

The wargame package

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Abstract

This package provides tools to typesetting manuals, board, and counters for wargames using L^AT_EX. Licensed under [Creative Commons Attribution-ShareAlike International License, version 4](https://creativecommons.org/licenses/by-sa/4.0/) ©©©.

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1 Introduction

This package provides tools for typesetting classic, hex-based wargames. The package allows an author to design a board, or map, comprised of hex, using a relatively simple interface. Units are typeset using a similar interface. Unit types are identified using the NATO Joint Military Symbolology [2] standard.

This document is meant as a reference manual (although far from complete). A separate tutorial is available, and may be the best starting point.

2 Hex Boards

The package provides a number of facilities to set-up a board comprised of hexagon fields (“hexes”).

2.1 Placing hexes

A hex can be added to the current `tikzpicture` using the macro `\hex`. It takes up to 4 arguments

```
\hex[⟨key-value-pairs⟩](⟨location⟩)(⟨name⟩)
```

The `⟨key-value-pairs⟩` specify the hex. Valid options are

`terrain=⟨terrain-keys⟩` specifies the terrain of the hex. More on in this in Section 2.5.

`ridges=⟨ridges-keys⟩` specifies where ridges are drawn in the hex. Section 2.6.

`label=<label-keys>` specifies the how to output the hex label, if any. This is expanded upon in Section 2.7.

`town=<town-keys>` specifies that a town (or similar) is present in the hex. The various keys are described in Section 2.8.

`bevel=<bevel-keys>` specifies that a bevel should be added to the hex. The various keys are described in Section 2.2.

`extra=<extra-keyx>` and `extra clipped=<extra-keyx>` allows the user to put custom graphics in the hexes. See also Section 2.9 for more.

`row=<row>` and `column=<column>` Keys to set hex coordinates. Mainly used when using `\node` rather than `\hex`. These coordinates should be specified in the `hex cs` coordinate system (Section 2.4).

any style key defined for TikZ pictures.

The *<location>* argument specifies the coordinates, in the hex coordinate system where to put the hex. More about the coordinate system is given in Section 2.4. Note, the numbers by default starts from the lower-left corner, but can be changed via options.

The elements are rendered in the following order

1. The terrain, clipped to the hex shape.
2. The hex, including circumference and fill
3. The ridges, if any
4. The label, if any
5. Extra graphics clipped to the hex
6. Bevel if selected
7. Town, if any
8. Extra graphics which may extend beyond the confines of the hex.

Figure 1 illustrates some of the components of a hex. The hexes are 2 unit lengths wide. Typically, the unit length is one centimetre, which means the hexes are roughly $2\text{ cm} \times 1.86\text{ cm}$ — or roughly $3/4'' \times 3/4''$ — big. This allows the hexes to fit chits (see Section ??) of size $12\text{ mm} \times 12\text{ mm}$ — or roughly $1/2'' \times 1/2''$ — nicely. If one wants larger chits or hexes one should take care to scale both by a similar amount.

Note that the macro `\hex` is really a short hand for TikZ's `\node` macro, but with preset options. An alternative to using the `\hex` macro is to do

```
\node[hex={key-value-pairs}] (<name>) at (<location>);
```

This can be useful when placing explanatory graphics or the like. The main difference between using `\hex` and the raw `\node[hex=...]` is that the former can automatically generate labels and set shape coordinates in the picture. If you want that for your board, it is recommended to use `\hex`. For example, if one does

```
\begin{tikzpicture}[
  every hex={label={auto=alpha column}},
  hex/labels is name=true]
```

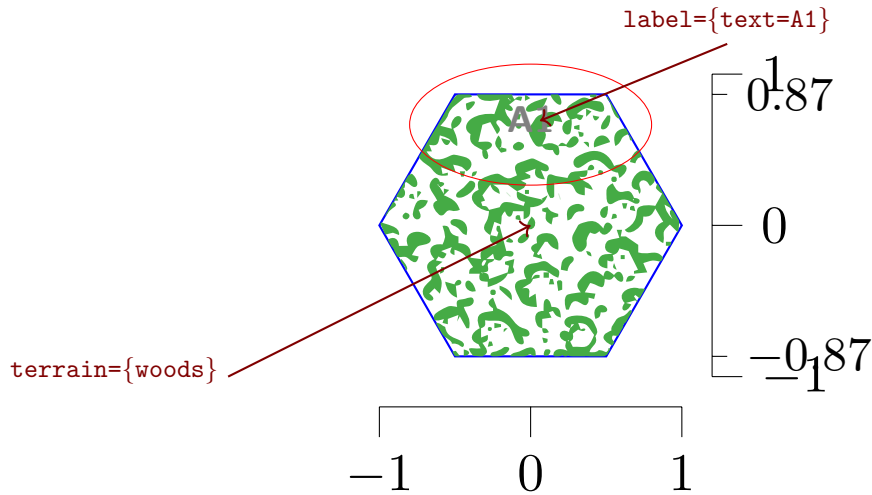


Figure 1: Hex parts. The bar on the bottom and to the right indicate two units of length.

```
\hex(c=1,r=1);
\end{tikzpicture}
```

then one can refer to the location of the hex by its label i.e., (A1). Since the hex is really a *TikZ* node, we can also use anchors defined for `hex` node shape, such as (A1.west), (A1.north edge), and so on. This is not possible if one uses the `\node` macro.

2.2 Hex bevels

A bevel (or “shadow-effect”) can be added to hexes using the key `bevel`, with a value that specifies where the light comes from (e.g., north west or NW). The percentage of the half width of a chit of the bevel can be specified by the key `bevel fraction` (default 10%).

2.3 Styling hexes

Typical *TikZ* options can be passed to the `\hex` macro. For example, if you want to draw the hex borders in red, simply pass `draw=red` in the [*optional*] arguments to `\hex`. Individual parts of the hexes can be styled separately. the default style used by `\hex` is `tikz/hex/hex`. Users can redefine this style to suit their needs. If one does not want to change the default style, or pass the same argument to all `\hex`s one can define the style `tikz/every hex`. For example, if one wants to auto label all hexes, one can do

```
\begin{tikzpicture}
  \begin{scope}[every hex/.style={label=auto}]
    % Hexes
  \end{scope}
\end{tikzpicture}
```

For example, to render only the corners of the hexes, as popular among some designers, one can do

```
every hex/.style={
  dash pattern=on .2cm off .6cm on .2cm off 0cm
},
```

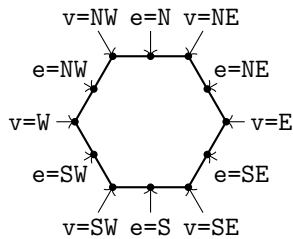
Note that the dash pattern should be 1cm long and the last element should be `off 0cm` so the dash pattern is started afresh on each hex edge.

2.4 Hex coordinate system

The package defines a coordinate system based on hexes. The centre of a hex is specified as $\langle column \rangle$ - $\langle row \rangle$ pairs, while vertexes and mid-point on edges can be specified separately. The syntax of the coordinates is

```
(hex cs:row= $\langle hex\text{-}row \rangle$ ,column= $\langle hex\text{-}column \rangle$ ,vertex= $\langle vertex \rangle$ ,edge= $\langle edge \rangle$ )
```

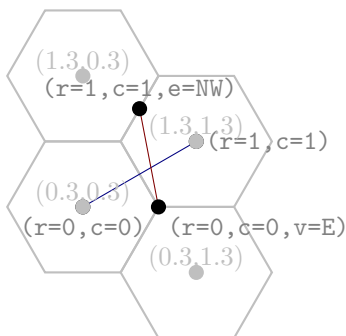
where $\langle vertex \rangle$ and $\langle edge \rangle$ are optional. The hex row and column defaults both to 0 and can be decimal numbers. The row, column, vertex, and edge keywords may be shortened to `r`, `c`, `v`, and `e`, respectively. Possible vertexes and edges are listed in Table 1.



vertex=	Angle	edge=	Angle
east	E	north east	NE 30°
north east	NE	north	N 90°
north west	NW	north west	NW 150°
west	W	south west	SW 210°
south west	SW	south	S 270°
south east	SE	south east	SE 330°

Table 1: Vertex and edge positions

In Figure 2 is an example of a picture drawn in this coordinate system.



Hexes and lines drawn with

```
\hex(0,0)\hex(0,1)\hex(1,0)\hex(1,1)
\draw[blue!50!black] (hex cs:r=0,c=0) --
(hex cs:r=1,c=1);
\draw[red!50!black] (hex cs:r=0,c=0,vertex=E) --
(hex cs:r=1,c=1,edge=NW);
\fill[lightgray](hex cs:r= .3,c= .3) circle(0.1);
\fill[lightgray](hex cs:r=1.3,c= .3) circle(0.1);
\fill[lightgray](hex cs:r=0.3,c=1.3) circle(0.1);
\fill[lightgray](hex cs:r=1.3,c=1.3) circle(0.1);
```

Figure 2: Hex coordinate system

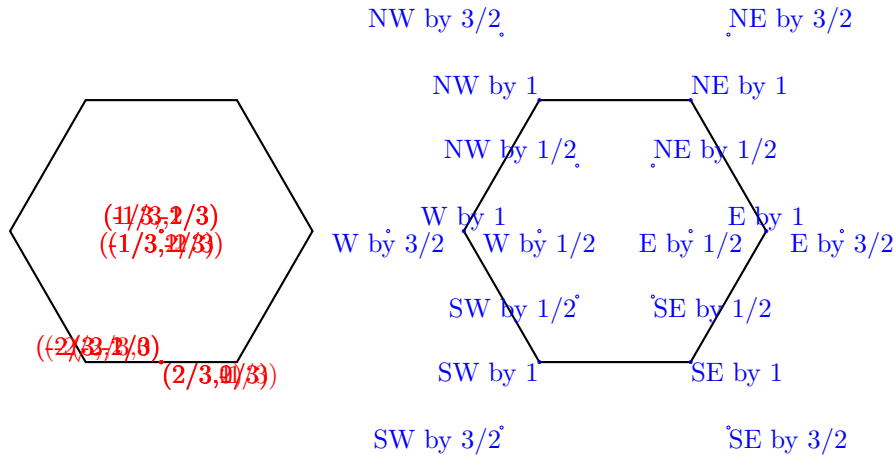


Figure 3: Relative coordinates

Important: When the horizontal distance to the centre of a hex becomes less than $-\cos 60^\circ$ or larger than $b - \cos 60^\circ$ we effectively have a new hex column, and the coordinates are shifted upward or downward for smaller or larger numbers. Figure ?? illustrates. this. This can make it a little hard to specify coordinates relative to a hex centre. Alternatively one may use vertex or edge specifications together with a relative offset in those directions. If one require even more flexibility, one can use the TikZ library `calc` to add arbitrary offsets, e.g.,

```
\coordinate at ($hex cs:c=1,r=10)+(.2,.2)$);
```

2.5 Terrains

Terrains are rendered using tile images or TikZ pictures. The available terrains are shown in Tables 2 and 3. Users can provide their own tile images and select those via `terrain={image=<image>}` or defined TikZ pictures and select those via `terrain={pic=<pic-name>}`. In all cases, the terrain graphics is clipped to the hex.

The terrain of a hex is selected via the multi-valued key `terrain`. Sub-keys of this key are

`image=<graphics-file>` Specifies terrain tile image *<graphics-file>*.

`pic=<picture-key>` Specifies terrain tile TikZ picture.

`code=<tikz-code>` Any valid TikZ code

`clip=<path(s)>` TikZ path specification to clip the terrain within the hex.

The terrain can be clipped by the sub-key `clip`. This can be useful if the game specifies movement costs in terms of hex-edge crossing, for example *First Blood* [1]. In that case, a hex may be, for example, a jungle hex, but some edges a clear. Thus movements across such an edge would count as moving into clear territory while moving over other edges will count as moving into a jungle. This is, of course, not how most games count movement costs, but this package nonetheless facilitates such rules. Table 4 shows a few examples of predefined clippings of terrain.

Users can define TikZ pictures that specify clipping paths as needed. For example, one could add clipping to the terrain to ensure that other graphics in the hex stands out.

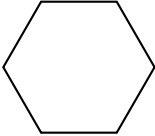
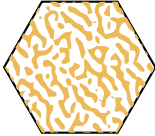
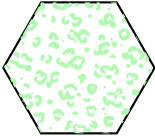

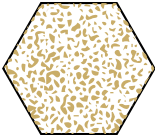
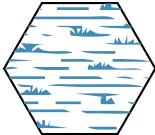

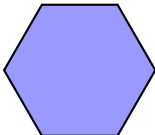
Symbol	Name	terrain={image=<image>}	Symbol	Name	terrain={image=<image>}
	Clear			Beach	{image=wargame.beach}
	Light woods	{image=wargame.light_woods}		Woods	{image=wargame.woods}
	Rough	{image=wargame.rough}		Swamp	{image=wargame.swamp}
	Mountains	{image=wargame.mountains}		Sea	{image=wargame.sea}

Table 2: Terrains specified via tile images


Symbol	Name	terrain={pic=<image>}
	Mountains	{pic=hex/terrain/mountain,line width=3pt}

Table 3: Terrains specified via TikZ pictures


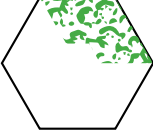
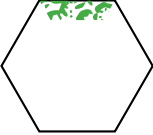

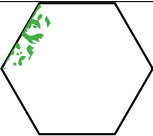

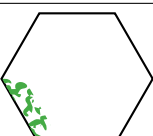
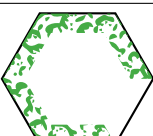
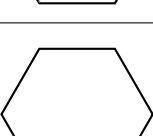
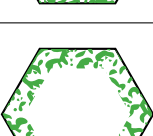
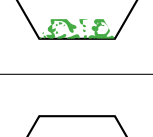
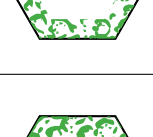
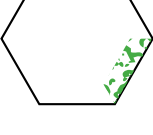

Symbol	terrain={clip=,...}	Symbol	terrain={clip=,...}
	{hex/sextant=NE}		{hex/large sextant=NE,hex/large sextant=N}
	{hex/sextant=N}		{hex/sextant=NE, hex/sextant=N, hex/sextant=NW}
	{hex/sextant=NW}		{hex/sextant=NE, hex/sextant=N, hex/sextant=NW, hex/sextant=SW}
	{hex/sextant=SW}		{hex/sextant=NE, hex/sextant=N, hex/sextant=NW, hex/sextant=SW, hex/sextant=S}
	{hex/sextant=S}		{hex/sextant=NE, hex/sextant=N, hex/sextant=NW, hex/sextant=SW, hex/sextant=S, hex/sextant=SE}
	{hex/sextant=SE}		{hex/sextant=NE, hex/sextant=N, hex/sextant=NW, hex/sextant=SW, hex/sextant=S, hex/sextant=SE, hex/sextant=C}
	{hex/sextant=C}		{hex/sextant=NE, hex/sextant=N, hex/sextant=S, hex/sextant=SE, hex/sextant=C}

Table 4: Terrain clipped via clip sub-key

2.5.1 Styling terrains

Terrains use the key `tikz/hex/terrain` to render the terrains. This is mainly useful for terrains made from `TikZ` pictures.

2.6 Ridges

Ridges, or hill or mountain slopes, can be added to a hex via the keyword `ridges`. The keyword takes a list of hex edges and generates symbology for the ridge on the chosen edges. Note that the edges does not have to be continuous, as illustrated in the bottom right of Table 5, nor in any particular order. The edges are specified as compass direction

north east, north, north west, south west, south, south east.
`NE, N, NW, SW, S, SE`

Table 5 shows some examples.

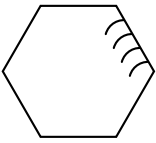
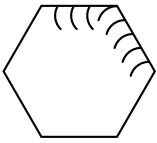
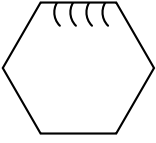

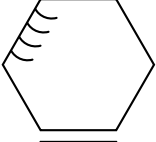

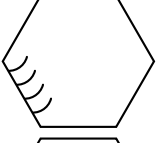

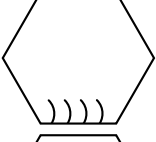

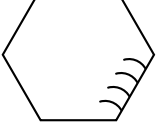

Symbol	ridges=	Symbol	ridges=
	NE		NE,N
	N		NE,N,NW
	NW		NE,N,NW,SW
	SW		NE,N,NW,SW,S,line width=3pt
	S		NE,N,NW,SW,S,SE,color=brown!70!black
	SE		N,S,NW,SE

Table 5: Ridges

2.6.1 Styling ridges

Every ridge is drawn with the style `tikz/hex/ridges`. Users can customise this style. The default is to draw thin black wave lines (TikZ decoration `waves`). The default style also takes care to auto scale line widths.

2.7 Labels

Labels can be placed on the hexes via the keyword `label`. The label can either be auto-generated or given explicitly. Table 6 shows the various choices.

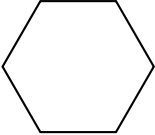
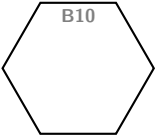
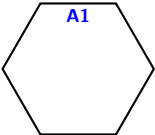
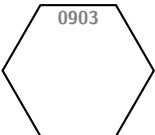
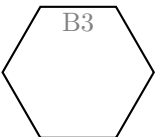

Symbol	Name	Column/Row	label=
	No label	n/a	<code>none</code>
	User specified	n/a	<code>text=B10</code>
	User specified	n/a	<code>{color=blue,text=A1}</code>
	Two-digit, zero padded numbers	9/3	<code>auto</code>
	Column letter, number row	2/3	<code>{auto=alpha column,font=\noexpand\rmfamily}</code> †
	Two letter column, two digit row	6/24	<code>{auto=alpha 2 column,anchor=north east}</code>

Table 6: Labels

†When specifying macros as key values in the options, for example the value `\rmfamily` for the key `font` above, we have to put a `\noexpand` in front if the macro. This is to prevent early expansion of the macro, which would cause errors. A minor nuisance.

The option `auto=inv y x plus 1` will label the rows inversely, and add one to the column number. This requires that the key `tikz/max hex row` has been set to the largest row number used.

In addition to the sub-keys `none`, `auto`, and `text`, one can also specify the following keys

`place=<coordinates>` specifies the Location of label within the hex. The anchor point of the text will be placed at

this point.

[`{/}`] **options**] at the start of the option (but inside braces `{...}`) can be used to give additional style options.

2.7.1 Styling labels

All labels use the style `tikz/hex/label`. By default, this places the label at the top of the hex, and renders the text as gray script sized text. Users can customise this style. If a user does not want to change the default style, or want to pass the same option to all labels, then one can set the key `tikz/every label` to those options.

2.8 Towns

Towns in hexes are made via the key `town`. This key takes several sub-keys, as illustrated in Table 7

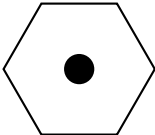
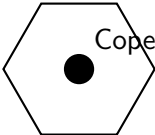
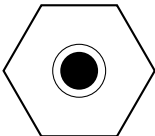
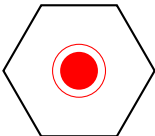
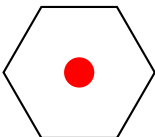
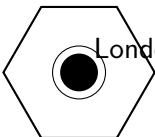
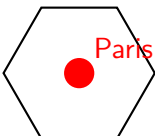
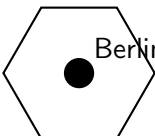
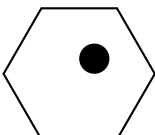
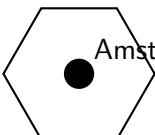
Symbol	town=	Symbol	town=
			<code>{name=Copenhagen}</code>
	<code>{pic=hex/town/city}</code>		<code>{red,pic=hex/town/city}</code>
	<code>{fill=red}</code>		<code>{name=London}</code>
	<code>{red,name=Paris}</code>		<code>{above=0.8,name=Berlin}</code>
	<code>{place={(.2,.2)}}</code>		<code>{font=\noexpand\itshape,name=Amsterdam}</code> †

Table 7: Towns

†When specifying macros as key values in the options, for example the value `\rmfamily` for the key `font` above, we have to put a `\noexpand` in front if the macro. This is to prevent early expansion of the macro, which would cause errors. A minor nuisance.

The sub-keys available for the `town` key are

`pic=`*(town-pic)* The name of a TikZ picture. Currently defined are `hex/town/town` and `hex/town/city`. Users can provide alternate definitions or new types by defining TikZ pictures.

`place=`*(coordinates)* Location of label within the hex. The anchor point of the text will be placed at this point.

name=*<name>* Name of town

2.8.1 Styling towns

Towns uses two styles: `tikz/hex/town` for the town graphics, and `tikz/hex/town name` for the name of the town. In addition, a user may set the key `tikz/every hex town` to contain options to be passed to all towns.

2.9 Extra graphics for hexes

Additional graphics for hexes can be added by the two keys `extra` and `extra clipped`. The difference between the two are that graphics specified by `extra clipped` are clipped (restricted) to the hex, while graphics given by `extra` may extend beyond the hex. Both keys accept a comma separated list of arguments, where each element has the syntax

```
[<options>](<placement>)<picture>
```

Both *<options>* and *<placement>* are optional, and specifies keys to draw *<picture>* with and the relative location in the hex, respectively. The required argument *<picture>* must name a TikZ picture, for example `hex/fortress`. This can be useful for marking hexes on the board. For example to mark a set-up hex for one faction of the game.

One could for example define the following pictures to define set-up points for a Sovjet and German faction

```
setup/sovjet/.pic={
  \path[fill=red,draw=yellow,pic actions]
    ( 90:.4)--(126:.15)--
    (162:.4)--(198:.15)--
    (234:.4)--(270:.15)--
    (306:.4)--(342:.15)--
    ( 18:.4)--( 54:.15)--cycle;},
setup/german/.pic={
  \path[fill,pic actions]
    (-.4, -.1) rectangle(.4,.1)
    (-.1, -.4) rectangle(.1,.4);
  \path[draw,pic actions]
    (-.4,-.2) -- (-.2,-.2) -- (-.2,-.4)
    (-.4, .2) -- (-.2, .2) -- (-.2, .4)
    (.4, .2) -- (.2, .2) -- (.2, .4)
    (.4,-.2) -- (.2,-.2) -- (.2,-.4);}
foo/large/.pic={
  \path[fill=gray,pic actions] (-1,-.5) rectangle(1,.5);},
}
```

We can place extra graphics in hexes as shown in Table 8.

To finish off this part on hexes and what we can do with those, we generate a map in Figure 4.

2.10 Rivers, borders, and roads

Rivers and borders follow the hex sides and are added to the current `tikzpicture` using `\river` and `\border` macros respectively. They are specified as regular TikZ paths. It is useful to utilise the hex coordinate system for this.

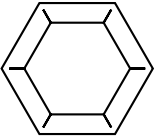

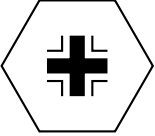


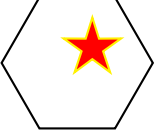
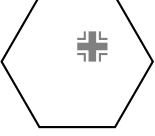
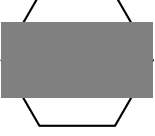
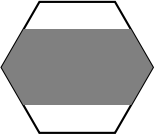
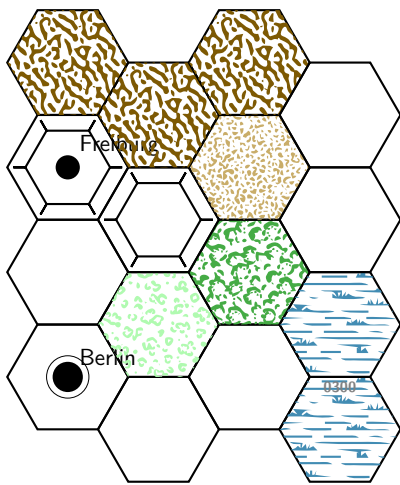
Symbol	extra=
	hex/fortress
	setup/sovjet
	setup/german
	{setup/german,hex/fortress} [†]
	{[line width=2pt,brown] fortress 2} [‡]
	{[shift={(.2,.2)}] setup/sovjet} [‡]
	{[shift={(.2,.2)},scale=.5,color=gray] setup/german} [‡]
	foo/large
Symbol	extra clipped=
	foo/large

Table 8: Hex extra graphics. Note that in the last line we use the graphics `foo/large` with `extra clipped` (compare to line just above) to restrict the graphics to the hex.

[†]When specifying more than one item, the list must be enclosed in braces (`{...}`)

[‡]When an item in the list of `extra` contains a comma (`,`), for example in a list of graphics options, then we need to enclose the inner list *and* the whole list in braces (`{...}`) to protect against unwanted expansion.



```

\hex[town={pic=hex/town/city,name=Berlin}] (r=0,c=0)
\hex[] (r=0,c=1)
\hex[] (r=0,c=2)
\hex[terrain={swamp},label=auto] (r=0,c=3)
\hex[] (r=1,c=0)
\hex[terrain={light woods}] (r=1,c=1)
\hex[terrain={woods}] (r=1,c=2)
\hex[terrain={swamp}] (r=1,c=3)
\hex[town={name=Freiburg},extra=hex/fortress] (r=2,c=0)
\hex[extra=hex/fortress] (r=2,c=1)
\hex[terrain={rough}] (r=2,c=2)
\hex[] (r=2,c=3)
\hex[terrain={mountains}] (r=3,c=0)
\hex[terrain={mountains}] (r=3,c=1)
\hex[terrain={mountains}] (r=3,c=2)
\hex[] (r=3,c=3)

```

Figure 4: Placing hexes

```

\river[options] path;
\border[options] path;

```

Rivers are essentially borders, but are randomized to give a more aesthetically pleasing output.

Roads and railroads typically go from hex-center to hex-center, and are added using the macro `\road`. The road or railroad is specified via a regular TikZ path.

```

\road[options] path;
\railroad[options] path;

```

Towns and cities conveniently serve as places to split up a road at.

2.10.1 Styling paths

Rivers, roads, railroads, and borders are styled by `hex/river`, `hex/road`, `hex/railroad`, and `border`, respectively, and the keys `every hex river`, `every hex road`, `every hex railroad`, and `every hex border` will also be applied. The latter can be defined by the user.

2.11 Board clipping and frame

In the river, border, and road example above, the roads extend beyond the hexes, which does not look very nice. One way to deal with this, is to draw a clipping box around the hexes

This technique works fine for examples in a manual, it has a somewhat displeasing effect for a full board. The package therefore defines the macro `\boardclip` which clips the graphics according to the defined hexes.

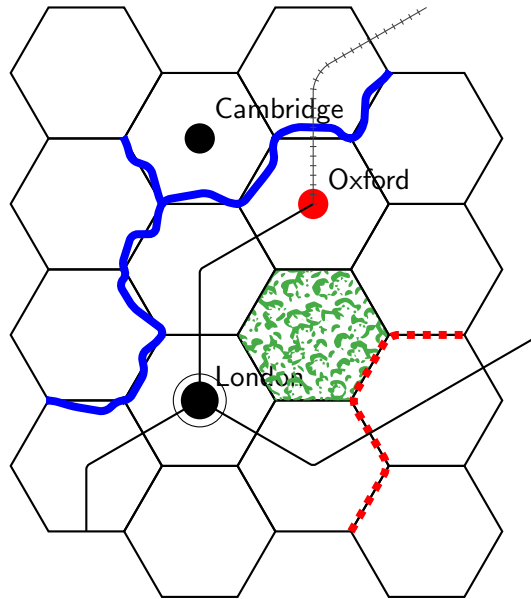


Figure 5: Adding rivers, borders, and roads

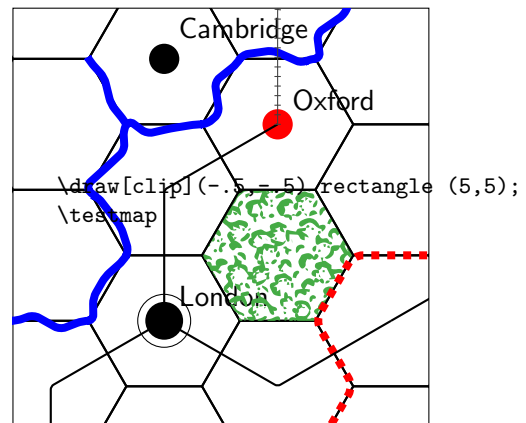
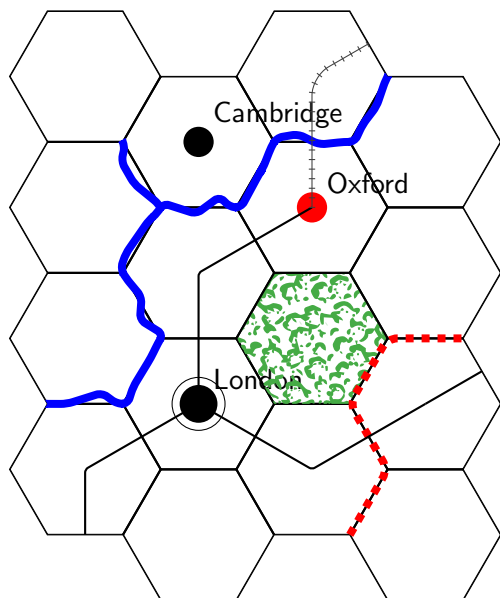


Figure 6: Clipping for a manual using a TikZ `\draw[clip]` command.

```
\boardclip(<lower-left>)(<upper-right>){<options>}
```

A clipping path of that spans from the hex at $\langle lower-left \rangle$ to $\langle upper-right \rangle$. Note, that both of these arguments should only specify the column and row keys. If $\langle options \rangle$ is non-empty, then the clipping path is drawn with those options.



```
\begin{scope}
\boardclip(c=0,r=0)(c=3,r=3){}
\testmap
\end{scope}
```

Figure 7: Snug-fit clipping of board using the macro `\boardclip`

This is particularly useful together with the `\boardframe` macro. This macro will put a frame around the board, optionally with a margin.

```
\boardframe[<margin>](<lower-left>)upper-right
```

where $\langle lower-left \rangle$ and $\langle upper-right \rangle$ are as for `\boardclip`. The $\langle margin \rangle$ must be a number, and specifies an optional margin around the hexes, The argument $\langle options \rangle$ specifies how the frame is drawn. The idea is to first draw the frame, then the clipping shape, and then the hexes. One should take care to use the $\langle options \rangle$ argument to `\boardclip` to specify a default background color. The frame is drawn with the style `hex/board frame`

The `\boardframe` macro prints the position of the rectangle to the log output, if one needs to do some more stuff around the board.

2.12 Constructing the physical board

If the board is not too large, so that it may fit on a paper format that can easily be printed (say A4, A3, Letter, or Tabloid), one can simply print the board and glue it onto a sturdy surface (say 1½ mm poster carton). However, if the board is large, meaning it does not fit on a piece of printable paper, then one has two options.

Either scale the board down so that it fits. Use the TikZ key `scale=⟨factor⟩` as an argument to the `tikzpicture` environment in which you create the board. In this case, you should make sure you also scale the chits by the

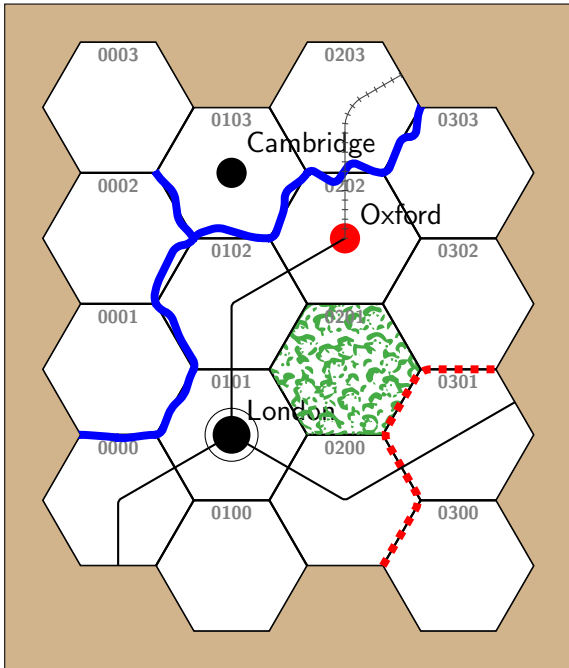


Figure 8: Combining a frame and clipping

same *factor*), again via the `scale` key.

Or you can split the board over several pages. The package provides a number of tools to help with this.

2.12.1 Split the board over multiple sheets

First, make sure you produce a standalone PDF of the board only.

```
\documentclass{standalone}
\usepackage{wargame}
\begin{tikzpicture}[scale=SCALE]
  % Define the board here.
\end{tikzpicture}
```

and that you have created this PDF — say `board.pdf`.

Next, prepare another document in which we will do the calculations. For example

```
\documentclass[11pt]{standalone}
\usepackage{wargame}
\begin{document}
\splitboard{paper=letter,margin=.7,ncol=2,nrow=2,overlap=1}
\end{document}
```

to calculate the split of `board.pdf` over 2×2 letter paper sheets, with a non-printable margin of 7mm, and an overlap between the segments of 1cm.

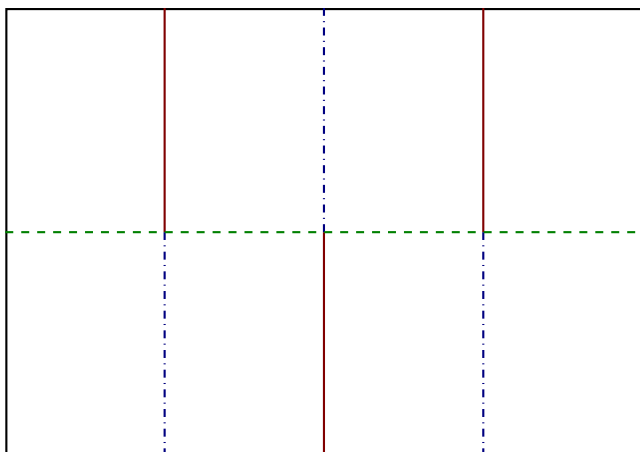
The possible keys for the `\splitboard` macro are

- `paper= $\langle format \rangle$` : Specifies the paper format. One of `a4`, `a3`, `letter`, `tabloid`. Default is `a4`.
- `landscape`: Sets the paper format to be in landscape mode (default is portrait).
- `margin= $\langle size in centimetres \rangle$` : Size of margins on each sheet in centimetres *without* unit. That is put 0.6 for 6mm, *not* 6mm. Default is 0.6. This should be *slightly* larger (by roughly 5%) than the *least* margin required by the printer used. *Must* be given *before* `paper` to have any effect.
- `ncol= $\langle number of columns \rangle$` : Sets the number of columns of sheets.
- `nrow= $\langle number of rows \rangle$` : Set the number of rows of sheets.
- `overlap= $\langle size in centimetres \rangle$` : Sets the size of the overlap between sheets in centimetres *without* unit. That is put 2 for 2cm, *not* 2cm. Default is 2.
- `image= $\langle image file name \rangle$` : File name of the board image (a PDF). Default is `board`
- `output= $\langle output file name \rangle$` : File name (without `.tex` ending) to write calculated split to.
- `standalone`: Boolean flag. If true, then output file will be a standalone document (i.e., has a `\documentclass`).
- `scale= $\langle scale \rangle$` : Set scale of board.

The macro will produce a file named `$\langle output file name \rangle.tex$` which can be included in another document to generate the split board PDF. Crop marks will be added to the board segments to make it easier to align the parts.

2.12.2 Foldable board

To make a fold-able board use for example the below template to create grooves and cuts.



- Cut through carton
- - - - - Cut groove ($\frac{1}{2}$ through) in carton on *back* side
- - - - - Cut groove ($\frac{1}{2}$ through) in carton on *front* side

This will fold the board down to a fourth of the size of the full map. For example, if the board is A1 (84 cm × 59.4 cm) it will fold down to A4 (21 cm × 29.7 cm) for easier storage.

3 Chits

Chits, or playing counters¹, can be made with the macro `\chit`. The syntax for rendering a chit is

```
\chit[⟨key-value-pairs⟩](⟨location⟩)(⟨name⟩)
```

Figure 9 shows an example of a chit.

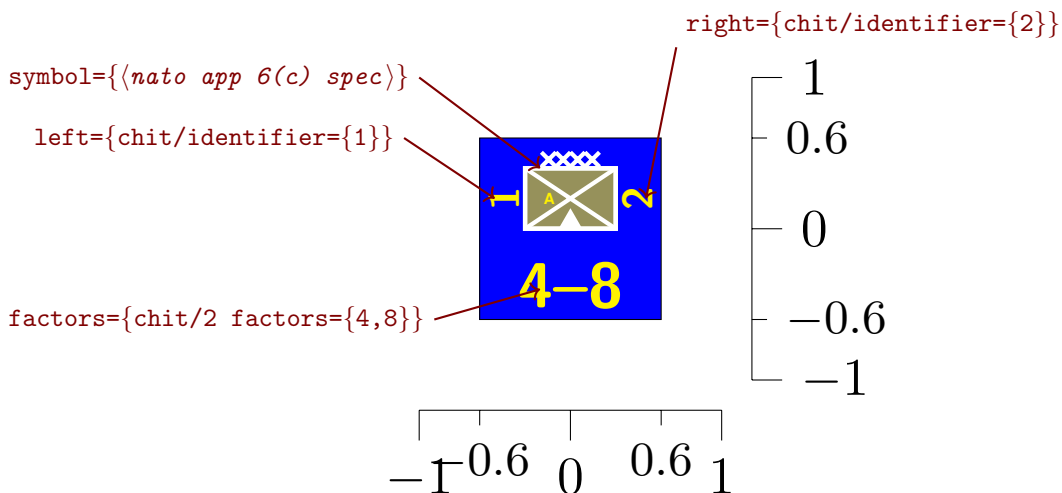


Figure 9: An example of a chit. The lines below and to the right shows two unit lengths. Other global options used are `color=white` to set the foreground colour, `fill=blue` for the background, and `text=yellow` to set the font colour to yellow. The `symbol` key also contains `frame={fill=yellow!50!black}` to set the frame fill colour, and `ultra thick` to set the line width of the NATO App6(C) symbol. Note that the line width is automatically scaled.

The example in Figure 9 shows an infantry mountaineer army unit with attack factor 4, and movement factor 8. The NATO App6(c) symbol is given in terms of keywords for the `\natoapp` macro (see Section 4). The other parts of the chit (`factors`, `left`, `right`, and `below`) are rendered onto the chit via `TikZ` pictures. This allows for a great deal of flexibility in generating chits. For example, above we use the pictures `chit/identifier` and `chit/2 factors` to render the left- and right-hand identifiers, and the factors, respectively.

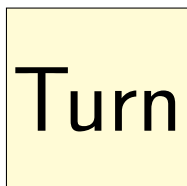
Full frame chits — that is chits which are not typically designating units or faction specific chits, e.g., a turn marker — can be made by using the key `full`. In that case, all other keys (`symbol`, `factors`, `left`, `right`, and `below`) are ignored. Figure 10 shows such an example.

The size of the chits are 1.2×1.2 unit lengths squared. This is tuned so that the chits will fit within the hexes produced by the `\hex` command (see Section). In Figure 11 we illustrate this. Typically the unit is one centimetre. which means the chits are $12\text{mm} \times 12\text{mm}$ — or roughly $1/2'' \times 1/2''$, which is a fairly good size for most games.

Just as `\hex` is really a wrapper around `TikZ`'s `\node` macro, so it is with `\chit`. This means that an alternative way of making a chit is to do

```
\node[chit={⟨key-value-pairs⟩}](⟨name⟩) at (⟨location⟩);
```

¹Since `TEX` has the concept of counters as in `\count` and `LATEX`'s `\newcounter`, we choose the name 'chit' for playing pieces instead.



chit made with

```
\tikzset{
  wg/big text/.pic={
    \node[font=\sffamily\fontsize{18}{0}%
      \selectfont]{#1};}
}
\tikz{
  \chit[full={wg/big text={Turn}},
    black,fill=yellow!20!white](0,0)}
\end{tikzpicture}
```

Figure 10: An example of a full-frame chit.

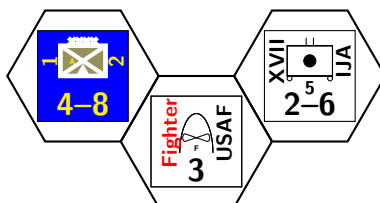


Figure 11: Example of chits fit within hexes.

Since chits are really TikZ nodes we can use anchors on the chit. Unlike for `\hex` where there are additional features available when using the dedicated macro, there really isn't much difference between `\chit` and `\node[chit=...]`.

3.1 Styling chits

Typical TikZ options can be passed to the `\chit` macro. For example, if you want to draw the chit with a red foreground, simply pass `draw=red` in the `[optional]` arguments to `\chits`. Individual parts of the hexes can be styled separately.

Important: To set the colours of the various elements, one should use

`color=<foreground and text>` Selects the foreground colour of lines, text, and so on, including for the NATO App6(C) symbol.

`fill=<background>` Selects the background colour of the full chit. By default this is transparent.

`text=<text foreground>` Selects the colour used for text in the chit. This overrides `color` for text.

`draw=<foreground>` This sets the colour for foreground elements, excluding text.

TikZ allows one to pass a `<colour>` as arguments for drawing and understands that as giving the foreground and text colours. However, that key is *deprecated* for this library, as it does not properly propagate through².

²The colour `pgfstrokecolor` is not modified by that.

The styles used by the `left`, `right`, `setup`, `factors`, and `symbol` elements are `tikz/chit/left`, `tikz/chit/right`, `tikz/setup`, `tikz/factors`, and `tikz/symbol` respectively. A user can redefine these to change the appearance of the chits. For example, one could make the symbol larger by setting a different `scale`, move the factors to the side by changing `shift`, and so on.

Pictures used by these elements are also styled by similar keys. For example, the picture `chit/identifier` is styled by `tikz/chit/identifier`.

A bevel (or “shadow-effect”) can be added to chits using the key `bevel`, with a value that specifies where the light comes from (e.g., north west or NW). The percentage of the half width of a chit of the bevel can be specified by the key `bevel fraction` (default 10%). This can be used for both symbol or full chits.

In addition, one can define the key `tikz/every chit` to be the default options for all chits.

By default, the outer “frame” of a chit is drawn with the same graphics options as the chit it self (i.e., same fill and stroke colour). To change that, one can pass `frame={\langle options \rangle}` as part of the chit options.

3.2 Defining preset chit types

One can conveniently pre-define some chit styles. For example, given the style definition

```
\tikzset{
  my chit/.style={/chit/symbol={[
    faction=friendly,
    command=land,
    main=armoured]},
    /chit/left={chit/identifier={Mine}},
    /chit/factors={chit/2 factors={2,4}}}}
```

We can use that to make different chits with some commonalities defined by that style. For example



where, in the second example, we have passed additional options to `\chit`. Note that we *must* give the full path to the `chit` keys when defining a style like this.

4 NATO App 6(c) symbols

The NATO markers are designed to fit within the template shown in Figure 12. The template serves as a placement guide of the various parts of the NATO marker as illustrated in Figure 13.

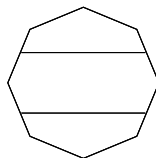


Figure 12: Template for NATO symbols

```
\natoapp[<key-value-pairs>](<location>)(<name>)
```

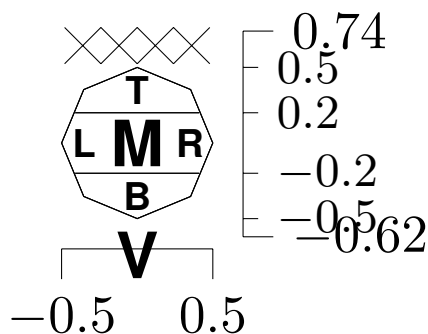
where all arguments are optional. Keys are defined to fill in the various parts of the markers. These keys are

`faction=<faction>` Selects the faction used for the symbol. See also Section 4.1.

`command=<command>` Selects the command used for the symbol. See also Section 4.1.

`main=<mains>` Specifies the main symbol(s). This can be a comma separated list of specifiers (delimited by braces $\{first, second, \dots\}$), and each symbol can be preceded by an optional argument to shift, scale, rotate, etc., the individual symbols. .

`left=<lefts>`, `right=<rights>`, `top=<tops>`, `bottom=<bottoms>`, `below=<belows>` Specifies the left-, right-hand, top, bottom, and lower symbol(s). The format of the arguments $\langle lefts \rangle$, $\langle rights \rangle$, $\langle tops \rangle$, $\langle bottoms \rangle$, and $\langle belows \rangle$ has the same format as $\langle mains \rangle$.



The figure is typeset by

```
\natoapp[faction=none,
command=base,
echelon=army,
main={text=M},
top={text=T},
bottom={text=B},
left={text=L},
right={text=R},
below={text=V}]
```

Figure 13: Main keys of `\natoapp`. The bottom and right hand bars indicate one unit of length.

Other keys are available to further customise the appearance of the symbols

`echelon=<size>` The size of the unit described. Possible values are `team`, `squad`, `section`, `platoon`, `company`, `battalion`, `regiment`, `brigade`, `division`, `corps`, `army`, `army group`, `theatre`, and `command`.

`frame=<keys>` Extra keys for frame.

4.1 Faction and Command Selection

Table 9 shows the various bases used for the various *faction/command* combinations. Also shown in the table is the base template for main identifiers.

<i><command></i>	<i><faction></i>			
	friendly	hostile	neutral	unknown
air				
land				
equipment				
installation				
sea surface				
sub surface				
space				
activity				

Table 9: Frames for various combinations of *<faction>* and *<command>* combinations. These are drawn with the `pic` given by `natoapp6c/<faction>/<command>` with the options `draw=blue,fill=<faction>`. If no `fill` is specified, then the background will be transparent. Note, the template for main identifiers is also shown on top of each frame.

The fill color of the frame is set by the key `frame`. If this is or contains the special value `faction`, then the frame fill colour will be the standard for the faction as illustrated in figure 14.

Elements of the frame can be controlled by the key `frame`.

`frame=<keys>` Additional keys to pass to the frame drawing. The special option `faction` will make the frame be filled with the standard faction color.

Table 10 illustrates this.

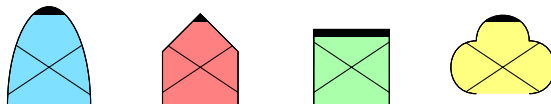


Figure 14: Illustration of using the special value `fraction` for the `frame` key

Example	<code>frame={color,...}</code>	<code>frame={fill,...}</code>	<code>frame={draw,...}</code>	<code>frame={line width,...}</code>
	red			thick
		yellow		thin
			blue	
		pink	magenta	
	red	green	blue	ultra thick

Table 10: Illustration of frame colour choices

4.2 Unit Size (echelon)

The size of a unit a marker represents is given by the `echelon` keyword. Table 11 shows the various markers and approximate unit sizes.

4.3 Unit type identification

See Table 12.

References

- [1] Hanover,C., Hendrix,C.E., & Llewelyn,S., *First Blood*, 1997, <https://grognard.com/fb/>. See also implementation using this package at https://gitlab.com/wargames_tex/firstblood_tex.
- [2] *NATO Joint Military Symbology*, APP-6(C), May 2011, https://en.wikipedia.org/wiki/NATO_Joint_Military_Symbology.
- [3] *NATO Joint Military Symbology*, APP-6(D), October 2017, <https://nso.nato.int/nso/nsdd/main/standards/ap-details/1912/EN>
- [4] `milsymb` package, <https://www.ctan.org/pkg/MilSymb>.

5 Implementation

5.1 The wargame package

First, package identification

```
1 \ProvidesPackage{wargame}
```

Then needed packages

```
2 \RequirePackage[svgnames]{xcolor}
3 \RequirePackage{tikz}
```

A switch to include terrain pictures (which take a lot of memory for some reason).

```
4 \@ifundefined{ifhex@terrain@pic}{%
5   \newif\ifhex@terrain@pic
6   \hex@terrain@picfalse}{}
```

Options

```
7 \DeclareOption{notterrainpic}{%
8   \hex@terrain@picfalse}
9 \DeclareOption{terrainpic}{%
10  \hex@terrain@pictrue}
11 \ProcessOptions\relax
```

Finally, the used TikZ libraries

```
12 \usetikzlibrary{wargame.hex,wargame.natoapp6c,wargame.chit}
```















Example	echelon	Approx. size	Sub-units	Officer
	team	3-5	none	Corporal or Sergeant
	squad	5-10	1-2 teams	Sergeant
	section	7-13	2-3 teams	Sergeant
	platoon	25-40	Several squads/sections	Second Lieutenant
	company	60-250	Several platoons	Captain
	battalion	300-1000	2-6 companies	Lieutenant colonel
	regiment	500-2000	3-7 battalions	Colonel
	brigade	2000-5000	Several battalions	Colonel
	division	10000-20000	Several brigades/regiments	Major General
	corps	30000-60000	Several divisions	Lieutenant General
	army	100000	Several corps (5-10 divisions)	General
	army group	120000-500000	Several armies	Field Marshal
	theatre	250000+	Several army groups	Field Marshal
	command		Not a unit size, but designator	

Table 11: Illustration of echelon values. Approximate sizes and command officer titles are typical modern day United States of America army values and identifiers. Historically the unit sizes have changed, as has officer titles. Furthermore, both the unit sizes, names, and command officer titles may vary from country to country, even across command.

Symbol	Type & Abbreviation	
	Air assault	AA
	Air defence	ADA
	Airborne	AB
	Amphibious	AM
	Anti tank/armoured	AT
	Armoured	AR
	Chemical biological radiological nuclear	CB
	Combined arms	CAR
	Engineer	ENG
	Field artillery	FA
	Infantry	IN ³
	Mechanised infantry	M
	Mountaineer	MTN
	Naval	N
	Reconnaissance	REC
	Special Operations Forces	SOF
Symbol	Echelon & Abbreviation	
XXXXXX	Army group	AG
XXXXX	Army	A
XXX	Corps	-
XX	Division	D ⁴
X	Brigade	BD
	Regiment	REGT
	Battalion	BN
	Company	COY
●●●	Platoon	PLT
●●	Section	
●	Squad	

Table 12: Some abbreviations of unit type identifications

5.2 The wargame.util TikZ library

This library contains some utilities for use in the other libraries.

5.2.1 Miscellaneous macros

```
\wargamelogo
```

This will produce the logo for this package.



```
13 \tikzset{
14   wargame logo text/.style={
15     font=\sffamily\bfseries\fontsize{12}{14}\selectfont,
16     scale=2.8,
17     inner sep=0,
18     text width=1.8cm,
19     transform shape,
20     align=center},
21   wargame logo text content/.store in=\wg@logo@text@content,
22   wargame logo text content={{\huge\LaTeX} wargame},
23   wargame logo chit/.style={
24     chit={symbol={
25       faction=friendly,
26       command=land,
27       echelon=division,
28       main=infantry}},
29     factors={chit/2 factors={4,3}},
30     left={chit/identifier=III},
31     right={chit/small identifier={10\textsuperscript{th}}},
32     color=white,
33     fill=red!50!black
34   }
35 },
36   wargame logo/.style={
37     transform shape,
38     every hex/.style={fill=gray!5!white,draw=gray!75!black},
39     hex/first row is=0,
40     hex/first column is=0,
```

```

41 hex/short top columns=none,
42 hex/short bottom columns=none,
43 hex/row direction is=normal,
44 hex/column direction is=normal
45 }
46 }
47 \newcommand\wargamelogo[1][]{%
48 \begin{scope}[wargame logo,#1]
49 \node[hex={fill=gray!30!white}] (logo center) at (hex cs:c=0,r=0) {};
50 \node[hex={terrain=light woods}] (logo light woods) at (hex cs:c=0,r=1) {};
51 \node[hex={terrain=city}] (logo city) at (hex cs:c=0,r=-1) {};
52 \node[hex={terrain=woods}] (logo woods) at (hex cs:c=-1,r=0) {};
53 \node[hex={terrain=mountains}] (logo mountains) at (hex cs:c=-1,r=1) {};
54 \node[hex={terrain=beach}] (logo beach) at (hex cs:c=1,r=1) {};
55 \node[hex={terrain=swamp}] (logo swamp) at (hex cs:c=1,r=0) {};
56 \node[wargame logo chit] (logo chit) at (hex cs:) {};
57 \node[wargame logo text] (logo text) {\wg@logo@text@content};
58 \end{scope}}

```

\wg@dbg

Debugging support. The counter `\wargamedbglvl` sets the debug level. The package code then uses `\wg@dbg` to print out debugging messages. This macro takes two arguments — the first is the *least* debug level at which the message is printed, and the second is the message it self.

```

59 \newcount\wargamedbglvl\wargamedbglvl=0
60 \def\wg@dbg#1#2{%
61 \ifnum#1>\wargamedbglvl\relax\else\message{^^J#2}\fi}

```

\wg@addto@macro

The macro `\wg@addto@macro{<macro>}{<other>}` adds the definition of the macro `<other>` to the macro `<macro>`. This uses the `\toks` trick of storing the *tokens* of the definition of a `<macro>` and `<other>` into `@` and expanding that token into the definition of `<macro>`. Effectively, this means that the top-level definition of `<macro>` and `<other>` are expanded (i.e., macros used in the definition of either macro is *not* expanded) and then that becomes the new definition of `<macro>`.

We will use this macro to do *shallow* definitions of macros to contain keys and such.

```

62 \long\def\wg@addto@macro#1#2{%
63 \begingroup
64 \toks@\expandafter\expandafter\expandafter{\expandafter#1#2}%
65 \xdef#1{\the\toks@}%
66 \endgroup}

```

\wg@sub@anchor

Get anchor from sub node. We cannot use `\pgfpointanchor` since that returns the anchor coordinates in the global coordinate system.


```

67 \def\wg@sub@nchor#1#2{%
68   \wg@dbg{3}{^^JGet '#2' in '#1'}%
69   \@ifundefined{pgf@sh@ns@#1}{%
70     \pgf@x=0cm\pgf@y=0cm}{%
71     \pgf@process{%
72       \csname pgf@sh@ma@#1\endcsname% MW
73       \csname pgf@sh@np@#1\endcsname%
74       \pgf@sh@reanchor{\csname pgf@sh@ns@#1\endcsname}{#2}}}%
75   \wg@dbg{10}{-> \the\pgf@x,\the\pgf@y}%
76 }

```

Scratch dimensions

```

77 \newdimen\wg@tmpa
78 \newdimen\wg@tmpb
79 \newdimen\wg@tmpc
80 \newdimen\wg@tmpd

```

Macro to easy restore a saved path

```

81 \def\settosave#1{
82   \pgfsyssoftpath@setcurrentpath{#1}}

```

5.2.2 Pictures in compound nodes

`\wg@pic`

The macro `\wg@pic` will render a `pic`. This is used by the `natoapp6cs`, `chit`, and `hex` node shapes extensively.

The arguments are

1. Prefix
2. Position
3. Fixed options
4. User options
5. Picture.

That is, the macro expects calls like

```
\wg@pic[<options>]<picture>\@endwg@pic{<prefix>}{<position>}{<options>}
```

Note the `\@endwg@pic` at the end of the call to swallow up `<picture>`. Typically this macro is used as

```
\edef\args{<something>} \expandafter\wg@pic\args\@endwg@pic{<prefix>}{<position>}{<options>}
```

where `<something>` typically expands to `[<user option>]<picture>`

First, the top-level macro `\wg@pic` that looks for user options.

```

83 \def\wg@pic{%
84   \@ifnextchar[{\wg@@pic}{\wg@@pic[]}%
85 }

```

This macro then forwards to `\wg@@pic` to gobble up $\langle picture \rangle$.

1. User options

2. Arguments

```
86 \def\wg@@pic[#1]#2\endwg@pic{%
87   \wg@dbg{2}{Options: '#1', picture: '#2'}%
88   \wg@@pic{#1}{#2}%
89 }
```

1. User options

2. Arguments

3. Prefix

4. Coordinates

5. Fixed options

```
90 \def\wg@@@pic#1#2#3#4#5{%
91   \ifx|#2|\wg@dbg{3}{No picture given}%
92   \else%
93     \wg@dbg{3}{^^JWG Pic:
94       ^^J User options:  #1
95       ^^J Picture:      #2
96       ^^J Prefix:       #3
97       ^^J Coordinates:  #4
98       ^^J Fixed options: #5}%
99   % \wg@dbg{2}{\string\pic[#5,#1] at (#4) {#3#2}}%
100  \pic[#5,#1] at (#4) {#3#2};%
101  \ifwg@s@ve%
102    \pgf@relevantforpicturesizetrue%
103    \begin{getbb1}%
104      \pic[draw=none,fill=none,transform shape] at (#4) {#3#2};%
105    \end{getbb1}%
106    \wg@dbg{5}{Clipping to local bounding box}%
107    \clip (L.south west) rectangle (L.north east);%
108    \pgf@relevantforpicturesizefalse \global\wg@s@vefalse%
109  \fi
110  \fi%
111  \wg@dbg{3}{End of WG Pic}
112 }
```

`\wg@pic@all`

This macro sets all pictures in a list.

1. List

2. Prefix

3. Position

4. Styles

```
113 \def\wg@pic@all#1#2#3#4{%
114   \wg@dbg{2}{WG picture loop
115     ^^J List:   \meaning#1
116     ^^J Prefix: '#2'
117     ^^J Position: '#3'
118     ^^J Styles: '#4'}
119   \foreach \p in #1{%
120     \wg@dbg{2}{WG picture element: \meaning\p}%
121     \expandafter\wg@pic\p\@endwg@pic {#2}{#3}{#4}%
122   }%
123 }
```

5.2.3 Nodes in compound nodes

`\wg@node`

The macro `\wg@node` will render a node. This can be used by the `natoapp6cs`, `chit`, and `hex` node shapes.

The arguments are

1. Prefix
2. Position
3. Fixed options
4. User options
5. Body.

That is, the macro expects calls like

```
\wg@node[<options>]<body>\@endwg@node{<prefix>}{<position>}{<options>}
```

Note the `\@endwg@node` at the end of the call to swallow up *<body>*. Typically this macro is used as

```
\edef\args{<something>} \expandafter\wg@node\args\@endwg@node{<prefix>}{<position>}{<options>}
```

where *<something>* typically expands to [*<user option>*]*<body>*

First, the top-level macro `\wg@node` that looks for user options.

```
124 \def\wg@node{%
125   \@ifnextchar[{\wg@@node}{\wg@@node []}%
126 }
```

This macro then forwards to `\wg@@node` to gobble up *<body>*.

1. User options
2. Arguments

```

127 \def\wg@@node[#1]#2\endwg@node{%
128 \wg@dbg{2}{Options: '#1', body: '#2'}%
129 \wg@@node{#1}{#2}%
130 }

```

1. User options
2. Arguments
3. Prefix
4. Coordinates
5. Fixed options

```

131 \def\wg@@node#1#2#3#4#5{%
132 \ifx|#2|\wg@dbg{3}{No body given}%
133 \else%
134 \wg@dbg{3}{^^JWG Pic:
135 ^^J User options: #1
136 ^^J Body: #2
137 ^^J Prefix: #3
138 ^^J Coordinates: #4
139 ^^J Fixed options: #5}%
140 % \wg@dbg{2}{\string\pic[#5,#1] at (#4) {#3#2}}%
141 \node[#5,#1] at (#4) {#3#2};%
142 \fi%
143 \wg@dbg{3}{End of WG Node}
144 }

```

\wg@node@all

This macro sets all pictures in a list.

1. List
2. Prefix
3. Position
4. Styles

```

145 \def\wg@node@all#1#2#3#4{%
146 \wg@dbg{2}{WG picture loop
147 ^^J List: \meaning#1
148 ^^J Prefix: '#2'
149 ^^J Position: '#3'
150 ^^J Styles: '#4'}
151 \foreach \p in #1{%
152 \wg@dbg{2}{WG picture element: \meaning\p}%
153 \expandafter\wg@node\p\endwg@node {#2}{#3}{#4}%
154 }%
155 }

```

5.2.4 Bounding boxes

Bounding box dimensions

```
156 \newdimen\wg@bb@minx
157 \newdimen\wg@bb@miny
158 \newdimen\wg@bb@maxx
159 \newdimen\wg@bb@maxy
```

Enable or disable bounding box tracking

```
160 \newif\ifwg@notrelevantforpathsize\wg@notrelevantforpathsizefalse
```

wg@resetbb

Reset the bounding box tracking dimensions

```
161 \def\wg@resetbb{%
162   \global\wg@bb@minx=16000pt\relax%
163   \global\wg@bb@miny=16000pt\relax%
164   \global\wg@bb@maxx=-16000pt\relax%
165   \global\wg@bb@maxy=-16000pt\relax%
166 }
```

\old@pgf@protocolsize

Save PGF's bounding box algorithm

```
167 \let\old@pgf@protocolsize\pgf@protocolsizes
```

\wg@protocolsizes

Our bounding box algorithm

```
168 \def\wg@protocolsizes#1#2{%
169   \old@pgf@protocolsize{#1}{#2}
170   \ifwg@notrelevantforpathsize\else%
171   \ifdim#1<\wg@bb@minx\global\wg@bb@minx#1\fi%
172   \ifdim#1>\wg@bb@maxx\global\wg@bb@maxx#1\fi%
173   \ifdim#2<\wg@bb@miny\global\wg@bb@miny#2\fi%
174   \ifdim#2>\wg@bb@maxy\global\wg@bb@maxy#2\fi%
175   \fi
176 }
```

getbb1 (*env.*) Environment that tracks the local bounding box

```
177 \newenvironment{getbb1}{%
178   \wg@resetbb%
179   \wg@notrelevantforpathsizefalse%
180   \global\let\pgf@protocolsizes\wg@protocolsizes}%
181 \gdef\pgf@sh@ns@L{rectangle}
```

```

182 \gdef\pgf@sh@np@L{%
183   \def\southwest{\pgfqpoint{\the\wg@bb@minx}{\the\wg@bb@miny}}%
184   \def\northeast{\pgfqpoint{\the\wg@bb@maxx}{\the\wg@bb@maxy}}%
185 }
186 \gdef\pgf@sh@nt@L{{1}{0}{0}{1}{0pt}{0pt}}
187 \gdef\pgf@sh@pi@L{\pgfpictureid}
188 \global\let\pgf@protocolsizes\old@pgf@protocolsize
189 }

```

`getbb` (*env.*) Environment to track global bounding box

```

190 \newenvironment{getbb}{%
191   \wg@resetbb%
192   \wg@notrelevantforpathsizefalse%
193   \global\let\pgf@protocolsizes\wg@protocolsizes}%
194 \gdef\pgf@sh@ns@M{rectangle}
195 \gdef\pgf@sh@np@M{%
196   \def\southwest{\pgfqpoint{\the\wg@bb@minx}{\the\wg@bb@miny}}%
197   \def\northeast{\pgfqpoint{\the\wg@bb@maxx}{\the\wg@bb@maxy}}%
198 }
199 \gdef\pgf@sh@nt@M{{1}{0}{0}{1}{0pt}{0pt}}
200 % \pgfgettransform\pgf@temp%
201 % \xdef\pgf@sh@nt@M{\pgf@temp}
202 % \pgfgettransformentries{\wg@tmp@a}{\wg@tmp@b}{\wg@tmp@c}{\wg@tmp@d}{\pgf@temp}{\pgf@temp}
203 % \message{^^JTransform of M: \meaning\pgf@temp}
204 % \xdef\pgf@sh@nt@M{{\wg@tmp@a}{\wg@tmp@b}{\wg@tmp@c}{\wg@tmp@d}{0pt}{0pt}}%
205 % \message{^^JTransform of M: \meaning\pgf@sh@nt@M}
206 \gdef\pgf@sh@pi@M{\pgfpictureid}
207 \global\let\pgf@protocolsizes\old@pgf@protocolsize
208 }

```

5.2.5 Some utilities to get bounding boxes and the like

All coordinates, and such are recorded in centimetres. It is worth remembering that the Tikz coordinate system has the y axis point upward, while typical image software has the y axis point down. `pdftocairo` typically assumes a 150 PPI (pixels-per-inch) resolution.

That means that scaling factor becomes

$$\frac{150\text{pixel}}{2.54\text{cm}} = 59.055 \frac{\text{pixel}}{\text{cm}}$$

Since we want to write all dimensions in centimetres, we need to be able to convert `pt` dimensions to centimetres. We make two macros to do that for us.

The exact definition of `1pt` is

$$1\text{pt} = \frac{249}{250}12'' \frac{1}{864} = \frac{83}{6000}1'' = 0.03513\bar{6}$$

```

209 % 2.54 / 72.27 = .03514598035145980351
210 % \def\wg@pt@to@cm#1{\pgfmathparse{#1 * 0.0351460}}
211 \def\wg@pt@to@cm#1{\pgfmathparse{#1 * 0.0351367}}
212 \def\ptpoint@to@cm#1#2{%

```

```

213 \wg@pt@to@cm{#1}\edef\x{\pgfmathresult}%
214 \wg@pt@to@cm{#2}\edef\y{\pgfmathresult}}

```

The next macro gets an anchors coordinates and stores them (in units of centimetres) in `\tmp@x` and `\tmp@y`

```

215 \def\wg@get@nchor#1#2{%
216 \wg@dbg{2}{Get anchor coordinates #1.#2}
217 \pgfpointanchor{#1}{#2}%
218 \wg@dbg{2}{ '\the\pgf@x', '\the\pgf@y' }
219 \pgfgetlastxy\tmp@x\tmp@y%
220 \wg@dbg{2}{ '\tmp@x', '\tmp@y' }
221 \wg@pt@to@cm{\tmp@x}\edef\tmp@x{\pgfmathresult}
222 \wg@pt@to@cm{\tmp@y}\edef\tmp@y{\pgfmathresult}
223 }

```

This does the same as above, but transform to the global coordinate system.

```

224 \def\wg@get@global@nchor#1#2{%
225 \pgfpointanchor{#1}{#2}%
226 \pgfgetlastxy\tmp@x\tmp@y%
227 \pgfpointtransformed{\pgfpoint{\tmp@x}{\tmp@y}}
228 \pgf@xa=\pgf@x
229 \pgf@ya=\pgf@y
230 %% \message{^^JAnchor #1.#2 @ (\the\pgf@xa,\the\pgf@ya)}
231 \wg@pt@to@cm{\the\pgf@xa}\edef\tmp@x{\pgfmathresult}
232 \wg@pt@to@cm{\the\pgf@ya}\edef\tmp@y{\pgfmathresult}
233 }

```

This records the bounding box given by a named node. The result is stored in the macros `\llx`, `\lly`, `\urx`, and `\ury`.

```

234 \def\wg@get@bb#1{%
235 \wg@get@nchor{#1}{south west}
236 \edef\llx{\tmp@x}
237 \edef\lly{\tmp@y}
238 \wg@get@nchor{#1}{north east}
239 \edef\urx{\tmp@x}
240 \edef\ury{\tmp@y}
241 }
242 \def\wg@logbb#1{%
243 \wg@get@bb{#1}%
244 \message{^^J'#1' BB: (\llx,\lly) x (\urx,\ury)^^J}}

```

5.2.6 Other Tikz utilities

tikz/reverseclip

A reverse clipping path. This is used to cut out stuff outside of path defined.

```

245 \tikzstyle{reverseclip}=[insert path={(current bounding box.north east) --
246 (current bounding box.south east) --
247 (current bounding box.south west) --
248 (current bounding box.north west) --
249 (current bounding box.north east)}}

```

tikz/clip even odd rule

A reverse clipping path

```
250 \tikzset{
251   clip even odd rule/.code={\pgfseteorule}, % Credit to Andrew Stacey
252 }
```

tikz/invclip

Inverse clipping. This should be an option *after* the path to do the inverse clipping by. This works by adding a *large* (page) path to the current path, and then use that as clipping.

```
253 \tikzset{
254   invclip/.style={
255     clip,insert path=
256     [clip even odd rule]{
257       [reset cm](-\maxdimen,-\maxdimen)rectangle(\maxdimen,\maxdimen)
258     }
259   },
260 }
```

save clip

An option for use with sub-elements of NATO App 6(c) or chit nodes. This will save the current path as a clipping path for the next paths to be drawn in the sub-element

```
261 \newif\ifwg@s@ve\wg@s@vefalse
262 \tikzset{
263   save clip/.is choice,
264   save clip/true/.code={\global\wg@s@vetrue},
265   save clip/false/.code={\global\wg@s@vefalse},
266   save clip/.default={true},
267   save clip/.initial={false},
268 }
```

scale line widths

Scales any line width specified in the node options.

Use like

```
\tikzset{
  some/.style={
    scale line widths,
    line width=1pt}
}
```


Note that the order is important.

```
269 %      Save pgf rounded corners macro
270 %      \let\wg@pgfsetcornersarced\pgfsetcornersarced
271 \def\wg@setcornersarced#1{%
272   \def\arg{#1}%
273   \let\isarched\relax%   Cannot set \ifpgf@arccorners directly inside
274   %   other \if
275   \ifx\arg\@empty\else%
276     \edef\pgf@corner@arc{{#1}{#1}}%
277     \let\isarched\pgf@arccornerstrue%
278     \ifdim#1=Opt%
279       \let\isarched\pgf@arccornersfalse%
280     \fi%
281   \fi%
282   \isarched}
283 \newdimen\wg@lw@scaled\wg@lw@scaled=1pt
284 \def\wg@getscale{%
285   \pgfgettransformentries{%
286     \wg@jaca}{%
287     \wg@jacb}{%
288     \wg@jacc}{%
289     \wg@jacd}{%
290     \wg@tmp}{%
291     \wg@tmp}%
292   \pgfmathsetmacro{\wg@jac}{sqrt(abs(\wg@jaca*\wg@jacd-\wg@jacb*\wg@jacc))}%
293   \wg@dbg{4}{Scale is \wg@jac}
294   \xdef\wg@scale{\wg@jac}}
295 \def\wg@scaled#1{%
296   \wg@getscale%
297   \wg@dbg{4}{Scaling #1 by \wg@scale}
298   \pgfmathsetmacro{\wg@tmp}{\wg@scale*#1}%
299   \xdef\wg@tmp{\wg@tmp}%
300   \xdef\wg@lw@scale{\wg@tmp}%
301   \wg@dbg{4}{Scaled #1 -> \wg@tmp}}
302 %% \message{^^JRounded corners: \meaning\pgfsetcornersarced}
303 \tikzset{
304   %% Get current scale and store in \wg@scale
305   get scale/.code={\wg@getscale},
306   scale line widths/.style={%
307     /utils/exec=\def\tikz@semiaddlinewidth##1{%
308       \wg@scaled{##1}
309       \wg@lw@scaled=\wg@tmp pt
310       \tikz@adoption{\pgfsetlinewidth{\wg@lw@scaled}}%
311       \wg@dbg{4}{Added scaled option \wg@tmp}
312       \pgfmathsetlength\pgflinewidth{\wg@tmp pt}
313       \wg@dbg{4}{Did set line width \wg@tmp pt}
314     }
315   },
316   scale rounded corners/.style={%
317     /utils/exec=\def\pgfsetcornersarced##1{%
318       \pgf@process{##1}%
319       \pgf@xa=\pgf@x%
320       \wg@scaled{\the\pgf@xa}%
```

```

321     % \tikz@addoption{\wg@setcornersarched{\wg@tmp pt}}%
322     \wg@dbg{4}{Scaled rounded corners: \the\pgf@xa -> \wg@tmp}%
323     \wg@setcornersarched{\wg@tmp pt}%
324   }
325 },
326 relative line width/.style={%
327   /utils/exec=\def\tikz@semiaddlinewidth##1{%
328     \wg@dbg{4}{Relative line width #1 times ##1}%
329     \pgfmathsetmacro{\wg@lv}{#1*##1}%
330     \tikz@addoption{\pgfsetlinewidth{\wg@lv pt}}%
331     \pgfmathsetlength\pgflinewidth{\wg@lv pt}}
332 }

```

sub pic actions

This is key that propagates actions to sub pictures of pictures. The normal `pic actions` cannot be used as it causes an infinite loop.

```

333 \tikzset{
334   sub pic actions/.code={%
335     \tikz@picmode%
336     \edef\opts{%
337       \iftikz@mode@draw draw,\else draw=none,\fi
338       \iftikz@mode@fill fill\else fill=none\fi}
339     \wg@dbg{5}{^^JSub Mode: \meaning\tikz@picmode \meaning\opts}
340     \pgfset{/tikz/.cd}
341     \pgfkeysalsofrom{\opts}
342   }}

```

wg/debug show

Show debugging information

```

343 \tikzset{
344   wg/debug show/.code={%
345     \extractcolorspec{pgfstrokecolor}{\wg@tmp@fg}
346     \def\wg@tmp@bg{none}
347     \@ifundefinedcolor{pgffillcolor}{}{
348       \extractcolorspec{pgffillcolor}{\wg@tmp@bg}}
349     \begingroup
350     \tikz@mode
351     \wargamedbglvl=#1
352     \wg@dbg{3}{Drawing with w/stroke '\wg@tmp@fg'
353       (\tikz@strokecolor,\iftikz@mode@draw\else not\space\fi drawing)
354       and fill '\wg@tmp@bg' (\tikz@fillcolor,\iftikz@mode@fill\else
355       not\space\fi filling)}
356     \endgroup
357   }
358 }

```

5.2.7 Random IDs

This macro sets the macro `\wg@uuid` to some random hex number.

```
359 \def\wg@randomid{%
360   \def\wg@uuid{}
361   \foreach \i in {1,...,8}{%
362     \pgfmathparse{Hex(random(0,15))}
363     \xdef\wg@uuid{\wg@uuid\pgfmathresult}}
```

5.2.8 VASSAL icons

Some icons that may be useful in VASSAL. We put them here so they may be used in manuals and the like too.

First, the line style

```
364 \tikzset{
365   trash can line/.style={scale line widths,scale rounded corners,
366     line width=.5mm,->},
367 }
```

Then, the body and lid of a trash can.

```
368 \tikzset{
369   trash can body/.pic={%
370     \path[fill=black,scale line widths,scale rounded corners,
371       rounded corners=.05cm]
372     (-.3,.2) ---+ (.6,0) ---+ (-.1,-.7) ---+ (-.4,0) --cycle;
373     \path[fill=white]
374     (-.025,-.4) arc(180:360:.025) ---+ ( 0,.5) arc(0:180:.025) --cycle;
375     \path[fill=white]
376     (-.125,-.4) arc(180:360:.025) ---+ (-.07,.5) arc(0:180:.025) --cycle;
377     \path[fill=white]
378     (.075,-.4) arc(180:360:.025) ---+ (.07,.5) arc(0:180:.025) --cycle;
379   },
380   trash can lid/.pic={%
381     \path[fill=black,scale line widths,scale rounded corners,
382       rounded corners=.05cm]
383     (-.35,.23) ---+ (.7,0) ---+ (-.07,.07) ---+ (-.56,0) --cycle;
384     \path[fill=black]
385     (-.15,.3) ---+ (.05,0) ---+ (0,.05) ---+ (.2,0) ---+ (0,-.05)
386     ---+ (.05,0) ---+ (0,.05) arc(0:90:.05) ---+ (-.2,0) arc(90:180:.05)
387     --cycle;
388   },
389 }
```

Then, a closed and open trash can

```
390 \tikzset{
391   trash can/.pic={
392     \pic{trash can body};
393     \pic{trash can lid};
394   },
395   trash can open/.pic={
```

```

396 \pic{trash can body};
397 \pic[rotate=-30] at (0,.1) {trash can lid};
398 },
399 }

```

Now we can use that to generate some useful icons.

```

400 \tikzset{
401   eliminate icon/.pic={
402     \pic{trash can open};
403     \draw[trash can line,color=red!50!black]
404       (-.5,.2) to[looseness=1.5] (-.1,.23);
405   },
406   restore icon/.pic={
407     \pic{trash can open};
408     \draw[trash can line,<-,color=green!50!black]
409       (-.5,.2) to[looseness=1.5] (-.1,.23);
410   },
411   pool icon/.pic={
412     \pic{trash can};
413   },
414 }

```

These icons does not use the trash can picture.

```

415 \tikzset{
416   flip icon/.pic={
417     \draw[scale line widths,scale rounded corners,
418       line width=1mm,->,color=blue!50!black]
419       (-.5,-.5) arc(180:0:.5);% (.5,-.5);
420   },
421   pics/oob icon/.style n args={2}{code={%
422     \begin{scope}[box/.style args={##1,##2,##3,##4}{
423       minimum width=##1cm,
424       minimum height=##2cm,
425       fill=##3,
426       anchor=##4,
427       draw=gray!50!black,
428       scale line widths,
429       line width=.5pt,
430       transform shape},
431     under/.style={
432       below=.05cm of ##1}
433   ]
434     \node[box={.5,.2,##1,north west,fill=##1}] (r1) at (.05,.45) {};
435     \node[under=r1.south west,box={.3,.25,##1,north west}] (r2) {};
436     \node[under=r2.south west,box={.2,.3, ##1,north west}] (r3) {};
437     \node[box={.2,.4,##2,north east}] (l1) at (-.05,.45) {};
438   \end{scope}
439   }
440 }
441 }

```

5.3 The wgexport class

This document class is used for exporting game component to be used in a VASSAL module libraries.

Class identification and load wargame package

```
442 \ProvidesClass{wgexport}
443 \PassOptionsToClass{multi=tikzpicture,varwidth=false}{standalone}
444 \DeclareOption{noterrainpic}{%
445   \PassOptionsToPackage{\CurrentOption}{wargame}}
446 \DeclareOption{terrainpic}{%
447   \PassOptionsToPackage{\CurrentOption}{wargame}}
448 \DeclareOption*{%
449   \PassOptionsToClass{\CurrentOption}{standalone}}
450 \ProcessOptions\relax
451 \LoadClass{standalone}
452 \RequirePackage{wargame}
```

We need a few utilities before we get to the actual environment. First, we need a tools to write out literal left and right curly braces. We do a bit of catcode hackery to accomplish that.

```
453 \begingroup
454 \catcode'\^^I=12
455 \def\@tabchar{^^I}
456 \catcode'\<=1 \catcode'\>=2
457 \catcode'\{=12 \catcode'\}=12
458 \gdef\@lbchar<{>
459 \gdef\@rbchar<>
460 \endgroup
```

Above, we temporarily set the tab, and left and right curly brace characters to be regular letters (12), and the catcodes of less than and greater than to be those of left and right curly braces respectively. We then define the macros \@tabchar, \@lbchar, and \@rbchar to produce literal characters. L^AT_EX already has \@percentchar.

Everything we do should go inside this environment. The single optional argument is the file name stem of the output JSON file.

```
461 \newenvironment{imagelist}[1][\jobname]{%
462   \newwrite\mk@out%
463   \def\mk@i{ }%
464   \def\mk@w{\immediate\write\mk@out}%
465   \immediate\openout\mk@out=#1.json
466   \mk@w{ [ }
467 }{
468   \mk@w{\mk@i \@lbchar "name":"End of list", "category": "<<eol>>",
469     "subcategory": "" \@rbchar }
470   \mk@w{ ] }
471   \immediate\closeout\mk@out
472 }
```

Preceed all images (tikzpicture) with this command

First argument is the name of the image. This can be anything. Note that for counters, if the name ends in `flipped` then it is considered the backside of a counter.

Second argument is the type of image. Recognised types are

- `board` for boards
- `oob` for OOBs
- `chart` for charts
- `counter` for counters
- `front` for front page

Other types can be used, and the images will be exported, but the Python script pays no particular attention to those then. Use for example to prepare images for help or the like.

The third argument is the sub type. This is most relevant for the counters. Sub types can be anything, but since the counters will receive different prototypes based on the sub type, it makes sense to divide into sub types a la

- factions
- common markers

The faction sub types should just be the name of the faction. E.g., Allies, Axis, Soviet, NATO, Warsaw Pact. Spaces should not matter.

For common markers, there are a few names that are recognised specifically by the Python script. These are

- `common`
- `all`
- `marker`
- `markers`

Counters that has these sub-types will no be considered to belong to any faction.

Note that the Python script uses the faction names to guess the players of the game, and uses them in several places.

```

473 \def\info{%
474   \ifstar{\@@info{,}}{\@@info{\@rbchar,}}
475 \def\@@info#1#2#3#4{%
476   \chit@dbg{2}{Making image '#2' of type '#3'/'#4' on page \thepage}%
477   \mk@w{ \@lbchar}%
478   \mk@w{ \space "name": "#2",}%
479   \mk@w{ \space "category": "#3",}%
480   \mk@w{ \space "subcategory": "#4", }%
481   \mk@w{ \space "number": \thepage #1}%
482   \let\oldmk@i\mk@i%
483   \ifx#1,\relax\edef\mk@i{\mk@i\space\space}\fi}
484 \def\end@info{%
485   \let\mk@i\oldmk@i%
486   \mk@w{ \space \@rbchar,}}

```

Make separate images for each counter (single sided).

First optional argument is the group to put the chits into. Second optional argument is options to give to each Tikz picture environment. Third, mandatory, argument is the list of chit identifiers to render.

```

487 \def\wg@add@drop@margin{%
488   \ifundefined{wg@drop@margin}{-}{
489     \dimen0=\wg@drop@margin
490     % \ifwg@chit@drop
491     \ifdim\dimen0>Opt%
492       \path ($(current bounding box.north east)+(45:\wg@drop@margin)$)
493       -- ($(current bounding box.south west)+(225:\wg@drop@margin)$);
494     \fi}}
495 \def\chitimages{%
496   \ifnextchar[{\@chitimages}{\chitimages []}]
497 }%
498 \def\@chitimages[#1]{%
499   \ifnextchar[{\@chitimages[#1]}{\@chitimages[#1] []}]
500 }%
501 \def\@@chitimages[#1][#2]#3{%
502   \begin{group}%
503   \let\chit@report\do@chit@report%
504   \let\natoapp@report\do@natoapp@report%
505   \chit@dbg{2}{chits to make images of '#3'}%
506   \foreach[count=\ti from 0] \t/\x in #3{%
507     \chit@dbg{2}{^^JRow: '\t' ('\x')}
508     \ifx\t\empty\else% Ignore empty rows
509       \chit@dbg{5}{^^JSubcategory: '\x' (default '#1')}
510       % Take sub-category or default
511       \ifx\t\x\def\x{#1}\else\ifx\x\empty\def\x{#1}\fi\fi
512       \foreach \u/\m in \t{%
513         \ifx\u\empty\else% Ignore empty cells
514           \ifx\u\chit@blank\else%
515             \chit@dbg{2}{Next chit '\u' with possible multiplicity '\m'}%
516             \ifx\m\empty\def\m{1}\fi% If no multiplicity defined
517             \ifx\u\m\def\m{1}\fi% If the same as unit
518             \chit@dbg{2}{Next chit '\u' multiplicity '\m'}%
519             %% We only make one copy of the chit, since we can duplicate
520             %% it in VASSAL
521             \info*{\u}{counter}{\x}
522             \nopagecolor%
523             \gdef\wg@drop@margin{Opt}%
524             \begin{tikzpicture}[chit has drop=false,#2]
525               \chit[\u=\ti]%
526               \wg@add@drop@margin%
527             \end{tikzpicture}
528             \end{info}%
529             %% \foreach \n in {1,...,\m}{% Make a number of copies
530             %%   \ifx\u\chit@blank%
531             %%     \chit@dbg{3}{Ignoring blank chit:\u}%
532             %%   \else%
533             %%     \info{\u}{counter}{#2}
534             %%     \begin{tikzpicture}
535             %%       \chit[\u=\ti](\c,\r)%
536             %%     \end{tikzpicture}
537             %%   \fi%

```

```

538         %% }%
539         \fi%
540     \fi%
541 }%
542     \chit@dbg{2}{End of inner loop}%
543 \fi%
544 }%
545 \chit@dbg{2}{End of outer loop}%
546 \endgroup%
547 }

```

Make separate images for each counter (double sided). The back-side counters must be defined by append ‘ flipped’ the front face name.

First optional argument is the group to put the chits into. Second optional argument is options to give to each Tikz picture environment. Third, mandatory, argument is the list of chit identifiers to render.

```

548 \def\doublechitimages{%
549   \@ifnextchar[{\@doublechitimages}{\doublechitimages[]}%
550 }%
551 \def\@doublechitimages[#1]{%
552   \@ifnextchar[{\@@doublechitimages[#1]}{\@@doublechitimages[#1] []}%
553 }%
554 \def\@@doublechitimages[#1][#2]#3{%
555   \begingroup%
556   \let\chit@report\do@chit@report%
557   \let\natoapp@report\do@natoapp@report%
558   \foreach[count=\ti from 0] \t/\x in #3{%
559     \ifx\t\empty\else% Ignore empty rows
560     \chit@dbg{5}{^^JSubcategory: ‘\x’ (default ‘#1’)}
561     % Take sub-category or default
562     \ifx\t\x\def\x{#1}\else\ifx\x\empty\def\x{#1}\fi\fi
563     \foreach \u/\m in \t{%
564       \ifx\u\empty\else% Ignore empty cells
565       \ifx\u\chit@blank\else%
566         \chit@dbg{2}{Next chit ‘\u’ with possible multiplicity ‘\m’}%
567         \ifx\m\empty\def\m{1}\fi% If not multiplicity defined
568         \ifx\u\m\def\m{1}\fi% If the same as unit
569         \chit@dbg{2}{Next chit ‘\u’ multiplicity ‘\m’}%
570         %% Flipped chit
571         \edef\s{\u\space flipped}%
572         %% We only make one copy of the chit, since we can duplicate
573         %% it in VASSAL
574         \info*{\u}{counter}{\x}%
575         \nopagecolor%
576         \gdef\wg@drop@margin{0pt}%
577         \begin{tikzpicture}[chit has drop=false,#2]%
578           \chit[\u=\ti]%
579           \wg@add@drop@margin%
580         \end{tikzpicture}%
581         \end@info%
582         \info*{\s}{counter}{\x}%
583         \nopagecolor%
584         \begin{tikzpicture}[chit has drop=false,#2]%

```



```

585         \chit[\s=\ti]%
586         \wg@add@drop@margin%
587     \end{tikzpicture}%
588 \end@info%
589     %% \foreach \n in {1,...,\m}{% Make a number of copies
590     %%     \ifx\u\chit@blank%
591     %%         \chit@dbg{3}{Ignoring blank chit:\u}%
592     %%     \else%
593     %%         \info{\u}{counter}{#2}
594     %%         \begin{tikzpicture}
595     %%             \chit[\u=\ti](\c,\r)%
596     %%         \end{tikzpicture}
597     %%     \fi%
598     %% }%
599 \fi%
600 \fi%
601 }%
602 \fi%
603 }%
604 \endgroup%
605 }

```

Special for boards, we have the environment `boardimage`. Like `\info` we must specify the name and sub-category of the board, but the category is assumed to be `board` (though the optional argument can specify a different category).

Within this environment some specific styles are defined that allows the user to specify VASSAL zones on the board. For this to work properly, the parent `tikzpicture` *must* have the style `zoned`. This style will record the bounding box of the picture which we will need to calculate VASSAL coordinates later on.

Other styles are `zone scope`, to be applied to `scopes` in the picture, and `zone path` to be applied to `paths` (or `\draw`, `\fill`, or the like) in the picture. These will record coordinates of these elements in side the picture. The Python script will then define VASSAL zones based on these coordinates.

For `zone scope` applied to a `scope`, what is recorded are

- The current coordinate transformation matrix
- The current translation
- The bounding box, within the current transformation and translation.

To define a zone in the board, simply enclose it in a

```

\begin{scope}[zone scope=name]
...
\end{scope}

```

The $\langle name \rangle$ will be the name of the scope. If this contains the sub-string `hex` (upper, lower, or mixed case), then the zone will get a hex grid with numbering attached to it.

If the $\langle name \rangle$ contains the sub-string `turn` (any case), then it is assumed to be a turn track and a rectangular grid will be attached. The column and row separator will be set to `T`, so that it won't collide with the main zone. Similar if $\langle name \rangle$ contains `oob`, except the separator is set to `0`.

If $\langle name \rangle$ contains the sub-string `pool`, then it is assumed to be a pool of counters, and *no* grid is attached.

For `zone path` applied to a `path`, what is recorded is the path coordinates (as straight line segments) in the global coordinate system.

Both styles take one argument — the name of the zone. If that name contains the sub-string `hex` anywhere in the name, then the zone is assumed to contain a hex grid. Otherwise, a rectangular grid (of fixed size) will be applied to it.

The environment `boardimage` also records the coordinate options currently in use (keys `hex/first row is`, `hex/row direction is`, and so on), as well as the current label option (as defined by `every hex` or `every hex node`).

The information extracted is written to the `\jobname.json` file as a sub-object (with name given by the first optional argument) of the image object. In that way, we can later on easily get the information from our catalogue of images.

Note, the styles `zoned`, `zone scope`, and `zone path` are defined in `wargame` to be dummies so that one can have them in the definition of the board without impact.

```

606 \def\mk@transform{%
607   \pgfgettransformentries{\mxx}{\mxy}{\myx}{\myy}{\ptdx}{\ptdy}
608   \wg@pt@to@cm{\ptdx}\edef\dx{\pgfmathresult}
609   \wg@pt@to@cm{\ptdy}\edef\dy{\pgfmathresult}
610   \mk@w{\mk@i "xx": \mxx,}
611   \mk@w{\mk@i "xy": \mxy,}
612   \mk@w{\mk@i "yx": \myx,}
613   \mk@w{\mk@i "yy": \myy,}
614   \mk@w{\mk@i "dx": \dx,}
615   \mk@w{\mk@i "dy": \dy,}
616 }

617 \def\mk@bb#1{%
618   \wg@get@bb{#1}
619   \mk@w{\mk@i "lower left": [\llx,\lly],}
620   \mk@w{\mk@i "upper right": [\urx,\ury],}
621   \begingroup
622     \wg@get@global@nchor{#1}{south west}
623     \mk@w{\mk@i "global lower left": [\tmp@x,\tmp@y],}
624     \wg@get@global@nchor{#1}{north east}
625     \mk@w{\mk@i "global upper right": [\tmp@x,\tmp@y]}
626   \endgroup
627 }

628 \def\mk@pos#1(#2){%
629   \wg@dbg{10}{^^JMarking '#2' with '#1' - start}
630   \coordinate[transform shape] (tmp) at (#2) {};
631   \wg@get@nchor{tmp}{center}
632   \wg@dbg{3}{^^JMarking '#2' with '#1' - '\tmp@x',\tmp@y'}
633   \tikzset{zone point=#1}{\tmp@x}{\tmp@y}
634 }

```

For the key `zone path` to work, we need to be able to record the path as it moves along. To that end, we make a custom decoration that will do that for us, and, once the path is finished, write the path to our JSON file.

```

635 \pgfdeclaredecoration{record path construction}{initial}{%
636   \state{initial}[width=0pt,next state=more]{
637     \begingroup
638       \pgf@decorate@inputsegment@first
639       \tpoint@to@cm{\the\pgf@x}{\the\pgf@y}

```

```

640     \xdef\wg@path{[\x,\y]}
641   \endgroup
642 }%
643 \state{more}[width=\pgfdecoratedinputsegmentremainingdistance]{%
644   \begingroup
645     \pgf@decorate@inputsegment@last
646     \ptpoint@to@cm{\the\pgf@x}{\the\pgf@y}
647     \xdef\wg@path{\wg@path, [\x,\y]}
648   \endgroup
649 }
650 \state{final}{%
651   \begingroup
652     \pgf@decorate@inputsegment@last
653     \ptpoint@to@cm{\the\pgf@x}{\the\pgf@y}
654     \xdef\wg@path{\wg@path, [\x,\y]}
655   \endgroup
656   \mk@w{ \mk@i "zone path \wg@record@path@name": \@lbchar}
657   \mk@w{ \mk@i\space "path": [\wg@path] \@rbchar,}
658 }
659 }%

```

Now we can make our environment

The first thing we do is to use the `\info` macro to mark the image. Then we open our JSON file. We make a short-hand macro for writing to that file. The macro `\bd@i` records the current indentation (which is important in JSON)

```

660 \newenvironment{boardimage}[3][board]{%
661   \def\bd@n{#2}
662   \newcount\mk@point
663   \mk@point=0
664   \let\oomk@i\mk@i%
665   \let\markpos\mk@pos%

```

Then, to extract the label option, we make a dummy node with the styles `every hex` and `every hex node`, so we can extract that option.

```

666 \info{dummy}{<<dummy>>}{}%
667 %\tikz{}%
668 \tikz{\scoped[%
669   every hex/.try,every hex node/.try,
670 ]{%
671   \def\hex@col{0}%
672   \def\hex@row{0}%
673   \node[hex,inner sep=0,outer sep=0]{%
674     %\message{^^JHex label: '\meaning\hex@label'}%
675     \global\let\mk@label\hex@label}}}%

```

The next thing we do is to make an object. The first things we put in are the units used (“cm”), and the grid options.

```

676 \info*{#2}{#1}{#3}%
677 \mk@w{ \mk@i "zones": \@lbchar}%
678 \edef\mk@i{\mk@i\space}
679 %% Everything is made into centimeters
680 \mk@w{ \mk@i "units": "cm",}

```

```

681 \hex@dbg{3}{Label: '\meaning\mk@label'}
682 \@ifundefined{mk@label}{}{\mk@w{ \mk@i "labels": "\mk@label",}}
683 %% Write out coordinate options as "coords" object
684 \mk@w{ \mk@i"coords": \@lbchar}%
685 \mk@w{ \mk@i "row": \@lbchar}%
686 \mk@w{ \mk@i\space "offset": \hex@coords@row@off,}%
687 \mk@w{ \mk@i\space "factor": \hex@coords@row@fac \@rbchar,}%
688 \mk@w{ \mk@i "column": \@lbchar}%
689 \mk@w{ \mk@i\space "offset": \hex@coords@col@off,}%
690 \mk@w{ \mk@i\space "factor": \hex@coords@col@fac,}%
691 \mk@w{ \mk@i\space "top short": "\hex@top@short@col",}%
692 \mk@w{ \mk@i\space "bottom short": "\hex@bot@short@col" \@rbchar}%
693 \mk@w{ \mk@i\@rbchar,}%

```

We then monkey-patch `\boardframe` to also output coordinates to our JSON file. Note that this will probably be embedded in a different object.

```

694 %%
695 \let\oldbo@rdframe\bo@rdframe%
696 \def\bo@rdframe[##1](##2)(##3){%
697   \oldbo@rdframe[##1](##2)(##3)%
698   \mk@w{ \mk@i"board frame": \@lbchar}
699   \mk@w{ \mk@i\space "lower left": [\llx,\lly],}
700   \mk@w{ \mk@i\space "upper right": [\urx,\ury],}
701   \mk@w{ \mk@i\space "margin": \margin,}
702   \mk@w{ \mk@i\space "width": \w,}
703   \mk@w{ \mk@i\space "height": \h \@rbchar,}}%

```

Next, we make the style zoned to be applied to the `tikzpicture` environment. This records the bounding box of the full picture.

```

704 \tikzset{
705   zoned/.code={% Apply to whole picture
706     \pgfkeys{%
707       % This needs to be done in the picture!
708       /tikz/execute at end picture={%
709         \mk@w{ \mk@i "zoned": \@lbchar}
710         \mk@transform%
711         \mk@bb{current bounding box}
712         \mk@w{ \mk@i \@rbchar,}
713       }
714     }
715 },

```

The next style is the `zone scope`. At the start of the scope we record the current transformation matrix. Then we install a handler to extract the bounding box at the end of the scope. Note that we increase indentation here.

```

716   zone scope/.code={%
717     \mk@w{ \mk@i"zone scope ##1": \@lbchar}
718     \let\omk@i\mk@i
719     \edef\mk@i{\mk@i\space}
720     \mk@transform%
721     %\bd@w{ \@rbchar,}
722     \gdef\wg@export@box{##1}%

```

```

723     \pgfkeys{%
724       /tikz/local bounding box=wg export box,
725       /tikz/execute at end scope={
726         \mk@bb{wg export box}
727         \let\mk@i\mk@i
728         \mk@w{ \mk@i\@rbchar,}},
729     } % pgfkeys
730 }, % zone scope

```

The next style gets the global coordinates of the current (0,0) point - f.ex. in a node - and outputs that

```

731 zone point/.code n args={3}{
732   \pgf@xa=##2 cm
733   \pgf@ya=##3 cm
734   \pgfpointtransformed{\pgfpoint{\pgf@xa}{\pgf@ya}}
735   % \pgfpointtransformed{\pgfpoint{0pt}{0pt}}
736   \pgf@xa=\pgf@x
737   \pgf@ya=\pgf@y
738   \wg@pt@to@cm{\the\pgf@xa}\edef\px{\pgfmathresult}
739   \wg@pt@to@cm{\the\pgf@ya}\edef\py{\pgfmathresult}
740   \advance\mk@point1
741   \global\mk@point=\mk@point
742   \mk@w{ \mk@i "point\the\mk@point": \@lbchar "name": "##1", "type": "point", "coords": [\px,\py]
743     \@rbchar, }
744   %\message{^^JZone point \the\mk@point\space ##1: ##2,##3 -> \px,\py}
745 },
746 zone oob point/.code n args={3}{
747   \pgf@xa=##2 cm
748   \pgf@ya=##3 cm
749   \advance\pgf@xa.1cm
750   \advance\pgf@ya.1cm
751   \pgfpointtransformed{\pgfpoint{\pgf@xa}{\pgf@ya}}
752   % \pgfpointtransformed{\pgfpoint{0pt}{0pt}}
753   \pgf@xa=\pgf@x
754   \pgf@ya=\pgf@y
755   \wg@pt@to@cm{\the\pgf@xa}\edef\px{\pgfmathresult}
756   \wg@pt@to@cm{\the\pgf@ya}\edef\py{\pgfmathresult}
757   \advance\mk@point1
758   \global\mk@point=\mk@point
759   \mk@w{ \mk@i "point\the\mk@point": \@lbchar "name": "##1",
760     "parent": "\wg@export@box", "type": "point", "coords": [\px,\py]
761     \@rbchar, }
762   %\message{^^JZone point \the\mk@point\space ##1: ##2,##3 -> \px,\py}
763 },
764 zone global point/.code n args={3}{
765   \advance\mk@point1
766   \global\mk@point=\mk@point
767   \mk@w{ \mk@i "point\the\mk@point": \@lbchar "name": "##1", "type": "point", "coords": [\px,\py]
768     \@rbchar, }
769 },

```

The `zone path` style is a bit more simple, but only because the bulk of the work is done in a decoration. We need to be able to pass a name to that decoration, so we make a key for that. The user need not think about that though.

```

770 /pgf/decoration/record path name/.store in=\wg@record@path@name,
771 zone path/.style={%
772   postaction={decorate,decoration={
773     record path construction,
774     record path name=##1}}
775 } % zone path
776 }% tikzset
777 }

```

That finishes the first part of the environment. At the end of the environment, we simply write the name of the picture, and close our JSON output.

```

778 {%
779 \mk@w{ \mk@i "name": "\bd@n" }%
780 \let\mk@i\oomk@i%
781 \mk@w{ \mk@i \@rbchar}%
782 \end@info%
783 }

```

Make battle markers. Mandatory argument is how many markers, optional is the group to add the markers to.

```

784 \def\wg@gennumberm@rkers#1#2#3#4{
785 \message{^^JNumbered markers: Type='#1' Max='#2' Category='#3'}
786 \def\markers{}
787 \def\keys{}
788 \foreach \i in {1,...,#2}{%
789 \xdef\keys{/tikz/#1 \i/.style={/tikz/#1=\i},\keys}
790 \xdef\markers{\markers,#1 \i}}
791 {%
792 \nopagecolor\pgfkeysalsofrom{\keys}\chitimages[#3][#4]{\markers}}%
793 \tikzset{
794 wg hidden unit/.pic={},
795 wg hidden unit/.style={
796   chit={
797     no chit drop,
798     frame={draw=none,fill=none},
799     full=wg hidden unit}}
800 %
801 % First optional argument are extra styles
802 % Second is category
803 % Third is number of markers
804 %
805 \def\battlemarkers{%
806 \@ifnextchar[{\@battlemarkers}{\battlemarkers[]}}%
807 }%
808 \def\@battlemarkers[#1]{%
809 \@ifnextchar[{\@@battlemarkers[#1]}{\battlemarkers[#1][BattleMarkers]}}%
810 }%
811 \def\@@battlemarkers[#1][#2]#3{%
812 \wg@gennumberm@rkers{battle marker}-{#3}-{#2}-{#1}%
813 \message{^^JMake a hidden unit and add to Markers category}
814 {%
815 \nopagecolor%
816 \chitimages[Markers]{\wg hidden unit}}%

```

```

817 %
818 \info{battle-marker-icon}{icon}{}%
819 \tikz[scale=.7,transform shape,auto icon more/.try]{%
820 \pic{battle marker=0};}%
821 \info{clear-battles-icon}{icon}{}
822 \tikz[scale=.4,transform shape,auto icon more/.try]{%
823 \pic{eliminate icon};
824 \pic[scale=.7,transform shape] at (-.3,0) {battle marker=0};}%
825 }%
826 }

```

Make odds markers. Mandatory argument is a list of odds and fill colours. Optional is the group to add the markers to.

```

827 \def\wg@gencolorm@rkers#1#2#3#4{%
828 \def\markers{}
829 \def\keys{}
830 \foreach \o/\f/\n [count=\i] in {#2}{%
831 \ifx\n\f\def\n{\o}\fi%
832 \ifx\o\f\def\f{white}\fi%
833 \message{^^JColour no \i marker '#1 \n' w/fill '\f' text '\o'}%
834 \protected@xdef\keys{/tikz/#1 \n/.style={/tikz/#1={\o,\f}},\keys}
835 \xdef\markers{\markers,#1 \n}
836 }%
837 {%
838 \nopagecolor%
839 \pgfkeysalsofrom{\keys}%
840 \chitimages[#3][#4]{\markers}%
841 }%
842 }%
843 %
844 % First optional argument are extra styles
845 % Second is category
846 % Third is marker list
847 %
848 \def\oddsmarkers{%
849 \@ifnextchar[{\@oddsmarkers}{\oddsmarkers []}]%
850 }%
851 \def\@oddsmarkers[#1]{%
852 \@ifnextchar[{\@oddsmarkers[#1]}{\oddsmarkers[#1][OddsMarkers]}%
853 }%
854 \def\@@oddsmarkers[#1][#2]#3{%
855 \wg@gencolorm@rkers{odds marker}{#3}{#2}{#1}%
856 \info{odds-battles-icon}{icon}{}
857 \tikz[scale=.5,transform shape,auto icon more/.try]{%
858 \pic{odds marker={?:?,white}}
859 \info{resolve-battles-icon}{icon}{}
860 \tikz[scale=.3,transform shape,auto icon more/.try]{%
861 \pic{dice};
862 \pic[scale=1.2,transform shape] at (-.2,-.2) {battle marker=0};}%
863 }

```

Make results markers. Mandatory argument is a list of results and fill colours. Optional is the group to add the markers to.

First optional argument are extra styles Second is category Third is marker list

```

864 \def\resultmarkers{%
865   \@ifnextchar[{\@resultmarkers}{\resultmarkers[]}%]
866 }%
867 \def\@resultmarkers[#1]{%
868   \@ifnextchar[{\@@resultmarkers[#1]}{\resultmarkers[#1][ResultMarkers]}%]
869 }%
870 \def\@@resultmarkers[#1][#2]#3{%
871   \wg@engcolormarkers{result marker}{#3}{#2}{#1}}%

```

Common icons used by many modules

```

872 \DeclareRobustCommand\commonicons[3] [] {%
873   \begingroup%
874   \nopagecolor%
875   \tikzset{auto icon/.style={scale=.4,transform shape,#1}}%
876   %
877   \info{pool-icon}{icon}{}
878   \tikz[auto icon,auto icon more/.try]{\pic{pool icon};}
879   %
880   \info{oob-icon}{icon}{}%
881   \tikz[auto icon,auto icon more/.try]{\pic{oob icon={#2}{#3}};}%
882   %
883   \info{flip-icon}{icon}{}%
884   \tikz[auto icon,auto icon more/.try]{\pic{flip icon};}%
885   %
886   \info{eliminate-icon}{icon}{}%
887   \tikz[auto icon,auto icon more/.try]{\pic{eliminate icon};}%
888   %
889   \info{restore-icon}{icon}{}%
890   \tikz[auto icon,auto icon more/.try]{\pic{restore icon};}%
891   %
892   \info{dice-icon}{icon}{}%
893   \tikz[auto icon,scale=.9,auto icon more/.try]{\pic{dice};}%
894   %
895   \info{unit-icon}{icon}{}%
896   \tikz[auto icon,scale=.7,auto icon more/.try]{%
897     \chit[fill=#2,
898       symbol={[
899         scale line widths,
900         line width=1pt,
901         faction=friend,
902         command=land,
903         main=infantry,
904         scale=1.3](0,-.15)}]}%
905   %
906   \info{layer-icon}{icon}{}%
907   \begin{tikzpicture}[scale=.25]
908     \foreach \i in {-1,0,1}{
909       \scoped[shift={(0,\i*.15)}]{
910         \draw[black,fill=white] (-.5,0)
911           --(0,.3)--(.5,0)--(0,-.3)--cycle;
912       }

```



```

913     }
914     \end{tikzpicture}%
915     %
916     \info{los-icon}{icon}{}
917     \begin{tikzpicture}[scale=.25]
918         \draw[scale line widths,line width=2pt,fill=white](-.5,0)
919         to[out=70,in=110] (.5,0)
920         to[out=-110,in=-70] cycle;
921         \begin{scope}[even odd rule]
922             \clip circle(.2);
923             \fill circle(.2) (125:.18) circle(.1);
924         \end{scope}
925     \end{tikzpicture}%
926     %
927     \endgroup%
928 }

```

5.3.1 Making dice

```
\dice[<tikz-options>][<node-options>]{<name>}{<name>}{<list>}
```

1. *<tikz-options>*
2. *<node-options>*
3. *<name>* - an identifier - e.g., the same as *<shape>*.
4. *<shape>* - one of d4, d6, d8, d10, d12, or d20.
5. *<list>* - list of pairs *<value>/<printed>*, where *<value>* is the value, and *<printed>* is the shown value. If *<printed>* is left out, then *<value>* is used.

```

929 \def\dice{%
930   \@ifnextchar[{\wg@dice}{\wg@dice[]}%
931 }
932 \def\wg@dice[#1]{%
933   \@ifnextchar[{\wg@@dice{#1}}{\wg@@dice{#1}[]} %
934 }
935 \def\wg@@dice#1[#2]#3#4#5{%
936   \foreach \v/\p in {#5}{%
937     \info{#3-\v}{die-roll}{#3}
938     \tikz[#1]{
939       %\node[shape=#4,transform shape,draw=none,fill=black,opacity=.5]
940       %at (.05,-.03){};
941       \node[shape=#4,#2,transform shape,
942         chit drop
943         ]{\p};\wg@add@drop@margin{}}}}

```

5.3.2 Hooks into chits, etc.

TO BE DONE: We could add hook the hex shape that would allow us to write out the settings for each of these. This would allow us to make data files that contain the information available in the L^AT_EX code.

If one then assumed that for example the upper left corner holds the start-up hex, then one could use that information. The code below exports the chit information to the JSON file. Together with the battle, odds, and result markers stuff above, this allows the exporter to almost automatically set up battle odds and result calculations. The fields exported are

- Left and right identifiers
- Upper left, upper right, lower left, and lower right identifiers. (some care must be taken if these contains graphics and not just text.)
- Factors
 - Faction, command, echelon
 - Mains
 - Left, right, top, and bottom attributes and modifiers
 - Below attribute

The exporter can set up prototypes for NATO types, echelons, etc. The exporter can also set factors as marks on the units.

```

944 \tikzset{
945   zone turn/.store in=\zone@turn,
946   zone mult/.store in=\zone@mult
947 }
948 \def\@chit@rep@line#1#2{%
949   \ifundefined{#2}{-}{
950     \edef\wg@chit@tmp{\csname #2\endcsname}
951     {\escapechar=' /
952      \xdef\tmp{\detokenize\expandafter{\wg@chit@tmp} \@empty}}
953     % \message{^^J\meaning\@tmp -> \meaning\tmp}
954     \mk@w{ \mk@i\space "#1": "\tmp",}}
955
956 \def\do@chit@report{%
957   \chit@dbg{3}{Start of Chit Report}
958   \mk@w{ \mk@i "chit": \@lbchar}
959   \chit@dbg{3}{Report - ID}
960   \ifundefined{id}{-}{\mk@w{ \mk@i\space "id":      "\id", }}%
961   \chit@dbg{3}{Report - Symbol: '\meaning\chit@symbol'}
962   \ifundefined{chit@symbol}{-}{\mk@w{ \mk@i\space "symbol": "true", }}%
963   \chit@dbg{3}{Report - Full: '\meaning\chit@full'}
964   \@chit@rep@line{full}{chit@full}
965   \chit@dbg{3}{Report - Factors: '\meaning\chit@factors'}
966   \@chit@rep@line{factors}{chit@factors}%
967   \chit@dbg{3}{Report - Left: '\meaning\chit@left'}
968   \@chit@rep@line{left}{chit@left}%
969   \chit@dbg{3}{Report - Right: : '\meaning\chit@right'}
970   \@chit@rep@line{right}{chit@right}%
971   \chit@dbg{3}{Report - Upper left: '\meaning\chit@upper@left'}
972   \@chit@rep@line{upper left}{chit@upper@left}%
973   \chit@dbg{3}{Report - Lower left: '\meaning\chit@lower@left'}

```

```

974 \@chit@rep@line{lower left}{chit@lower@left}%
975 \chit@dbg{3}{Report - Upper right: '\meaning\chit@upper@right}
976 \@chit@rep@line{upper right}{chit@upper@right}%
977 \chit@dbg{3}{Report - Lower right: '\meaning\chit@lower@right'}
978 \@chit@rep@line{lower right}{chit@lower@right}%
979 \chit@dbg{3}{Report - End comma}
980 \mk@w{ \mk@i\space "end": 0}
981 \@ifundefined{chit@symbol}{
982   \mk@w{ \mk@i \@rbchar }
983 }{
984   \mk@w{ \mk@i \@rbchar, }% NATOAPP6c will follow
985 }%
986 \chit@dbg{3}{End of Chit Report}
987 }

```

Report out NATO App6 symbol settings

```

988 \def\do@natoapp@report{%
989   \mk@w{ \mk@i "natoapp6c": \@lbchar}
990   \@chit@rep@line{id}{\id}
991   \@chit@rep@line{faction}{natoapp@fac}
992   \@chit@rep@line{command}{natoapp@cmd}
993   \@chit@rep@line{echelon}{natoapp@ech}
994   \@chit@rep@line{main}{natoapp@main}
995   \@chit@rep@line{left}{natoapp@left}
996   \@chit@rep@line{right}{natoapp@right}
997   \@chit@rep@line{upper}{natoapp@upper}
998   \@chit@rep@line{lower}{natoapp@lower}
999   \@chit@rep@line{below}{natoapp@below}
1000   \mk@w{ \mk@i\space "end": 0}
1001   \mk@w{ \mk@i \@rbchar}
1002 }
1003 \tikzset{
1004   chit drop margin/.store in=\wg@drop@margin,
1005   chit drop shadows/.code={
1006     \pgfkeysalso{%
1007       /tikz/every chit node/.prefix style={chit drop={#1}},
1008       /tikz/chit has drop=true}
1009   },
1010   chit drop shadows/.default=,
1011   marker drop shadows/.code={
1012     \pgfkeysalso{%
1013       /tikz/every battle marker/.prefix style={chit drop={#1}},
1014       /tikz/every odds marker/.prefix style={chit drop={#1}},
1015       /tikz/every result marker/.prefix style={chit drop={#1}},
1016       /tikz/auto icon more/.prefix style={no chit drop}},
1017   marker drop shadows/.default={
1018     chit has drop=false,
1019     shadow xshift=0.04cm,
1020     shadow yshift=-0.04cm,
1021     shadow blur radius=0.04cm}
1022 }
1023
1024

```

5.4 The wargame.hex TikZ library

Used TikZ libraries

```
1025 \RequirePackage{alphalph}
1026 \usetikzlibrary{calc}
1027 \usetikzlibrary{arrows.meta}
1028 \usetikzlibrary{arrows}
1029 \usetikzlibrary{shapes.geometric}
1030 \usetikzlibrary{shapes.symbols}
1031 \usetikzlibrary{shapes.arrows}
1032 \usetikzlibrary{decorations}
1033 \usetikzlibrary{decorations.pathmorphing}
1034 \usetikzlibrary{decorations.pathreplacing}
1035 \usetikzlibrary{decorations.markings}
1036 \usetikzlibrary{wargame.util}
```

```
\@ifempty
```

This is a utility macro we will use below.

```
1037 \def\@ifempty#1{\def\temp{#1}\ifx\temp\@empty}
```

5.4.1 Debugging

The counter `\hexdbglvl` sets the debug level, and the macro `\hex@dbg` prints out (conditionally) debug messages.

```
\hexdbglvl
```

```
\hex@dbg
```

```
1038 \newcount\hexdbglvl\hexdbglvl=\wargamedbglvl
1039 \def\hex@dbg#1#2{%
1040   \ifnum#1>\hexdbglvl\relax\else\message{^^J#2}\fi}
```

5.4.2 Suppress terrain pictures

```
1041 \@ifundefined{ifhex@terrain@pic}{%
1042   \newif\ifhex@terrain@pic
1043   \hex@terrain@pictrue}{%
1044   \def\markpos#1(#2){}
```

5.4.3 Hex coordinate system

```
\hex@xx
```

```
\hex@yy
```

Some offsets along x and y due to offset of every second hex column.

$$\delta_x = \cos 60^\circ$$

$$\delta_y = \sin 60^\circ$$

These numbers are calculated once here and then used several times in the following code.

```

1045 \pgfmathparse{\cos(60)}          \xdef\hex@xx{\pgfmathresult}
1046 \pgfmathparse{\sin(60)}          \xdef\hex@yy{\pgfmathresult}
1047 \pgfmathparse{\hex@yy*\cos(30)}\xdef\hex@e@xx{\pgfmathresult}
1048 \pgfmathparse{\hex@yy*\sin(30)}\xdef\hex@e@yy{\pgfmathresult}
1049 \newdimen\hex@radius\hex@radius=1cm
1050 \newdimen\hex@dx    \expandafter\hex@dx=\hex@xx cm
1051 \newdimen\hex@dy    \expandafter\hex@dy=\hex@yy cm
1052 \newdimen\hex@e@dx  \expandafter\hex@e@dx=\hex@e@xx cm
1053 \newdimen\hex@e@dy  \expandafter\hex@e@dy=\hex@e@yy cm
1054

```

Some code we need for some options

```

1055 \newif\ifhex@label@is@name\hex@label@is@namefalse
1056 \def\hex@short@col{isfalse}
1057 \def\hex@got@short{isfalse}
1058 \pgfmathdeclarefunction{isfalse}{1}{%
1059   \begingroup
1060   \def\pgfmathresult{0}%
1061   \pgfmath@smuggleone\pgfmathresult
1062   \endgroup}
1063 \pgfmathdeclarefunction{istrue}{1}{%
1064   \begingroup
1065   \def\pgfmathresult{1}%
1066   \pgfmath@smuggleone\pgfmathresult
1067   \endgroup}

```

What follows is a way to configure the hex coordinate system. For example, if the rows goes down, then we can flag that, but still add hexes straightforwardly. Similar for columns. We can also specify that the first row or column has number 1 (instead of 0). Since this is dealt with a the coordinate level, it means most of the rest of the code is agnostic to these choices.

Which is the first coordinate (0 or 1)

```

1068 \tikzset{
1069   hex/first row is/.is choice,
1070   hex/first row is/0/.code={\def\hex@coords@row@off{0}},
1071   hex/first row is/1/.code={\def\hex@coords@row@off{-1}},
1072   hex/first row is=0,
1073   hex/first column is/.is choice,
1074   hex/first column is/0/.code={\def\hex@coords@col@off{0}},
1075   hex/first column is/1/.code={\def\hex@coords@col@off{-1}},
1076   hex/first column is=0,
1077   hex/first row and column are/.is choice,
1078   hex/first row and column are/0/.style={
1079     hex/first row is=0,%

```

```

1080   hex/first column is=0},
1081 hex/first row and column are/1/.style={
1082   hex/first row is=1,%
1083   hex/first column is=1},

```

Which way does the column and row numbers go

```

1084 hex/row direction is/.is choice,
1085 hex/row direction is/normal/.code={\def\hex@coords@row@fac{1}},
1086 hex/row direction is/reversed/.code={\def\hex@coords@row@fac{-1}},
1087 hex/row direction is/up/.style={hex/row direction is=normal},
1088 hex/row direction is/down/.style={hex/row direction is=reversed},
1089 hex/row direction is/positive/.style={hex/row direction is=normal},
1090 hex/row direction is/negative/.style={hex/row direction is=reversed},
1091 hex/row direction is=normal,
1092 hex/column direction is/.is choice,
1093 hex/column direction is/normal/.code={\def\hex@coords@col@fac{1}},
1094 hex/column direction is/reversed/.code={\def\hex@coords@col@fac{-1}},
1095 hex/column direction is/right/.style={hex/column direction is=normal},
1096 hex/column direction is/left/.style={hex/column direction is=reversed},
1097 hex/column direction is/positive/.style={hex/column direction is=normal},
1098 hex/column direction is/negative/.style={hex/column direction is=reversed},
1099 hex/column direction is=normal,

```

Make labels names of shapes of the hexes so we can use labels to place stuff

```

1100 hex/label is name/.is if=hex@label@is@name,

```

If we have uneven number of rows in some columns.

```

1101 hex/short bottom columns/.is choice,
1102 hex/short bottom columns/odd/.code={%
1103   \def\hex@bot@short@col{isodd}
1104   \def\hex@got@bot@short{istrue}
1105   \hex@dbg{4}{Short columns (odd): \meaning\hex@bot@short@col}},
1106 hex/short bottom columns/even/.code={
1107   \def\hex@bot@short@col{iseven}
1108   \def\hex@got@bot@short{istrue}
1109   \hex@dbg{4}{Short column (even): \meaning\hex@bot@short@col}},
1110 hex/short bottom columns/none/.code={
1111   \def\hex@bot@short@col{isfalse}
1112   \def\hex@got@bot@short{isfalse}
1113   \hex@dbg{4}{Short columns (none): \meaning\hex@bot@short@col}},
1114 hex/short bottom columns=none,
1115 hex/short columns/.forward to=hex/short bottom columns,
1116 hex/short top columns/.is choice,
1117 hex/short top columns/odd/.code={%
1118   \def\hex@top@short@col{isodd}
1119   \def\hex@got@top@short{istrue}
1120   \hex@dbg{4}{Short columns (odd): \meaning\hex@top@short@col}},
1121 hex/short top columns/even/.code={
1122   \def\hex@top@short@col{iseven}
1123   \def\hex@got@top@short{istrue}
1124   \hex@dbg{4}{Short column (even): \meaning\hex@top@short@col}},

```

```

1125 hex/short top columns/none/.code={
1126   \def\hex@top@short@col{isfalse}
1127   \def\hex@got@top@short{isfalse}
1128   \hex@dbg{4}{Short columns (none): \meaning\hex@top@short@col}},
1129 hex/short top columns=none,
1130 }
1131 \message{^^JInitial hex coordinate setup:
1132 Rows: factor=\hex@coords@row@fac, offset=\hex@coords@row@off
1133 Columns: factor=\hex@coords@col@fac, offset=\hex@coords@col@off}

```

```

hex/coords/column
hex/coords/row
hex/coords/vertex
hex/coords/edge
hex/coords/offset

```

We define the keys for hexagon coordinates. These are the `row`, `column`, possible `vertex` or `edge`. Vertices and edges are defined as multiple-choice. `offset` specifies the offset from the centre in the direction of a vertex or edge. By default, the offset is one, meaning all the way to the vertex or edge.

The key `inverse row` specifies that the rows are given from the top down, but coordinates should be calculated as if the row was negative. This (should) allow us to design boards where rows increase downward, while still keeping the interface and remaining code somewhat reasonable and agnostic.

Similarly, the key `column 1`, will allow us to start the columns with 1.

```

1134 \tikzset{
1135   /hex/coords/.cd,
1136   column/.store in=\hex@col,
1137   c/.store in=\hex@col,
1138   row/.store in=\hex@row,
1139   r/.store in=\hex@row,
1140   offset/.store in=\hex@off,
1141   o/.store in=\hex@off,
1142   vertex/.is choice,
1143   vertex/none/.code={\global\let\hex@vtx\@empty},
1144   vertex/east/.code={\def\hex@vtx{0}},
1145   vertex/north east/.code={\def\hex@vtx{60}},
1146   vertex/north west/.code={\def\hex@vtx{120}},
1147   vertex/west/.code={\def\hex@vtx{180}},
1148   vertex/south west/.code={\def\hex@vtx{240}},
1149   vertex/south east/.code={\def\hex@vtx{300}},
1150   vertex/E/.code={\def\hex@vtx{0}},
1151   vertex/NE/.code={\def\hex@vtx{60}},
1152   vertex/NW/.code={\def\hex@vtx{120}},
1153   vertex/W/.code={\def\hex@vtx{180}},
1154   vertex/SW/.code={\def\hex@vtx{240}},
1155   vertex/SE/.code={\def\hex@vtx{300}},
1156   vertex/.default=none,
1157   v/.forward to=/hex/coords/vertex=#1,
1158   edge/.is choice,
1159   edge/none/.code={\global\let\hex@edg\@empty},
1160   edge/north east/.code={\def\hex@edg{30}},

```

```

1161 edge/north/.code={\def\hex@edg{90}},
1162 edge/north west/.code={\def\hex@edg{150}},
1163 edge/south west/.code={\def\hex@edg{210}},
1164 edge/south/.code={\def\hex@edg{270}},
1165 edge/south east/.code={\def\hex@edg{330}},
1166 edge/NE/.code={\def\hex@edg{30}},
1167 edge/N/.code={\def\hex@edg{90}},
1168 edge/NW/.code={\def\hex@edg{150}},
1169 edge/SW/.code={\def\hex@edg{210}},
1170 edge/S/.code={\def\hex@edg{270}},
1171 edge/SE/.code={\def\hex@edg{330}},
1172 edge/.default=none,
1173 e/.forward to=/hex/coords/edge,
1174 }

```

`\hex@coords@reset`

This macro resets the hex coordinates to default values. That is row and column 0, no vertex or edge.

```

1175 \def\hex@coords@reset{%
1176   \tikzset{%
1177     /hex/coords/.cd,
1178     column=0,
1179     row=0,
1180     edge=none,
1181     vertex=none,
1182     offset=1}}

```

The following calculates the Cartesian coordinates from Hex coordinates

`(cs:hex column= $\langle C \rangle$, row= $\langle R \rangle$, vertex= $\langle V \rangle$, edge= $\langle E \rangle$)`

Given the hexagon column C and row R with hexagon radius r , the centre of the hexagon is at

$$\begin{aligned}
 x &= 2C\frac{3}{4}r \\
 y &= r(R - (C\%2) \sin 60^\circ)
 \end{aligned}$$

If $\langle V \rangle$ or $\langle E \rangle$ are given, then these are added to the centre point.

Note, C and R may be fractional numbers, which will specify a point inside a hex.

We set-up the translation to Cartesian coordinates. First thing is to reset keys in `/hex/coords`, and then parse out the keys given.

```

1183 \def\hex@coords@conv#1{%
1184   \hex@coords@reset%
1185   \tikzset{/hex/coords/.cd, #1}%

```

Then we calculate the x coordinate and set the dimension `\pgf@x`. We do this by

$$x = c_e \frac{3}{2} ,$$

where

$$c_e = f_c(c + o_c) \quad ,$$

is the effective column (stored in `\hex@eff@col`) calculated from is the direction factor f_c (set by `hex/column direction is`) and the offset o_c (set by `hex/first column is`).

```

1186 \pgfmathparse{int(\hex@coords@col@fac*(\hex@col+\hex@coords@col@off))}%
1187 \xdef\hex@eff@col{\pgfmathresult}%
1188 \hex@dbg{2}{Effective column: \hex@coords@col@fac * (\hex@col +
1189   \hex@coords@col@off) -> \hex@eff@col}%
1190 \pgfmathparse{\hex@eff@col*1.5}%
1191 \xdef\hex@x{\pgfmathresult}%

```

And then for the y coordinate and set the dimension `\pgf@y`.

$$y = 2(r_e - c_e \bmod 2) \cos 60^\circ \quad ,$$

where

$$r_e = 2f_r(r + o_r) - (c + o_c) \bmod 2 \quad ,$$

is the effective row (stored as `\hex@eff@row`) calculated from the the direction factor f_r (set by `hex/row direction is`) and the offset o_r (set by `hex/first row is`).

```

1192 \pgfmathparse{int(\hex@coords@row@fac*(\hex@row+\hex@coords@row@off))}%
1193 \xdef\hex@eff@row{\pgfmathresult}%
1194 \hex@dbg{2}{Effective row: \hex@coords@row@fac * (\hex@row +
1195   \hex@coords@row@off) -> \hex@eff@row}%
1196 \pgfmathparse{(2*\hex@eff@row-mod(round((\hex@col+\hex@coords@col@off)),2))*\hex@yy}%
1197 \pgfmathparse{(2*\hex@eff@row-mod(abs(round(\hex@col+\hex@coords@col@off)),2))*\hex@yy}%
1198 \xdef\hex@y{\pgfmathresult}%

```

If we have a vertex specification add that location to the current coordinates. If not, set the point.

```

1199 \ifx\hex@vtx\@empty\else%
1200   \pgfmathparse{\hex@x+\hex@off*cos(\hex@vtx)}\xdef\hex@x{\pgfmathresult}
1201   \pgfmathparse{\hex@y+\hex@off*sin(\hex@vtx)}\xdef\hex@y{\pgfmathresult}
1202 \fi%
1203 % \ifx\hex@vtx\@empty\pgfpointxy{\hex@x}{\hex@y}\else%
1204 % \pgfpointadd{\pgfpointxy{\hex@x}{\hex@y}}{%
1205 %   \pgfpointscale{\hex@off}{\pgfpointpolarxy{\hex@vtx}{1}}}\fi%

```

If we have an edge specification add that location to the current coordinates.

```

1206 \ifx\hex@edg\@empty\else%
1207   \pgfmathparse{\hex@x+\hex@off*\hex@yy*cos(\hex@edg)}%
1208   \xdef\hex@x{\pgfmathresult}%
1209   \pgfmathparse{\hex@y+\hex@off*\hex@yy*sin(\hex@edg)}%
1210   \xdef\hex@y{\pgfmathresult}%
1211 \fi%
1212 % \ifx\hex@edg\@empty\else%
1213 % \pgfpointadd{\pgfpointxy{\hex@x}{\hex@y}}{%
1214 %   \pgfpointscale{\hex@off}{\pgfpointpolarxy{\hex@edg}{\hex@yy}}}\fi

```

For debugging, we can print out stuff.

```

1215 \pgfpointxy{\hex@x}{\hex@y}
1216 \hex@dbg{2}{Hex coordinates: #1
1217   ^^J c='\hex@col'
1218   ^^J r='\hex@row'
1219   ^^J v='\hex@vtx'
1220   ^^J e='\hex@edg'
1221   ^^J o='\hex@off'
1222   ^^J x='\hex@x'
1223   ^^J y='\hex@y'}%
1224 \global\let\hex@x\hex@x%
1225 \global\let\hex@y\hex@y%
1226 \global\let\hex@row\hex@row%
1227 \global\let\hex@col\hex@col%
1228 }
1229 \tikzdeclarecoordinatesystem{hex}{%
1230 \hex@coords@conv{#1}}

```

5.4.4 Hexes

In this part, we make macros etc. for the hexes.

A hex shape. We make a node of this shape if we are to give a name to the hex added. We add a bunch of anchors to it so we may easily refer to it. This is also where we actual fill stuff into the hex, such as terrain and so on.

```

1231 \tikzset{%
1232 /hex/.cd,
1233 bevel/.store in=\hex@bevel,          bevel/.initial=,
1234 bevel fraction/.store in=\hex@bevel@frac,bevel fraction/.initial=10,
1235 bevel/.is choice,
1236 bevel/none/.style = {/hex/bev=},
1237 bevel/north west/.style = {/hex/bev=1},
1238 bevel/north east/.style = {/hex/bev=2},
1239 bevel/south west/.style = {/hex/bev=3},
1240 bevel/south east/.style = {/hex/bev=4},
1241 bevel/NW/.style = {/hex/bev=1},
1242 bevel/NE/.style = {/hex/bev=2},
1243 bevel/SW/.style = {/hex/bev=3},
1244 bevel/SE/.style = {/hex/bev=4},
1245 bevel/.default = {north west},
1246 }
1247 \def\hex@bevel@frac{10}
1248 \tikzset{
1249 hex/bevel highlight/.style={fill=white,opacity=.25},
1250 hex/bevel shadow/.style={fill=black,opacity=.25},
1251 }

1252 \newdimen\wg@tmpe
1253 \newdimen\wg@tmpf
1254 \newdimen\wg@tmpg
1255 \def\hex@bevel@path#1{%
1256 \scope[#1]
1257 \wg@tmpe=\wg@tmpa\multiply\wg@tmpe by \hex@bevel@frac

```

```

1258 \wg@tmpf=\wg@tmpb\multiply\wg@tmpf by \hex@bevel@frac
1259 \wg@tmpg=\wg@tmpc\multiply\wg@tmpg by \hex@bevel@frac
1260 \divide\wg@tmpe100
1261 \divide\wg@tmpf100
1262 \divide\wg@tmpg100
1263 % Start
1264 \pgfpathmoveto{\pgfqpoint{\wg@tmpa}{\wg@tmpb}}%
1265 % Left
1266 \pgfpathlineto{\pgfqpoint{-\wg@tmpa}{\wg@tmpb}}%
1267 % Left-down
1268 \pgfpathlineto{\pgfqpoint{\wg@tmpc}{\wg@tmpd}}%
1269 % Right down
1270 \wg@tmpa=-\wg@tmpa%
1271 \wg@tmpb=-\wg@tmpb%
1272 \pgfpathlineto{\pgfqpoint{\wg@tmpa}{\wg@tmpb}}%
1273 % Up, in
1274 \advance\wg@tmpa\wg@tmpe%
1275 \advance\wg@tmpb\wg@tmpf%
1276 \pgfpathlineto{\pgfqpoint{\wg@tmpa}{\wg@tmpb}}%
1277 % Left-down, in
1278 \advance\wg@tmpc-\wg@tmpg
1279 \pgfpathlineto{\pgfqpoint{\wg@tmpc}{\wg@tmpd}}%
1280 % Left, down in
1281 \advance\wg@tmpb-\wg@tmpf\wg@tmpb-\wg@tmpb%
1282 \advance\wg@tmpb-\wg@tmpf
1283 \pgfpathlineto{\pgfqpoint{\wg@tmpa}{\wg@tmpb}}%
1284 % Start, down in
1285 \advance\wg@tmpa-\wg@tmpe\wg@tmpa-\wg@tmpa%
1286 \advance\wg@tmpa-\wg@tmpe
1287 \pgfpathlineto{\pgfqpoint{\wg@tmpa}{\wg@tmpb}}%
1288 % %
1289 \pgfclosepath%
1290 \pgfusepath{fill}
1291 \endscope}%

1292 \hex@dbg{5}{Base vertex: \hex@xx,\hex@yy}
1293 \hex@dbg{5}{Base edges: \hex@e@xx,\hex@e@yy}
1294 \pgfdeclareshape{hex/hex}{%
1295 \saveddimen\radius{\pgf@x=\hex@radius}
1296 \savedanchor{\east}{\pgfqpoint{\hex@radius}{0cm}}
1297 \savedanchor{\west}{\pgfqpoint{-\hex@radius}{0cm}}
1298 \savedanchor{\northeast}{\pgfqpoint{\hex@dx}{\hex@dy}}
1299 \savedanchor{\northwest}{\pgfqpoint{-\hex@dx}{\hex@dy}}
1300 \savedanchor{\southwest}{\pgfqpoint{-\hex@dx}{-\hex@dy}}
1301 \savedanchor{\southeast}{\pgfqpoint{\hex@dx}{-\hex@dy}}
1302 \savedanchor{\northedge}{\pgfqpoint{0cm}{\hex@dy}}
1303 \savedanchor{\southedge}{\pgfqpoint{0cm}{-\hex@dy}}
1304 \savedanchor{\northeastedge}{\pgfqpoint{\hex@e@dx}{\hex@e@dy}}
1305 \savedanchor{\northwestedge}{\pgfqpoint{-\hex@e@dx}{\hex@e@dy}}
1306 \savedanchor{\southwestedge}{\pgfqpoint{-\hex@e@dx}{-\hex@e@dy}}
1307 \savedanchor{\southeastedge}{\pgfqpoint{\hex@e@dx}{-\hex@e@dy}}
1308 \savedmacro\init{%
1309 \def\hexpath{%
1310 \pgfpathmoveto{\east}%

```

```

1311     \pgfpathlineto{\northeast}%
1312     \pgfpathlineto{\northwest}%
1313     \pgfpathlineto{\west}%
1314     \pgfpathlineto{\southwest}%
1315     \pgfpathlineto{\southeast}%
1316     \pgfpathclose}
1317 }

```

These are the actual user callable anchors. We make anchors for each vertex and mid points on each edge.

```

1318 %%
1319 \anchor{center}{      \pgfpointorigin}
1320 \anchor{east}{       \east}
1321 \anchor{west}{       \west}
1322 \anchor{north east}{ \northeast}
1323 \anchor{north west}{ \northwest}
1324 \anchor{south west}{ \southwest}
1325 \anchor{south east}{ \southeast}
1326 \anchor{north edge}{ \northeastedge}
1327 \anchor{south edge}{ \southedge}
1328 \anchor{north east edge}{\northeastedge}
1329 \anchor{north west edge}{\northwestedge}
1330 \anchor{south west edge}{\southwestedge}
1331 \anchor{south east edge}{\southeastedge}

```

Next we make some short hand aliases for each of these anchors.

```

1332 \anchor{E}{      \east}
1333 \anchor{W}{      \west}
1334 \anchor{NE}{     \northeast}
1335 \anchor{NW}{     \northwest}
1336 \anchor{SW}{     \southwest}
1337 \anchor{SE}{     \southeast}
1338 \anchor{N edge}{ \northeastedge}
1339 \anchor{S edge}{ \southedge}
1340 \anchor{NE edge}{\northeastedge}
1341 \anchor{NW edge}{\northwestedge}
1342 \anchor{SW edge}{\southwestedge}
1343 \anchor{SE edge}{\southeastedge}

```

The next part is commented out because its not obvious we'll use these.

```

1344 %%
1345 \savedanchor{\chitnorth}{ \pgfpoint{ 0cm}{ 0.6cm}}
1346 \savedanchor{\chitsouth}{ \pgfpoint{ 0cm}{ -0.6cm}}
1347 \savedanchor{\chiteast}{ \pgfpoint{ 0.6cm}{ 0cm}}
1348 \savedanchor{\chitwest}{ \pgfpoint{-0.6cm}{ 0cm}}
1349 \savedanchor{\chitnortheast}{\pgfpoint{ 0.6cm}{ 0.6cm}}
1350 \savedanchor{\chitnorthwest}{\pgfpoint{-0.6cm}{ 0.6cm}}
1351 \savedanchor{\chitsouthwest}{\pgfpoint{-0.6cm}{-0.6cm}}
1352 \savedanchor{\chitsoutheast}{\pgfpoint{ 0.6cm}{-0.6cm}}
1353 %
1354 \anchor{chit north}{\chitnorth}
1355 \anchor{chit south}{\chitsouth}

```

```

1356 \anchor{chit east}{\chiteast}
1357 \anchor{chit west}{\chitwest}
1358 \anchor{chit north east}{\chitnortheast}
1359 \anchor{chit north west}{\chitnorthwest}
1360 \anchor{chit south west}{\chitsouthwest}
1361 \anchor{chit south east}{\chitsoutheast}
1362 %
1363 \anchor{chit N}{\chitnorth}
1364 \anchor{chit S}{\chitsouth}
1365 \anchor{chit E}{\chiteast}
1366 \anchor{chit W}{\chitwest}
1367 \anchor{chit NE}{\chitnortheast}
1368 \anchor{chit NW}{\chitnorthwest}
1369 \anchor{chit SW}{\chitsouthwest}
1370 \anchor{chit SE}{\chitsoutheast}
1371 %

```

The background path. This path may be drawn when the node is drawn. However, we will do most of the work in the `\behindbackgroundpath` which gets drawn *after* this path.

```

1372 \backgroundpath{\init\hexpath}

```

The *behind* background path, where we do most of the work.

```

1373 \behindforegroundpath{%
1374   \hex@dbg{2}{Hex behind foreground path:
1375     ^^JTerrain:      '\meaning\hex@terrain'
1376     ^^JRidges:      '\meaning\hex@ridges'
1377     ^^JTown:        '\meaning\hex@town'
1378     ^^JExtra clipped: '\meaning\hex@extra@clip'
1379     ^^JLabel:       '\meaning\hex@label'
1380     ^^JExtra:       '\meaning\hex@extra'
1381     ^^JLast node name: '\meaning\tikzlastnode'
1382     ^^JHex row:     '\meaning\hex@row'
1383     ^^JHex col:     '\meaning\hex@col'
1384   }%
1385   \init%

```

We start a scope and clip to the hex path first.

```

1386   \scope%
1387     \hexpath%
1388     \pgfusepath{clip}%

```

Anything inside this scope is clipped to the hex path. The next step is to see if we have a specified terrain for the hex.

```

1389     \@ifundefined{hex@terrain}{\let\hex@terrain\empty}{}%
1390     \ifx\hex@terrain\empty\else\hex@do@terrain\fi%

```

This concludes the processing of the terrain of the hex. Next, we must see if the user specified ridges.

```

1391     \@ifundefined{hex@ridges}{\let\hex@ridges\empty}{}%
1392     \ifx\hex@ridges\empty\else\hex@do@ridges\fi%

```

This concludes the processing of the ridges of the hex. Next, we should process any extra (clipped) stuff specified. The user may pass options to each picture by preceding it with [*options*].

```

1393     \@ifundefined{hex@extra@clip}{\let\hex@extra@clip\empty}{}
1394     \ifx\hex@extra@clip\empty\else%
1395         \hex@dbg{5}{Extra clipped: '\meaning\hex@extra'}
1396         \pgfpointorigin\wg@tmpa=\pgf@x\wg@tmpb=\pgf@y%
1397         \wg@pic@all{\hex@extra@clip}{\the\wg@tmpa,\the\wg@tmpb}{}%
1398     \fi%

```

This concludes the extra stuff put in the hex. Next, we should place the label is specified. Note, we may know the hex row and column at this point, stored in `\hex@row` and `\hex@column`, respectively. We may want to name the generated node from these if the user specified that option (perhaps use `\pgfnoderename` or similar).

```

1399     \@ifundefined{hex@label}{\let\hex@label\empty}{}
1400     \ifx\hex@label\empty\else\hex@do@label\fi%

1401 \@ifundefined{hex@bevel}{\let\hex@bevel\empty}{}
1402 \ifx\hex@bevel\empty\else%
1403     \northeast
1404     \wg@tmpa=\pgf@x\wg@tmpb=\pgf@y%
1405     \west
1406     \wg@tmpc=\pgf@x\wg@tmpd=\pgf@y%
1407     \ifcase\hex@bevel\relax
1408     \or%1
1409     \or\wg@tmpa=-\wg@tmpa\wg@tmpc=-\wg@tmpc%2
1410     \or\wg@tmpb=-\wg@tmpb\wg@tmpd=-\wg@tmpd%3
1411     \or% 4
1412     \wg@tmpa=-\wg@tmpa\wg@tmpc=-\wg@tmpc%
1413     \wg@tmpb=-\wg@tmpb\wg@tmpd=-\wg@tmpd%
1414     \fi
1415     \hex@bevel@path{chit/bevel highlight}
1416     \northeast
1417     \wg@tmpa=-\pgf@x\wg@tmpb=-\pgf@y%
1418     \west
1419     \wg@tmpc=-\pgf@x\wg@tmpd=-\pgf@y%
1420     \ifcase\hex@bevel\relax
1421     \or%1
1422     \or\wg@tmpa=-\wg@tmpa\wg@tmpc=-\wg@tmpc%2
1423     \or\wg@tmpb=-\wg@tmpb\wg@tmpd=-\wg@tmpd%3
1424     \or% 4
1425     \wg@tmpa=-\wg@tmpa\wg@tmpc=-\wg@tmpc%
1426     \wg@tmpb=-\wg@tmpb\wg@tmpd=-\wg@tmpd%
1427     \fi
1428     \hex@bevel@path{chit/bevel shadow}
1429 \fi

1430 \endscope%

```

This concludes the label processing, and stuff that should be clipped to the hex shape. If the user specified a town, we can now make that.

```

1431 \@ifundefined{hex@town}{\let\hex@town\empty}{}
1432 \@ifundefined{hex@c@pic}{\let\hex@c@pic\empty}{}
1433 \ifx\hex@town\empty\else\hex@do@town\fi%

```

We can now add extra (non-clipped) stuff. We assume that extra stuff is pictures. The user may pass options to each picture by preceding it with [*options*].

```

1434 \@ifundefined{hex@extra}{\let\hex@extra\empty}{
1435 \ifx\hex@extra\empty\else%
1436 \hex@dbg{5}{Extra: '\meaning\hex@extra'}
1437 \pgfpointorigin\wg@tmpa=\pgf@x\wg@tmpb=\pgf@y%
1438 \wg@pic@call{\hex@extra}{\the\wg@tmpa,\the\wg@tmpb}{}%
1439 \fi%
1440 }
1441 }

```

```

/hex/terrain
/hex/town
/hex/label
/hex/ridges
/hex/extra
/hex/extra clipped

```

Next, we set up the name space for hex keys. This is the top level name space for hexes. Sub keys **terrain**, **ridges**, **town**, **extra**, **label**, and **extra clipped**, store their arguments in macros and we expand these later on. This allows us to scope some of the keys given to those specific parts.

Define keys for hexagon options. These are

Name	Description
terrain	Terrain
label	Label on hex
town	Town in hex. Optionally with a name
ridges	Ridge markings on hex
extra	More
extra clipped	More clipped to hex

```

1442 \tikzset{%
1443 /hex/.search also={/tikz},%
1444 /hex/.cd,%
1445 terrain/.store in=\hex@terrain,%
1446 ridges/.store in=\hex@ridges,%
1447 town/.store in=\hex@town,%
1448 extra/.store in=\hex@extra,%
1449 label/.store in=\hex@label,%
1450 extra clipped/.store in=\hex@extra@clip%
1451 }

```

hex

The next key is the real work horse of the show. Specifying the **hex** key to a node effectively creates a hex for us. Now, there are some things we cannot do outright in the node shape code. For example, we cannot set the name of the node created from the shape code. Therefore, the use of **\hex** is often the right choice.

```

1452 \tikzset{%

```

```

1453 hex/hex/.style={
1454     transform shape,
1455     anchor=center,
1456     draw=pgfstrokecolor,
1457     fill=none,
1458     thick,
1459     solid},
1460 hex/.code={%
1461     \hex@dbg{1}{=== Hex with options: '#1'}%
1462     \pgfkeys{/tikz/transform shape,/tikz/shape=hex/hex}
1463     \pgfkeys{/hex/.cd,/tikz/hex/hex,/tikz/every hex/.try,#1}}

```

The first thing is to set the default graphics options. The key `every hex` can be set to hex options to be used for all hexes. For example, if one want to label all hexes with an auto-generated label, one can do

```
\tikzset{every hex/.style={label={auto=numbered}}}
```

This, coupled with the `hex/label is name` option allows us to set up the board with really minimal effort. We can then use the board coordinates when placing units, and other things.

Now we have set up these tools we can go on and define the user facing macro.

```

\hex
\hex@
\hex@@

```

This will add a hex to the output graphics. Note, the macro need not be followed by a semi-colon (;).

First argument is optional options.

```

1464 \def\hex{%
1465   \@ifnextchar[{\hex@}{\hex@[]}%
1466 }

```

Second optional argument is the coordinates. These should be given in the hex coordinate system.

```

1467 \def\hex@[#1]{%
1468   \@ifnextchar({\hex@@{#1}}{%
1469     \hex@@{#1}(c=0,r=0)}%
1470 }

```

Third argument is the name to be used.

```

1471 \def\hex@@#1(#2){%
1472   \@ifnextchar({\hex@@@{#1}{#2}}{\hex@@@{#1}{#2}()})%
1473 }

```

Now for the real work-horse. First thing is to reset keys and parse them out from the arguments.

```

1474 %       Third argument is name
1475 \def\hex@@@#1#2(#3){%
1476   \node[hex={#1}] (tmp) at (hex cs:#2) {};%
1477   \hex@dbg{8}{=== Label text: '\meaning\hex@l@text'}
1478   \ifx|#3|\relax%
1479     \@ifundefined{hex@l@text}{%

```



```

1480     \hex@dbg{8}{=== Label text of hex (#2) not defined}%
1481     \let\hex@l@text\empty%
1482   }{}
1483   \ifhex@label@is@name%
1484     \hex@dbg{5}{=== Use label text of hex (#2) as name}%
1485     \ifx\hex@l@text\@empty%
1486       \hex@dbg{8}{=== Argh! Label text is empty! '\meaning\hex@l@text'}
1487     \else%
1488       \hex@dbg{3}{=== Renaming hex to label text '\hex@l@text'}
1489       \pgfnoderename{\hex@l@text}{tmp}%
1490     \fi%
1491   \fi%
1492 \else%
1493   \hex@dbg{3}{=== Renaming hex to user defined name '#3'}%
1494   \pgfnoderename{#3}{tmp}%
1495 \fi%
1496 \@ifnextchar;{\@gobble}{}%
1497 }

```

5.4.5 Terrain

With the above main routine for making hexes, we turn to decorating a hex with a terrain.

```

hex/terrain/image
hex/terrain/pic
hex/terrain/code
hex/terrain/clip

```

We make the namespace `/hex/terrain` to hold the specific terrain keys. Keys used by terrain identifiers are

Name	Description
<code>image</code>	Terrain tile image
<code>pic</code>	Terrain <i>TikZ</i> picture
<code>code</code>	Arbitrary <i>TikZ</i> code
<code>clip</code>	<i>TikZ</i> path to clip terrain

Now, we have the keys we'll need for selecting the terrain. These live in the namespace `/hex/terrain`, and we can select between pictures or images (external graphics files) for making the terrain. We define some short hands to easily select the common terrains.

```

1498 \newif\if@hex@t@rot\@hex@t@rotfalse%
1499 \tikzset{%
1500   /hex/terrain/.search also={/tikz},%
1501   /hex/terrain/.cd,%
1502   pic/.store in=\hex@t@pic,%
1503   image/.store in=\hex@t@image,%
1504   code/.store in=\hex@t@code,%
1505   clip/.store in=\hex@t@clip,%
1506   random rotation/.is if=@hex@t@rot,
1507   pic/.default=,
1508   image/.default=,
1509   code/.default=,

```

```

1510 clip/.default=,
1511 }
1512 \iffalse
1513 \tikzset{
1514 /hex/terrain/.cd,%
1515 beach/.style={pic=hex/terrain/beach},
1516 light woods/.style={pic=hex/terrain/light woods},
1517 woods/.style={pic=hex/terrain/woods},
1518 swamp/.style={pic=hex/terrain/swamp},
1519 rough/.style={pic=hex/terrain/rough},
1520 mountains/.style={pic=hex/terrain/mountains},
1521 village/.style={pic=hex/terrain/village},
1522 town/.style={pic=hex/terrain/town},
1523 city/.style={pic=hex/terrain/city},
1524 }
1525 \else
1526 \tikzset{
1527 /hex/terrain/.cd,%
1528 beach/.style={image=wargame.beach},
1529 light woods/.style={image=wargame.light_woods},
1530 woods/.style={image=wargame.woods},
1531 swamp/.style={image=wargame.swamp},
1532 rough/.style={image=wargame.rough},
1533 mountains/.style={image=wargame.mountains},
1534 village/.style={image=wargame.village},
1535 town/.style={image=wargame.town},
1536 city/.style={image=wargame.city},
1537 }
1538 \fi

```

Before we go on, we define the macro that actually generates the terrain of a hex.

`\hex@do@terrain`

If we do have a terrain specified, we start a new scope, this time to clip the terrain by the clipping path specified by `hex={terrain={clip=...}}`. The first thing into the new scope is to process the keys specified in `hex={terrain=...}`. This will set the terrain and the clipping of the terrain.

```

1539 \def\hex@do@terrain{%
1540 \hex@dbg{5}{Terrain: \meaning\hex@terrain}%
1541 \edef\hex@t@tmp{[/hex/terrain/.cd,\hex@terrain]}%
1542 \expandafter\scope\hex@t@tmp% Scope for terrain clipping.
1543 \hex@dbg{5}{Terrain:
1544   ^^J pic: \meaning\hex@t@pic
1545   ^^J image: \meaning\hex@t@image
1546   ^^J code: \meaning\hex@t@code
1547   ^^J clip: \meaning\hex@t@clip}

```

We check to see if we have any clipping pictures. If so, we process these in turn and append the soft path to a macro. Once this is done, we use the soft path as a clipping path for the rest of the (terrain) scope.

```

1548 \@ifundefined{hex@t@clip}{\let\hex@t@clip\empty}{}
1549 \ifx\hex@t@clip\empty\else%

```

```

1550     \edef\hex@t@cc{\hex@t@clip}%
1551     \def\hex@t@c{}
1552     \foreach \c in \hex@t@cc{%
1553         \hex@dbg{5}{Clipping to ‘\c’}
1554         \expandafter\wg@pic\c\endwg@pic {\wg@tmpa,\wg@tmpb}{%
1555             save path=\hex@t@tmp}%
1556         \wg@addto@macro\hex@t@c\hex@t@tmp % Append to clipping
1557     }%
1558     \pgfsyssoftpath@setcurrentpath{\hex@t@c}% Set path
1559     \clip;% Clip to the path
1560     \fi % End of clipping terrain

```

We’re now ready to make the terrain. First, we check to see if the relevant storage macros are undefined and if so, \let them to \empty so that we can deal more easily with the various cases.

```

1561     %% Now switch between how to draw the terrain. If some of the
1562     %% macros are undefined, define them to be empty
1563     \@ifundefined{hex@t@pic}{\let\hex@t@pic\empty}{}
1564     \@ifundefined{hex@t@image}{\let\hex@t@image\empty}{}
1565     \@ifundefined{hex@t@code}{\let\hex@t@code\empty}{}
1566     \@ifundefined{hex@t@code}{\let\hex@t@code\empty}{}

```

Possible make rotation. We define a scope and rotate within that.

```

1567     \def\hex@t@angle{0}%
1568     \if\hex@t@rot%
1569         \pgfmathrandominteger{\hex@t@angle}{0}{5}
1570         \pgfmathparse{int(60*\hex@t@angle)}\edef\hex@t@angle{\pgfmathresult}%
1571     \fi%
1572     \hex@dbg{5}{Will rotate terrain by ‘\hex@t@angle’}%

```

If we have specified code for the terrain, then execute that.

```

1573     \scope[rotate=\hex@t@angle]%
1574     \ifx\hex@t@code\empty\else\hex@t@code\fi%
1575     \endscope% End rotate code

```

First we check if we have not got terrain images, but terrain pictures. If we have that, we process these in turn. Note, the user can give options to each terrain picture by preceding the picture name with [*options*].

```

1576     % If we have no image, check if we have pictures.
1577     \ifx\hex@t@image\empty%
1578         \hex@dbg{8}{No terrain images}%
1579         \ifx\hex@t@pic\empty\else%
1580             % We have pictures
1581             \hex@dbg{5}{Terrain pictures}%
1582             \pgfpointorigin\wg@tmpa=\pgf@x\wg@tmpb=\pgf@y%
1583             \foreach \i in \hex@t@pic{%
1584                 \wg@pic@all{\i}{\the\wg@tmpa,\the\wg@tmpb}{%
1585                     rotate=\hex@t@angle,
1586                     transform shape}}%
1587             \fi% We have pictures.

```

If the user specified images rather than pictures, then we process these in turn. Again, the user can specify options to each terrain image by preceding the image file name with [*options*].

```

1588 \else % We have images
1589 \hex@dbg{5}{Terrain images}%
1590 \pgfpointorigin\wg@tmpa=\pgf@x\wg@tmpb=\pgf@y%
1591 \foreach \i in \hex@t@image{%
1592 \hex@dbg{10}{Terrain image: '\meaning\i'}
1593 \expandafter\wg@node{%
1594 \includegraphics[width=2cm]{\i}\@endwg@node %
1595 }{\wg@tmpa,\wg@tmpb}{%
1596 rotate=\hex@t@angle,%
1597 shape=rectangle,%
1598 anchor=center,%
1599 transform shape,%
1600 draw=none}%
1601 }
1602 \fi%
1603 \endscope% End of terrain scope
1604 }% End of terrain

```

Next, we define some example clippings of the terrain images. Specifically, we make clippings to sextants. We do this by first defining a macro.

\hex@make@sextants

When executed this macro will generate some paths that will clip to sextants. The first argument is the inner radius of the sextant and the second argument is the (possible empty) prefix to put in front of the `sextant` name.

```

1605 \def\hex@x@r{.7}
1606 \def\hex@make@sextants#1#2{%
1607 \tikzset{%
1608 pics/hex/#2sextant/.is choice,
1609 pics/hex/#2sextant/north east/.style={
1610 code={
1611 \path[pic actions]( 0:1)--( 60:1)--( 60:#1)--( 0:#1)--cycle;}},
1612 pics/hex/#2sextant/north/.style={
1613 code={
1614 \path[pic actions]( 60:1)--(120:1)--(120:#1)--( 60:#1)--cycle;}},
1615 pics/hex/#2sextant/north west/.style={
1616 code={
1617 \path[pic actions](120:1)--(180:1)--(180:#1)--(120:#1)--cycle;}},
1618 pics/hex/#2sextant/south west/.style={
1619 code={
1620 \path[pic actions](180:1)--(240:1)--(240:#1)--(180:#1)--cycle;}},
1621 pics/hex/#2sextant/south/.style={
1622 code={
1623 \path[pic actions](240:1)--(300:1)--(300:#1)--(240:#1)--cycle;}},
1624 pics/hex/#2sextant/south east/.style={
1625 code={
1626 \path[pic actions](300:1)--(360:1)--(360:#1)--(300:#1)--cycle;}},
1627 pics/hex/#2sextant/center/.style={
1628 code={
1629 \path[pic actions]
1630 (0:#1)--
1631 (60:#1)--

```

```

1632     (120:#1)--
1633     (180:#1)--
1634     (240:#1)--
1635     (300:#1)--cycle;}},
1636     pics/hex/#2sextant/NE/.style=hex/#2sextant/north east,
1637     pics/hex/#2sextant/NE/.style=hex/#2sextant/north east,
1638     pics/hex/#2sextant/N/.style=hex/#2sextant/north,
1639     pics/hex/#2sextant/NW/.style=hex/#2sextant/north west,
1640     pics/hex/#2sextant/SW/.style=hex/#2sextant/south west,
1641     pics/hex/#2sextant/S/.style=hex/#2sextant/south,
1642     pics/hex/#2sextant/SE/.style=hex/#2sextant/south east,
1643     pics/hex/#2sextant/C/.style=hex/#2sextant/center,
1644   }
1645 }

1646 \hex@make@sextants{.7}{-}
1647 \hex@make@sextants{.3}{-large }
1648 \hex@make@sextants{0}{-full }

```

Next, we define some styles for styling the terrain pictures. Users can change these styles (e.g., by appending to them) to change say the colour of the terrain graphics.

hex/terrain/beach

The style for beach hexes. The pattern is filled with a yellowish colour, and drawing of the outline is disabled.

```

1649 \tikzset{
1650   hex/terrain/beach/.style={%
1651     fill={rgb,100:red,93;green,73;blue,35},%
1652     draw=none%
1653   }%
1654 }

```

hex/terrain/beach

Now for the actual patterns. We go in the same order as above — i.e, we start with the beach pattern. This is rather long.



```

1655 \ifhex@terrain@pic
1656 \tikzset{
1657   hex/terrain/beach/.pic={
1658     \path[hex/terrain/beach,pic actions,draw=none]
1659     (-0.4931, 0.8848)
1660     -- (-0.4998, 0.8734)
1661     .. controls (-0.4908, 0.8731) and (-0.4813, 0.8762) .. (-0.4762, 0.8847)
1662     --cycle

```

```

1663      (-0.4032, 0.8841)
1664      .. controls (-0.4004, 0.8804) and (-0.3988, 0.8794) .. (-0.3956, 0.8745)
1665      .. controls (-0.3760, 0.8443) and (-0.3811, 0.8330) .. (-0.3456, 0.8112)
1666      .. controls (-0.3250, 0.7986) and (-0.2712, 0.7770) .. (-0.2531, 0.8032)
1667      .. controls (-0.2294, 0.8375) and (-0.2984, 0.8503) .. (-0.3193, 0.8690)
1668      .. controls (-0.3243, 0.8735) and (-0.3281, 0.8785) .. (-0.3321, 0.8835)
1669      --cycle
1670      (-0.2462, 0.8828)
1671      .. controls (-0.2425, 0.8681) and (-0.2383, 0.8546) .. (-0.2293, 0.8461)
1672      .. controls (-0.2102, 0.8280) and (-0.1892, 0.8390) .. (-0.1859, 0.8669)
1673      .. controls (-0.1854, 0.8711) and (-0.1871, 0.8772) .. (-0.1875, 0.8822)
1674      --cycle
1675      (-0.0997, 0.8815)
1676      .. controls (-0.0971, 0.8706) and (-0.0941, 0.8597) .. (-0.0907, 0.8493)
1677      -- (-0.0570, 0.8578)
1678      .. controls (-0.0570, 0.8629) and (-0.0560, 0.8730) .. (-0.0553, 0.8812)
1679      --cycle
1680      ( 0.0213, 0.8805)
1681      .. controls ( 0.0222, 0.8725) and ( 0.0235, 0.8650) .. ( 0.0262, 0.8587)
1682      .. controls ( 0.0391, 0.8281) and ( 0.0706, 0.8199) .. ( 0.0917, 0.7894)
1683      .. controls ( 0.1112, 0.7609) and ( 0.1058, 0.7286) .. ( 0.1050, 0.6961)
1684      -- ( 0.1731, 0.7216)
1685      -- ( 0.1203, 0.8649)
1686      -- ( 0.1097, 0.8797)
1687      --cycle
1688      ( 0.2978, 0.8781)
1689      .. controls ( 0.2985, 0.8773) and ( 0.3002, 0.8756) .. ( 0.3008, 0.8749)
1690      .. controls ( 0.2854, 0.8687) and ( 0.2549, 0.8572) .. ( 0.2421, 0.8487)
1691      .. controls ( 0.2026, 0.8224) and ( 0.1905, 0.7567) .. ( 0.2046, 0.7132)
1692      .. controls ( 0.2146, 0.6819) and ( 0.2330, 0.6680) .. ( 0.2394, 0.6280)
1693      .. controls ( 0.2413, 0.6160) and ( 0.2468, 0.5527) .. ( 0.2446, 0.5437)
1694      .. controls ( 0.2396, 0.5232) and ( 0.2211, 0.5122) .. ( 0.2231, 0.4913)
1695      .. controls ( 0.2261, 0.4603) and ( 0.2686, 0.4388) .. ( 0.2891, 0.4194)
1696      .. controls ( 0.3020, 0.4071) and ( 0.3136, 0.3895) .. ( 0.3281, 0.3799)
1697      .. controls ( 0.3688, 0.3533) and ( 0.3905, 0.3863) .. ( 0.4199, 0.3902)
1698      .. controls ( 0.4350, 0.3921) and ( 0.4560, 0.3849) .. ( 0.4710, 0.3812)
1699      -- ( 0.4795, 0.4067)
1700      -- ( 0.4965, 0.4067)
1701      .. controls ( 0.5008, 0.3961) and ( 0.5009, 0.3893) .. ( 0.5112, 0.3811)
1702      .. controls ( 0.5112, 0.3811) and ( 0.6172, 0.3385) .. ( 0.6481, 0.3037)
1703      .. controls ( 0.6729, 0.2758) and ( 0.6641, 0.2532) .. ( 0.6667, 0.2206)
1704      -- ( 0.7004, 0.2206)
1705      .. controls ( 0.7839, 0.2118) and ( 0.7047, 0.0740) .. ( 0.7057, 0.0568)
1706      .. controls ( 0.7067, 0.0396) and ( 0.7865,-0.0424) .. ( 0.8032,-0.0520)
1707      .. controls ( 0.8251,-0.0644) and ( 0.8703,-0.0686) .. ( 0.8572,-0.0293)
1708      .. controls ( 0.8518,-0.0131) and ( 0.7996, 0.0474) .. ( 0.7843, 0.0564)
1709      .. controls ( 0.7724, 0.0633) and ( 0.7645, 0.0636) .. ( 0.7518, 0.0664)
1710      .. controls ( 0.7688, 0.1093) and ( 0.7993, 0.1905) .. ( 0.7930, 0.2362)
1711      .. controls ( 0.7869, 0.2804) and ( 0.7252, 0.2982) .. ( 0.6946, 0.3268)
1712      .. controls ( 0.6664, 0.3531) and ( 0.6746, 0.3662) .. ( 0.6323, 0.3966)
1713      .. controls ( 0.5760, 0.4371) and ( 0.5386, 0.4324) .. ( 0.5250, 0.4601)
1714      .. controls ( 0.5090, 0.4927) and ( 0.5578, 0.6035) .. ( 0.5969, 0.5911)
1715      .. controls ( 0.6199, 0.5839) and ( 0.6224, 0.5471) .. ( 0.6341, 0.5291)

```

```

1716 .. controls ( 0.6488, 0.5064) and ( 0.7020, 0.4614) .. ( 0.7263, 0.4493)
1717 -- ( 0.7373, 0.4768)
1718 -- ( 0.6866, 0.5671)
1719 -- ( 0.6756, 0.5720)
1720 -- ( 0.6766, 0.5850)
1721 -- ( 0.6331, 0.6627)
1722 .. controls ( 0.6280, 0.6613) and ( 0.6239, 0.6599) .. ( 0.6157, 0.6589)
1723 -- ( 0.5646, 0.6589)
1724 .. controls ( 0.5375, 0.6557) and ( 0.5277, 0.6432) .. ( 0.4965, 0.6489)
1725 .. controls ( 0.4716, 0.6520) and ( 0.4306, 0.6774) .. ( 0.4104, 0.6489)
1726 .. controls ( 0.3809, 0.6093) and ( 0.4627, 0.6240) .. ( 0.4837, 0.5772)
1727 .. controls ( 0.4958, 0.5502) and ( 0.4652, 0.4811) .. ( 0.4429, 0.4648)
1728 -- ( 0.3523, 0.4350)
1729 .. controls ( 0.3178, 0.4372) and ( 0.3207, 0.4766) .. ( 0.3153, 0.5004)
1730 .. controls ( 0.3090, 0.5282) and ( 0.2968, 0.5398) .. ( 0.2922, 0.5684)
1731 .. controls ( 0.2896, 0.6035) and ( 0.3061, 0.6276) .. ( 0.2922, 0.6621)
1732 .. controls ( 0.2756, 0.6961) and ( 0.2422, 0.7190) .. ( 0.2525, 0.7640)
1733 .. controls ( 0.2650, 0.8188) and ( 0.3165, 0.7932) .. ( 0.3324, 0.8417)
1734 .. controls ( 0.3359, 0.8522) and ( 0.3385, 0.8648) .. ( 0.3399, 0.8778)
1735 --cycle
1736 ( 0.4261, 0.8770)
1737 -- ( 0.4333, 0.8493)
1738 -- ( 0.4845, 0.7440)
1739 .. controls ( 0.4963, 0.7304) and ( 0.5450, 0.6930) .. ( 0.5630, 0.6989)
1740 .. controls ( 0.5735, 0.7024) and ( 0.5838, 0.7169) .. ( 0.5932, 0.7337)
1741 -- ( 0.5612, 0.7909)
1742 .. controls ( 0.5537, 0.7875) and ( 0.5468, 0.7852) .. ( 0.5403, 0.7864)
1743 .. controls ( 0.5078, 0.7926) and ( 0.5191, 0.8406) .. ( 0.5145, 0.8567)
1744 .. controls ( 0.5121, 0.8651) and ( 0.5076, 0.8710) .. ( 0.5025, 0.8764)
1745 --cycle
1746 ( 0.3773, 0.8153)
1747 .. controls ( 0.3625, 0.7892) and ( 0.2993, 0.7161) .. ( 0.3316, 0.6877)
1748 .. controls ( 0.3432, 0.6774) and ( 0.3866, 0.6728) .. ( 0.4029, 0.6706)
1749 -- ( 0.3973, 0.7472)
1750 -- ( 0.4029, 0.8153)
1751 --cycle
1752 (-0.4224, 0.8088)
1753 .. controls (-0.4416, 0.8077) and (-0.4585, 0.7826) .. (-0.4275, 0.7562)
1754 -- (-0.3971, 0.7387)
1755 .. controls (-0.4780, 0.6942) and (-0.4752, 0.6640) .. (-0.4591, 0.5855)
1756 .. controls (-0.4391, 0.4887) and (-0.4527, 0.5347) .. (-0.4103, 0.4493)
1757 .. controls (-0.3870, 0.4026) and (-0.4070, 0.3747) .. (-0.3460, 0.3642)
1758 -- (-0.3352, 0.4823)
1759 .. controls (-0.3409, 0.5024) and (-0.3617, 0.5113) .. (-0.3739, 0.5281)
1760 -- (-0.4164, 0.6287)
1761 .. controls (-0.4188, 0.6375) and (-0.4186, 0.6444) .. (-0.4164, 0.6528)
1762 .. controls (-0.4067, 0.6807) and (-0.3521, 0.7255) .. (-0.3274, 0.6931)
1763 .. controls (-0.3070, 0.6694) and (-0.3336, 0.6432) .. (-0.3274, 0.6221)
1764 .. controls (-0.3249, 0.6055) and (-0.3059, 0.6028) .. (-0.2950, 0.6162)
1765 .. controls (-0.2867, 0.6265) and (-0.2838, 0.6558) .. (-0.2829, 0.6692)
1766 .. controls (-0.2775, 0.7444) and (-0.3333, 0.7652) .. (-0.3955, 0.7472)
1767 .. controls (-0.3950, 0.7586) and (-0.3916, 0.7684) .. (-0.3955, 0.7803)
1768 .. controls (-0.3986, 0.8016) and (-0.4109, 0.8096) .. (-0.4224, 0.8088)

```

```

1769 --cycle
1770 (-0.1391, 0.8077)
1771 .. controls (-0.1634, 0.8024) and (-0.1582, 0.7647) .. (-0.1487, 0.7492)
1772 .. controls (-0.1306, 0.7190) and (-0.1004, 0.7270) .. (-0.0652, 0.7073)
1773 -- (-0.0226, 0.6801)
1774 -- ( 0.0282, 0.6560)
1775 .. controls ( 0.0622, 0.6331) and ( 0.0955, 0.5639) .. ( 0.1219, 0.5259)
1776 .. controls ( 0.2125, 0.5714) and ( 0.1427, 0.6114) .. ( 0.1219, 0.6453)
1777 -- ( 0.1054, 0.6768)
1778 .. controls ( 0.0862, 0.7028) and ( 0.0448, 0.7080) .. ( 0.0115, 0.7299)
1779 .. controls (-0.0377, 0.7622) and (-0.0173, 0.7726) .. (-0.0822, 0.7918)
1780 .. controls (-0.0961, 0.7958) and (-0.1270, 0.8103) .. (-0.1391, 0.8077)
1781 --cycle
1782 (-0.5460, 0.7940)
1783 -- (-0.5911, 0.7166)
1784 .. controls (-0.5649, 0.7015) and (-0.5397, 0.7188) .. (-0.5308, 0.7556)
1785 .. controls (-0.5251, 0.7788) and (-0.5335, 0.7873) .. (-0.5460, 0.7940)
1786 --cycle
1787 (-0.2382, 0.7423)
1788 .. controls (-0.2453, 0.7424) and (-0.2512, 0.7383) .. (-0.2550, 0.7274)
1789 .. controls (-0.2635, 0.7026) and (-0.2353, 0.6726) .. (-0.2229, 0.6536)
1790 .. controls (-0.2031, 0.6234) and (-0.2020, 0.6105) .. (-0.1928, 0.5770)
1791 .. controls (-0.1763, 0.5803) and (-0.1499, 0.5890) .. (-0.1342, 0.5831)
1792 .. controls (-0.1112, 0.5745) and (-0.1047, 0.5481) .. (-0.0866, 0.5338)
1793 -- (-0.0397, 0.5102)
1794 -- ( 0.0664, 0.4219)
1795 .. controls ( 0.0874, 0.3954) and ( 0.0785, 0.3655) .. ( 0.1070, 0.3502)
1796 .. controls ( 0.1367, 0.3343) and ( 0.1690, 0.3592) .. ( 0.1732, 0.3899)
1797 .. controls ( 0.1755, 0.4075) and ( 0.1545, 0.4554) .. ( 0.1475, 0.4748)
1798 .. controls ( 0.0838, 0.4666) and ( 0.0509, 0.4836) .. ( 0.0454, 0.5515)
1799 .. controls (-0.0576, 0.5778) and (-0.0955, 0.6323) .. (-0.1754, 0.6949)
1800 .. controls (-0.1861, 0.7034) and (-0.2171, 0.7418) .. (-0.2382, 0.7423)
1801 --cycle
1802 (-0.5068, 0.6706)
1803 .. controls (-0.5119, 0.6724) and (-0.5194, 0.6726) .. (-0.5299, 0.6701)
1804 .. controls (-0.5512, 0.6413) and (-0.5242, 0.6333) .. (-0.5102, 0.6400)
1805 .. controls (-0.4981, 0.6457) and (-0.4916, 0.6653) .. (-0.5068, 0.6706)
1806 --cycle
1807 (-0.6356, 0.6402)
1808 -- (-0.6681, 0.5845)
1809 -- (-0.6588, 0.5684)
1810 .. controls (-0.6473, 0.5521) and (-0.6323, 0.5371) .. (-0.6265, 0.5174)
1811 .. controls (-0.6174, 0.4865) and (-0.6614, 0.4161) .. (-0.6950, 0.4206)
1812 .. controls (-0.7111, 0.4226) and (-0.7174, 0.4376) .. (-0.7460, 0.4507)
1813 -- (-0.7632, 0.4212)
1814 .. controls (-0.7629, 0.4042) and (-0.7611, 0.3875) .. (-0.7546, 0.3789)
1815 .. controls (-0.7424, 0.3626) and (-0.7129, 0.3612) .. (-0.6966, 0.3297)
1816 .. controls (-0.6823, 0.3022) and (-0.6963, 0.2741) .. (-0.6808, 0.2598)
1817 .. controls (-0.6602, 0.2410) and (-0.6495, 0.2720) .. (-0.6484, 0.2878)
1818 .. controls (-0.6461, 0.3229) and (-0.6488, 0.4046) .. (-0.6080, 0.4204)
1819 .. controls (-0.5750, 0.4330) and (-0.4980, 0.3514) .. (-0.4929, 0.3217)
1820 .. controls (-0.4895, 0.3019) and (-0.5044, 0.2671) .. (-0.4860, 0.2550)
1821 .. controls (-0.4691, 0.2439) and (-0.4582, 0.2679) .. (-0.4535, 0.2796)

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1822 .. controls (-0.4450, 0.3015) and (-0.4273, 0.3562) .. (-0.4401, 0.3771)
1823 .. controls (-0.4495, 0.3922) and (-0.5019, 0.4172) .. (-0.5296, 0.4507)
1824 .. controls (-0.5656, 0.4941) and (-0.5734, 0.5631) .. (-0.5973, 0.6021)
1825 .. controls (-0.6099, 0.6226) and (-0.6226, 0.6316) .. (-0.6356, 0.6402)
1826 --cycle
1827 ( 0.2242, 0.6110)
1828 -- ( 0.1816, 0.6025)
1829 -- ( 0.1816, 0.5855)
1830 .. controls ( 0.2117, 0.5815) and ( 0.2140, 0.5821) .. ( 0.2242, 0.6110)
1831 --cycle
1832 ( 0.3924, 0.6049)
1833 .. controls ( 0.3895, 0.6048) and ( 0.3860, 0.6036) .. ( 0.3820, 0.6011)
1834 .. controls ( 0.3535, 0.5835) and ( 0.3670, 0.5238) .. ( 0.3773, 0.5004)
1835 -- ( 0.3944, 0.5004)
1836 -- ( 0.4061, 0.5429)
1837 .. controls ( 0.4082, 0.5540) and ( 0.4130, 0.6056) .. ( 0.3924, 0.6049)
1838 --cycle
1839 (-0.2864, 0.5940)
1840 .. controls (-0.2904, 0.5793) and (-0.2950, 0.5676) .. (-0.2919, 0.5518)
1841 .. controls (-0.2769, 0.4768) and (-0.1616, 0.5041) .. (-0.2162, 0.5623)
1842 .. controls (-0.2236, 0.5702) and (-0.2346, 0.5747) .. (-0.2443, 0.5790)
1843 --cycle
1844 (-0.7010, 0.5280)
1845 -- (-0.7269, 0.4835)
1846 .. controls (-0.7207, 0.4876) and (-0.7144, 0.4952) .. (-0.7081, 0.5094)
1847 --cycle
1848 (-0.0992, 0.4748)
1849 -- (-0.2099, 0.4556)
1850 -- (-0.2888, 0.3790)
1851 -- (-0.3460, 0.3557)
1852 -- (-0.3389, 0.3218)
1853 .. controls (-0.3310, 0.2959) and (-0.3026, 0.2636) .. (-0.2781, 0.2927)
1854 .. controls (-0.2745, 0.2971) and (-0.2504, 0.3947) .. (-0.1948, 0.3764)
1855 .. controls (-0.1607, 0.3651) and (-0.1697, 0.2984) .. (-0.1588, 0.2536)
1856 -- (-0.1503, 0.2536)
1857 -- (-0.1503, 0.2450)
1858 -- (-0.1163, 0.2366)
1859 .. controls (-0.0968, 0.3059) and (-0.1262, 0.3371) .. (-0.1239, 0.3982)
1860 .. controls (-0.1229, 0.4261) and (-0.1067, 0.4484) .. (-0.0992, 0.4748)
1861 --cycle
1862 (-0.1503, 0.2450)
1863 -- (-0.1588, 0.2536)
1864 .. controls (-0.2292, 0.2544) and (-0.2730, 0.2893) .. (-0.2677, 0.2195)
1865 -- (-0.2609, 0.1855)
1866 .. controls (-0.2393, 0.1890) and (-0.2005, 0.2039) .. (-0.1909, 0.1753)
1867 .. controls (-0.1709, 0.1163) and (-0.2582, 0.0953) .. (-0.2387, 0.0533)
1868 .. controls (-0.2275, 0.0292) and (-0.1430, 0.0537) .. (-0.1361, 0.0692)
1869 .. controls (-0.1250, 0.0859) and (-0.1359, 0.1083) .. (-0.1361, 0.1259)
1870 .. controls (-0.1437, 0.1788) and (-0.1186, 0.1766) .. (-0.1503, 0.2450)
1871 --cycle
1872 ( 0.7348, 0.4408)
1873 .. controls ( 0.7113, 0.3774) and ( 0.7569, 0.3513) .. ( 0.7901, 0.3824)
1874 -- ( 0.7585, 0.4390)

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1875 --cycle
1876 ( 0.2071, 0.4153)
1877 .. controls ( 0.1984, 0.3706) and ( 0.2118, 0.3204) .. ( 0.2582, 0.3046)
1878 .. controls ( 0.2685, 0.3631) and ( 0.2706, 0.3931) .. ( 0.2071, 0.4153)
1879 --cycle
1880 (-0.0567, 0.3982)
1881 .. controls (-0.0558, 0.3230) and (-0.0460, 0.3456) .. (-0.0210, 0.2876)
1882 -- ( 0.0067, 0.1940)
1883 .. controls ( 0.0180, 0.1513) and ( 0.0026, 0.1332) .. ( 0.0454, 0.1089)
1884 -- ( 0.0767, 0.1940)
1885 -- ( 0.0546, 0.2621)
1886 -- ( 0.0406, 0.3185)
1887 -- (-0.0258, 0.3896)
1888 --cycle
1889 (-0.7969, 0.3634)
1890 -- (-0.8570, 0.2602)
1891 .. controls (-0.8515, 0.2550) and (-0.8469, 0.2514) .. (-0.8414, 0.2450)
1892 .. controls (-0.8020, 0.1990) and (-0.8201, 0.1971) .. (-0.7629, 0.1540)
1893 .. controls (-0.7462, 0.1414) and (-0.7054, 0.1023) .. (-0.6834, 0.1181)
1894 .. controls (-0.6662, 0.1304) and (-0.6813, 0.1625) .. (-0.6882, 0.1768)
1895 .. controls (-0.7213, 0.2456) and (-0.7865, 0.2417) .. (-0.8004, 0.2965)
1896 .. controls (-0.8052, 0.3154) and (-0.7990, 0.3413) .. (-0.7969, 0.3634)
1897 --cycle
1898 ( 0.8244, 0.3214)
1899 .. controls ( 0.8136, 0.3128) and ( 0.8080, 0.2984) .. ( 0.8114, 0.2706)
1900 .. controls ( 0.8314, 0.2739) and ( 0.8424, 0.2735) .. ( 0.8526, 0.2710)
1901 --cycle
1902 ( 0.5015, 0.3207)
1903 .. controls ( 0.4943, 0.3196) and ( 0.4861, 0.3171) .. ( 0.4766, 0.3130)
1904 .. controls ( 0.4611, 0.2827) and ( 0.4839, 0.2747) .. ( 0.5028, 0.2521)
1905 -- ( 0.5376, 0.1972)
1906 .. controls ( 0.5529, 0.1772) and ( 0.5728, 0.1698) .. ( 0.5845, 0.1426)
1907 .. controls ( 0.5979, 0.1115) and ( 0.5837, 0.0732) .. ( 0.5987, 0.0532)
1908 .. controls ( 0.6095, 0.0384) and ( 0.6236, 0.0428) .. ( 0.6350, 0.0532)
1909 .. controls ( 0.6681, 0.0842) and ( 0.6456, 0.1087) .. ( 0.6482, 0.1429)
1910 .. controls ( 0.6481, 0.1614) and ( 0.6596, 0.1802) .. ( 0.6482, 0.1967)
1911 .. controls ( 0.6390, 0.2131) and ( 0.5992, 0.2239) .. ( 0.5768, 0.2483)
1912 .. controls ( 0.5547, 0.2722) and ( 0.5524, 0.3288) .. ( 0.5015, 0.3207)
1913 --cycle
1914 (-0.5678, 0.3115)
1915 .. controls (-0.5832, 0.3118) and (-0.6140, 0.2810) .. (-0.6269, 0.2706)
1916 .. controls (-0.6185, 0.2412) and (-0.5926, 0.1953) .. (-0.5973, 0.1685)
1917 .. controls (-0.6029, 0.1373) and (-0.6320, 0.1239) .. (-0.6369, 0.0996)
1918 .. controls (-0.6406, 0.0816) and (-0.6303, 0.0652) .. (-0.6237, 0.0493)
1919 .. controls (-0.6147, 0.0275) and (-0.6000,-0.0443) .. (-0.5641,-0.0258)
1920 .. controls (-0.5134,-0.0018) and (-0.5902, 0.0606) .. (-0.5641, 0.1074)
1921 .. controls (-0.5332, 0.1697) and (-0.4913, 0.1444) .. (-0.4481, 0.1593)
1922 .. controls (-0.3913, 0.1792) and (-0.3439, 0.2446) .. (-0.3545, 0.3046)
1923 -- (-0.4568, 0.2201)
1924 -- (-0.5588, 0.2201)
1925 .. controls (-0.5549, 0.2390) and (-0.5305, 0.3109) .. (-0.5678, 0.3115)
1926 --cycle
1927 ( 0.2243, 0.2813)

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1928 -- (0.1631, 0.2450)
1929 -- (0.0965, 0.2281)
1930 -- (0.1689, 0.1131)
1931 -- (0.2065, 0.0861)
1932 .. controls (0.2453, 0.0564) and (0.2384, 0.0410) .. (0.2923, 0.0323)
1933 -- (0.2988,-0.0188)
1934 .. controls (0.2994,-0.0695) and (0.2657,-0.0796) .. (0.2249,-0.0579)
1935 .. controls (0.1337,-0.0093) and (0.1545, 0.0219) .. (0.1102, 0.0744)
1936 .. controls (0.0914, 0.0967) and (0.0807, 0.1010) .. (0.0539, 0.1089)
1937 .. controls (0.0562, 0.0613) and (0.0756,-0.0434) .. (0.0403,-0.0825)
1938 .. controls (0.0293,-0.0948) and (-0.0336,-0.1168) .. (-0.0567,-0.1294)
1939 .. controls (-0.0615,-0.1087) and (-0.0777,-0.0729) .. (-0.0703,-0.0546)
1940 .. controls (-0.0586,-0.0251) and (0.0562, 0.0040) .. (-0.0152, 0.0389)
1941 -- (-0.0397, 0.0480)
1942 -- (-0.0737, 0.0578)
1943 .. controls (-0.0806, 0.0391) and (-0.0849, 0.0192) .. (-0.1018, 0.0068)
1944 .. controls (-0.1154,-0.0032) and (-0.1352,-0.0018) .. (-0.1438,-0.0212)
1945 .. controls (-0.1562,-0.0491) and (-0.1117,-0.1243) .. (-0.0874,-0.1373)
1946 .. controls (-0.0745,-0.1434) and (-0.0687,-0.1394) .. (-0.0567,-0.1373)
1947 .. controls (-0.0358,-0.2033) and (-0.0062,-0.1612) .. (0.0370,-0.1500)
1948 -- (0.1050,-0.1379)
1949 .. controls (0.0882,-0.0871) and (0.0808,-0.0999) .. (0.0965,-0.0443)
1950 .. controls (0.1454,-0.0619) and (0.1336,-0.0743) .. (0.1664,-0.0940)
1951 .. controls (0.1897,-0.1081) and (0.2226,-0.1052) .. (0.2361,-0.1388)
1952 .. controls (0.2495,-0.1724) and (0.2245,-0.1963) .. (0.2412,-0.2584)
1953 .. controls (0.2526,-0.2569) and (0.2622,-0.2548) .. (0.2735,-0.2584)
1954 .. controls (0.2987,-0.2708) and (0.3225,-0.3241) .. (0.3212,-0.3506)
1955 .. controls (0.3203,-0.3711) and (0.3053,-0.3950) .. (0.3008,-0.4443)
1956 -- (0.2497,-0.4187)
1957 .. controls (0.2599,-0.4479) and (0.2621,-0.4475) .. (0.2905,-0.4528)
1958 .. controls (0.2877,-0.4715) and (0.2799,-0.4998) .. (0.2905,-0.5182)
1959 .. controls (0.2991,-0.5392) and (0.3228,-0.5357) .. (0.3346,-0.5182)
1960 .. controls (0.3506,-0.4943) and (0.3355,-0.4515) .. (0.3532,-0.4203)
1961 .. controls (0.3716,-0.3881) and (0.4096,-0.3844) .. (0.4084,-0.3499)
1962 .. controls (0.4074,-0.3241) and (0.3866,-0.3087) .. (0.3728,-0.2897)
1963 -- (0.3426,-0.2337)
1964 -- (0.2989,-0.1879)
1965 .. controls (0.2810,-0.1587) and (0.2976,-0.1327) .. (0.3187,-0.1323)
1966 .. controls (0.3342,-0.1319) and (0.3489,-0.1451) .. (0.3603,-0.1541)
1967 .. controls (0.3817,-0.1712) and (0.4026,-0.1894) .. (0.4144,-0.2146)
1968 .. controls (0.4299,-0.2477) and (0.4289,-0.2977) .. (0.4712,-0.3110)
1969 .. controls (0.4957,-0.3188) and (0.5167,-0.3024) .. (0.5044,-0.2753)
1970 .. controls (0.4967,-0.2585) and (0.4769,-0.2471) .. (0.4676,-0.2227)
1971 .. controls (0.4582,-0.1981) and (0.4681,-0.1743) .. (0.4488,-0.1492)
1972 .. controls (0.4286,-0.1227) and (0.3809,-0.1095) .. (0.3621,-0.0696)
1973 .. controls (0.3402,-0.0230) and (0.3896, 0.0270) .. (0.3092, 0.0408)
1974 -- (0.3532, 0.1933)
1975 -- (0.3944, 0.2536)
1976 -- (0.3433, 0.2765)
1977 --cycle
1978 (0.2497, 0.2450)
1979 -- (0.2782, 0.2025)
1980 .. controls (0.2843, 0.1911) and (0.2884, 0.1815) .. (0.2900, 0.1685)

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1981 .. controls ( 0.3021, 0.0654) and ( 0.1495, 0.1479) .. ( 0.2135, 0.2245)
1982 .. controls ( 0.2246, 0.2378) and ( 0.2346, 0.2396) .. ( 0.2497, 0.2450)
1983 --cycle
1984 ( 0.8836, 0.2157)
1985 .. controls ( 0.8688, 0.2061) and ( 0.8571, 0.1889) .. ( 0.8687, 0.1736)
1986 .. controls ( 0.8785, 0.1608) and ( 0.8967, 0.1613) .. ( 0.9161, 0.1578)
1987 --cycle
1988 (-0.3035, 0.1940)
1989 .. controls (-0.3340, 0.1390) and (-0.3508, 0.1491) .. (-0.3624, 0.1300)
1990 .. controls (-0.3738, 0.1112) and (-0.3588, 0.0896) .. (-0.3288, 0.0972)
1991 .. controls (-0.2842, 0.1084) and (-0.2392, 0.1714) .. (-0.3035, 0.1940)
1992 --cycle
1993 ( 0.4710, 0.1940)
1994 .. controls ( 0.4330, 0.1525) and ( 0.3961, 0.1447) .. ( 0.4114, 0.0833)
1995 .. controls ( 0.4294, 0.0897) and ( 0.4596, 0.1056) .. ( 0.4776, 0.0984)
1996 .. controls ( 0.5010, 0.0888) and ( 0.5182, 0.0420) .. ( 0.4925, 0.0231)
1997 .. controls ( 0.4698, 0.0064) and ( 0.4500, 0.0299) .. ( 0.3944, 0.0153)
1998 .. controls ( 0.4243,-0.0189) and ( 0.4618,-0.0333) .. ( 0.4765,-0.0621)
1999 .. controls ( 0.4928,-0.0939) and ( 0.4729,-0.1183) .. ( 0.4881,-0.1406)
2000 .. controls ( 0.4977,-0.1549) and ( 0.5241,-0.1630) .. ( 0.5425,-0.1894)
2001 .. controls ( 0.5557,-0.2085) and ( 0.5562,-0.2282) .. ( 0.5657,-0.2485)
2002 -- ( 0.6122,-0.3251)
2003 .. controls ( 0.6335,-0.3720) and ( 0.6160,-0.3973) .. ( 0.6323,-0.4443)
2004 .. controls ( 0.6532,-0.5042) and ( 0.6754,-0.5231) .. ( 0.6973,-0.5440)
2005 -- ( 0.7289,-0.4899)
2006 .. controls ( 0.7138,-0.4739) and ( 0.6992,-0.4579) .. ( 0.6886,-0.4358)
2007 -- ( 0.6489,-0.2690)
2008 .. controls ( 0.6485,-0.2445) and ( 0.6654,-0.2180) .. ( 0.6598,-0.2002)
2009 .. controls ( 0.6522,-0.1752) and ( 0.6202,-0.1899) .. ( 0.5938,-0.1612)
2010 .. controls ( 0.5619,-0.1263) and ( 0.5907,-0.0980) .. ( 0.5797,-0.0720)
2011 .. controls ( 0.5714,-0.0525) and ( 0.5434,-0.0441) .. ( 0.5374,-0.0184)
2012 .. controls ( 0.5319, 0.0056) and ( 0.5522, 0.0300) .. ( 0.5533, 0.0578)
2013 .. controls ( 0.5548, 0.0943) and ( 0.4981, 0.1701) .. ( 0.4710, 0.1940)
2014 --cycle
2015 (-0.9001, 0.1862)
2016 -- (-0.9386, 0.1201)
2017 .. controls (-0.9374, 0.1181) and (-0.9371, 0.1158) .. (-0.9356, 0.1139)
2018 .. controls (-0.9242, 0.0996) and (-0.9046, 0.0893) .. (-0.8911, 0.0660)
2019 .. controls (-0.8684, 0.0268) and (-0.8960, 0.0297) .. (-0.8592,-0.0296)
2020 .. controls (-0.8262,-0.0830) and (-0.8655,-0.1092) .. (-0.7971,-0.1209)
2021 -- (-0.7875, 0.0068)
2022 -- (-0.8579, 0.1174)
2023 --cycle
2024 (-0.4453, 0.0979)
2025 .. controls (-0.4922, 0.0916) and (-0.4988, 0.0347) .. (-0.4759, 0.0116)
2026 .. controls (-0.4491,-0.0149) and (-0.4165, 0.0208) .. (-0.3900, 0.0116)
2027 .. controls (-0.3555,-0.0011) and (-0.3800,-0.0410) .. (-0.3751,-0.0698)
2028 -- (-0.3537,-0.1294)
2029 .. controls (-0.3428,-0.1879) and (-0.4042,-0.1777) .. (-0.3801,-0.2656)
2030 .. controls (-0.3617,-0.2531) and (-0.3352,-0.2292) .. (-0.3122,-0.2330)
2031 .. controls (-0.2845,-0.2375) and (-0.2669,-0.2694) .. (-0.2543,-0.2911)
2032 .. controls (-0.2183,-0.3533) and (-0.2004,-0.3613) .. (-0.2184,-0.4358)
2033 .. controls (-0.3300,-0.4097) and (-0.2723,-0.5065) .. (-0.2483,-0.5549)

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2034 -- (-0.2129,-0.6314)
2035 .. controls (-0.2017,-0.6508) and (-0.1900,-0.6661) .. (-0.1670,-0.6712)
2036 .. controls (-0.1211,-0.6813) and (-0.1100,-0.6527) .. (-0.1163,-0.6145)
2037 .. controls (-0.1327,-0.6119) and (-0.1427,-0.6118) .. (-0.1568,-0.6009)
2038 .. controls (-0.1780,-0.5845) and (-0.2123,-0.5041) .. (-0.2042,-0.4783)
2039 .. controls (-0.1947,-0.4484) and (-0.1575,-0.4121) .. (-0.1333,-0.3932)
2040 -- (-0.1527,-0.3251)
2041 -- (-0.1588,-0.2656)
2042 .. controls (-0.2187,-0.2715) and (-0.2083,-0.2536) .. (-0.2457,-0.2163)
2043 .. controls (-0.2684,-0.1935) and (-0.2911,-0.1886) .. (-0.2996,-0.1546)
2044 -- (-0.2996,-0.1209)
2045 -- (-0.3232,-0.0698)
2046 .. controls (-0.3283,-0.0435) and (-0.3124,-0.0260) .. (-0.3175,-0.0041)
2047 .. controls (-0.3251, 0.0283) and (-0.3891, 0.0917) .. (-0.4227, 0.0973)
2048 .. controls (-0.4311, 0.0987) and (-0.4386, 0.0989) .. (-0.4453, 0.0979)
2049 --cycle
2050 (-0.1163,-0.6145)
2051 -- (-0.0812,-0.6009)
2052 -- (-0.0509,-0.4868)
2053 -- (-0.0567,-0.4528)
2054 .. controls (-0.1227,-0.4845) and (-0.1350,-0.5483) .. (-0.1163,-0.6145)
2055 --cycle
2056 ( 0.9165, 0.0573)
2057 .. controls ( 0.8982, 0.0512) and ( 0.8800, 0.0260) .. ( 0.8880,-0.0013)
2058 .. controls ( 0.8973,-0.0334) and ( 0.9330,-0.0408) .. ( 0.9466,-0.0703)
2059 .. controls ( 0.9528,-0.0838) and ( 0.9514,-0.0964) .. ( 0.9506,-0.1091)
2060 -- ( 1.0000,-0.0243)
2061 .. controls ( 0.9816,-0.0179) and ( 0.9678,-0.0119) .. ( 0.9563, 0.0077)
2062 .. controls ( 0.9465, 0.0244) and ( 0.9476, 0.0488) .. ( 0.9340, 0.0564)
2063 .. controls ( 0.9288, 0.0593) and ( 0.9227, 0.0593) .. ( 0.9165, 0.0573)
2064 --cycle
2065 (-0.7064, 0.0069)
2066 .. controls (-0.7128, 0.0077) and (-0.7187, 0.0075) .. (-0.7237, 0.0061)
2067 .. controls (-0.7255, 0.0030) and (-0.7310, 0.0025) .. (-0.7316,-0.0115)
2068 .. controls (-0.7321,-0.0230) and (-0.7071,-0.1058) .. (-0.6984,-0.1096)
2069 .. controls (-0.6872,-0.1176) and (-0.6721,-0.1116) .. (-0.6609,-0.1096)
2070 .. controls (-0.6502,-0.1046) and (-0.6316,-0.0986) .. (-0.6242,-0.0900)
2071 .. controls (-0.5901,-0.0507) and (-0.6615, 0.0017) .. (-0.7064, 0.0069)
2072 --cycle
2073 (-1.0000, 0.0068)
2074 -- (-1.0000, 0.0020)
2075 -- (-0.9548,-0.0788)
2076 .. controls (-0.9170,-0.0310) and (-0.9342,-0.0158) .. (-1.0000, 0.0068)
2077 --cycle
2078 (-0.2643, 0.0054)
2079 .. controls (-0.2853,-0.0295) and (-0.2523,-0.0713) .. (-0.2182,-0.0843)
2080 .. controls (-0.2024,-0.0902) and (-0.1781,-0.0944) .. (-0.1687,-0.0757)
2081 .. controls (-0.1530,-0.0441) and (-0.2378, 0.0095) .. (-0.2643, 0.0054)
2082 --cycle
2083 ( 0.6299,-0.0102)
2084 .. controls ( 0.6155,-0.0145) and ( 0.6071,-0.0342) .. ( 0.6128,-0.0510)
2085 .. controls ( 0.6198,-0.0721) and ( 0.6440,-0.0790) .. ( 0.6606,-0.0986)
2086 .. controls ( 0.6738,-0.1143) and ( 0.6761,-0.1328) .. ( 0.6948,-0.1437)

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2087 .. controls ( 0.7092,-0.1520) and ( 0.7311,-0.1484) .. ( 0.7401,-0.1664)
2088 .. controls ( 0.7461,-0.1784) and ( 0.7351,-0.2363) .. ( 0.7348,-0.2570)
2089 .. controls ( 0.7336,-0.3524) and ( 0.7289,-0.3324) .. ( 0.7620,-0.4187)
2090 .. controls ( 0.7631,-0.4216) and ( 0.7642,-0.4246) .. ( 0.7652,-0.4275)
2091 -- ( 0.8003,-0.3672)
2092 .. controls ( 0.7976,-0.3636) and ( 0.7942,-0.3606) .. ( 0.7918,-0.3568)
2093 .. controls ( 0.7778,-0.3349) and ( 0.7645,-0.2537) .. ( 0.7970,-0.2417)
2094 .. controls ( 0.8206,-0.2330) and ( 0.8347,-0.2671) .. ( 0.8432,-0.2822)
2095 -- ( 0.8469,-0.2872)
2096 -- ( 0.8787,-0.2326)
2097 -- ( 0.8594,-0.1993)
2098 .. controls ( 0.8496,-0.1847) and ( 0.7996,-0.1314) .. ( 0.7847,-0.1281)
2099 .. controls ( 0.7712,-0.1229) and ( 0.7642,-0.1268) .. ( 0.7518,-0.1281)
2100 .. controls ( 0.7451,-0.1148) and ( 0.7397,-0.1014) .. ( 0.7293,-0.0886)
2101 -- ( 0.6461,-0.0117)
2102 .. controls ( 0.6402,-0.0090) and ( 0.6347,-0.0087) .. ( 0.6299,-0.0102)
2103 --cycle
2104 (-0.5178,-0.0844)
2105 .. controls (-0.5451,-0.0820) and (-0.5852,-0.0947) .. (-0.5902,-0.1144)
2106 .. controls (-0.6007,-0.1557) and (-0.5621,-0.1731) .. (-0.5414,-0.1997)
2107 .. controls (-0.5274,-0.2177) and (-0.5229,-0.2355) .. (-0.5044,-0.2525)
2108 .. controls (-0.4888,-0.2669) and (-0.4706,-0.2705) .. (-0.4543,-0.2923)
2109 .. controls (-0.4420,-0.3087) and (-0.4220,-0.3707) .. (-0.4141,-0.3932)
2110 .. controls (-0.3620,-0.3875) and (-0.3060,-0.4031) .. (-0.3060,-0.3592)
2111 .. controls (-0.3060,-0.3272) and (-0.3358,-0.3272) .. (-0.3716,-0.3008)
2112 .. controls (-0.4367,-0.2529) and (-0.4253,-0.2451) .. (-0.4621,-0.1914)
2113 .. controls (-0.4700,-0.1800) and (-0.4814,-0.1685) .. (-0.4867,-0.1556)
2114 .. controls (-0.4970,-0.1308) and (-0.4804,-0.1088) .. (-0.4966,-0.0923)
2115 .. controls (-0.5011,-0.0877) and (-0.5087,-0.0853) .. (-0.5178,-0.0844)
2116 --cycle
2117 (-0.4165,-0.0846)
2118 .. controls (-0.4357,-0.0807) and (-0.4622,-0.1075) .. (-0.4395,-0.1440)
2119 .. controls (-0.4316,-0.1566) and (-0.4254,-0.1571) .. (-0.4141,-0.1634)
2120 .. controls (-0.4094,-0.1522) and (-0.4042,-0.1415) .. (-0.4019,-0.1294)
2121 .. controls (-0.3960,-0.1004) and (-0.4049,-0.0870) .. (-0.4165,-0.0846)
2122 --cycle
2123 (-0.9358,-0.1125)
2124 -- (-0.8813,-0.2098)
2125 .. controls (-0.8768,-0.1903) and (-0.8656,-0.1673) .. (-0.8723,-0.1485)
2126 .. controls (-0.8801,-0.1269) and (-0.9022,-0.1274) .. (-0.9358,-0.1125)
2127 --cycle
2128 ( 0.1455,-0.1458)
2129 .. controls ( 0.1402,-0.1449) and ( 0.1336,-0.1452) .. ( 0.1255,-0.1471)
2130 .. controls ( 0.0901,-0.1850) and ( 0.1064,-0.2454) .. ( 0.1360,-0.2301)
2131 .. controls ( 0.1569,-0.2194) and ( 0.1827,-0.1522) .. ( 0.1455,-0.1458)
2132 --cycle
2133 (-0.1477,-0.1474)
2134 .. controls (-0.1646,-0.1458) and (-0.1813,-0.1543) .. (-0.1847,-0.1659)
2135 .. controls (-0.1889,-0.1806) and (-0.1612,-0.2953) .. (-0.1163,-0.2315)
2136 -- (-0.0420,-0.4418)
2137 .. controls (-0.0291,-0.4661) and (-0.0068,-0.4600) .. ( 0.0136,-0.4880)
2138 .. controls ( 0.0294,-0.5097) and ( 0.0259,-0.5331) .. ( 0.0419,-0.5487)
2139 .. controls ( 0.0694,-0.5755) and ( 0.1462,-0.5710) .. ( 0.1798,-0.6001)

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2140 -- ( 0.2188,-0.6436)
2141 .. controls ( 0.2392,-0.6605) and ( 0.2566,-0.6577) .. ( 0.2804,-0.6838)
2142 .. controls ( 0.3122,-0.7186) and ( 0.3037,-0.7586) .. ( 0.3603,-0.7592)
2143 .. controls ( 0.3537,-0.7217) and ( 0.3358,-0.6781) .. ( 0.3603,-0.6427)
2144 .. controls ( 0.3743,-0.6222) and ( 0.3978,-0.6232) .. ( 0.4032,-0.6039)
2145 .. controls ( 0.4084,-0.5852) and ( 0.3901,-0.5654) .. ( 0.3712,-0.5741)
2146 .. controls ( 0.3573,-0.5804) and ( 0.3558,-0.5936) .. ( 0.3518,-0.6044)
2147 .. controls ( 0.3319,-0.6046) and ( 0.2996,-0.6092) .. ( 0.2842,-0.6044)
2148 .. controls ( 0.2568,-0.5917) and ( 0.2515,-0.5648) .. ( 0.2231,-0.5501)
2149 .. controls ( 0.1960,-0.5359) and ( 0.1632,-0.5421) .. ( 0.1413,-0.5292)
2150 -- ( 0.0626,-0.4601)
2151 .. controls ( 0.0525,-0.4430) and ( 0.0547,-0.4207) .. ( 0.0440,-0.4065)
2152 .. controls ( 0.0320,-0.3906) and ( 0.0076,-0.3898) .. (-0.0104,-0.3714)
2153 .. controls (-0.0515,-0.3289) and ( 0.0146,-0.2721) .. (-0.0737,-0.2358)
2154 .. controls (-0.0903,-0.2290) and (-0.0917,-0.2313) .. (-0.1098,-0.2315)
2155 -- (-0.1098,-0.1892)
2156 .. controls (-0.1137,-0.1607) and (-0.1308,-0.1491) .. (-0.1477,-0.1474)
2157 --cycle
2158 (-0.7679,-0.1481)
2159 .. controls (-0.8119,-0.1523) and (-0.8157,-0.2051) .. (-0.8303,-0.2401)
2160 -- (-0.8453,-0.2740)
2161 -- (-0.8299,-0.3015)
2162 .. controls (-0.7861,-0.2968) and (-0.8116,-0.2403) .. (-0.7732,-0.2278)
2163 .. controls (-0.7561,-0.2223) and (-0.7349,-0.2415) .. (-0.7204,-0.2497)
2164 .. controls (-0.6711,-0.2774) and (-0.6473,-0.2864) .. (-0.6524,-0.3506)
2165 -- (-0.6787,-0.3422)
2166 .. controls (-0.6786,-0.3475) and (-0.6826,-0.3544) .. (-0.6787,-0.3655)
2167 .. controls (-0.6635,-0.4244) and (-0.5943,-0.3658) .. (-0.5763,-0.3760)
2168 .. controls (-0.5586,-0.3861) and (-0.5497,-0.4251) .. (-0.5357,-0.4418)
2169 .. controls (-0.5118,-0.4701) and (-0.4694,-0.4662) .. (-0.4504,-0.5047)
2170 .. controls (-0.4231,-0.5599) and (-0.4535,-0.6772) .. (-0.4451,-0.7421)
2171 .. controls (-0.4389,-0.7901) and (-0.4023,-0.8005) .. (-0.3912,-0.8443)
2172 .. controls (-0.3883,-0.8558) and (-0.3874,-0.8667) .. (-0.3869,-0.8774)
2173 -- (-0.3386,-0.8778)
2174 .. controls (-0.3371,-0.8645) and (-0.3342,-0.8523) .. (-0.3394,-0.8358)
2175 .. controls (-0.3448,-0.8167) and (-0.3914,-0.7567) .. (-0.3962,-0.6996)
2176 .. controls (-0.4039,-0.6074) and (-0.3294,-0.5871) .. (-0.3545,-0.4954)
2177 -- (-0.3886,-0.5039)
2178 -- (-0.4196,-0.4442)
2179 -- (-0.4864,-0.4090)
2180 -- (-0.5345,-0.3241)
2181 -- (-0.6106,-0.2802)
2182 -- (-0.6106,-0.1975)
2183 .. controls (-0.6301,-0.2027) and (-0.6486,-0.2101) .. (-0.6694,-0.2022)
2184 .. controls (-0.7004,-0.1904) and (-0.7133,-0.1559) .. (-0.7464,-0.1495)
2185 .. controls (-0.7544,-0.1479) and (-0.7616,-0.1475) .. (-0.7679,-0.1481)
2186 --cycle
2187 ( 0.0029,-0.2060)
2188 .. controls (-0.0139,-0.2731) and ( 0.0196,-0.2608) .. ( 0.0476,-0.3014)
2189 .. controls ( 0.0682,-0.3314) and ( 0.0511,-0.3569) .. ( 0.0750,-0.3784)
2190 .. controls ( 0.0974,-0.3988) and ( 0.1304,-0.3876) .. ( 0.1549,-0.4019)
2191 .. controls ( 0.1795,-0.4164) and ( 0.1878,-0.4529) .. ( 0.1987,-0.4783)
2192 .. controls ( 0.2461,-0.4539) and ( 0.2519,-0.4021) .. ( 0.2180,-0.3618)

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2193 .. controls ( 0.1964,-0.3362) and ( 0.1652,-0.3426) .. ( 0.1414,-0.3257)
2194 .. controls ( 0.1198,-0.3103) and ( 0.1183,-0.2881) .. ( 0.1007,-0.2689)
2195 .. controls ( 0.0838,-0.2504) and ( 0.0265,-0.2166) .. ( 0.0029,-0.2060)
2196 --cycle
2197 ( 0.2327,-0.2826)
2198 .. controls ( 0.1961,-0.2955) and ( 0.1961,-0.3123) .. ( 0.2327,-0.3251)
2199 --cycle
2200 (-0.7548,-0.3137)
2201 .. controls (-0.7774,-0.3164) and (-0.7890,-0.3323) .. (-0.7986,-0.3573)
2202 -- (-0.7759,-0.3979)
2203 .. controls (-0.7735,-0.3968) and (-0.7711,-0.3964) .. (-0.7688,-0.3946)
2204 -- (-0.7205,-0.3166)
2205 .. controls (-0.7341,-0.3135) and (-0.7454,-0.3126) .. (-0.7548,-0.3137)
2206 --cycle
2207 ( 0.4114,-0.3847)
2208 .. controls ( 0.4216,-0.4136) and ( 0.4238,-0.4142) .. ( 0.4540,-0.4102)
2209 -- ( 0.4540,-0.3932)
2210 --cycle
2211 ( 0.5395,-0.3997)
2212 .. controls ( 0.5263,-0.3990) and ( 0.5044,-0.4032) .. ( 0.4625,-0.4018)
2213 -- ( 0.4780,-0.4954)
2214 .. controls ( 0.4757,-0.5287) and ( 0.4518,-0.5542) .. ( 0.4648,-0.5776)
2215 .. controls ( 0.4852,-0.6142) and ( 0.5202,-0.5603) .. ( 0.5614,-0.5929)
2216 .. controls ( 0.5752,-0.6038) and ( 0.6063,-0.6359) .. ( 0.6275,-0.6638)
2217 -- ( 0.6570,-0.6132)
2218 .. controls ( 0.6460,-0.6042) and ( 0.6347,-0.5954) .. ( 0.6268,-0.5865)
2219 -- ( 0.5937,-0.5346)
2220 .. controls ( 0.5648,-0.5023) and ( 0.5031,-0.4880) .. ( 0.5646,-0.4273)
2221 .. controls ( 0.5574,-0.4062) and ( 0.5528,-0.4005) .. ( 0.5395,-0.3997)
2222 --cycle
2223 (-0.6609,-0.4273)
2224 .. controls (-0.7027,-0.4247) and (-0.7300,-0.4414) .. (-0.7397,-0.4624)
2225 -- (-0.7047,-0.5249)
2226 .. controls (-0.7013,-0.5263) and (-0.6989,-0.5282) .. (-0.6950,-0.5294)
2227 .. controls (-0.6935,-0.4878) and (-0.6933,-0.4806) .. (-0.6609,-0.4528)
2228 --cycle
2229 (-0.5689,-0.4528)
2230 .. controls (-0.6368,-0.4677) and (-0.6352,-0.5020) .. (-0.6354,-0.5634)
2231 -- (-0.5757,-0.6071)
2232 -- (-0.5162,-0.6826)
2233 .. controls (-0.5073,-0.6508) and (-0.5037,-0.6125) .. (-0.5241,-0.5838)
2234 .. controls (-0.5384,-0.5639) and (-0.5622,-0.5584) .. (-0.5689,-0.5361)
2235 .. controls (-0.5775,-0.5167) and (-0.5648,-0.4918) .. (-0.5689,-0.4528)
2236 --cycle
2237 (-0.6354,-0.5634)
2238 .. controls (-0.6583,-0.5576) and (-0.6713,-0.5579) .. (-0.6839,-0.5619)
2239 -- (-0.6487,-0.6248)
2240 .. controls (-0.6395,-0.6053) and (-0.6326,-0.5852) .. (-0.6354,-0.5634)
2241 --cycle
2242 (-0.0056,-0.5890)
2243 .. controls (-0.0554,-0.6155) and (-0.0426,-0.6370) .. (-0.0606,-0.6818)
2244 -- (-0.1199,-0.7847)
2245 .. controls (-0.1298,-0.8015) and (-0.1531,-0.8317) .. (-0.1499,-0.8510)

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2246 .. controls (-0.1482,-0.8615) and (-0.1397,-0.8702) .. (-0.1295,-0.8795)
2247 -- (-0.0507,-0.8802)
2248 .. controls (-0.0629,-0.8583) and (-0.0745,-0.8380) .. (-0.0742,-0.8358)
2249 .. controls (-0.0792,-0.8239) and (-0.0776,-0.8135) .. (-0.0742,-0.8027)
2250 .. controls (-0.0460,-0.7520) and ( 0.0016,-0.7834) .. ( 0.0277,-0.7780)
2251 .. controls ( 0.0760,-0.7679) and ( 0.1284,-0.6914) .. ( 0.1207,-0.6405)
2252 .. controls ( 0.1150,-0.6017) and ( 0.0841,-0.6082) .. ( 0.0711,-0.6267)
2253 .. controls ( 0.0620,-0.6397) and ( 0.0556,-0.7141) .. ( 0.0539,-0.7336)
2254 .. controls (-0.0413,-0.7085) and ( 0.0139,-0.6637) .. (-0.0056,-0.5890)
2255 --cycle
2256 ( 0.4284,-0.6571)
2257 .. controls ( 0.4285,-0.7307) and ( 0.4284,-0.7652) .. ( 0.5135,-0.7336)
2258 .. controls ( 0.5170,-0.7469) and ( 0.5220,-0.7585) .. ( 0.5179,-0.7726)
2259 .. controls ( 0.5091,-0.8019) and ( 0.4473,-0.8546) .. ( 0.4851,-0.8847)
2260 -- ( 0.4987,-0.8848)
2261 -- ( 0.5768,-0.7509)
2262 .. controls ( 0.5767,-0.7509) and ( 0.5767,-0.7507) .. ( 0.5767,-0.7507)
2263 .. controls ( 0.5412,-0.6652) and ( 0.5083,-0.6726) .. ( 0.4284,-0.6571)
2264 --cycle
2265 (-0.2914,-0.6672)
2266 .. controls (-0.2998,-0.6666) and (-0.3106,-0.6686) .. (-0.3250,-0.6743)
2267 .. controls (-0.3545,-0.7128) and (-0.3081,-0.7358) .. (-0.2850,-0.7678)
2268 .. controls (-0.2710,-0.7873) and (-0.2601,-0.8137) .. (-0.2351,-0.8216)
2269 .. controls (-0.2083,-0.8301) and (-0.1916,-0.8105) .. (-0.1960,-0.7845)
2270 .. controls (-0.2008,-0.7566) and (-0.2232,-0.7418) .. (-0.2396,-0.7216)
2271 .. controls (-0.2612,-0.6950) and (-0.2660,-0.6690) .. (-0.2914,-0.6672)
2272 --cycle
2273 (-0.5641,-0.6998)
2274 .. controls (-0.5850,-0.6984) and (-0.5808,-0.7367) .. (-0.5766,-0.7507)
2275 .. controls (-0.5748,-0.7566) and (-0.5723,-0.7598) .. (-0.5702,-0.7648)
2276 -- (-0.5492,-0.8022)
2277 .. controls (-0.5310,-0.8247) and (-0.5120,-0.8367) .. (-0.5052,-0.8613)
2278 .. controls (-0.5044,-0.8642) and (-0.5062,-0.8717) .. (-0.5063,-0.8763)
2279 -- (-0.4585,-0.8767)
2280 .. controls (-0.4596,-0.7984) and (-0.5013,-0.7963) .. (-0.5234,-0.7583)
2281 .. controls (-0.5344,-0.7394) and (-0.5352,-0.7120) .. (-0.5535,-0.7030)
2282 .. controls (-0.5576,-0.7010) and (-0.5611,-0.7000) .. (-0.5641,-0.6998)
2283 --cycle
2284 ( 0.1990,-0.7341)
2285 .. controls ( 0.1094,-0.7768) and ( 0.2330,-0.8330) .. ( 0.2586,-0.8828)
2286 -- ( 0.3183,-0.8833)
2287 .. controls ( 0.3165,-0.8684) and ( 0.3066,-0.8565) .. ( 0.2991,-0.8428)
2288 .. controls ( 0.2762,-0.8010) and ( 0.2508,-0.7418) .. ( 0.1990,-0.7341)
2289 --cycle
2290 ( 0.3603,-0.7592)
2291 -- ( 0.3859,-0.8188)
2292 .. controls ( 0.4178,-0.7853) and ( 0.4108,-0.7527) .. ( 0.3603,-0.7592)
2293 --cycle
2294 ( 0.4369,-0.8443)
2295 .. controls ( 0.4147,-0.8480) and ( 0.3837,-0.8661) .. ( 0.3628,-0.8837)
2296 -- ( 0.4240,-0.8842)
2297 .. controls ( 0.4307,-0.8690) and ( 0.4358,-0.8541) .. ( 0.4369,-0.8443)
2298 --cycle

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2299 (-0.3205,-0.8528)
2300 -- (-0.3266,-0.8779)
2301 -- (-0.2773,-0.8783)
2302 .. controls (-0.2800,-0.8719) and (-0.2850,-0.8655) .. (-0.2963,-0.8600)
2303 --cycle
2304 ( 0.1093,-0.8568)
2305 .. controls ( 0.0964,-0.8568) and ( 0.0834,-0.8587) .. ( 0.0710,-0.8600)
2306 .. controls ( 0.0605,-0.8611) and ( 0.0403,-0.8617) .. ( 0.0312,-0.8664)
2307 .. controls ( 0.0240,-0.8701) and ( 0.0203,-0.8751) .. ( 0.0184,-0.8808)
2308 -- ( 0.1002,-0.8815)
2309 -- ( 0.1050,-0.8698)
2310 -- ( 0.1085,-0.8815)
2311 -- ( 0.1641,-0.8820)
2312 .. controls ( 0.1606,-0.8757) and ( 0.1553,-0.8698) .. ( 0.1463,-0.8649)
2313 .. controls ( 0.1347,-0.8586) and ( 0.1221,-0.8568) .. ( 0.1093,-0.8568)
2314 --cycle
2315 ;
2316 }
2317 }
2318 \fi

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hex/terrain/light woods

The draw style for light woods. The pattern is filled with light green, and outline is not drawn.

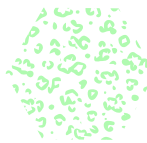
```

2319 \tikzset{
2320 hex/terrain/light woods/.style={
2321   draw=none,
2322   fill={rgb,100:red,69;green,98;blue,69}
2323 }
2324 }

```

hex/terrain/light woods

Next, we have light woods.



```

2325 \ifhex@terrain@pic
2326 \tikzset{
2327 hex/terrain/light woods/.pic={
2328   \path[hex/terrain/light woods,pic actions,draw=none]
2329     (-0.4795, 0.8736)
2330     -- (-0.5104, 0.8207)
2331     .. controls (-0.5041, 0.8191) and (-0.4967, 0.8182) .. (-0.4854, 0.8192)
2332     -- (-0.4770, 0.8108)
2333     -- (-0.4854, 0.7856)
2334     -- (-0.5190, 0.8023)
2335     .. controls (-0.5219, 0.7975) and (-0.5245, 0.7958) .. (-0.5272, 0.7916)

```

```

2336 -- (-0.5881, 0.6872)
2337 .. controls (-0.5849, 0.6876) and (-0.5819, 0.6876) .. (-0.5782, 0.6885)
2338 .. controls (-0.5524, 0.6946) and (-0.5387, 0.7153) .. (-0.5182, 0.7298)
2339 .. controls (-0.4841, 0.7540) and (-0.4420, 0.7539) .. (-0.4346, 0.7864)
2340 .. controls (-0.4295, 0.8088) and (-0.4470, 0.8265) .. (-0.4572, 0.8444)
2341 .. controls (-0.4631, 0.8549) and (-0.4670, 0.8646) .. (-0.4707, 0.8736)
2342 --cycle
2343 (-0.3185, 0.8722)
2344 .. controls (-0.3478, 0.8487) and (-0.3526, 0.8080) .. (-0.3290, 0.7808)
2345 .. controls (-0.3140, 0.7633) and (-0.2394, 0.7433) .. (-0.2165, 0.7459)
2346 .. controls (-0.1895, 0.7488) and (-0.1787, 0.7643) .. (-0.1561, 0.7725)
2347 .. controls (-0.1380, 0.7791) and (-0.1179, 0.7766) .. (-0.1025, 0.7906)
2348 .. controls (-0.0719, 0.8182) and (-0.0936, 0.8427) .. (-0.1240, 0.8528)
2349 -- (-0.1323, 0.8192)
2350 -- (-0.1912, 0.8359)
2351 .. controls (-0.1985, 0.8023) and (-0.1999, 0.7965) .. (-0.2332, 0.7856)
2352 .. controls (-0.2512, 0.8363) and (-0.2775, 0.8009) .. (-0.2909, 0.8240)
2353 .. controls (-0.2975, 0.8355) and (-0.2884, 0.8535) .. (-0.2756, 0.8719)
2354 --cycle
2355 (-0.1660, 0.8709)
2356 .. controls (-0.1609, 0.8538) and (-0.1460, 0.8596) .. (-0.1371, 0.8707)
2357 --cycle
2358 ( 0.0768, 0.8689)
2359 .. controls ( 0.0767, 0.8688) and ( 0.0765, 0.8686) .. ( 0.0764, 0.8685)
2360 .. controls ( 0.0704, 0.8503) and ( 0.0779, 0.7592) .. ( 0.1533, 0.7700)
2361 .. controls ( 0.1955, 0.7761) and ( 0.1956, 0.8018) .. ( 0.1871, 0.8359)
2362 -- ( 0.1366, 0.8108)
2363 -- ( 0.1510, 0.8683)
2364 --cycle
2365 ( 0.1840, 0.8680)
2366 .. controls ( 0.1910, 0.8650) and ( 0.1993, 0.8662) .. ( 0.2081, 0.8678)
2367 --cycle
2368 ( 0.2214, 0.8677)
2369 -- ( 0.2459, 0.7939)
2370 .. controls ( 0.1903, 0.7716) and ( 0.2267, 0.7399) .. ( 0.2534, 0.7490)
2371 .. controls ( 0.2925, 0.7624) and ( 0.2842, 0.8066) .. ( 0.2735, 0.8359)
2372 .. controls ( 0.2690, 0.8483) and ( 0.2655, 0.8586) .. ( 0.2619, 0.8674)
2373 --cycle
2374 ( 0.4057, 0.8661)
2375 .. controls ( 0.4149, 0.8349) and ( 0.4483, 0.8068) .. ( 0.4873, 0.8349)
2376 .. controls ( 0.4993, 0.8436) and ( 0.5001, 0.8496) .. ( 0.5065, 0.8612)
2377 .. controls ( 0.5170, 0.8447) and ( 0.5269, 0.8297) .. ( 0.5405, 0.8189)
2378 -- ( 0.5145, 0.8652)
2379 --cycle
2380 (-0.0288, 0.8391)
2381 .. controls (-0.0335, 0.8388) and (-0.0390, 0.8377) .. (-0.0453, 0.8356)
2382 .. controls (-0.0698, 0.8019) and (-0.0347, 0.7882) .. (-0.0173, 0.7966)
2383 .. controls ( 0.0001, 0.8052) and ( 0.0042, 0.8413) .. (-0.0288, 0.8391)
2384 --cycle
2385 ( 0.3888, 0.7856)
2386 -- ( 0.3719, 0.7687)
2387 -- ( 0.3719, 0.7604)
2388 -- ( 0.3888, 0.7435)

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2389 -- ( 0.3972, 0.7435)
2390 -- ( 0.4140, 0.7604)
2391 --cycle
2392 (-0.0821, 0.7138)
2393 .. controls (-0.0999, 0.7158) and (-0.1171, 0.7050) .. (-0.1211, 0.6922)
2394 .. controls (-0.1297, 0.6650) and (-0.0695, 0.6250) .. (-0.0468, 0.6186)
2395 .. controls (-0.0352, 0.6169) and (-0.0107, 0.6175) .. ( 0.0022, 0.6186)
2396 .. controls (-0.0326, 0.5765) and (-0.0411, 0.5767) .. (-0.0909, 0.5922)
2397 .. controls (-0.0924, 0.5799) and (-0.0959, 0.5731) .. (-0.0909, 0.5597)
2398 .. controls (-0.0591, 0.4605) and ( 0.1221, 0.6255) .. ( 0.0020, 0.6581)
2399 .. controls (-0.0090, 0.6597) and (-0.0281, 0.6592) .. (-0.0399, 0.6581)
2400 .. controls (-0.0462, 0.6969) and (-0.0645, 0.7118) .. (-0.0821, 0.7138)
2401 --cycle
2402 ( 0.3704, 0.7106)
2403 .. controls ( 0.3510, 0.7072) and ( 0.3332, 0.6943) .. ( 0.3224, 0.6679)
2404 .. controls ( 0.3172, 0.6530) and ( 0.3220, 0.6121) .. ( 0.3224, 0.5922)
2405 -- ( 0.3056, 0.6154)
2406 .. controls ( 0.2531, 0.6742) and ( 0.2322, 0.5554) .. ( 0.2966, 0.5454)
2407 .. controls ( 0.3239, 0.5412) and ( 0.3417, 0.5630) .. ( 0.3972, 0.5670)
2408 .. controls ( 0.4005, 0.5473) and ( 0.4019, 0.5314) .. ( 0.4237, 0.5231)
2409 .. controls ( 0.4541, 0.5116) and ( 0.4961, 0.5392) .. ( 0.4841, 0.5736)
2410 .. controls ( 0.4794, 0.5870) and ( 0.4556, 0.5991) .. ( 0.4331, 0.6106)
2411 .. controls ( 0.4972, 0.6497) and ( 0.4277, 0.7210) .. ( 0.3704, 0.7106)
2412 --cycle
2413 (-0.4679, 0.7004)
2414 .. controls (-0.5116, 0.6983) and (-0.4629, 0.6153) .. (-0.4266, 0.6632)
2415 .. controls (-0.4200, 0.6718) and (-0.4201, 0.6786) .. (-0.4182, 0.6846)
2416 -- (-0.4434, 0.6958)
2417 .. controls (-0.4536, 0.6993) and (-0.4618, 0.7007) .. (-0.4679, 0.7004)
2418 --cycle
2419 ( 0.5653, 0.7002)
2420 .. controls ( 0.5661, 0.6911) and ( 0.5658, 0.6799) .. ( 0.5704, 0.6702)
2421 .. controls ( 0.5856, 0.6381) and ( 0.6183, 0.6504) .. ( 0.6246, 0.6688)
2422 -- ( 0.6102, 0.6944)
2423 .. controls ( 0.6066, 0.6965) and ( 0.6036, 0.6986) .. ( 0.5984, 0.7002)
2424 .. controls ( 0.5884, 0.7016) and ( 0.5757, 0.7012) .. ( 0.5653, 0.7002)
2425 --cycle
2426 ( 0.1310, 0.6925)
2427 .. controls ( 0.1003, 0.6568) and ( 0.1392, 0.6414) .. ( 0.1582, 0.6530)
2428 .. controls ( 0.1772, 0.6646) and ( 0.1778, 0.7030) .. ( 0.1310, 0.6925)
2429 --cycle
2430 (-0.3425, 0.6846)
2431 .. controls (-0.3485, 0.6703) and (-0.3540, 0.6584) .. (-0.3564, 0.6427)
2432 .. controls (-0.3714, 0.5438) and (-0.2673, 0.5839) .. (-0.3103, 0.6583)
2433 .. controls (-0.3198, 0.6747) and (-0.3272, 0.6765) .. (-0.3425, 0.6846)
2434 --cycle
2435 (-0.1828, 0.6763)
2436 .. controls (-0.2468, 0.6411) and (-0.2396, 0.5532) .. (-0.1659, 0.5602)
2437 .. controls (-0.1273, 0.5639) and (-0.0946, 0.6066) .. (-0.1492, 0.6258)
2438 -- (-0.1828, 0.6006)
2439 --cycle
2440 ( 0.3972, 0.6763)
2441 -- ( 0.4287, 0.6131)

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2442 .. controls ( 0.4206, 0.6173) and ( 0.4113, 0.6217) .. ( 0.4056, 0.6258)
2443 -- ( 0.3719, 0.6006)
2444 .. controls ( 0.3635, 0.6415) and ( 0.3652, 0.6489) .. ( 0.3972, 0.6763)
2445 --cycle
2446 ( 0.5737, 0.6319)
2447 -- ( 0.5485, 0.6258)
2448 .. controls ( 0.5516, 0.6201) and ( 0.5520, 0.6138) .. ( 0.5614, 0.6043)
2449 .. controls ( 0.6074, 0.5569) and ( 0.6453, 0.6371) .. ( 0.5737, 0.6319)
2450 --cycle
2451 (-0.6211, 0.6305)
2452 -- (-0.6755, 0.5370)
2453 -- (-0.6787, 0.5166)
2454 .. controls (-0.6809, 0.5180) and (-0.6832, 0.5188) .. (-0.6854, 0.5203)
2455 -- (-0.7191, 0.4623)
2456 -- (-0.7291, 0.4073)
2457 .. controls (-0.7367, 0.4126) and (-0.7403, 0.4136) .. (-0.7456, 0.4169)
2458 -- (-0.7651, 0.3834)
2459 .. controls (-0.7455, 0.3798) and (-0.7239, 0.3727) .. (-0.7052, 0.3845)
2460 .. controls (-0.6739, 0.3993) and (-0.6763, 0.4662) .. (-0.6703, 0.4998)
2461 .. controls (-0.6178, 0.4665) and (-0.6044, 0.4826) .. (-0.5611, 0.5204)
2462 .. controls (-0.5440, 0.5353) and (-0.5267, 0.5491) .. (-0.5345, 0.5748)
2463 .. controls (-0.5466, 0.6149) and (-0.5841, 0.6243) .. (-0.6211, 0.6305)
2464 --cycle
2465 (-0.6450, 0.5670)
2466 -- (-0.5862, 0.5670)
2467 .. controls (-0.6029, 0.5328) and (-0.6086, 0.5274) .. (-0.6450, 0.5166)
2468 --cycle
2469 ( 0.5940, 0.5141)
2470 .. controls ( 0.5876, 0.5135) and ( 0.5814, 0.5119) .. ( 0.5737, 0.5105)
2471 .. controls ( 0.5529, 0.5005) and ( 0.5203, 0.4878) .. ( 0.5123, 0.4644)
2472 .. controls ( 0.5022, 0.4349) and ( 0.5312, 0.3332) .. ( 0.5982, 0.3551)
2473 .. controls ( 0.6173, 0.3612) and ( 0.6614, 0.3963) .. ( 0.6651, 0.4168)
2474 .. controls ( 0.6700, 0.4432) and ( 0.6406, 0.5019) .. ( 0.6149, 0.5105)
2475 .. controls ( 0.6066, 0.5139) and ( 0.6003, 0.5146) .. ( 0.5940, 0.5141)
2476 --cycle
2477 ( 0.0525, 0.5036)
2478 .. controls ( 0.0223, 0.5016) and ( 0.0014, 0.4715) .. (-0.0147, 0.4493)
2479 .. controls (-0.0480, 0.4823) and (-0.1271, 0.5502) .. (-0.1240, 0.4493)
2480 -- (-0.0819, 0.4661)
2481 .. controls (-0.0631, 0.4289) and ( 0.0054, 0.3259) .. ( 0.0443, 0.3176)
2482 .. controls ( 0.1031, 0.3051) and ( 0.1431, 0.3862) .. ( 0.0694, 0.3989)
2483 .. controls ( 0.0551, 0.3118) and ( 0.0044, 0.4056) .. ( 0.0316, 0.4326)
2484 .. controls ( 0.0741, 0.4748) and ( 0.1233, 0.3699) .. ( 0.1388, 0.4261)
2485 .. controls ( 0.1477, 0.4584) and ( 0.0813, 0.5057) .. ( 0.0525, 0.5036)
2486 --cycle
2487 ( 0.6073, 0.4745)
2488 -- ( 0.6242, 0.4241)
2489 -- ( 0.5569, 0.3989)
2490 -- ( 0.5569, 0.4493)
2491 --cycle
2492 (-0.3498, 0.4626)
2493 .. controls (-0.3744, 0.4586) and (-0.3998, 0.4069) .. (-0.3941, 0.3847)
2494 .. controls (-0.3893, 0.3661) and (-0.3650, 0.3651) .. (-0.3503, 0.3798)

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2495 -- (-0.3257, 0.4157)
2496 .. controls (-0.3295, 0.3698) and (-0.2940, 0.3485) .. (-0.2697, 0.3592)
2497 .. controls (-0.2492, 0.3684) and (-0.2611, 0.3898) .. (-0.2697, 0.4024)
2498 .. controls (-0.2865, 0.4277) and (-0.3149, 0.4682) .. (-0.3498, 0.4626)
2499 --cycle
2500 ( 0.7488, 0.4472)
2501 .. controls ( 0.7446, 0.4429) and ( 0.7413, 0.4378) .. ( 0.7395, 0.4315)
2502 .. controls ( 0.7338, 0.4111) and ( 0.7612, 0.3277) .. ( 0.8087, 0.3352)
2503 .. controls ( 0.8094, 0.3354) and ( 0.8102, 0.3361) .. ( 0.8109, 0.3364)
2504 --cycle
2505 (-0.1492, 0.4409)
2506 .. controls (-0.1577, 0.3701) and (-0.1298, 0.3577) .. (-0.0651, 0.3568)
2507 .. controls (-0.0461, 0.3027) and (-0.0025, 0.3462) .. (-0.0567, 0.3652)
2508 -- (-0.0567, 0.3568)
2509 -- (-0.0651, 0.3652)
2510 -- (-0.0567, 0.3652)
2511 -- (-0.0567, 0.3989)
2512 -- (-0.0988, 0.3905)
2513 .. controls (-0.1116, 0.4252) and (-0.1112, 0.4344) .. (-0.1492, 0.4409)
2514 --cycle
2515 ( 0.2869, 0.4351)
2516 .. controls ( 0.2475, 0.4293) and ( 0.2234, 0.3681) .. ( 0.2795, 0.3485)
2517 -- ( 0.3048, 0.3905)
2518 .. controls ( 0.3028, 0.3760) and ( 0.3013, 0.3442) .. ( 0.3278, 0.3583)
2519 .. controls ( 0.3557, 0.3731) and ( 0.3437, 0.4227) .. ( 0.3046, 0.4338)
2520 .. controls ( 0.2985, 0.4356) and ( 0.2925, 0.4359) .. ( 0.2869, 0.4351)
2521 --cycle
2522 (-0.5352, 0.4038)
2523 .. controls (-0.5519, 0.4042) and (-0.5689, 0.3932) .. (-0.5778, 0.3652)
2524 -- (-0.5358, 0.3652)
2525 -- (-0.5442, 0.3149)
2526 -- (-0.6030, 0.3401)
2527 .. controls (-0.6099, 0.3078) and (-0.5933, 0.2580) .. (-0.5523, 0.2636)
2528 .. controls (-0.5251, 0.2673) and (-0.4980, 0.3070) .. (-0.4910, 0.3316)
2529 .. controls (-0.4799, 0.3705) and (-0.5072, 0.4030) .. (-0.5352, 0.4038)
2530 --cycle
2531 ( 0.4056, 0.3989)
2532 .. controls ( 0.4011, 0.3650) and ( 0.4064, 0.3627) .. ( 0.4392, 0.3568)
2533 .. controls ( 0.4340, 0.3865) and ( 0.4336, 0.3876) .. ( 0.4056, 0.3989)
2534 --cycle
2535 (-0.2248, 0.3737)
2536 -- (-0.2164, 0.3401)
2537 -- (-0.1828, 0.3568)
2538 --cycle
2539 ( 0.4558, 0.3414)
2540 .. controls ( 0.4424, 0.3419) and ( 0.4339, 0.3363) .. ( 0.4224, 0.3316)
2541 -- ( 0.4340, 0.2885)
2542 .. controls ( 0.4635, 0.2154) and ( 0.5405, 0.3381) .. ( 0.4558, 0.3414)
2543 --cycle
2544 (-0.3179, 0.3382)
2545 .. controls (-0.3270, 0.3401) and (-0.3357, 0.3403) .. (-0.3425, 0.3381)
2546 .. controls (-0.3762, 0.3275) and (-0.3957, 0.2970) .. (-0.4013, 0.2644)
2547 -- (-0.3341, 0.2892)

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2548 .. controls (-0.3207, 0.2121) and (-0.2456, 0.2402) .. (-0.2545, 0.2892)
2549 .. controls (-0.2586, 0.3110) and (-0.2906, 0.3324) .. (-0.3179, 0.3382)
2550 --cycle
2551 ( 0.3611, 0.3359)
2552 .. controls ( 0.3110, 0.3372) and ( 0.2179, 0.3015) .. ( 0.2626, 0.2392)
2553 -- ( 0.2207, 0.2056)
2554 -- ( 0.2123, 0.2308)
2555 -- ( 0.1955, 0.2308)
2556 .. controls ( 0.1691, 0.1342) and ( 0.2461, 0.1660) .. ( 0.2711, 0.1678)
2557 .. controls ( 0.3105, 0.1704) and ( 0.3525, 0.1635) .. ( 0.3836, 0.2013)
2558 .. controls ( 0.4000, 0.2213) and ( 0.3935, 0.2469) .. ( 0.3552, 0.2434)
2559 .. controls ( 0.3256, 0.2408) and ( 0.3193, 0.2282) .. ( 0.3048, 0.2056)
2560 .. controls ( 0.2927, 0.2510) and ( 0.2970, 0.2476) .. ( 0.3131, 0.2897)
2561 -- ( 0.3552, 0.2728)
2562 -- ( 0.3636, 0.2980)
2563 -- ( 0.3719, 0.2644)
2564 .. controls ( 0.4287, 0.2825) and ( 0.4092, 0.3226) .. ( 0.3795, 0.3331)
2565 .. controls ( 0.3746, 0.3349) and ( 0.3683, 0.3357) .. ( 0.3611, 0.3359)
2566 --cycle
2567 (-0.7326, 0.3304)
2568 .. controls (-0.7558, 0.2996) and (-0.7303, 0.2839) .. (-0.7147, 0.2917)
2569 .. controls (-0.6982, 0.3000) and (-0.6941, 0.3349) .. (-0.7326, 0.3304)
2570 --cycle
2571 ( 0.5316, 0.3064)
2572 .. controls ( 0.5417, 0.2779) and ( 0.5439, 0.2772) .. ( 0.5737, 0.2813)
2573 .. controls ( 0.5591, 0.3056) and ( 0.5600, 0.3049) .. ( 0.5316, 0.3064)
2574 --cycle
2575 ( 0.7063, 0.2870)
2576 .. controls ( 0.6995, 0.2880) and ( 0.6923, 0.2874) .. ( 0.6840, 0.2844)
2577 .. controls ( 0.6531, 0.2731) and ( 0.6307, 0.2270) .. ( 0.6242, 0.1972)
2578 -- ( 0.6914, 0.2056)
2579 -- ( 0.6914, 0.2475)
2580 -- ( 0.7166, 0.2139)
2581 -- ( 0.7670, 0.2224)
2582 -- ( 0.7670, 0.1887)
2583 -- ( 0.8091, 0.1804)
2584 -- ( 0.7755, 0.1047)
2585 -- ( 0.8343, 0.1131)
2586 .. controls ( 0.8409, 0.1435) and ( 0.8409, 0.1473) .. ( 0.8679, 0.1636)
2587 .. controls ( 0.8652, 0.1490) and ( 0.8470, 0.0581) .. ( 0.8896, 0.0809)
2588 .. controls ( 0.9211, 0.0965) and ( 0.9103, 0.1720) .. ( 0.8896, 0.1909)
2589 .. controls ( 0.8668, 0.2094) and ( 0.8421, 0.2029) .. ( 0.8174, 0.1972)
2590 .. controls ( 0.8135, 0.2098) and ( 0.8137, 0.2162) .. ( 0.8041, 0.2272)
2591 .. controls ( 0.7922, 0.2408) and ( 0.7748, 0.2458) .. ( 0.7601, 0.2552)
2592 .. controls ( 0.7419, 0.2667) and ( 0.7266, 0.2841) .. ( 0.7063, 0.2870)
2593 --cycle
2594 ( 0.6242, 0.1972)
2595 .. controls ( 0.6061, 0.1985) and ( 0.5845, 0.2023) .. ( 0.5690, 0.1902)
2596 .. controls ( 0.5426, 0.1695) and ( 0.5550, 0.1248) .. ( 0.5909, 0.1110)
2597 .. controls ( 0.6168, 0.1011) and ( 0.6421, 0.1125) .. ( 0.6679, 0.1215)
2598 .. controls ( 0.6663, 0.1076) and ( 0.6658, 0.0850) .. ( 0.6679, 0.0720)
2599 .. controls ( 0.6961, -0.0135) and ( 0.8163, 0.0895) .. ( 0.7250, 0.1215)
2600 -- ( 0.6998, 0.0795)

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2601 -- ( 0.7166, 0.1299)
2602 -- ( 0.6830, 0.1804)
2603 -- ( 0.6578, 0.1636)
2604 --cycle
2605 ( 0.0950, 0.2671)
2606 .. controls ( 0.0367, 0.2427) and ( 0.0851, 0.1985) .. ( 0.1112, 0.2040)
2607 .. controls ( 0.1427, 0.2110) and ( 0.1597, 0.2672) .. ( 0.0950, 0.2671)
2608 --cycle
2609 (-0.0988, 0.2609)
2610 .. controls (-0.1426, 0.2672) and (-0.2761, 0.1879) .. (-0.1828, 0.1551)
2611 -- (-0.1743, 0.1972)
2612 -- (-0.1240, 0.1804)
2613 -- (-0.0904, 0.2308)
2614 -- (-0.1071, 0.1720)
2615 .. controls (-0.0221, 0.1543) and (-0.0435, 0.2528) .. (-0.0988, 0.2609)
2616 --cycle
2617 (-0.8142, 0.2071)
2618 .. controls (-0.8258, 0.2070) and (-0.8375, 0.2012) .. (-0.8466, 0.1869)
2619 .. controls (-0.8534, 0.1760) and (-0.8533, 0.1669) .. (-0.8551, 0.1551)
2620 -- (-0.7963, 0.1636)
2621 -- (-0.8132, 0.1215)
2622 .. controls (-0.8020, 0.1234) and (-0.7923, 0.1232) .. (-0.7821, 0.1301)
2623 .. controls (-0.7447, 0.1557) and (-0.7793, 0.2072) .. (-0.8142, 0.2071)
2624 --cycle
2625 (-0.2584, 0.2056)
2626 -- (-0.2584, 0.1636)
2627 .. controls (-0.2445, 0.1848) and (-0.2445, 0.1843) .. (-0.2584, 0.2056)
2628 --cycle
2629 (-0.7132, 0.1953)
2630 .. controls (-0.7373, 0.1910) and (-0.7568, 0.1647) .. (-0.7459, 0.1215)
2631 -- (-0.6955, 0.1551)
2632 .. controls (-0.7015, 0.1043) and (-0.7057, 0.0835) .. (-0.6450, 0.0963)
2633 -- (-0.6535, 0.0711)
2634 .. controls (-0.5898, 0.0580) and (-0.5907, 0.1071) .. (-0.6081, 0.1249)
2635 .. controls (-0.6203, 0.1374) and (-0.6375, 0.1370) .. (-0.6535, 0.1383)
2636 .. controls (-0.6607, 0.1823) and (-0.6892, 0.1997) .. (-0.7132, 0.1953)
2637 --cycle
2638 (-0.4097, 0.1720)
2639 -- (-0.3845, 0.1215)
2640 -- (-0.4097, 0.0963)
2641 -- (-0.4349, 0.1047)
2642 .. controls (-0.4598,-0.0134) and (-0.2772, 0.1076) .. (-0.3690, 0.1621)
2643 .. controls (-0.3821, 0.1699) and (-0.3951, 0.1703) .. (-0.4097, 0.1720)
2644 --cycle
2645 ( 0.4374, 0.1711)
2646 .. controls ( 0.4200, 0.1682) and ( 0.4016, 0.1543) .. ( 0.3888, 0.1299)
2647 -- ( 0.4477, 0.1299)
2648 .. controls ( 0.4703, 0.1056) and ( 0.4891, 0.1252) .. ( 0.4798, 0.1463)
2649 .. controls ( 0.4711, 0.1661) and ( 0.4548, 0.1741) .. ( 0.4374, 0.1711)
2650 --cycle
2651 (-0.4594, 0.1707)
2652 .. controls (-0.4648, 0.1719) and (-0.4705, 0.1718) .. (-0.4752, 0.1698)
2653 .. controls (-0.4878, 0.1646) and (-0.4954, 0.1508) .. (-0.4982, 0.1382)

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2654 .. controls (-0.5096, 0.0875) and (-0.4448, 0.0609) .. (-0.4602, 0.1299)
2655 .. controls (-0.4304, 0.1504) and (-0.4433, 0.1669) .. (-0.4594, 0.1707)
2656 --cycle
2657 (-0.0230, 0.1592)
2658 .. controls (-0.0727, 0.1609) and (-0.0799, 0.1002) .. (-0.1492, 0.0795)
2659 -- (-0.1576, 0.0374)
2660 .. controls (-0.1940, 0.0779) and (-0.1965, 0.0894) .. (-0.2500, 0.0711)
2661 -- (-0.2584, 0.0795)
2662 -- (-0.2332, 0.1383)
2663 .. controls (-0.2779, 0.1347) and (-0.3158, 0.0997) .. (-0.2855, 0.0563)
2664 .. controls (-0.2695, 0.0332) and (-0.2481, 0.0337) .. (-0.2256, 0.0248)
2665 .. controls (-0.1803, 0.0069) and (-0.1541,-0.0311) .. (-0.1155, 0.0290)
2666 .. controls (-0.0607, 0.0067) and (-0.0553,-0.0150) .. (-0.0307,-0.0232)
2667 .. controls ( 0.0157,-0.0389) and ( 0.0524, 0.0035) .. ( 0.0442, 0.0543)
2668 .. controls ( 0.0843, 0.0613) and ( 0.1010, 0.0937) .. ( 0.0727, 0.1263)
2669 .. controls ( 0.0598, 0.1414) and (-0.0030, 0.1586) .. (-0.0230, 0.1592)
2670 --cycle
2671 (-0.0230, 0.1215)
2672 -- ( 0.0442, 0.1131)
2673 .. controls ( 0.0289, 0.0705) and ( 0.0228, 0.0356) .. (-0.0230, 0.0207)
2674 .. controls (-0.0339, 0.0543) and (-0.0383, 0.0572) .. (-0.0735, 0.0543)
2675 -- (-0.0819, 0.0627)
2676 --cycle
2677 (-0.8973, 0.1131)
2678 .. controls (-0.9051, 0.0492) and (-0.8679, 0.0676) .. (-0.8321, 0.0457)
2679 .. controls (-0.7996, 0.0258) and (-0.7906,-0.0272) .. (-0.7039,-0.0046)
2680 .. controls (-0.6977,-0.0167) and (-0.6964,-0.0237) .. (-0.6846,-0.0331)
2681 .. controls (-0.6146,-0.0891) and (-0.5741, 0.0485) .. (-0.6619, 0.0396)
2682 .. controls (-0.6723, 0.0384) and (-0.6856, 0.0326) .. (-0.6955, 0.0290)
2683 .. controls (-0.7145, 0.0487) and (-0.7442, 0.0435) .. (-0.7712, 0.0459)
2684 -- (-0.7771, 0.0746)
2685 --cycle
2686 ( 0.7839, 0.0627)
2687 .. controls ( 0.7798, 0.0513) and ( 0.7748, 0.0421) .. ( 0.7752, 0.0292)
2688 .. controls ( 0.7776,-0.0409) and ( 0.8888, 0.0073) .. ( 0.8169, 0.0493)
2689 .. controls ( 0.8064, 0.0555) and ( 0.7952, 0.0587) .. ( 0.7839, 0.0627)
2690 --cycle
2691 ( 0.6399, 0.0543)
2692 .. controls ( 0.6341, 0.0555) and ( 0.6275, 0.0553) .. ( 0.6207, 0.0536)
2693 .. controls ( 0.5899, 0.0092) and ( 0.6489,-0.0145) .. ( 0.6606, 0.0149)
2694 .. controls ( 0.6690, 0.0359) and ( 0.6576, 0.0510) .. ( 0.6399, 0.0543)
2695 --cycle
2696 ( 0.2228, 0.0528)
2697 .. controls ( 0.1887, 0.0319) and ( 0.2131,-0.0076) .. ( 0.2361,-0.0078)
2698 .. controls ( 0.2619,-0.0080) and ( 0.2726, 0.0432) .. ( 0.2228, 0.0528)
2699 --cycle
2700 ( 0.4509, 0.0479)
2701 .. controls ( 0.4394, 0.0460) and ( 0.4290, 0.0332) .. ( 0.4224, 0.0038)
2702 .. controls ( 0.3826, 0.0304) and ( 0.3797, 0.0371) .. ( 0.3300, 0.0301)
2703 .. controls ( 0.3175, 0.0283) and ( 0.3021, 0.0266) .. ( 0.2915, 0.0192)
2704 .. controls ( 0.2691, 0.0036) and ( 0.2444,-0.0690) .. ( 0.3552,-0.0718)
2705 -- ( 0.3131,-0.0046)
2706 .. controls ( 0.3436,-0.0165) and ( 0.3418,-0.0171) .. ( 0.3719,-0.0046)

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2707 .. controls ( 0.3961,-0.0513) and ( 0.4113,-0.0431) .. ( 0.4560,-0.0298)
2708 -- ( 0.4560, 0.0038)
2709 -- ( 0.4812,-0.0466)
2710 .. controls ( 0.4281,-0.0863) and ( 0.4953,-0.1091) .. ( 0.5137,-0.0706)
2711 .. controls ( 0.5296,-0.0376) and ( 0.4853, 0.0538) .. ( 0.4509, 0.0479)
2712 --cycle
2713 (-0.9381, 0.0440)
2714 .. controls (-0.9573, 0.0465) and (-0.9752, 0.0361) .. (-0.9800, 0.0016)
2715 -- (-0.9774,-0.0032)
2716 -- (-0.9308, 0.0123)
2717 .. controls (-0.9260, 0.0012) and (-0.9218,-0.0135) .. (-0.9103,-0.0200)
2718 .. controls (-0.8939,-0.0290) and (-0.8783,-0.0112) .. (-0.8895, 0.0115)
2719 .. controls (-0.8962, 0.0252) and (-0.9176, 0.0414) .. (-0.9381, 0.0440)
2720 --cycle
2721 ( 0.9435, 0.0207)
2722 -- ( 0.9184, 0.0123)
2723 -- ( 0.9435,-0.0046)
2724 --cycle
2725 ( 0.8999,-0.0129)
2726 .. controls ( 0.9000,-0.0216) and ( 0.8974,-0.0282) .. ( 0.8999,-0.0376)
2727 .. controls ( 0.9043,-0.0955) and ( 0.9800,-0.0453) .. ( 0.9254,-0.0191)
2728 .. controls ( 0.9173,-0.0151) and ( 0.9098,-0.0148) .. ( 0.8999,-0.0129)
2729 --cycle
2730 (-0.5187,-0.0249)
2731 .. controls (-0.5448,-0.0284) and (-0.5586,-0.0592) .. (-0.5611,-0.0886)
2732 -- (-0.5022,-0.0718)
2733 .. controls (-0.5038,-0.1199) and (-0.4832,-0.1244) .. (-0.4434,-0.1054)
2734 -- (-0.4349,-0.1139)
2735 -- (-0.5106,-0.1811)
2736 -- (-0.5442,-0.1475)
2737 -- (-0.5274,-0.1139)
2738 .. controls (-0.5482,-0.1103) and (-0.5717,-0.1068) .. (-0.5806,-0.1326)
2739 .. controls (-0.5943,-0.1714) and (-0.5235,-0.2179) .. (-0.5014,-0.2194)
2740 .. controls (-0.4612,-0.2223) and (-0.4187,-0.1658) .. (-0.4108,-0.1306)
2741 .. controls (-0.4075,-0.1185) and (-0.4054,-0.1026) .. (-0.4108,-0.0911)
2742 .. controls (-0.4193,-0.0753) and (-0.4422,-0.0688) .. (-0.4571,-0.0576)
2743 -- (-0.4884,-0.0315)
2744 .. controls (-0.4999,-0.0256) and (-0.5100,-0.0237) .. (-0.5187,-0.0249)
2745 --cycle
2746 ( 0.2098,-0.0382)
2747 .. controls ( 0.1959,-0.0434) and ( 0.1851,-0.0663) .. ( 0.1925,-0.0882)
2748 .. controls ( 0.2035,-0.1206) and ( 0.2830,-0.1639) .. ( 0.2964,-0.0882)
2749 .. controls ( 0.2773,-0.0896) and ( 0.2586,-0.0934) .. ( 0.2447,-0.0768)
2750 .. controls ( 0.2363,-0.0666) and ( 0.2352,-0.0463) .. ( 0.2242,-0.0396)
2751 .. controls ( 0.2194,-0.0367) and ( 0.2145,-0.0365) .. ( 0.2098,-0.0382)
2752 --cycle
2753 (-0.2960,-0.0452)
2754 .. controls (-0.3231,-0.0465) and (-0.3530,-0.0602) .. (-0.3592,-0.0683)
2755 .. controls (-0.3758,-0.0903) and (-0.3560,-0.1221) .. (-0.3845,-0.1979)
2756 -- (-0.4013,-0.1727)
2757 -- (-0.4182,-0.1727)
2758 .. controls (-0.4336,-0.2291) and (-0.4124,-0.2782) .. (-0.3803,-0.2577)
2759 .. controls (-0.3601,-0.2446) and (-0.3538,-0.2099) .. (-0.3392,-0.1970)

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2760 .. controls (-0.3137,-0.1743) and (-0.2596,-0.2064) .. (-0.2752,-0.1306)
2761 -- (-0.3257,-0.1558)
2762 -- (-0.3341,-0.1475)
2763 -- (-0.3341,-0.0970)
2764 -- (-0.2500,-0.0970)
2765 .. controls (-0.2447,-0.0551) and (-0.2689,-0.0439) .. (-0.2960,-0.0452)
2766 --cycle
2767 ( 0.6563,-0.0662)
2768 .. controls ( 0.6458,-0.0662) and ( 0.6374,-0.0668) .. ( 0.6332,-0.0685)
2769 .. controls ( 0.5970,-0.0835) and ( 0.6057,-0.1189) .. ( 0.6332,-0.1391)
2770 -- ( 0.6493,-0.0970)
2771 -- ( 0.6662,-0.0970)
2772 .. controls ( 0.6850,-0.1248) and ( 0.6940,-0.1204) .. ( 0.7250,-0.1139)
2773 -- ( 0.7081,-0.1475)
2774 .. controls ( 0.7837,-0.1829) and ( 0.7876,-0.1033) .. ( 0.7490,-0.0804)
2775 .. controls ( 0.7374,-0.0735) and ( 0.6877,-0.0664) .. ( 0.6563,-0.0662)
2776 --cycle
2777 ( 0.7081,-0.1475)
2778 .. controls ( 0.6742,-0.1429) and ( 0.6720,-0.1483) .. ( 0.6662,-0.1811)
2779 .. controls ( 0.6162,-0.1289) and ( 0.6115,-0.1833) .. ( 0.6244,-0.2044)
2780 .. controls ( 0.6426,-0.2346) and ( 0.6823,-0.2320) .. ( 0.7016,-0.2044)
2781 .. controls ( 0.7147,-0.1858) and ( 0.7107,-0.1681) .. ( 0.7081,-0.1475)
2782 --cycle
2783 ( 0.0544,-0.0769)
2784 .. controls ( 0.0466,-0.0773) and ( 0.0382,-0.0797) .. ( 0.0297,-0.0845)
2785 -- (-0.0147,-0.1139)
2786 .. controls (-0.0057,-0.1396) and (-0.0069,-0.1385) .. ( 0.0189,-0.1475)
2787 .. controls (-0.0074,-0.2147) and ( 0.0346,-0.2081) .. ( 0.0553,-0.1870)
2788 .. controls ( 0.0667,-0.1752) and ( 0.0961,-0.1299) .. ( 0.0958,-0.1139)
2789 .. controls ( 0.0955,-0.0925) and ( 0.0776,-0.0759) .. ( 0.0544,-0.0769)
2790 --cycle
2791 ( 0.3572,-0.0881)
2792 .. controls ( 0.3447,-0.0867) and ( 0.3392,-0.1053) .. ( 0.3450,-0.1208)
2793 .. controls ( 0.3587,-0.1579) and ( 0.4169,-0.1493) .. ( 0.4239,-0.1208)
2794 .. controls ( 0.4287,-0.1010) and ( 0.4113,-0.0745) .. ( 0.3888,-0.0970)
2795 -- ( 0.3719,-0.0970)
2796 .. controls ( 0.3663,-0.0912) and ( 0.3613,-0.0886) .. ( 0.3572,-0.0881)
2797 --cycle
2798 ( 0.7250,-0.1054)
2799 -- ( 0.7333,-0.1054)
2800 -- ( 0.7333,-0.1139)
2801 --cycle
2802 (-0.7357,-0.1221)
2803 .. controls (-0.7405,-0.1203) and (-0.7472,-0.1201) .. (-0.7562,-0.1227)
2804 .. controls (-0.7721,-0.1527) and (-0.7463,-0.1606) .. (-0.7339,-0.1532)
2805 .. controls (-0.7244,-0.1475) and (-0.7214,-0.1275) .. (-0.7357,-0.1221)
2806 --cycle
2807 (-0.8606,-0.1378)
2808 .. controls (-0.8718,-0.1386) and (-0.8832,-0.1446) .. (-0.8941,-0.1518)
2809 -- (-0.8728,-0.1897)
2810 -- (-0.8468,-0.1811)
2811 -- (-0.8613,-0.2102)
2812 -- (-0.8317,-0.2631)

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2813 .. controls (-0.7953,-0.2270) and (-0.7967,-0.1536) .. (-0.8471,-0.1391)
2814 .. controls (-0.8514,-0.1378) and (-0.8560,-0.1374) .. (-0.8606,-0.1378)
2815 --cycle
2816 ( 0.9187,-0.1555)
2817 .. controls ( 0.9083,-0.1585) and ( 0.8971,-0.1627) .. ( 0.8847,-0.1675)
2818 .. controls ( 0.8669,-0.1743) and ( 0.8469,-0.1785) .. ( 0.8399,-0.1989)
2819 .. controls ( 0.8307,-0.2247) and ( 0.8481,-0.2329) .. ( 0.8679,-0.2399)
2820 -- ( 0.8847,-0.2063)
2821 .. controls ( 0.8863,-0.2068) and ( 0.8871,-0.2069) .. ( 0.8886,-0.2074)
2822 --cycle
2823 ( 0.8679,-0.2399)
2824 .. controls ( 0.8663,-0.2432) and ( 0.8651,-0.2468) .. ( 0.8637,-0.2502)
2825 -- ( 0.8693,-0.2405)
2826 .. controls ( 0.8687,-0.2402) and ( 0.8685,-0.2401) .. ( 0.8679,-0.2399)
2827 --cycle
2828 ( 0.4392,-0.1558)
2829 -- ( 0.4332,-0.1807)
2830 .. controls ( 0.4281,-0.2431) and ( 0.5089,-0.2120) .. ( 0.4618,-0.1688)
2831 .. controls ( 0.4519,-0.1597) and ( 0.4457,-0.1593) .. ( 0.4392,-0.1558)
2832 --cycle
2833 (-0.6846,-0.1952)
2834 .. controls (-0.6966,-0.1951) and (-0.7082,-0.2013) .. (-0.7157,-0.2171)
2835 .. controls (-0.7203,-0.2268) and (-0.7199,-0.2378) .. (-0.7207,-0.2483)
2836 -- (-0.6787,-0.2399)
2837 -- (-0.6703,-0.2735)
2838 .. controls (-0.6096,-0.2523) and (-0.6488,-0.1955) .. (-0.6846,-0.1952)
2839 --cycle
2840 (-0.1120,-0.2035)
2841 .. controls (-0.1188,-0.2048) and (-0.1255,-0.2071) .. (-0.1323,-0.2089)
2842 .. controls (-0.1785,-0.2217) and (-0.2021,-0.2285) .. (-0.1912,-0.2819)
2843 -- (-0.0988,-0.2483)
2844 -- (-0.0651,-0.2740)
2845 .. controls (-0.0333,-0.3228) and (-0.0165,-0.2917) .. (-0.0209,-0.2740)
2846 .. controls (-0.0243,-0.2616) and (-0.0384,-0.2481) .. (-0.0474,-0.2386)
2847 .. controls (-0.0590,-0.2264) and (-0.0744,-0.2085) .. (-0.0911,-0.2040)
2848 .. controls (-0.0982,-0.2021) and (-0.1052,-0.2023) .. (-0.1120,-0.2035)
2849 --cycle
2850 ( 0.1647,-0.2053)
2851 .. controls ( 0.1471,-0.2058) and ( 0.1297,-0.2092) .. ( 0.1164,-0.2148)
2852 .. controls ( 0.0833,-0.2632) and ( 0.1207,-0.3872) .. ( 0.1933,-0.3346)
2853 .. controls ( 0.2031,-0.3275) and ( 0.2109,-0.3165) .. ( 0.2178,-0.3068)
2854 .. controls ( 0.2722,-0.2297) and ( 0.2177,-0.2039) .. ( 0.1647,-0.2053)
2855 --cycle
2856 ( 0.3262,-0.2328)
2857 .. controls ( 0.3073,-0.2617) and ( 0.3314,-0.2707) .. ( 0.3420,-0.2638)
2858 .. controls ( 0.3522,-0.2572) and ( 0.3585,-0.2285) .. ( 0.3262,-0.2328)
2859 --cycle
2860 ( 0.1534,-0.2399)
2861 -- ( 0.2039,-0.2483)
2862 -- ( 0.1534,-0.2987)
2863 --cycle
2864 ( 0.5217,-0.2636)
2865 .. controls ( 0.5071,-0.2632) and ( 0.4918,-0.2708) .. ( 0.4798,-0.2909)

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2866 .. controls ( 0.4713,-0.3051) and ( 0.4736,-0.3094) .. ( 0.4728,-0.3240)
2867 -- ( 0.4812,-0.3240)
2868 -- ( 0.4812,-0.3324)
2869 -- ( 0.5232,-0.2987)
2870 -- ( 0.5232,-0.3492)
2871 .. controls ( 0.6028,-0.3358) and ( 0.5655,-0.2645) .. ( 0.5217,-0.2636)
2872 --cycle
2873 ( 0.4812,-0.3324)
2874 -- ( 0.4728,-0.3240)
2875 .. controls ( 0.4525,-0.3209) and ( 0.4056,-0.3074) .. ( 0.3892,-0.3106)
2876 .. controls ( 0.3596,-0.3163) and ( 0.3503,-0.3437) .. ( 0.3892,-0.3660)
2877 -- ( 0.3972,-0.3407)
2878 .. controls ( 0.4281,-0.3611) and ( 0.4279,-0.3612) .. ( 0.4644,-0.3576)
2879 -- ( 0.4560,-0.4080)
2880 .. controls ( 0.5104,-0.3986) and ( 0.5053,-0.3736) .. ( 0.4812,-0.3324)
2881 --cycle
2882 ( 0.7282,-0.2775)
2883 .. controls ( 0.7176,-0.2768) and ( 0.7066,-0.2782) .. ( 0.6965,-0.2822)
2884 .. controls ( 0.6458,-0.3532) and ( 0.7574,-0.3899) .. ( 0.7782,-0.3306)
2885 .. controls ( 0.7887,-0.3013) and ( 0.7602,-0.2797) .. ( 0.7282,-0.2775)
2886 --cycle
2887 (-0.2465,-0.2903)
2888 .. controls (-0.2987,-0.3042) and (-0.2344,-0.4071) .. (-0.2306,-0.4102)
2889 .. controls (-0.1938,-0.4396) and (-0.1663,-0.4010) .. (-0.1299,-0.4027)
2890 .. controls (-0.1140,-0.4034) and (-0.0666,-0.4182) .. (-0.0557,-0.3820)
2891 .. controls (-0.0504,-0.3644) and (-0.0676,-0.3334) .. (-0.0988,-0.3744)
2892 -- (-0.1181,-0.3407)
2893 -- (-0.1308,-0.3168)
2894 .. controls (-0.1675,-0.2582) and (-0.1759,-0.3435) .. (-0.1781,-0.3492)
2895 .. controls (-0.1841,-0.3653) and (-0.1898,-0.3700) .. (-0.1996,-0.3828)
2896 -- (-0.2164,-0.2903)
2897 .. controls (-0.2291,-0.2881) and (-0.2389,-0.2883) .. (-0.2465,-0.2903)
2898 --cycle
2899 (-0.5947,-0.3156)
2900 -- (-0.6030,-0.3407)
2901 -- (-0.5778,-0.3240)
2902 --cycle
2903 (-0.0014,-0.3194)
2904 .. controls (-0.0278,-0.3131) and (-0.0544,-0.3497) .. (-0.0058,-0.3694)
2905 .. controls ( 0.0049,-0.3738) and ( 0.0162,-0.3735) .. ( 0.0273,-0.3744)
2906 .. controls ( 0.0265,-0.3636) and ( 0.0269,-0.3522) .. ( 0.0223,-0.3420)
2907 .. controls ( 0.0163,-0.3283) and ( 0.0074,-0.3214) .. (-0.0014,-0.3194)
2908 --cycle
2909 (-0.6508,-0.3284)
2910 .. controls (-0.6656,-0.3290) and (-0.6816,-0.3373) .. (-0.6955,-0.3576)
2911 .. controls (-0.7159,-0.3441) and (-0.7363,-0.3292) .. (-0.7624,-0.3378)
2912 .. controls (-0.7705,-0.3405) and (-0.7771,-0.3450) .. (-0.7829,-0.3501)
2913 -- (-0.7599,-0.3912)
2914 -- (-0.7543,-0.3744)
2915 -- (-0.6619,-0.4164)
2916 -- (-0.6619,-0.3660)
2917 -- (-0.6367,-0.4164)
2918 .. controls (-0.5723,-0.3945) and (-0.6064,-0.3266) .. (-0.6508,-0.3284)

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2919  --cycle
2920  (-0.5287,-0.3512)
2921  .. controls (-0.5489,-0.3498) and (-0.5690,-0.3591) .. (-0.5764,-0.3751)
2922  .. controls (-0.5966,-0.4192) and (-0.5398,-0.3912) .. (-0.5274,-0.3828)
2923  -- (-0.5190,-0.4500)
2924  -- (-0.5358,-0.4333)
2925  -- (-0.5358,-0.4248)
2926  -- (-0.5611,-0.4248)
2927  .. controls (-0.5664,-0.4641) and (-0.5605,-0.4735) .. (-0.5442,-0.5088)
2928  -- (-0.5274,-0.5088)
2929  .. controls (-0.4972,-0.4701) and (-0.4647,-0.4466) .. (-0.4806,-0.3915)
2930  .. controls (-0.4882,-0.3649) and (-0.5085,-0.3527) .. (-0.5287,-0.3512)
2931  --cycle
2932  ( 0.5485,-0.3594)
2933  .. controls ( 0.5504,-0.3686) and ( 0.5513,-0.3797) .. ( 0.5560,-0.3899)
2934  .. controls ( 0.5831,-0.4490) and ( 0.6446,-0.3809) .. ( 0.5811,-0.3594)
2935  .. controls ( 0.5706,-0.3579) and ( 0.5594,-0.3583) .. ( 0.5485,-0.3594)
2936  --cycle
2937  ( 0.3311,-0.3646)
2938  .. controls ( 0.3201,-0.3659) and ( 0.3103,-0.3791) .. ( 0.3084,-0.3917)
2939  .. controls ( 0.3035,-0.4255) and ( 0.3481,-0.5315) .. ( 0.4140,-0.4669)
2940  .. controls ( 0.4439,-0.4932) and ( 0.4962,-0.5278) .. ( 0.5388,-0.5107)
2941  .. controls ( 0.5684,-0.4989) and ( 0.5806,-0.4516) .. ( 0.5232,-0.4333)
2942  -- ( 0.5232,-0.4669)
2943  .. controls ( 0.4932,-0.4550) and ( 0.4949,-0.4563) .. ( 0.4644,-0.4669)
2944  -- ( 0.4560,-0.4248)
2945  -- ( 0.4224,-0.4417)
2946  -- ( 0.3888,-0.4080)
2947  -- ( 0.3617,-0.4500)
2948  -- ( 0.3617,-0.4080)
2949  .. controls ( 0.3546,-0.3735) and ( 0.3422,-0.3632) .. ( 0.3311,-0.3646)
2950  --cycle
2951  ( 0.0862,-0.3828)
2952  .. controls ( 0.0086,-0.4104) and ( 0.1258,-0.4856) .. ( 0.1453,-0.4236)
2953  .. controls ( 0.1495,-0.4116) and ( 0.1465,-0.4028) .. ( 0.1453,-0.3912)
2954  -- ( 0.0946,-0.4080)
2955  --cycle
2956  (-0.3761,-0.4056)
2957  .. controls (-0.4460,-0.4310) and (-0.4022,-0.4833) .. (-0.3686,-0.4756)
2958  .. controls (-0.3385,-0.4686) and (-0.3150,-0.4102) .. (-0.3761,-0.4056)
2959  --cycle
2960  (-0.1407,-0.4164)
2961  .. controls (-0.1510,-0.4360) and (-0.1606,-0.4518) .. (-0.1524,-0.4748)
2962  .. controls (-0.1401,-0.5093) and (-0.0958,-0.5218) .. (-0.0687,-0.4961)
2963  .. controls (-0.0363,-0.4652) and (-0.0685,-0.4086) .. (-0.0988,-0.4753)
2964  --cycle
2965  (-0.7345,-0.4223)
2966  .. controls (-0.7375,-0.4223) and (-0.7393,-0.4233) .. (-0.7417,-0.4237)
2967  -- (-0.7259,-0.4519)
2968  -- (-0.7123,-0.4248)
2969  .. controls (-0.7212,-0.4230) and (-0.7284,-0.4222) .. (-0.7345,-0.4223)
2970  --cycle
2971  (-0.6450,-0.4333)

```

```

2972 -- (-0.6283,-0.4753)
2973 -- (-0.6959,-0.5053)
2974 -- (-0.6728,-0.5467)
2975 .. controls (-0.6597,-0.5415) and (-0.6464,-0.5310) .. (-0.6353,-0.5238)
2976 .. controls (-0.6229,-0.5161) and (-0.6029,-0.5082) .. (-0.5949,-0.4962)
2977 .. controls (-0.5673,-0.4552) and (-0.6118,-0.4359) .. (-0.6450,-0.4333)
2978 --cycle
2979 ( 0.7515,-0.4421)
2980 .. controls ( 0.7404,-0.4518) and ( 0.7330,-0.4660) .. ( 0.7289,-0.4814)
2981 -- ( 0.7518,-0.4421)
2982 .. controls ( 0.7518,-0.4422) and ( 0.7516,-0.4421) .. ( 0.7515,-0.4421)
2983 --cycle
2984 (-0.7203,-0.4618)
2985 -- (-0.7004,-0.4973)
2986 .. controls (-0.6944,-0.4774) and (-0.6993,-0.4695) .. (-0.7203,-0.4618)
2987 --cycle
2988 ( 0.1694,-0.4873)
2989 .. controls ( 0.1182,-0.4851) and ( 0.0606,-0.5165) .. ( 0.1114,-0.5509)
2990 .. controls ( 0.1043,-0.5681) and ( 0.0968,-0.5809) .. ( 0.1030,-0.6004)
2991 .. controls ( 0.1160,-0.6424) and ( 0.2092,-0.6560) .. ( 0.1955,-0.5761)
2992 -- ( 0.1450,-0.6013)
2993 -- ( 0.1199,-0.5425)
2994 -- ( 0.1282,-0.5341)
2995 .. controls ( 0.1602,-0.5459) and ( 0.1584,-0.5438) .. ( 0.1871,-0.5257)
2996 .. controls ( 0.1977,-0.5856) and ( 0.2311,-0.5564) .. ( 0.2301,-0.5337)
2997 .. controls ( 0.2287,-0.5019) and ( 0.2002,-0.4885) .. ( 0.1694,-0.4873)
2998 --cycle
2999 ( 0.3143,-0.5168)
3000 .. controls ( 0.2653,-0.5233) and ( 0.3123,-0.5809) .. ( 0.3334,-0.5398)
3001 .. controls ( 0.3375,-0.5319) and ( 0.3370,-0.5251) .. ( 0.3384,-0.5168)
3002 --cycle
3003 ( 0.5821,-0.5172)
3004 -- ( 0.5905,-0.5425)
3005 .. controls ( 0.5223,-0.5546) and ( 0.5461,-0.6299) .. ( 0.5965,-0.6187)
3006 .. controls ( 0.6116,-0.6153) and ( 0.6642,-0.5952) .. ( 0.6693,-0.5808)
3007 .. controls ( 0.6859,-0.5354) and ( 0.6147,-0.5138) .. ( 0.5821,-0.5172)
3008 --cycle
3009 (-0.2667,-0.5315)
3010 .. controls (-0.3091,-0.5364) and (-0.3818,-0.5868) .. (-0.3173,-0.6098)
3011 .. controls (-0.3409,-0.7049) and (-0.2257,-0.7182) .. (-0.2332,-0.6265)
3012 -- (-0.2752,-0.6434)
3013 -- (-0.3173,-0.6013)
3014 .. controls (-0.2964,-0.5962) and (-0.2716,-0.5851) .. (-0.2511,-0.5945)
3015 .. controls (-0.2356,-0.6015) and (-0.2239,-0.6203) .. (-0.2131,-0.6252)
3016 .. controls (-0.1929,-0.6345) and (-0.1822,-0.6134) .. (-0.1883,-0.5942)
3017 .. controls (-0.1944,-0.5749) and (-0.2315,-0.5384) .. (-0.2508,-0.5323)
3018 .. controls (-0.2552,-0.5310) and (-0.2606,-0.5308) .. (-0.2667,-0.5315)
3019 --cycle
3020 ( 0.5989,-0.5509)
3021 -- ( 0.6073,-0.5509)
3022 -- ( 0.6073,-0.5593)
3023 --cycle
3024 (-0.0485,-0.5624)

```

```

3025 .. controls (-0.0662,-0.5623) and (-0.0842,-0.5741) .. (-0.0904,-0.6098)
3026 -- (-0.0483,-0.6013)
3027 .. controls (-0.0229,-0.6296) and ( 0.0007,-0.6067) .. (-0.0083,-0.5860)
3028 .. controls (-0.0134,-0.5744) and (-0.0308,-0.5625) .. (-0.0485,-0.5624)
3029 --cycle
3030 (-0.4918,-0.5707)
3031 .. controls (-0.5107,-0.5708) and (-0.5309,-0.5802) .. (-0.5442,-0.6013)
3032 -- (-0.5778,-0.5846)
3033 -- (-0.5862,-0.6181)
3034 .. controls (-0.5249,-0.6353) and (-0.5439,-0.6523) .. (-0.4854,-0.6098)
3035 -- (-0.4937,-0.6770)
3036 -- (-0.5442,-0.6854)
3037 -- (-0.5442,-0.7022)
3038 .. controls (-0.4313,-0.7520) and (-0.4409,-0.6069) .. (-0.4465,-0.5962)
3039 .. controls (-0.4550,-0.5800) and (-0.4728,-0.5707) .. (-0.4918,-0.5707)
3040 --cycle
3041 ( 0.3300,-0.5846)
3042 -- ( 0.3300,-0.6098)
3043 -- ( 0.3552,-0.6098)
3044 -- ( 0.3552,-0.5846)
3045 --cycle
3046 ( 0.3726,-0.6221)
3047 .. controls ( 0.2948,-0.6226) and ( 0.2995,-0.7351) .. ( 0.3726,-0.7632)
3048 .. controls ( 0.4265,-0.7841) and ( 0.4818,-0.7181) .. ( 0.4056,-0.6938)
3049 -- ( 0.3719,-0.7275)
3050 -- ( 0.3719,-0.7027)
3051 .. controls ( 0.3796,-0.6524) and ( 0.4200,-0.6879) .. ( 0.4450,-0.6792)
3052 .. controls ( 0.4638,-0.6728) and ( 0.4659,-0.6470) .. ( 0.4510,-0.6352)
3053 .. controls ( 0.4434,-0.6293) and ( 0.3843,-0.6220) .. ( 0.3726,-0.6221)
3054 --cycle
3055 ( 0.0022,-0.6349)
3056 -- ( 0.0189,-0.6686)
3057 -- ( 0.0189,-0.6349)
3058 --cycle
3059 (-0.1244,-0.6794)
3060 .. controls (-0.1314,-0.6810) and (-0.1382,-0.6846) .. (-0.1441,-0.6904)
3061 .. controls (-0.1605,-0.7066) and (-0.1526,-0.7279) .. (-0.1607,-0.7464)
3062 -- (-0.1786,-0.7721)
3063 .. controls (-0.1852,-0.7840) and (-0.1929,-0.8079) .. (-0.1728,-0.8122)
3064 .. controls (-0.1636,-0.8142) and (-0.1224,-0.7844) .. (-0.1071,-0.7778)
3065 -- (-0.1155,-0.7106)
3066 -- (-0.0735,-0.7275)
3067 .. controls (-0.0800,-0.6898) and (-0.1033,-0.6748) .. (-0.1244,-0.6794)
3068 --cycle
3069 ( 0.1863,-0.6829)
3070 .. controls ( 0.1792,-0.6828) and ( 0.1712,-0.6837) .. ( 0.1618,-0.6854)
3071 -- ( 0.1618,-0.7022)
3072 -- ( 0.2123,-0.7442)
3073 -- ( 0.1282,-0.7190)
3074 .. controls ( 0.1336,-0.7372) and ( 0.1344,-0.7442) .. ( 0.1476,-0.7594)
3075 .. controls ( 0.1538,-0.7664) and ( 0.1626,-0.7738) .. ( 0.1704,-0.7788)
3076 .. controls ( 0.2127,-0.8054) and ( 0.2462,-0.7806) .. ( 0.2481,-0.7530)
3077 .. controls ( 0.2492,-0.7403) and ( 0.2417,-0.7279) .. ( 0.2353,-0.7175)

```



```

3078 .. controls ( 0.2199,-0.6926) and ( 0.2075,-0.6832) .. ( 0.1863,-0.6829)
3079 --cycle
3080 ( 0.5905,-0.6889)
3081 .. controls ( 0.5769,-0.6869) and ( 0.5692,-0.6908) .. ( 0.5569,-0.6938)
3082 -- ( 0.5569,-0.7106)
3083 -- ( 0.5821,-0.7190)
3084 .. controls ( 0.5823,-0.7234) and ( 0.5836,-0.7260) .. ( 0.5844,-0.7296)
3085 -- ( 0.6046,-0.6948)
3086 .. controls ( 0.6001,-0.6927) and ( 0.5958,-0.6898) .. ( 0.5905,-0.6889)
3087 --cycle
3088 (-0.0391,-0.7245)
3089 .. controls (-0.0667,-0.7229) and (-0.0839,-0.7453) .. (-0.0753,-0.7947)
3090 .. controls (-0.0651,-0.8529) and (-0.0367,-0.8483) .. (-0.0106,-0.8698)
3091 -- ( 0.0547,-0.8704)
3092 .. controls ( 0.0548,-0.8616) and ( 0.0567,-0.8516) .. ( 0.0610,-0.8367)
3093 -- ( 0.0189,-0.8367)
3094 .. controls ( 0.0024,-0.8190) and ( 0.0000,-0.8231) .. (-0.0230,-0.8283)
3095 .. controls (-0.0380,-0.7923) and (-0.0454,-0.7840) .. (-0.0399,-0.7442)
3096 -- (-0.0230,-0.7442)
3097 -- (-0.0147,-0.7778)
3098 -- ( 0.0694,-0.7778)
3099 -- ( 0.0525,-0.8199)
3100 -- ( 0.1424,-0.8295)
3101 .. controls ( 0.1612,-0.8227) and ( 0.1619,-0.8006) .. ( 0.1424,-0.7877)
3102 .. controls ( 0.1265,-0.7801) and ( 0.1112,-0.7837) .. ( 0.0946,-0.7877)
3103 .. controls ( 0.0866,-0.7388) and ( 0.0598,-0.7228) .. ( 0.0189,-0.7526)
3104 .. controls (-0.0021,-0.7351) and (-0.0224,-0.7255) .. (-0.0391,-0.7245)
3105 --cycle
3106 (-0.5605,-0.7471)
3107 -- (-0.5242,-0.8116)
3108 .. controls (-0.5223,-0.8116) and (-0.5211,-0.8114) .. (-0.5190,-0.8115)
3109 -- (-0.5201,-0.8191)
3110 -- (-0.4998,-0.8552)
3111 .. controls (-0.4770,-0.8370) and (-0.4696,-0.8098) .. (-0.4974,-0.7815)
3112 --cycle
3113 (-0.3761,-0.7611)
3114 -- (-0.3845,-0.7694)
3115 -- (-0.3845,-0.7863)
3116 -- (-0.3761,-0.7947)
3117 -- (-0.3593,-0.7947)
3118 -- (-0.3508,-0.7863)
3119 -- (-0.3508,-0.7694)
3120 -- (-0.3593,-0.7611)
3121 --cycle
3122 ( 0.3384,-0.8347)
3123 .. controls ( 0.3106,-0.8395) and ( 0.2888,-0.8533) .. ( 0.2775,-0.8723)
3124 -- ( 0.3442,-0.8729)
3125 -- ( 0.3467,-0.8702)
3126 -- ( 0.3561,-0.8730)
3127 -- ( 0.4348,-0.8736)
3128 .. controls ( 0.4345,-0.8731) and ( 0.4345,-0.8727) .. ( 0.4341,-0.8721)
3129 .. controls ( 0.4186,-0.8512) and ( 0.3640,-0.8304) .. ( 0.3384,-0.8347)
3130 --cycle

```

```

3131      (-0.0904,-0.8535)
3132      .. controls (-0.1018,-0.8579) and (-0.1087,-0.8586) .. (-0.1185,-0.8680)
3133      .. controls (-0.1188,-0.8683) and (-0.1189,-0.8687) .. (-0.1192,-0.8690)
3134      -- (-0.0904,-0.8692)
3135      --cycle
3136      (-0.3081,-0.8645)
3137      .. controls (-0.3140,-0.8641) and (-0.3192,-0.8651) .. (-0.3238,-0.8672)
3138      -- (-0.2954,-0.8675)
3139      .. controls (-0.2996,-0.8660) and (-0.3039,-0.8648) .. (-0.3081,-0.8645)
3140      --cycle
3141      ;
3142   }
3143 }
3144 \fi

```

hex/terrain/woods

The style for woods. The pattern is filled with a darker green, and outlines are not drawn.

```

3145 \tikzset{
3146   hex/terrain/woods/.style={
3147     draw=none,
3148     fill={rgb,100:red,27;green,67;blue,27}
3149   }
3150 }

```

hex/terrain/woods

Regular woods.



```

3151 \ifhex@terrain@pic
3152 \tikzset{
3153   hex/terrain/woods/.pic={
3154     \path[hex/terrain/woods,pic actions,draw=none]
3155       (-0.2656, 0.8694)
3156       .. controls (-0.3133, 0.8640) and (-0.3608, 0.8400) .. (-0.3541, 0.8219)
3157       .. controls (-0.3417, 0.7629) and (-0.2512, 0.7779) .. (-0.2082, 0.7875)
3158       -- (-0.2424, 0.6937)
3159       .. controls (-0.2916, 0.7000) and (-0.3535, 0.6915) .. (-0.3950, 0.6606)
3160       .. controls (-0.4299, 0.6330) and (-0.4373, 0.5909) .. (-0.3950, 0.5657)
3161       .. controls (-0.4092, 0.5022) and (-0.3694, 0.4908) .. (-0.3191, 0.4633)
3162       .. controls (-0.3291, 0.3852) and (-0.2535, 0.3866) .. (-0.2935, 0.4633)
3163       .. controls (-0.2488, 0.4801) and (-0.2488, 0.5071) .. (-0.2778, 0.5156)
3164       .. controls (-0.2888, 0.5201) and (-0.3300, 0.5153) .. (-0.3447, 0.5156)
3165       -- (-0.3191, 0.6255)
3166       -- (-0.2680, 0.6425)
3167       -- (-0.2253, 0.5657)

```

```

3168 .. controls (-0.2136, 0.5780) and (-0.2023, 0.5853) .. (-0.2092, 0.6046)
3169 .. controls (-0.2132, 0.6161) and (-0.2403, 0.6366) .. (-0.2260, 0.6502)
3170 .. controls (-0.2044, 0.6711) and (-0.1779, 0.6203) .. (-0.1564, 0.6147)
3171 .. controls (-0.1363, 0.6094) and (-0.1262, 0.6240) .. (-0.1328, 0.6430)
3172 .. controls (-0.1449, 0.6778) and (-0.1661, 0.6737) .. (-0.1741, 0.7278)
3173 .. controls (-0.1213, 0.6943) and (-0.1063, 0.7287) .. (-0.1485, 0.7534)
3174 -- (-0.1058, 0.7875)
3175 -- (-0.0718, 0.7789)
3176 -- (-0.0633, 0.8046)
3177 .. controls (-0.0937, 0.8085) and (-0.0917, 0.8079) .. (-0.1143, 0.7875)
3178 -- (-0.1311, 0.8194)
3179 .. controls (-0.0764, 0.8223) and (-0.0450, 0.8485) .. (-0.0671, 0.8554)
3180 .. controls (-0.1156, 0.8701) and (-0.1015, 0.8233) .. (-0.1806, 0.8398)
3181 .. controls (-0.1900, 0.8580) and (-0.2089, 0.8664) .. (-0.2307, 0.8694)
3182 --cycle
3183 ( 0.3814, 0.8694)
3184 .. controls ( 0.3767, 0.8683) and ( 0.3712, 0.8666) .. ( 0.3632, 0.8643)
3185 -- ( 0.3974, 0.8387)
3186 .. controls ( 0.3974, 0.8591) and ( 0.3972, 0.8674) .. ( 0.3911, 0.8694)
3187 --cycle
3188 (-0.2452, 0.8541)
3189 .. controls (-0.2324, 0.8571) and (-0.2266, 0.8501) .. (-0.2079, 0.8422)
3190 -- (-0.2167, 0.8284)
3191 .. controls (-0.2397, 0.8309) and (-0.2848, 0.8202) .. (-0.2983, 0.8284)
3192 .. controls (-0.3215, 0.8378) and (-0.2860, 0.8342) .. (-0.2614, 0.8473)
3193 .. controls (-0.2547, 0.8509) and (-0.2496, 0.8531) .. (-0.2452, 0.8541)
3194 --cycle
3195 (-0.4331, 0.8427)
3196 .. controls (-0.4534, 0.8538) and (-0.5066, 0.7937) .. (-0.5170, 0.7773)
3197 .. controls (-0.5802, 0.6871) and (-0.6279, 0.5503) .. (-0.6704, 0.5650)
3198 .. controls (-0.6703, 0.5117) and (-0.7322, 0.4917) .. (-0.7340, 0.4547)
3199 .. controls (-0.7365, 0.4053) and (-0.6948, 0.3832) .. (-0.6621, 0.3593)
3200 .. controls (-0.6271, 0.3335) and (-0.6254, 0.2860) .. (-0.5409, 0.3014)
3201 -- (-0.5409, 0.3184)
3202 -- (-0.5750, 0.3099)
3203 -- (-0.5836, 0.3524)
3204 -- (-0.4898, 0.3184)
3205 -- (-0.5068, 0.3696)
3206 .. controls (-0.4593, 0.3586) and (-0.4552, 0.3659) .. (-0.4214, 0.3269)
3207 .. controls (-0.3754, 0.3528) and (-0.3794, 0.4022) .. (-0.4295, 0.4177)
3208 .. controls (-0.4450, 0.4224) and (-0.4931, 0.4354) .. (-0.5068, 0.4333)
3209 .. controls (-0.5383, 0.4284) and (-0.6200, 0.3557) .. (-0.6774, 0.4548)
3210 -- (-0.6432, 0.4548)
3211 -- (-0.6603, 0.4975)
3212 .. controls (-0.6019, 0.4851) and (-0.6021, 0.5053) .. (-0.5921, 0.5572)
3213 .. controls (-0.4969, 0.5307) and (-0.5431, 0.5224) .. (-0.4812, 0.4890)
3214 .. controls (-0.4749, 0.5293) and (-0.4896, 0.5637) .. (-0.5068, 0.5998)
3215 .. controls (-0.4948, 0.6064) and (-0.4850, 0.6107) .. (-0.4746, 0.6204)
3216 .. controls (-0.4177, 0.6740) and (-0.4877, 0.7151) .. (-0.5154, 0.6423)
3217 .. controls (-0.5225, 0.6240) and (-0.5189, 0.6174) .. (-0.5154, 0.5998)
3218 -- (-0.5889, 0.6190)
3219 .. controls (-0.5889, 0.6190) and (-0.5470, 0.6607) .. (-0.5396, 0.6879)
3220 .. controls (-0.5254, 0.7392) and (-0.4740, 0.7624) .. (-0.4378, 0.7960)

```

```

3221 .. controls (-0.4256, 0.8071) and (-0.3322, 0.7872) .. (-0.4331, 0.8427)
3222 --cycle
3223 ( 0.1374, 0.8418)
3224 .. controls ( 0.1320, 0.8428) and ( 0.1261, 0.8424) .. ( 0.1202, 0.8403)
3225 .. controls ( 0.1031, 0.8066) and ( 0.1641, 0.7460) .. ( 0.1812, 0.7545)
3226 .. controls ( 0.1999, 0.7639) and ( 0.1758, 0.8354) .. ( 0.1374, 0.8418)
3227 --cycle
3228 (-0.0462, 0.8217)
3229 -- (-0.0462, 0.7789)
3230 -- (-0.0121, 0.7961)
3231 --cycle
3232 ( 0.3717, 0.8217)
3233 -- ( 0.3717, 0.8046)
3234 -- ( 0.4059, 0.7961)
3235 -- ( 0.4144, 0.8217)
3236 --cycle
3237 ( 0.4898, 0.8122)
3238 .. controls ( 0.4741, 0.8124) and ( 0.4748, 0.7893) .. ( 0.4981, 0.7754)
3239 .. controls ( 0.5017, 0.7550) and ( 0.5313, 0.6452) .. ( 0.5686, 0.6689)
3240 .. controls ( 0.5928, 0.6844) and ( 0.5339, 0.7103) .. ( 0.5653, 0.7412)
3241 .. controls ( 0.5710, 0.7471) and ( 0.5728, 0.7507) .. ( 0.5731, 0.7536)
3242 -- ( 0.5703, 0.7583)
3243 .. controls ( 0.5582, 0.7647) and ( 0.5121, 0.7531) .. ( 0.5343, 0.7796)
3244 .. controls ( 0.5145, 0.8036) and ( 0.4992, 0.8122) .. ( 0.4898, 0.8122)
3245 --cycle
3246 ( 0.3291, 0.7997)
3247 .. controls ( 0.3112, 0.7975) and ( 0.2934, 0.7843) .. ( 0.2780, 0.7757)
3248 .. controls ( 0.2235, 0.7455) and ( 0.1913, 0.7199) .. ( 0.2438, 0.6595)
3249 .. controls ( 0.2287, 0.6542) and ( 0.2176, 0.6521) .. ( 0.2063, 0.6389)
3250 .. controls ( 0.1704, 0.5968) and ( 0.2192, 0.5413) .. ( 0.2430, 0.5712)
3251 .. controls ( 0.2494, 0.5791) and ( 0.2509, 0.6061) .. ( 0.2523, 0.6170)
3252 .. controls ( 0.2545, 0.6376) and ( 0.2547, 0.6388) .. ( 0.2523, 0.6595)
3253 -- ( 0.2865, 0.6681)
3254 .. controls ( 0.3094, 0.6426) and ( 0.3194, 0.6608) .. ( 0.3291, 0.6852)
3255 -- ( 0.2865, 0.6937)
3256 .. controls ( 0.3061, 0.7101) and ( 0.3276, 0.7308) .. ( 0.3547, 0.7322)
3257 .. controls ( 0.3792, 0.7335) and ( 0.4787, 0.6707) .. ( 0.4596, 0.7446)
3258 .. controls ( 0.4487, 0.7866) and ( 0.4132, 0.7751) .. ( 0.3912, 0.7800)
3259 .. controls ( 0.3681, 0.7853) and ( 0.3549, 0.8026) .. ( 0.3291, 0.7997)
3260 --cycle
3261 ( 0.0971, 0.7996)
3262 .. controls ( 0.0971, 0.7996) and (-0.0371, 0.7713) .. (-0.0393, 0.7247)
3263 .. controls (-0.0408, 0.6927) and ( 0.0217, 0.7175) .. ( 0.0521, 0.7277)
3264 .. controls ( 0.0789, 0.7366) and ( 0.0971, 0.7996) .. ( 0.0971, 0.7996)
3265 --cycle
3266 (-0.1571, 0.7961)
3267 -- (-0.1485, 0.7961)
3268 -- (-0.1485, 0.7875)
3269 -- (-0.1400, 0.7875)
3270 -- (-0.1400, 0.7789)
3271 -- (-0.1485, 0.7875)
3272 --cycle
3273 (-0.3689, 0.7733)

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3274 .. controls (-0.3791, 0.7835) and (-0.4247, 0.7612) .. (-0.4247, 0.7612)
3275 .. controls (-0.4247, 0.7612) and (-0.4258, 0.7138) .. (-0.4104, 0.7184)
3276 .. controls (-0.3965, 0.7227) and (-0.3586, 0.7631) .. (-0.3689, 0.7733)
3277 --cycle
3278 ( 0.3462, 0.7278)
3279 -- ( 0.3462, 0.6766)
3280 -- ( 0.3804, 0.7107)
3281 --cycle
3282 ( 0.1142, 0.7077)
3283 .. controls ( 0.1016, 0.7065) and ( 0.0878, 0.7029) .. ( 0.0733, 0.6974)
3284 .. controls ( 0.0595, 0.6920) and ( 0.0449, 0.6883) .. ( 0.0332, 0.6789)
3285 .. controls ( 0.0192, 0.6678) and ( 0.0113, 0.6500) .. ( 0.0014, 0.6354)
3286 .. controls (-0.0079, 0.6219) and (-0.0221, 0.6074) .. (-0.0243, 0.5905)
3287 .. controls (-0.0267, 0.5713) and ( 0.0128, 0.4923) .. ( 0.0326, 0.4877)
3288 .. controls ( 0.0455, 0.4824) and ( 0.0530, 0.4866) .. ( 0.0647, 0.4877)
3289 .. controls ( 0.0870, 0.4591) and ( 0.0975, 0.4638) .. ( 0.1331, 0.4633)
3290 .. controls ( 0.1499, 0.4110) and ( 0.1908, 0.4198) .. ( 0.1671, 0.4890)
3291 .. controls ( 0.1267, 0.5142) and ( 0.1094, 0.5105) .. ( 0.0647, 0.4975)
3292 .. controls ( 0.0889, 0.5509) and ( 0.0981, 0.5486) .. ( 0.0733, 0.6084)
3293 .. controls ( 0.1221, 0.6144) and ( 0.1333, 0.6047) .. ( 0.1415, 0.6510)
3294 -- ( 0.1927, 0.6425)
3295 .. controls ( 0.1814, 0.6932) and ( 0.1526, 0.7111) .. ( 0.1142, 0.7077)
3296 --cycle
3297 ( 0.1671, 0.4890)
3298 -- ( 0.2182, 0.4890)
3299 .. controls ( 0.2474, 0.4580) and ( 0.2982, 0.5061) .. ( 0.2981, 0.5238)
3300 .. controls ( 0.2981, 0.5425) and ( 0.2721, 0.5720) .. ( 0.2418, 0.5318)
3301 -- ( 0.2182, 0.4975)
3302 .. controls ( 0.1923, 0.5152) and ( 0.1850, 0.5158) .. ( 0.1671, 0.4890)
3303 --cycle
3304 (-0.1058, 0.6937)
3305 -- (-0.0973, 0.6595)
3306 -- (-0.0802, 0.6595)
3307 -- (-0.0718, 0.6937)
3308 --cycle
3309 ( 0.3889, 0.6852)
3310 .. controls ( 0.3954, 0.6469) and ( 0.4108, 0.6416) .. ( 0.4314, 0.6766)
3311 --cycle
3312 ( 0.4826, 0.6852)
3313 -- ( 0.4562, 0.6475)
3314 .. controls ( 0.4460, 0.6335) and ( 0.4249, 0.5852) .. ( 0.4639, 0.5976)
3315 .. controls ( 0.4953, 0.6076) and ( 0.5058, 0.6583) .. ( 0.4998, 0.6852)
3316 --cycle
3317 (-0.0879, 0.6326)
3318 .. controls (-0.1189, 0.6139) and (-0.0956, 0.5976) .. (-0.0822, 0.6003)
3319 .. controls (-0.0699, 0.6027) and (-0.0544, 0.6253) .. (-0.0879, 0.6326)
3320 --cycle
3321 ( 0.3034, 0.6255)
3322 -- ( 0.2694, 0.6170)
3323 -- ( 0.2694, 0.5998)
3324 -- ( 0.3034, 0.5913)
3325 --cycle
3326 ( 0.6085, 0.6015)

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3327 .. controls ( 0.5969, 0.6043) and ( 0.5796, 0.6004) .. ( 0.5688, 0.5964)
3328 .. controls ( 0.5189, 0.5780) and ( 0.5216, 0.5317) .. ( 0.5338, 0.4890)
3329 .. controls ( 0.5892, 0.5200) and ( 0.5513, 0.5451) .. ( 0.6191, 0.5657)
3330 .. controls ( 0.6318, 0.5296) and ( 0.6176, 0.4979) .. ( 0.6703, 0.5572)
3331 .. controls ( 0.6580, 0.5662) and ( 0.6196, 0.5989) .. ( 0.6085, 0.6015)
3332 --cycle
3333 ( 0.6703, 0.5572)
3334 .. controls ( 0.6650, 0.4639) and ( 0.7377, 0.4434) .. ( 0.6703, 0.5572)
3335 --cycle
3336 ( 0.2950, 0.5828)
3337 -- ( 0.3034, 0.5487)
3338 -- ( 0.3206, 0.5487)
3339 -- ( 0.3291, 0.5572)
3340 -- ( 0.3291, 0.5743)
3341 --cycle
3342 (-0.2167, 0.5572)
3343 .. controls (-0.2524, 0.4984) and (-0.2378, 0.4949) .. (-0.1997, 0.4463)
3344 -- (-0.1656, 0.4548)
3345 -- (-0.1656, 0.4719)
3346 -- (-0.1997, 0.4804)
3347 -- (-0.1997, 0.4719)
3348 -- (-0.2082, 0.4804)
3349 -- (-0.1997, 0.4804)
3350 .. controls (-0.1944, 0.5170) and (-0.1913, 0.5288) .. (-0.2167, 0.5572)
3351 --cycle
3352 ( 0.4528, 0.5567)
3353 .. controls ( 0.4208, 0.5591) and ( 0.3875, 0.5291) .. ( 0.3974, 0.4804)
3354 -- ( 0.4998, 0.5146)
3355 .. controls ( 0.4909, 0.5422) and ( 0.4721, 0.5552) .. ( 0.4528, 0.5567)
3356 --cycle
3357 (-0.5836, 0.5401)
3358 .. controls (-0.5724, 0.5036) and (-0.5428, 0.4697) .. (-0.5238, 0.5231)
3359 --cycle
3360 (-0.0890, 0.5163)
3361 .. controls (-0.1486, 0.4959) and (-0.1212, 0.4523) .. (-0.0806, 0.4615)
3362 .. controls (-0.0429, 0.4702) and (-0.0388, 0.5108) .. (-0.0890, 0.5163)
3363 --cycle
3364 ( 0.3494, 0.5160)
3365 .. controls ( 0.3442, 0.5162) and ( 0.3376, 0.5157) .. ( 0.3291, 0.5146)
3366 -- ( 0.3632, 0.4804)
3367 .. controls ( 0.3666, 0.5059) and ( 0.3648, 0.5149) .. ( 0.3494, 0.5160)
3368 --cycle
3369 ( 0.6832, 0.4635)
3370 .. controls ( 0.6577, 0.4592) and ( 0.6354, 0.4224) .. ( 0.6277, 0.3866)
3371 -- ( 0.6618, 0.3781)
3372 .. controls ( 0.6758, 0.4215) and ( 0.6897, 0.4164) .. ( 0.7299, 0.4293)
3373 .. controls ( 0.7150, 0.4573) and ( 0.6984, 0.4662) .. ( 0.6832, 0.4635)
3374 --cycle
3375 ( 0.3846, 0.4569)
3376 .. controls ( 0.3643, 0.4547) and ( 0.3427, 0.4484) .. ( 0.3206, 0.4379)
3377 .. controls ( 0.2993, 0.4278) and ( 0.2743, 0.4198) .. ( 0.2665, 0.3948)
3378 .. controls ( 0.2602, 0.3747) and ( 0.2710, 0.3497) .. ( 0.2940, 0.3491)
3379 .. controls ( 0.3208, 0.3484) and ( 0.3628, 0.4037) .. ( 0.4059, 0.3999)

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3380 .. controls ( 0.4648, 0.3948) and ( 0.4817, 0.3238) .. ( 0.5508, 0.3184)
3381 -- ( 0.5594, 0.2842)
3382 .. controls ( 0.6325, 0.3301) and ( 0.6184, 0.4000) .. ( 0.5253, 0.3610)
3383 .. controls ( 0.4966, 0.4310) and ( 0.4457, 0.4630) .. ( 0.3846, 0.4569)
3384 --cycle
3385 ( 0.0020, 0.4093)
3386 .. controls (-0.0096, 0.4099) and (-0.0218, 0.4039) .. (-0.0547, 0.3920)
3387 .. controls (-0.0742, 0.3851) and (-0.1009, 0.3815) .. (-0.1085, 0.3591)
3388 .. controls (-0.1143, 0.3413) and (-0.1036, 0.3179) .. (-0.0973, 0.3014)
3389 .. controls (-0.1114, 0.2946) and (-0.1334, 0.2825) .. (-0.1485, 0.2820)
3390 .. controls (-0.1767, 0.2809) and (-0.1949, 0.3055) .. (-0.2182, 0.3110)
3391 .. controls (-0.2417, 0.3165) and (-0.3307, 0.2833) .. (-0.3437, 0.2635)
3392 .. controls (-0.3530, 0.2471) and (-0.3474, 0.2253) .. (-0.3437, 0.2075)
3393 .. controls (-0.4324, 0.1756) and (-0.3706, 0.0831) .. (-0.2765, 0.0710)
3394 .. controls (-0.2795, 0.0550) and (-0.2801, 0.0364) .. (-0.2860, 0.0213)
3395 .. controls (-0.2997,-0.0142) and (-0.3382,-0.0416) .. (-0.2680,-0.0825)
3396 -- (-0.2424, 0.0027)
3397 -- (-0.1997,-0.0143)
3398 .. controls (-0.1918, 0.0295) and (-0.2082, 0.0371) .. (-0.1741, 0.0710)
3399 .. controls (-0.1600, 0.0270) and (-0.1316, 0.0212) .. (-0.1230, 0.0710)
3400 -- (-0.0547, 0.0710)
3401 -- (-0.0547, 0.0198)
3402 .. controls (-0.0089, 0.0346) and (-0.0127, 0.0528) .. (-0.0121, 0.0966)
3403 .. controls ( 0.0434, 0.0981) and ( 0.0809, 0.1179) .. ( 0.0988, 0.1733)
3404 -- ( 0.0561, 0.1477)
3405 -- ( 0.0647, 0.1477)
3406 -- ( 0.0647, 0.1392)
3407 -- ( 0.0561, 0.1477)
3408 -- (-0.0333, 0.1681)
3409 -- (-0.0973, 0.1990)
3410 .. controls (-0.1035, 0.1519) and (-0.0915, 0.1406) .. (-0.0462, 0.1307)
3411 -- (-0.0547, 0.1051)
3412 .. controls (-0.0809, 0.1134) and (-0.1575, 0.1376) .. (-0.1816, 0.1275)
3413 .. controls (-0.1979, 0.1207) and (-0.2008, 0.1105) .. (-0.2082, 0.0966)
3414 -- (-0.2765, 0.0796)
3415 .. controls (-0.2913, 0.1042) and (-0.2904, 0.1037) .. (-0.3191, 0.1051)
3416 -- (-0.3277, 0.1307)
3417 -- (-0.3020, 0.1392)
3418 -- (-0.3191, 0.1733)
3419 -- (-0.2680, 0.2416)
3420 .. controls (-0.2555, 0.2025) and (-0.2434, 0.1999) .. (-0.2082, 0.1819)
3421 .. controls (-0.2103, 0.2198) and (-0.2204, 0.2217) .. (-0.2509, 0.2416)
3422 -- (-0.1571, 0.2416)
3423 -- (-0.0973, 0.1990)
3424 .. controls (-0.0622, 0.2159) and (-0.0506, 0.2107) .. (-0.0376, 0.2501)
3425 -- (-0.0718, 0.2672)
3426 -- (-0.0121, 0.2842)
3427 -- (-0.0121, 0.3014)
3428 -- (-0.0462, 0.3184)
3429 -- ( 0.0221, 0.3439)
3430 .. controls ( 0.0070, 0.2950) and ( 0.0355, 0.2771) .. ( 0.0818, 0.2757)
3431 -- ( 0.0561, 0.3354)
3432 .. controls ( 0.1139, 0.3092) and ( 0.1160, 0.3517) .. ( 0.0949, 0.3683)

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3433 -- ( 0.0561, 0.3859)
3434 .. controls ( 0.0248, 0.4010) and ( 0.0136, 0.4085) .. ( 0.0020, 0.4093)
3435 --cycle
3436 (-0.2680,-0.0825)
3437 .. controls (-0.2752,-0.1245) and (-0.2656,-0.1332) .. (-0.2253,-0.1423)
3438 .. controls (-0.2780,-0.1694) and (-0.3487,-0.1517) .. (-0.3277,-0.2360)
3439 -- (-0.3958,-0.2275)
3440 .. controls (-0.3850,-0.1662) and (-0.4133,-0.1372) .. (-0.4727,-0.1337)
3441 -- (-0.4727,-0.0910)
3442 .. controls (-0.5590,-0.0763) and (-0.5042,-0.0134) .. (-0.5750,-0.0228)
3443 .. controls (-0.5589,-0.0849) and (-0.5477,-0.0819) .. (-0.5750,-0.1423)
3444 .. controls (-0.6476,-0.1314) and (-0.6815,-0.1792) .. (-0.6262,-0.2360)
3445 .. controls (-0.6614,-0.2507) and (-0.6863,-0.2704) .. (-0.6674,-0.3120)
3446 .. controls (-0.6596,-0.3292) and (-0.6399,-0.3442) .. (-0.6461,-0.3629)
3447 .. controls (-0.6528,-0.3836) and (-0.7224,-0.4151) .. (-0.6960,-0.4711)
3448 .. controls (-0.6692,-0.5273) and (-0.5938,-0.5008) .. (-0.6603,-0.4579)
3449 -- (-0.6262,-0.4237)
3450 -- (-0.5921,-0.4579)
3451 .. controls (-0.5645,-0.3552) and (-0.5902,-0.3724) .. (-0.6177,-0.2872)
3452 -- (-0.5750,-0.2531)
3453 -- (-0.6177,-0.2446)
3454 -- (-0.6006,-0.2190)
3455 .. controls (-0.5707,-0.2398) and (-0.5626,-0.2347) .. (-0.5494,-0.2019)
3456 -- (-0.5836,-0.1848)
3457 -- (-0.5153,-0.1592)
3458 .. controls (-0.5297,-0.1903) and (-0.5326,-0.1983) .. (-0.4983,-0.2105)
3459 -- (-0.4983,-0.1763)
3460 .. controls (-0.4268,-0.1951) and (-0.4189,-0.2337) .. (-0.3789,-0.2872)
3461 .. controls (-0.4036,-0.3020) and (-0.4028,-0.3012) .. (-0.4044,-0.3299)
3462 -- (-0.3362,-0.3299)
3463 .. controls (-0.3465,-0.3786) and (-0.3284,-0.3796) .. (-0.2850,-0.3811)
3464 -- (-0.2850,-0.4151)
3465 .. controls (-0.2401,-0.4035) and (-0.1731,-0.3767) .. (-0.1571,-0.3299)
3466 .. controls (-0.1233,-0.3324) and (-0.1022,-0.3221) .. (-0.1230,-0.2872)
3467 -- (-0.1143,-0.2360)
3468 -- (-0.1741,-0.2531)
3469 -- (-0.1741,-0.2701)
3470 -- (-0.1485,-0.2787)
3471 -- (-0.1571,-0.3214)
3472 -- (-0.2765,-0.3640)
3473 .. controls (-0.2785,-0.3286) and (-0.2853,-0.3271) .. (-0.3191,-0.3214)
3474 -- (-0.3191,-0.3299)
3475 -- (-0.3277,-0.3214)
3476 -- (-0.3191,-0.3214)
3477 .. controls (-0.3191,-0.3214) and (-0.2922,-0.3221) .. (-0.2850,-0.3128)
3478 .. controls (-0.2781,-0.3038) and (-0.2850,-0.2787) .. (-0.2850,-0.2787)
3479 .. controls (-0.2850,-0.2462) and (-0.2522,-0.2669) .. (-0.2424,-0.2360)
3480 -- (-0.2935,-0.2360)
3481 -- (-0.2509,-0.2019)
3482 -- (-0.2424,-0.2360)
3483 .. controls (-0.1852,-0.2624) and (-0.2046,-0.2259) .. (-0.1740,-0.2170)
3484 .. controls (-0.1599,-0.2119) and (-0.1427,-0.2266) .. (-0.1281,-0.2170)
3485 .. controls (-0.1166,-0.2109) and (-0.1070,-0.1747) .. (-0.1656,-0.1848)

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3486 -- (-0.2082,-0.0228)
3487 -- (-0.2253,-0.0228)
3488 .. controls (-0.2307,-0.0463) and (-0.2347,-0.0485) .. (-0.2167,-0.0654)
3489 -- (-0.2253,-0.0910)
3490 --cycle
3491 ( 0.7385, 0.3781)
3492 .. controls ( 0.7464, 0.3334) and ( 0.7712, 0.3235) .. ( 0.7897, 0.3696)
3493 --cycle
3494 ( 0.3825, 0.3684)
3495 .. controls ( 0.3722, 0.3709) and ( 0.3598, 0.3638) .. ( 0.3547, 0.3341)
3496 -- ( 0.3712, 0.3341)
3497 .. controls ( 0.4107, 0.3328) and ( 0.3998, 0.3641) .. ( 0.3825, 0.3684)
3498 --cycle
3499 ( 0.3547, 0.3341)
3500 -- ( 0.3034, 0.3280)
3501 .. controls ( 0.2587, 0.3223) and ( 0.2449, 0.3331) .. ( 0.2267, 0.2842)
3502 -- ( 0.1515, 0.2970)
3503 .. controls ( 0.1395, 0.3001) and ( 0.1217, 0.3113) .. ( 0.1096, 0.3062)
3504 .. controls ( 0.0947, 0.3000) and ( 0.0955, 0.2804) .. ( 0.0944, 0.2671)
3505 .. controls ( 0.0897, 0.2118) and ( 0.0889, 0.2059) .. ( 0.1158, 0.1563)
3506 -- ( 0.1331, 0.1563)
3507 -- ( 0.1415, 0.1648)
3508 -- ( 0.1415, 0.2501)
3509 -- ( 0.2449, 0.2446)
3510 .. controls ( 0.2870, 0.2248) and ( 0.2549, 0.1801) .. ( 0.3376, 0.1733)
3511 -- ( 0.3376, 0.2245)
3512 -- ( 0.3889, 0.2075)
3513 .. controls ( 0.3692, 0.2680) and ( 0.3319, 0.2493) .. ( 0.3034, 0.2928)
3514 .. controls ( 0.3440, 0.2858) and ( 0.3561, 0.2934) .. ( 0.3547, 0.3341)
3515 --cycle
3516 ( 0.4285, 0.3341)
3517 .. controls ( 0.4111, 0.3048) and ( 0.4418, 0.2997) .. ( 0.4508, 0.3082)
3518 .. controls ( 0.4603, 0.3170) and ( 0.4582, 0.3376) .. ( 0.4285, 0.3341)
3519 --cycle
3520 ( 0.7199, 0.3309)
3521 .. controls ( 0.7120, 0.3311) and ( 0.7041, 0.3301) .. ( 0.6963, 0.3276)
3522 .. controls ( 0.6516, 0.3141) and ( 0.5998, 0.2127) .. ( 0.6788, 0.2075)
3523 -- ( 0.6874, 0.1819)
3524 .. controls ( 0.6908, 0.1882) and ( 0.6948, 0.1871) .. ( 0.6958, 0.2009)
3525 .. controls ( 0.6967, 0.2152) and ( 0.6850, 0.2341) .. ( 0.6875, 0.2482)
3526 .. controls ( 0.6912, 0.2697) and ( 0.7185, 0.2790) .. ( 0.7404, 0.2558)
3527 -- ( 0.7556, 0.2330)
3528 .. controls ( 0.8209, 0.2699) and ( 0.7743, 0.3292) .. ( 0.7199, 0.3309)
3529 --cycle
3530 (-0.4641, 0.3269)
3531 -- (-0.4556, 0.2928)
3532 -- (-0.4386, 0.2928)
3533 -- (-0.4300, 0.3269)
3534 --cycle
3535 (-0.3532, 0.3269)
3536 .. controls (-0.3838, 0.3252) and (-0.3857, 0.3233) .. (-0.3874, 0.2928)
3537 .. controls (-0.3613, 0.3019) and (-0.3623, 0.3007) .. (-0.3532, 0.3269)
3538 --cycle

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3539      (-0.7723, 0.3114)
3540      .. controls (-0.9303, 0.2491) and (-0.8236, 0.1766) .. (-0.9066, 0.1318)
3541      .. controls (-0.9222, 0.1231) and (-0.9315, 0.1156) .. (-0.9385, 0.1084)
3542      -- (-0.9505, 0.0875)
3543      .. controls (-0.9537, 0.0757) and (-0.9542, 0.0621) .. (-0.9542, 0.0410)
3544      -- (-0.9333, 0.0454)
3545      .. controls (-0.9116, 0.1020) and (-0.8383, 0.0970) .. (-0.8943, 0.1349)
3546      .. controls (-0.8577, 0.1472) and (-0.8473, 0.1249) .. (-0.8748, 0.1652)
3547      -- (-0.8414, 0.1559)
3548      .. controls (-0.8055, 0.1614) and (-0.8119, 0.2075) .. (-0.8279, 0.2170)
3549      .. controls (-0.8020, 0.2197) and (-0.8300, 0.2698) .. (-0.8062, 0.2572)
3550      .. controls (-0.7862, 0.2467) and (-0.7713, 0.2258) .. (-0.7547, 0.2261)
3551      .. controls (-0.7211, 0.2267) and (-0.7384, 0.2895) .. (-0.7723, 0.3114)
3552      --cycle
3553      ( 0.5167, 0.2928)
3554      -- ( 0.5083, 0.2842)
3555      -- ( 0.5083, 0.2672)
3556      -- ( 0.5167, 0.2587)
3557      -- ( 0.5338, 0.2587)
3558      -- ( 0.5423, 0.2672)
3559      -- ( 0.5423, 0.2842)
3560      -- ( 0.5338, 0.2928)
3561      --cycle
3562      ( 0.8233, 0.2914)
3563      .. controls ( 0.8159, 0.2897) and ( 0.8101, 0.2823) .. ( 0.8101, 0.2664)
3564      .. controls ( 0.8101, 0.2592) and ( 0.7901, 0.2245) .. ( 0.7943, 0.2184)
3565      .. controls ( 0.8010, 0.2085) and ( 0.8177, 0.1916) .. ( 0.8341, 0.1843)
3566      -- ( 0.7897, 0.1051)
3567      .. controls ( 0.7638, 0.1109) and ( 0.6977, 0.1143) .. ( 0.6790, 0.0913)
3568      .. controls ( 0.6678, 0.0772) and ( 0.6727, 0.0528) .. ( 0.6644, 0.0283)
3569      .. controls ( 0.6511,-0.0104) and ( 0.6263,-0.0275) .. ( 0.5936,-0.0484)
3570      .. controls ( 0.5977,-0.0521) and ( 0.6009,-0.0593) .. ( 0.6125,-0.0633)
3571      .. controls ( 0.6432,-0.0738) and ( 0.6954,-0.0310) .. ( 0.7067,-0.0043)
3572      .. controls ( 0.7123, 0.0088) and ( 0.7121, 0.0229) .. ( 0.7130, 0.0368)
3573      .. controls ( 0.7585, 0.0333) and ( 0.7707, 0.0484) .. ( 0.7897, 0.0881)
3574      -- ( 0.8409, 0.0027)
3575      .. controls ( 0.7828,-0.0157) and ( 0.7583,-0.0941) .. ( 0.8409,-0.1337)
3576      .. controls ( 0.8561,-0.0647) and ( 0.8176,-0.0742) .. ( 0.8836,-0.0143)
3577      -- ( 0.9348,-0.0654)
3578      .. controls ( 0.9443,-0.0311) and ( 0.9398,-0.0319) .. ( 0.9430,-0.0008)
3579      .. controls ( 0.9475, 0.0433) and ( 0.9603, 0.0556) .. ( 0.8921, 0.0796)
3580      -- ( 0.8836, 0.0710)
3581      -- ( 0.8836, 0.0540)
3582      -- ( 0.9006, 0.0198)
3583      .. controls ( 0.8705, 0.0555) and ( 0.8589, 0.0671) .. ( 0.8494, 0.1137)
3584      -- ( 0.8921, 0.0881)
3585      .. controls ( 0.9100, 0.1275) and ( 0.9093, 0.1211) .. ( 0.9077, 0.1641)
3586      .. controls ( 0.8502, 0.2199) and ( 0.8502, 0.2055) .. ( 0.8245, 0.2294)
3587      .. controls ( 0.8511, 0.2387) and ( 0.8571, 0.2533) .. ( 0.8546, 0.2660)
3588      -- ( 0.8445, 0.2834)
3589      .. controls ( 0.8380, 0.2892) and ( 0.8301, 0.2928) .. ( 0.8233, 0.2914)
3590      --cycle
3591      (-0.6221, 0.2851)

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3592 .. controls (-0.6403, 0.2814) and (-0.6578, 0.2533) .. (-0.6578, 0.2330)
3593 .. controls (-0.6578, 0.2083) and (-0.6228, 0.1685) .. (-0.6090, 0.1392)
3594 .. controls (-0.6712, 0.1174) and (-0.6013, 0.0486) .. (-0.5914, 0.0454)
3595 .. controls (-0.5625, 0.0361) and (-0.5594, 0.0690) .. (-0.5384, 0.0751)
3596 .. controls (-0.5161, 0.0820) and (-0.5142, 0.0619) .. (-0.4641, 0.0796)
3597 .. controls (-0.4838, 0.1372) and (-0.5135, 0.1504) .. (-0.5665, 0.1733)
3598 -- (-0.5323, 0.2075)
3599 -- (-0.5665, 0.2160)
3600 -- (-0.5665, 0.1819)
3601 -- (-0.5921, 0.2245)
3602 -- (-0.6006, 0.2330)
3603 -- (-0.6090, 0.2416)
3604 -- (-0.6006, 0.2416)
3605 -- (-0.6006, 0.2330)
3606 -- (-0.5921, 0.2330)
3607 -- (-0.5921, 0.2245)
3608 .. controls (-0.5591, 0.2361) and (-0.5513, 0.2585) .. (-0.5921, 0.2587)
3609 .. controls (-0.5999, 0.2809) and (-0.6112, 0.2874) .. (-0.6221, 0.2851)
3610 --cycle
3611 (-0.4001, 0.2659)
3612 -- (-0.4398, 0.2231)
3613 -- (-0.4713, 0.1989)
3614 .. controls (-0.5030, 0.1708) and (-0.4873, 0.1496) .. (-0.4486, 0.1607)
3615 .. controls (-0.4215, 0.1683) and (-0.3832, 0.1951) .. (-0.3704, 0.2199)
3616 .. controls (-0.3565, 0.2464) and (-0.3702, 0.2690) .. (-0.4001, 0.2659)
3617 --cycle
3618 ( 0.5167, 0.2501)
3619 .. controls ( 0.4726, 0.2275) and ( 0.4751, 0.2109) .. ( 0.4771, 0.1648)
3620 .. controls ( 0.4776, 0.1495) and ( 0.4771, 0.1247) .. ( 0.4946, 0.1178)
3621 .. controls ( 0.5149, 0.1096) and ( 0.5288, 0.1359) .. ( 0.5681, 0.1435)
3622 .. controls ( 0.6164, 0.1530) and ( 0.6391, 0.1274) .. ( 0.6568, 0.1214)
3623 .. controls ( 0.6669, 0.1180) and ( 0.6795, 0.1163) .. ( 0.6862, 0.1272)
3624 .. controls ( 0.7003, 0.1512) and ( 0.6673, 0.1556) .. ( 0.6532, 0.1563)
3625 .. controls ( 0.6261, 0.2314) and ( 0.5966, 0.1859) .. ( 0.5605, 0.1960)
3626 .. controls ( 0.5390, 0.2022) and ( 0.5268, 0.2319) .. ( 0.5167, 0.2501)
3627 --cycle
3628 (-0.0462, 0.2075)
3629 -- (-0.0462, 0.1819)
3630 -- (-0.0206, 0.1819)
3631 -- (-0.0206, 0.2075)
3632 --cycle
3633 (-0.7371, 0.1990)
3634 -- (-0.7371, 0.1563)
3635 -- (-0.7115, 0.1905)
3636 -- (-0.7200, 0.1990)
3637 --cycle
3638 (-0.1656, 0.1905)
3639 -- (-0.1400, 0.1648)
3640 --cycle
3641 (-0.7797, 0.1819)
3642 -- (-0.7883, 0.1733)
3643 -- (-0.7883, 0.1563)
3644 -- (-0.7542, 0.1477)

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3645 -- (-0.7627, 0.1819)
3646 --cycle
3647 ( 0.1671, 0.1819)
3648 -- ( 0.1841, 0.1477)
3649 --cycle
3650 ( 0.6447, 0.1477)
3651 -- ( 0.6532, 0.1477)
3652 -- ( 0.6532, 0.1392)
3653 --cycle
3654 (-0.7081, 0.1437)
3655 .. controls (-0.7387, 0.1429) and (-0.7462, 0.1254) .. (-0.7593, 0.0844)
3656 .. controls (-0.7628, 0.0670) and (-0.7720, 0.0499) .. (-0.7593, 0.0321)
3657 .. controls (-0.7496, 0.0145) and (-0.7241, 0.0137) .. (-0.7173, 0.0321)
3658 .. controls (-0.7114, 0.0479) and (-0.7222, 0.0657) .. (-0.7285, 0.0796)
3659 .. controls (-0.6938, 0.0968) and (-0.6811, 0.1011) .. (-0.6688, 0.1392)
3660 .. controls (-0.6852, 0.1425) and (-0.6979, 0.1439) .. (-0.7081, 0.1437)
3661 --cycle
3662 ( 0.8921, 0.1392)
3663 -- ( 0.9006, 0.1392)
3664 -- ( 0.9006, 0.1307)
3665 --cycle
3666 ( 0.5765, 0.1222)
3667 -- ( 0.5850, 0.0881)
3668 -- ( 0.6021, 0.0881)
3669 -- ( 0.6106, 0.1222)
3670 --cycle
3671 ( 0.2872, 0.1175)
3672 .. controls ( 0.2767, 0.1166) and ( 0.2651, 0.1135) .. ( 0.2533, 0.1071)
3673 .. controls ( 0.2151, 0.0867) and ( 0.2220, 0.0479) .. ( 0.2267, 0.0113)
3674 .. controls ( 0.2625, 0.0237) and ( 0.2504, 0.0254) .. ( 0.2701, 0.0519)
3675 .. controls ( 0.2958, 0.0863) and ( 0.3249, 0.0559) .. ( 0.3338, 0.0822)
3676 .. controls ( 0.3402, 0.1009) and ( 0.3185, 0.1198) .. ( 0.2872, 0.1175)
3677 --cycle
3678 ( 0.4845, 0.1051)
3679 .. controls ( 0.4706, 0.1009) and ( 0.4616, 0.0995) .. ( 0.4512, 0.0905)
3680 .. controls ( 0.4040, 0.0493) and ( 0.4796,-0.0172) .. ( 0.4845, 0.0710)
3681 .. controls ( 0.4877, 0.0867) and ( 0.4856, 0.0907) .. ( 0.4845, 0.1051)
3682 --cycle
3683 ( 0.6362, 0.1051)
3684 -- ( 0.6277, 0.0966)
3685 -- ( 0.6277, 0.0796)
3686 -- ( 0.6618, 0.0710)
3687 -- ( 0.6532, 0.1051)
3688 --cycle
3689 ( 0.0988, 0.0966)
3690 -- ( 0.0647, 0.0881)
3691 -- ( 0.0647, 0.0710)
3692 -- ( 0.0902, 0.0625)
3693 .. controls ( 0.0813, 0.0194) and ( 0.0842, 0.0065) .. ( 0.1244,-0.0143)
3694 -- ( 0.1331, 0.0283)
3695 -- ( 0.1671, 0.0368)
3696 -- ( 0.1671, 0.0540)
3697 .. controls ( 0.1326, 0.0659) and ( 0.1186, 0.0637) .. ( 0.0988, 0.0966)

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3698 --cycle
3699 (-0.8125, 0.0621)
3700 .. controls (-0.8490, 0.0401) and (-0.8237, 0.0162) .. (-0.8062, 0.0190)
3701 .. controls (-0.7883, 0.0219) and (-0.7704, 0.0544) .. (-0.8125, 0.0621)
3702 --cycle
3703 ( 0.5167, 0.0540)
3704 -- ( 0.5083, 0.0198)
3705 -- ( 0.5423, 0.0283)
3706 -- ( 0.5423, 0.0454)
3707 -- ( 0.5338, 0.0540)
3708 --cycle
3709 (-0.0973, 0.0454)
3710 -- (-0.1058, 0.0368)
3711 -- (-0.1058, 0.0198)
3712 -- (-0.0718, 0.0113)
3713 -- (-0.0802, 0.0454)
3714 --cycle
3715 (-0.0035, 0.0368)
3716 -- (-0.0210, 0.0109)
3717 .. controls (-0.0655,-0.0708) and ( 0.0385,-0.0566) .. ( 0.0166, 0.0109)
3718 .. controls ( 0.0120, 0.0245) and ( 0.0056, 0.0275) .. (-0.0035, 0.0368)
3719 --cycle
3720 (-0.4977, 0.0207)
3721 .. controls (-0.5147, 0.0204) and (-0.5312, 0.0080) .. (-0.5211,-0.0096)
3722 .. controls (-0.5118,-0.0261) and (-0.4926,-0.0166) .. (-0.4645,-0.0487)
3723 .. controls (-0.4440,-0.0720) and (-0.4524,-0.0706) .. (-0.4214,-0.0825)
3724 .. controls (-0.4050,-0.0235) and (-0.4308, 0.0217) .. (-0.4977, 0.0207)
3725 --cycle
3726 ( 0.3756, 0.0075)
3727 .. controls ( 0.3646, 0.0069) and ( 0.3522, 0.0045) .. ( 0.3376, 0.0002)
3728 .. controls ( 0.3227,-0.0042) and ( 0.3054,-0.0075) .. ( 0.2946,-0.0193)
3729 -- ( 0.2742,-0.0568)
3730 .. controls ( 0.2649,-0.0745) and ( 0.2554,-0.0861) .. ( 0.2571,-0.1073)
3731 .. controls ( 0.2601,-0.1471) and ( 0.2967,-0.2295) .. ( 0.3408,-0.1666)
3732 .. controls ( 0.3653,-0.1317) and ( 0.3284,-0.1299) .. ( 0.3717,-0.0654)
3733 .. controls ( 0.4033,-0.0789) and ( 0.4049,-0.0788) .. ( 0.4314,-0.0568)
3734 .. controls ( 0.4664,-0.1165) and ( 0.5153,-0.0409) .. ( 0.5152,-0.0308)
3735 .. controls ( 0.5148,-0.0111) and ( 0.4690, 0.0277) .. ( 0.4571,-0.0399)
3736 .. controls ( 0.4280,-0.0054) and ( 0.4082, 0.0095) .. ( 0.3756, 0.0075)
3737 --cycle
3738 (-0.9801, 0.0047)
3739 -- (-0.9427,-0.0792)
3740 -- (-0.8931,-0.0669)
3741 -- (-0.8538,-0.0818)
3742 .. controls (-0.8464,-0.0219) and (-0.9339,-0.0180) .. (-0.9801, 0.0047)
3743 --cycle
3744 ( 0.5423,-0.0484)
3745 -- ( 0.5594,-0.0997)
3746 .. controls ( 0.5416,-0.1040) and ( 0.4986,-0.1096) .. ( 0.4864,-0.1181)
3747 .. controls ( 0.4658,-0.1324) and ( 0.4601,-0.1677) .. ( 0.4793,-0.1854)
3748 .. controls ( 0.4883,-0.1938) and ( 0.5053,-0.1981) .. ( 0.5167,-0.2019)
3749 .. controls ( 0.4933,-0.2045) and ( 0.4609,-0.2005) .. ( 0.4427,-0.2156)
3750 .. controls ( 0.4166,-0.2372) and ( 0.4089,-0.2872) .. ( 0.4826,-0.2957)

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3751 -- ( 0.4826,-0.2446)
3752 .. controls ( 0.5217,-0.2597) and ( 0.5287,-0.2486) .. ( 0.5167,-0.2105)
3753 .. controls ( 0.5424,-0.2023) and ( 0.5512,-0.1934) .. ( 0.5594,-0.1677)
3754 -- ( 0.6191,-0.1848)
3755 -- ( 0.6788,-0.3042)
3756 -- ( 0.6532,-0.3128)
3757 -- ( 0.6532,-0.3299)
3758 -- ( 0.7385,-0.3214)
3759 -- ( 0.7130,-0.2617)
3760 .. controls ( 0.7337,-0.2558) and ( 0.7608,-0.2439) .. ( 0.7812,-0.2454)
3761 .. controls ( 0.7973,-0.2453) and ( 0.8226,-0.2581) .. ( 0.8346,-0.2454)
3762 .. controls ( 0.8523,-0.2285) and ( 0.8216,-0.2043) .. ( 0.8067,-0.1989)
3763 .. controls ( 0.7691,-0.1854) and ( 0.7439,-0.2093) .. ( 0.6805,-0.1933)
3764 -- ( 0.6805,-0.1448)
3765 -- ( 0.6017,-0.0907)
3766 -- ( 0.5680,-0.0907)
3767 -- ( 0.5765,-0.0484)
3768 --cycle
3769 (-0.7372,-0.0610)
3770 .. controls (-0.7812,-0.0612) and (-0.8222,-0.0885) .. (-0.7969,-0.1508)
3771 -- (-0.8546,-0.1518)
3772 .. controls (-0.8578,-0.0809) and (-0.9199,-0.0961) .. (-0.9322,-0.1220)
3773 -- (-0.9145,-0.1528)
3774 .. controls (-0.9119,-0.1539) and (-0.9110,-0.1554) .. (-0.9080,-0.1566)
3775 .. controls (-0.8746,-0.1628) and (-0.8911,-0.2081) .. (-0.8709,-0.2184)
3776 .. controls (-0.8479,-0.2301) and (-0.8289,-0.2160) .. (-0.8075,-0.2238)
3777 .. controls (-0.7880,-0.2309) and (-0.7418,-0.2959) .. (-0.7285,-0.2190)
3778 -- (-0.7712,-0.2105)
3779 .. controls (-0.7608,-0.1935) and (-0.7474,-0.1633) .. (-0.7309,-0.1535)
3780 .. controls (-0.7132,-0.1433) and (-0.6647,-0.1458) .. (-0.6532,-0.1225)
3781 .. controls (-0.6410,-0.0974) and (-0.6763,-0.0776) .. (-0.6945,-0.0697)
3782 .. controls (-0.7075,-0.0641) and (-0.7225,-0.0610) .. (-0.7372,-0.0610)
3783 --cycle
3784 ( 0.0790,-0.0703)
3785 .. controls ( 0.0586,-0.0724) and ( 0.0391,-0.0799) .. ( 0.0314,-0.0938)
3786 .. controls ( 0.0258,-0.1059) and ( 0.0293,-0.1207) .. ( 0.0314,-0.1337)
3787 .. controls (-0.0051,-0.1451) and (-0.0235,-0.1672) .. ( 0.0136,-0.1933)
3788 -- ( 0.0050,-0.2190)
3789 -- ( 0.0647,-0.2360)
3790 -- ( 0.0561,-0.2019)
3791 -- ( 0.0391,-0.2105)
3792 -- ( 0.0307,-0.2019)
3793 -- ( 0.0818,-0.1251)
3794 -- ( 0.0988,-0.1251)
3795 .. controls ( 0.1190,-0.1566) and ( 0.1311,-0.1660) .. ( 0.1671,-0.1763)
3796 .. controls ( 0.1712,-0.1381) and ( 0.1680,-0.1029) .. ( 0.1325,-0.0792)
3797 .. controls ( 0.1208,-0.0715) and ( 0.0994,-0.0682) .. ( 0.0790,-0.0703)
3798 --cycle
3799 (-0.0347,-0.0729)
3800 .. controls (-0.0400,-0.0723) and (-0.0465,-0.0725) .. (-0.0547,-0.0739)
3801 .. controls (-0.1154,-0.1097) and (-0.0914,-0.1419) .. (-0.0629,-0.1331)
3802 .. controls (-0.0318,-0.1235) and ( 0.0014,-0.0769) .. (-0.0347,-0.0729)
3803 --cycle

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3804 (-0.1485,-0.0997)
3805 -- (-0.1656,-0.1166)
3806 -- (-0.1656,-0.1251)
3807 .. controls (-0.1656,-0.1251) and (-0.1284,-0.1383) .. (-0.1230,-0.1251)
3808 .. controls (-0.1184,-0.1140) and (-0.1485,-0.0997) .. (-0.1485,-0.0997)
3809 --cycle
3810 ( 0.8579,-0.1251)
3811 -- ( 0.8579,-0.1508)
3812 -- ( 0.8921,-0.1508)
3813 -- ( 0.8921,-0.1251)
3814 --cycle
3815 ( 0.3462,-0.1848)
3816 .. controls ( 0.3553,-0.2111) and ( 0.3541,-0.2099) .. ( 0.3804,-0.2190)
3817 .. controls ( 0.3789,-0.1929) and ( 0.3722,-0.1863) .. ( 0.3462,-0.1848)
3818 --cycle
3819 ( 0.5680,-0.2105)
3820 -- ( 0.5680,-0.2360)
3821 -- ( 0.5936,-0.2360)
3822 -- ( 0.5936,-0.2105)
3823 --cycle
3824 ( 0.2429,-0.2175)
3825 .. controls ( 0.2301,-0.2183) and ( 0.2146,-0.2250) .. ( 0.2042,-0.2351)
3826 .. controls ( 0.1851,-0.2515) and ( 0.1867,-0.2802) .. ( 0.1841,-0.3042)
3827 -- ( 0.2267,-0.3128)
3828 .. controls ( 0.2366,-0.2535) and ( 0.2673,-0.2625) .. ( 0.2665,-0.2351)
3829 .. controls ( 0.2661,-0.2218) and ( 0.2558,-0.2167) .. ( 0.2429,-0.2175)
3830 --cycle
3831 (-0.8394,-0.2360)
3832 .. controls (-0.8657,-0.2452) and (-0.8037,-0.2814) .. (-0.8128,-0.3076)
3833 .. controls (-0.7841,-0.3060) and (-0.8155,-0.2595) .. (-0.8394,-0.2360)
3834 --cycle
3835 (-0.3106,-0.2446)
3836 .. controls (-0.3061,-0.2411) and (-0.2935,-0.2446) .. (-0.2935,-0.2446)
3837 .. controls (-0.2935,-0.2446) and (-0.3063,-0.2847) .. (-0.3191,-0.2787)
3838 .. controls (-0.3297,-0.2736) and (-0.3199,-0.2518) .. (-0.3106,-0.2446)
3839 --cycle
3840 ( 0.0809,-0.2495)
3841 .. controls ( 0.0629,-0.2468) and ( 0.0475,-0.2563) .. ( 0.0307,-0.2602)
3842 .. controls ( 0.0102,-0.2651) and (-0.0913,-0.2616) .. (-0.0376,-0.3640)
3843 .. controls (-0.1141,-0.3685) and (-0.1262,-0.4016) .. (-0.0926,-0.4664)
3844 .. controls (-0.0856,-0.4795) and (-0.0758,-0.5040) .. (-0.0668,-0.5138)
3845 .. controls (-0.0449,-0.5377) and ( 0.0001,-0.5440) .. ( 0.0307,-0.5431)
3846 -- ( 0.0221,-0.4579)
3847 -- (-0.0206,-0.4833)
3848 .. controls (-0.0180,-0.4388) and (-0.0055,-0.4140) .. (-0.0633,-0.4237)
3849 .. controls (-0.0215,-0.3935) and (-0.0083,-0.4022) .. ( 0.0050,-0.3640)
3850 -- ( 0.0476,-0.3555)
3851 -- ( 0.0476,-0.3384)
3852 .. controls ( 0.0149,-0.3341) and ( 0.0150,-0.3375) .. (-0.0035,-0.3640)
3853 .. controls (-0.0031,-0.3175) and ( 0.0507,-0.3021) .. ( 0.0895,-0.3132)
3854 .. controls ( 0.0967,-0.3153) and ( 0.1020,-0.3182) .. ( 0.1069,-0.3214)
3855 -- ( 0.0733,-0.3214)
3856 -- ( 0.0733,-0.3555)

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3857 -- ( 0.1073,-0.3555)
3858 -- ( 0.1073,-0.3217)
3859 .. controls ( 0.1209,-0.3306) and ( 0.1314,-0.3431) .. ( 0.1671,-0.3555)
3860 .. controls ( 0.1861,-0.3011) and ( 0.1658,-0.3044) .. ( 0.1276,-0.2793)
3861 .. controls ( 0.1121,-0.2692) and ( 0.1003,-0.2524) .. ( 0.0809,-0.2495)
3862 --cycle
3863 ( 0.5253,-0.2617)
3864 .. controls ( 0.5159,-0.2894) and ( 0.5137,-0.2935) .. ( 0.5423,-0.3042)
3865 --cycle
3866 (-0.5836,-0.2872)
3867 -- (-0.5921,-0.3299)
3868 .. controls (-0.5632,-0.3196) and (-0.5624,-0.3175) .. (-0.5665,-0.2872)
3869 --cycle
3870 ( 0.4825,-0.3113)
3871 .. controls ( 0.4709,-0.3098) and ( 0.4621,-0.3187) .. ( 0.4571,-0.3470)
3872 .. controls ( 0.4065,-0.2945) and ( 0.3565,-0.3080) .. ( 0.3141,-0.3613)
3873 .. controls ( 0.3029,-0.3754) and ( 0.2880,-0.3874) .. ( 0.2903,-0.4075)
3874 .. controls ( 0.2921,-0.4247) and ( 0.3027,-0.4361) .. ( 0.3120,-0.4493)
3875 .. controls ( 0.2945,-0.4516) and ( 0.2350,-0.4574) .. ( 0.2234,-0.4665)
3876 .. controls ( 0.2011,-0.4843) and ( 0.2099,-0.5378) .. ( 0.2182,-0.5602)
3877 -- ( 0.2352,-0.5602)
3878 .. controls ( 0.2421,-0.5417) and ( 0.2492,-0.5116) .. ( 0.2706,-0.5071)
3879 .. controls ( 0.3048,-0.4961) and ( 0.3439,-0.5674) .. ( 0.3618,-0.5071)
3880 -- ( 0.3618,-0.4833)
3881 -- ( 0.3974,-0.4919)
3882 -- ( 0.4059,-0.4579)
3883 -- ( 0.3376,-0.4493)
3884 -- ( 0.3717,-0.3896)
3885 .. controls ( 0.4306,-0.3991) and ( 0.4623,-0.4570) .. ( 0.4656,-0.3640)
3886 .. controls ( 0.4971,-0.3707) and ( 0.5062,-0.3751) .. ( 0.5253,-0.3470)
3887 -- ( 0.5451,-0.3694)
3888 .. controls ( 0.6171,-0.4271) and ( 0.5795,-0.2610) .. ( 0.5253,-0.3384)
3889 .. controls ( 0.5089,-0.3248) and ( 0.4943,-0.3128) .. ( 0.4825,-0.3113)
3890 --cycle
3891 ( 0.6371,-0.3426)
3892 .. controls ( 0.6165,-0.3414) and ( 0.6075,-0.3499) .. ( 0.6021,-0.3811)
3893 .. controls ( 0.6375,-0.3781) and ( 0.6440,-0.3786) .. ( 0.6618,-0.3470)
3894 .. controls ( 0.6521,-0.3447) and ( 0.6439,-0.3431) .. ( 0.6371,-0.3426)
3895 --cycle
3896 ( 0.1158,-0.3640)
3897 -- ( 0.1073,-0.3981)
3898 -- ( 0.1415,-0.3981)
3899 -- ( 0.1331,-0.3640)
3900 --cycle
3901 (-0.4660,-0.3701)
3902 .. controls (-0.4757,-0.3670) and (-0.4894,-0.3727) .. (-0.4983,-0.3981)
3903 -- (-0.5580,-0.3811)
3904 .. controls (-0.5508,-0.4276) and (-0.5277,-0.4685) .. (-0.4812,-0.4833)
3905 -- (-0.4898,-0.4066)
3906 .. controls (-0.4444,-0.4042) and (-0.4498,-0.3750) .. (-0.4660,-0.3701)
3907 --cycle
3908 ( 0.1671,-0.3724)
3909 -- ( 0.1585,-0.3811)

```



```

3910 -- ( 0.1671,-0.4407)
3911 -- ( 0.1927,-0.4322)
3912 -- ( 0.1927,-0.3811)
3913 -- ( 0.1841,-0.3724)
3914 --cycle
3915 (-0.4061,-0.3746)
3916 .. controls (-0.4337,-0.3682) and (-0.4432,-0.4275) .. (-0.3933,-0.4421)
3917 .. controls (-0.3807,-0.4474) and (-0.3733,-0.4433) .. (-0.3617,-0.4421)
3918 .. controls (-0.3654,-0.4287) and (-0.3677,-0.4184) .. (-0.3740,-0.4070)
3919 .. controls (-0.3858,-0.3861) and (-0.3969,-0.3767) .. (-0.4061,-0.3746)
3920 --cycle
3921 (-0.2091,-0.4066)
3922 -- (-0.2091,-0.4298)
3923 -- (-0.1315,-0.5004)
3924 .. controls (-0.1221,-0.4446) and (-0.1606,-0.4228) .. (-0.2091,-0.4066)
3925 --cycle
3926 ( 0.6634,-0.4202)
3927 .. controls ( 0.6063,-0.4164) and ( 0.5403,-0.4628) .. ( 0.5936,-0.5175)
3928 .. controls ( 0.5533,-0.5676) and ( 0.6039,-0.5913) .. ( 0.6362,-0.5261)
3929 -- ( 0.6021,-0.5175)
3930 -- ( 0.6618,-0.5004)
3931 -- ( 0.6874,-0.5261)
3932 -- ( 0.6532,-0.4749)
3933 -- ( 0.6618,-0.4664)
3934 .. controls ( 0.6767,-0.4763) and ( 0.6924,-0.4939) .. ( 0.7031,-0.4938)
3935 .. controls ( 0.7482,-0.4516) and ( 0.7588,-0.4217) .. ( 0.6869,-0.4249)
3936 .. controls ( 0.6795,-0.4222) and ( 0.6716,-0.4207) .. ( 0.6634,-0.4202)
3937 --cycle
3938 (-0.2595,-0.4322)
3939 -- (-0.2680,-0.4407)
3940 -- (-0.2680,-0.4579)
3941 -- (-0.2595,-0.4664)
3942 -- (-0.2424,-0.4664)
3943 -- (-0.2338,-0.4579)
3944 -- (-0.2338,-0.4407)
3945 -- (-0.2424,-0.4322)
3946 --cycle
3947 (-0.3947,-0.4820)
3948 .. controls (-0.4064,-0.4819) and (-0.4202,-0.4884) .. (-0.4300,-0.4906)
3949 .. controls (-0.4705,-0.5000) and (-0.4926,-0.4888) .. (-0.4812,-0.5431)
3950 .. controls (-0.4962,-0.5405) and (-0.5172,-0.5356) .. (-0.5319,-0.5380)
3951 .. controls (-0.5497,-0.5409) and (-0.6218,-0.5786) .. (-0.6276,-0.5954)
3952 .. controls (-0.6443,-0.6458) and (-0.5896,-0.6294) .. (-0.5665,-0.6198)
3953 -- (-0.5750,-0.6455)
3954 -- (-0.5409,-0.6540)
3955 -- (-0.5409,-0.6198)
3956 -- (-0.4727,-0.5943)
3957 -- (-0.4812,-0.6370)
3958 -- (-0.4641,-0.6028)
3959 -- (-0.4214,-0.6796)
3960 -- (-0.4044,-0.6796)
3961 .. controls (-0.3922,-0.6110) and (-0.4199,-0.5974) .. (-0.4386,-0.5431)
3962 -- (-0.4053,-0.5384)

```

```

3963 .. controls (-0.3682,-0.5271) and (-0.3698,-0.4934) .. (-0.3840,-0.4848)
3964 .. controls (-0.3872,-0.4829) and (-0.3908,-0.4821) .. (-0.3947,-0.4820)
3965 --cycle
3966 (-0.2509,-0.4833)
3967 .. controls (-0.2897,-0.5056) and (-0.2886,-0.5289) .. (-0.2509,-0.5516)
3968 -- (-0.2509,-0.5688)
3969 .. controls (-0.3046,-0.5780) and (-0.3807,-0.5721) .. (-0.3362,-0.6796)
3970 .. controls (-0.3905,-0.7060) and (-0.4127,-0.7567) .. (-0.3447,-0.7820)
3971 -- (-0.3305,-0.8084)
3972 .. controls (-0.3952,-0.8150) and (-0.4330,-0.7851) .. (-0.3796,-0.8551)
3973 .. controls (-0.3707,-0.8560) and (-0.2665,-0.8846) .. (-0.3191,-0.8587)
3974 .. controls (-0.2670,-0.8376) and (-0.2955,-0.8083) .. (-0.3191,-0.7735)
3975 .. controls (-0.2852,-0.7626) and (-0.2805,-0.7579) .. (-0.2850,-0.7222)
3976 -- (-0.3277,-0.7393)
3977 -- (-0.3277,-0.6796)
3978 .. controls (-0.2965,-0.6680) and (-0.3000,-0.6597) .. (-0.3020,-0.6285)
3979 .. controls (-0.2349,-0.6402) and (-0.2059,-0.6119) .. (-0.1513,-0.6666)
3980 .. controls (-0.1144,-0.7033) and (-0.1214,-0.7764) .. (-0.0716,-0.7828)
3981 .. controls (-0.0398,-0.7870) and (-0.0581,-0.7438) .. (-0.0633,-0.7307)
3982 .. controls (-0.0105,-0.7419) and (-0.0101,-0.7107) .. (-0.0259,-0.6944)
3983 .. controls (-0.0416,-0.6781) and (-0.0638,-0.6847) .. (-0.0920,-0.6613)
3984 .. controls (-0.1363,-0.6245) and (-0.1312,-0.5893) .. (-0.2253,-0.5516)
3985 --cycle
3986 ( 0.0893,-0.4928)
3987 .. controls ( 0.0854,-0.4941) and ( 0.0816,-0.4977) .. ( 0.0781,-0.5045)
3988 .. controls ( 0.0717,-0.5167) and ( 0.0733,-0.5538) .. ( 0.0733,-0.5688)
3989 .. controls (-0.0068,-0.5661) and ( 0.0229,-0.6522) .. ( 0.0360,-0.6661)
3990 .. controls ( 0.0456,-0.6761) and ( 0.0531,-0.6759) .. ( 0.0647,-0.6796)
3991 -- ( 0.0647,-0.6198)
3992 -- ( 0.1244,-0.6113)
3993 -- ( 0.1073,-0.5773)
3994 -- ( 0.1331,-0.5688)
3995 .. controls ( 0.1502,-0.5983) and ( 0.1514,-0.6011) .. ( 0.1841,-0.6113)
3996 .. controls ( 0.1815,-0.5647) and ( 0.1767,-0.5414) .. ( 0.1244,-0.5431)
3997 -- ( 0.1174,-0.5185)
3998 .. controls ( 0.1127,-0.5047) and ( 0.1008,-0.4886) .. ( 0.0893,-0.4928)
3999 --cycle
4000 ( 0.0647,-0.6796)
4001 .. controls ( 0.0651,-0.7162) and ( 0.0755,-0.7152) .. ( 0.1073,-0.7052)
4002 .. controls ( 0.0927,-0.6800) and ( 0.0939,-0.6798) .. ( 0.0647,-0.6796)
4003 --cycle
4004 ( 0.4429,-0.5307)
4005 .. controls ( 0.4305,-0.5311) and ( 0.4171,-0.5380) .. ( 0.4059,-0.5558)
4006 .. controls ( 0.3999,-0.5655) and ( 0.3989,-0.5750) .. ( 0.3994,-0.5861)
4007 .. controls ( 0.3998,-0.5978) and ( 0.4033,-0.6088) .. ( 0.4059,-0.6198)
4008 .. controls ( 0.4351,-0.6096) and ( 0.4347,-0.6075) .. ( 0.4400,-0.5773)
4009 .. controls ( 0.5088,-0.5860) and ( 0.4802,-0.5296) .. ( 0.4429,-0.5307)
4010 --cycle
4011 ( 0.6296,-0.5636)
4012 .. controls ( 0.6201,-0.5648) and ( 0.6129,-0.5872) .. ( 0.5850,-0.6007)
4013 .. controls ( 0.5662,-0.6071) and ( 0.5466,-0.6101) .. ( 0.5358,-0.6303)
4014 .. controls ( 0.5238,-0.6524) and ( 0.5014,-0.6717) .. ( 0.5092,-0.6929)
4015 .. controls ( 0.4879,-0.7051) and ( 0.4594,-0.7105) .. ( 0.4574,-0.7383)

```

```

4016 .. controls ( 0.4557,-0.7622) and ( 0.5198,-0.8058) .. ( 0.5459,-0.7885)
4017 .. controls ( 0.5602,-0.7791) and ( 0.4924,-0.7612) .. ( 0.5176,-0.7262)
4018 -- ( 0.5713,-0.7309)
4019 .. controls ( 0.6461,-0.7123) and ( 0.5265,-0.6556) .. ( 0.6262,-0.6344)
4020 .. controls ( 0.6303,-0.6340) and ( 0.6389,-0.6314) .. ( 0.6474,-0.6278)
4021 -- ( 0.6629,-0.6006)
4022 .. controls ( 0.6611,-0.5976) and ( 0.6583,-0.5944) .. ( 0.6541,-0.5908)
4023 .. controls ( 0.6418,-0.5698) and ( 0.6353,-0.5628) .. ( 0.6296,-0.5636)
4024 --cycle
4025 ( 0.2723,-0.5991)
4026 .. controls ( 0.2592,-0.6003) and ( 0.2468,-0.6028) .. ( 0.2363,-0.6064)
4027 .. controls ( 0.1997,-0.6189) and ( 0.1915,-0.6622) .. ( 0.2438,-0.6796)
4028 -- ( 0.2524,-0.6540)
4029 -- ( 0.2694,-0.6540)
4030 -- ( 0.2438,-0.6796)
4031 -- ( 0.2352,-0.7052)
4032 .. controls ( 0.1815,-0.6689) and ( 0.1445,-0.7418) .. ( 0.2182,-0.7649)
4033 .. controls ( 0.2103,-0.7956) and ( 0.2084,-0.7983) .. ( 0.2267,-0.8246)
4034 .. controls ( 0.1155,-0.7748) and ( 0.1095,-0.9097) .. ( 0.1942,-0.8505)
4035 -- ( 0.2141,-0.8675)
4036 .. controls ( 0.2535,-0.8323) and ( 0.2056,-0.8655) .. ( 0.2756,-0.8643)
4037 -- ( 0.2903,-0.8720)
4038 -- ( 0.3279,-0.8720)
4039 -- ( 0.3427,-0.8612)
4040 .. controls ( 0.3869,-0.8663) and ( 0.4661,-0.8748) .. ( 0.4741,-0.8502)
4041 .. controls ( 0.5431,-0.8855) and ( 0.5233,-0.7888) .. ( 0.5039,-0.8143)
4042 .. controls ( 0.4752,-0.7958) and ( 0.5046,-0.8131) .. ( 0.4741,-0.8331)
4043 .. controls ( 0.3949,-0.7997) and ( 0.4522,-0.8406) .. ( 0.3683,-0.8327)
4044 .. controls ( 0.3744,-0.7942) and ( 0.4288,-0.7829) .. ( 0.4051,-0.7307)
4045 .. controls ( 0.4260,-0.7007) and ( 0.4185,-0.6946) .. ( 0.4051,-0.6626)
4046 .. controls ( 0.3990,-0.6503) and ( 0.3940,-0.6359) .. ( 0.3839,-0.6265)
4047 .. controls ( 0.3585,-0.6027) and ( 0.3119,-0.5953) .. ( 0.2723,-0.5991)
4048 --cycle
4049 (-0.2424,-0.6455)
4050 -- (-0.2424,-0.6796)
4051 -- (-0.1997,-0.6711)
4052 -- (-0.1997,-0.6540)
4053 --cycle
4054 ( 0.2950,-0.6455)
4055 .. controls ( 0.3615,-0.6477) and ( 0.3567,-0.6705) .. ( 0.3974,-0.7222)
4056 .. controls ( 0.3592,-0.8249) and ( 0.3353,-0.7947) .. ( 0.2609,-0.7990)
4057 -- ( 0.2438,-0.7649)
4058 .. controls ( 0.2681,-0.7474) and ( 0.2638,-0.7424) .. ( 0.2609,-0.7137)
4059 -- ( 0.2950,-0.6881)
4060 .. controls ( 0.3035,-0.6916) and ( 0.3102,-0.6959) .. ( 0.3198,-0.6974)
4061 .. controls ( 0.3496,-0.7020) and ( 0.3487,-0.6665) .. ( 0.3120,-0.6881)
4062 --cycle
4063 (-0.6122,-0.6460)
4064 .. controls (-0.6202,-0.6484) and (-0.6222,-0.6534) .. (-0.6220,-0.6591)
4065 -- (-0.6084,-0.6829)
4066 .. controls (-0.6039,-0.6880) and (-0.6001,-0.6940) .. (-0.5958,-0.6974)
4067 .. controls (-0.5822,-0.7078) and (-0.5979,-0.7175) .. (-0.5836,-0.7137)
4068 -- (-0.5557,-0.7397)

```

```

4069 .. controls (-0.5863,-0.7181) and (-0.4852,-0.7770) .. (-0.5233,-0.7812)
4070 .. controls (-0.4643,-0.7650) and (-0.4542,-0.8172) .. (-0.4400,-0.7940)
4071 .. controls (-0.4310,-0.7794) and (-0.4454,-0.7672) .. (-0.4569,-0.7609)
4072 .. controls (-0.5042,-0.7356) and (-0.5468,-0.7364) .. (-0.5580,-0.6711)
4073 .. controls (-0.5740,-0.6662) and (-0.5960,-0.6410) .. (-0.6122,-0.6460)
4074 --cycle
4075 (-0.2799,-0.6723)
4076 .. controls (-0.2946,-0.6977) and (-0.2726,-0.7009) .. (-0.2645,-0.6954)
4077 .. controls (-0.2563,-0.6899) and (-0.2508,-0.6683) .. (-0.2799,-0.6723)
4078 --cycle
4079 (-0.1741,-0.6796)
4080 -- (-0.1826,-0.6881)
4081 -- (-0.1826,-0.7052)
4082 -- (-0.1571,-0.6796)
4083 --cycle
4084 ( 0.0647,-0.7393)
4085 -- ( 0.0733,-0.7735)
4086 -- ( 0.0902,-0.7735)
4087 -- ( 0.0988,-0.7649)
4088 -- ( 0.0988,-0.7478)
4089 --cycle
4090 ( 0.2267,-0.7564)
4091 -- ( 0.2352,-0.7564)
4092 -- ( 0.2352,-0.7649)
4093 --cycle
4094 (-0.2765,-0.7649)
4095 -- (-0.2850,-0.7990)
4096 -- (-0.2509,-0.7905)
4097 -- (-0.2595,-0.7649)
4098 --cycle
4099 (-0.1620,-0.7999)
4100 .. controls (-0.1665,-0.7994) and (-0.1723,-0.7994) .. (-0.1792,-0.8003)
4101 .. controls (-0.2378,-0.8436) and (-0.2549,-0.8217) .. (-0.2658,-0.8441)
4102 .. controls (-0.2799,-0.8733) and (-0.2098,-0.8685) .. (-0.1746,-0.8466)
4103 .. controls (-0.1557,-0.8347) and (-0.1302,-0.8033) .. (-0.1620,-0.7999)
4104 --cycle
4105 (-0.0021,-0.8033)
4106 .. controls (-0.0289,-0.7979) and (-0.0697,-0.8240) .. (-0.0817,-0.8284)
4107 .. controls (-0.1018,-0.8361) and (-0.1245,-0.8333) .. (-0.1384,-0.8539)
4108 .. controls (-0.1534,-0.8760) and (-0.1093,-0.8641) .. (-0.0866,-0.8639)
4109 .. controls (-0.0704,-0.8637) and (-0.0573,-0.8695) .. (-0.0331,-0.8549)
4110 .. controls ( 0.0004,-0.8348) and (-0.0157,-0.8559) .. ( 0.0221,-0.8587)
4111 .. controls ( 0.0252,-0.8212) and ( 0.0141,-0.8066) .. (-0.0021,-0.8033)
4112 --cycle
4113 ( 0.1096,-0.8160)
4114 .. controls ( 0.1044,-0.8138) and ( 0.0965,-0.8137) .. ( 0.0850,-0.8167)
4115 .. controls ( 0.0624,-0.8514) and ( 0.0794,-0.8648) .. ( 0.0988,-0.8546)
4116 .. controls ( 0.1148,-0.8462) and ( 0.1249,-0.8224) .. ( 0.1096,-0.8160)
4117 --cycle
4118 (-0.4386,-0.8161)
4119 -- (-0.4386,-0.8587)
4120 .. controls (-0.3929,-0.8508) and (-0.3929,-0.8240) .. (-0.4386,-0.8161)
4121 --cycle

```

```

4122      (-0.4898,-0.8246)
4123      -- (-0.5227,-0.8312)
4124      -- (-0.5082,-0.8563)
4125      .. controls (-0.5034,-0.8573) and (-0.4999,-0.8586) .. (-0.4898,-0.8587)
4126      -- (-0.4878,-0.8720)
4127      -- (-0.4837,-0.8720)
4128      -- (-0.4565,-0.8673)
4129      --cycle
4130      ;
4131  }
4132 }
4133 \fi

```

hex/terrain/swamp

The pattern for swamps. The pattern is filled with a light blue.

```

4134 \tikzset{
4135   hex/terrain/swamp/.style={
4136     draw=none,
4137     fill={rgb,100:red,26;green,55;blue,70}
4138   }
4139 }

```

hex/terrain/swamp

Swamps. This is probably the shortest of the terrain patterns.



```

4140 \ifhex@terrain@pic
4141 \tikzset{
4142   hex/terrain/swamp/.pic={
4143     \path[hex/terrain/swamp,pic actions,draw=none]
4144       (-0.5026, 0.8699)
4145       -- (-0.5041, 0.8672)
4146       .. controls (-0.3586, 0.8441) and (-0.1148, 0.8722) .. ( 0.0006, 0.8697)
4147       -- ( 0.2386, 0.8529)
4148       -- ( 0.2386, 0.8699)
4149       --cycle
4150       ( 0.4257, 0.8699)
4151       -- ( 0.4257, 0.8529)
4152       -- ( 0.5112, 0.8558)
4153       -- ( 0.5033, 0.8699)
4154       --cycle
4155       ( 0.3067, 0.8359)
4156       -- ( 0.2897, 0.7848)
4157       -- ( 0.2726, 0.8188)
4158       -- ( 0.2556, 0.8188)

```

```

4159 -- ( 0.2217, 0.7509)
4160 -- ( 0.5719, 0.7509)
4161 -- ( 0.5621, 0.7679)
4162 -- ( 0.5617, 0.7679)
4163 -- ( 0.3746, 0.7848)
4164 -- ( 0.3746, 0.8359)
4165 --cycle
4166 (-0.3225, 0.7848)
4167 -- (-0.3225, 0.7509)
4168 -- ( 0.0856, 0.7509)
4169 -- ( 0.0856, 0.7848)
4170 --cycle
4171 (-0.5555, 0.7782)
4172 -- (-0.5713, 0.7509)
4173 -- (-0.5097, 0.7509)
4174 --cycle
4175 ( 0.2789, 0.6696)
4176 .. controls ( 0.2234, 0.6713) and ( 0.1659, 0.6658) .. ( 0.1195, 0.6658)
4177 -- (-0.6117, 0.6658)
4178 -- (-0.6117, 0.6318)
4179 -- ( 0.4257, 0.6318)
4180 .. controls ( 0.3878, 0.6597) and ( 0.3344, 0.6681) .. ( 0.2789, 0.6696)
4181 --cycle
4182 ( 0.6297, 0.6318)
4183 -- ( 0.6297, 0.5468)
4184 -- ( 0.5617, 0.5807)
4185 .. controls ( 0.5449, 0.5387) and ( 0.5194, 0.5474) .. ( 0.4764, 0.5468)
4186 -- ( 0.2047, 0.5468)
4187 .. controls ( 0.2857, 0.5146) and ( 0.5508, 0.5135) .. ( 0.7089, 0.5136)
4188 -- ( 0.6740, 0.5740)
4189 -- ( 0.6638, 0.5637)
4190 --cycle
4191 (-0.6684, 0.5591)
4192 .. controls (-0.6731, 0.5588) and (-0.6784, 0.5577) .. (-0.6832, 0.5571)
4193 -- (-0.6990, 0.5298)
4194 -- (-0.5777, 0.5298)
4195 .. controls (-0.6139, 0.5561) and (-0.6407, 0.5608) .. (-0.6684, 0.5591)
4196 --cycle
4197 (-0.3396, 0.5468)
4198 .. controls (-0.2194, 0.4991) and (-0.1285, 0.5826) .. (-0.0845, 0.4447)
4199 -- (-0.1525, 0.4957)
4200 -- (-0.1525, 0.4277)
4201 .. controls (-0.0482, 0.4023) and ( 0.2732, 0.3989) .. ( 0.3746, 0.4277)
4202 .. controls ( 0.2597, 0.4733) and ( 0.2397, 0.4045) .. ( 0.1026, 0.4957)
4203 -- ( 0.0686, 0.4617)
4204 -- ( 0.0516, 0.4617)
4205 -- ( 0.0686, 0.5298)
4206 -- ( 0.0006, 0.4447)
4207 -- ( 0.0006, 0.5468)
4208 --cycle
4209 (-0.0675, 0.5127)
4210 -- (-0.0164, 0.5127)
4211 -- (-0.0505, 0.4447)

```

```

4212  --cycle
4213  (-0.7435, 0.4527)
4214  -- (-0.7580, 0.4277)
4215  -- (-0.6797, 0.4277)
4216  .. controls (-0.6982, 0.4394) and (-0.7200, 0.4471) .. (-0.7435, 0.4527)
4217  --cycle
4218  (-0.5266, 0.4447)
4219  .. controls (-0.4681, 0.4018) and (-0.4413, 0.4086) .. (-0.3736, 0.4277)
4220  --cycle
4221  ( 0.5787, 0.4277)
4222  -- ( 0.5447, 0.3257)
4223  -- ( 0.5108, 0.3257)
4224  -- ( 0.4597, 0.4107)
4225  -- ( 0.4597, 0.3257)
4226  -- ( 0.4257, 0.3937)
4227  -- ( 0.4087, 0.3257)
4228  -- ( 0.2897, 0.3257)
4229  .. controls ( 0.3725, 0.2928) and ( 0.6913, 0.3087) .. ( 0.7998, 0.3087)
4230  .. controls ( 0.7426, 0.3376) and ( 0.7264, 0.3382) .. ( 0.6638, 0.3257)
4231  -- ( 0.6638, 0.3767)
4232  -- ( 0.5787, 0.3257)
4233  --cycle
4234  (-0.7817, 0.3257)
4235  -- (-0.7137, 0.2407)
4236  -- (-0.7988, 0.2746)
4237  .. controls (-0.8162, 0.2534) and (-0.8404, 0.2432) .. (-0.8672, 0.2385)
4238  -- (-0.8857, 0.2066)
4239  -- (-0.6627, 0.2066)
4240  .. controls (-0.5059, 0.2059) and (-0.2690, 0.1655) .. (-0.1185, 0.2066)
4241  .. controls (-0.2358, 0.2532) and (-0.4834, 0.1773) .. (-0.5607, 0.2746)
4242  -- (-0.6287, 0.2237)
4243  -- (-0.6457, 0.2407)
4244  .. controls (-0.5823, 0.3108) and (-0.5667, 0.3074) .. (-0.4756, 0.3087)
4245  --cycle
4246  ( 0.8338, 0.2576)
4247  -- ( 0.7998, 0.2066)
4248  -- ( 0.8906, 0.1990)
4249  -- ( 0.8567, 0.2576)
4250  --cycle
4251  (-0.0164, 0.2237)
4252  .. controls ( 0.0715, 0.1799) and ( 0.3189, 0.1896) .. ( 0.4257, 0.1896)
4253  -- ( 0.4257, 0.2237)
4254  --cycle
4255  (-0.2716, 0.1216)
4256  -- (-0.2716, 0.0876)
4257  -- ( 0.1501, 0.0876)
4258  -- ( 0.1434, 0.1042)
4259  -- ( 0.0345, 0.1216)
4260  --cycle
4261  ( 0.1501, 0.0876)
4262  -- ( 0.1536, 0.0789)
4263  -- ( 0.1536, 0.0876)
4264  --cycle

```

```

4265 ( 0.1536, 0.0789)
4266 -- ( 0.1536, 0.0196)
4267 -- ( 0.0856, 0.0534)
4268 -- ( 0.0686,-0.0145)
4269 -- ( 0.7658,-0.0145)
4270 .. controls ( 0.6332, 0.0380) and ( 0.4479,-0.0524) .. ( 0.3406, 0.0534)
4271 -- ( 0.3236, 0.0534)
4272 -- ( 0.2897, 0.0196)
4273 -- ( 0.2897, 0.0876)
4274 -- ( 0.2556, 0.0196)
4275 -- ( 0.2386, 0.0876)
4276 -- ( 0.1705, 0.0365)
4277 --cycle
4278 ( 0.3917, 0.1216)
4279 -- ( 0.3917, 0.0876)
4280 -- ( 0.8678, 0.0876)
4281 .. controls ( 0.7768, 0.1266) and ( 0.5022, 0.1216) .. ( 0.3917, 0.1216)
4282 --cycle
4283 (-0.9351, 0.1208)
4284 -- (-0.9518, 0.0921)
4285 -- (-0.9518, 0.0876)
4286 -- (-0.6117, 0.1045)
4287 --cycle
4288 (-0.9144, 0.0213)
4289 .. controls (-0.9468, 0.0204) and (-0.9775, 0.0109) .. (-0.9996,-0.0116)
4290 -- (-0.9982,-0.0141)
4291 -- (-0.8158, 0.0026)
4292 .. controls (-0.8449, 0.0142) and (-0.8804, 0.0222) .. (-0.9144, 0.0213)
4293 --cycle
4294 (-0.6287, 0.0196)
4295 .. controls (-0.5470,-0.0404) and (-0.2796,-0.0145) .. (-0.1695,-0.0145)
4296 -- (-0.1695, 0.0196)
4297 --cycle
4298 (-0.9488,-0.0996)
4299 -- (-0.9292,-0.1335)
4300 -- (-0.4756,-0.1335)
4301 -- (-0.4756,-0.0996)
4302 --cycle
4303 (-0.2886,-0.0996)
4304 -- (-0.2886,-0.1335)
4305 -- ( 0.2726,-0.1335)
4306 .. controls ( 0.2164,-0.0920) and ( 0.1871,-0.0997) .. ( 0.1195,-0.0996)
4307 --cycle
4308 ( 0.5478,-0.1025)
4309 .. controls ( 0.5070,-0.1018) and ( 0.4651,-0.1086) .. ( 0.4257,-0.1165)
4310 -- ( 0.6638,-0.1335)
4311 .. controls ( 0.6286,-0.1113) and ( 0.5887,-0.1031) .. ( 0.5478,-0.1025)
4312 --cycle
4313 ( 0.8928,-0.1132)
4314 .. controls ( 0.8481,-0.1114) and ( 0.8007,-0.1165) .. ( 0.7658,-0.1165)
4315 -- ( 0.9264,-0.1394)
4316 -- ( 0.9384,-0.1186)
4317 .. controls ( 0.9238,-0.1157) and ( 0.9087,-0.1137) .. ( 0.8928,-0.1132)

```



```

4318 --cycle
4319 (-0.2982,-0.2002)
4320 .. controls (-0.3469,-0.2010) and (-0.3950,-0.2053) .. (-0.4416,-0.2185)
4321 -- (-0.0505,-0.2355)
4322 -- ( 0.7827,-0.2355)
4323 .. controls ( 0.6739,-0.1909) and ( 0.4335,-0.2017) .. ( 0.3067,-0.2016)
4324 -- (-0.1525,-0.2016)
4325 .. controls (-0.2005,-0.2016) and (-0.2496,-0.1992) .. (-0.2982,-0.2002)
4326 --cycle
4327 (-0.8328,-0.2016)
4328 .. controls (-0.7894,-0.2498) and (-0.7244,-0.2355) .. (-0.6627,-0.2355)
4329 -- (-0.6627,-0.3034)
4330 -- (-0.6967,-0.2696)
4331 -- (-0.7137,-0.2696)
4332 .. controls (-0.7385,-0.3064) and (-0.7772,-0.3191) .. (-0.8200,-0.3227)
4333 -- (-0.8113,-0.3377)
4334 .. controls (-0.6682,-0.3440) and (-0.4684,-0.3376) .. (-0.3906,-0.3376)
4335 -- (-0.4586,-0.2696)
4336 -- (-0.5266,-0.3034)
4337 -- (-0.5097,-0.2355)
4338 -- (-0.5607,-0.3206)
4339 -- (-0.5777,-0.2355)
4340 -- (-0.6457,-0.3034)
4341 -- (-0.6287,-0.2185)
4342 --cycle
4343 ( 0.8169,-0.2866)
4344 -- ( 0.7489,-0.3206)
4345 .. controls ( 0.7652,-0.3284) and ( 0.7871,-0.3345) .. ( 0.8114,-0.3386)
4346 -- ( 0.8324,-0.3020)
4347 --cycle
4348 ( 0.2076,-0.3170)
4349 .. controls ( 0.0913,-0.3168) and (-0.0288,-0.3206) .. (-0.0845,-0.3206)
4350 -- ( 0.2509,-0.3621)
4351 -- ( 0.2897,-0.4056)
4352 -- ( 0.2556,-0.3716)
4353 -- ( 0.2386,-0.3716)
4354 -- ( 0.2386,-0.4566)
4355 -- ( 0.4257,-0.4566)
4356 -- ( 0.3746,-0.3716)
4357 -- ( 0.3067,-0.4226)
4358 -- ( 0.3067,-0.3547)
4359 -- ( 0.4766,-0.3376)
4360 .. controls ( 0.4363,-0.3215) and ( 0.3237,-0.3172) .. ( 0.2076,-0.3170)
4361 --cycle
4362 (-0.7622,-0.4226)
4363 -- (-0.7427,-0.4566)
4364 -- (-0.5607,-0.4566)
4365 -- (-0.5607,-0.4226)
4366 --cycle
4367 (-0.3396,-0.4226)
4368 -- (-0.3396,-0.4566)
4369 -- (-0.0164,-0.4566)
4370 -- (-0.0164,-0.4226)

```

```

4371 --cycle
4372 ( 0.5787,-0.4226)
4373 .. controls ( 0.6179,-0.4661) and ( 0.6835,-0.4595) .. ( 0.7407,-0.4607)
4374 -- ( 0.7528,-0.4400)
4375 .. controls ( 0.6947,-0.4396) and ( 0.6370,-0.4368) .. ( 0.5787,-0.4226)
4376 --cycle
4377 (-0.2496,-0.5239)
4378 .. controls (-0.2827,-0.5212) and (-0.3176,-0.5246) .. (-0.3566,-0.5246)
4379 -- (-0.7034,-0.5246)
4380 -- (-0.6873,-0.5524)
4381 .. controls (-0.6429,-0.5639) and (-0.5972,-0.5587) .. (-0.5436,-0.5587)
4382 -- (-0.1525,-0.5587)
4383 .. controls (-0.1848,-0.5349) and (-0.2163,-0.5263) .. (-0.2496,-0.5239)
4384 --cycle
4385 (-0.0164,-0.5417)
4386 .. controls ( 0.0514,-0.5917) and ( 0.1065,-0.5717) .. ( 0.1876,-0.5736)
4387 .. controls ( 0.2932,-0.5761) and ( 0.5300,-0.5848) .. ( 0.6766,-0.5720)
4388 -- ( 0.6872,-0.5538)
4389 -- ( 0.4937,-0.5417)
4390 --cycle
4391 (-0.6255,-0.6593)
4392 -- (-0.6248,-0.6607)
4393 -- (-0.6117,-0.6607)
4394 --cycle
4395 (-0.5777,-0.6607)
4396 -- (-0.5777,-0.7287)
4397 -- (-0.5856,-0.7287)
4398 -- (-0.5659,-0.7627)
4399 -- (-0.3906,-0.7627)
4400 -- (-0.1695,-0.7627)
4401 -- (-0.4246,-0.7287)
4402 -- (-0.4076,-0.6607)
4403 -- (-0.4416,-0.7287)
4404 -- (-0.4756,-0.7287)
4405 -- (-0.4756,-0.6607)
4406 -- (-0.5097,-0.6607)
4407 -- (-0.5097,-0.7287)
4408 --cycle
4409 ( 0.0686,-0.7457)
4410 .. controls ( 0.1464,-0.8028) and ( 0.3428,-0.7798) .. ( 0.4427,-0.7798)
4411 -- ( 0.4427,-0.7457)
4412 --cycle
4413 (-0.3736,-0.8478)
4414 -- (-0.3736,-0.8722)
4415 -- (-0.2203,-0.8722)
4416 .. controls (-0.2708,-0.8419) and (-0.3097,-0.8478) .. (-0.3736,-0.8478)
4417 --cycle
4418 (-0.0172,-0.8544)
4419 .. controls (-0.0398,-0.8556) and (-0.0623,-0.8586) .. (-0.0845,-0.8648)
4420 .. controls (-0.0753,-0.8684) and (-0.0664,-0.8700) .. (-0.0573,-0.8722)
4421 -- ( 0.5033,-0.8722)
4422 -- ( 0.5088,-0.8626)
4423 .. controls ( 0.3892,-0.8602) and ( 0.2527,-0.8649) .. ( 0.1876,-0.8648)

```

```

4424 .. controls ( 0.1186,-0.8647) and ( 0.0502,-0.8509) .. (-0.0172,-0.8544)
4425 --cycle
4426 ;
4427 }
4428 }
4429 \fi

```

hex/terrain/rough

The style for rough hexes. The pattern is filled with a light brown, and outlines are not drawn.

```

4430 \tikzset{
4431 hex/terrain/rough/.style={
4432   draw=none,
4433   fill={rgb,100:red,79;green,68;blue,41}
4434 }
4435 }

```

hex/terrain/rough

Roughs. Again, a bit long.



```

4436 \ifhex@terrain@pic
4437 \tikzset{
4438 hex/terrain/rough/.pic={
4439   \path[hex/terrain/rough,pic actions,draw=none]
4440     (-0.2701, 0.8873)
4441     .. controls (-0.2982, 0.8927) and (-0.3250, 0.8675) .. (-0.3296, 0.8537)
4442     .. controls (-0.3363, 0.8337) and (-0.3058, 0.8263) .. (-0.2820, 0.8610)
4443     .. controls (-0.2717, 0.8450) and (-0.2591, 0.8228) .. (-0.2441, 0.8112)
4444     .. controls (-0.2057, 0.7817) and (-0.1394, 0.7709) .. (-0.1208, 0.8270)
4445     -- (-0.2226, 0.8355)
4446     .. controls (-0.2359, 0.8698) and (-0.2532, 0.8840) .. (-0.2701, 0.8873)
4447     --cycle
4448     (-0.1081, 0.8792)
4449     .. controls (-0.1371, 0.8680) and (-0.1265, 0.8900) .. (-0.1377, 0.8610)
4450     .. controls (-0.1121, 0.8691) and (-0.1163, 0.8536) .. (-0.1081, 0.8792)
4451     --cycle
4452     ( 0.1762, 0.8752)
4453     -- ( 0.1761, 0.8710)
4454     .. controls ( 0.1746, 0.8556) and ( 0.1707, 0.8704) .. ( 0.1822, 0.8575)
4455     .. controls ( 0.1958, 0.8423) and ( 0.2514, 0.8065) .. ( 0.2435, 0.8694)
4456     --cycle
4457     ( 0.3216, 0.8740)
4458     .. controls ( 0.3061, 0.8744) and ( 0.2932, 0.8668) .. ( 0.2896, 0.8414)
4459     .. controls ( 0.2869, 0.8222) and ( 0.3049, 0.8110) .. ( 0.3122, 0.7930)

```

```

4460 -- ( 0.3292, 0.7930)
4461 -- ( 0.3377, 0.8440)
4462 -- ( 0.3874, 0.8438)
4463 -- ( 0.3702, 0.8584)
4464 .. controls ( 0.3556, 0.8652) and ( 0.3372, 0.8736) .. ( 0.3216, 0.8740)
4465 --cycle
4466 ( 0.4696, 0.8697)
4467 .. controls ( 0.4362, 0.8687) and ( 0.4116, 0.8113) .. ( 0.4594, 0.7865)
4468 -- ( 0.4565, 0.8238)
4469 -- ( 0.5034, 0.8485)
4470 .. controls ( 0.4927, 0.8641) and ( 0.4807, 0.8700) .. ( 0.4696, 0.8697)
4471 --cycle
4472 (-0.0783, 0.8695)
4473 -- (-0.0698, 0.8185)
4474 -- (-0.0528, 0.8185)
4475 .. controls (-0.0488, 0.8507) and (-0.0499, 0.8533) .. (-0.0783, 0.8695)
4476 --cycle
4477 ( 0.0321, 0.8695)
4478 .. controls (-0.0074, 0.8534) and (-0.0195, 0.8453) .. (-0.0104, 0.8015)
4479 .. controls ( 0.0252, 0.8183) and ( 0.0356, 0.8295) .. ( 0.0321, 0.8695)
4480 --cycle
4481 (-0.4155, 0.8596)
4482 .. controls (-0.4417, 0.8307) and (-0.4165, 0.8213) .. (-0.4032, 0.8284)
4483 .. controls (-0.3903, 0.8353) and (-0.3789, 0.8639) .. (-0.4155, 0.8596)
4484 --cycle
4485 (-0.4857, 0.8525)
4486 .. controls (-0.4972, 0.8321) and (-0.5172, 0.8207) .. (-0.5389, 0.8116)
4487 -- (-0.5595, 0.7763)
4488 .. controls (-0.5377, 0.7748) and (-0.5144, 0.7944) .. (-0.4942, 0.8100)
4489 -- (-0.4857, 0.7845)
4490 .. controls (-0.4503, 0.8051) and (-0.4552, 0.8169) .. (-0.4688, 0.8525)
4491 --cycle
4492 ( 0.1002, 0.8511)
4493 .. controls ( 0.0869, 0.8528) and ( 0.0769, 0.8478) .. ( 0.0696, 0.8260)
4494 -- ( 0.1509, 0.8185)
4495 -- ( 0.1509, 0.8355)
4496 .. controls ( 0.1302, 0.8408) and ( 0.1135, 0.8493) .. ( 0.1002, 0.8511)
4497 --cycle
4498 ( 0.2485, 0.8268)
4499 .. controls ( 0.2378, 0.8296) and ( 0.2250, 0.8213) .. ( 0.2103, 0.7930)
4500 .. controls ( 0.2410, 0.7676) and ( 0.2451, 0.7555) .. ( 0.2867, 0.7591)
4501 .. controls ( 0.2791, 0.7861) and ( 0.2665, 0.8220) .. ( 0.2485, 0.8268)
4502 --cycle
4503 (-0.3754, 0.8100)
4504 -- (-0.3754, 0.7930)
4505 -- (-0.3330, 0.7930)
4506 -- (-0.3330, 0.8100)
4507 --cycle
4508 ( 0.5066, 0.8010)
4509 -- ( 0.5131, 0.7667)
4510 -- ( 0.5443, 0.7538)
4511 -- ( 0.5566, 0.7611)
4512 -- ( 0.5392, 0.7958)

```

```

4513 --cycle
4514 (-0.4008, 0.7930)
4515 -- (-0.4348, 0.7591)
4516 --cycle
4517 ( 0.1509, 0.7930)
4518 -- ( 0.1254, 0.7676)
4519 .. controls ( 0.1432, 0.7361) and ( 0.1497, 0.7365) .. ( 0.1849, 0.7336)
4520 .. controls ( 0.1820, 0.7688) and ( 0.1824, 0.7753) .. ( 0.1509, 0.7930)
4521 --cycle
4522 ( 0.0301, 0.7854)
4523 .. controls ( 0.0240, 0.7861) and ( 0.0162, 0.7858) .. ( 0.0066, 0.7845)
4524 -- ( 0.0490, 0.7421)
4525 .. controls ( 0.0527, 0.7709) and ( 0.0486, 0.7831) .. ( 0.0301, 0.7854)
4526 --cycle
4527 (-0.2757, 0.7847)
4528 .. controls (-0.2819, 0.7857) and (-0.2896, 0.7857) .. (-0.2990, 0.7845)
4529 -- (-0.2820, 0.7411)
4530 .. controls (-0.3010, 0.7423) and (-0.3576, 0.7485) .. (-0.3704, 0.7411)
4531 .. controls (-0.3832, 0.7314) and (-0.3819, 0.7137) .. (-0.3644, 0.7089)
4532 .. controls (-0.3522, 0.7029) and (-0.3199, 0.7069) .. (-0.3075, 0.7089)
4533 .. controls (-0.2647, 0.7227) and (-0.2326, 0.7776) .. (-0.2757, 0.7847)
4534 --cycle
4535 ( 0.3631, 0.7676)
4536 -- ( 0.3122, 0.7479)
4537 .. controls ( 0.3064, 0.6995) and ( 0.3021, 0.7030) .. ( 0.3546, 0.7166)
4538 .. controls ( 0.3550, 0.6777) and ( 0.3499, 0.6644) .. ( 0.3886, 0.6488)
4539 .. controls ( 0.3854, 0.7398) and ( 0.3467, 0.6989) .. ( 0.3631, 0.7676)
4540 --cycle
4541 ( 0.5753, 0.7676)
4542 .. controls ( 0.5837, 0.7354) and ( 0.5927, 0.7219) .. ( 0.6097, 0.7131)
4543 -- ( 0.5796, 0.7669)
4544 .. controls ( 0.5781, 0.7670) and ( 0.5768, 0.7674) .. ( 0.5753, 0.7676)
4545 --cycle
4546 (-0.5536, 0.7591)
4547 -- (-0.5706, 0.7082)
4548 -- (-0.5621, 0.6997)
4549 -- (-0.5027, 0.6997)
4550 .. controls (-0.5136, 0.7365) and (-0.5192, 0.7422) .. (-0.5536, 0.7591)
4551 --cycle
4552 (-0.1361, 0.7534)
4553 .. controls (-0.1512, 0.7509) and (-0.1612, 0.7304) .. (-0.1462, 0.6912)
4554 -- (-0.0953, 0.7082)
4555 .. controls (-0.1007, 0.7406) and (-0.1210, 0.7560) .. (-0.1361, 0.7534)
4556 --cycle
4557 (-0.4655, 0.7519)
4558 .. controls (-0.4811, 0.7476) and (-0.4887, 0.7146) .. (-0.4551, 0.6911)
4559 .. controls (-0.4447, 0.6838) and (-0.4376, 0.6846) .. (-0.4263, 0.6827)
4560 -- (-0.4362, 0.7201)
4561 .. controls (-0.4440, 0.7466) and (-0.4562, 0.7544) .. (-0.4655, 0.7519)
4562 --cycle
4563 (-0.2311, 0.7421)
4564 -- (-0.2480, 0.7082)
4565 -- (-0.1971, 0.6827)

```

```

4566 -- (-0.2141, 0.7421)
4567 --cycle
4568 ( 0.4819, 0.7421)
4569 -- ( 0.5244, 0.7082)
4570 -- ( 0.5329, 0.7166)
4571 -- ( 0.5329, 0.7336)
4572 --cycle
4573 ( 0.4140, 0.7336)
4574 .. controls ( 0.4091, 0.6951) and ( 0.4180, 0.6863) .. ( 0.4565, 0.6912)
4575 --cycle
4576 ( 0.1000, 0.7166)
4577 .. controls ( 0.0969, 0.7064) and ( 0.0893, 0.6845) .. ( 0.0896, 0.6747)
4578 .. controls ( 0.0911, 0.6142) and ( 0.1603, 0.6571) .. ( 0.1849, 0.6658)
4579 -- ( 0.2260, 0.6725)
4580 .. controls ( 0.2381, 0.6766) and ( 0.2515, 0.6891) .. ( 0.2429, 0.7019)
4581 .. controls ( 0.2330, 0.7185) and ( 0.1897, 0.7058) .. ( 0.1756, 0.7019)
4582 -- ( 0.1339, 0.6827)
4583 --cycle
4584 ( 0.0321, 0.7082)
4585 -- (-0.0019, 0.6318)
4586 .. controls ( 0.0528, 0.6362) and ( 0.0992, 0.6731) .. ( 0.0321, 0.7082)
4587 --cycle
4588 ( 0.5074, 0.6997)
4589 .. controls ( 0.5090, 0.6563) and ( 0.5107, 0.6351) .. ( 0.5584, 0.6572)
4590 --cycle
4591 (-0.6116, 0.6867)
4592 -- (-0.6413, 0.6359)
4593 .. controls (-0.6321, 0.6229) and (-0.6158, 0.6171) .. (-0.6009, 0.6289)
4594 .. controls (-0.5820, 0.6437) and (-0.5846, 0.6623) .. (-0.5876, 0.6827)
4595 --cycle
4596 (-0.3414, 0.6742)
4597 .. controls (-0.3515, 0.6371) and (-0.3559, 0.6083) .. (-0.3075, 0.6148)
4598 -- (-0.3245, 0.6742)
4599 --cycle
4600 (-0.5112, 0.6657)
4601 -- (-0.5112, 0.6318)
4602 -- (-0.4772, 0.6233)
4603 -- (-0.5027, 0.5893)
4604 -- (-0.5027, 0.5808)
4605 -- (-0.4857, 0.5638)
4606 .. controls (-0.4400, 0.6074) and (-0.4373, 0.6597) .. (-0.5112, 0.6657)
4607 --cycle
4608 (-0.2905, 0.6657)
4609 .. controls (-0.2682, 0.6064) and (-0.2058, 0.5997) .. (-0.2141, 0.6657)
4610 --cycle
4611 (-0.0953, 0.6488)
4612 -- (-0.1547, 0.6403)
4613 -- (-0.1377, 0.5553)
4614 -- (-0.1208, 0.5553)
4615 .. controls (-0.0926, 0.5982) and (-0.0954, 0.5977) .. (-0.0953, 0.6488)
4616 --cycle
4617 ( 0.0915, 0.6403)
4618 .. controls ( 0.0497, 0.6269) and ( 0.0505, 0.6133) .. ( 0.0490, 0.5723)

```

```

4619 .. controls ( 0.0796, 0.5913) and ( 0.0822, 0.6066) .. ( 0.0915, 0.6403)
4620 --cycle
4621 ( 0.4310, 0.6403)
4622 .. controls ( 0.4211, 0.6043) and ( 0.4125, 0.5931) .. ( 0.4480, 0.5723)
4623 -- ( 0.4819, 0.6148)
4624 -- ( 0.4819, 0.6318)
4625 --cycle
4626 ( 0.5838, 0.6403)
4627 .. controls ( 0.5923, 0.5846) and ( 0.5925, 0.5918) .. ( 0.6362, 0.5668)
4628 -- ( 0.6521, 0.5663)
4629 -- ( 0.6615, 0.5890)
4630 .. controls ( 0.6340, 0.6304) and ( 0.6328, 0.6347) .. ( 0.5838, 0.6403)
4631 --cycle
4632 ( 0.2018, 0.6233)
4633 -- ( 0.2018, 0.5808)
4634 -- ( 0.2358, 0.5808)
4635 .. controls ( 0.2306, 0.6108) and ( 0.2301, 0.6119) .. ( 0.2018, 0.6233)
4636 --cycle
4637 ( 0.3200, 0.6175)
4638 .. controls ( 0.3147, 0.6171) and ( 0.3095, 0.6162) .. ( 0.3037, 0.6159)
4639 -- ( 0.3144, 0.5906)
4640 .. controls ( 0.3494, 0.5385) and ( 0.3913, 0.6066) .. ( 0.3367, 0.6159)
4641 .. controls ( 0.3306, 0.6176) and ( 0.3252, 0.6178) .. ( 0.3200, 0.6175)
4642 --cycle
4643 ( 0.1254, 0.6148)
4644 -- ( 0.1169, 0.5553)
4645 -- ( 0.1339, 0.5553)
4646 -- ( 0.1594, 0.5808)
4647 --cycle
4648 (-0.0188, 0.6063)
4649 .. controls (-0.0629, 0.5361) and (-0.0925, 0.5785) .. (-0.1038, 0.5044)
4650 -- (-0.0528, 0.4875)
4651 .. controls (-0.0307, 0.5232) and (-0.0275, 0.5285) .. ( 0.0151, 0.5299)
4652 .. controls ( 0.0257, 0.5724) and ( 0.0206, 0.5860) .. (-0.0188, 0.6063)
4653 --cycle
4654 (-0.2820, 0.5893)
4655 .. controls (-0.2753, 0.5073) and (-0.2107, 0.5185) .. (-0.1801, 0.5808)
4656 --cycle
4657 ( 0.5244, 0.5893)
4658 .. controls ( 0.5408, 0.5621) and ( 0.5447, 0.5620) .. ( 0.5753, 0.5553)
4659 .. controls ( 0.5625, 0.5873) and ( 0.5579, 0.5867) .. ( 0.5244, 0.5893)
4660 --cycle
4661 (-0.4023, 0.5839)
4662 .. controls (-0.4095, 0.5826) and (-0.4161, 0.5794) .. (-0.4210, 0.5751)
4663 .. controls (-0.4340, 0.5638) and (-0.4334, 0.5376) .. (-0.4348, 0.5214)
4664 .. controls (-0.3835, 0.5433) and (-0.4044, 0.5361) .. (-0.3499, 0.5299)
4665 .. controls (-0.3537, 0.5756) and (-0.3808, 0.5879) .. (-0.4023, 0.5839)
4666 --cycle
4667 (-0.6717, 0.5836)
4668 -- (-0.7007, 0.5338)
4669 .. controls (-0.6810, 0.5286) and (-0.6639, 0.5441) .. (-0.6717, 0.5836)
4670 --cycle
4671 (-0.5683, 0.5760)

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4672 .. controls (-0.5775, 0.5769) and (-0.5875, 0.5722) .. (-0.6045, 0.5638)
4673 -- (-0.5876, 0.5214)
4674 -- (-0.5367, 0.5553)
4675 .. controls (-0.5506, 0.5688) and (-0.5590, 0.5752) .. (-0.5683, 0.5760)
4676 --cycle
4677 ( 0.2527, 0.5638)
4678 -- ( 0.2782, 0.5129)
4679 -- ( 0.2867, 0.5129)
4680 -- ( 0.3037, 0.5299)
4681 .. controls ( 0.2852, 0.5566) and ( 0.2848, 0.5585) .. ( 0.2527, 0.5638)
4682 --cycle
4683 ( 0.6946, 0.5616)
4684 .. controls ( 0.6944, 0.5600) and ( 0.6921, 0.5548) .. ( 0.6787, 0.5413)
4685 -- ( 0.6878, 0.5061)
4686 .. controls ( 0.6794, 0.4976) and ( 0.6747, 0.5161) .. ( 0.6694, 0.5045)
4687 -- ( 0.6262, 0.5469)
4688 .. controls ( 0.6001, 0.4510) and ( 0.6708, 0.4762) .. ( 0.6776, 0.4804)
4689 .. controls ( 0.6913, 0.4889) and ( 0.7003, 0.4848) .. ( 0.7078, 0.4982)
4690 -- ( 0.7283, 0.4862)
4691 -- ( 0.7151, 0.5087)
4692 -- ( 0.6995, 0.5381)
4693 .. controls ( 0.6915, 0.5505) and ( 0.6933, 0.5583) .. ( 0.6948, 0.5614)
4694 --cycle
4695 ( 0.1764, 0.5469)
4696 .. controls ( 0.1765, 0.5023) and ( 0.1718, 0.4964) .. ( 0.2018, 0.4620)
4697 -- ( 0.2443, 0.4790)
4698 .. controls ( 0.2287, 0.5015) and ( 0.2286, 0.4995) .. ( 0.2018, 0.4960)
4699 -- ( 0.1934, 0.5044)
4700 -- ( 0.1934, 0.5469)
4701 --cycle
4702 ( 0.3971, 0.5384)
4703 -- ( 0.4056, 0.5044)
4704 -- ( 0.4649, 0.4875)
4705 -- ( 0.4904, 0.5384)
4706 -- ( 0.4395, 0.5214)
4707 --cycle
4708 ( 0.5668, 0.5384)
4709 .. controls ( 0.5368, 0.5332) and ( 0.5357, 0.5327) .. ( 0.5244, 0.5044)
4710 -- ( 0.5329, 0.4960)
4711 -- ( 0.5668, 0.5044)
4712 -- ( 0.5499, 0.4620)
4713 .. controls ( 0.5250, 0.4718) and ( 0.5240, 0.4756) .. ( 0.5074, 0.4535)
4714 -- ( 0.5584, 0.4280)
4715 .. controls ( 0.6164, 0.4608) and ( 0.5800, 0.4918) .. ( 0.5668, 0.5384)
4716 --cycle
4717 ( 0.0770, 0.5310)
4718 .. controls ( 0.0682, 0.5304) and ( 0.0588, 0.5222) .. ( 0.0538, 0.5053)
4719 .. controls ( 0.0343, 0.4401) and ( 0.0794, 0.3794) .. ( 0.1169, 0.4450)
4720 -- ( 0.0830, 0.4535)
4721 .. controls ( 0.0904, 0.4711) and ( 0.1010, 0.4920) .. ( 0.0968, 0.5117)
4722 .. controls ( 0.0941, 0.5249) and ( 0.0858, 0.5317) .. ( 0.0770, 0.5310)
4723 --cycle
4724 (-0.3075, 0.5299)

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4725 -- (-0.3414, 0.4790)
4726 -- (-0.3330, 0.4705)
4727 .. controls (-0.2926, 0.4813) and (-0.2724, 0.4931) .. (-0.3075, 0.5299)
4728 --cycle
4729 (-0.6105, 0.5210)
4730 .. controls (-0.6292, 0.5286) and (-0.6359, 0.5102) .. (-0.6385, 0.4790)
4731 -- (-0.5876, 0.5044)
4732 .. controls (-0.5967, 0.5132) and (-0.6043, 0.5185) .. (-0.6105, 0.5210)
4733 --cycle
4734 (-0.6810, 0.5129)
4735 .. controls (-0.6924, 0.5121) and (-0.7036, 0.5121) .. (-0.7147, 0.5086)
4736 .. controls (-0.7151, 0.5085) and (-0.7153, 0.5083) .. (-0.7157, 0.5081)
4737 -- (-0.7430, 0.4612)
4738 .. controls (-0.7297, 0.4478) and (-0.7007, 0.4457) .. (-0.6860, 0.4801)
4739 .. controls (-0.6815, 0.4906) and (-0.6819, 0.5019) .. (-0.6810, 0.5129)
4740 --cycle
4741 (-0.1462, 0.5129)
4742 .. controls (-0.1949, 0.5129) and (-0.2098, 0.5207) .. (-0.2480, 0.4875)
4743 -- (-0.2480, 0.4790)
4744 -- (-0.2311, 0.4620)
4745 -- (-0.1801, 0.4790)
4746 -- (-0.1801, 0.4535)
4747 -- (-0.1462, 0.4535)
4748 --cycle
4749 ( 0.0066, 0.5044)
4750 -- (-0.0019, 0.4620)
4751 .. controls (-0.0908, 0.4424) and (-0.0252, 0.3738) .. ( 0.0185, 0.4370)
4752 .. controls ( 0.0238, 0.4448) and ( 0.0272, 0.4527) .. ( 0.0290, 0.4620)
4753 .. controls ( 0.0322, 0.4784) and ( 0.0277, 0.4893) .. ( 0.0236, 0.5044)
4754 --cycle
4755 (-0.5118, 0.4944)
4756 .. controls (-0.5315, 0.4962) and (-0.5506, 0.4944) .. (-0.5676, 0.4798)
4757 .. controls (-0.5973, 0.4546) and (-0.5662, 0.4306) .. (-0.5676, 0.4033)
4758 .. controls (-0.5682, 0.3806) and (-0.5896, 0.3679) .. (-0.5934, 0.3509)
4759 .. controls (-0.6001, 0.3209) and (-0.5656, 0.2986) .. (-0.5452, 0.2838)
4760 -- (-0.5621, 0.2498)
4761 -- (-0.5282, 0.2498)
4762 .. controls (-0.5165, 0.2920) and (-0.5111, 0.3040) .. (-0.5536, 0.3262)
4763 .. controls (-0.5263, 0.3959) and (-0.5223, 0.3799) .. (-0.5452, 0.4535)
4764 -- (-0.4857, 0.4705)
4765 -- (-0.4518, 0.4535)
4766 -- (-0.4518, 0.4875)
4767 .. controls (-0.4715, 0.4873) and (-0.4920, 0.4926) .. (-0.5118, 0.4944)
4768 --cycle
4769 ( 0.3588, 0.4802)
4770 .. controls ( 0.3533, 0.4806) and ( 0.3465, 0.4801) .. ( 0.3377, 0.4790)
4771 -- ( 0.3801, 0.4365)
4772 -- ( 0.3886, 0.4450)
4773 .. controls ( 0.3795, 0.4694) and ( 0.3752, 0.4789) .. ( 0.3588, 0.4802)
4774 --cycle
4775 (-0.3923, 0.4620)
4776 .. controls (-0.3995, 0.4156) and (-0.3752, 0.3562) .. (-0.3330, 0.3347)
4777 -- (-0.3245, 0.3431)

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4778 -- (-0.3172, 0.4229)
4779 -- (-0.3754, 0.4620)
4780 --cycle
4781 ( 0.1254, 0.4620)
4782 .. controls ( 0.1311, 0.4303) and ( 0.1371, 0.3466) .. ( 0.1909, 0.3657)
4783 .. controls ( 0.2082, 0.3718) and ( 0.2132, 0.3929) .. ( 0.2274, 0.4041)
4784 .. controls ( 0.2376, 0.4123) and ( 0.2569, 0.4158) .. ( 0.2697, 0.4196)
4785 .. controls ( 0.2404, 0.4707) and ( 0.2211, 0.4375) .. ( 0.1594, 0.4196)
4786 --cycle
4787 ( 0.6347, 0.4620)
4788 .. controls ( 0.5865, 0.3970) and ( 0.5594, 0.4145) .. ( 0.5753, 0.3516)
4789 .. controls ( 0.6248, 0.3639) and ( 0.6190, 0.3659) .. ( 0.6687, 0.3516)
4790 .. controls ( 0.6624, 0.3942) and ( 0.6392, 0.4050) .. ( 0.6772, 0.4280)
4791 --cycle
4792 (-0.2735, 0.4535)
4793 .. controls (-0.2776, 0.4212) and (-0.2764, 0.4187) .. (-0.2480, 0.4026)
4794 -- (-0.2565, 0.4535)
4795 --cycle
4796 ( 0.4565, 0.4535)
4797 -- ( 0.4395, 0.4365)
4798 -- ( 0.4395, 0.4280)
4799 -- ( 0.4565, 0.4111)
4800 -- ( 0.4649, 0.4111)
4801 -- ( 0.4819, 0.4280)
4802 --cycle
4803 ( 0.7558, 0.4524)
4804 .. controls ( 0.7494, 0.4473) and ( 0.7430, 0.4394) .. ( 0.7366, 0.4280)
4805 .. controls ( 0.7552, 0.4225) and ( 0.7653, 0.4183) .. ( 0.7753, 0.4176)
4806 --cycle
4807 (-0.4518, 0.4450)
4808 -- (-0.4772, 0.4365)
4809 -- (-0.4518, 0.4196)
4810 --cycle
4811 (-0.6423, 0.4300)
4812 .. controls (-0.6532, 0.4307) and (-0.6637, 0.4304) .. (-0.6690, 0.4274)
4813 .. controls (-0.6866, 0.4158) and (-0.6850, 0.3910) .. (-0.6630, 0.3848)
4814 -- (-0.6130, 0.3848)
4815 -- (-0.6130, 0.4274)
4816 .. controls (-0.6201, 0.4279) and (-0.6314, 0.4294) .. (-0.6423, 0.4300)
4817 --cycle
4818 ( 0.7111, 0.4196)
4819 -- ( 0.7451, 0.3771)
4820 .. controls ( 0.7399, 0.4071) and ( 0.7394, 0.4082) .. ( 0.7111, 0.4196)
4821 --cycle
4822 (-0.7404, 0.4111)
4823 -- (-0.7574, 0.3347)
4824 -- (-0.7065, 0.3262)
4825 -- (-0.7234, 0.4111)
4826 --cycle
4827 (-0.1547, 0.4111)
4828 -- (-0.1462, 0.3601)
4829 -- (-0.1038, 0.3856)
4830 .. controls (-0.0885, 0.3562) and (-0.0864, 0.3520) .. (-0.0528, 0.3516)

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4831 -- (-0.0783, 0.4026)
4832 --cycle
4833 ( 0.3886, 0.4111)
4834 .. controls ( 0.3213, 0.4055) and ( 0.3289, 0.3610) .. ( 0.3801, 0.3347)
4835 --cycle
4836 ( 0.3801, 0.3347)
4837 -- ( 0.3801, 0.3262)
4838 -- ( 0.3631, 0.3092)
4839 -- ( 0.3801, 0.2753)
4840 -- ( 0.3971, 0.2753)
4841 .. controls ( 0.4050, 0.3067) and ( 0.4083, 0.3157) .. ( 0.3801, 0.3347)
4842 --cycle
4843 ( 0.5074, 0.4026)
4844 -- ( 0.4565, 0.3516)
4845 .. controls ( 0.4935, 0.3518) and ( 0.5571, 0.3505) .. ( 0.5074, 0.4026)
4846 --cycle
4847 (-0.4348, 0.3941)
4848 -- (-0.4433, 0.3856)
4849 -- (-0.4348, 0.3516)
4850 -- (-0.4008, 0.3856)
4851 --cycle
4852 (-0.5112, 0.3856)
4853 -- (-0.5027, 0.3347)
4854 -- (-0.4518, 0.3856)
4855 --cycle
4856 ( 0.0405, 0.3856)
4857 .. controls ( 0.0481, 0.3444) and ( 0.0444, 0.3224) .. ( 0.0830, 0.3007)
4858 -- ( 0.1169, 0.3686)
4859 --cycle
4860 ( 0.2586, 0.3821)
4861 .. controls ( 0.2327, 0.3759) and ( 0.2165, 0.3319) .. ( 0.2699, 0.3440)
4862 -- ( 0.2952, 0.3516)
4863 .. controls ( 0.2928, 0.3578) and ( 0.2924, 0.3646) .. ( 0.2856, 0.3722)
4864 .. controls ( 0.2770, 0.3820) and ( 0.2672, 0.3842) .. ( 0.2586, 0.3821)
4865 --cycle
4866 (-0.2650, 0.3686)
4867 .. controls (-0.2695, 0.3349) and (-0.2648, 0.3302) .. (-0.2311, 0.3347)
4868 --cycle
4869 ( 0.8037, 0.3670)
4870 .. controls ( 0.7958, 0.3549) and ( 0.8002, 0.3405) .. ( 0.8215, 0.3262)
4871 -- ( 0.8225, 0.3334)
4872 --cycle
4873 (-0.0104, 0.3601)
4874 -- (-0.0273, 0.3007)
4875 -- (-0.0698, 0.3007)
4876 .. controls (-0.0385, 0.2465) and ( 0.0057, 0.2824) .. ( 0.0066, 0.3601)
4877 --cycle
4878 (-0.4348, 0.3431)
4879 -- (-0.4348, 0.3007)
4880 .. controls (-0.4123, 0.3163) and (-0.4143, 0.3163) .. (-0.4178, 0.3431)
4881 --cycle
4882 (-0.8185, 0.3317)
4883 -- (-0.8365, 0.3007)

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4884 -- (-0.7998, 0.3007)
4885 -- (-0.7998, 0.3177)
4886 --cycle
4887 ( 0.4649, 0.3315)
4888 .. controls ( 0.4219, 0.3238) and ( 0.4094, 0.2904) .. ( 0.4395, 0.2583)
4889 -- ( 0.4565, 0.2922)
4890 -- ( 0.5414, 0.2922)
4891 -- ( 0.5414, 0.3092)
4892 .. controls ( 0.5190, 0.3194) and ( 0.4902, 0.3361) .. ( 0.4649, 0.3315)
4893 --cycle
4894 (-0.6388, 0.3309)
4895 .. controls (-0.6527, 0.3328) and (-0.6597, 0.3256) .. (-0.6674, 0.3156)
4896 -- (-0.6895, 0.2838)
4897 .. controls (-0.6839, 0.2742) and (-0.6820, 0.2649) .. (-0.6700, 0.2597)
4898 .. controls (-0.6290, 0.2418) and (-0.5917, 0.3244) .. (-0.6388, 0.3309)
4899 --cycle
4900 (-0.1462, 0.3262)
4901 .. controls (-0.1623, 0.2693) and (-0.1610, 0.2418) .. (-0.0953, 0.2498)
4902 -- (-0.1292, 0.3262)
4903 --cycle
4904 ( 0.2103, 0.3262)
4905 -- ( 0.1849, 0.2753)
4906 .. controls ( 0.2243, 0.2757) and ( 0.2321, 0.2881) .. ( 0.2273, 0.3262)
4907 --cycle
4908 ( 0.3292, 0.3262)
4909 -- ( 0.2782, 0.2668)
4910 -- ( 0.2782, 0.2498)
4911 -- ( 0.3390, 0.2109)
4912 .. controls ( 0.3506, 0.1937) and ( 0.3360, 0.1683) .. ( 0.3513, 0.1579)
4913 .. controls ( 0.3686, 0.1461) and ( 0.4096, 0.1877) .. ( 0.3631, 0.2073)
4914 -- ( 0.3801, 0.2243)
4915 -- ( 0.3377, 0.2583)
4916 -- ( 0.3546, 0.3007)
4917 --cycle
4918 ( 0.6941, 0.3262)
4919 -- ( 0.6941, 0.2838)
4920 -- ( 0.7111, 0.2838)
4921 -- ( 0.7111, 0.3262)
4922 --cycle
4923 ( 0.7706, 0.3177)
4924 -- ( 0.7366, 0.3092)
4925 -- ( 0.7366, 0.2922)
4926 -- ( 0.7451, 0.2838)
4927 -- ( 0.7621, 0.2838)
4928 --cycle
4929 (-0.7913, 0.3092)
4930 -- (-0.7828, 0.2583)
4931 -- (-0.7658, 0.2583)
4932 -- (-0.7574, 0.2668)
4933 -- (-0.7743, 0.3092)
4934 --cycle
4935 ( 0.6093, 0.3092)
4936 -- ( 0.5838, 0.2413)

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4937 -- ( 0.6093, 0.2668)
4938 -- ( 0.6347, 0.2583)
4939 -- ( 0.6432, 0.3092)
4940 --cycle
4941 (-0.3494, 0.3079)
4942 .. controls (-0.4142, 0.2885) and (-0.3452, 0.2195) .. (-0.3258, 0.2842)
4943 -- (-0.3258, 0.3079)
4944 --cycle
4945 ( 0.1084, 0.3007)
4946 .. controls ( 0.1005, 0.2885) and ( 0.0956, 0.2764) .. ( 0.0807, 0.2708)
4947 .. controls ( 0.0663, 0.2653) and ( 0.0431, 0.2752) .. ( 0.0335, 0.2617)
4948 .. controls ( 0.0200, 0.2427) and ( 0.0540, 0.2322) .. ( 0.0660, 0.2298)
4949 .. controls ( 0.1034, 0.2226) and ( 0.1204, 0.2407) .. ( 0.1509, 0.2583)
4950 --cycle
4951 (-0.2201, 0.2946)
4952 .. controls (-0.2487, 0.2922) and (-0.2701, 0.2767) .. (-0.2990, 0.2583)
4953 -- (-0.2565, 0.2073)
4954 -- (-0.1886, 0.2922)
4955 .. controls (-0.2003, 0.2947) and (-0.2106, 0.2954) .. (-0.2201, 0.2946)
4956 --cycle
4957 (-0.4772, 0.2583)
4958 .. controls (-0.5022, 0.2481) and (-0.5267, 0.2367) .. (-0.5427, 0.2138)
4959 .. controls (-0.5681, 0.1773) and (-0.5547, 0.1549) .. (-0.5112, 0.1575)
4960 .. controls (-0.4976, 0.1584) and (-0.4899, 0.1613) .. (-0.4772, 0.1649)
4961 -- (-0.4688, 0.1564)
4962 -- (-0.4688, 0.1225)
4963 -- (-0.4518, 0.1225)
4964 .. controls (-0.4302, 0.1774) and (-0.4489, 0.1866) .. (-0.5027, 0.1988)
4965 --cycle
4966 (-0.4433, 0.2583)
4967 -- (-0.4348, 0.2073)
4968 -- (-0.4263, 0.2073)
4969 -- (-0.4093, 0.2243)
4970 -- (-0.4263, 0.2583)
4971 --cycle
4972 (-0.8446, 0.2512)
4973 .. controls (-0.8626, 0.2459) and (-0.8672, 0.2066) .. (-0.8677, 0.1903)
4974 .. controls (-0.8362, 0.1909) and (-0.8333, 0.1924) .. (-0.8168, 0.1649)
4975 -- (-0.7913, 0.1734)
4976 .. controls (-0.7979, 0.1888) and (-0.8118, 0.2347) .. (-0.8218, 0.2431)
4977 .. controls (-0.8311, 0.2510) and (-0.8386, 0.2530) .. (-0.8446, 0.2512)
4978 --cycle
4979 (-0.6130, 0.2498)
4980 -- (-0.6385, 0.1988)
4981 .. controls (-0.5969, 0.2023) and (-0.5781, 0.2132) .. (-0.6130, 0.2498)
4982 --cycle
4983 ( 0.7209, 0.2469)
4984 .. controls ( 0.7057, 0.2498) and ( 0.6918, 0.2452) .. ( 0.6875, 0.2241)
4985 .. controls ( 0.6832, 0.1844) and ( 0.7333, 0.1800) .. ( 0.6875, 0.1309)
4986 .. controls ( 0.6935, 0.1147) and ( 0.6966, 0.1050) .. ( 0.7123, 0.0936)
4987 .. controls ( 0.7287, 0.0815) and ( 0.7996, 0.0650) .. ( 0.8166, 0.0782)
4988 .. controls ( 0.8441, 0.0997) and ( 0.8443, 0.1468) .. ( 0.7875, 0.1564)
4989 -- ( 0.8130, 0.1055)

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4990 -- ( 0.7706, 0.0970)
4991 .. controls ( 0.7537, 0.1222) and ( 0.7493, 0.1200) .. ( 0.7196, 0.1225)
4992 -- ( 0.7621, 0.2241)
4993 .. controls ( 0.7526, 0.2335) and ( 0.7361, 0.2440) .. ( 0.7209, 0.2469)
4994 --cycle
4995 ( 0.5029, 0.2452)
4996 .. controls ( 0.4837, 0.2409) and ( 0.4663, 0.2223) .. ( 0.4749, 0.2012)
4997 .. controls ( 0.4861, 0.1737) and ( 0.5371, 0.1377) .. ( 0.5668, 0.1819)
4998 .. controls ( 0.5276, 0.2081) and ( 0.5495, 0.2337) .. ( 0.5218, 0.2442)
4999 .. controls ( 0.5159, 0.2464) and ( 0.5093, 0.2466) .. ( 0.5029, 0.2452)
5000 --cycle
5001 (-0.7065, 0.2328)
5002 .. controls (-0.7174, 0.2318) and (-0.7287, 0.2323) .. (-0.7391, 0.2277)
5003 .. controls (-0.7803, 0.2096) and (-0.7474, 0.1632) .. (-0.7171, 0.2086)
5004 --cycle
5005 (-0.0188, 0.2328)
5006 .. controls (-0.0280, 0.2283) and (-0.0341, 0.2273) .. (-0.0430, 0.2197)
5007 .. controls (-0.1097, 0.1629) and ( 0.0304, 0.1216) .. (-0.0010, 0.2037)
5008 --cycle
5009 ( 0.2612, 0.2328)
5010 -- ( 0.1849, 0.2073)
5011 .. controls ( 0.2210, 0.1548) and ( 0.2532, 0.1800) .. ( 0.2612, 0.2328)
5012 --cycle
5013 (-0.3330, 0.2243)
5014 -- (-0.3958, 0.1938)
5015 .. controls (-0.4203, 0.1689) and (-0.3928, 0.1505) .. (-0.4518, 0.0970)
5016 -- (-0.4518, 0.0800)
5017 .. controls (-0.4010, 0.0738) and (-0.3851, 0.1024) .. (-0.3754, 0.1479)
5018 .. controls (-0.3297, 0.1544) and (-0.3165, 0.1646) .. (-0.2990, 0.2073)
5019 --cycle
5020 (-0.1971, 0.2243)
5021 -- (-0.2056, 0.1479)
5022 -- (-0.1462, 0.1394)
5023 -- (-0.1462, 0.1564)
5024 -- (-0.1801, 0.2243)
5025 --cycle
5026 ( 0.8384, 0.2243)
5027 .. controls ( 0.8324, 0.1770) and ( 0.8519, 0.1318) .. ( 0.8979, 0.1140)
5028 -- ( 0.9064, 0.1225)
5029 .. controls ( 0.8952, 0.1805) and ( 0.8898, 0.1922) .. ( 0.8384, 0.2243)
5030 --cycle
5031 ( 0.0151, 0.2073)
5032 -- ( 0.0151, 0.1903)
5033 -- ( 0.0405, 0.1819)
5034 -- ( 0.0405, 0.1479)
5035 -- ( 0.0575, 0.1479)
5036 -- ( 0.0575, 0.1564)
5037 -- ( 0.0745, 0.1734)
5038 .. controls ( 0.0548, 0.2031) and ( 0.0517, 0.2101) .. ( 0.0151, 0.2073)
5039 --cycle
5040 ( 0.6262, 0.2073)
5041 -- ( 0.6347, 0.1734)
5042 -- ( 0.6517, 0.1734)

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5043 -- ( 0.6602, 0.1819)
5044 -- ( 0.6602, 0.1988)
5045 --cycle
5046 ( 0.7621, 0.2073)
5047 -- ( 0.7621, 0.1649)
5048 .. controls ( 0.7903, 0.1763) and ( 0.7908, 0.1774) .. ( 0.7960, 0.2073)
5049 --cycle
5050 (-0.8988, 0.1938)
5051 -- (-0.9014, 0.1893)
5052 .. controls (-0.9006, 0.1906) and (-0.8994, 0.1914) .. (-0.8988, 0.1930)
5053 .. controls (-0.8987, 0.1933) and (-0.8989, 0.1936) .. (-0.8988, 0.1938)
5054 --cycle
5055 (-0.1292, 0.1903)
5056 -- (-0.1292, 0.1479)
5057 -- (-0.0953, 0.1819)
5058 --cycle
5059 ( 0.2952, 0.1903)
5060 .. controls ( 0.2890, 0.1611) and ( 0.2867, 0.1567) .. ( 0.3122, 0.1394)
5061 -- ( 0.3122, 0.1903)
5062 --cycle
5063 (-0.6895, 0.1819)
5064 -- (-0.6895, 0.1479)
5065 -- (-0.6640, 0.1564)
5066 -- (-0.6640, 0.1734)
5067 -- (-0.6725, 0.1819)
5068 --cycle
5069 ( 0.1480, 0.1735)
5070 .. controls ( 0.1310, 0.1697) and ( 0.1252, 0.1423) .. ( 0.1594, 0.1225)
5071 -- ( 0.1849, 0.1479)
5072 .. controls ( 0.1726, 0.1694) and ( 0.1583, 0.1757) .. ( 0.1480, 0.1735)
5073 --cycle
5074 (-0.6300, 0.1734)
5075 .. controls (-0.6429, 0.1238) and (-0.6284, 0.1142) .. (-0.5876, 0.0885)
5076 -- (-0.6215, 0.0461)
5077 -- (-0.6640, 0.0800)
5078 .. controls (-0.6670, 0.0697) and (-0.6746, 0.0478) .. (-0.6743, 0.0381)
5079 .. controls (-0.6736, 0.0066) and (-0.6456, 0.0044) .. (-0.6219, 0.0135)
5080 .. controls (-0.5925, 0.0247) and (-0.5281, 0.0777) .. (-0.5319, 0.1120)
5081 .. controls (-0.5350, 0.1399) and (-0.5677, 0.1315) .. (-0.5853, 0.1410)
5082 .. controls (-0.5998, 0.1487) and (-0.6048, 0.1603) .. (-0.6130, 0.1734)
5083 --cycle
5084 (-0.6640, 0.0800)
5085 .. controls (-0.6595, 0.1137) and (-0.6643, 0.1185) .. (-0.6980, 0.1140)
5086 --cycle
5087 (-0.2565, 0.1734)
5088 -- (-0.3584, 0.1309)
5089 -- (-0.3330, 0.0800)
5090 -- (-0.2990, 0.1140)
5091 .. controls (-0.2519, 0.1142) and (-0.2453, 0.1302) .. (-0.2565, 0.1734)
5092 --cycle
5093 ( 0.2271, 0.1407)
5094 .. controls ( 0.1925, 0.1328) and ( 0.1533, 0.0767) .. ( 0.2190, 0.0890)
5095 -- ( 0.2612, 0.0970)

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5096 .. controls ( 0.2604, 0.1073) and ( 0.2611, 0.1186) .. ( 0.2562, 0.1281)
5097 .. controls ( 0.2497, 0.1405) and ( 0.2386, 0.1433) .. ( 0.2271, 0.1407)
5098 --cycle
5099 (-0.0698, 0.1394)
5100 .. controls (-0.0981, 0.1280) and (-0.0986, 0.1270) .. (-0.1038, 0.0970)
5101 -- (-0.0698, 0.0970)
5102 --cycle
5103 ( 0.3971, 0.1394)
5104 -- ( 0.3971, 0.1225)
5105 -- ( 0.4056, 0.1140)
5106 -- ( 0.4395, 0.1225)
5107 -- ( 0.4395, 0.1394)
5108 --cycle
5109 ( 0.6090, 0.1316)
5110 .. controls ( 0.5968, 0.1320) and ( 0.5847, 0.1313) .. ( 0.5753, 0.1309)
5111 .. controls ( 0.5937, 0.1034) and ( 0.6031, 0.1066) .. ( 0.6347, 0.1055)
5112 .. controls ( 0.5863, 0.0654) and ( 0.5849, 0.0269) .. ( 0.6432,-0.0049)
5113 -- ( 0.6262, 0.0461)
5114 -- ( 0.6488, 0.0715)
5115 .. controls ( 0.6828, 0.1212) and ( 0.6456, 0.1307) .. ( 0.6090, 0.1316)
5116 --cycle
5117 (-0.9354, 0.1309)
5118 -- (-0.9422, 0.1193)
5119 -- (-0.9356, 0.0800)
5120 -- (-0.8847, 0.0970)
5121 -- (-0.8847, 0.1309)
5122 --cycle
5123 (-0.8507, 0.1309)
5124 .. controls (-0.8417, 0.0965) and (-0.8401, 0.0890) .. (-0.8083, 0.0715)
5125 .. controls (-0.8126, 0.1087) and (-0.8139, 0.1187) .. (-0.8507, 0.1309)
5126 --cycle
5127 ( 0.1084, 0.1309)
5128 -- ( 0.0575, 0.1225)
5129 .. controls ( 0.0537, 0.0923) and ( 0.0510, 0.0922) .. ( 0.0236, 0.0800)
5130 .. controls ( 0.0578, 0.0292) and ( 0.1015, 0.0713) .. ( 0.1084, 0.1309)
5131 --cycle
5132 ( 0.4819, 0.1309)
5133 -- ( 0.5028, 0.0739)
5134 -- ( 0.4819,-0.0049)
5135 .. controls ( 0.4993,-0.0102) and ( 0.5299,-0.0233) .. ( 0.5472,-0.0163)
5136 .. controls ( 0.5677,-0.0081) and ( 0.5663, 0.0195) .. ( 0.5644, 0.0376)
5137 .. controls ( 0.5592, 0.0860) and ( 0.5308, 0.1235) .. ( 0.4819, 0.1309)
5138 --cycle
5139 ( 0.3461, 0.1140)
5140 .. controls ( 0.3108, 0.0951) and ( 0.3082, 0.0849) .. ( 0.3037, 0.0461)
5141 .. controls ( 0.3481, 0.0535) and ( 0.3552, 0.0713) .. ( 0.3461, 0.1140)
5142 --cycle
5143 (-0.4857, 0.0970)
5144 .. controls (-0.5241, 0.0326) and (-0.4983, 0.0214) .. (-0.4348, 0.0206)
5145 .. controls (-0.4420,-0.0343) and (-0.4036,-0.0413) .. (-0.3728,-0.0186)
5146 .. controls (-0.3557,-0.0061) and (-0.3442, 0.0265) .. (-0.3330, 0.0461)
5147 .. controls (-0.3807, 0.0916) and (-0.3834, 0.0423) .. (-0.3839, 0.0036)
5148 --cycle

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5149 (-0.2480, 0.0970)
5150 -- (-0.2480, 0.0800)
5151 -- (-0.2056, 0.0800)
5152 -- (-0.2056, 0.0970)
5153 --cycle
5154 (-0.1292, 0.0970)
5155 -- (-0.1462, 0.0800)
5156 -- (-0.1462, 0.0715)
5157 -- (-0.1292, 0.0546)
5158 -- (-0.1208, 0.0546)
5159 -- (-0.1038, 0.0715)
5160 --cycle
5161 ( 0.3801, 0.0800)
5162 -- ( 0.3801, 0.0206)
5163 -- ( 0.3971, 0.0206)
5164 -- ( 0.4056, 0.0291)
5165 -- ( 0.4140, 0.0800)
5166 --cycle
5167 ( 0.4225, 0.0800)
5168 .. controls ( 0.4316, 0.0456) and ( 0.4332, 0.0381) .. ( 0.4649, 0.0206)
5169 .. controls ( 0.4618, 0.0591) and ( 0.4606, 0.0679) .. ( 0.4225, 0.0800)
5170 --cycle
5171 ( 0.8809, 0.0759)
5172 .. controls ( 0.8722, 0.0759) and ( 0.8634, 0.0659) .. ( 0.8554, 0.0461)
5173 -- ( 0.9064, 0.0461)
5174 .. controls ( 0.8984, 0.0659) and ( 0.8897, 0.0759) .. ( 0.8809, 0.0759)
5175 --cycle
5176 ( 0.1413, 0.0752)
5177 .. controls ( 0.1324, 0.0761) and ( 0.1215, 0.0749) .. ( 0.1084, 0.0715)
5178 .. controls ( 0.1253, 0.0362) and ( 0.1326, 0.0290) .. ( 0.1679, 0.0121)
5179 .. controls ( 0.1762, 0.0511) and ( 0.1679, 0.0726) .. ( 0.1413, 0.0752)
5180 --cycle
5181 (-0.7409, 0.0649)
5182 .. controls (-0.7448, 0.0648) and (-0.7485, 0.0639) .. (-0.7518, 0.0618)
5183 .. controls (-0.7690, 0.0508) and (-0.7544,-0.0147) .. (-0.7438,-0.0279)
5184 .. controls (-0.7341,-0.0398) and (-0.7273,-0.0409) .. (-0.7149,-0.0473)
5185 -- (-0.7065, 0.0546)
5186 .. controls (-0.7159, 0.0583) and (-0.7292, 0.0653) .. (-0.7409, 0.0649)
5187 --cycle
5188 ( 0.9762, 0.0591)
5189 -- ( 0.9564, 0.0203)
5190 .. controls ( 0.9517,-0.0013) and ( 0.9637,-0.0270) .. ( 0.9761,-0.0510)
5191 -- ( 0.9997,-0.0105)
5192 .. controls ( 1.0000,-0.0010) and ( 1.0000, 0.0075) .. ( 0.9998, 0.0171)
5193 --cycle
5194 (-0.1717, 0.0546)
5195 .. controls (-0.2038, 0.0492) and (-0.2042, 0.0472) .. (-0.2226, 0.0206)
5196 -- (-0.1717, 0.0206)
5197 --cycle
5198 ( 0.7281, 0.0546)
5199 -- ( 0.6687, 0.0461)
5200 -- ( 0.6687, 0.0291)
5201 .. controls ( 0.7027, 0.0233) and ( 0.7100, 0.0245) .. ( 0.7281, 0.0546)

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5202 --cycle
5203 (-0.9726, 0.0477)
5204 .. controls (-0.9758, 0.0477) and (-0.9806, 0.0473) .. (-0.9843, 0.0471)
5205 -- (-1.0000, 0.0201)
5206 -- (-0.9912, 0.0044)
5207 -- (-0.9696, 0.0206)
5208 -- (-0.9448,-0.0784)
5209 -- (-0.9432,-0.0812)
5210 -- (-0.8422,-0.0728)
5211 -- (-0.8677,-0.0982)
5212 -- (-0.8677,-0.1322)
5213 .. controls (-0.8159,-0.1280) and (-0.7904,-0.1016) .. (-0.8308,-0.0569)
5214 .. controls (-0.8618,-0.0226) and (-0.8917,-0.0142) .. (-0.9356,-0.0049)
5215 .. controls (-0.9393, 0.0402) and (-0.9477, 0.0479) .. (-0.9726, 0.0477)
5216 --cycle
5217 (-0.0273, 0.0430)
5218 .. controls (-0.1037, 0.0283) and (-0.0659,-0.0617) .. (-0.0043, 0.0049)
5219 .. controls ( 0.0066, 0.0167) and ( 0.0086, 0.0240) .. ( 0.0151, 0.0376)
5220 .. controls ( 0.0001, 0.0416) and (-0.0110, 0.0461) .. (-0.0273, 0.0430)
5221 --cycle
5222 ( 0.2361, 0.0409)
5223 .. controls ( 0.2189, 0.0454) and ( 0.2022, 0.0366) .. ( 0.2018, 0.0036)
5224 .. controls ( 0.2379, 0.0017) and ( 0.2409,-0.0057) .. ( 0.2527,-0.0388)
5225 .. controls ( 0.2946,-0.0103) and ( 0.2647, 0.0336) .. ( 0.2361, 0.0409)
5226 --cycle
5227 (-0.2852, 0.0389)
5228 .. controls (-0.3005, 0.0379) and (-0.3023, 0.0289) .. (-0.2990, 0.0036)
5229 -- (-0.2650, 0.0376)
5230 .. controls (-0.2735, 0.0387) and (-0.2801, 0.0393) .. (-0.2852, 0.0389)
5231 --cycle
5232 ( 0.3037, 0.0291)
5233 .. controls ( 0.3231,-0.0055) and ( 0.3338,-0.0035) .. ( 0.3716,-0.0049)
5234 .. controls ( 0.3519, 0.0279) and ( 0.3402, 0.0269) .. ( 0.3037, 0.0291)
5235 --cycle
5236 (-0.8206, 0.0192)
5237 .. controls (-0.8430,-0.0126) and (-0.8179,-0.0291) .. (-0.8045,-0.0204)
5238 .. controls (-0.7923,-0.0127) and (-0.7854, 0.0239) .. (-0.8206, 0.0192)
5239 --cycle
5240 (-0.1371, 0.0134)
5241 .. controls (-0.1438, 0.0114) and (-0.1493, 0.0019) .. (-0.1547,-0.0134)
5242 -- (-0.1123,-0.0049)
5243 .. controls (-0.1224, 0.0099) and (-0.1303, 0.0154) .. (-0.1371, 0.0134)
5244 --cycle
5245 ( 0.7536, 0.0121)
5246 -- ( 0.7111, 0.0036)
5247 -- ( 0.7111,-0.0304)
5248 .. controls ( 0.7469,-0.0274) and ( 0.7588,-0.0268) .. ( 0.7536, 0.0121)
5249 --cycle
5250 ( 0.0750, 0.0106)
5251 .. controls ( 0.0661, 0.0093) and ( 0.0570, 0.0067) .. ( 0.0490, 0.0036)
5252 .. controls ( 0.0651,-0.0248) and ( 0.0680,-0.0250) .. ( 0.1000,-0.0304)
5253 .. controls ( 0.0590,-0.0732) and ( 0.0241,-0.0913) .. ( 0.0745,-0.1492)
5254 .. controls ( 0.1110,-0.1331) and ( 0.1272,-0.1362) .. ( 0.1424,-0.0982)

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5255 -- ( 0.1339,-0.0897)
5256 -- ( 0.1000,-0.0982)
5257 .. controls ( 0.1057,-0.0835) and ( 0.1261,-0.0416) .. ( 0.1266,-0.0304)
5258 .. controls ( 0.1284, 0.0069) and ( 0.1019, 0.0144) .. ( 0.0750, 0.0106)
5259 --cycle
5260 (-0.2311, 0.0036)
5261 -- (-0.2311,-0.0049)
5262 -- (-0.2480,-0.0219)
5263 .. controls (-0.2373,-0.0386) and (-0.2259,-0.0581) .. (-0.2054,-0.0643)
5264 .. controls (-0.1781,-0.0725) and (-0.1665,-0.0457) .. (-0.1984,-0.0158)
5265 .. controls (-0.2100,-0.0050) and (-0.2177,-0.0027) .. (-0.2311, 0.0036)
5266 --cycle
5267 ( 0.8469, 0.0036)
5268 .. controls ( 0.8030,-0.0174) and ( 0.7970,-0.0343) .. ( 0.7706,-0.0728)
5269 .. controls ( 0.7934,-0.1060) and ( 0.7994,-0.1083) .. ( 0.8384,-0.0982)
5270 -- ( 0.8384,-0.0813)
5271 -- ( 0.8130,-0.0728)
5272 -- ( 0.8130,-0.0558)
5273 .. controls ( 0.8448,-0.0370) and ( 0.8501,-0.0340) .. ( 0.8469, 0.0036)
5274 --cycle
5275 (-0.4603,-0.0049)
5276 .. controls (-0.4831,-0.0157) and (-0.5088,-0.0301) .. (-0.5182,-0.0557)
5277 .. controls (-0.5278,-0.0816) and (-0.5057,-0.0969) .. (-0.4907,-0.0883)
5278 .. controls (-0.4763,-0.0802) and (-0.4829,-0.0617) .. (-0.4518,-0.0304)
5279 -- (-0.4518,-0.0134)
5280 --cycle
5281 ( 0.4264,-0.0112)
5282 .. controls ( 0.3999,-0.0108) and ( 0.3834,-0.0280) .. ( 0.4056,-0.0728)
5283 -- ( 0.4565,-0.0558)
5284 -- ( 0.4649,-0.1237)
5285 -- ( 0.4819,-0.1237)
5286 -- ( 0.5074,-0.0558)
5287 .. controls ( 0.4895,-0.0297) and ( 0.4529,-0.0116) .. ( 0.4264,-0.0112)
5288 --cycle
5289 (-0.5706,-0.0134)
5290 -- (-0.6045,-0.0388)
5291 .. controls (-0.6509,-0.0147) and (-0.6809,-0.0236) .. (-0.6725,-0.0813)
5292 -- (-0.6980,-0.0897)
5293 .. controls (-0.6821,-0.1195) and (-0.6788,-0.1210) .. (-0.6470,-0.1322)
5294 .. controls (-0.6222,-0.0713) and (-0.6544,-0.0848) .. (-0.6130,-0.0473)
5295 .. controls (-0.5953,-0.0788) and (-0.5888,-0.0784) .. (-0.5536,-0.0813)
5296 --cycle
5297 ( 0.1679,-0.0219)
5298 .. controls ( 0.1573,-0.0941) and ( 0.2349,-0.1063) .. ( 0.2526,-0.0847)
5299 .. controls ( 0.2609,-0.0744) and ( 0.2602,-0.0596) .. ( 0.2612,-0.0473)
5300 --cycle
5301 (-0.3112,-0.0274)
5302 .. controls (-0.3586,-0.0281) and (-0.4163,-0.0558) .. (-0.4212,-0.0609)
5303 .. controls (-0.4295,-0.0692) and (-0.4319,-0.0787) .. (-0.4327,-0.0899)
5304 -- (-0.4327,-0.1492)
5305 -- (-0.4327,-0.2086)
5306 .. controls (-0.3777,-0.1999) and (-0.3244,-0.1312) .. (-0.4008,-0.1067)
5307 -- (-0.3823,-0.0879)

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5308 .. controls (-0.3347,-0.0526) and (-0.3277,-0.1099) .. (-0.2903,-0.1163)
5309 .. controls (-0.2612,-0.1213) and (-0.2444,-0.0914) .. (-0.2507,-0.0659)
5310 .. controls (-0.2581,-0.0362) and (-0.2828,-0.0269) .. (-0.3112,-0.0274)
5311 --cycle
5312 ( 0.9234,-0.0304)
5313 -- ( 0.9149,-0.0643)
5314 -- ( 0.9488,-0.0558)
5315 -- ( 0.9488,-0.0388)
5316 -- ( 0.9403,-0.0304)
5317 --cycle
5318 ( 0.6406,-0.0369)
5319 .. controls ( 0.6333,-0.0375) and ( 0.6251,-0.0419) .. ( 0.6177,-0.0522)
5320 .. controls ( 0.6105,-0.0620) and ( 0.6112,-0.0704) .. ( 0.6093,-0.0799)
5321 -- ( 0.6342,-0.0799)
5322 .. controls ( 0.6760,-0.0673) and ( 0.6625,-0.0350) .. ( 0.6406,-0.0369)
5323 --cycle
5324 (-0.0016,-0.0449)
5325 .. controls (-0.0461,-0.0548) and (-0.0410,-0.0663) .. (-0.0297,-0.1043)
5326 .. controls (-0.0250,-0.1199) and (-0.0232,-0.1440) .. (-0.0016,-0.1422)
5327 .. controls ( 0.0349,-0.1392) and ( 0.0554,-0.0537) .. (-0.0016,-0.0449)
5328 --cycle
5329 (-0.1123,-0.0473)
5330 -- (-0.1208,-0.1067)
5331 .. controls (-0.0719,-0.1062) and (-0.0661,-0.0635) .. (-0.1123,-0.0473)
5332 --cycle
5333 ( 0.3037,-0.0473)
5334 .. controls ( 0.3198,-0.0756) and ( 0.3223,-0.0769) .. ( 0.3546,-0.0728)
5335 .. controls ( 0.3383,-0.0447) and ( 0.3358,-0.0446) .. ( 0.3037,-0.0473)
5336 --cycle
5337 ( 0.5329,-0.0473)
5338 .. controls ( 0.5004,-0.0966) and ( 0.4981,-0.1266) .. ( 0.5668,-0.1322)
5339 -- ( 0.5499,-0.0473)
5340 --cycle
5341 (-0.1632,-0.0728)
5342 -- (-0.1462,-0.1067)
5343 -- (-0.1462,-0.0728)
5344 --cycle
5345 ( 0.7090,-0.0817)
5346 .. controls ( 0.6987,-0.0843) and ( 0.6911,-0.0952) .. ( 0.6894,-0.1068)
5347 .. controls ( 0.6863,-0.1276) and ( 0.7043,-0.1387) .. ( 0.7111,-0.1831)
5348 .. controls ( 0.7499,-0.1786) and ( 0.7602,-0.1760) .. ( 0.7791,-0.1407)
5349 -- ( 0.7196,-0.1322)
5350 -- ( 0.7451,-0.1068)
5351 .. controls ( 0.7324,-0.0850) and ( 0.7193,-0.0791) .. ( 0.7090,-0.0817)
5352 --cycle
5353 ( 0.9485,-0.0984)
5354 .. controls ( 0.9284,-0.1094) and ( 0.8781,-0.1542) .. ( 0.8706,-0.1754)
5355 .. controls ( 0.8655,-0.1897) and ( 0.8704,-0.2051) .. ( 0.8817,-0.2131)
5356 --cycle
5357 (-0.9323,-0.1007)
5358 -- (-0.9101,-0.1405)
5359 .. controls (-0.9101,-0.1287) and (-0.9146,-0.1173) .. (-0.9187,-0.1067)
5360 --cycle

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5361 (-0.0528,-0.1067)
5362 .. controls (-0.0616,-0.1167) and (-0.0681,-0.1217) .. (-0.0735,-0.1348)
5363 .. controls (-0.0802,-0.1513) and (-0.0835,-0.2032) .. (-0.0603,-0.2082)
5364 .. controls (-0.0462,-0.2108) and (-0.0167,-0.1971) .. (-0.0603,-0.1577)
5365 .. controls (-0.0459,-0.1339) and (-0.0396,-0.1326) .. (-0.0528,-0.1067)
5366 --cycle
5367 (-0.4876,-0.1114)
5368 .. controls (-0.4992,-0.1127) and (-0.5150,-0.1170) .. (-0.5367,-0.1237)
5369 -- (-0.5367,-0.1577)
5370 -- (-0.4433,-0.1916)
5371 .. controls (-0.4544,-0.1299) and (-0.4526,-0.1074) .. (-0.4876,-0.1114)
5372 --cycle
5373 (-0.7635,-0.1120)
5374 .. controls (-0.7788,-0.1114) and (-0.7890,-0.1295) .. (-0.7913,-0.1577)
5375 -- (-0.7574,-0.1577)
5376 .. controls (-0.7442,-0.2093) and (-0.7301,-0.2080) .. (-0.6810,-0.2086)
5377 -- (-0.6810,-0.1746)
5378 -- (-0.7149,-0.1916)
5379 .. controls (-0.7175,-0.1714) and (-0.7177,-0.1520) .. (-0.7311,-0.1350)
5380 .. controls (-0.7433,-0.1194) and (-0.7544,-0.1124) .. (-0.7635,-0.1120)
5381 --cycle
5382 (-0.2082,-0.1145)
5383 .. controls (-0.2215,-0.1126) and (-0.2378,-0.1199) .. (-0.2495,-0.1410)
5384 .. controls (-0.2530,-0.1510) and (-0.2546,-0.1612) .. (-0.2495,-0.1721)
5385 .. controls (-0.2475,-0.1840) and (-0.2388,-0.1913) .. (-0.2311,-0.2001)
5386 .. controls (-0.2202,-0.1931) and (-0.2111,-0.1884) .. (-0.2020,-0.1785)
5387 .. controls (-0.1722,-0.1464) and (-0.1860,-0.1177) .. (-0.2082,-0.1145)
5388 --cycle
5389 ( 0.4225,-0.1152)
5390 -- ( 0.3631,-0.1492)
5391 -- ( 0.3801,-0.1831)
5392 .. controls ( 0.4160,-0.1656) and ( 0.4276,-0.1565) .. ( 0.4225,-0.1152)
5393 --cycle
5394 (-0.5925,-0.1174)
5395 .. controls (-0.6021,-0.1151) and (-0.6144,-0.1208) .. (-0.6203,-0.1336)
5396 .. controls (-0.6283,-0.1508) and (-0.6192,-0.1674) .. (-0.6130,-0.1831)
5397 -- (-0.5961,-0.1831)
5398 .. controls (-0.5903,-0.1723) and (-0.5831,-0.1615) .. (-0.5803,-0.1494)
5399 .. controls (-0.5758,-0.1301) and (-0.5828,-0.1197) .. (-0.5925,-0.1174)
5400 --cycle
5401 ( 0.2952,-0.1237)
5402 -- ( 0.3292,-0.1746)
5403 -- ( 0.3377,-0.1746)
5404 -- ( 0.3546,-0.1577)
5405 .. controls ( 0.3339,-0.1275) and ( 0.3315,-0.1266) .. ( 0.2952,-0.1237)
5406 --cycle
5407 ( 0.1832,-0.1240)
5408 .. controls ( 0.1608,-0.1263) and ( 0.1298,-0.1544) .. ( 0.1254,-0.2086)
5409 .. controls ( 0.1747,-0.2011) and ( 0.2191,-0.1503) .. ( 0.2015,-0.1301)
5410 .. controls ( 0.1972,-0.1252) and ( 0.1907,-0.1232) .. ( 0.1832,-0.1240)
5411 --cycle
5412 (-0.3330,-0.1407)
5413 .. controls (-0.3325,-0.1552) and (-0.3330,-0.1683) .. (-0.3280,-0.1824)

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5414 .. controls (-0.3221,-0.1993) and (-0.2907,-0.2626) .. (-0.2674,-0.2496)
5415 .. controls (-0.2290,-0.2283) and (-0.2939,-0.1556) .. (-0.3330,-0.1407)
5416 --cycle
5417 (-0.8677,-0.1492)
5418 .. controls (-0.8906,-0.2074) and (-0.8704,-0.2079) .. (-0.8168,-0.2086)
5419 -- (-0.8168,-0.2341)
5420 -- (-0.7828,-0.2341)
5421 .. controls (-0.7876,-0.1754) and (-0.8159,-0.1679) .. (-0.8677,-0.1492)
5422 --cycle
5423 ( 0.6507,-0.1523)
5424 .. controls ( 0.6150,-0.1514) and ( 0.5790,-0.1648) .. ( 0.5634,-0.2019)
5425 .. controls ( 0.5467,-0.2418) and ( 0.5701,-0.2915) .. ( 0.6347,-0.2595)
5426 -- ( 0.5923,-0.2426)
5427 .. controls ( 0.6167,-0.1901) and ( 0.6349,-0.1909) .. ( 0.6857,-0.1746)
5428 -- ( 0.6857,-0.1577)
5429 .. controls ( 0.6745,-0.1545) and ( 0.6627,-0.1526) .. ( 0.6507,-0.1523)
5430 --cycle
5431 ( 0.4992,-0.1530)
5432 .. controls ( 0.4893,-0.1544) and ( 0.4788,-0.1613) .. ( 0.4723,-0.1757)
5433 .. controls ( 0.4601,-0.2024) and ( 0.4716,-0.2265) .. ( 0.4819,-0.2510)
5434 -- ( 0.4310,-0.2510)
5435 .. controls ( 0.4659,-0.3129) and ( 0.5002,-0.2692) .. ( 0.5329,-0.2341)
5436 .. controls ( 0.5195,-0.1890) and ( 0.5320,-0.1766) .. ( 0.5232,-0.1628)
5437 .. controls ( 0.5186,-0.1555) and ( 0.5091,-0.1515) .. ( 0.4992,-0.1530)
5438 --cycle
5439 (-0.1462,-0.1577)
5440 -- (-0.1462,-0.2001)
5441 -- (-0.1292,-0.2001)
5442 -- (-0.1292,-0.1577)
5443 --cycle
5444 ( 0.0490,-0.1577)
5445 -- ( 0.0066,-0.1831)
5446 -- ( 0.0066,-0.2001)
5447 .. controls ( 0.0224,-0.2077) and ( 0.0639,-0.2307) .. ( 0.0802,-0.2267)
5448 .. controls ( 0.1236,-0.2159) and ( 0.0615,-0.1657) .. ( 0.0490,-0.1577)
5449 --cycle
5450 ( 0.2527,-0.1577)
5451 -- ( 0.2358,-0.1746)
5452 -- ( 0.2273,-0.1746)
5453 -- ( 0.2273,-0.1916)
5454 .. controls ( 0.2817,-0.2389) and ( 0.2612,-0.2548) .. ( 0.3207,-0.2595)
5455 -- ( 0.2952,-0.2341)
5456 .. controls ( 0.2952,-0.1946) and ( 0.2813,-0.1829) .. ( 0.2527,-0.1577)
5457 --cycle
5458 ( 0.4124,-0.1906)
5459 .. controls ( 0.3901,-0.1934) and ( 0.3801,-0.2077) .. ( 0.3631,-0.2341)
5460 .. controls ( 0.4031,-0.2391) and ( 0.4075,-0.2303) .. ( 0.4395,-0.2086)
5461 -- ( 0.4395,-0.1916)
5462 .. controls ( 0.4286,-0.1900) and ( 0.4198,-0.1897) .. ( 0.4124,-0.1906)
5463 --cycle
5464 (-0.5282,-0.1916)
5465 -- (-0.5536,-0.2001)
5466 -- (-0.5282,-0.2171)

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5467 --cycle
5468 (-0.6045,-0.2001)
5469 .. controls (-0.6700,-0.2056) and (-0.6485,-0.2287) .. (-0.6330,-0.2741)
5470 .. controls (-0.6243,-0.2991) and (-0.6268,-0.3013) .. (-0.6130,-0.3274)
5471 .. controls (-0.5769,-0.3048) and (-0.5602,-0.2946) .. (-0.5536,-0.2510)
5472 -- (-0.6045,-0.2510)
5473 --cycle
5474 (-0.3584,-0.2086)
5475 .. controls (-0.3921,-0.2259) and (-0.3939,-0.2318) .. (-0.4008,-0.2680)
5476 .. controls (-0.4235,-0.2397) and (-0.4237,-0.2318) .. (-0.4603,-0.2256)
5477 -- (-0.4603,-0.2850)
5478 .. controls (-0.4267,-0.2892) and (-0.3194,-0.3199) .. (-0.3429,-0.2424)
5479 --cycle
5480 ( 0.7960,-0.2086)
5481 -- ( 0.8384,-0.2510)
5482 .. controls ( 0.8428,-0.2169) and ( 0.8301,-0.2042) .. ( 0.7960,-0.2086)
5483 --cycle
5484 ( 0.1928,-0.2162)
5485 .. controls ( 0.1816,-0.2174) and ( 0.1689,-0.2258) .. ( 0.1598,-0.2322)
5486 .. controls ( 0.1191,-0.2606) and ( 0.1214,-0.2831) .. ( 0.1339,-0.3274)
5487 -- ( 0.1509,-0.3274)
5488 .. controls ( 0.1561,-0.3114) and ( 0.1614,-0.2848) .. ( 0.1729,-0.2730)
5489 .. controls ( 0.1867,-0.2591) and ( 0.2098,-0.2594) .. ( 0.2174,-0.2461)
5490 .. controls ( 0.2253,-0.2321) and ( 0.2130,-0.2142) .. ( 0.1928,-0.2162)
5491 --cycle
5492 (-0.1905,-0.2188)
5493 .. controls (-0.1970,-0.2195) and (-0.2037,-0.2233) .. (-0.2087,-0.2284)
5494 .. controls (-0.2248,-0.2451) and (-0.2297,-0.2881) .. (-0.2311,-0.3104)
5495 -- (-0.1801,-0.3104)
5496 .. controls (-0.1960,-0.2531) and (-0.1611,-0.2530) .. (-0.1738,-0.2284)
5497 .. controls (-0.1778,-0.2206) and (-0.1840,-0.2181) .. (-0.1905,-0.2188)
5498 --cycle
5499 (-0.5112,-0.2256)
5500 -- (-0.5112,-0.2595)
5501 -- (-0.4772,-0.2595)
5502 -- (-0.4772,-0.2256)
5503 --cycle
5504 ( 0.7451,-0.2256)
5505 -- ( 0.6687,-0.2341)
5506 -- ( 0.6602,-0.2426)
5507 .. controls ( 0.6862,-0.3159) and ( 0.7361,-0.2848) .. ( 0.7451,-0.2256)
5508 --cycle
5509 (-0.8578,-0.2336)
5510 -- (-0.8203,-0.3006)
5511 .. controls (-0.7747,-0.3108) and (-0.8112,-0.2349) .. (-0.8578,-0.2336)
5512 --cycle
5513 (-0.0280,-0.2369)
5514 .. controls (-0.0529,-0.2386) and (-0.0646,-0.2625) .. (-0.0273,-0.3019)
5515 -- ( 0.0236,-0.2595)
5516 .. controls ( 0.0068,-0.2430) and (-0.0130,-0.2359) .. (-0.0280,-0.2369)
5517 --cycle
5518 (-0.7234,-0.2510)
5519 .. controls (-0.7141,-0.2750) and (-0.7050,-0.2842) .. (-0.6810,-0.2935)

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5520 -- (-0.6725,-0.2850)
5521 .. controls (-0.6853,-0.2530) and (-0.6899,-0.2536) .. (-0.7234,-0.2510)
5522 --cycle
5523 ( 0.0504,-0.2510)
5524 -- ( 0.0504,-0.2760)
5525 .. controls ( 0.0689,-0.3381) and ( 0.1243,-0.2780) .. ( 0.0804,-0.2561)
5526 .. controls ( 0.0707,-0.2513) and ( 0.0594,-0.2519) .. ( 0.0504,-0.2510)
5527 --cycle
5528 (-0.1292,-0.2595)
5529 -- (-0.1462,-0.2765)
5530 -- (-0.1038,-0.3274)
5531 -- (-0.0953,-0.3274)
5532 -- (-0.0783,-0.3104)
5533 --cycle
5534 ( 0.7877,-0.2632)
5535 .. controls ( 0.7523,-0.2682) and ( 0.7335,-0.3052) .. ( 0.7960,-0.3359)
5536 .. controls ( 0.8015,-0.3335) and ( 0.8068,-0.3333) .. ( 0.8122,-0.3324)
5537 -- ( 0.8442,-0.2774)
5538 .. controls ( 0.8248,-0.2696) and ( 0.8026,-0.2612) .. ( 0.7877,-0.2632)
5539 --cycle
5540 ( 0.5329,-0.2765)
5541 .. controls ( 0.5358,-0.3116) and ( 0.5353,-0.3182) .. ( 0.5668,-0.3359)
5542 .. controls ( 0.5639,-0.3008) and ( 0.5644,-0.2942) .. ( 0.5329,-0.2765)
5543 --cycle
5544 ( 0.3385,-0.2820)
5545 .. controls ( 0.3148,-0.2878) and ( 0.2673,-0.3492) .. ( 0.3385,-0.3614)
5546 -- ( 0.3122,-0.4038)
5547 .. controls ( 0.3574,-0.4463) and ( 0.3787,-0.4004) .. ( 0.3701,-0.3806)
5548 .. controls ( 0.3644,-0.3672) and ( 0.3492,-0.3602) .. ( 0.3377,-0.3529)
5549 -- ( 0.3886,-0.3019)
5550 .. controls ( 0.3746,-0.2928) and ( 0.3572,-0.2777) .. ( 0.3385,-0.2820)
5551 --cycle
5552 (-0.3075,-0.2850)
5553 -- (-0.3669,-0.3359)
5554 .. controls (-0.3237,-0.3346) and (-0.3194,-0.3327) .. (-0.2820,-0.3104)
5555 --cycle
5556 ( 0.6347,-0.2850)
5557 -- ( 0.6093,-0.3359)
5558 -- ( 0.6687,-0.3359)
5559 .. controls ( 0.6634,-0.3038) and ( 0.6614,-0.3034) .. ( 0.6347,-0.2850)
5560 --cycle
5561 ( 0.2482,-0.2927)
5562 .. controls ( 0.2430,-0.2922) and ( 0.2370,-0.2926) .. ( 0.2301,-0.2942)
5563 .. controls ( 0.1967,-0.3336) and ( 0.2478,-0.3609) .. ( 0.2647,-0.3515)
5564 .. controls ( 0.2796,-0.3431) and ( 0.2843,-0.2960) .. ( 0.2482,-0.2927)
5565 --cycle
5566 (-0.5371,-0.2933)
5567 .. controls (-0.5481,-0.2970) and (-0.5577,-0.3098) .. (-0.5621,-0.3359)
5568 -- (-0.5112,-0.3869)
5569 .. controls (-0.4600,-0.3526) and (-0.5043,-0.2822) .. (-0.5371,-0.2933)
5570 --cycle
5571 (-0.4433,-0.3019)
5572 .. controls (-0.4430,-0.3328) and (-0.4401,-0.3356) .. (-0.4093,-0.3359)

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5573 -- (-0.4263,-0.3019)
5574 --cycle
5575 ( 0.0236,-0.3104)
5576 -- ( 0.0066,-0.3274)
5577 -- ( 0.0066,-0.3359)
5578 -- ( 0.0236,-0.3529)
5579 -- ( 0.0321,-0.3529)
5580 -- ( 0.0490,-0.3359)
5581 --cycle
5582 ( 0.4140,-0.3104)
5583 -- ( 0.4140,-0.3274)
5584 -- ( 0.4565,-0.3274)
5585 -- ( 0.4565,-0.3104)
5586 --cycle
5587 (-0.6555,-0.3189)
5588 .. controls (-0.7282,-0.3463) and (-0.7047,-0.4238) .. (-0.6385,-0.3614)
5589 --cycle
5590 (-0.7635,-0.3203)
5591 .. controls (-0.7897,-0.3491) and (-0.7645,-0.3586) .. (-0.7512,-0.3515)
5592 .. controls (-0.7383,-0.3446) and (-0.7269,-0.3159) .. (-0.7635,-0.3203)
5593 --cycle
5594 (-0.1547,-0.3359)
5595 .. controls (-0.2375,-0.3951) and (-0.1886,-0.3975) .. (-0.2106,-0.4536)
5596 .. controls (-0.2221,-0.4826) and (-0.2548,-0.4886) .. (-0.2435,-0.5309)
5597 .. controls (-0.2373,-0.5540) and (-0.1692,-0.6520) .. (-0.1548,-0.5893)
5598 .. controls (-0.1503,-0.5696) and (-0.1713,-0.5323) .. (-0.1801,-0.5141)
5599 -- (-0.2141,-0.5141)
5600 -- (-0.1801,-0.4836)
5601 -- (-0.1632,-0.3784)
5602 -- (-0.1292,-0.3614)
5603 --cycle
5604 ( 0.5838,-0.3444)
5605 -- ( 0.6178,-0.3869)
5606 .. controls ( 0.6126,-0.3569) and ( 0.6121,-0.3558) .. ( 0.5838,-0.3444)
5607 --cycle
5608 (-0.5876,-0.3529)
5609 -- (-0.5876,-0.3869)
5610 -- (-0.5536,-0.3869)
5611 --cycle
5612 (-0.3075,-0.3529)
5613 .. controls (-0.3075,-0.4259) and (-0.3150,-0.4459) .. (-0.2480,-0.4378)
5614 .. controls (-0.2520,-0.3893) and (-0.2634,-0.3741) .. (-0.3075,-0.3529)
5615 --cycle
5616 ( 0.0745,-0.3529)
5617 .. controls ( 0.0603,-0.3977) and ( 0.0512,-0.3786) .. ( 0.0066,-0.3869)
5618 .. controls ( 0.0321,-0.4377) and ( 0.0562,-0.4373) .. ( 0.1084,-0.4378)
5619 -- ( 0.1254,-0.3614)
5620 --cycle
5621 ( 0.1868,-0.3534)
5622 .. controls ( 0.1605,-0.3550) and ( 0.1563,-0.3921) .. ( 0.1681,-0.4095)
5623 .. controls ( 0.1887,-0.4397) and ( 0.2596,-0.3970) .. ( 0.2782,-0.3784)
5624 .. controls ( 0.2016,-0.3640) and ( 0.2352,-0.3656) .. ( 0.1995,-0.3551)
5625 .. controls ( 0.1948,-0.3537) and ( 0.1906,-0.3532) .. ( 0.1868,-0.3534)

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5626 --cycle
5627 (-0.0650,-0.3585)
5628 .. controls (-0.0712,-0.3584) and (-0.0783,-0.3594) .. (-0.0865,-0.3617)
5629 .. controls (-0.1407,-0.4045) and (-0.1029,-0.4414) .. (-0.0731,-0.4301)
5630 .. controls (-0.0250,-0.4118) and (-0.0217,-0.3591) .. (-0.0650,-0.3585)
5631 --cycle
5632 (-0.4008,-0.3614)
5633 -- (-0.3584,-0.4293)
5634 .. controls (-0.3814,-0.4389) and (-0.3792,-0.4389) .. (-0.3839,-0.4632)
5635 .. controls (-0.3078,-0.4504) and (-0.3334,-0.3529) .. (-0.4008,-0.3614)
5636 --cycle
5637 ( 0.7706,-0.3784)
5638 -- ( 0.6689,-0.4004)
5639 -- ( 0.6602,-0.4378)
5640 .. controls ( 0.6990,-0.4346) and ( 0.7019,-0.4328) .. ( 0.7281,-0.4038)
5641 .. controls ( 0.7344,-0.4232) and ( 0.7382,-0.4373) .. ( 0.7461,-0.4460)
5642 -- ( 0.7747,-0.3969)
5643 --cycle
5644 (-0.7404,-0.3869)
5645 -- (-0.7574,-0.4038)
5646 .. controls (-0.7352,-0.4249) and (-0.7368,-0.4246) .. (-0.7065,-0.4208)
5647 -- (-0.7065,-0.4038)
5648 --cycle
5649 ( 0.3971,-0.3953)
5650 -- ( 0.3801,-0.4378)
5651 -- ( 0.4140,-0.4378)
5652 -- ( 0.4140,-0.3953)
5653 --cycle
5654 (-0.6640,-0.4038)
5655 .. controls (-0.6429,-0.4478) and (-0.6261,-0.4537) .. (-0.5876,-0.4802)
5656 -- (-0.5367,-0.4378)
5657 .. controls (-0.5592,-0.4163) and (-0.5680,-0.4098) .. (-0.5876,-0.4378)
5658 .. controls (-0.6195,-0.4110) and (-0.6224,-0.4072) .. (-0.6640,-0.4038)
5659 --cycle
5660 (-0.4603,-0.4038)
5661 -- (-0.4603,-0.4378)
5662 -- (-0.4263,-0.4378)
5663 -- (-0.4263,-0.4038)
5664 --cycle
5665 ( 0.5584,-0.4038)
5666 .. controls ( 0.5189,-0.4043) and ( 0.5111,-0.4167) .. ( 0.5159,-0.4548)
5667 -- ( 0.5329,-0.4548)
5668 --cycle
5669 ( 0.6093,-0.4123)
5670 -- ( 0.6008,-0.4378)
5671 -- ( 0.6262,-0.4378)
5672 --cycle
5673 ( 0.2273,-0.4293)
5674 -- ( 0.2273,-0.4632)
5675 -- ( 0.2612,-0.4632)
5676 -- ( 0.2612,-0.4293)
5677 --cycle
5678 ( 0.1339,-0.4378)

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5679 .. controls ( 0.1294,-0.4715) and ( 0.1342,-0.4762) .. ( 0.1679,-0.4717)
5680 --cycle
5681 (-0.1337,-0.4435)
5682 .. controls (-0.1394,-0.4438) and (-0.1452,-0.4454) .. (-0.1547,-0.4474)
5683 -- (-0.1547,-0.4632)
5684 -- (-0.1038,-0.4972)
5685 -- (-0.1547,-0.5057)
5686 .. controls (-0.1508,-0.5315) and (-0.1180,-0.5928) .. (-0.0833,-0.5723)
5687 .. controls (-0.0768,-0.5684) and (-0.0244,-0.4827) .. (-0.1123,-0.4474)
5688 .. controls (-0.1220,-0.4442) and (-0.1279,-0.4432) .. (-0.1337,-0.4435)
5689 --cycle
5690 (-0.0033,-0.4457)
5691 .. controls (-0.0284,-0.4445) and (-0.0459,-0.4662) .. (-0.0273,-0.5141)
5692 -- ( 0.0660,-0.5141)
5693 .. controls ( 0.0545,-0.4708) and ( 0.0219,-0.4468) .. (-0.0033,-0.4457)
5694 --cycle
5695 (-0.7383,-0.4470)
5696 -- (-0.7101,-0.4972)
5697 .. controls (-0.7099,-0.4756) and (-0.7233,-0.4577) .. (-0.7383,-0.4470)
5698 --cycle
5699 (-0.4942,-0.4548)
5700 -- (-0.4857,-0.5065)
5701 .. controls (-0.4998,-0.5043) and (-0.5212,-0.5004) .. (-0.5329,-0.5065)
5702 .. controls (-0.5629,-0.5229) and (-0.5515,-0.5662) .. (-0.5329,-0.5843)
5703 .. controls (-0.5068,-0.6075) and (-0.4879,-0.6033) .. (-0.4603,-0.5906)
5704 .. controls (-0.4787,-0.5639) and (-0.4791,-0.5620) .. (-0.5112,-0.5566)
5705 -- (-0.5112,-0.5396)
5706 .. controls (-0.4518,-0.5306) and (-0.4206,-0.4773) .. (-0.4942,-0.4548)
5707 --cycle
5708 ( 0.3377,-0.4548)
5709 .. controls ( 0.3023,-0.4717) and ( 0.2951,-0.4788) .. ( 0.2782,-0.5141)
5710 .. controls ( 0.3342,-0.5180) and ( 0.3822,-0.5526) .. ( 0.3886,-0.4717)
5711 -- ( 0.3631,-0.4972)
5712 --cycle
5713 ( 0.5663,-0.4671)
5714 .. controls ( 0.5583,-0.4668) and ( 0.5478,-0.4680) .. ( 0.5329,-0.4717)
5715 -- ( 0.5329,-0.4887)
5716 .. controls ( 0.5814,-0.5209) and ( 0.6607,-0.5778) .. ( 0.6687,-0.4802)
5717 -- ( 0.6201,-0.4852)
5718 .. controls ( 0.5908,-0.4828) and ( 0.5901,-0.4680) .. ( 0.5663,-0.4671)
5719 --cycle
5720 (-0.6640,-0.4802)
5721 .. controls (-0.6763,-0.5067) and (-0.6845,-0.5204) .. (-0.6886,-0.5355)
5722 -- (-0.6647,-0.5782)
5723 -- (-0.5876,-0.5396)
5724 .. controls (-0.6003,-0.5515) and (-0.6232,-0.5710) .. (-0.6310,-0.5860)
5725 .. controls (-0.6373,-0.5982) and (-0.6388,-0.6155) .. (-0.6360,-0.6294)
5726 -- (-0.6224,-0.6537)
5727 .. controls (-0.5951,-0.6768) and (-0.5385,-0.6561) .. (-0.5112,-0.6415)
5728 .. controls (-0.5400,-0.5996) and (-0.5579,-0.6048) .. (-0.6045,-0.6161)
5729 -- (-0.5621,-0.5651)
5730 -- (-0.5621,-0.5566)
5731 -- (-0.5791,-0.5481)

```

```

5732 -- (-0.5621,-0.5141)
5733 --cycle
5734 ( 0.1000,-0.4802)
5735 -- ( 0.0745,-0.5396)
5736 .. controls ( 0.1186,-0.5345) and ( 0.1548,-0.5114) .. ( 0.1000,-0.4802)
5737 --cycle
5738 ( 0.2188,-0.4802)
5739 -- ( 0.2358,-0.5141)
5740 -- ( 0.2358,-0.4802)
5741 --cycle
5742 ( 0.4310,-0.4802)
5743 -- ( 0.4140,-0.5311)
5744 -- ( 0.4140,-0.5396)
5745 -- ( 0.4310,-0.5566)
5746 .. controls ( 0.4679,-0.5313) and ( 0.4644,-0.5230) .. ( 0.4649,-0.4802)
5747 --cycle
5748 ( 0.7111,-0.4802)
5749 -- ( 0.7111,-0.5059)
5750 -- ( 0.7261,-0.4802)
5751 --cycle
5752 (-0.3414,-0.4972)
5753 .. controls (-0.3911,-0.5256) and (-0.3704,-0.5729) .. (-0.3075,-0.5566)
5754 -- (-0.3075,-0.5396)
5755 --cycle
5756 (-0.4348,-0.5057)
5757 -- (-0.4348,-0.5736)
5758 .. controls (-0.4068,-0.5549) and (-0.4098,-0.5369) .. (-0.4008,-0.5057)
5759 --cycle
5760 ( 0.1509,-0.5311)
5761 -- ( 0.1254,-0.5736)
5762 -- ( 0.1849,-0.5651)
5763 --cycle
5764 ( 0.2273,-0.5311)
5765 -- ( 0.2103,-0.5975)
5766 .. controls ( 0.1971,-0.5957) and ( 0.1843,-0.5904) .. ( 0.1705,-0.5975)
5767 .. controls ( 0.1304,-0.6124) and ( 0.1679,-0.7346) .. ( 0.2142,-0.6893)
5768 .. controls ( 0.2226,-0.6812) and ( 0.2236,-0.6741) .. ( 0.2273,-0.6670)
5769 -- ( 0.1849,-0.6330)
5770 .. controls ( 0.2427,-0.6183) and ( 0.2598,-0.5884) .. ( 0.2443,-0.5311)
5771 --cycle
5772 ( 0.5074,-0.5311)
5773 .. controls ( 0.5252,-0.5626) and ( 0.5317,-0.5622) .. ( 0.5668,-0.5651)
5774 .. controls ( 0.5491,-0.5336) and ( 0.5426,-0.5340) .. ( 0.5074,-0.5311)
5775 --cycle
5776 ( 0.0269,-0.5388)
5777 .. controls ( 0.0166,-0.5396) and ( 0.0072,-0.5496) .. ( 0.0090,-0.5738)
5778 -- ( 0.0151,-0.5991)
5779 .. controls ( 0.0222,-0.5954) and ( 0.0287,-0.5947) .. ( 0.0377,-0.5860)
5780 .. controls ( 0.0637,-0.5611) and ( 0.0441,-0.5373) .. ( 0.0269,-0.5388)
5781 --cycle
5782 ( 0.2782,-0.5481)
5783 -- ( 0.2612,-0.5821)
5784 -- ( 0.3122,-0.6245)

```

```

5785 .. controls ( 0.3120,-0.5837) and ( 0.3197,-0.5648) .. ( 0.2782,-0.5481)
5786 --cycle
5787 (-0.2820,-0.5566)
5788 .. controls (-0.2791,-0.5918) and (-0.2795,-0.5983) .. (-0.2480,-0.6161)
5789 .. controls (-0.2450,-0.5789) and (-0.2492,-0.5737) .. (-0.2820,-0.5566)
5790 --cycle
5791 ( 0.3631,-0.5651)
5792 .. controls ( 0.3595,-0.5776) and ( 0.3566,-0.5855) .. ( 0.3557,-0.5990)
5793 .. controls ( 0.3500,-0.6875) and ( 0.4541,-0.6501) .. ( 0.3934,-0.5846)
5794 .. controls ( 0.3826,-0.5729) and ( 0.3761,-0.5717) .. ( 0.3631,-0.5651)
5795 --cycle
5796 ( 0.4330,-0.5736)
5797 -- ( 0.4330,-0.6379)
5798 .. controls ( 0.4274,-0.6731) and ( 0.3959,-0.6885) .. ( 0.4395,-0.7179)
5799 .. controls ( 0.4751,-0.6405) and ( 0.4954,-0.6629) .. ( 0.4480,-0.5736)
5800 --cycle
5801 ( 0.5329,-0.5821)
5802 .. controls ( 0.5362,-0.6232) and ( 0.5740,-0.6869) .. ( 0.6222,-0.6585)
5803 -- ( 0.6513,-0.6086)
5804 .. controls ( 0.6095,-0.6116) and ( 0.5939,-0.6354) .. ( 0.5668,-0.5821)
5805 --cycle
5806 ( 0.1000,-0.5906)
5807 -- ( 0.0830,-0.6245)
5808 -- ( 0.0575,-0.6161)
5809 .. controls ( 0.0477,-0.6898) and ( 0.1617,-0.6541) .. ( 0.1000,-0.5906)
5810 --cycle
5811 (-0.3245,-0.5991)
5812 .. controls (-0.3790,-0.5920) and (-0.3824,-0.6312) .. (-0.3839,-0.6754)
5813 -- (-0.3245,-0.6161)
5814 --cycle
5815 (-0.4348,-0.6076)
5816 -- (-0.4603,-0.6670)
5817 -- (-0.4942,-0.6585)
5818 -- (-0.5027,-0.6670)
5819 .. controls (-0.4589,-0.7510) and (-0.3531,-0.6544) .. (-0.4348,-0.6076)
5820 --cycle
5821 (-0.1377,-0.6076)
5822 .. controls (-0.1554,-0.6464) and (-0.1574,-0.6512) .. (-0.1292,-0.6839)
5823 -- (-0.1208,-0.6839)
5824 -- (-0.1038,-0.6670)
5825 -- (-0.1208,-0.6076)
5826 --cycle
5827 (-0.0698,-0.6161)
5828 -- (-0.0698,-0.6330)
5829 -- (-0.0019,-0.6330)
5830 -- (-0.0019,-0.6161)
5831 --cycle
5832 (-0.2735,-0.6330)
5833 .. controls (-0.3246,-0.6408) and (-0.3550,-0.6906) .. (-0.3754,-0.7356)
5834 -- (-0.3510,-0.7356)
5835 -- (-0.2786,-0.6658)
5836 --cycle
5837 (-0.1971,-0.6330)

```

```

5838 .. controls (-0.2393,-0.6535) and (-0.2774,-0.6931) .. (-0.2226,-0.7264)
5839 --cycle
5840 ( 0.2782,-0.6415)
5841 -- ( 0.2612,-0.6585)
5842 .. controls ( 0.2834,-0.6795) and ( 0.2819,-0.6792) .. ( 0.3122,-0.6754)
5843 -- ( 0.3122,-0.6585)
5844 --cycle
5845 ( 0.5244,-0.6630)
5846 .. controls ( 0.5103,-0.6630) and ( 0.4934,-0.6765) .. ( 0.4819,-0.6839)
5847 .. controls ( 0.4916,-0.7019) and ( 0.4915,-0.7036) .. ( 0.5078,-0.7175)
5848 -- ( 0.5293,-0.7332)
5849 .. controls ( 0.6028,-0.7786) and ( 0.5789,-0.6636) .. ( 0.5244,-0.6630)
5850 --cycle
5851 (-0.0698,-0.6839)
5852 -- (-0.0613,-0.7433)
5853 -- (-0.0528,-0.7518)
5854 .. controls (-0.0005,-0.7307) and (-0.0190,-0.6844) .. (-0.0698,-0.6839)
5855 --cycle
5856 ( 0.1339,-0.6839)
5857 .. controls ( 0.0648,-0.6945) and ( 0.0512,-0.7734) .. ( 0.1169,-0.7943)
5858 .. controls ( 0.1059,-0.7314) and ( 0.1116,-0.7410) .. ( 0.1339,-0.6839)
5859 --cycle
5860 ( 0.3546,-0.6839)
5861 .. controls ( 0.3575,-0.7191) and ( 0.3571,-0.7256) .. ( 0.3886,-0.7433)
5862 -- ( 0.3716,-0.6839)
5863 --cycle
5864 ( 0.3886,-0.7433)
5865 -- ( 0.3886,-0.7603)
5866 -- ( 0.3546,-0.7943)
5867 -- ( 0.3631,-0.7943)
5868 -- ( 0.3801,-0.8113)
5869 .. controls ( 0.4252,-0.7878) and ( 0.4333,-0.7840) .. ( 0.4140,-0.7349)
5870 --cycle
5871 (-0.5653,-0.6922)
5872 .. controls (-0.5767,-0.6913) and (-0.5873,-0.6939) .. (-0.5981,-0.6969)
5873 -- (-0.5741,-0.7399)
5874 .. controls (-0.5528,-0.7446) and (-0.5350,-0.7433) .. (-0.5027,-0.7433)
5875 .. controls (-0.5172,-0.7077) and (-0.5409,-0.6942) .. (-0.5653,-0.6922)
5876 --cycle
5877 (-0.1547,-0.7099)
5878 .. controls (-0.1719,-0.7103) and (-0.1811,-0.7133) .. (-0.1971,-0.7179)
5879 .. controls (-0.1923,-0.7317) and (-0.1881,-0.7454) .. (-0.1792,-0.7574)
5880 .. controls (-0.1162,-0.8422) and (-0.0444,-0.7079) .. (-0.1547,-0.7099)
5881 --cycle
5882 (-0.4348,-0.7179)
5883 .. controls (-0.4394,-0.7549) and (-0.4359,-0.7636) .. (-0.4008,-0.7773)
5884 --cycle
5885 ( 0.2358,-0.7179)
5886 -- ( 0.2358,-0.7349)
5887 -- ( 0.3037,-0.7349)
5888 -- ( 0.3037,-0.7179)
5889 --cycle
5890 ( 0.4649,-0.7179)

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```

5891 -- ( 0.4734,-0.7858)
5892 .. controls ( 0.4612,-0.7900) and ( 0.4516,-0.7918) .. ( 0.4409,-0.8004)
5893 .. controls ( 0.3964,-0.8360) and ( 0.4585,-0.8927) .. ( 0.4819,-0.8198)
5894 -- ( 0.5159,-0.8283)
5895 .. controls ( 0.5142,-0.8359) and ( 0.5131,-0.8417) .. ( 0.5125,-0.8468)
5896 -- ( 0.5398,-0.8000)
5897 .. controls ( 0.5329,-0.7638) and ( 0.5138,-0.7350) .. ( 0.4649,-0.7179)
5898 --cycle
5899 ( 0.2103,-0.7264)
5900 -- ( 0.1509,-0.7349)
5901 -- ( 0.1509,-0.7688)
5902 .. controls ( 0.1894,-0.7657) and ( 0.1982,-0.7645) .. ( 0.2103,-0.7264)
5903 --cycle
5904 (-0.2905,-0.7349)
5905 .. controls (-0.3009,-0.7717) and (-0.3009,-0.7829) .. (-0.2905,-0.8198)
5906 -- (-0.2480,-0.8028)
5907 -- (-0.2311,-0.8367)
5908 .. controls (-0.1820,-0.7845) and (-0.2454,-0.7805) .. (-0.2735,-0.7349)
5909 --cycle
5910 (-0.0019,-0.7349)
5911 .. controls (-0.0202,-0.7845) and (-0.0471,-0.8007) .. (-0.0358,-0.8537)
5912 -- ( 0.0066,-0.8113)
5913 -- ( 0.0236,-0.8113)
5914 .. controls ( 0.0412,-0.8384) and ( 0.0421,-0.8410) .. ( 0.0745,-0.8367)
5915 .. controls ( 0.0599,-0.7914) and ( 0.0500,-0.7437) .. (-0.0019,-0.7349)
5916 --cycle
5917 (-0.5282,-0.7688)
5918 .. controls (-0.5349,-0.8205) and (-0.5012,-0.8219) .. (-0.4603,-0.8113)
5919 -- (-0.4603,-0.7943)
5920 --cycle
5921 ( 0.3122,-0.7688)
5922 -- ( 0.3037,-0.7773)
5923 .. controls ( 0.3122,-0.8236) and ( 0.3093,-0.8598) .. ( 0.3608,-0.8698)
5924 -- ( 0.3628,-0.8698)
5925 -- ( 0.3292,-0.7688)
5926 --cycle
5927 (-0.3584,-0.7858)
5928 -- (-0.3770,-0.8622)
5929 .. controls (-0.3770,-0.8627) and (-0.3768,-0.8631) .. (-0.3768,-0.8636)
5930 -- (-0.3401,-0.8639)
5931 -- (-0.3245,-0.7858)
5932 --cycle
5933 ( 0.2612,-0.7858)
5934 .. controls ( 0.2125,-0.7858) and ( 0.1976,-0.7780) .. ( 0.1594,-0.8113)
5935 .. controls ( 0.2029,-0.8570) and ( 0.2552,-0.8596) .. ( 0.2612,-0.7858)
5936 --cycle
5937 (-0.1292,-0.7943)
5938 -- (-0.1886,-0.8537)
5939 .. controls (-0.1453,-0.8604) and (-0.1341,-0.8487) .. (-0.1038,-0.8198)
5940 --cycle
5941 (-0.4348,-0.8367)
5942 -- (-0.4479,-0.8630)
5943 -- (-0.4228,-0.8632)

```

```

5944 .. controls (-0.4191,-0.8583) and (-0.4180,-0.8505) .. (-0.4178,-0.8367)
5945 --cycle
5946 (-0.0783,-0.8452)
5947 .. controls (-0.0928,-0.8536) and (-0.0996,-0.8588) .. (-0.1026,-0.8659)
5948 -- (-0.0748,-0.8661)
5949 -- (-0.0698,-0.8537)
5950 --cycle
5951 ( 0.1503,-0.8501)
5952 .. controls ( 0.1440,-0.8514) and ( 0.1387,-0.8545) .. ( 0.1353,-0.8602)
5953 .. controls ( 0.1334,-0.8621) and ( 0.1330,-0.8649) .. ( 0.1333,-0.8679)
5954 -- ( 0.2103,-0.8685)
5955 -- ( 0.2103,-0.8602)
5956 .. controls ( 0.1968,-0.8575) and ( 0.1690,-0.8460) .. ( 0.1503,-0.8501)
5957 --cycle
5958 (-0.2396,-0.8622)
5959 -- (-0.2421,-0.8647)
5960 -- (-0.2217,-0.8649)
5961 .. controls (-0.2221,-0.8638) and (-0.2222,-0.8633) .. (-0.2226,-0.8622)
5962 --cycle
5963 ( 0.2867,-0.8622)
5964 .. controls ( 0.2782,-0.8636) and ( 0.2734,-0.8665) .. ( 0.2676,-0.8690)
5965 -- ( 0.2859,-0.8691)
5966 --cycle
5967 ( 0.3942,-0.8639)
5968 .. controls ( 0.3909,-0.8650) and ( 0.3884,-0.8678) .. ( 0.3855,-0.8700)
5969 -- ( 0.4192,-0.8703)
5970 .. controls ( 0.4168,-0.8684) and ( 0.4154,-0.8656) .. ( 0.4124,-0.8643)
5971 .. controls ( 0.4062,-0.8618) and ( 0.4000,-0.8619) .. ( 0.3942,-0.8639)
5972 --cycle
5973 ;
5974 }
5975 }
5976 \fi

```

hex/terrain/mountains

The style for mountains. The pattern is filled with a darker brown, and outlines are not drawn. Note that the mountain pattern is the same as the beach pattern, just with a different colour.

```

5977 \tikzset{
5978   hex/terrain/mountains/.style={
5979     draw=none,
5980     fill={rgb,100:red,49;green,35;blue,1}
5981   }
5982 }

```

hex/terrain/mountains

And the mountains pattern. This is the same as the beach pattern, only filled with a darker brown colour.



```
5983 \ifhex@terrain@pic
5984 \tikzset{
5985   hex/terrain/mountains/.pic={
5986     \path[hex/terrain/mountains,pic actions,draw=none]
5987       (-0.4931, 0.8848)
5988       -- (-0.4998, 0.8734)
5989       .. controls (-0.4908, 0.8731) and (-0.4813, 0.8762) .. (-0.4762, 0.8847)
5990       --cycle
5991       (-0.4032, 0.8841)
5992       .. controls (-0.4004, 0.8804) and (-0.3988, 0.8794) .. (-0.3956, 0.8745)
5993       .. controls (-0.3760, 0.8443) and (-0.3811, 0.8330) .. (-0.3456, 0.8112)
5994       .. controls (-0.3250, 0.7986) and (-0.2712, 0.7770) .. (-0.2531, 0.8032)
5995       .. controls (-0.2294, 0.8375) and (-0.2984, 0.8503) .. (-0.3193, 0.8690)
5996       .. controls (-0.3243, 0.8735) and (-0.3281, 0.8785) .. (-0.3321, 0.8835)
5997       --cycle
5998       (-0.2462, 0.8828)
5999       .. controls (-0.2425, 0.8681) and (-0.2383, 0.8546) .. (-0.2293, 0.8461)
6000       .. controls (-0.2102, 0.8280) and (-0.1892, 0.8390) .. (-0.1859, 0.8669)
6001       .. controls (-0.1854, 0.8711) and (-0.1871, 0.8772) .. (-0.1875, 0.8822)
6002       --cycle
6003       (-0.0997, 0.8815)
6004       .. controls (-0.0971, 0.8706) and (-0.0941, 0.8597) .. (-0.0907, 0.8493)
6005       -- (-0.0570, 0.8578)
6006       .. controls (-0.0570, 0.8629) and (-0.0560, 0.8730) .. (-0.0553, 0.8812)
6007       --cycle
6008       ( 0.0213, 0.8805)
6009       .. controls ( 0.0222, 0.8725) and ( 0.0235, 0.8650) .. ( 0.0262, 0.8587)
6010       .. controls ( 0.0391, 0.8281) and ( 0.0706, 0.8199) .. ( 0.0917, 0.7894)
6011       .. controls ( 0.1112, 0.7609) and ( 0.1058, 0.7286) .. ( 0.1050, 0.6961)
6012       -- ( 0.1731, 0.7216)
6013       -- ( 0.1203, 0.8649)
6014       -- ( 0.1097, 0.8797)
6015       --cycle
6016       ( 0.2978, 0.8781)
6017       .. controls ( 0.2985, 0.8773) and ( 0.3002, 0.8756) .. ( 0.3008, 0.8749)
6018       .. controls ( 0.2854, 0.8687) and ( 0.2549, 0.8572) .. ( 0.2421, 0.8487)
6019       .. controls ( 0.2026, 0.8224) and ( 0.1905, 0.7567) .. ( 0.2046, 0.7132)
6020       .. controls ( 0.2146, 0.6819) and ( 0.2330, 0.6680) .. ( 0.2394, 0.6280)
6021       .. controls ( 0.2413, 0.6160) and ( 0.2468, 0.5527) .. ( 0.2446, 0.5437)
6022       .. controls ( 0.2396, 0.5232) and ( 0.2211, 0.5122) .. ( 0.2231, 0.4913)
6023       .. controls ( 0.2261, 0.4603) and ( 0.2686, 0.4388) .. ( 0.2891, 0.4194)
6024       .. controls ( 0.3020, 0.4071) and ( 0.3136, 0.3895) .. ( 0.3281, 0.3799)
6025       .. controls ( 0.3688, 0.3533) and ( 0.3905, 0.3863) .. ( 0.4199, 0.3902)
6026       .. controls ( 0.4350, 0.3921) and ( 0.4560, 0.3849) .. ( 0.4710, 0.3812)
6027       -- ( 0.4795, 0.4067)
6028       -- ( 0.4965, 0.4067)
6029       .. controls ( 0.5008, 0.3961) and ( 0.5009, 0.3893) .. ( 0.5112, 0.3811)
6030       .. controls ( 0.5112, 0.3811) and ( 0.6172, 0.3385) .. ( 0.6481, 0.3037)
```

```

6031 .. controls ( 0.6729, 0.2758) and ( 0.6641, 0.2532) .. ( 0.6667, 0.2206)
6032 -- ( 0.7004, 0.2206)
6033 .. controls ( 0.7839, 0.2118) and ( 0.7047, 0.0740) .. ( 0.7057, 0.0568)
6034 .. controls ( 0.7067, 0.0396) and ( 0.7865,-0.0424) .. ( 0.8032,-0.0520)
6035 .. controls ( 0.8251,-0.0644) and ( 0.8703,-0.0686) .. ( 0.8572,-0.0293)
6036 .. controls ( 0.8518,-0.0131) and ( 0.7996, 0.0474) .. ( 0.7843, 0.0564)
6037 .. controls ( 0.7724, 0.0633) and ( 0.7645, 0.0636) .. ( 0.7518, 0.0664)
6038 .. controls ( 0.7688, 0.1093) and ( 0.7993, 0.1905) .. ( 0.7930, 0.2362)
6039 .. controls ( 0.7869, 0.2804) and ( 0.7252, 0.2982) .. ( 0.6946, 0.3268)
6040 .. controls ( 0.6664, 0.3531) and ( 0.6746, 0.3662) .. ( 0.6323, 0.3966)
6041 .. controls ( 0.5760, 0.4371) and ( 0.5386, 0.4324) .. ( 0.5250, 0.4601)
6042 .. controls ( 0.5090, 0.4927) and ( 0.5578, 0.6035) .. ( 0.5969, 0.5911)
6043 .. controls ( 0.6199, 0.5839) and ( 0.6224, 0.5471) .. ( 0.6341, 0.5291)
6044 .. controls ( 0.6488, 0.5064) and ( 0.7020, 0.4614) .. ( 0.7263, 0.4493)
6045 -- ( 0.7373, 0.4768)
6046 -- ( 0.6866, 0.5671)
6047 -- ( 0.6756, 0.5720)
6048 -- ( 0.6766, 0.5850)
6049 -- ( 0.6331, 0.6627)
6050 .. controls ( 0.6280, 0.6613) and ( 0.6239, 0.6599) .. ( 0.6157, 0.6589)
6051 -- ( 0.5646, 0.6589)
6052 .. controls ( 0.5375, 0.6557) and ( 0.5277, 0.6432) .. ( 0.4965, 0.6489)
6053 .. controls ( 0.4716, 0.6520) and ( 0.4306, 0.6774) .. ( 0.4104, 0.6489)
6054 .. controls ( 0.3809, 0.6093) and ( 0.4627, 0.6240) .. ( 0.4837, 0.5772)
6055 .. controls ( 0.4958, 0.5502) and ( 0.4652, 0.4811) .. ( 0.4429, 0.4648)
6056 -- ( 0.3523, 0.4350)
6057 .. controls ( 0.3178, 0.4372) and ( 0.3207, 0.4766) .. ( 0.3153, 0.5004)
6058 .. controls ( 0.3090, 0.5282) and ( 0.2968, 0.5398) .. ( 0.2922, 0.5684)
6059 .. controls ( 0.2896, 0.6035) and ( 0.3061, 0.6276) .. ( 0.2922, 0.6621)
6060 .. controls ( 0.2756, 0.6961) and ( 0.2422, 0.7190) .. ( 0.2525, 0.7640)
6061 .. controls ( 0.2650, 0.8188) and ( 0.3165, 0.7932) .. ( 0.3324, 0.8417)
6062 .. controls ( 0.3359, 0.8522) and ( 0.3385, 0.8648) .. ( 0.3399, 0.8778)
6063 --cycle
6064 ( 0.4261, 0.8770)
6065 -- ( 0.4333, 0.8493)
6066 -- ( 0.4845, 0.7440)
6067 .. controls ( 0.4963, 0.7304) and ( 0.5450, 0.6930) .. ( 0.5630, 0.6989)
6068 .. controls ( 0.5735, 0.7024) and ( 0.5838, 0.7169) .. ( 0.5932, 0.7337)
6069 -- ( 0.5612, 0.7909)
6070 .. controls ( 0.5537, 0.7875) and ( 0.5468, 0.7852) .. ( 0.5403, 0.7864)
6071 .. controls ( 0.5078, 0.7926) and ( 0.5191, 0.8406) .. ( 0.5145, 0.8567)
6072 .. controls ( 0.5121, 0.8651) and ( 0.5076, 0.8710) .. ( 0.5025, 0.8764)
6073 --cycle
6074 ( 0.3773, 0.8153)
6075 .. controls ( 0.3625, 0.7892) and ( 0.2993, 0.7161) .. ( 0.3316, 0.6877)
6076 .. controls ( 0.3432, 0.6774) and ( 0.3866, 0.6728) .. ( 0.4029, 0.6706)
6077 -- ( 0.3973, 0.7472)
6078 -- ( 0.4029, 0.8153)
6079 --cycle
6080 (-0.4224, 0.8088)
6081 .. controls (-0.4416, 0.8077) and (-0.4585, 0.7826) .. (-0.4275, 0.7562)
6082 -- (-0.3971, 0.7387)
6083 .. controls (-0.4780, 0.6942) and (-0.4752, 0.6640) .. (-0.4591, 0.5855)

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6084 .. controls (-0.4391, 0.4887) and (-0.4527, 0.5347) .. (-0.4103, 0.4493)
6085 .. controls (-0.3870, 0.4026) and (-0.4070, 0.3747) .. (-0.3460, 0.3642)
6086 -- (-0.3352, 0.4823)
6087 .. controls (-0.3409, 0.5024) and (-0.3617, 0.5113) .. (-0.3739, 0.5281)
6088 -- (-0.4164, 0.6287)
6089 .. controls (-0.4188, 0.6375) and (-0.4186, 0.6444) .. (-0.4164, 0.6528)
6090 .. controls (-0.4067, 0.6807) and (-0.3521, 0.7255) .. (-0.3274, 0.6931)
6091 .. controls (-0.3070, 0.6694) and (-0.3336, 0.6432) .. (-0.3274, 0.6221)
6092 .. controls (-0.3249, 0.6055) and (-0.3059, 0.6028) .. (-0.2950, 0.6162)
6093 .. controls (-0.2867, 0.6265) and (-0.2838, 0.6558) .. (-0.2829, 0.6692)
6094 .. controls (-0.2775, 0.7444) and (-0.3333, 0.7652) .. (-0.3955, 0.7472)
6095 .. controls (-0.3950, 0.7586) and (-0.3916, 0.7684) .. (-0.3955, 0.7803)
6096 .. controls (-0.3986, 0.8016) and (-0.4109, 0.8096) .. (-0.4224, 0.8088)
6097 --cycle
6098 (-0.1391, 0.8077)
6099 .. controls (-0.1634, 0.8024) and (-0.1582, 0.7647) .. (-0.1487, 0.7492)
6100 .. controls (-0.1306, 0.7190) and (-0.1004, 0.7270) .. (-0.0652, 0.7073)
6101 -- (-0.0226, 0.6801)
6102 -- ( 0.0282, 0.6560)
6103 .. controls ( 0.0622, 0.6331) and ( 0.0955, 0.5639) .. ( 0.1219, 0.5259)
6104 .. controls ( 0.2125, 0.5714) and ( 0.1427, 0.6114) .. ( 0.1219, 0.6453)
6105 -- ( 0.1054, 0.6768)
6106 .. controls ( 0.0862, 0.7028) and ( 0.0448, 0.7080) .. ( 0.0115, 0.7299)
6107 .. controls (-0.0377, 0.7622) and (-0.0173, 0.7726) .. (-0.0822, 0.7918)
6108 .. controls (-0.0961, 0.7958) and (-0.1270, 0.8103) .. (-0.1391, 0.8077)
6109 --cycle
6110 (-0.5460, 0.7940)
6111 -- (-0.5911, 0.7166)
6112 .. controls (-0.5649, 0.7015) and (-0.5397, 0.7188) .. (-0.5308, 0.7556)
6113 .. controls (-0.5251, 0.7788) and (-0.5335, 0.7873) .. (-0.5460, 0.7940)
6114 --cycle
6115 (-0.2382, 0.7423)
6116 .. controls (-0.2453, 0.7424) and (-0.2512, 0.7383) .. (-0.2550, 0.7274)
6117 .. controls (-0.2635, 0.7026) and (-0.2353, 0.6726) .. (-0.2229, 0.6536)
6118 .. controls (-0.2031, 0.6234) and (-0.2020, 0.6105) .. (-0.1928, 0.5770)
6119 .. controls (-0.1763, 0.5803) and (-0.1499, 0.5890) .. (-0.1342, 0.5831)
6120 .. controls (-0.1112, 0.5745) and (-0.1047, 0.5481) .. (-0.0866, 0.5338)
6121 -- (-0.0397, 0.5102)
6122 -- ( 0.0664, 0.4219)
6123 .. controls ( 0.0874, 0.3954) and ( 0.0785, 0.3655) .. ( 0.1070, 0.3502)
6124 .. controls ( 0.1367, 0.3343) and ( 0.1690, 0.3592) .. ( 0.1732, 0.3899)
6125 .. controls ( 0.1755, 0.4075) and ( 0.1545, 0.4554) .. ( 0.1475, 0.4748)
6126 .. controls ( 0.0838, 0.4666) and ( 0.0509, 0.4836) .. ( 0.0454, 0.5515)
6127 .. controls (-0.0576, 0.5778) and (-0.0955, 0.6323) .. (-0.1754, 0.6949)
6128 .. controls (-0.1861, 0.7034) and (-0.2171, 0.7418) .. (-0.2382, 0.7423)
6129 --cycle
6130 (-0.5068, 0.6706)
6131 .. controls (-0.5119, 0.6724) and (-0.5194, 0.6726) .. (-0.5299, 0.6701)
6132 .. controls (-0.5512, 0.6413) and (-0.5242, 0.6333) .. (-0.5102, 0.6400)
6133 .. controls (-0.4981, 0.6457) and (-0.4916, 0.6653) .. (-0.5068, 0.6706)
6134 --cycle
6135 (-0.6356, 0.6402)
6136 -- (-0.6681, 0.5845)

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6137 -- (-0.6588, 0.5684)
6138 .. controls (-0.6473, 0.5521) and (-0.6323, 0.5371) .. (-0.6265, 0.5174)
6139 .. controls (-0.6174, 0.4865) and (-0.6614, 0.4161) .. (-0.6950, 0.4206)
6140 .. controls (-0.7111, 0.4226) and (-0.7174, 0.4376) .. (-0.7460, 0.4507)
6141 -- (-0.7632, 0.4212)
6142 .. controls (-0.7629, 0.4042) and (-0.7611, 0.3875) .. (-0.7546, 0.3789)
6143 .. controls (-0.7424, 0.3626) and (-0.7129, 0.3612) .. (-0.6966, 0.3297)
6144 .. controls (-0.6823, 0.3022) and (-0.6963, 0.2741) .. (-0.6808, 0.2598)
6145 .. controls (-0.6602, 0.2410) and (-0.6495, 0.2720) .. (-0.6484, 0.2878)
6146 .. controls (-0.6461, 0.3229) and (-0.6488, 0.4046) .. (-0.6080, 0.4204)
6147 .. controls (-0.5750, 0.4330) and (-0.4980, 0.3514) .. (-0.4929, 0.3217)
6148 .. controls (-0.4895, 0.3019) and (-0.5044, 0.2671) .. (-0.4860, 0.2550)
6149 .. controls (-0.4691, 0.2439) and (-0.4582, 0.2679) .. (-0.4535, 0.2796)
6150 .. controls (-0.4450, 0.3015) and (-0.4273, 0.3562) .. (-0.4401, 0.3771)
6151 .. controls (-0.4495, 0.3922) and (-0.5019, 0.4172) .. (-0.5296, 0.4507)
6152 .. controls (-0.5656, 0.4941) and (-0.5734, 0.5631) .. (-0.5973, 0.6021)
6153 .. controls (-0.6099, 0.6226) and (-0.6226, 0.6316) .. (-0.6356, 0.6402)
6154 --cycle
6155 ( 0.2242, 0.6110)
6156 -- ( 0.1816, 0.6025)
6157 -- ( 0.1816, 0.5855)
6158 .. controls ( 0.2117, 0.5815) and ( 0.2140, 0.5821) .. ( 0.2242, 0.6110)
6159 --cycle
6160 ( 0.3924, 0.6049)
6161 .. controls ( 0.3895, 0.6048) and ( 0.3860, 0.6036) .. ( 0.3820, 0.6011)
6162 .. controls ( 0.3535, 0.5835) and ( 0.3670, 0.5238) .. ( 0.3773, 0.5004)
6163 -- ( 0.3944, 0.5004)
6164 -- ( 0.4061, 0.5429)
6165 .. controls ( 0.4082, 0.5540) and ( 0.4130, 0.6056) .. ( 0.3924, 0.6049)
6166 --cycle
6167 (-0.2864, 0.5940)
6168 .. controls (-0.2904, 0.5793) and (-0.2950, 0.5676) .. (-0.2919, 0.5518)
6169 .. controls (-0.2769, 0.4768) and (-0.1616, 0.5041) .. (-0.2162, 0.5623)
6170 .. controls (-0.2236, 0.5702) and (-0.2346, 0.5747) .. (-0.2443, 0.5790)
6171 --cycle
6172 (-0.7010, 0.5280)
6173 -- (-0.7269, 0.4835)
6174 .. controls (-0.7207, 0.4876) and (-0.7144, 0.4952) .. (-0.7081, 0.5094)
6175 --cycle
6176 (-0.0992, 0.4748)
6177 -- (-0.2099, 0.4556)
6178 -- (-0.2888, 0.3790)
6179 -- (-0.3460, 0.3557)
6180 -- (-0.3389, 0.3218)
6181 .. controls (-0.3310, 0.2959) and (-0.3026, 0.2636) .. (-0.2781, 0.2927)
6182 .. controls (-0.2745, 0.2971) and (-0.2504, 0.3947) .. (-0.1948, 0.3764)
6183 .. controls (-0.1607, 0.3651) and (-0.1697, 0.2984) .. (-0.1588, 0.2536)
6184 -- (-0.1503, 0.2536)
6185 -- (-0.1503, 0.2450)
6186 -- (-0.1163, 0.2366)
6187 .. controls (-0.0968, 0.3059) and (-0.1262, 0.3371) .. (-0.1239, 0.3982)
6188 .. controls (-0.1229, 0.4261) and (-0.1067, 0.4484) .. (-0.0992, 0.4748)
6189 --cycle

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6190      (-0.1503, 0.2450)
6191      -- (-0.1588, 0.2536)
6192      .. controls (-0.2292, 0.2544) and (-0.2730, 0.2893) .. (-0.2677, 0.2195)
6193      -- (-0.2609, 0.1855)
6194      .. controls (-0.2393, 0.1890) and (-0.2005, 0.2039) .. (-0.1909, 0.1753)
6195      .. controls (-0.1709, 0.1163) and (-0.2582, 0.0953) .. (-0.2387, 0.0533)
6196      .. controls (-0.2275, 0.0292) and (-0.1430, 0.0537) .. (-0.1361, 0.0692)
6197      .. controls (-0.1250, 0.0859) and (-0.1359, 0.1083) .. (-0.1361, 0.1259)
6198      .. controls (-0.1437, 0.1788) and (-0.1186, 0.1766) .. (-0.1503, 0.2450)
6199      --cycle
6200      ( 0.7348, 0.4408)
6201      .. controls ( 0.7113, 0.3774) and ( 0.7569, 0.3513) .. ( 0.7901, 0.3824)
6202      -- ( 0.7585, 0.4390)
6203      --cycle
6204      ( 0.2071, 0.4153)
6205      .. controls ( 0.1984, 0.3706) and ( 0.2118, 0.3204) .. ( 0.2582, 0.3046)
6206      .. controls ( 0.2685, 0.3631) and ( 0.2706, 0.3931) .. ( 0.2071, 0.4153)
6207      --cycle
6208      (-0.0567, 0.3982)
6209      .. controls (-0.0558, 0.3230) and (-0.0460, 0.3456) .. (-0.0210, 0.2876)
6210      -- ( 0.0067, 0.1940)
6211      .. controls ( 0.0180, 0.1513) and ( 0.0026, 0.1332) .. ( 0.0454, 0.1089)
6212      -- ( 0.0767, 0.1940)
6213      -- ( 0.0546, 0.2621)
6214      -- ( 0.0406, 0.3185)
6215      -- (-0.0258, 0.3896)
6216      --cycle
6217      (-0.7969, 0.3634)
6218      -- (-0.8570, 0.2602)
6219      .. controls (-0.8515, 0.2550) and (-0.8469, 0.2514) .. (-0.8414, 0.2450)
6220      .. controls (-0.8020, 0.1990) and (-0.8201, 0.1971) .. (-0.7629, 0.1540)
6221      .. controls (-0.7462, 0.1414) and (-0.7054, 0.1023) .. (-0.6834, 0.1181)
6222      .. controls (-0.6662, 0.1304) and (-0.6813, 0.1625) .. (-0.6882, 0.1768)
6223      .. controls (-0.7213, 0.2456) and (-0.7865, 0.2417) .. (-0.8004, 0.2965)
6224      .. controls (-0.8052, 0.3154) and (-0.7990, 0.3413) .. (-0.7969, 0.3634)
6225      --cycle
6226      ( 0.8244, 0.3214)
6227      .. controls ( 0.8136, 0.3128) and ( 0.8080, 0.2984) .. ( 0.8114, 0.2706)
6228      .. controls ( 0.8314, 0.2739) and ( 0.8424, 0.2735) .. ( 0.8526, 0.2710)
6229      --cycle
6230      ( 0.5015, 0.3207)
6231      .. controls ( 0.4943, 0.3196) and ( 0.4861, 0.3171) .. ( 0.4766, 0.3130)
6232      .. controls ( 0.4611, 0.2827) and ( 0.4839, 0.2747) .. ( 0.5028, 0.2521)
6233      -- ( 0.5376, 0.1972)
6234      .. controls ( 0.5529, 0.1772) and ( 0.5728, 0.1698) .. ( 0.5845, 0.1426)
6235      .. controls ( 0.5979, 0.1115) and ( 0.5837, 0.0732) .. ( 0.5987, 0.0532)
6236      .. controls ( 0.6095, 0.0384) and ( 0.6236, 0.0428) .. ( 0.6350, 0.0532)
6237      .. controls ( 0.6681, 0.0842) and ( 0.6456, 0.1087) .. ( 0.6482, 0.1429)
6238      .. controls ( 0.6481, 0.1614) and ( 0.6596, 0.1802) .. ( 0.6482, 0.1967)
6239      .. controls ( 0.6390, 0.2131) and ( 0.5992, 0.2239) .. ( 0.5768, 0.2483)
6240      .. controls ( 0.5547, 0.2722) and ( 0.5524, 0.3288) .. ( 0.5015, 0.3207)
6241      --cycle
6242      (-0.5678, 0.3115)

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6243 .. controls (-0.5832, 0.3118) and (-0.6140, 0.2810) .. (-0.6269, 0.2706)
6244 .. controls (-0.6185, 0.2412) and (-0.5926, 0.1953) .. (-0.5973, 0.1685)
6245 .. controls (-0.6029, 0.1373) and (-0.6320, 0.1239) .. (-0.6369, 0.0996)
6246 .. controls (-0.6406, 0.0816) and (-0.6303, 0.0652) .. (-0.6237, 0.0493)
6247 .. controls (-0.6147, 0.0275) and (-0.6000,-0.0443) .. (-0.5641,-0.0258)
6248 .. controls (-0.5134,-0.0018) and (-0.5902, 0.0606) .. (-0.5641, 0.1074)
6249 .. controls (-0.5332, 0.1697) and (-0.4913, 0.1444) .. (-0.4481, 0.1593)
6250 .. controls (-0.3913, 0.1792) and (-0.3439, 0.2446) .. (-0.3545, 0.3046)
6251 -- (-0.4568, 0.2201)
6252 -- (-0.5588, 0.2201)
6253 .. controls (-0.5549, 0.2390) and (-0.5305, 0.3109) .. (-0.5678, 0.3115)
6254 --cycle
6255 ( 0.2243, 0.2813)
6256 -- ( 0.1631, 0.2450)
6257 -- ( 0.0965, 0.2281)
6258 -- ( 0.1689, 0.1131)
6259 -- ( 0.2065, 0.0861)
6260 .. controls ( 0.2453, 0.0564) and ( 0.2384, 0.0410) .. ( 0.2923, 0.0323)
6261 -- ( 0.2988,-0.0188)
6262 .. controls ( 0.2994,-0.0695) and ( 0.2657,-0.0796) .. ( 0.2249,-0.0579)
6263 .. controls ( 0.1337,-0.0093) and ( 0.1545, 0.0219) .. ( 0.1102, 0.0744)
6264 .. controls ( 0.0914, 0.0967) and ( 0.0807, 0.1010) .. ( 0.0539, 0.1089)
6265 .. controls ( 0.0562, 0.0613) and ( 0.0756,-0.0434) .. ( 0.0403,-0.0825)
6266 .. controls ( 0.0293,-0.0948) and (-0.0336,-0.1168) .. (-0.0567,-0.1294)
6267 .. controls (-0.0615,-0.1087) and (-0.0777,-0.0729) .. (-0.0703,-0.0546)
6268 .. controls (-0.0586,-0.0251) and ( 0.0562, 0.0040) .. (-0.0152, 0.0389)
6269 -- (-0.0397, 0.0480)
6270 -- (-0.0737, 0.0578)
6271 .. controls (-0.0806, 0.0391) and (-0.0849, 0.0192) .. (-0.1018, 0.0068)
6272 .. controls (-0.1154,-0.0032) and (-0.1352,-0.0018) .. (-0.1438,-0.0212)
6273 .. controls (-0.1562,-0.0491) and (-0.1117,-0.1243) .. (-0.0874,-0.1373)
6274 .. controls (-0.0745,-0.1434) and (-0.0687,-0.1394) .. (-0.0567,-0.1373)
6275 .. controls (-0.0358,-0.2033) and (-0.0062,-0.1612) .. ( 0.0370,-0.1500)
6276 -- ( 0.1050,-0.1379)
6277 .. controls ( 0.0882,-0.0871) and ( 0.0808,-0.0999) .. ( 0.0965,-0.0443)
6278 .. controls ( 0.1454,-0.0619) and ( 0.1336,-0.0743) .. ( 0.1664,-0.0940)
6279 .. controls ( 0.1897,-0.1081) and ( 0.2226,-0.1052) .. ( 0.2361,-0.1388)
6280 .. controls ( 0.2495,-0.1724) and ( 0.2245,-0.1963) .. ( 0.2412,-0.2584)
6281 .. controls ( 0.2526,-0.2569) and ( 0.2622,-0.2548) .. ( 0.2735,-0.2584)
6282 .. controls ( 0.2987,-0.2708) and ( 0.3225,-0.3241) .. ( 0.3212,-0.3506)
6283 .. controls ( 0.3203,-0.3711) and ( 0.3053,-0.3950) .. ( 0.3008,-0.4443)
6284 -- ( 0.2497,-0.4187)
6285 .. controls ( 0.2599,-0.4479) and ( 0.2621,-0.4475) .. ( 0.2905,-0.4528)
6286 .. controls ( 0.2877,-0.4715) and ( 0.2799,-0.4998) .. ( 0.2905,-0.5182)
6287 .. controls ( 0.2991,-0.5392) and ( 0.3228,-0.5357) .. ( 0.3346,-0.5182)
6288 .. controls ( 0.3506,-0.4943) and ( 0.3355,-0.4515) .. ( 0.3532,-0.4203)
6289 .. controls ( 0.3716,-0.3881) and ( 0.4096,-0.3844) .. ( 0.4084,-0.3499)
6290 .. controls ( 0.4074,-0.3241) and ( 0.3866,-0.3087) .. ( 0.3728,-0.2897)
6291 -- ( 0.3426,-0.2337)
6292 -- ( 0.2989,-0.1879)
6293 .. controls ( 0.2810,-0.1587) and ( 0.2976,-0.1327) .. ( 0.3187,-0.1323)
6294 .. controls ( 0.3342,-0.1319) and ( 0.3489,-0.1451) .. ( 0.3603,-0.1541)
6295 .. controls ( 0.3817,-0.1712) and ( 0.4026,-0.1894) .. ( 0.4144,-0.2146)

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6296 .. controls ( 0.4299,-0.2477) and ( 0.4289,-0.2977) .. ( 0.4712,-0.3110)
6297 .. controls ( 0.4957,-0.3188) and ( 0.5167,-0.3024) .. ( 0.5044,-0.2753)
6298 .. controls ( 0.4967,-0.2585) and ( 0.4769,-0.2471) .. ( 0.4676,-0.2227)
6299 .. controls ( 0.4582,-0.1981) and ( 0.4681,-0.1743) .. ( 0.4488,-0.1492)
6300 .. controls ( 0.4286,-0.1227) and ( 0.3809,-0.1095) .. ( 0.3621,-0.0696)
6301 .. controls ( 0.3402,-0.0230) and ( 0.3896, 0.0270) .. ( 0.3092, 0.0408)
6302 -- ( 0.3532, 0.1933)
6303 -- ( 0.3944, 0.2536)
6304 -- ( 0.3433, 0.2765)
6305 --cycle
6306 ( 0.2497, 0.2450)
6307 -- ( 0.2782, 0.2025)
6308 .. controls ( 0.2843, 0.1911) and ( 0.2884, 0.1815) .. ( 0.2900, 0.1685)
6309 .. controls ( 0.3021, 0.0654) and ( 0.1495, 0.1479) .. ( 0.2135, 0.2245)
6310 .. controls ( 0.2246, 0.2378) and ( 0.2346, 0.2396) .. ( 0.2497, 0.2450)
6311 --cycle
6312 ( 0.8836, 0.2157)
6313 .. controls ( 0.8688, 0.2061) and ( 0.8571, 0.1889) .. ( 0.8687, 0.1736)
6314 .. controls ( 0.8785, 0.1608) and ( 0.8967, 0.1613) .. ( 0.9161, 0.1578)
6315 --cycle
6316 (-0.3035, 0.1940)
6317 .. controls (-0.3340, 0.1390) and (-0.3508, 0.1491) .. (-0.3624, 0.1300)
6318 .. controls (-0.3738, 0.1112) and (-0.3588, 0.0896) .. (-0.3288, 0.0972)
6319 .. controls (-0.2842, 0.1084) and (-0.2392, 0.1714) .. (-0.3035, 0.1940)
6320 --cycle
6321 ( 0.4710, 0.1940)
6322 .. controls ( 0.4330, 0.1525) and ( 0.3961, 0.1447) .. ( 0.4114, 0.0833)
6323 .. controls ( 0.4294, 0.0897) and ( 0.4596, 0.1056) .. ( 0.4776, 0.0984)
6324 .. controls ( 0.5010, 0.0888) and ( 0.5182, 0.0420) .. ( 0.4925, 0.0231)
6325 .. controls ( 0.4698, 0.0064) and ( 0.4500, 0.0299) .. ( 0.3944, 0.0153)
6326 .. controls ( 0.4243,-0.0189) and ( 0.4618,-0.0333) .. ( 0.4765,-0.0621)
6327 .. controls ( 0.4928,-0.0939) and ( 0.4729,-0.1183) .. ( 0.4881,-0.1406)
6328 .. controls ( 0.4977,-0.1549) and ( 0.5241,-0.1630) .. ( 0.5425,-0.1894)
6329 .. controls ( 0.5557,-0.2085) and ( 0.5562,-0.2282) .. ( 0.5657,-0.2485)
6330 -- ( 0.6122,-0.3251)
6331 .. controls ( 0.6335,-0.3720) and ( 0.6160,-0.3973) .. ( 0.6323,-0.4443)
6332 .. controls ( 0.6532,-0.5042) and ( 0.6754,-0.5231) .. ( 0.6973,-0.5440)
6333 -- ( 0.7289,-0.4899)
6334 .. controls ( 0.7138,-0.4739) and ( 0.6992,-0.4579) .. ( 0.6886,-0.4358)
6335 -- ( 0.6489,-0.2690)
6336 .. controls ( 0.6485,-0.2445) and ( 0.6654,-0.2180) .. ( 0.6598,-0.2002)
6337 .. controls ( 0.6522,-0.1752) and ( 0.6202,-0.1899) .. ( 0.5938,-0.1612)
6338 .. controls ( 0.5619,-0.1263) and ( 0.5907,-0.0980) .. ( 0.5797,-0.0720)
6339 .. controls ( 0.5714,-0.0525) and ( 0.5434,-0.0441) .. ( 0.5374,-0.0184)
6340 .. controls ( 0.5319, 0.0056) and ( 0.5522, 0.0300) .. ( 0.5533, 0.0578)
6341 .. controls ( 0.5548, 0.0943) and ( 0.4981, 0.1701) .. ( 0.4710, 0.1940)
6342 --cycle
6343 (-0.9001, 0.1862)
6344 -- (-0.9386, 0.1201)
6345 .. controls (-0.9374, 0.1181) and (-0.9371, 0.1158) .. (-0.9356, 0.1139)
6346 .. controls (-0.9242, 0.0996) and (-0.9046, 0.0893) .. (-0.8911, 0.0660)
6347 .. controls (-0.8684, 0.0268) and (-0.8960, 0.0297) .. (-0.8592,-0.0296)
6348 .. controls (-0.8262,-0.0830) and (-0.8655,-0.1092) .. (-0.7971,-0.1209)

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6349 -- (-0.7875, 0.0068)
6350 -- (-0.8579, 0.1174)
6351 --cycle
6352 (-0.4453, 0.0979)
6353 .. controls (-0.4922, 0.0916) and (-0.4988, 0.0347) .. (-0.4759, 0.0116)
6354 .. controls (-0.4491,-0.0149) and (-0.4165, 0.0208) .. (-0.3900, 0.0116)
6355 .. controls (-0.3555,-0.0011) and (-0.3800,-0.0410) .. (-0.3751,-0.0698)
6356 -- (-0.3537,-0.1294)
6357 .. controls (-0.3428,-0.1879) and (-0.4042,-0.1777) .. (-0.3801,-0.2656)
6358 .. controls (-0.3617,-0.2531) and (-0.3352,-0.2292) .. (-0.3122,-0.2330)
6359 .. controls (-0.2845,-0.2375) and (-0.2669,-0.2694) .. (-0.2543,-0.2911)
6360 .. controls (-0.2183,-0.3533) and (-0.2004,-0.3613) .. (-0.2184,-0.4358)
6361 .. controls (-0.3300,-0.4097) and (-0.2723,-0.5065) .. (-0.2483,-0.5549)
6362 -- (-0.2129,-0.6314)
6363 .. controls (-0.2017,-0.6508) and (-0.1900,-0.6661) .. (-0.1670,-0.6712)
6364 .. controls (-0.1211,-0.6813) and (-0.1100,-0.6527) .. (-0.1163,-0.6145)
6365 .. controls (-0.1327,-0.6119) and (-0.1427,-0.6118) .. (-0.1568,-0.6009)
6366 .. controls (-0.1780,-0.5845) and (-0.2123,-0.5041) .. (-0.2042,-0.4783)
6367 .. controls (-0.1947,-0.4484) and (-0.1575,-0.4121) .. (-0.1333,-0.3932)
6368 -- (-0.1527,-0.3251)
6369 -- (-0.1588,-0.2656)
6370 .. controls (-0.2187,-0.2715) and (-0.2083,-0.2536) .. (-0.2457,-0.2163)
6371 .. controls (-0.2684,-0.1935) and (-0.2911,-0.1886) .. (-0.2996,-0.1546)
6372 -- (-0.2996,-0.1209)
6373 -- (-0.3232,-0.0698)
6374 .. controls (-0.3283,-0.0435) and (-0.3124,-0.0260) .. (-0.3175,-0.0041)
6375 .. controls (-0.3251, 0.0283) and (-0.3891, 0.0917) .. (-0.4227, 0.0973)
6376 .. controls (-0.4311, 0.0987) and (-0.4386, 0.0989) .. (-0.4453, 0.0979)
6377 --cycle
6378 (-0.1163,-0.6145)
6379 -- (-0.0812,-0.6009)
6380 -- (-0.0509,-0.4868)
6381 -- (-0.0567,-0.4528)
6382 .. controls (-0.1227,-0.4845) and (-0.1350,-0.5483) .. (-0.1163,-0.6145)
6383 --cycle
6384 ( 0.9165, 0.0573)
6385 .. controls ( 0.8982, 0.0512) and ( 0.8800, 0.0260) .. ( 0.8880,-0.0013)
6386 .. controls ( 0.8973,-0.0334) and ( 0.9330,-0.0408) .. ( 0.9466,-0.0703)
6387 .. controls ( 0.9528,-0.0838) and ( 0.9514,-0.0964) .. ( 0.9506,-0.1091)
6388 -- ( 1.0000,-0.0243)
6389 .. controls ( 0.9816,-0.0179) and ( 0.9678,-0.0119) .. ( 0.9563, 0.0077)
6390 .. controls ( 0.9465, 0.0244) and ( 0.9476, 0.0488) .. ( 0.9340, 0.0564)
6391 .. controls ( 0.9288, 0.0593) and ( 0.9227, 0.0593) .. ( 0.9165, 0.0573)
6392 --cycle
6393 (-0.7064, 0.0069)
6394 .. controls (-0.7128, 0.0077) and (-0.7187, 0.0075) .. (-0.7237, 0.0061)
6395 .. controls (-0.7255, 0.0030) and (-0.7310, 0.0025) .. (-0.7316,-0.0115)
6396 .. controls (-0.7321,-0.0230) and (-0.7071,-0.1058) .. (-0.6984,-0.1096)
6397 .. controls (-0.6872,-0.1176) and (-0.6721,-0.1116) .. (-0.6609,-0.1096)
6398 .. controls (-0.6502,-0.1046) and (-0.6316,-0.0986) .. (-0.6242,-0.0900)
6399 .. controls (-0.5901,-0.0507) and (-0.6615, 0.0017) .. (-0.7064, 0.0069)
6400 --cycle
6401 (-1.0000, 0.0068)

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6402 -- (-1.0000, 0.0020)
6403 -- (-0.9548,-0.0788)
6404 .. controls (-0.9170,-0.0310) and (-0.9342,-0.0158) .. (-1.0000, 0.0068)
6405 --cycle
6406 (-0.2643, 0.0054)
6407 .. controls (-0.2853,-0.0295) and (-0.2523,-0.0713) .. (-0.2182,-0.0843)
6408 .. controls (-0.2024,-0.0902) and (-0.1781,-0.0944) .. (-0.1687,-0.0757)
6409 .. controls (-0.1530,-0.0441) and (-0.2378, 0.0095) .. (-0.2643, 0.0054)
6410 --cycle
6411 ( 0.6299,-0.0102)
6412 .. controls ( 0.6155,-0.0145) and ( 0.6071,-0.0342) .. ( 0.6128,-0.0510)
6413 .. controls ( 0.6198,-0.0721) and ( 0.6440,-0.0790) .. ( 0.6606,-0.0986)
6414 .. controls ( 0.6738,-0.1143) and ( 0.6761,-0.1328) .. ( 0.6948,-0.1437)
6415 .. controls ( 0.7092,-0.1520) and ( 0.7311,-0.1484) .. ( 0.7401,-0.1664)
6416 .. controls ( 0.7461,-0.1784) and ( 0.7351,-0.2363) .. ( 0.7348,-0.2570)
6417 .. controls ( 0.7336,-0.3524) and ( 0.7289,-0.3324) .. ( 0.7620,-0.4187)
6418 .. controls ( 0.7631,-0.4216) and ( 0.7642,-0.4246) .. ( 0.7652,-0.4275)
6419 -- ( 0.8003,-0.3672)
6420 .. controls ( 0.7976,-0.3636) and ( 0.7942,-0.3606) .. ( 0.7918,-0.3568)
6421 .. controls ( 0.7778,-0.3349) and ( 0.7645,-0.2537) .. ( 0.7970,-0.2417)
6422 .. controls ( 0.8206,-0.2330) and ( 0.8347,-0.2671) .. ( 0.8432,-0.2822)
6423 -- ( 0.8469,-0.2872)
6424 -- ( 0.8787,-0.2326)
6425 -- ( 0.8594,-0.1993)
6426 .. controls ( 0.8496,-0.1847) and ( 0.7996,-0.1314) .. ( 0.7847,-0.1281)
6427 .. controls ( 0.7712,-0.1229) and ( 0.7642,-0.1268) .. ( 0.7518,-0.1281)
6428 .. controls ( 0.7451,-0.1148) and ( 0.7397,-0.1014) .. ( 0.7293,-0.0886)
6429 -- ( 0.6461,-0.0117)
6430 .. controls ( 0.6402,-0.0090) and ( 0.6347,-0.0087) .. ( 0.6299,-0.0102)
6431 --cycle
6432 (-0.5178,-0.0844)
6433 .. controls (-0.5451,-0.0820) and (-0.5852,-0.0947) .. (-0.5902,-0.1144)
6434 .. controls (-0.6007,-0.1557) and (-0.5621,-0.1731) .. (-0.5414,-0.1997)
6435 .. controls (-0.5274,-0.2177) and (-0.5229,-0.2355) .. (-0.5044,-0.2525)
6436 .. controls (-0.4888,-0.2669) and (-0.4706,-0.2705) .. (-0.4543,-0.2923)
6437 .. controls (-0.4420,-0.3087) and (-0.4220,-0.3707) .. (-0.4141,-0.3932)
6438 .. controls (-0.3620,-0.3875) and (-0.3060,-0.4031) .. (-0.3060,-0.3592)
6439 .. controls (-0.3060,-0.3272) and (-0.3358,-0.3272) .. (-0.3716,-0.3008)
6440 .. controls (-0.4367,-0.2529) and (-0.4253,-0.2451) .. (-0.4621,-0.1914)
6441 .. controls (-0.4700,-0.1800) and (-0.4814,-0.1685) .. (-0.4867,-0.1556)
6442 .. controls (-0.4970,-0.1308) and (-0.4804,-0.1088) .. (-0.4966,-0.0923)
6443 .. controls (-0.5011,-0.0877) and (-0.5087,-0.0853) .. (-0.5178,-0.0844)
6444 --cycle
6445 (-0.4165,-0.0846)
6446 .. controls (-0.4357,-0.0807) and (-0.4622,-0.1075) .. (-0.4395,-0.1440)
6447 .. controls (-0.4316,-0.1566) and (-0.4254,-0.1571) .. (-0.4141,-0.1634)
6448 .. controls (-0.4094,-0.1522) and (-0.4042,-0.1415) .. (-0.4019,-0.1294)
6449 .. controls (-0.3960,-0.1004) and (-0.4049,-0.0870) .. (-0.4165,-0.0846)
6450 --cycle
6451 (-0.9358,-0.1125)
6452 -- (-0.8813,-0.2098)
6453 .. controls (-0.8768,-0.1903) and (-0.8656,-0.1673) .. (-0.8723,-0.1485)
6454 .. controls (-0.8801,-0.1269) and (-0.9022,-0.1274) .. (-0.9358,-0.1125)

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6455 --cycle
6456 ( 0.1455,-0.1458)
6457 .. controls ( 0.1402,-0.1449) and ( 0.1336,-0.1452) .. ( 0.1255,-0.1471)
6458 .. controls ( 0.0901,-0.1850) and ( 0.1064,-0.2454) .. ( 0.1360,-0.2301)
6459 .. controls ( 0.1569,-0.2194) and ( 0.1827,-0.1522) .. ( 0.1455,-0.1458)
6460 --cycle
6461 (-0.1477,-0.1474)
6462 .. controls (-0.1646,-0.1458) and (-0.1813,-0.1543) .. (-0.1847,-0.1659)
6463 .. controls (-0.1889,-0.1806) and (-0.1612,-0.2953) .. (-0.1163,-0.2315)
6464 -- (-0.0420,-0.4418)
6465 .. controls (-0.0291,-0.4661) and (-0.0068,-0.4600) .. ( 0.0136,-0.4880)
6466 .. controls ( 0.0294,-0.5097) and ( 0.0259,-0.5331) .. ( 0.0419,-0.5487)
6467 .. controls ( 0.0694,-0.5755) and ( 0.1462,-0.5710) .. ( 0.1798,-0.6001)
6468 -- ( 0.2188,-0.6436)
6469 .. controls ( 0.2392,-0.6605) and ( 0.2566,-0.6577) .. ( 0.2804,-0.6838)
6470 .. controls ( 0.3122,-0.7186) and ( 0.3037,-0.7586) .. ( 0.3603,-0.7592)
6471 .. controls ( 0.3537,-0.7217) and ( 0.3358,-0.6781) .. ( 0.3603,-0.6427)
6472 .. controls ( 0.3743,-0.6222) and ( 0.3978,-0.6232) .. ( 0.4032,-0.6039)
6473 .. controls ( 0.4084,-0.5852) and ( 0.3901,-0.5654) .. ( 0.3712,-0.5741)
6474 .. controls ( 0.3573,-0.5804) and ( 0.3558,-0.5936) .. ( 0.3518,-0.6044)
6475 .. controls ( 0.3319,-0.6046) and ( 0.2996,-0.6092) .. ( 0.2842,-0.6044)
6476 .. controls ( 0.2568,-0.5917) and ( 0.2515,-0.5648) .. ( 0.2231,-0.5501)
6477 .. controls ( 0.1960,-0.5359) and ( 0.1632,-0.5421) .. ( 0.1413,-0.5292)
6478 -- ( 0.0626,-0.4601)
6479 .. controls ( 0.0525,-0.4430) and ( 0.0547,-0.4207) .. ( 0.0440,-0.4065)
6480 .. controls ( 0.0320,-0.3906) and ( 0.0076,-0.3898) .. (-0.0104,-0.3714)
6481 .. controls (-0.0515,-0.3289) and ( 0.0146,-0.2721) .. (-0.0737,-0.2358)
6482 .. controls (-0.0903,-0.2290) and (-0.0917,-0.2313) .. (-0.1098,-0.2315)
6483 -- (-0.1098,-0.1892)
6484 .. controls (-0.1137,-0.1607) and (-0.1308,-0.1491) .. (-0.1477,-0.1474)
6485 --cycle
6486 (-0.7679,-0.1481)
6487 .. controls (-0.8119,-0.1523) and (-0.8157,-0.2051) .. (-0.8303,-0.2401)
6488 -- (-0.8453,-0.2740)
6489 -- (-0.8299,-0.3015)
6490 .. controls (-0.7861,-0.2968) and (-0.8116,-0.2403) .. (-0.7732,-0.2278)
6491 .. controls (-0.7561,-0.2223) and (-0.7349,-0.2415) .. (-0.7204,-0.2497)
6492 .. controls (-0.6711,-0.2774) and (-0.6473,-0.2864) .. (-0.6524,-0.3506)
6493 -- (-0.6787,-0.3422)
6494 .. controls (-0.6786,-0.3475) and (-0.6826,-0.3544) .. (-0.6787,-0.3655)
6495 .. controls (-0.6635,-0.4244) and (-0.5943,-0.3658) .. (-0.5763,-0.3760)
6496 .. controls (-0.5586,-0.3861) and (-0.5497,-0.4251) .. (-0.5357,-0.4418)
6497 .. controls (-0.5118,-0.4701) and (-0.4694,-0.4662) .. (-0.4504,-0.5047)
6498 .. controls (-0.4231,-0.5599) and (-0.4535,-0.6772) .. (-0.4451,-0.7421)
6499 .. controls (-0.4389,-0.7901) and (-0.4023,-0.8005) .. (-0.3912,-0.8443)
6500 .. controls (-0.3883,-0.8558) and (-0.3874,-0.8667) .. (-0.3869,-0.8774)
6501 -- (-0.3386,-0.8778)
6502 .. controls (-0.3371,-0.8645) and (-0.3342,-0.8523) .. (-0.3394,-0.8358)
6503 .. controls (-0.3448,-0.8167) and (-0.3914,-0.7567) .. (-0.3962,-0.6996)
6504 .. controls (-0.4039,-0.6074) and (-0.3294,-0.5871) .. (-0.3545,-0.4954)
6505 -- (-0.3886,-0.5039)
6506 -- (-0.4196,-0.4442)
6507 -- (-0.4864,-0.4090)

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6508 -- (-0.5345,-0.3241)
6509 -- (-0.6106,-0.2802)
6510 -- (-0.6106,-0.1975)
6511 .. controls (-0.6301,-0.2027) and (-0.6486,-0.2101) .. (-0.6694,-0.2022)
6512 .. controls (-0.7004,-0.1904) and (-0.7133,-0.1559) .. (-0.7464,-0.1495)
6513 .. controls (-0.7544,-0.1479) and (-0.7616,-0.1475) .. (-0.7679,-0.1481)
6514 --cycle
6515 ( 0.0029,-0.2060)
6516 .. controls (-0.0139,-0.2731) and ( 0.0196,-0.2608) .. ( 0.0476,-0.3014)
6517 .. controls ( 0.0682,-0.3314) and ( 0.0511,-0.3569) .. ( 0.0750,-0.3784)
6518 .. controls ( 0.0974,-0.3988) and ( 0.1304,-0.3876) .. ( 0.1549,-0.4019)
6519 .. controls ( 0.1795,-0.4164) and ( 0.1878,-0.4529) .. ( 0.1987,-0.4783)
6520 .. controls ( 0.2461,-0.4539) and ( 0.2519,-0.4021) .. ( 0.2180,-0.3618)
6521 .. controls ( 0.1964,-0.3362) and ( 0.1652,-0.3426) .. ( 0.1414,-0.3257)
6522 .. controls ( 0.1198,-0.3103) and ( 0.1183,-0.2881) .. ( 0.1007,-0.2689)
6523 .. controls ( 0.0838,-0.2504) and ( 0.0265,-0.2166) .. ( 0.0029,-0.2060)
6524 --cycle
6525 ( 0.2327,-0.2826)
6526 .. controls ( 0.1961,-0.2955) and ( 0.1961,-0.3123) .. ( 0.2327,-0.3251)
6527 --cycle
6528 (-0.7548,-0.3137)
6529 .. controls (-0.7774,-0.3164) and (-0.7890,-0.3323) .. (-0.7986,-0.3573)
6530 -- (-0.7759,-0.3979)
6531 .. controls (-0.7735,-0.3968) and (-0.7711,-0.3964) .. (-0.7688,-0.3946)
6532 -- (-0.7205,-0.3166)
6533 .. controls (-0.7341,-0.3135) and (-0.7454,-0.3126) .. (-0.7548,-0.3137)
6534 --cycle
6535 ( 0.4114,-0.3847)
6536 .. controls ( 0.4216,-0.4136) and ( 0.4238,-0.4142) .. ( 0.4540,-0.4102)
6537 -- ( 0.4540,-0.3932)
6538 --cycle
6539 ( 0.5395,-0.3997)
6540 .. controls ( 0.5263,-0.3990) and ( 0.5044,-0.4032) .. ( 0.4625,-0.4018)
6541 -- ( 0.4780,-0.4954)
6542 .. controls ( 0.4757,-0.5287) and ( 0.4518,-0.5542) .. ( 0.4648,-0.5776)
6543 .. controls ( 0.4852,-0.6142) and ( 0.5202,-0.5603) .. ( 0.5614,-0.5929)
6544 .. controls ( 0.5752,-0.6038) and ( 0.6063,-0.6359) .. ( 0.6275,-0.6638)
6545 -- ( 0.6570,-0.6132)
6546 .. controls ( 0.6460,-0.6042) and ( 0.6347,-0.5954) .. ( 0.6268,-0.5865)
6547 -- ( 0.5937,-0.5346)
6548 .. controls ( 0.5648,-0.5023) and ( 0.5031,-0.4880) .. ( 0.5646,-0.4273)
6549 .. controls ( 0.5574,-0.4062) and ( 0.5528,-0.4005) .. ( 0.5395,-0.3997)
6550 --cycle
6551 (-0.6609,-0.4273)
6552 .. controls (-0.7027,-0.4247) and (-0.7300,-0.4414) .. (-0.7397,-0.4624)
6553 -- (-0.7047,-0.5249)
6554 .. controls (-0.7013,-0.5263) and (-0.6989,-0.5282) .. (-0.6950,-0.5294)
6555 .. controls (-0.6935,-0.4878) and (-0.6933,-0.4806) .. (-0.6609,-0.4528)
6556 --cycle
6557 (-0.5689,-0.4528)
6558 .. controls (-0.6368,-0.4677) and (-0.6352,-0.5020) .. (-0.6354,-0.5634)
6559 -- (-0.5757,-0.6071)
6560 -- (-0.5162,-0.6826)

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6561 .. controls (-0.5073,-0.6508) and (-0.5037,-0.6125) .. (-0.5241,-0.5838)
6562 .. controls (-0.5384,-0.5639) and (-0.5622,-0.5584) .. (-0.5689,-0.5361)
6563 .. controls (-0.5775,-0.5167) and (-0.5648,-0.4918) .. (-0.5689,-0.4528)
6564 --cycle
6565 (-0.6354,-0.5634)
6566 .. controls (-0.6583,-0.5576) and (-0.6713,-0.5579) .. (-0.6839,-0.5619)
6567 -- (-0.6487,-0.6248)
6568 .. controls (-0.6395,-0.6053) and (-0.6326,-0.5852) .. (-0.6354,-0.5634)
6569 --cycle
6570 (-0.0056,-0.5890)
6571 .. controls (-0.0554,-0.6155) and (-0.0426,-0.6370) .. (-0.0606,-0.6818)
6572 -- (-0.1199,-0.7847)
6573 .. controls (-0.1298,-0.8015) and (-0.1531,-0.8317) .. (-0.1499,-0.8510)
6574 .. controls (-0.1482,-0.8615) and (-0.1397,-0.8702) .. (-0.1295,-0.8795)
6575 -- (-0.0507,-0.8802)
6576 .. controls (-0.0629,-0.8583) and (-0.0745,-0.8380) .. (-0.0742,-0.8358)
6577 .. controls (-0.0792,-0.8239) and (-0.0776,-0.8135) .. (-0.0742,-0.8027)
6578 .. controls (-0.0460,-0.7520) and ( 0.0016,-0.7834) .. ( 0.0277,-0.7780)
6579 .. controls ( 0.0760,-0.7679) and ( 0.1284,-0.6914) .. ( 0.1207,-0.6405)
6580 .. controls ( 0.1150,-0.6017) and ( 0.0841,-0.6082) .. ( 0.0711,-0.6267)
6581 .. controls ( 0.0620,-0.6397) and ( 0.0556,-0.7141) .. ( 0.0539,-0.7336)
6582 .. controls (-0.0413,-0.7085) and ( 0.0139,-0.6637) .. (-0.0056,-0.5890)
6583 --cycle
6584 ( 0.4284,-0.6571)
6585 .. controls ( 0.4285,-0.7307) and ( 0.4284,-0.7652) .. ( 0.5135,-0.7336)
6586 .. controls ( 0.5170,-0.7469) and ( 0.5220,-0.7585) .. ( 0.5179,-0.7726)
6587 .. controls ( 0.5091,-0.8019) and ( 0.4473,-0.8546) .. ( 0.4851,-0.8847)
6588 -- ( 0.4987,-0.8848)
6589 -- ( 0.5768,-0.7509)
6590 .. controls ( 0.5767,-0.7509) and ( 0.5767,-0.7507) .. ( 0.5767,-0.7507)
6591 .. controls ( 0.5412,-0.6652) and ( 0.5083,-0.6726) .. ( 0.4284,-0.6571)
6592 --cycle
6593 (-0.2914,-0.6672)
6594 .. controls (-0.2998,-0.6666) and (-0.3106,-0.6686) .. (-0.3250,-0.6743)
6595 .. controls (-0.3545,-0.7128) and (-0.3081,-0.7358) .. (-0.2850,-0.7678)
6596 .. controls (-0.2710,-0.7873) and (-0.2601,-0.8137) .. (-0.2351,-0.8216)
6597 .. controls (-0.2083,-0.8301) and (-0.1916,-0.8105) .. (-0.1960,-0.7845)
6598 .. controls (-0.2008,-0.7566) and (-0.2232,-0.7418) .. (-0.2396,-0.7216)
6599 .. controls (-0.2612,-0.6950) and (-0.2660,-0.6690) .. (-0.2914,-0.6672)
6600 --cycle
6601 (-0.5641,-0.6998)
6602 .. controls (-0.5850,-0.6984) and (-0.5808,-0.7367) .. (-0.5766,-0.7507)
6603 .. controls (-0.5748,-0.7566) and (-0.5723,-0.7598) .. (-0.5702,-0.7648)
6604 -- (-0.5492,-0.8022)
6605 .. controls (-0.5310,-0.8247) and (-0.5120,-0.8367) .. (-0.5052,-0.8613)
6606 .. controls (-0.5044,-0.8642) and (-0.5062,-0.8717) .. (-0.5063,-0.8763)
6607 -- (-0.4585,-0.8767)
6608 .. controls (-0.4596,-0.7984) and (-0.5013,-0.7963) .. (-0.5234,-0.7583)
6609 .. controls (-0.5344,-0.7394) and (-0.5352,-0.7120) .. (-0.5535,-0.7030)
6610 .. controls (-0.5576,-0.7010) and (-0.5611,-0.7000) .. (-0.5641,-0.6998)
6611 --cycle
6612 ( 0.1990,-0.7341)
6613 .. controls ( 0.1094,-0.7768) and ( 0.2330,-0.8330) .. ( 0.2586,-0.8828)

```

```

6614 -- ( 0.3183,-0.8833)
6615 .. controls ( 0.3165,-0.8684) and ( 0.3066,-0.8565) .. ( 0.2991,-0.8428)
6616 .. controls ( 0.2762,-0.8010) and ( 0.2508,-0.7418) .. ( 0.1990,-0.7341)
6617 --cycle
6618 ( 0.3603,-0.7592)
6619 -- ( 0.3859,-0.8188)
6620 .. controls ( 0.4178,-0.7853) and ( 0.4108,-0.7527) .. ( 0.3603,-0.7592)
6621 --cycle
6622 ( 0.4369,-0.8443)
6623 .. controls ( 0.4147,-0.8480) and ( 0.3837,-0.8661) .. ( 0.3628,-0.8837)
6624 -- ( 0.4240,-0.8842)
6625 .. controls ( 0.4307,-0.8690) and ( 0.4358,-0.8541) .. ( 0.4369,-0.8443)
6626 --cycle
6627 (-0.3205,-0.8528)
6628 -- (-0.3266,-0.8779)
6629 -- (-0.2773,-0.8783)
6630 .. controls (-0.2800,-0.8719) and (-0.2850,-0.8655) .. (-0.2963,-0.8600)
6631 --cycle
6632 ( 0.1093,-0.8568)
6633 .. controls ( 0.0964,-0.8568) and ( 0.0834,-0.8587) .. ( 0.0710,-0.8600)
6634 .. controls ( 0.0605,-0.8611) and ( 0.0403,-0.8617) .. ( 0.0312,-0.8664)
6635 .. controls ( 0.0240,-0.8701) and ( 0.0203,-0.8751) .. ( 0.0184,-0.8808)
6636 -- ( 0.1002,-0.8815)
6637 -- ( 0.1050,-0.8698)
6638 -- ( 0.1085,-0.8815)
6639 -- ( 0.1641,-0.8820)
6640 .. controls ( 0.1606,-0.8757) and ( 0.1553,-0.8698) .. ( 0.1463,-0.8649)
6641 .. controls ( 0.1347,-0.8586) and ( 0.1221,-0.8568) .. ( 0.1093,-0.8568)
6642 --cycle
6643 ;
6644 }
6645 }
6646 \fi

```

```

hex/terrain/town/road
hex/terrain/town/small road
hex/terrain/town/house

```

For villages, towns, and cities, we need three styles: one for houses, and separate styles for regular and small roads. Note that we draw using the stroke colour for roads and houses.



```

6647 \ifhex@terrain@pic
6648 \tikzset{
6649   hex/terrain/town/road/.style={
6650     fill=None,
6651     draw=gray!50!black,
6652     scale line widths,

```

```

6653     line width=.3mm
6654   },
6655   hex/terrain/town/small road/.style={
6656     fill=none,
6657     draw=gray!75!black,
6658     scale line widths,
6659     line width=.15mm
6660   },
6661   hex/terrain/town/post road/.style={
6662     fill=none
6663   },
6664   hex/terrain/town/house/.style={
6665     draw=none,
6666     fill=gray!75!black,
6667   }
6668 }

```

hex/terrain/village

Now for village, town, and city patterns.

```

6669 \tikzset{
6670   hex/terrain/village/.pic={
6671     \path[hex/terrain/town/road,pic actions,hex/terrain/town/post road]
6672       ( 0.0073, 0.8700)
6673       -- ( 0.3952, 0.3373)
6674       -- ( 0.3884, 0.2029)
6675       -- ( 0.3555, 0.1378)
6676       -- ( 0.3751, 0.0880)
6677       -- ( 0.2513,-0.1997)
6678       -- ( 0.1396,-0.4505)
6679       -- ( 0.0641,-0.6512)
6680       -- ( 0.0070,-0.8700)
6681       -- ( 0.0070,-0.8700)
6682     ;
6683     \path[hex/terrain/town/road,pic actions,hex/terrain/town/post road]
6684       ( 0.7575, 0.4367)
6685       -- ( 0.3945, 0.3375)
6686       -- ( 0.3945, 0.3375)
6687     ;
6688     \path[hex/terrain/town/road,pic actions,hex/terrain/town/post road]
6689       (-0.1900,-0.0806)
6690       -- (-0.1155, 0.1588)
6691     ;
6692     \path[hex/terrain/town/road,pic actions,hex/terrain/town/post road]
6693       (-0.1308, 0.1580)
6694       -- (-0.7603, 0.4394)
6695     ;
6696     \path[hex/terrain/town/road,pic actions,hex/terrain/town/post road]
6697       (-0.6615,-0.2309)
6698       -- (-0.6777,-0.3255)
6699       -- (-0.7607,-0.4327)
6700     ;

```

```

6701 \path[hex/terrain/town/road,pic actions,hex/terrain/town/post road]
6702 (-0.6676,-0.2405)
6703 -- (-0.4599,-0.1067)
6704 -- (-0.1877,-0.0679)
6705 ;
6706 \path[hex/terrain/town/road,pic actions,hex/terrain/town/post road]
6707 ( 0.2082,-0.3003)
6708 -- ( 0.4578,-0.4855)
6709 -- ( 0.5914,-0.3675)
6710 -- ( 0.7607,-0.4420)
6711 ;
6712 \path[hex/terrain/town/road,pic actions,hex/terrain/town/post road]
6713 ( 0.3827, 0.1864)
6714 -- (-0.1290, 0.1576)
6715 ;
6716 \path[hex/terrain/town/house,pic actions]
6717 ( 0.2259, 0.4898)
6718 -- ( 0.2453, 0.4680)
6719 -- ( 0.2052, 0.4324)
6720 -- ( 0.1858, 0.4542)
6721 --cycle
6722 ;
6723 \path[hex/terrain/town/house,pic actions]
6724 ( 0.2259, 0.4898)
6725 -- ( 0.2453, 0.4680)
6726 -- ( 0.2052, 0.4324)
6727 -- ( 0.1858, 0.4542)
6728 --cycle
6729 ;
6730 \path[hex/terrain/town/house,pic actions]
6731 (-0.1978, 0.1663)
6732 -- (-0.1534, 0.1549)
6733 -- (-0.1685, 0.0960)
6734 -- (-0.2130, 0.1074)
6735 --cycle
6736 ;
6737 \path[hex/terrain/town/house,pic actions]
6738 (-0.1978, 0.1663)
6739 -- (-0.1534, 0.1549)
6740 -- (-0.1685, 0.0960)
6741 -- (-0.2130, 0.1074)
6742 --cycle
6743 ;
6744 \path[hex/terrain/town/house,pic actions]
6745 ( 0.5127,-0.3559)
6746 -- ( 0.5341,-0.3759)
6747 -- ( 0.4975,-0.4151)
6748 -- ( 0.4761,-0.3951)
6749 --cycle
6750 ;
6751 \path[hex/terrain/town/house,pic actions]
6752 ( 0.5127,-0.3559)
6753 -- ( 0.5341,-0.3759)

```

```

6754 -- ( 0.4975,-0.4151)
6755 -- ( 0.4761,-0.3951)
6756 --cycle
6757 ;
6758 \path[hex/terrain/town/house,pic actions]
6759 ( 0.2761, 0.3992)
6760 -- ( 0.2947, 0.3765)
6761 -- ( 0.2533, 0.3425)
6762 -- ( 0.2347, 0.3651)
6763 --cycle
6764 ;
6765 \path[hex/terrain/town/house,pic actions]
6766 ( 0.2761, 0.3992)
6767 -- ( 0.2947, 0.3765)
6768 -- ( 0.2533, 0.3425)
6769 -- ( 0.2347, 0.3651)
6770 --cycle
6771 ;
6772 \path[hex/terrain/town/house,pic actions]
6773 ( 0.3227, 0.3548)
6774 -- ( 0.3421, 0.3329)
6775 -- ( 0.3020, 0.2974)
6776 -- ( 0.2826, 0.3192)
6777 --cycle
6778 ;
6779 \path[hex/terrain/town/house,pic actions]
6780 ( 0.3227, 0.3548)
6781 -- ( 0.3421, 0.3329)
6782 -- ( 0.3020, 0.2974)
6783 -- ( 0.2826, 0.3192)
6784 --cycle
6785 ;
6786 \path[hex/terrain/town/house,pic actions]
6787 ( 0.2901, 0.6234)
6788 -- ( 0.3088, 0.6008)
6789 -- ( 0.2674, 0.5667)
6790 -- ( 0.2487, 0.5893)
6791 --cycle
6792 ;
6793 \path[hex/terrain/town/house,pic actions]
6794 ( 0.2901, 0.6234)
6795 -- ( 0.3088, 0.6008)
6796 -- ( 0.2674, 0.5667)
6797 -- ( 0.2487, 0.5893)
6798 --cycle
6799 ;
6800 \path[hex/terrain/town/house,pic actions]
6801 (-0.3456, 0.2854)
6802 -- (-0.3335, 0.3120)
6803 -- (-0.2847, 0.2898)
6804 -- (-0.2968, 0.2632)
6805 --cycle
6806 ;

```



```

6807 \path[hex/terrain/town/house,pic actions]
6808 (-0.3456, 0.2854)
6809 -- (-0.3335, 0.3120)
6810 -- (-0.2847, 0.2898)
6811 -- (-0.2968, 0.2632)
6812 --cycle
6813 ;
6814 \path[hex/terrain/town/house,pic actions]
6815 (-0.6678,-0.1369)
6816 -- (-0.6492,-0.1143)
6817 -- (-0.6078,-0.1484)
6818 -- (-0.6264,-0.1710)
6819 --cycle
6820 ;
6821 \path[hex/terrain/town/house,pic actions]
6822 (-0.6678,-0.1369)
6823 -- (-0.6492,-0.1143)
6824 -- (-0.6078,-0.1484)
6825 -- (-0.6264,-0.1710)
6826 --cycle
6827 ;
6828 \path[hex/terrain/town/house,pic actions]
6829 ( 0.4610, 0.0967)
6830 -- ( 0.4896, 0.0909)
6831 -- ( 0.4790, 0.0384)
6832 -- ( 0.4503, 0.0442)
6833 --cycle
6834 ;
6835 \path[hex/terrain/town/house,pic actions]
6836 ( 0.4610, 0.0967)
6837 -- ( 0.4896, 0.0909)
6838 -- ( 0.4790, 0.0384)
6839 -- ( 0.4503, 0.0442)
6840 --cycle
6841 ;
6842 \path[hex/terrain/town/house,pic actions]
6843 ( 0.2924,-0.1375)
6844 -- ( 0.3110,-0.0955)
6845 -- ( 0.3667,-0.1202)
6846 -- ( 0.3481,-0.1621)
6847 --cycle
6848 ;
6849 \path[hex/terrain/town/house,pic actions]
6850 ( 0.2924,-0.1375)
6851 -- ( 0.3110,-0.0955)
6852 -- ( 0.3667,-0.1202)
6853 -- ( 0.3481,-0.1621)
6854 --cycle
6855 ;
6856 \path[hex/terrain/town/house,pic actions]
6857 ( 0.5094, 0.3292)
6858 -- ( 0.5505, 0.3494)
6859 -- ( 0.5773, 0.2947)

```

```

6860 -- ( 0.5362, 0.2746)
6861 --cycle
6862 ;
6863 \path[hex/terrain/town/house,pic actions]
6864 ( 0.5094, 0.3292)
6865 -- ( 0.5505, 0.3494)
6866 -- ( 0.5773, 0.2947)
6867 -- ( 0.5362, 0.2746)
6868 --cycle
6869 ;
6870 \path[hex/terrain/town/house,pic actions]
6871 (-0.1323, 0.2640)
6872 -- (-0.0890, 0.2489)
6873 -- (-0.1092, 0.1914)
6874 -- (-0.1524, 0.2065)
6875 --cycle
6876 ;
6877 \path[hex/terrain/town/house,pic actions]
6878 (-0.1323, 0.2640)
6879 -- (-0.0890, 0.2489)
6880 -- (-0.1092, 0.1914)
6881 -- (-0.1524, 0.2065)
6882 --cycle
6883 ;
6884 \path[hex/terrain/town/house,pic actions]
6885 ( 0.4115,-0.5373)
6886 -- ( 0.4390,-0.5006)
6887 -- ( 0.4877,-0.5372)
6888 -- ( 0.4601,-0.5739)
6889 --cycle
6890 ;
6891 \path[hex/terrain/town/house,pic actions]
6892 ( 0.4115,-0.5373)
6893 -- ( 0.4390,-0.5006)
6894 -- ( 0.4877,-0.5372)
6895 -- ( 0.4601,-0.5739)
6896 --cycle
6897 ;
6898 \path[hex/terrain/town/house,pic actions]
6899 ( 0.3095, 0.1272)
6900 -- ( 0.3519, 0.1095)
6901 -- ( 0.3284, 0.0533)
6902 -- ( 0.2861, 0.0710)
6903 --cycle
6904 ;
6905 \path[hex/terrain/town/house,pic actions]
6906 ( 0.3095, 0.1272)
6907 -- ( 0.3519, 0.1095)
6908 -- ( 0.3284, 0.0533)
6909 -- ( 0.2861, 0.0710)
6910 --cycle
6911 ;
6912 \path[hex/terrain/town/house,pic actions]

```

```

6913 ( 0.2904, 0.2714)
6914 -- ( 0.3361, 0.2681)
6915 -- ( 0.3318, 0.2074)
6916 -- ( 0.2861, 0.2106)
6917 --cycle
6918 ;
6919 \path[hex/terrain/town/house,pic actions]
6920 ( 0.2904, 0.2714)
6921 -- ( 0.3361, 0.2681)
6922 -- ( 0.3318, 0.2074)
6923 -- ( 0.2861, 0.2106)
6924 --cycle
6925 ;
6926 \path[hex/terrain/town/house,pic actions]
6927 ( 0.4665, 0.4396)
6928 -- ( 0.4868, 0.3985)
6929 -- ( 0.4321, 0.3716)
6930 -- ( 0.4119, 0.4127)
6931 --cycle
6932 ;
6933 \path[hex/terrain/town/house,pic actions]
6934 ( 0.4665, 0.4396)
6935 -- ( 0.4868, 0.3985)
6936 -- ( 0.4321, 0.3716)
6937 -- ( 0.4119, 0.4127)
6938 --cycle
6939 ;
6940 \path[hex/terrain/town/house,pic actions]
6941 ( 0.4187, 0.2523)
6942 -- ( 0.4643, 0.2574)
6943 -- ( 0.4711, 0.1969)
6944 -- ( 0.4256, 0.1917)
6945 --cycle
6946 ;
6947 \path[hex/terrain/town/house,pic actions]
6948 ( 0.4187, 0.2523)
6949 -- ( 0.4643, 0.2574)
6950 -- ( 0.4711, 0.1969)
6951 -- ( 0.4256, 0.1917)
6952 --cycle
6953 ;
6954 \path[hex/terrain/town/house,pic actions]
6955 ( 0.3746, 0.1600)
6956 -- ( 0.4021, 0.1699)
6957 -- ( 0.4204, 0.1195)
6958 -- ( 0.3929, 0.1095)
6959 --cycle
6960 ;
6961 \path[hex/terrain/town/house,pic actions]
6962 ( 0.3746, 0.1600)
6963 -- ( 0.4021, 0.1699)
6964 -- ( 0.4204, 0.1195)
6965 -- ( 0.3929, 0.1095)

```

```

6966 --cycle
6967 ;
6968 }
6969 }
6970 \fi

```

hex/terrain/town

A town.



```

6971 \ifhex@terrain@pic
6972 \tikzset{
6973   hex/terrain/town/.pic={
6974     \path[hex/terrain/town/small road,pic actions,hex/terrain/town/post road]
6975       ( 0.1432,-0.4518)
6976       -- (-0.0320,-0.2906)
6977       -- ( 0.0745,-0.0351)
6978       -- ( 0.1130,-0.0387)
6979       ;
6980     \path[hex/terrain/town/small road,pic actions,hex/terrain/town/post road]
6981       ( 0.0729,-0.0352)
6982       -- (-0.1716, 0.0254)
6983       ;
6984     \path[hex/terrain/town/small road,pic actions,hex/terrain/town/post road]
6985       (-0.2493, 0.5648)
6986       -- (-0.2192, 0.4501)
6987       ;
6988     \path[hex/terrain/town/small road,pic actions,hex/terrain/town/post road]
6989       ( 0.0677,-0.6538)
6990       -- ( 0.1754,-0.7052)
6991       -- ( 0.4358,-0.4688)
6992       ;
6993     \path[hex/terrain/town/small road,pic actions,hex/terrain/town/post road]
6994       ( 0.0439,-0.3617)
6995       -- (-0.0921,-0.5012)
6996       -- (-0.2865,-0.3243)
6997       -- (-0.4420,-0.4608)
6998       -- (-0.5795,-0.4446)
6999       -- (-0.6421,-0.3520)
7000       ;
7001     \path[hex/terrain/town/small road,pic actions,hex/terrain/town/post road]
7002       ( 0.0622,-0.6515)
7003       -- (-0.0316,-0.6176)
7004       -- (-0.0221,-0.5364)
7005       ;
7006     \path[hex/terrain/town/small road,pic actions,hex/terrain/town/post road]
7007       ( 0.0048,-0.2069)

```

```

7008 -- (-0.1945,-0.1818)
7009 -- (-0.2278,-0.2247)
7010 -- (-0.5051,-0.1356)
7011 ;
7012 \path[hex/terrain/town/small road,pic actions,hex/terrain/town/post road]
7013 (-0.3383, 0.0449)
7014 -- (-0.2189, 0.4510)
7015 ;
7016 \path[hex/terrain/town/road,pic actions,hex/terrain/town/post road]
7017 ( 0.0073, 0.8700)
7018 -- ( 0.3952, 0.3373)
7019 -- ( 0.3884, 0.2029)
7020 -- ( 0.3555, 0.1378)
7021 -- ( 0.3751, 0.0880)
7022 -- ( 0.2513,-0.1997)
7023 -- ( 0.1396,-0.4505)
7024 -- ( 0.0641,-0.6512)
7025 -- ( 0.0070,-0.8700)
7026 -- ( 0.0070,-0.8700)
7027 ;
7028 \path[hex/terrain/town/road,pic actions,hex/terrain/town/post road]
7029 ( 0.7575, 0.4367)
7030 -- ( 0.3945, 0.3375)
7031 -- ( 0.3945, 0.3375)
7032 ;
7033 \path[hex/terrain/town/road,pic actions,hex/terrain/town/post road]
7034 (-0.1900,-0.0806)
7035 -- (-0.0751, 0.3938)
7036 -- (-0.0765, 0.3925)
7037 ;
7038 \path[hex/terrain/town/road,pic actions,hex/terrain/town/post road]
7039 (-0.1308, 0.1580)
7040 -- (-0.7603, 0.4394)
7041 ;
7042 \path[hex/terrain/town/road,pic actions,hex/terrain/town/post road]
7043 (-0.7139,-0.1526)
7044 -- (-0.6147,-0.3362)
7045 -- (-0.7607,-0.4327)
7046 ;
7047 \path[hex/terrain/town/road,pic actions,hex/terrain/town/post road]
7048 (-0.6676,-0.2405)
7049 -- (-0.4599,-0.1067)
7050 -- (-0.1877,-0.0679)
7051 ;
7052 \path[hex/terrain/town/road,pic actions,hex/terrain/town/post road]
7053 ( 0.2082,-0.3003)
7054 -- ( 0.4578,-0.4855)
7055 -- ( 0.5914,-0.3675)
7056 -- ( 0.7607,-0.4420)
7057 ;
7058 \path[hex/terrain/town/road,pic actions,hex/terrain/town/post road]
7059 ( 0.3827, 0.1864)
7060 -- (-0.1290, 0.1576)

```

```

7061 ;
7062 \path[hex/terrain/town/house,pic actions]
7063 (-0.4493,-0.3075)
7064 -- (-0.4043,-0.2868)
7065 -- (-0.3710,-0.3593)
7066 -- (-0.4160,-0.3799)
7067 --cycle
7068 ;
7069 \path[hex/terrain/town/house,pic actions]
7070 (-0.4493,-0.3075)
7071 -- (-0.4043,-0.2868)
7072 -- (-0.3710,-0.3593)
7073 -- (-0.4160,-0.3799)
7074 --cycle
7075 ;
7076 \path[hex/terrain/town/house,pic actions]
7077 (-0.5264,-0.1066)
7078 -- (-0.5514,-0.0681)
7079 -- (-0.5002,-0.0349)
7080 -- (-0.4753,-0.0733)
7081 --cycle
7082 ;
7083 \path[hex/terrain/town/house,pic actions]
7084 (-0.5264,-0.1066)
7085 -- (-0.5514,-0.0681)
7086 -- (-0.5002,-0.0349)
7087 -- (-0.4753,-0.0733)
7088 --cycle
7089 ;
7090 \path[hex/terrain/town/house,pic actions]
7091 (-0.1978, 0.1663)
7092 -- (-0.1534, 0.1549)
7093 -- (-0.1685, 0.0960)
7094 -- (-0.2130, 0.1074)
7095 --cycle
7096 ;
7097 \path[hex/terrain/town/house,pic actions]
7098 (-0.1978, 0.1663)
7099 -- (-0.1534, 0.1549)
7100 -- (-0.1685, 0.0960)
7101 -- (-0.2130, 0.1074)
7102 --cycle
7103 ;
7104 \path[hex/terrain/town/house,pic actions]
7105 ( 0.2259, 0.4898)
7106 -- ( 0.2453, 0.4680)
7107 -- ( 0.2052, 0.4324)
7108 -- ( 0.1858, 0.4542)
7109 --cycle
7110 ;
7111 \path[hex/terrain/town/house,pic actions]
7112 ( 0.2259, 0.4898)
7113 -- ( 0.2453, 0.4680)

```

```

7114 -- ( 0.2052, 0.4324)
7115 -- ( 0.1858, 0.4542)
7116 --cycle
7117 ;
7118 \path[hex/terrain/town/house,pic actions]
7119 (-0.0986, 0.2553)
7120 -- (-0.0882, 0.2827)
7121 -- (-0.0380, 0.2637)
7122 -- (-0.0484, 0.2363)
7123 --cycle
7124 ;
7125 \path[hex/terrain/town/house,pic actions]
7126 (-0.0986, 0.2553)
7127 -- (-0.0882, 0.2827)
7128 -- (-0.0380, 0.2637)
7129 -- (-0.0484, 0.2363)
7130 --cycle
7131 ;
7132 \path[hex/terrain/town/house,pic actions]
7133 ( 0.0834, 0.2379)
7134 -- ( 0.0888, 0.2667)
7135 -- ( 0.1415, 0.2566)
7136 -- ( 0.1361, 0.2279)
7137 --cycle
7138 ;
7139 \path[hex/terrain/town/house,pic actions]
7140 ( 0.0834, 0.2379)
7141 -- ( 0.0888, 0.2667)
7142 -- ( 0.1415, 0.2566)
7143 -- ( 0.1361, 0.2279)
7144 --cycle
7145 ;
7146 \path[hex/terrain/town/house,pic actions]
7147 (-0.0207,-0.0604)
7148 -- (-0.0103,-0.0331)
7149 -- ( 0.0398,-0.0521)
7150 -- ( 0.0294,-0.0794)
7151 --cycle
7152 ;
7153 \path[hex/terrain/town/house,pic actions]
7154 (-0.0207,-0.0604)
7155 -- (-0.0103,-0.0331)
7156 -- ( 0.0398,-0.0521)
7157 -- ( 0.0294,-0.0794)
7158 --cycle
7159 ;
7160 \path[hex/terrain/town/house,pic actions]
7161 ( 0.3580,-0.4608)
7162 -- ( 0.3837,-0.4748)
7163 -- ( 0.3581,-0.5219)
7164 -- ( 0.3324,-0.5080)
7165 --cycle
7166 ;

```

```

7167 \path[hex/terrain/town/house,pic actions]
7168 ( 0.3580,-0.4608)
7169 -- ( 0.3837,-0.4748)
7170 -- ( 0.3581,-0.5219)
7171 -- ( 0.3324,-0.5080)
7172 --cycle
7173 ;
7174 \path[hex/terrain/town/house,pic actions]
7175 ( 0.5127,-0.3559)
7176 -- ( 0.5341,-0.3759)
7177 -- ( 0.4975,-0.4151)
7178 -- ( 0.4761,-0.3951)
7179 --cycle
7180 ;
7181 \path[hex/terrain/town/house,pic actions]
7182 ( 0.5127,-0.3559)
7183 -- ( 0.5341,-0.3759)
7184 -- ( 0.4975,-0.4151)
7185 -- ( 0.4761,-0.3951)
7186 --cycle
7187 ;
7188 \path[hex/terrain/town/house,pic actions]
7189 ( 0.2118,-0.3884)
7190 -- ( 0.2245,-0.3620)
7191 -- ( 0.2728,-0.3854)
7192 -- ( 0.2600,-0.4118)
7193 --cycle
7194 ;
7195 \path[hex/terrain/town/house,pic actions]
7196 ( 0.2118,-0.3884)
7197 -- ( 0.2245,-0.3620)
7198 -- ( 0.2728,-0.3854)
7199 -- ( 0.2600,-0.4118)
7200 --cycle
7201 ;
7202 \path[hex/terrain/town/house,pic actions]
7203 ( 0.1651,-0.4740)
7204 -- ( 0.1775,-0.4475)
7205 -- ( 0.2260,-0.4702)
7206 -- ( 0.2137,-0.4968)
7207 --cycle
7208 ;
7209 \path[hex/terrain/town/house,pic actions]
7210 ( 0.1651,-0.4740)
7211 -- ( 0.1775,-0.4475)
7212 -- ( 0.2260,-0.4702)
7213 -- ( 0.2137,-0.4968)
7214 --cycle
7215 ;
7216 \path[hex/terrain/town/house,pic actions]
7217 ( 0.2834,-0.4196)
7218 -- ( 0.2957,-0.3932)
7219 -- ( 0.3443,-0.4159)

```



```

7220 -- ( 0.3319,-0.4423)
7221 --cycle
7222 ;
7223 \path[hex/terrain/town/house,pic actions]
7224 ( 0.2834,-0.4196)
7225 -- ( 0.2957,-0.3932)
7226 -- ( 0.3443,-0.4159)
7227 -- ( 0.3319,-0.4423)
7228 --cycle
7229 ;
7230 \path[hex/terrain/town/house,pic actions]
7231 ( 0.1447,-0.5170)
7232 -- ( 0.1555,-0.4899)
7233 -- ( 0.2053,-0.5096)
7234 -- ( 0.1945,-0.5368)
7235 --cycle
7236 ;
7237 \path[hex/terrain/town/house,pic actions]
7238 ( 0.1447,-0.5170)
7239 -- ( 0.1555,-0.4899)
7240 -- ( 0.2053,-0.5096)
7241 -- ( 0.1945,-0.5368)
7242 --cycle
7243 ;
7244 \path[hex/terrain/town/house,pic actions]
7245 ( 0.0154,-0.5671)
7246 -- ( 0.0244,-0.5392)
7247 -- ( 0.0754,-0.5558)
7248 -- ( 0.0664,-0.5836)
7249 --cycle
7250 ;
7251 \path[hex/terrain/town/house,pic actions]
7252 ( 0.0154,-0.5671)
7253 -- ( 0.0244,-0.5392)
7254 -- ( 0.0754,-0.5558)
7255 -- ( 0.0664,-0.5836)
7256 --cycle
7257 ;
7258 \path[hex/terrain/town/house,pic actions]
7259 (-0.2958,-0.3614)
7260 -- (-0.2707,-0.3764)
7261 -- (-0.2983,-0.4224)
7262 -- (-0.3234,-0.4073)
7263 --cycle
7264 ;
7265 \path[hex/terrain/town/house,pic actions]
7266 (-0.2958,-0.3614)
7267 -- (-0.2707,-0.3764)
7268 -- (-0.2983,-0.4224)
7269 -- (-0.3234,-0.4073)
7270 --cycle
7271 ;
7272 \path[hex/terrain/town/house,pic actions]

```

```

7273      (-0.3024,-0.2385)
7274      -- (-0.2753,-0.2491)
7275      -- (-0.2948,-0.2990)
7276      -- (-0.3220,-0.2883)
7277      --cycle
7278      ;
7279      \path[hex/terrain/town/house,pic actions]
7280      (-0.3024,-0.2385)
7281      -- (-0.2753,-0.2491)
7282      -- (-0.2948,-0.2990)
7283      -- (-0.3220,-0.2883)
7284      --cycle
7285      ;
7286      \path[hex/terrain/town/house,pic actions]
7287      (-0.5719,-0.2295)
7288      -- (-0.5577,-0.2550)
7289      -- (-0.6045,-0.2811)
7290      -- (-0.6187,-0.2556)
7291      --cycle
7292      ;
7293      \path[hex/terrain/town/house,pic actions]
7294      (-0.5719,-0.2295)
7295      -- (-0.5577,-0.2550)
7296      -- (-0.6045,-0.2811)
7297      -- (-0.6187,-0.2556)
7298      --cycle
7299      ;
7300      \path[hex/terrain/town/house,pic actions]
7301      (-0.5909,-0.3922)
7302      -- (-0.5677,-0.3744)
7303      -- (-0.5351,-0.4170)
7304      -- (-0.5584,-0.4348)
7305      --cycle
7306      ;
7307      \path[hex/terrain/town/house,pic actions]
7308      (-0.5909,-0.3922)
7309      -- (-0.5677,-0.3744)
7310      -- (-0.5351,-0.4170)
7311      -- (-0.5584,-0.4348)
7312      --cycle
7313      ;
7314      \path[hex/terrain/town/house,pic actions]
7315      (-0.4367,-0.3858)
7316      -- (-0.4233,-0.4119)
7317      -- (-0.4709,-0.4364)
7318      -- (-0.4843,-0.4105)
7319      --cycle
7320      ;
7321      \path[hex/terrain/town/house,pic actions]
7322      (-0.4367,-0.3858)
7323      -- (-0.4233,-0.4119)
7324      -- (-0.4709,-0.4364)
7325      -- (-0.4843,-0.4105)

```

```

7326 --cycle
7327 ;
7328 \path[hex/terrain/town/house,pic actions]
7329 (-0.6605,-0.4272)
7330 -- (-0.6489,-0.4540)
7331 -- (-0.6982,-0.4752)
7332 -- (-0.7097,-0.4483)
7333 --cycle
7334 ;
7335 \path[hex/terrain/town/house,pic actions]
7336 (-0.6605,-0.4272)
7337 -- (-0.6489,-0.4540)
7338 -- (-0.6982,-0.4752)
7339 -- (-0.7097,-0.4483)
7340 --cycle
7341 ;
7342 \path[hex/terrain/town/house,pic actions]
7343 ( 0.2694,-0.2379)
7344 -- ( 0.2777,-0.2098)
7345 -- ( 0.3291,-0.2250)
7346 -- ( 0.3209,-0.2530)
7347 --cycle
7348 ;
7349 \path[hex/terrain/town/house,pic actions]
7350 ( 0.2694,-0.2379)
7351 -- ( 0.2777,-0.2098)
7352 -- ( 0.3291,-0.2250)
7353 -- ( 0.3209,-0.2530)
7354 --cycle
7355 ;
7356 \path[hex/terrain/town/house,pic actions]
7357 ( 0.1131,-0.3134)
7358 -- ( 0.1237,-0.2861)
7359 -- ( 0.1737,-0.3055)
7360 -- ( 0.1630,-0.3328)
7361 --cycle
7362 ;
7363 \path[hex/terrain/town/house,pic actions]
7364 ( 0.1131,-0.3134)
7365 -- ( 0.1237,-0.2861)
7366 -- ( 0.1737,-0.3055)
7367 -- ( 0.1630,-0.3328)
7368 --cycle
7369 ;
7370 \path[hex/terrain/town/house,pic actions]
7371 ( 0.1931,-0.0936)
7372 -- ( 0.2058,-0.0673)
7373 -- ( 0.2541,-0.0904)
7374 -- ( 0.2415,-0.1168)
7375 --cycle
7376 ;
7377 \path[hex/terrain/town/house,pic actions]
7378 ( 0.1931,-0.0936)

```

```

7379 -- ( 0.2058,-0.0673)
7380 -- ( 0.2541,-0.0904)
7381 -- ( 0.2415,-0.1168)
7382 --cycle
7383 ;
7384 \path[hex/terrain/town/house,pic actions]
7385 ( 0.1779, 0.1198)
7386 -- ( 0.1984, 0.0990)
7387 -- ( 0.1603, 0.0613)
7388 -- ( 0.1398, 0.0821)
7389 --cycle
7390 ;
7391 \path[hex/terrain/town/house,pic actions]
7392 ( 0.1779, 0.1198)
7393 -- ( 0.1984, 0.0990)
7394 -- ( 0.1603, 0.0613)
7395 -- ( 0.1398, 0.0821)
7396 --cycle
7397 ;
7398 \path[hex/terrain/town/house,pic actions]
7399 ( 0.2761, 0.3992)
7400 -- ( 0.2947, 0.3765)
7401 -- ( 0.2533, 0.3425)
7402 -- ( 0.2347, 0.3651)
7403 --cycle
7404 ;
7405 \path[hex/terrain/town/house,pic actions]
7406 ( 0.2761, 0.3992)
7407 -- ( 0.2947, 0.3765)
7408 -- ( 0.2533, 0.3425)
7409 -- ( 0.2347, 0.3651)
7410 --cycle
7411 ;
7412 \path[hex/terrain/town/house,pic actions]
7413 ( 0.3227, 0.3548)
7414 -- ( 0.3421, 0.3329)
7415 -- ( 0.3020, 0.2974)
7416 -- ( 0.2826, 0.3192)
7417 --cycle
7418 ;
7419 \path[hex/terrain/town/house,pic actions]
7420 ( 0.3227, 0.3548)
7421 -- ( 0.3421, 0.3329)
7422 -- ( 0.3020, 0.2974)
7423 -- ( 0.2826, 0.3192)
7424 --cycle
7425 ;
7426 \path[hex/terrain/town/house,pic actions]
7427 (-0.2473, 0.2770)
7428 -- (-0.2380, 0.3048)
7429 -- (-0.1871, 0.2879)
7430 -- (-0.1964, 0.2601)
7431 --cycle

```

```

7432 ;
7433 \path[hex/terrain/town/house,pic actions]
7434 (-0.2473, 0.2770)
7435 -- (-0.2380, 0.3048)
7436 -- (-0.1871, 0.2879)
7437 -- (-0.1964, 0.2601)
7438 --cycle
7439 ;
7440 \path[hex/terrain/town/house,pic actions]
7441 (-0.1395, 0.3602)
7442 -- (-0.1127, 0.3488)
7443 -- (-0.1335, 0.2995)
7444 -- (-0.1604, 0.3109)
7445 --cycle
7446 ;
7447 \path[hex/terrain/town/house,pic actions]
7448 (-0.1395, 0.3602)
7449 -- (-0.1127, 0.3488)
7450 -- (-0.1335, 0.2995)
7451 -- (-0.1604, 0.3109)
7452 --cycle
7453 ;
7454 \path[hex/terrain/town/house,pic actions]
7455 ( 0.2901, 0.6234)
7456 -- ( 0.3088, 0.6008)
7457 -- ( 0.2674, 0.5667)
7458 -- ( 0.2487, 0.5893)
7459 --cycle
7460 ;
7461 \path[hex/terrain/town/house,pic actions]
7462 ( 0.2901, 0.6234)
7463 -- ( 0.3088, 0.6008)
7464 -- ( 0.2674, 0.5667)
7465 -- ( 0.2487, 0.5893)
7466 --cycle
7467 ;
7468 \path[hex/terrain/town/house,pic actions]
7469 (-0.3456, 0.2854)
7470 -- (-0.3335, 0.3120)
7471 -- (-0.2847, 0.2898)
7472 -- (-0.2968, 0.2632)
7473 --cycle
7474 ;
7475 \path[hex/terrain/town/house,pic actions]
7476 (-0.3456, 0.2854)
7477 -- (-0.3335, 0.3120)
7478 -- (-0.2847, 0.2898)
7479 -- (-0.2968, 0.2632)
7480 --cycle
7481 ;
7482 \path[hex/terrain/town/house,pic actions]
7483 (-0.3040, 0.3746)
7484 -- (-0.2919, 0.4012)

```

```

7485 -- (-0.2431, 0.3791)
7486 -- (-0.2552, 0.3524)
7487 --cycle
7488 ;
7489 \path[hex/terrain/town/house,pic actions]
7490 (-0.3040, 0.3746)
7491 -- (-0.2919, 0.4012)
7492 -- (-0.2431, 0.3791)
7493 -- (-0.2552, 0.3524)
7494 --cycle
7495 ;
7496 \path[hex/terrain/town/house,pic actions]
7497 (-0.7420,-0.2456)
7498 -- (-0.7302,-0.2189)
7499 -- (-0.6812,-0.2407)
7500 -- (-0.6930,-0.2674)
7501 --cycle
7502 ;
7503 \path[hex/terrain/town/house,pic actions]
7504 (-0.7420,-0.2456)
7505 -- (-0.7302,-0.2189)
7506 -- (-0.6812,-0.2407)
7507 -- (-0.6930,-0.2674)
7508 --cycle
7509 ;
7510 \path[hex/terrain/town/house,pic actions]
7511 (-0.6678,-0.1369)
7512 -- (-0.6492,-0.1143)
7513 -- (-0.6078,-0.1484)
7514 -- (-0.6264,-0.1710)
7515 --cycle
7516 ;
7517 \path[hex/terrain/town/house,pic actions]
7518 (-0.6678,-0.1369)
7519 -- (-0.6492,-0.1143)
7520 -- (-0.6078,-0.1484)
7521 -- (-0.6264,-0.1710)
7522 --cycle
7523 ;
7524 \path[hex/terrain/town/house,pic actions]
7525 (-0.2252,-0.0023)
7526 -- (-0.1960,-0.0023)
7527 -- (-0.1960,-0.0559)
7528 -- (-0.2252,-0.0559)
7529 --cycle
7530 ;
7531 \path[hex/terrain/town/house,pic actions]
7532 (-0.2252,-0.0023)
7533 -- (-0.1960,-0.0023)
7534 -- (-0.1960,-0.0559)
7535 -- (-0.2252,-0.0559)
7536 --cycle
7537 ;

```

```

7538 \path[hex/terrain/town/house,pic actions]
7539 (-0.0041,-0.2944)
7540 -- ( 0.0064,-0.2671)
7541 -- ( 0.0564,-0.2862)
7542 -- ( 0.0460,-0.3135)
7543 --cycle
7544 ;
7545 \path[hex/terrain/town/house,pic actions]
7546 (-0.0041,-0.2944)
7547 -- ( 0.0064,-0.2671)
7548 -- ( 0.0564,-0.2862)
7549 -- ( 0.0460,-0.3135)
7550 --cycle
7551 ;
7552 \path[hex/terrain/town/house,pic actions]
7553 (-0.1877,-0.2296)
7554 -- (-0.1764,-0.2026)
7555 -- (-0.1270,-0.2233)
7556 -- (-0.1383,-0.2503)
7557 --cycle
7558 ;
7559 \path[hex/terrain/town/house,pic actions]
7560 (-0.1877,-0.2296)
7561 -- (-0.1764,-0.2026)
7562 -- (-0.1270,-0.2233)
7563 -- (-0.1383,-0.2503)
7564 --cycle
7565 ;
7566 \path[hex/terrain/town/house,pic actions]
7567 (-0.1170,-0.3014)
7568 -- (-0.1067,-0.2740)
7569 -- (-0.0566,-0.2928)
7570 -- (-0.0668,-0.3202)
7571 --cycle
7572 ;
7573 \path[hex/terrain/town/house,pic actions]
7574 (-0.1170,-0.3014)
7575 -- (-0.1067,-0.2740)
7576 -- (-0.0566,-0.2928)
7577 -- (-0.0668,-0.3202)
7578 --cycle
7579 ;
7580 \path[hex/terrain/town/house,pic actions]
7581 (-0.0719,-0.3499)
7582 -- (-0.0428,-0.3468)
7583 -- (-0.0371,-0.4001)
7584 -- (-0.0661,-0.4032)
7585 --cycle
7586 ;
7587 \path[hex/terrain/town/house,pic actions]
7588 (-0.0719,-0.3499)
7589 -- (-0.0428,-0.3468)
7590 -- (-0.0371,-0.4001)

```

```

7591 -- (-0.0661,-0.4032)
7592 --cycle
7593 ;
7594 \path[hex/terrain/town/house,pic actions]
7595 ( 0.4610, 0.0967)
7596 -- ( 0.4896, 0.0909)
7597 -- ( 0.4790, 0.0384)
7598 -- ( 0.4503, 0.0442)
7599 --cycle
7600 ;
7601 \path[hex/terrain/town/house,pic actions]
7602 ( 0.4610, 0.0967)
7603 -- ( 0.4896, 0.0909)
7604 -- ( 0.4790, 0.0384)
7605 -- ( 0.4503, 0.0442)
7606 --cycle
7607 ;
7608 \path[hex/terrain/town/house,pic actions]
7609 (-0.1944,-0.4810)
7610 -- (-0.1500,-0.4925)
7611 -- (-0.1653,-0.5515)
7612 -- (-0.2097,-0.5399)
7613 --cycle
7614 ;
7615 \path[hex/terrain/town/house,pic actions]
7616 (-0.1944,-0.4810)
7617 -- (-0.1500,-0.4925)
7618 -- (-0.1653,-0.5515)
7619 -- (-0.2097,-0.5399)
7620 --cycle
7621 ;
7622 \path[hex/terrain/town/house,pic actions]
7623 ( 0.2924,-0.1375)
7624 -- ( 0.3110,-0.0955)
7625 -- ( 0.3667,-0.1202)
7626 -- ( 0.3481,-0.1621)
7627 --cycle
7628 ;
7629 \path[hex/terrain/town/house,pic actions]
7630 ( 0.2924,-0.1375)
7631 -- ( 0.3110,-0.0955)
7632 -- ( 0.3667,-0.1202)
7633 -- ( 0.3481,-0.1621)
7634 --cycle
7635 ;
7636 \path[hex/terrain/town/house,pic actions]
7637 (-0.3062, 0.5810)
7638 -- (-0.2635, 0.5641)
7639 -- (-0.2859, 0.5075)
7640 -- (-0.3285, 0.5243)
7641 --cycle
7642 ;
7643 \path[hex/terrain/town/house,pic actions]

```



```

7644 (-0.3062, 0.5810)
7645 -- (-0.2635, 0.5641)
7646 -- (-0.2859, 0.5075)
7647 -- (-0.3285, 0.5243)
7648 --cycle
7649 ;
7650 \path[hex/terrain/town/house,pic actions]
7651 ( 0.0310,-0.4661)
7652 -- ( 0.0449,-0.4224)
7653 -- ( 0.1029,-0.4409)
7654 -- ( 0.0889,-0.4846)
7655 --cycle
7656 ;
7657 \path[hex/terrain/town/house,pic actions]
7658 ( 0.0310,-0.4661)
7659 -- ( 0.0449,-0.4224)
7660 -- ( 0.1029,-0.4409)
7661 -- ( 0.0889,-0.4846)
7662 --cycle
7663 ;
7664 \path[hex/terrain/town/house,pic actions]
7665 ( 0.1523,-0.2013)
7666 -- ( 0.1718,-0.1598)
7667 -- ( 0.2270,-0.1857)
7668 -- ( 0.2075,-0.2272)
7669 --cycle
7670 ;
7671 \path[hex/terrain/town/house,pic actions]
7672 ( 0.1523,-0.2013)
7673 -- ( 0.1718,-0.1598)
7674 -- ( 0.2270,-0.1857)
7675 -- ( 0.2075,-0.2272)
7676 --cycle
7677 ;
7678 \path[hex/terrain/town/house,pic actions]
7679 ( 0.0857,-0.3676)
7680 -- ( 0.1052,-0.3261)
7681 -- ( 0.1603,-0.3520)
7682 -- ( 0.1409,-0.3935)
7683 --cycle
7684 ;
7685 \path[hex/terrain/town/house,pic actions]
7686 ( 0.0857,-0.3676)
7687 -- ( 0.1052,-0.3261)
7688 -- ( 0.1603,-0.3520)
7689 -- ( 0.1409,-0.3935)
7690 --cycle
7691 ;
7692 \path[hex/terrain/town/house,pic actions]
7693 ( 0.0204,-0.2046)
7694 -- ( 0.0398,-0.1631)
7695 -- ( 0.0950,-0.1890)
7696 -- ( 0.0755,-0.2305)

```

```

7697 --cycle
7698 ;
7699 \path[hex/terrain/town/house,pic actions]
7700 ( 0.0204,-0.2046)
7701 -- ( 0.0398,-0.1631)
7702 -- ( 0.0950,-0.1890)
7703 -- ( 0.0755,-0.2305)
7704 --cycle
7705 ;
7706 \path[hex/terrain/town/house,pic actions]
7707 ( 0.5094, 0.3292)
7708 -- ( 0.5505, 0.3494)
7709 -- ( 0.5773, 0.2947)
7710 -- ( 0.5362, 0.2746)
7711 --cycle
7712 ;
7713 \path[hex/terrain/town/house,pic actions]
7714 ( 0.5094, 0.3292)
7715 -- ( 0.5505, 0.3494)
7716 -- ( 0.5773, 0.2947)
7717 -- ( 0.5362, 0.2746)
7718 --cycle
7719 ;
7720 \path[hex/terrain/town/house,pic actions]
7721 (-0.0647, 0.4710)
7722 -- (-0.0215, 0.4559)
7723 -- (-0.0416, 0.3984)
7724 -- (-0.0848, 0.4135)
7725 --cycle
7726 ;
7727 \path[hex/terrain/town/house,pic actions]
7728 (-0.0647, 0.4710)
7729 -- (-0.0215, 0.4559)
7730 -- (-0.0416, 0.3984)
7731 -- (-0.0848, 0.4135)
7732 --cycle
7733 ;
7734 \path[hex/terrain/town/house,pic actions]
7735 (-0.1476,-0.3704)
7736 -- (-0.1403,-0.3251)
7737 -- (-0.0802,-0.3347)
7738 -- (-0.0873,-0.3799)
7739 --cycle
7740 ;
7741 \path[hex/terrain/town/house,pic actions]
7742 (-0.1476,-0.3704)
7743 -- (-0.1403,-0.3251)
7744 -- (-0.0802,-0.3347)
7745 -- (-0.0873,-0.3799)
7746 --cycle
7747 ;
7748 \path[hex/terrain/town/house,pic actions]
7749 (-0.0755, 0.3210)

```

```

7750 -- (-0.0531, 0.3610)
7751 -- ( 0.0001, 0.3312)
7752 -- (-0.0224, 0.2912)
7753 --cycle
7754 ;
7755 \path[hex/terrain/town/house,pic actions]
7756 (-0.0755, 0.3210)
7757 -- (-0.0531, 0.3610)
7758 -- ( 0.0001, 0.3312)
7759 -- (-0.0224, 0.2912)
7760 --cycle
7761 ;
7762 \path[hex/terrain/town/house,pic actions]
7763 (-0.1354, 0.0442)
7764 -- (-0.1129, 0.0842)
7765 -- (-0.0599, 0.0544)
7766 -- (-0.0823, 0.0144)
7767 --cycle
7768 ;
7769 \path[hex/terrain/town/house,pic actions]
7770 (-0.1354, 0.0442)
7771 -- (-0.1129, 0.0842)
7772 -- (-0.0599, 0.0544)
7773 -- (-0.0823, 0.0144)
7774 --cycle
7775 ;
7776 \path[hex/terrain/town/house,pic actions]
7777 (-0.1672,-0.0608)
7778 -- (-0.1524,-0.0175)
7779 -- (-0.0948,-0.0371)
7780 -- (-0.1096,-0.0805)
7781 --cycle
7782 ;
7783 \path[hex/terrain/town/house,pic actions]
7784 (-0.1672,-0.0608)
7785 -- (-0.1524,-0.0175)
7786 -- (-0.0948,-0.0371)
7787 -- (-0.1096,-0.0805)
7788 --cycle
7789 ;
7790 \path[hex/terrain/town/house,pic actions]
7791 ( 0.0920,-0.6296)
7792 -- ( 0.1069,-0.5863)
7793 -- ( 0.1645,-0.6060)
7794 -- ( 0.1497,-0.6493)
7795 --cycle
7796 ;
7797 \path[hex/terrain/town/house,pic actions]
7798 ( 0.0920,-0.6296)
7799 -- ( 0.1069,-0.5863)
7800 -- ( 0.1645,-0.6060)
7801 -- ( 0.1497,-0.6493)
7802 --cycle

```

```

7803 ;
7804 \path[hex/terrain/town/house,pic actions]
7805 ( 0.4115,-0.5373)
7806 -- ( 0.4390,-0.5006)
7807 -- ( 0.4877,-0.5372)
7808 -- ( 0.4601,-0.5739)
7809 --cycle
7810 ;
7811 \path[hex/terrain/town/house,pic actions]
7812 ( 0.4115,-0.5373)
7813 -- ( 0.4390,-0.5006)
7814 -- ( 0.4877,-0.5372)
7815 -- ( 0.4601,-0.5739)
7816 --cycle
7817 ;
7818 \path[hex/terrain/town/house,pic actions]
7819 ( 0.3095, 0.1272)
7820 -- ( 0.3519, 0.1095)
7821 -- ( 0.3284, 0.0533)
7822 -- ( 0.2861, 0.0710)
7823 --cycle
7824 ;
7825 \path[hex/terrain/town/house,pic actions]
7826 ( 0.3095, 0.1272)
7827 -- ( 0.3519, 0.1095)
7828 -- ( 0.3284, 0.0533)
7829 -- ( 0.2861, 0.0710)
7830 --cycle
7831 ;
7832 \path[hex/terrain/town/house,pic actions]
7833 (-0.3558, 0.0291)
7834 -- (-0.3124, 0.0144)
7835 -- (-0.3318,-0.0433)
7836 -- (-0.3753,-0.0287)
7837 --cycle
7838 ;
7839 \path[hex/terrain/town/house,pic actions]
7840 (-0.3558, 0.0291)
7841 -- (-0.3124, 0.0144)
7842 -- (-0.3318,-0.0433)
7843 -- (-0.3753,-0.0287)
7844 --cycle
7845 ;
7846 \path[hex/terrain/town/house,pic actions]
7847 ( 0.2904, 0.2714)
7848 -- ( 0.3361, 0.2681)
7849 -- ( 0.3318, 0.2074)
7850 -- ( 0.2861, 0.2106)
7851 --cycle
7852 ;
7853 \path[hex/terrain/town/house,pic actions]
7854 ( 0.2904, 0.2714)
7855 -- ( 0.3361, 0.2681)

```

```

7856 -- ( 0.3318, 0.2074)
7857 -- ( 0.2861, 0.2106)
7858 --cycle
7859 ;
7860 \path[hex/terrain/town/house,pic actions]
7861 (-0.0124, 0.1558)
7862 -- ( 0.0333, 0.1525)
7863 -- ( 0.0290, 0.0918)
7864 -- (-0.0167, 0.0950)
7865 --cycle
7866 ;
7867 \path[hex/terrain/town/house,pic actions]
7868 (-0.0124, 0.1558)
7869 -- ( 0.0333, 0.1525)
7870 -- ( 0.0290, 0.0918)
7871 -- (-0.0167, 0.0950)
7872 --cycle
7873 ;
7874 \path[hex/terrain/town/house,pic actions]
7875 ( 0.4665, 0.4396)
7876 -- ( 0.4868, 0.3985)
7877 -- ( 0.4321, 0.3716)
7878 -- ( 0.4119, 0.4127)
7879 --cycle
7880 ;
7881 \path[hex/terrain/town/house,pic actions]
7882 ( 0.4665, 0.4396)
7883 -- ( 0.4868, 0.3985)
7884 -- ( 0.4321, 0.3716)
7885 -- ( 0.4119, 0.4127)
7886 --cycle
7887 ;
7888 \path[hex/terrain/town/house,pic actions]
7889 (-0.2433,-0.1480)
7890 -- (-0.2141,-0.1472)
7891 -- (-0.2127,-0.2008)
7892 -- (-0.2419,-0.2015)
7893 --cycle
7894 ;
7895 \path[hex/terrain/town/house,pic actions]
7896 (-0.2433,-0.1480)
7897 -- (-0.2141,-0.1472)
7898 -- (-0.2127,-0.2008)
7899 -- (-0.2419,-0.2015)
7900 --cycle
7901 ;
7902 \path[hex/terrain/town/house,pic actions]
7903 ( 0.4187, 0.2523)
7904 -- ( 0.4643, 0.2574)
7905 -- ( 0.4711, 0.1969)
7906 -- ( 0.4256, 0.1917)
7907 --cycle
7908 ;

```

```

7909 \path[hex/terrain/town/house,pic actions]
7910 ( 0.4187, 0.2523)
7911 -- ( 0.4643, 0.2574)
7912 -- ( 0.4711, 0.1969)
7913 -- ( 0.4256, 0.1917)
7914 --cycle
7915 ;
7916 \path[hex/terrain/town/house,pic actions]
7917 (-0.2599,-0.2379)
7918 -- (-0.2164,-0.2525)
7919 -- (-0.2358,-0.3102)
7920 -- (-0.2793,-0.2955)
7921 --cycle
7922 ;
7923 \path[hex/terrain/town/house,pic actions]
7924 (-0.2599,-0.2379)
7925 -- (-0.2164,-0.2525)
7926 -- (-0.2358,-0.3102)
7927 -- (-0.2793,-0.2955)
7928 --cycle
7929 ;
7930 \path[hex/terrain/town/house,pic actions]
7931 ( 0.0167, 0.0438)
7932 -- ( 0.0385, 0.0365)
7933 -- ( 0.0301, 0.0113)
7934 -- ( 0.0082, 0.0187)
7935 --cycle
7936 ;
7937 \path[hex/terrain/town/house,pic actions]
7938 ( 0.0167, 0.0438)
7939 -- ( 0.0385, 0.0365)
7940 -- ( 0.0301, 0.0113)
7941 -- ( 0.0082, 0.0187)
7942 --cycle
7943 ;
7944 \path[hex/terrain/town/house,pic actions]
7945 (-0.2901,-0.1193)
7946 -- (-0.2450,-0.1273)
7947 -- (-0.2556,-0.1872)
7948 -- (-0.3008,-0.1792)
7949 --cycle
7950 ;
7951 \path[hex/terrain/town/house,pic actions]
7952 (-0.2901,-0.1193)
7953 -- (-0.2450,-0.1273)
7954 -- (-0.2556,-0.1872)
7955 -- (-0.3008,-0.1792)
7956 --cycle
7957 ;
7958 \path[hex/terrain/town/house,pic actions]
7959 ( 0.1275,-0.0001)
7960 -- ( 0.1734,-0.0022)
7961 -- ( 0.1707,-0.0630)

```

```

7962    -- ( 0.1248,-0.0610)
7963    --cycle
7964    ;
7965    \path[hex/terrain/town/house,pic actions]
7966    ( 0.1275,-0.0001)
7967    -- ( 0.1734,-0.0022)
7968    -- ( 0.1707,-0.0630)
7969    -- ( 0.1248,-0.0610)
7970    --cycle
7971    ;
7972    \path[hex/terrain/town/house,pic actions]
7973    (-0.0645,-0.5272)
7974    -- (-0.0415,-0.5245)
7975    -- (-0.0383,-0.5509)
7976    -- (-0.0612,-0.5536)
7977    --cycle
7978    ;
7979    \path[hex/terrain/town/house,pic actions]
7980    (-0.0645,-0.5272)
7981    -- (-0.0415,-0.5245)
7982    -- (-0.0383,-0.5509)
7983    -- (-0.0612,-0.5536)
7984    --cycle
7985    ;
7986    \path[hex/terrain/town/house,pic actions]
7987    (-0.3209, 0.2176)
7988    -- (-0.2989, 0.2105)
7989    -- (-0.3069, 0.1853)
7990    -- (-0.3289, 0.1923)
7991    --cycle
7992    ;
7993    \path[hex/terrain/town/house,pic actions]
7994    (-0.3209, 0.2176)
7995    -- (-0.2989, 0.2105)
7996    -- (-0.3069, 0.1853)
7997    -- (-0.3289, 0.1923)
7998    --cycle
7999    ;
8000    \path[hex/terrain/town/house,pic actions]
8001    ( 0.3746, 0.1600)
8002    -- ( 0.4021, 0.1699)
8003    -- ( 0.4204, 0.1195)
8004    -- ( 0.3929, 0.1095)
8005    --cycle
8006    ;
8007    \path[hex/terrain/town/house,pic actions]
8008    ( 0.3746, 0.1600)
8009    -- ( 0.4021, 0.1699)
8010    -- ( 0.4204, 0.1195)
8011    -- ( 0.3929, 0.1095)
8012    --cycle
8013    ;
8014 }

```

```
8015 }
8016 \fi
```

hex/terrain/city

And finally a city



```
8017 \ifhex@terrain@pic
8018 \tikzset{
8019   hex/terrain/city/.pic={
8020     \path[hex/terrain/town/small road,pic actions,hex/terrain/town/post road]
8021       ( 0.6475, 0.4068)
8022       -- ( 0.7314,-0.0575)
8023       -- ( 0.7314,-0.0575)
8024       ;
8025     \path[hex/terrain/town/small road,pic actions,hex/terrain/town/post road]
8026       ( 0.3200,-0.0497)
8027       -- ( 0.7360,-0.0572)
8028       -- ( 0.9222,-0.0903)
8029       -- ( 0.7082,-0.4210)
8030       ;
8031     \path[hex/terrain/town/small road,pic actions,hex/terrain/town/post road]
8032       ( 0.3828, 0.1855)
8033       -- ( 0.0279, 0.1945)
8034       ;
8035     \path[hex/terrain/town/small road,pic actions,hex/terrain/town/post road]
8036       ( 0.0433, 0.3473)
8037       -- ( 0.0217, 0.1444)
8038       ;
8039     \path[hex/terrain/town/small road,pic actions,hex/terrain/town/post road]
8040       ( 0.1413, 0.1884)
8041       -- ( 0.3369,-0.0066)
8042       ;
8043     \path[hex/terrain/town/small road,pic actions,hex/terrain/town/post road]
8044       (-0.1278, 0.7257)
8045       -- (-0.2203, 0.4496)
8046       ;
8047     \path[hex/terrain/town/small road,pic actions,hex/terrain/town/post road]
8048       ( 0.1602, 0.6526)
8049       -- ( 0.0382, 0.6110)
8050       -- (-0.1527, 0.6534)
8051       ;
8052     \path[hex/terrain/town/small road,pic actions,hex/terrain/town/post road]
8053       (-0.1688, 0.6051)
8054       -- (-0.4768, 0.7222)
8055       ;
8056     \path[hex/terrain/town/small road,pic actions,hex/terrain/town/post road]
8057       ( 0.3602,-0.4159)
```



```

8058 .. controls ( 0.4139,-0.2355) and ( 0.4139,-0.2352) .. ( 0.4139,-0.2352)
8059 -- ( 0.4838,-0.2184)
8060 -- ( 0.5251,-0.0570)
8061 ;
8062 \path[hex/terrain/town/small road,pic actions,hex/terrain/town/post road]
8063 ( 0.5443,-0.6880)
8064 -- ( 0.5887,-0.5618)
8065 -- ( 0.4781,-0.4650)
8066 -- ( 0.4781,-0.4650)
8067 ;
8068 \path[hex/terrain/town/small road,pic actions,hex/terrain/town/post road]
8069 ( 0.0671,-0.6564)
8070 -- ( 0.2799,-0.7025)
8071 -- ( 0.4360,-0.4711)
8072 ;
8073 \path[hex/terrain/town/small road,pic actions,hex/terrain/town/post road]
8074 ( 0.2023,-0.8374)
8075 -- ( 0.2231,-0.6909)
8076 ;
8077 \path[hex/terrain/town/small road,pic actions,hex/terrain/town/post road]
8078 ( 0.0433,-0.3639)
8079 -- (-0.0931,-0.5036)
8080 -- (-0.3798,-0.4049)
8081 -- (-0.4436,-0.4630)
8082 -- (-0.5468,-0.5027)
8083 -- (-0.6442,-0.3540)
8084 ;
8085 \path[hex/terrain/town/small road,pic actions,hex/terrain/town/post road]
8086 (-0.3296,-0.7486)
8087 -- (-0.3153,-0.6107)
8088 -- (-0.4388,-0.4598)
8089 ;
8090 \path[hex/terrain/town/small road,pic actions,hex/terrain/town/post road]
8091 (-0.3247,-0.6883)
8092 -- (-0.0201,-0.7169)
8093 -- ( 0.0501,-0.7042)
8094 ;
8095 \path[hex/terrain/town/small road,pic actions,hex/terrain/town/post road]
8096 ( 0.0616,-0.6541)
8097 -- (-0.0427,-0.6505)
8098 -- (-0.0229,-0.5387)
8099 ;
8100 \path[hex/terrain/town/small road,pic actions,hex/terrain/town/post road]
8101 ( 0.0040,-0.2086)
8102 -- (-0.1956,-0.1835)
8103 -- (-0.2290,-0.2265)
8104 -- (-0.5068,-0.1372)
8105 ;
8106 \path[hex/terrain/town/small road,pic actions,hex/terrain/town/post road]
8107 (-0.3396, 0.0437)
8108 -- (-0.2201, 0.4506)
8109 ;
8110 \path[hex/terrain/town/road,pic actions,hex/terrain/town/post road]

```

```

8111      ( 0.0066, 0.8705)
8112      -- ( 0.3952, 0.3367)
8113      -- ( 0.3885, 0.2021)
8114      -- ( 0.3555, 0.1368)
8115      -- ( 0.3751, 0.0869)
8116      -- ( 0.2511,-0.2014)
8117      -- ( 0.1393,-0.4528)
8118      -- ( 0.0636,-0.6538)
8119      -- ( 0.0063,-0.8731)
8120      -- ( 0.0063,-0.8731)
8121      ;
8122      \path[hex/terrain/town/road,pic actions,hex/terrain/town/post road]
8123      ( 0.1775, 0.6355)
8124      -- ( 0.4288, 0.7459)
8125      -- ( 0.5543, 0.5148)
8126      -- ( 0.5543, 0.5148)
8127      ;
8128      \path[hex/terrain/town/road,pic actions,hex/terrain/town/post road]
8129      ( 0.7584, 0.4363)
8130      -- ( 0.3946, 0.3369)
8131      -- ( 0.3946, 0.3369)
8132      ;
8133      \path[hex/terrain/town/road,pic actions,hex/terrain/town/post road]
8134      ( 0.1428,-0.4540)
8135      -- (-0.0329,-0.2925)
8136      -- ( 0.0739,-0.0364)
8137      -- ( 0.1645,-0.0483)
8138      ;
8139      \path[hex/terrain/town/road,pic actions,hex/terrain/town/post road]
8140      ( 0.0723,-0.0367)
8141      -- (-0.5150, 0.0791)
8142      ;
8143      \path[hex/terrain/town/road,pic actions,hex/terrain/town/post road]
8144      (-0.1911,-0.0821)
8145      -- (-0.0760, 0.3934)
8146      -- (-0.0774, 0.3920)
8147      ;
8148      \path[hex/terrain/town/road,pic actions,hex/terrain/town/post road]
8149      ( 0.0439, 0.3452)
8150      -- (-0.3449, 0.4978)
8151      -- (-0.4614, 0.2954)
8152      -- (-0.4614, 0.2954)
8153      ;
8154      \path[hex/terrain/town/road,pic actions,hex/terrain/town/post road]
8155      (-0.4152, 0.2683)
8156      -- (-0.7626, 0.4390)
8157      -- (-0.7626, 0.4390)
8158      ;
8159      \path[hex/terrain/town/road,pic actions,hex/terrain/town/post road]
8160      (-0.5846, 0.3486)
8161      -- (-0.8106,-0.1286)
8162      -- (-0.7727,-0.2079)
8163      -- (-0.7053,-0.1745)

```

```

8164 ;
8165 \path[hex/terrain/town/road,pic actions,hex/terrain/town/post road]
8166 (-0.7161,-0.1542)
8167 -- (-0.6166,-0.3381)
8168 -- (-0.7630,-0.4349)
8169 ;
8170 \path[hex/terrain/town/road,pic actions,hex/terrain/town/post road]
8171 (-0.6697,-0.2422)
8172 -- (-0.4615,-0.1081)
8173 -- (-0.4615,-0.1081)
8174 ;
8175 \path[hex/terrain/town/road,pic actions,hex/terrain/town/post road]
8176 ( 0.2080,-0.3022)
8177 -- ( 0.4581,-0.4878)
8178 -- ( 0.5919,-0.3695)
8179 -- ( 0.7615,-0.4441)
8180 ;
8181 \path[hex/terrain/town/house,pic actions]
8182 ( 0.1146, 0.0405)
8183 -- ( 0.1598, 0.0323)
8184 -- ( 0.1489,-0.0277)
8185 -- ( 0.1036,-0.0196)
8186 --cycle
8187 ;
8188 \path[hex/terrain/town/house,pic actions]
8189 ( 0.1146, 0.0405)
8190 -- ( 0.1598, 0.0323)
8191 -- ( 0.1489,-0.0277)
8192 -- ( 0.1036,-0.0196)
8193 --cycle
8194 ;
8195 \path[hex/terrain/town/house,pic actions]
8196 (-0.0844, 0.4998)
8197 -- (-0.0599, 0.4835)
8198 -- (-0.0898, 0.4389)
8199 -- (-0.1141, 0.4551)
8200 --cycle
8201 ;
8202 \path[hex/terrain/town/house,pic actions]
8203 (-0.0844, 0.4998)
8204 -- (-0.0599, 0.4835)
8205 -- (-0.0898, 0.4389)
8206 -- (-0.1141, 0.4551)
8207 --cycle
8208 ;
8209 \path[hex/terrain/town/house,pic actions]
8210 (-0.6143,-0.0454)
8211 -- (-0.6005,-0.0196)
8212 -- (-0.5531,-0.0447)
8213 -- (-0.5668,-0.0707)
8214 --cycle
8215 ;
8216 \path[hex/terrain/town/house,pic actions]

```

```

8217 (-0.6143,-0.0454)
8218 -- (-0.6005,-0.0196)
8219 -- (-0.5531,-0.0447)
8220 -- (-0.5668,-0.0707)
8221 --cycle
8222 ;
8223 \path[hex/terrain/town/house,pic actions]
8224 (-0.3809,-0.0792)
8225 -- (-0.3371,-0.0929)
8226 -- (-0.3553,-0.1511)
8227 -- (-0.3991,-0.1375)
8228 --cycle
8229 ;
8230 \path[hex/terrain/town/house,pic actions]
8231 (-0.3809,-0.0792)
8232 -- (-0.3371,-0.0929)
8233 -- (-0.3553,-0.1511)
8234 -- (-0.3991,-0.1375)
8235 --cycle
8236 ;
8237 \path[hex/terrain/town/house,pic actions]
8238 (-0.5133, 0.1838)
8239 -- (-0.4733, 0.1613)
8240 -- (-0.5032, 0.1081)
8241 -- (-0.5433, 0.1307)
8242 --cycle
8243 ;
8244 \path[hex/terrain/town/house,pic actions]
8245 (-0.5133, 0.1838)
8246 -- (-0.4733, 0.1613)
8247 -- (-0.5032, 0.1081)
8248 -- (-0.5433, 0.1307)
8249 --cycle
8250 ;
8251 \path[hex/terrain/town/house,pic actions]
8252 (-0.3878, 0.1398)
8253 -- (-0.3421, 0.1442)
8254 -- (-0.3362, 0.0834)
8255 -- (-0.3819, 0.0790)
8256 --cycle
8257 ;
8258 \path[hex/terrain/town/house,pic actions]
8259 (-0.3878, 0.1398)
8260 -- (-0.3421, 0.1442)
8261 -- (-0.3362, 0.0834)
8262 -- (-0.3819, 0.0790)
8263 --cycle
8264 ;
8265 \path[hex/terrain/town/house,pic actions]
8266 (-0.5622, 0.0806)
8267 -- (-0.5234, 0.0560)
8268 -- (-0.5559, 0.0044)
8269 -- (-0.5948, 0.0290)

```

```

8270  --cycle
8271  ;
8272  \path[hex/terrain/town/house,pic actions]
8273  (-0.5622, 0.0806)
8274  -- (-0.5234, 0.0560)
8275  -- (-0.5559, 0.0044)
8276  -- (-0.5948, 0.0290)
8277  --cycle
8278  ;
8279  \path[hex/terrain/town/house,pic actions]
8280  (-0.6218, 0.1903)
8281  -- (-0.6097, 0.2346)
8282  -- (-0.5508, 0.2185)
8283  -- (-0.5629, 0.1742)
8284  --cycle
8285  ;
8286  \path[hex/terrain/town/house,pic actions]
8287  (-0.6218, 0.1903)
8288  -- (-0.6097, 0.2346)
8289  -- (-0.5508, 0.2185)
8290  -- (-0.5629, 0.1742)
8291  --cycle
8292  ;
8293  \path[hex/terrain/town/house,pic actions]
8294  (-0.2884, 0.7423)
8295  -- (-0.2596, 0.7372)
8296  -- (-0.2691, 0.6843)
8297  -- (-0.2980, 0.6895)
8298  --cycle
8299  ;
8300  \path[hex/terrain/town/house,pic actions]
8301  (-0.2884, 0.7423)
8302  -- (-0.2596, 0.7372)
8303  -- (-0.2691, 0.6843)
8304  -- (-0.2980, 0.6895)
8305  --cycle
8306  ;
8307  \path[hex/terrain/town/house,pic actions]
8308  ( 0.1219, 0.8731)
8309  -- ( 0.1475, 0.8350)
8310  -- ( 0.0970, 0.8008)
8311  -- ( 0.0712, 0.8389)
8312  --cycle
8313  ;
8314  \path[hex/terrain/town/house,pic actions]
8315  ( 0.1219, 0.8731)
8316  -- ( 0.1475, 0.8350)
8317  -- ( 0.0970, 0.8008)
8318  -- ( 0.0712, 0.8389)
8319  --cycle
8320  ;
8321  \path[hex/terrain/town/house,pic actions]
8322  ( 0.3659, 0.5557)

```

```

8323 -- ( 0.3913, 0.5175)
8324 -- ( 0.3405, 0.4837)
8325 -- ( 0.3150, 0.5219)
8326 --cycle
8327 ;
8328 \path[hex/terrain/town/house,pic actions]
8329 ( 0.3659, 0.5557)
8330 -- ( 0.3913, 0.5175)
8331 -- ( 0.3405, 0.4837)
8332 -- ( 0.3150, 0.5219)
8333 --cycle
8334 ;
8335 \path[hex/terrain/town/house,pic actions]
8336 ( 0.0626, 0.4298)
8337 -- ( 0.0896, 0.4184)
8338 -- ( 0.0686, 0.3690)
8339 -- ( 0.0416, 0.3804)
8340 --cycle
8341 ;
8342 \path[hex/terrain/town/house,pic actions]
8343 ( 0.0626, 0.4298)
8344 -- ( 0.0896, 0.4184)
8345 -- ( 0.0686, 0.3690)
8346 -- ( 0.0416, 0.3804)
8347 --cycle
8348 ;
8349 \path[hex/terrain/town/house,pic actions]
8350 (-0.4510,-0.3094)
8351 -- (-0.4058,-0.2887)
8352 -- (-0.3725,-0.3614)
8353 -- (-0.4176,-0.3821)
8354 --cycle
8355 ;
8356 \path[hex/terrain/town/house,pic actions]
8357 (-0.4510,-0.3094)
8358 -- (-0.4058,-0.2887)
8359 -- (-0.3725,-0.3614)
8360 -- (-0.4176,-0.3821)
8361 --cycle
8362 ;
8363 \path[hex/terrain/town/house,pic actions]
8364 (-0.5282,-0.1080)
8365 -- (-0.5533,-0.0695)
8366 -- (-0.5021,-0.0363)
8367 -- (-0.4770,-0.0749)
8368 --cycle
8369 ;
8370 \path[hex/terrain/town/house,pic actions]
8371 (-0.5282,-0.1080)
8372 -- (-0.5533,-0.0695)
8373 -- (-0.5021,-0.0363)
8374 -- (-0.4770,-0.0749)
8375 --cycle

```

```

8376 ;
8377 \path[hex/terrain/town/house,pic actions]
8378 ( 0.0108,-0.2602)
8379 -- ( 0.0173,-0.2316)
8380 -- ( 0.0696,-0.2435)
8381 -- ( 0.0632,-0.2721)
8382 --cycle
8383 ;
8384 \path[hex/terrain/town/house,pic actions]
8385 ( 0.0108,-0.2602)
8386 -- ( 0.0173,-0.2316)
8387 -- ( 0.0696,-0.2435)
8388 -- ( 0.0632,-0.2721)
8389 --cycle
8390 ;
8391 \path[hex/terrain/town/house,pic actions]
8392 (-0.1989, 0.1654)
8393 -- (-0.1544, 0.1540)
8394 -- (-0.1696, 0.0948)
8395 -- (-0.2141, 0.1063)
8396 --cycle
8397 ;
8398 \path[hex/terrain/town/house,pic actions]
8399 (-0.1989, 0.1654)
8400 -- (-0.1544, 0.1540)
8401 -- (-0.1696, 0.0948)
8402 -- (-0.2141, 0.1063)
8403 --cycle
8404 ;
8405 \path[hex/terrain/town/house,pic actions]
8406 (-0.0216,-0.0407)
8407 -- ( 0.0230,-0.0521)
8408 -- ( 0.0078,-0.1112)
8409 -- (-0.0368,-0.0997)
8410 --cycle
8411 ;
8412 \path[hex/terrain/town/house,pic actions]
8413 (-0.0216,-0.0407)
8414 -- ( 0.0230,-0.0521)
8415 -- ( 0.0078,-0.1112)
8416 -- (-0.0368,-0.0997)
8417 --cycle
8418 ;
8419 \path[hex/terrain/town/house,pic actions]
8420 ( 0.1936, 0.5180)
8421 -- ( 0.2045, 0.4909)
8422 -- ( 0.1547, 0.4709)
8423 -- ( 0.1437, 0.4981)
8424 --cycle
8425 ;
8426 \path[hex/terrain/town/house,pic actions]
8427 ( 0.1936, 0.5180)
8428 -- ( 0.2045, 0.4909)

```

```

8429 -- ( 0.1547, 0.4709)
8430 -- ( 0.1437, 0.4981)
8431 --cycle
8432 ;
8433 \path[hex/terrain/town/house,pic actions]
8434 (-0.1903, 0.4858)
8435 -- (-0.1678, 0.5258)
8436 -- (-0.1146, 0.4960)
8437 -- (-0.1371, 0.4559)
8438 --cycle
8439 ;
8440 \path[hex/terrain/town/house,pic actions]
8441 (-0.1903, 0.4858)
8442 -- (-0.1678, 0.5258)
8443 -- (-0.1146, 0.4960)
8444 -- (-0.1371, 0.4559)
8445 --cycle
8446 ;
8447 \path[hex/terrain/town/house,pic actions]
8448 ( 0.1470, 0.3493)
8449 -- ( 0.1689, 0.3567)
8450 -- ( 0.1775, 0.3315)
8451 -- ( 0.1555, 0.3241)
8452 --cycle
8453 ;
8454 \path[hex/terrain/town/house,pic actions]
8455 ( 0.1470, 0.3493)
8456 -- ( 0.1689, 0.3567)
8457 -- ( 0.1775, 0.3315)
8458 -- ( 0.1555, 0.3241)
8459 --cycle
8460 ;
8461 \path[hex/terrain/town/house,pic actions]
8462 ( 0.1892, 0.2562)
8463 -- ( 0.2118, 0.2510)
8464 -- ( 0.2058, 0.2251)
8465 -- ( 0.1833, 0.2303)
8466 --cycle
8467 ;
8468 \path[hex/terrain/town/house,pic actions]
8469 ( 0.1892, 0.2562)
8470 -- ( 0.2118, 0.2510)
8471 -- ( 0.2058, 0.2251)
8472 -- ( 0.1833, 0.2303)
8473 --cycle
8474 ;
8475 \path[hex/terrain/town/house,pic actions]
8476 ( 0.8016, 0.0292)
8477 -- ( 0.8235, 0.0367)
8478 -- ( 0.8321, 0.0116)
8479 -- ( 0.8103, 0.0040)
8480 --cycle
8481 ;

```



```

8482 \path[hex/terrain/town/house,pic actions]
8483 ( 0.8016, 0.0292)
8484 -- ( 0.8235, 0.0367)
8485 -- ( 0.8321, 0.0116)
8486 -- ( 0.8103, 0.0040)
8487 --cycle
8488 ;
8489 \path[hex/terrain/town/house,pic actions]
8490 ( 0.7392, 0.1737)
8491 -- ( 0.7609, 0.1816)
8492 -- ( 0.7702, 0.1568)
8493 -- ( 0.7485, 0.1487)
8494 --cycle
8495 ;
8496 \path[hex/terrain/town/house,pic actions]
8497 ( 0.7392, 0.1737)
8498 -- ( 0.7609, 0.1816)
8499 -- ( 0.7702, 0.1568)
8500 -- ( 0.7485, 0.1487)
8501 --cycle
8502 ;
8503 \path[hex/terrain/town/house,pic actions]
8504 ( 0.3736, 0.7805)
8505 -- ( 0.3937, 0.7921)
8506 -- ( 0.4071, 0.7691)
8507 -- ( 0.3870, 0.7575)
8508 --cycle
8509 ;
8510 \path[hex/terrain/town/house,pic actions]
8511 ( 0.3736, 0.7805)
8512 -- ( 0.3937, 0.7921)
8513 -- ( 0.4071, 0.7691)
8514 -- ( 0.3870, 0.7575)
8515 --cycle
8516 ;
8517 \path[hex/terrain/town/house,pic actions]
8518 (-0.4808,-0.6251)
8519 -- (-0.4706,-0.6459)
8520 -- (-0.4946,-0.6576)
8521 -- (-0.5047,-0.6368)
8522 --cycle
8523 ;
8524 \path[hex/terrain/town/house,pic actions]
8525 (-0.4808,-0.6251)
8526 -- (-0.4706,-0.6459)
8527 -- (-0.4946,-0.6576)
8528 -- (-0.5047,-0.6368)
8529 --cycle
8530 ;
8531 \path[hex/terrain/town/house,pic actions]
8532 (-0.4514,-0.6075)
8533 -- (-0.4393,-0.6272)
8534 -- (-0.4620,-0.6412)

```

```

8535 -- (-0.4740,-0.6215)
8536 --cycle
8537 ;
8538 \path[hex/terrain/town/house,pic actions]
8539 (-0.4514,-0.6075)
8540 -- (-0.4393,-0.6272)
8541 -- (-0.4620,-0.6412)
8542 -- (-0.4740,-0.6215)
8543 --cycle
8544 ;
8545 \path[hex/terrain/town/house,pic actions]
8546 (-0.2390,-0.7174)
8547 -- (-0.2175,-0.7260)
8548 -- (-0.2273,-0.7508)
8549 -- (-0.2489,-0.7421)
8550 --cycle
8551 ;
8552 \path[hex/terrain/town/house,pic actions]
8553 (-0.2390,-0.7174)
8554 -- (-0.2175,-0.7260)
8555 -- (-0.2273,-0.7508)
8556 -- (-0.2489,-0.7421)
8557 --cycle
8558 ;
8559 \path[hex/terrain/town/house,pic actions]
8560 (-0.2386,-0.5506)
8561 -- (-0.2108,-0.5598)
8562 -- (-0.2277,-0.6108)
8563 -- (-0.2555,-0.6015)
8564 --cycle
8565 ;
8566 \path[hex/terrain/town/house,pic actions]
8567 (-0.2386,-0.5506)
8568 -- (-0.2108,-0.5598)
8569 -- (-0.2277,-0.6108)
8570 -- (-0.2555,-0.6015)
8571 --cycle
8572 ;
8573 \path[hex/terrain/town/house,pic actions]
8574 (-0.3574, 0.2226)
8575 -- (-0.3530, 0.2515)
8576 -- (-0.2999, 0.2435)
8577 -- (-0.3043, 0.2145)
8578 --cycle
8579 ;
8580 \path[hex/terrain/town/house,pic actions]
8581 (-0.3574, 0.2226)
8582 -- (-0.3530, 0.2515)
8583 -- (-0.2999, 0.2435)
8584 -- (-0.3043, 0.2145)
8585 --cycle
8586 ;
8587 \path[hex/terrain/town/house,pic actions]

```

```

8588 (-0.3315, 0.3242)
8589 -- (-0.3271, 0.3532)
8590 -- (-0.2740, 0.3451)
8591 -- (-0.2783, 0.3162)
8592 --cycle
8593 ;
8594 \path[hex/terrain/town/house,pic actions]
8595 (-0.3315, 0.3242)
8596 -- (-0.3271, 0.3532)
8597 -- (-0.2740, 0.3451)
8598 -- (-0.2783, 0.3162)
8599 --cycle
8600 ;
8601 \path[hex/terrain/town/house,pic actions]
8602 ( 0.2256, 0.4895)
8603 -- ( 0.2451, 0.4676)
8604 -- ( 0.2049, 0.4320)
8605 -- ( 0.1854, 0.4539)
8606 --cycle
8607 ;
8608 \path[hex/terrain/town/house,pic actions]
8609 ( 0.2256, 0.4895)
8610 -- ( 0.2451, 0.4676)
8611 -- ( 0.2049, 0.4320)
8612 -- ( 0.1854, 0.4539)
8613 --cycle
8614 ;
8615 \path[hex/terrain/town/house,pic actions]
8616 ( 0.1717, 0.5777)
8617 -- ( 0.1903, 0.5551)
8618 -- ( 0.1488, 0.5210)
8619 -- ( 0.1302, 0.5436)
8620 --cycle
8621 ;
8622 \path[hex/terrain/town/house,pic actions]
8623 ( 0.1717, 0.5777)
8624 -- ( 0.1903, 0.5551)
8625 -- ( 0.1488, 0.5210)
8626 -- ( 0.1302, 0.5436)
8627 --cycle
8628 ;
8629 \path[hex/terrain/town/house,pic actions]
8630 (-0.0995, 0.2545)
8631 -- (-0.0891, 0.2819)
8632 -- (-0.0389, 0.2629)
8633 -- (-0.0492, 0.2355)
8634 --cycle
8635 ;
8636 \path[hex/terrain/town/house,pic actions]
8637 (-0.0995, 0.2545)
8638 -- (-0.0891, 0.2819)
8639 -- (-0.0389, 0.2629)
8640 -- (-0.0492, 0.2355)

```

```

8641  --cycle
8642  ;
8643  \path[hex/terrain/town/house,pic actions]
8644  ( 0.0828, 0.2371)
8645  -- ( 0.0883, 0.2659)
8646  -- ( 0.1411, 0.2559)
8647  -- ( 0.1357, 0.2271)
8648  --cycle
8649  ;
8650  \path[hex/terrain/town/house,pic actions]
8651  ( 0.0828, 0.2371)
8652  -- ( 0.0883, 0.2659)
8653  -- ( 0.1411, 0.2559)
8654  -- ( 0.1357, 0.2271)
8655  --cycle
8656  ;
8657  \path[hex/terrain/town/house,pic actions]
8658  (-0.1049, 0.1819)
8659  -- (-0.0945, 0.2094)
8660  -- (-0.0443, 0.1904)
8661  -- (-0.0546, 0.1629)
8662  --cycle
8663  ;
8664  \path[hex/terrain/town/house,pic actions]
8665  (-0.1049, 0.1819)
8666  -- (-0.0945, 0.2094)
8667  -- (-0.0443, 0.1904)
8668  -- (-0.0546, 0.1629)
8669  --cycle
8670  ;
8671  \path[hex/terrain/town/house,pic actions]
8672  (-0.0889,-0.0631)
8673  -- (-0.0785,-0.0357)
8674  -- (-0.0283,-0.0549)
8675  -- (-0.0388,-0.0823)
8676  --cycle
8677  ;
8678  \path[hex/terrain/town/house,pic actions]
8679  (-0.0889,-0.0631)
8680  -- (-0.0785,-0.0357)
8681  -- (-0.0283,-0.0549)
8682  -- (-0.0388,-0.0823)
8683  --cycle
8684  ;
8685  \path[hex/terrain/town/house,pic actions]
8686  (-0.2282,-0.7907)
8687  -- (-0.1823,-0.7907)
8688  -- (-0.1823,-0.8518)
8689  -- (-0.2282,-0.8518)
8690  --cycle
8691  ;
8692  \path[hex/terrain/town/house,pic actions]
8693  (-0.2282,-0.7907)

```

```

8694 -- (-0.1823,-0.7907)
8695 -- (-0.1823,-0.8518)
8696 -- (-0.2282,-0.8518)
8697 --cycle
8698 ;
8699 \path[hex/terrain/town/house,pic actions]
8700 ( 0.2275,-0.7989)
8701 -- ( 0.2734,-0.7989)
8702 -- ( 0.2734,-0.8599)
8703 -- ( 0.2275,-0.8599)
8704 --cycle
8705 ;
8706 \path[hex/terrain/town/house,pic actions]
8707 ( 0.2275,-0.7989)
8708 -- ( 0.2734,-0.7989)
8709 -- ( 0.2734,-0.8599)
8710 -- ( 0.2275,-0.8599)
8711 --cycle
8712 ;
8713 \path[hex/terrain/town/house,pic actions]
8714 ( 0.2516,-0.7126)
8715 -- ( 0.2808,-0.7126)
8716 -- ( 0.2808,-0.7663)
8717 -- ( 0.2516,-0.7663)
8718 --cycle
8719 ;
8720 \path[hex/terrain/town/house,pic actions]
8721 ( 0.2516,-0.7126)
8722 -- ( 0.2808,-0.7126)
8723 -- ( 0.2808,-0.7663)
8724 -- ( 0.2516,-0.7663)
8725 --cycle
8726 ;
8727 \path[hex/terrain/town/house,pic actions]
8728 ( 0.1669,-0.7129)
8729 -- ( 0.1954,-0.7199)
8730 -- ( 0.1826,-0.7721)
8731 -- ( 0.1542,-0.7650)
8732 --cycle
8733 ;
8734 \path[hex/terrain/town/house,pic actions]
8735 ( 0.1669,-0.7129)
8736 -- ( 0.1954,-0.7199)
8737 -- ( 0.1826,-0.7721)
8738 -- ( 0.1542,-0.7650)
8739 --cycle
8740 ;
8741 \path[hex/terrain/town/house,pic actions]
8742 ( 0.1222,-0.7854)
8743 -- ( 0.1514,-0.7854)
8744 -- ( 0.1514,-0.8390)
8745 -- ( 0.1222,-0.8390)
8746 --cycle

```

```

8747 ;
8748 \path[hex/terrain/town/house,pic actions]
8749 ( 0.1222,-0.7854)
8750 -- ( 0.1514,-0.7854)
8751 -- ( 0.1514,-0.8390)
8752 -- ( 0.1222,-0.8390)
8753 --cycle
8754 ;
8755 \path[hex/terrain/town/house,pic actions]
8756 ( 0.3031,-0.7156)
8757 -- ( 0.3325,-0.7156)
8758 -- ( 0.3325,-0.7693)
8759 -- ( 0.3031,-0.7693)
8760 --cycle
8761 ;
8762 \path[hex/terrain/town/house,pic actions]
8763 ( 0.3031,-0.7156)
8764 -- ( 0.3325,-0.7156)
8765 -- ( 0.3325,-0.7693)
8766 -- ( 0.3031,-0.7693)
8767 --cycle
8768 ;
8769 \path[hex/terrain/town/house,pic actions]
8770 ( 0.3574,-0.7174)
8771 -- ( 0.3867,-0.7174)
8772 -- ( 0.3867,-0.7712)
8773 -- ( 0.3574,-0.7712)
8774 --cycle
8775 ;
8776 \path[hex/terrain/town/house,pic actions]
8777 ( 0.3574,-0.7174)
8778 -- ( 0.3867,-0.7174)
8779 -- ( 0.3867,-0.7712)
8780 -- ( 0.3574,-0.7712)
8781 --cycle
8782 ;
8783 \path[hex/terrain/town/house,pic actions]
8784 ( 0.3742,-0.8016)
8785 -- ( 0.4036,-0.8016)
8786 -- ( 0.4036,-0.8554)
8787 -- ( 0.3742,-0.8554)
8788 --cycle
8789 ;
8790 \path[hex/terrain/town/house,pic actions]
8791 ( 0.3742,-0.8016)
8792 -- ( 0.4036,-0.8016)
8793 -- ( 0.4036,-0.8554)
8794 -- ( 0.3742,-0.8554)
8795 --cycle
8796 ;
8797 \path[hex/terrain/town/house,pic actions]
8798 ( 0.4107,-0.8072)
8799 -- ( 0.4400,-0.8072)

```

```

8800 -- ( 0.4400,-0.8610)
8801 -- ( 0.4107,-0.8610)
8802 --cycle
8803 ;
8804 \path[hex/terrain/town/house,pic actions]
8805 ( 0.4107,-0.8072)
8806 -- ( 0.4400,-0.8072)
8807 -- ( 0.4400,-0.8610)
8808 -- ( 0.4107,-0.8610)
8809 --cycle
8810 ;
8811 \path[hex/terrain/town/house,pic actions]
8812 ( 0.4612,-0.7886)
8813 -- ( 0.4905,-0.7886)
8814 -- ( 0.4905,-0.8423)
8815 -- ( 0.4612,-0.8423)
8816 --cycle
8817 ;
8818 \path[hex/terrain/town/house,pic actions]
8819 ( 0.4612,-0.7886)
8820 -- ( 0.4905,-0.7886)
8821 -- ( 0.4905,-0.8423)
8822 -- ( 0.4612,-0.8423)
8823 --cycle
8824 ;
8825 \path[hex/terrain/town/house,pic actions]
8826 ( 0.5733,-0.6570)
8827 -- ( 0.6007,-0.6675)
8828 -- ( 0.5814,-0.7176)
8829 -- ( 0.5540,-0.7071)
8830 --cycle
8831 ;
8832 \path[hex/terrain/town/house,pic actions]
8833 ( 0.5733,-0.6570)
8834 -- ( 0.6007,-0.6675)
8835 -- ( 0.5814,-0.7176)
8836 -- ( 0.5540,-0.7071)
8837 --cycle
8838 ;
8839 \path[hex/terrain/town/house,pic actions]
8840 ( 0.6698,-0.4454)
8841 -- ( 0.6958,-0.4589)
8842 -- ( 0.6710,-0.5065)
8843 -- ( 0.6450,-0.4930)
8844 --cycle
8845 ;
8846 \path[hex/terrain/town/house,pic actions]
8847 ( 0.6698,-0.4454)
8848 -- ( 0.6958,-0.4589)
8849 -- ( 0.6710,-0.5065)
8850 -- ( 0.6450,-0.4930)
8851 --cycle
8852 ;

```

```

8853 \path[hex/terrain/town/house,pic actions]
8854 ( 0.5789,-0.4658)
8855 -- ( 0.6009,-0.4851)
8856 -- ( 0.5654,-0.5254)
8857 -- ( 0.5434,-0.5061)
8858 --cycle
8859 ;
8860 \path[hex/terrain/town/house,pic actions]
8861 ( 0.5789,-0.4658)
8862 -- ( 0.6009,-0.4851)
8863 -- ( 0.5654,-0.5254)
8864 -- ( 0.5434,-0.5061)
8865 --cycle
8866 ;
8867 \path[hex/terrain/town/house,pic actions]
8868 ( 0.6025,-0.4876)
8869 -- ( 0.6259,-0.5054)
8870 -- ( 0.5934,-0.5481)
8871 -- ( 0.5701,-0.5304)
8872 --cycle
8873 ;
8874 \path[hex/terrain/town/house,pic actions]
8875 ( 0.6025,-0.4876)
8876 -- ( 0.6259,-0.5054)
8877 -- ( 0.5934,-0.5481)
8878 -- ( 0.5701,-0.5304)
8879 --cycle
8880 ;
8881 \path[hex/terrain/town/house,pic actions]
8882 ( 0.6466,-0.5044)
8883 -- ( 0.6729,-0.5172)
8884 -- ( 0.6493,-0.5654)
8885 -- ( 0.6230,-0.5526)
8886 --cycle
8887 ;
8888 \path[hex/terrain/town/house,pic actions]
8889 ( 0.6466,-0.5044)
8890 -- ( 0.6729,-0.5172)
8891 -- ( 0.6493,-0.5654)
8892 -- ( 0.6230,-0.5526)
8893 --cycle
8894 ;
8895 \path[hex/terrain/town/house,pic actions]
8896 ( 0.4854,-0.5939)
8897 -- ( 0.5002,-0.5686)
8898 -- ( 0.5466,-0.5955)
8899 -- ( 0.5320,-0.6208)
8900 --cycle
8901 ;
8902 \path[hex/terrain/town/house,pic actions]
8903 ( 0.4854,-0.5939)
8904 -- ( 0.5002,-0.5686)
8905 -- ( 0.5466,-0.5955)

```



```

8906 -- ( 0.5320,-0.6208)
8907 --cycle
8908 ;
8909 \path[hex/terrain/town/house,pic actions]
8910 ( 0.4577,-0.6299)
8911 -- ( 0.4750,-0.6063)
8912 -- ( 0.5183,-0.6380)
8913 -- ( 0.5010,-0.6617)
8914 --cycle
8915 ;
8916 \path[hex/terrain/town/house,pic actions]
8917 ( 0.4577,-0.6299)
8918 -- ( 0.4750,-0.6063)
8919 -- ( 0.5183,-0.6380)
8920 -- ( 0.5010,-0.6617)
8921 --cycle
8922 ;
8923 \path[hex/terrain/town/house,pic actions]
8924 ( 0.4354,-0.6506)
8925 -- ( 0.4568,-0.6305)
8926 -- ( 0.4935,-0.6697)
8927 -- ( 0.4721,-0.6898)
8928 --cycle
8929 ;
8930 \path[hex/terrain/town/house,pic actions]
8931 ( 0.4354,-0.6506)
8932 -- ( 0.4568,-0.6305)
8933 -- ( 0.4935,-0.6697)
8934 -- ( 0.4721,-0.6898)
8935 --cycle
8936 ;
8937 \path[hex/terrain/town/house,pic actions]
8938 ( 0.3580,-0.4631)
8939 -- ( 0.3837,-0.4771)
8940 -- ( 0.3581,-0.5243)
8941 -- ( 0.3323,-0.5103)
8942 --cycle
8943 ;
8944 \path[hex/terrain/town/house,pic actions]
8945 ( 0.3580,-0.4631)
8946 -- ( 0.3837,-0.4771)
8947 -- ( 0.3581,-0.5243)
8948 -- ( 0.3323,-0.5103)
8949 --cycle
8950 ;
8951 \path[hex/terrain/town/house,pic actions]
8952 ( 0.5131,-0.3580)
8953 -- ( 0.5345,-0.3780)
8954 -- ( 0.4978,-0.4172)
8955 -- ( 0.4763,-0.3972)
8956 --cycle
8957 ;
8958 \path[hex/terrain/town/house,pic actions]

```

```

8959 ( 0.5131,-0.3580)
8960 -- ( 0.5345,-0.3780)
8961 -- ( 0.4978,-0.4172)
8962 -- ( 0.4763,-0.3972)
8963 --cycle
8964 ;
8965 \path[hex/terrain/town/house,pic actions]
8966 ( 0.2116,-0.3904)
8967 -- ( 0.2243,-0.3641)
8968 -- ( 0.2726,-0.3875)
8969 -- ( 0.2598,-0.4139)
8970 --cycle
8971 ;
8972 \path[hex/terrain/town/house,pic actions]
8973 ( 0.2116,-0.3904)
8974 -- ( 0.2243,-0.3641)
8975 -- ( 0.2726,-0.3875)
8976 -- ( 0.2598,-0.4139)
8977 --cycle
8978 ;
8979 \path[hex/terrain/town/house,pic actions]
8980 ( 0.1786,-0.4343)
8981 -- ( 0.1889,-0.4069)
8982 -- ( 0.2391,-0.4259)
8983 -- ( 0.2289,-0.4532)
8984 --cycle
8985 ;
8986 \path[hex/terrain/town/house,pic actions]
8987 ( 0.1786,-0.4343)
8988 -- ( 0.1889,-0.4069)
8989 -- ( 0.2391,-0.4259)
8990 -- ( 0.2289,-0.4532)
8991 --cycle
8992 ;
8993 \path[hex/terrain/town/house,pic actions]
8994 ( 0.1647,-0.4763)
8995 -- ( 0.1772,-0.4497)
8996 -- ( 0.2258,-0.4725)
8997 -- ( 0.2134,-0.4990)
8998 --cycle
8999 ;
9000 \path[hex/terrain/town/house,pic actions]
9001 ( 0.1647,-0.4763)
9002 -- ( 0.1772,-0.4497)
9003 -- ( 0.2258,-0.4725)
9004 -- ( 0.2134,-0.4990)
9005 --cycle
9006 ;
9007 \path[hex/terrain/town/house,pic actions]
9008 ( 0.2335,-0.5197)
9009 -- ( 0.2460,-0.4932)
9010 -- ( 0.2946,-0.5160)
9011 -- ( 0.2821,-0.5425)

```

```

9012  --cycle
9013  ;
9014  \path[hex/terrain/town/house,pic actions]
9015  ( 0.2335,-0.5197)
9016  -- ( 0.2460,-0.4932)
9017  -- ( 0.2946,-0.5160)
9018  -- ( 0.2821,-0.5425)
9019  --cycle
9020  ;
9021  \path[hex/terrain/town/house,pic actions]
9022  ( 0.2832,-0.4218)
9023  -- ( 0.2956,-0.3952)
9024  -- ( 0.3443,-0.4180)
9025  -- ( 0.3318,-0.4445)
9026  --cycle
9027  ;
9028  \path[hex/terrain/town/house,pic actions]
9029  ( 0.2832,-0.4218)
9030  -- ( 0.2956,-0.3952)
9031  -- ( 0.3443,-0.4180)
9032  -- ( 0.3318,-0.4445)
9033  --cycle
9034  ;
9035  \path[hex/terrain/town/house,pic actions]
9036  ( 0.2064,-0.6136)
9037  -- ( 0.2189,-0.5871)
9038  -- ( 0.2675,-0.6099)
9039  -- ( 0.2551,-0.6364)
9040  --cycle
9041  ;
9042  \path[hex/terrain/town/house,pic actions]
9043  ( 0.2064,-0.6136)
9044  -- ( 0.2189,-0.5871)
9045  -- ( 0.2675,-0.6099)
9046  -- ( 0.2551,-0.6364)
9047  --cycle
9048  ;
9049  \path[hex/terrain/town/house,pic actions]
9050  ( 0.1443,-0.5195)
9051  -- ( 0.1550,-0.4922)
9052  -- ( 0.2050,-0.5120)
9053  -- ( 0.1942,-0.5392)
9054  --cycle
9055  ;
9056  \path[hex/terrain/town/house,pic actions]
9057  ( 0.1443,-0.5195)
9058  -- ( 0.1550,-0.4922)
9059  -- ( 0.2050,-0.5120)
9060  -- ( 0.1942,-0.5392)
9061  --cycle
9062  ;
9063  \path[hex/terrain/town/house,pic actions]
9064  ( 0.3128,-0.5333)

```

```

9065 -- ( 0.3394,-0.5455)
9066 -- ( 0.3173,-0.5943)
9067 -- ( 0.2906,-0.5823)
9068 --cycle
9069 ;
9070 \path[hex/terrain/town/house,pic actions]
9071 ( 0.3128,-0.5333)
9072 -- ( 0.3394,-0.5455)
9073 -- ( 0.3173,-0.5943)
9074 -- ( 0.2906,-0.5823)
9075 --cycle
9076 ;
9077 \path[hex/terrain/town/house,pic actions]
9078 ( 0.1781,-0.6526)
9079 -- ( 0.1883,-0.6250)
9080 -- ( 0.2386,-0.6435)
9081 -- ( 0.2286,-0.6710)
9082 --cycle
9083 ;
9084 \path[hex/terrain/town/house,pic actions]
9085 ( 0.1781,-0.6526)
9086 -- ( 0.1883,-0.6250)
9087 -- ( 0.2386,-0.6435)
9088 -- ( 0.2286,-0.6710)
9089 --cycle
9090 ;
9091 \path[hex/terrain/town/house,pic actions]
9092 ( 0.0147,-0.5695)
9093 -- ( 0.0238,-0.5417)
9094 -- ( 0.0749,-0.5582)
9095 -- ( 0.0658,-0.5861)
9096 --cycle
9097 ;
9098 \path[hex/terrain/town/house,pic actions]
9099 ( 0.0147,-0.5695)
9100 -- ( 0.0238,-0.5417)
9101 -- ( 0.0749,-0.5582)
9102 -- ( 0.0658,-0.5861)
9103 --cycle
9104 ;
9105 \path[hex/terrain/town/house,pic actions]
9106 ( 0.0205,-0.5124)
9107 -- ( 0.0287,-0.4843)
9108 -- ( 0.0803,-0.4994)
9109 -- ( 0.0720,-0.5275)
9110 --cycle
9111 ;
9112 \path[hex/terrain/town/house,pic actions]
9113 ( 0.0205,-0.5124)
9114 -- ( 0.0287,-0.4843)
9115 -- ( 0.0803,-0.4994)
9116 -- ( 0.0720,-0.5275)
9117 --cycle

```

```

9118 ;
9119 \path[hex/terrain/town/house,pic actions]
9120 (-0.0719,-0.6560)
9121 -- (-0.0678,-0.6849)
9122 -- (-0.1209,-0.6925)
9123 -- (-0.1250,-0.6635)
9124 --cycle
9125 ;
9126 \path[hex/terrain/town/house,pic actions]
9127 (-0.0719,-0.6560)
9128 -- (-0.0678,-0.6849)
9129 -- (-0.1209,-0.6925)
9130 -- (-0.1250,-0.6635)
9131 --cycle
9132 ;
9133 \path[hex/terrain/town/house,pic actions]
9134 (-0.1330,-0.6411)
9135 -- (-0.1375,-0.6700)
9136 -- (-0.1906,-0.6618)
9137 -- (-0.1861,-0.6329)
9138 --cycle
9139 ;
9140 \path[hex/terrain/town/house,pic actions]
9141 (-0.1330,-0.6411)
9142 -- (-0.1375,-0.6700)
9143 -- (-0.1906,-0.6618)
9144 -- (-0.1861,-0.6329)
9145 --cycle
9146 ;
9147 \path[hex/terrain/town/house,pic actions]
9148 (-0.0334,-0.7381)
9149 -- (-0.0042,-0.7381)
9150 -- (-0.0042,-0.7917)
9151 -- (-0.0334,-0.7917)
9152 --cycle
9153 ;
9154 \path[hex/terrain/town/house,pic actions]
9155 (-0.0334,-0.7381)
9156 -- (-0.0042,-0.7381)
9157 -- (-0.0042,-0.7917)
9158 -- (-0.0334,-0.7917)
9159 --cycle
9160 ;
9161 \path[hex/terrain/town/house,pic actions]
9162 (-0.0998,-0.7315)
9163 -- (-0.0706,-0.7315)
9164 -- (-0.0706,-0.7852)
9165 -- (-0.0998,-0.7852)
9166 --cycle
9167 ;
9168 \path[hex/terrain/town/house,pic actions]
9169 (-0.0998,-0.7315)
9170 -- (-0.0706,-0.7315)

```

```

9171 -- (-0.0706,-0.7852)
9172 -- (-0.0998,-0.7852)
9173 --cycle
9174 ;
9175 \path[hex/terrain/town/house,pic actions]
9176 (-0.2018,-0.7234)
9177 -- (-0.1730,-0.7180)
9178 -- (-0.1631,-0.7708)
9179 -- (-0.1919,-0.7762)
9180 --cycle
9181 ;
9182 \path[hex/terrain/town/house,pic actions]
9183 (-0.2018,-0.7234)
9184 -- (-0.1730,-0.7180)
9185 -- (-0.1631,-0.7708)
9186 -- (-0.1919,-0.7762)
9187 --cycle
9188 ;
9189 \path[hex/terrain/town/house,pic actions]
9190 (-0.2956,-0.7184)
9191 -- (-0.2667,-0.7229)
9192 -- (-0.2750,-0.7760)
9193 -- (-0.3039,-0.7714)
9194 --cycle
9195 ;
9196 \path[hex/terrain/town/house,pic actions]
9197 (-0.2956,-0.7184)
9198 -- (-0.2667,-0.7229)
9199 -- (-0.2750,-0.7760)
9200 -- (-0.3039,-0.7714)
9201 --cycle
9202 ;
9203 \path[hex/terrain/town/house,pic actions]
9204 (-0.1661,-0.8014)
9205 -- (-0.1372,-0.8060)
9206 -- (-0.1454,-0.8590)
9207 -- (-0.1744,-0.8545)
9208 --cycle
9209 ;
9210 \path[hex/terrain/town/house,pic actions]
9211 (-0.1661,-0.8014)
9212 -- (-0.1372,-0.8060)
9213 -- (-0.1454,-0.8590)
9214 -- (-0.1744,-0.8545)
9215 --cycle
9216 ;
9217 \path[hex/terrain/town/house,pic actions]
9218 (-0.1269,-0.8074)
9219 -- (-0.0977,-0.8054)
9220 -- (-0.0940,-0.8590)
9221 -- (-0.1232,-0.8610)
9222 --cycle
9223 ;

```

```

9224 \path[hex/terrain/town/house,pic actions]
9225 (-0.1269,-0.8074)
9226 -- (-0.0977,-0.8054)
9227 -- (-0.0940,-0.8590)
9228 -- (-0.1232,-0.8610)
9229 --cycle
9230 ;
9231 \path[hex/terrain/town/house,pic actions]
9232 (-0.2787,-0.7975)
9233 -- (-0.2495,-0.7956)
9234 -- (-0.2459,-0.8492)
9235 -- (-0.2751,-0.8511)
9236 --cycle
9237 ;
9238 \path[hex/terrain/town/house,pic actions]
9239 (-0.2787,-0.7975)
9240 -- (-0.2495,-0.7956)
9241 -- (-0.2459,-0.8492)
9242 -- (-0.2751,-0.8511)
9243 --cycle
9244 ;
9245 \path[hex/terrain/town/house,pic actions]
9246 (-0.3966,-0.5592)
9247 -- (-0.3802,-0.5834)
9248 -- (-0.4246,-0.6135)
9249 -- (-0.4411,-0.5892)
9250 --cycle
9251 ;
9252 \path[hex/terrain/town/house,pic actions]
9253 (-0.3966,-0.5592)
9254 -- (-0.3802,-0.5834)
9255 -- (-0.4246,-0.6135)
9256 -- (-0.4411,-0.5892)
9257 --cycle
9258 ;
9259 \path[hex/terrain/town/house,pic actions]
9260 (-0.4189,-0.5000)
9261 -- (-0.4033,-0.5248)
9262 -- (-0.4488,-0.5534)
9263 -- (-0.4644,-0.5286)
9264 --cycle
9265 ;
9266 \path[hex/terrain/town/house,pic actions]
9267 (-0.4189,-0.5000)
9268 -- (-0.4033,-0.5248)
9269 -- (-0.4488,-0.5534)
9270 -- (-0.4644,-0.5286)
9271 --cycle
9272 ;
9273 \path[hex/terrain/town/house,pic actions]
9274 (-0.3561,-0.4332)
9275 -- (-0.3310,-0.4483)
9276 -- (-0.3586,-0.4944)

```

```

9277 -- (-0.3837,-0.4793)
9278 --cycle
9279 ;
9280 \path[hex/terrain/town/house,pic actions]
9281 (-0.3561,-0.4332)
9282 -- (-0.3310,-0.4483)
9283 -- (-0.3586,-0.4944)
9284 -- (-0.3837,-0.4793)
9285 --cycle
9286 ;
9287 \path[hex/terrain/town/house,pic actions]
9288 (-0.3120,-0.4787)
9289 -- (-0.2896,-0.4976)
9290 -- (-0.3241,-0.5386)
9291 -- (-0.3466,-0.5198)
9292 --cycle
9293 ;
9294 \path[hex/terrain/town/house,pic actions]
9295 (-0.3120,-0.4787)
9296 -- (-0.2896,-0.4976)
9297 -- (-0.3241,-0.5386)
9298 -- (-0.3466,-0.5198)
9299 --cycle
9300 ;
9301 \path[hex/terrain/town/house,pic actions]
9302 (-0.2660,-0.5113)
9303 -- (-0.2456,-0.5323)
9304 -- (-0.2840,-0.5697)
9305 -- (-0.3045,-0.5487)
9306 --cycle
9307 ;
9308 \path[hex/terrain/town/house,pic actions]
9309 (-0.2660,-0.5113)
9310 -- (-0.2456,-0.5323)
9311 -- (-0.2840,-0.5697)
9312 -- (-0.3045,-0.5487)
9313 --cycle
9314 ;
9315 \path[hex/terrain/town/house,pic actions]
9316 (-0.3939,-0.2212)
9317 -- (-0.3666,-0.2319)
9318 -- (-0.3863,-0.2819)
9319 -- (-0.4135,-0.2712)
9320 --cycle
9321 ;
9322 \path[hex/terrain/town/house,pic actions]
9323 (-0.3939,-0.2212)
9324 -- (-0.3666,-0.2319)
9325 -- (-0.3863,-0.2819)
9326 -- (-0.4135,-0.2712)
9327 --cycle
9328 ;
9329 \path[hex/terrain/town/house,pic actions]

```



```

9330      (-0.3038,-0.2403)
9331      -- (-0.2765,-0.2509)
9332      -- (-0.2961,-0.3010)
9333      -- (-0.3234,-0.2902)
9334      --cycle
9335      ;
9336      \path[hex/terrain/town/house,pic actions]
9337      (-0.3038,-0.2403)
9338      -- (-0.2765,-0.2509)
9339      -- (-0.2961,-0.3010)
9340      -- (-0.3234,-0.2902)
9341      --cycle
9342      ;
9343      \path[hex/terrain/town/house,pic actions]
9344      (-0.3532,-0.2251)
9345      -- (-0.3255,-0.2346)
9346      -- (-0.3428,-0.2854)
9347      -- (-0.3705,-0.2760)
9348      --cycle
9349      ;
9350      \path[hex/terrain/town/house,pic actions]
9351      (-0.3532,-0.2251)
9352      -- (-0.3255,-0.2346)
9353      -- (-0.3428,-0.2854)
9354      -- (-0.3705,-0.2760)
9355      --cycle
9356      ;
9357      \path[hex/terrain/town/house,pic actions]
9358      (-0.3482,-0.3198)
9359      -- (-0.3204,-0.3293)
9360      -- (-0.3377,-0.3801)
9361      -- (-0.3655,-0.3706)
9362      --cycle
9363      ;
9364      \path[hex/terrain/town/house,pic actions]
9365      (-0.3482,-0.3198)
9366      -- (-0.3204,-0.3293)
9367      -- (-0.3377,-0.3801)
9368      -- (-0.3655,-0.3706)
9369      --cycle
9370      ;
9371      \path[hex/terrain/town/house,pic actions]
9372      (-0.5006,-0.1767)
9373      -- (-0.4737,-0.1885)
9374      -- (-0.4953,-0.2376)
9375      -- (-0.5221,-0.2258)
9376      --cycle
9377      ;
9378      \path[hex/terrain/town/house,pic actions]
9379      (-0.5006,-0.1767)
9380      -- (-0.4737,-0.1885)
9381      -- (-0.4953,-0.2376)
9382      -- (-0.5221,-0.2258)

```

```

9383 --cycle
9384 ;
9385 \path[hex/terrain/town/house,pic actions]
9386 (-0.5739,-0.2312)
9387 -- (-0.5595,-0.2568)
9388 -- (-0.6065,-0.2830)
9389 -- (-0.6207,-0.2575)
9390 --cycle
9391 ;
9392 \path[hex/terrain/town/house,pic actions]
9393 (-0.5739,-0.2312)
9394 -- (-0.5595,-0.2568)
9395 -- (-0.6065,-0.2830)
9396 -- (-0.6207,-0.2575)
9397 --cycle
9398 ;
9399 \path[hex/terrain/town/house,pic actions]
9400 (-0.5929,-0.3943)
9401 -- (-0.5696,-0.3765)
9402 -- (-0.5369,-0.4192)
9403 -- (-0.5602,-0.4370)
9404 --cycle
9405 ;
9406 \path[hex/terrain/town/house,pic actions]
9407 (-0.5929,-0.3943)
9408 -- (-0.5696,-0.3765)
9409 -- (-0.5369,-0.4192)
9410 -- (-0.5602,-0.4370)
9411 --cycle
9412 ;
9413 \path[hex/terrain/town/house,pic actions]
9414 (-0.5005,-0.3312)
9415 -- (-0.4775,-0.3129)
9416 -- (-0.4441,-0.3550)
9417 -- (-0.4670,-0.3733)
9418 --cycle
9419 ;
9420 \path[hex/terrain/town/house,pic actions]
9421 (-0.5005,-0.3312)
9422 -- (-0.4775,-0.3129)
9423 -- (-0.4441,-0.3550)
9424 -- (-0.4670,-0.3733)
9425 --cycle
9426 ;
9427 \path[hex/terrain/town/house,pic actions]
9428 (-0.5523,-0.3618)
9429 -- (-0.5293,-0.3436)
9430 -- (-0.4960,-0.3857)
9431 -- (-0.5189,-0.4038)
9432 --cycle
9433 ;
9434 \path[hex/terrain/town/house,pic actions]
9435 (-0.5523,-0.3618)

```

```

9436 -- (-0.5293,-0.3436)
9437 -- (-0.4960,-0.3857)
9438 -- (-0.5189,-0.4038)
9439 --cycle
9440 ;
9441 \path[hex/terrain/town/house,pic actions]
9442 (-0.4383,-0.3880)
9443 -- (-0.4249,-0.4140)
9444 -- (-0.4726,-0.4386)
9445 -- (-0.4861,-0.4126)
9446 --cycle
9447 ;
9448 \path[hex/terrain/town/house,pic actions]
9449 (-0.4383,-0.3880)
9450 -- (-0.4249,-0.4140)
9451 -- (-0.4726,-0.4386)
9452 -- (-0.4861,-0.4126)
9453 --cycle
9454 ;
9455 \path[hex/terrain/town/house,pic actions]
9456 (-0.6626,-0.4293)
9457 -- (-0.6510,-0.4562)
9458 -- (-0.7003,-0.4775)
9459 -- (-0.7119,-0.4506)
9460 --cycle
9461 ;
9462 \path[hex/terrain/town/house,pic actions]
9463 (-0.6626,-0.4293)
9464 -- (-0.6510,-0.4562)
9465 -- (-0.7003,-0.4775)
9466 -- (-0.7119,-0.4506)
9467 --cycle
9468 ;
9469 \path[hex/terrain/town/house,pic actions]
9470 (-0.6449,-0.4759)
9471 -- (-0.6280,-0.4998)
9472 -- (-0.6717,-0.5309)
9473 -- (-0.6887,-0.5069)
9474 --cycle
9475 ;
9476 \path[hex/terrain/town/house,pic actions]
9477 (-0.6449,-0.4759)
9478 -- (-0.6280,-0.4998)
9479 -- (-0.6717,-0.5309)
9480 -- (-0.6887,-0.5069)
9481 --cycle
9482 ;
9483 \path[hex/terrain/town/house,pic actions]
9484 (-0.5766,-0.5683)
9485 -- (-0.5643,-0.5948)
9486 -- (-0.6130,-0.6174)
9487 -- (-0.6254,-0.5909)
9488 --cycle

```

```

9489 ;
9490 \path[hex/terrain/town/house,pic actions]
9491 (-0.5766,-0.5683)
9492 -- (-0.5643,-0.5948)
9493 -- (-0.6130,-0.6174)
9494 -- (-0.6254,-0.5909)
9495 --cycle
9496 ;
9497 \path[hex/terrain/town/house,pic actions]
9498 (-0.4733,-0.5728)
9499 -- (-0.4590,-0.5983)
9500 -- (-0.5061,-0.6244)
9501 -- (-0.5202,-0.5988)
9502 --cycle
9503 ;
9504 \path[hex/terrain/town/house,pic actions]
9505 (-0.4733,-0.5728)
9506 -- (-0.4590,-0.5983)
9507 -- (-0.5061,-0.6244)
9508 -- (-0.5202,-0.5988)
9509 --cycle
9510 ;
9511 \path[hex/terrain/town/house,pic actions]
9512 (-0.4272,-0.6520)
9513 -- (-0.4128,-0.6774)
9514 -- (-0.4595,-0.7039)
9515 -- (-0.4740,-0.6785)
9516 --cycle
9517 ;
9518 \path[hex/terrain/town/house,pic actions]
9519 (-0.4272,-0.6520)
9520 -- (-0.4128,-0.6774)
9521 -- (-0.4595,-0.7039)
9522 -- (-0.4740,-0.6785)
9523 --cycle
9524 ;
9525 \path[hex/terrain/town/house,pic actions]
9526 (-0.5374,-0.6782)
9527 -- (-0.5236,-0.7040)
9528 -- (-0.5710,-0.7292)
9529 -- (-0.5848,-0.7034)
9530 --cycle
9531 ;
9532 \path[hex/terrain/town/house,pic actions]
9533 (-0.5374,-0.6782)
9534 -- (-0.5236,-0.7040)
9535 -- (-0.5710,-0.7292)
9536 -- (-0.5848,-0.7034)
9537 --cycle
9538 ;
9539 \path[hex/terrain/town/house,pic actions]
9540 (-0.5214,-0.7131)
9541 -- (-0.5038,-0.7365)

```

```

9542 -- (-0.5468,-0.7687)
9543 -- (-0.5644,-0.7453)
9544 --cycle
9545 ;
9546 \path[hex/terrain/town/house,pic actions]
9547 (-0.5214,-0.7131)
9548 -- (-0.5038,-0.7365)
9549 -- (-0.5468,-0.7687)
9550 -- (-0.5644,-0.7453)
9551 --cycle
9552 ;
9553 \path[hex/terrain/town/house,pic actions]
9554 ( 0.2847,-0.1917)
9555 -- ( 0.2954,-0.1644)
9556 -- ( 0.3454,-0.1841)
9557 -- ( 0.3347,-0.2114)
9558 --cycle
9559 ;
9560 \path[hex/terrain/town/house,pic actions]
9561 ( 0.2847,-0.1917)
9562 -- ( 0.2954,-0.1644)
9563 -- ( 0.3454,-0.1841)
9564 -- ( 0.3347,-0.2114)
9565 --cycle
9566 ;
9567 \path[hex/terrain/town/house,pic actions]
9568 ( 0.2692,-0.2397)
9569 -- ( 0.2775,-0.2116)
9570 -- ( 0.3291,-0.2268)
9571 -- ( 0.3208,-0.2548)
9572 --cycle
9573 ;
9574 \path[hex/terrain/town/house,pic actions]
9575 ( 0.2692,-0.2397)
9576 -- ( 0.2775,-0.2116)
9577 -- ( 0.3291,-0.2268)
9578 -- ( 0.3208,-0.2548)
9579 --cycle
9580 ;
9581 \path[hex/terrain/town/house,pic actions]
9582 ( 0.2587,-0.2944)
9583 -- ( 0.2585,-0.2651)
9584 -- ( 0.3123,-0.2648)
9585 -- ( 0.3125,-0.2941)
9586 --cycle
9587 ;
9588 \path[hex/terrain/town/house,pic actions]
9589 ( 0.2587,-0.2944)
9590 -- ( 0.2585,-0.2651)
9591 -- ( 0.3123,-0.2648)
9592 -- ( 0.3125,-0.2941)
9593 --cycle
9594 ;

```

```

9595 \path[hex/terrain/town/house,pic actions]
9596 ( 0.1269,-0.2581)
9597 -- ( 0.1359,-0.2303)
9598 -- ( 0.1871,-0.2468)
9599 -- ( 0.1780,-0.2746)
9600 --cycle
9601 ;
9602 \path[hex/terrain/town/house,pic actions]
9603 ( 0.1269,-0.2581)
9604 -- ( 0.1359,-0.2303)
9605 -- ( 0.1871,-0.2468)
9606 -- ( 0.1780,-0.2746)
9607 --cycle
9608 ;
9609 \path[hex/terrain/town/house,pic actions]
9610 ( 0.1127,-0.3153)
9611 -- ( 0.1232,-0.2880)
9612 -- ( 0.1733,-0.3074)
9613 -- ( 0.1626,-0.3348)
9614 --cycle
9615 ;
9616 \path[hex/terrain/town/house,pic actions]
9617 ( 0.1127,-0.3153)
9618 -- ( 0.1232,-0.2880)
9619 -- ( 0.1733,-0.3074)
9620 -- ( 0.1626,-0.3348)
9621 --cycle
9622 ;
9623 \path[hex/terrain/town/house,pic actions]
9624 ( 0.1928,-0.0951)
9625 -- ( 0.2055,-0.0687)
9626 -- ( 0.2539,-0.0920)
9627 -- ( 0.2412,-0.1184)
9628 --cycle
9629 ;
9630 \path[hex/terrain/town/house,pic actions]
9631 ( 0.1928,-0.0951)
9632 -- ( 0.2055,-0.0687)
9633 -- ( 0.2539,-0.0920)
9634 -- ( 0.2412,-0.1184)
9635 --cycle
9636 ;
9637 \path[hex/terrain/town/house,pic actions]
9638 ( 0.2202,-0.0375)
9639 -- ( 0.2335,-0.0113)
9640 -- ( 0.2814,-0.0356)
9641 -- ( 0.2682,-0.0617)
9642 --cycle
9643 ;
9644 \path[hex/terrain/town/house,pic actions]
9645 ( 0.2202,-0.0375)
9646 -- ( 0.2335,-0.0113)
9647 -- ( 0.2814,-0.0356)

```

```

9648 -- ( 0.2682,-0.0617)
9649 --cycle
9650 ;
9651 \path[hex/terrain/town/house,pic actions]
9652 ( 0.2582, 0.0509)
9653 -- ( 0.2736, 0.0259)
9654 -- ( 0.2278,-0.0022)
9655 -- ( 0.2125, 0.0227)
9656 --cycle
9657 ;
9658 \path[hex/terrain/town/house,pic actions]
9659 ( 0.2582, 0.0509)
9660 -- ( 0.2736, 0.0259)
9661 -- ( 0.2278,-0.0022)
9662 -- ( 0.2125, 0.0227)
9663 --cycle
9664 ;
9665 \path[hex/terrain/town/house,pic actions]
9666 ( 0.2111, 0.0849)
9667 -- ( 0.2307, 0.0632)
9668 -- ( 0.1908, 0.0273)
9669 -- ( 0.1712, 0.0490)
9670 --cycle
9671 ;
9672 \path[hex/terrain/town/house,pic actions]
9673 ( 0.2111, 0.0849)
9674 -- ( 0.2307, 0.0632)
9675 -- ( 0.1908, 0.0273)
9676 -- ( 0.1712, 0.0490)
9677 --cycle
9678 ;
9679 \path[hex/terrain/town/house,pic actions]
9680 ( 0.1776, 0.1187)
9681 -- ( 0.1982, 0.0978)
9682 -- ( 0.1599, 0.0601)
9683 -- ( 0.1394, 0.0810)
9684 --cycle
9685 ;
9686 \path[hex/terrain/town/house,pic actions]
9687 ( 0.1776, 0.1187)
9688 -- ( 0.1982, 0.0978)
9689 -- ( 0.1599, 0.0601)
9690 -- ( 0.1394, 0.0810)
9691 --cycle
9692 ;
9693 \path[hex/terrain/town/house,pic actions]
9694 ( 0.2760, 0.3987)
9695 -- ( 0.2946, 0.3760)
9696 -- ( 0.2531, 0.3420)
9697 -- ( 0.2345, 0.3646)
9698 --cycle
9699 ;
9700 \path[hex/terrain/town/house,pic actions]

```

```

9701 ( 0.2760, 0.3987)
9702 -- ( 0.2946, 0.3760)
9703 -- ( 0.2531, 0.3420)
9704 -- ( 0.2345, 0.3646)
9705 --cycle
9706 ;
9707 \path[hex/terrain/town/house,pic actions]
9708 ( 0.3226, 0.3543)
9709 -- ( 0.3420, 0.3323)
9710 -- ( 0.3018, 0.2967)
9711 -- ( 0.2824, 0.3185)
9712 --cycle
9713 ;
9714 \path[hex/terrain/town/house,pic actions]
9715 ( 0.3226, 0.3543)
9716 -- ( 0.3420, 0.3323)
9717 -- ( 0.3018, 0.2967)
9718 -- ( 0.2824, 0.3185)
9719 --cycle
9720 ;
9721 \path[hex/terrain/town/house,pic actions]
9722 (-0.2277, 0.3599)
9723 -- (-0.2171, 0.3872)
9724 -- (-0.1671, 0.3676)
9725 -- (-0.1777, 0.3404)
9726 --cycle
9727 ;
9728 \path[hex/terrain/town/house,pic actions]
9729 (-0.2277, 0.3599)
9730 -- (-0.2171, 0.3872)
9731 -- (-0.1671, 0.3676)
9732 -- (-0.1777, 0.3404)
9733 --cycle
9734 ;
9735 \path[hex/terrain/town/house,pic actions]
9736 (-0.1722, 0.5368)
9737 -- (-0.1616, 0.5642)
9738 -- (-0.1116, 0.5446)
9739 -- (-0.1223, 0.5174)
9740 --cycle
9741 ;
9742 \path[hex/terrain/town/house,pic actions]
9743 (-0.1722, 0.5368)
9744 -- (-0.1616, 0.5642)
9745 -- (-0.1116, 0.5446)
9746 -- (-0.1223, 0.5174)
9747 --cycle
9748 ;
9749 \path[hex/terrain/town/house,pic actions]
9750 (-0.2400, 0.3081)
9751 -- (-0.2307, 0.3359)
9752 -- (-0.1797, 0.3189)
9753 -- (-0.1890, 0.2912)

```



```

9754 --cycle
9755 ;
9756 \path[hex/terrain/town/house,pic actions]
9757 (-0.2400, 0.3081)
9758 -- (-0.2307, 0.3359)
9759 -- (-0.1797, 0.3189)
9760 -- (-0.1890, 0.2912)
9761 --cycle
9762 ;
9763 \path[hex/terrain/town/house,pic actions]
9764 (-0.2735, 0.1997)
9765 -- (-0.2631, 0.2270)
9766 -- (-0.2129, 0.2080)
9767 -- (-0.2233, 0.1807)
9768 --cycle
9769 ;
9770 \path[hex/terrain/town/house,pic actions]
9771 (-0.2735, 0.1997)
9772 -- (-0.2631, 0.2270)
9773 -- (-0.2129, 0.2080)
9774 -- (-0.2233, 0.1807)
9775 --cycle
9776 ;
9777 \path[hex/terrain/town/house,pic actions]
9778 (-0.3047, 0.1045)
9779 -- (-0.2975, 0.1329)
9780 -- (-0.2455, 0.1200)
9781 -- (-0.2525, 0.0915)
9782 --cycle
9783 ;
9784 \path[hex/terrain/town/house,pic actions]
9785 (-0.3047, 0.1045)
9786 -- (-0.2975, 0.1329)
9787 -- (-0.2455, 0.1200)
9788 -- (-0.2525, 0.0915)
9789 --cycle
9790 ;
9791 \path[hex/terrain/town/house,pic actions]
9792 (-0.1406, 0.3596)
9793 -- (-0.1136, 0.3482)
9794 -- (-0.1345, 0.2988)
9795 -- (-0.1615, 0.3102)
9796 --cycle
9797 ;
9798 \path[hex/terrain/town/house,pic actions]
9799 (-0.1406, 0.3596)
9800 -- (-0.1136, 0.3482)
9801 -- (-0.1345, 0.2988)
9802 -- (-0.1615, 0.3102)
9803 --cycle
9804 ;
9805 \path[hex/terrain/town/house,pic actions]
9806 (-0.0597, 0.5878)

```

```

9807 -- (-0.0327, 0.5763)
9808 -- (-0.0536, 0.5269)
9809 -- (-0.0806, 0.5383)
9810 --cycle
9811 ;
9812 \path[hex/terrain/town/house,pic actions]
9813 (-0.0597, 0.5878)
9814 -- (-0.0327, 0.5763)
9815 -- (-0.0536, 0.5269)
9816 -- (-0.0806, 0.5383)
9817 --cycle
9818 ;
9819 \path[hex/terrain/town/house,pic actions]
9820 (-0.0206, 0.5864)
9821 -- ( 0.0064, 0.5749)
9822 -- (-0.0146, 0.5255)
9823 -- (-0.0416, 0.5369)
9824 --cycle
9825 ;
9826 \path[hex/terrain/town/house,pic actions]
9827 (-0.0206, 0.5864)
9828 -- ( 0.0064, 0.5749)
9829 -- (-0.0146, 0.5255)
9830 -- (-0.0416, 0.5369)
9831 --cycle
9832 ;
9833 \path[hex/terrain/town/house,pic actions]
9834 (-0.1653, 0.2738)
9835 -- (-0.1360, 0.2738)
9836 -- (-0.1360, 0.2200)
9837 -- (-0.1653, 0.2200)
9838 --cycle
9839 ;
9840 \path[hex/terrain/town/house,pic actions]
9841 (-0.1653, 0.2738)
9842 -- (-0.1360, 0.2738)
9843 -- (-0.1360, 0.2200)
9844 -- (-0.1653, 0.2200)
9845 --cycle
9846 ;
9847 \path[hex/terrain/town/house,pic actions]
9848 (-0.1782, 0.2207)
9849 -- (-0.1501, 0.2122)
9850 -- (-0.1657, 0.1608)
9851 -- (-0.1937, 0.1693)
9852 --cycle
9853 ;
9854 \path[hex/terrain/town/house,pic actions]
9855 (-0.1782, 0.2207)
9856 -- (-0.1501, 0.2122)
9857 -- (-0.1657, 0.1608)
9858 -- (-0.1937, 0.1693)
9859 --cycle

```

```

9860 ;
9861 \path[hex/terrain/town/house,pic actions]
9862 (-0.2343, 0.0622)
9863 -- (-0.2239, 0.0896)
9864 -- (-0.1737, 0.0706)
9865 -- (-0.1840, 0.0432)
9866 --cycle
9867 ;
9868 \path[hex/terrain/town/house,pic actions]
9869 (-0.2343, 0.0622)
9870 -- (-0.2239, 0.0896)
9871 -- (-0.1737, 0.0706)
9872 -- (-0.1840, 0.0432)
9873 --cycle
9874 ;
9875 \path[hex/terrain/town/house,pic actions]
9876 (-0.1289, 0.0933)
9877 -- (-0.1186, 0.1207)
9878 -- (-0.0683, 0.1017)
9879 -- (-0.0787, 0.0743)
9880 --cycle
9881 ;
9882 \path[hex/terrain/town/house,pic actions]
9883 (-0.1289, 0.0933)
9884 -- (-0.1186, 0.1207)
9885 -- (-0.0683, 0.1017)
9886 -- (-0.0787, 0.0743)
9887 --cycle
9888 ;
9889 \path[hex/terrain/town/house,pic actions]
9890 ( 0.2223, 0.7399)
9891 -- ( 0.2483, 0.7532)
9892 -- ( 0.2727, 0.7054)
9893 -- ( 0.2467, 0.6920)
9894 --cycle
9895 ;
9896 \path[hex/terrain/town/house,pic actions]
9897 ( 0.2223, 0.7399)
9898 -- ( 0.2483, 0.7532)
9899 -- ( 0.2727, 0.7054)
9900 -- ( 0.2467, 0.6920)
9901 --cycle
9902 ;
9903 \path[hex/terrain/town/house,pic actions]
9904 ( 0.5440, 0.7476)
9905 -- ( 0.5576, 0.7217)
9906 -- ( 0.5102, 0.6965)
9907 -- ( 0.4965, 0.7224)
9908 --cycle
9909 ;
9910 \path[hex/terrain/town/house,pic actions]
9911 ( 0.5440, 0.7476)
9912 -- ( 0.5576, 0.7217)

```

```

9913 -- ( 0.5102, 0.6965)
9914 -- ( 0.4965, 0.7224)
9915 --cycle
9916 ;
9917 \path[hex/terrain/town/house,pic actions]
9918 ( 0.5919, 0.6377)
9919 -- ( 0.6068, 0.6125)
9920 -- ( 0.5604, 0.5853)
9921 -- ( 0.5456, 0.6106)
9922 --cycle
9923 ;
9924 \path[hex/terrain/town/house,pic actions]
9925 ( 0.5919, 0.6377)
9926 -- ( 0.6068, 0.6125)
9927 -- ( 0.5604, 0.5853)
9928 -- ( 0.5456, 0.6106)
9929 --cycle
9930 ;
9931 \path[hex/terrain/town/house,pic actions]
9932 ( 0.6224, 0.5979)
9933 -- ( 0.6382, 0.5732)
9934 -- ( 0.5930, 0.5443)
9935 -- ( 0.5772, 0.5690)
9936 --cycle
9937 ;
9938 \path[hex/terrain/town/house,pic actions]
9939 ( 0.6224, 0.5979)
9940 -- ( 0.6382, 0.5732)
9941 -- ( 0.5930, 0.5443)
9942 -- ( 0.5772, 0.5690)
9943 --cycle
9944 ;
9945 \path[hex/terrain/town/house,pic actions]
9946 ( 0.4104, 0.6743)
9947 -- ( 0.4255, 0.6491)
9948 -- ( 0.3795, 0.6215)
9949 -- ( 0.3644, 0.6466)
9950 --cycle
9951 ;
9952 \path[hex/terrain/town/house,pic actions]
9953 ( 0.4104, 0.6743)
9954 -- ( 0.4255, 0.6491)
9955 -- ( 0.3795, 0.6215)
9956 -- ( 0.3644, 0.6466)
9957 --cycle
9958 ;
9959 \path[hex/terrain/town/house,pic actions]
9960 ( 0.4437, 0.6203)
9961 -- ( 0.4592, 0.5954)
9962 -- ( 0.4136, 0.5671)
9963 -- ( 0.3981, 0.5918)
9964 --cycle
9965 ;

```

```

9966 \path[hex/terrain/town/house,pic actions]
9967 ( 0.4437, 0.6203)
9968 -- ( 0.4592, 0.5954)
9969 -- ( 0.4136, 0.5671)
9970 -- ( 0.3981, 0.5918)
9971 --cycle
9972 ;
9973 \path[hex/terrain/town/house,pic actions]
9974 ( 0.5275, 0.4892)
9975 -- ( 0.5449, 0.4656)
9976 -- ( 0.5018, 0.4337)
9977 -- ( 0.4844, 0.4571)
9978 --cycle
9979 ;
9980 \path[hex/terrain/town/house,pic actions]
9981 ( 0.5275, 0.4892)
9982 -- ( 0.5449, 0.4656)
9983 -- ( 0.5018, 0.4337)
9984 -- ( 0.4844, 0.4571)
9985 --cycle
9986 ;
9987 \path[hex/terrain/town/house,pic actions]
9988 ( 0.2900, 0.6234)
9989 -- ( 0.3087, 0.6008)
9990 -- ( 0.2671, 0.5666)
9991 -- ( 0.2485, 0.5892)
9992 --cycle
9993 ;
9994 \path[hex/terrain/town/house,pic actions]
9995 ( 0.2900, 0.6234)
9996 -- ( 0.3087, 0.6008)
9997 -- ( 0.2671, 0.5666)
9998 -- ( 0.2485, 0.5892)
9999 --cycle
10000 ;
10001 \path[hex/terrain/town/house,pic actions]
10002 ( 0.3295, 0.5855)
10003 -- ( 0.3477, 0.5626)
10004 -- ( 0.3058, 0.5291)
10005 -- ( 0.2875, 0.5519)
10006 --cycle
10007 ;
10008 \path[hex/terrain/town/house,pic actions]
10009 ( 0.3295, 0.5855)
10010 -- ( 0.3477, 0.5626)
10011 -- ( 0.3058, 0.5291)
10012 -- ( 0.2875, 0.5519)
10013 --cycle
10014 ;
10015 \path[hex/terrain/town/house,pic actions]
10016 ( 0.3915, 0.5035)
10017 -- ( 0.4098, 0.4807)
10018 -- ( 0.3680, 0.4471)

```

```

10019  -- ( 0.3497, 0.4699)
10020  --cycle
10021  ;
10022  \path[hex/terrain/town/house,pic actions]
10023  ( 0.3915, 0.5035)
10024  -- ( 0.4098, 0.4807)
10025  -- ( 0.3680, 0.4471)
10026  -- ( 0.3497, 0.4699)
10027  --cycle
10028  ;
10029  \path[hex/terrain/town/house,pic actions]
10030  ( 0.4274, 0.4691)
10031  -- ( 0.4472, 0.4474)
10032  -- ( 0.4075, 0.4112)
10033  -- ( 0.3878, 0.4327)
10034  --cycle
10035  ;
10036  \path[hex/terrain/town/house,pic actions]
10037  ( 0.4274, 0.4691)
10038  -- ( 0.4472, 0.4474)
10039  -- ( 0.4075, 0.4112)
10040  -- ( 0.3878, 0.4327)
10041  --cycle
10042  ;
10043  \path[hex/terrain/town/house,pic actions]
10044  ( 0.0465, 0.7243)
10045  -- ( 0.0751, 0.7305)
10046  -- ( 0.0864, 0.6779)
10047  -- ( 0.0578, 0.6717)
10048  --cycle
10049  ;
10050  \path[hex/terrain/town/house,pic actions]
10051  ( 0.0465, 0.7243)
10052  -- ( 0.0751, 0.7305)
10053  -- ( 0.0864, 0.6779)
10054  -- ( 0.0578, 0.6717)
10055  --cycle
10056  ;
10057  \path[hex/terrain/town/house,pic actions]
10058  (-0.0312, 0.7116)
10059  -- (-0.0338, 0.7407)
10060  -- ( 0.0197, 0.7456)
10061  -- ( 0.0223, 0.7164)
10062  --cycle
10063  ;
10064  \path[hex/terrain/town/house,pic actions]
10065  (-0.0312, 0.7116)
10066  -- (-0.0338, 0.7407)
10067  -- ( 0.0197, 0.7456)
10068  -- ( 0.0223, 0.7164)
10069  --cycle
10070  ;
10071  \path[hex/terrain/town/house,pic actions]

```

```

10072      (-0.1044, 0.7143)
10073      -- (-0.1084, 0.7434)
10074      -- (-0.0552, 0.7507)
10075      -- (-0.0512, 0.7216)
10076      --cycle
10077      ;
10078      \path[hex/terrain/town/house,pic actions]
10079      (-0.1044, 0.7143)
10080      -- (-0.1084, 0.7434)
10081      -- (-0.0552, 0.7507)
10082      -- (-0.0512, 0.7216)
10083      --cycle
10084      ;
10085      \path[hex/terrain/town/house,pic actions]
10086      (-0.1250, 0.6753)
10087      -- (-0.1169, 0.7034)
10088      -- (-0.0653, 0.6887)
10089      -- (-0.0733, 0.6605)
10090      --cycle
10091      ;
10092      \path[hex/terrain/town/house,pic actions]
10093      (-0.1250, 0.6753)
10094      -- (-0.1169, 0.7034)
10095      -- (-0.0653, 0.6887)
10096      -- (-0.0733, 0.6605)
10097      --cycle
10098      ;
10099      \path[hex/terrain/town/house,pic actions]
10100      (-0.2293, 0.7263)
10101      -- (-0.2016, 0.7170)
10102      -- (-0.2185, 0.6660)
10103      -- (-0.2463, 0.6753)
10104      --cycle
10105      ;
10106      \path[hex/terrain/town/house,pic actions]
10107      (-0.2293, 0.7263)
10108      -- (-0.2016, 0.7170)
10109      -- (-0.2185, 0.6660)
10110      -- (-0.2463, 0.6753)
10111      --cycle
10112      ;
10113      \path[hex/terrain/town/house,pic actions]
10114      (-0.4164, 0.8019)
10115      -- (-0.3886, 0.7926)
10116      -- (-0.4056, 0.7417)
10117      -- (-0.4335, 0.7510)
10118      --cycle
10119      ;
10120      \path[hex/terrain/town/house,pic actions]
10121      (-0.4164, 0.8019)
10122      -- (-0.3886, 0.7926)
10123      -- (-0.4056, 0.7417)
10124      -- (-0.4335, 0.7510)

```

```

10125  --cycle
10126  ;
10127  \path[hex/terrain/town/house,pic actions]
10128  (-0.3769, 0.7827)
10129  -- (-0.3486, 0.7746)
10130  -- (-0.3636, 0.7230)
10131  -- (-0.3918, 0.7311)
10132  --cycle
10133  ;
10134  \path[hex/terrain/town/house,pic actions]
10135  (-0.3769, 0.7827)
10136  -- (-0.3486, 0.7746)
10137  -- (-0.3636, 0.7230)
10138  -- (-0.3918, 0.7311)
10139  --cycle
10140  ;
10141  \path[hex/terrain/town/house,pic actions]
10142  (-0.2690, 0.8085)
10143  -- (-0.2696, 0.8379)
10144  -- (-0.2159, 0.8389)
10145  -- (-0.2153, 0.8097)
10146  --cycle
10147  ;
10148  \path[hex/terrain/town/house,pic actions]
10149  (-0.2690, 0.8085)
10150  -- (-0.2696, 0.8379)
10151  -- (-0.2159, 0.8389)
10152  -- (-0.2153, 0.8097)
10153  --cycle
10154  ;
10155  \path[hex/terrain/town/house,pic actions]
10156  (-0.0864, 0.8532)
10157  -- (-0.0767, 0.8256)
10158  -- (-0.1273, 0.8076)
10159  -- (-0.1371, 0.8352)
10160  --cycle
10161  ;
10162  \path[hex/terrain/town/house,pic actions]
10163  (-0.0864, 0.8532)
10164  -- (-0.0767, 0.8256)
10165  -- (-0.1273, 0.8076)
10166  -- (-0.1371, 0.8352)
10167  --cycle
10168  ;
10169  \path[hex/terrain/town/house,pic actions]
10170  (-0.3699, 0.6041)
10171  -- (-0.3425, 0.5939)
10172  -- (-0.3609, 0.5436)
10173  -- (-0.3885, 0.5537)
10174  --cycle
10175  ;
10176  \path[hex/terrain/town/house,pic actions]
10177  (-0.3699, 0.6041)

```



```

10178 -- (-0.3425, 0.5939)
10179 -- (-0.3609, 0.5436)
10180 -- (-0.3885, 0.5537)
10181 --cycle
10182 ;
10183 \path[hex/terrain/town/house,pic actions]
10184 (-0.4770, 0.6412)
10185 -- (-0.4500, 0.6299)
10186 -- (-0.4707, 0.5804)
10187 -- (-0.4978, 0.5918)
10188 --cycle
10189 ;
10190 \path[hex/terrain/town/house,pic actions]
10191 (-0.4770, 0.6412)
10192 -- (-0.4500, 0.6299)
10193 -- (-0.4707, 0.5804)
10194 -- (-0.4978, 0.5918)
10195 --cycle
10196 ;
10197 \path[hex/terrain/town/house,pic actions]
10198 (-0.4348, 0.4860)
10199 -- (-0.4060, 0.4806)
10200 -- (-0.4159, 0.4278)
10201 -- (-0.4447, 0.4332)
10202 --cycle
10203 ;
10204 \path[hex/terrain/town/house,pic actions]
10205 (-0.4348, 0.4860)
10206 -- (-0.4060, 0.4806)
10207 -- (-0.4159, 0.4278)
10208 -- (-0.4447, 0.4332)
10209 --cycle
10210 ;
10211 \path[hex/terrain/town/house,pic actions]
10212 (-0.4771, 0.4952)
10213 -- (-0.4520, 0.4800)
10214 -- (-0.4799, 0.4341)
10215 -- (-0.5050, 0.4493)
10216 --cycle
10217 ;
10218 \path[hex/terrain/town/house,pic actions]
10219 (-0.4771, 0.4952)
10220 -- (-0.4520, 0.4800)
10221 -- (-0.4799, 0.4341)
10222 -- (-0.5050, 0.4493)
10223 --cycle
10224 ;
10225 \path[hex/terrain/town/house,pic actions]
10226 (-0.5175, 0.4232)
10227 -- (-0.4917, 0.4092)
10228 -- (-0.5176, 0.3620)
10229 -- (-0.5433, 0.3761)
10230 --cycle

```

```

10231 ;
10232 \path[hex/terrain/town/house,pic actions]
10233 (-0.5175, 0.4232)
10234 -- (-0.4917, 0.4092)
10235 -- (-0.5176, 0.3620)
10236 -- (-0.5433, 0.3761)
10237 --cycle
10238 ;
10239 \path[hex/terrain/town/house,pic actions]
10240 (-0.5739, 0.5614)
10241 -- (-0.5487, 0.5464)
10242 -- (-0.5762, 0.5003)
10243 -- (-0.6013, 0.5152)
10244 --cycle
10245 ;
10246 \path[hex/terrain/town/house,pic actions]
10247 (-0.5739, 0.5614)
10248 -- (-0.5487, 0.5464)
10249 -- (-0.5762, 0.5003)
10250 -- (-0.6013, 0.5152)
10251 --cycle
10252 ;
10253 \path[hex/terrain/town/house,pic actions]
10254 (-0.6244, 0.4780)
10255 -- (-0.5977, 0.4661)
10256 -- (-0.6195, 0.4170)
10257 -- (-0.6463, 0.4289)
10258 --cycle
10259 ;
10260 \path[hex/terrain/town/house,pic actions]
10261 (-0.6244, 0.4780)
10262 -- (-0.5977, 0.4661)
10263 -- (-0.6195, 0.4170)
10264 -- (-0.6463, 0.4289)
10265 --cycle
10266 ;
10267 \path[hex/terrain/town/house,pic actions]
10268 (-0.6236, 0.1401)
10269 -- (-0.6192, 0.1691)
10270 -- (-0.5661, 0.1611)
10271 -- (-0.5705, 0.1321)
10272 --cycle
10273 ;
10274 \path[hex/terrain/town/house,pic actions]
10275 (-0.6236, 0.1401)
10276 -- (-0.6192, 0.1691)
10277 -- (-0.5661, 0.1611)
10278 -- (-0.5705, 0.1321)
10279 --cycle
10280 ;
10281 \path[hex/terrain/town/house,pic actions]
10282 (-0.3872, 0.3590)
10283 -- (-0.3829, 0.3880)

```

```

10284 -- (-0.3297, 0.3800)
10285 -- (-0.3341, 0.3510)
10286 --cycle
10287 ;
10288 \path[hex/terrain/town/house,pic actions]
10289 (-0.3872, 0.3590)
10290 -- (-0.3829, 0.3880)
10291 -- (-0.3297, 0.3800)
10292 -- (-0.3341, 0.3510)
10293 --cycle
10294 ;
10295 \path[hex/terrain/town/house,pic actions]
10296 (-0.6525, 0.1021)
10297 -- (-0.6404, 0.1288)
10298 -- (-0.5915, 0.1066)
10299 -- (-0.6036, 0.0799)
10300 --cycle
10301 ;
10302 \path[hex/terrain/town/house,pic actions]
10303 (-0.6525, 0.1021)
10304 -- (-0.6404, 0.1288)
10305 -- (-0.5915, 0.1066)
10306 -- (-0.6036, 0.0799)
10307 --cycle
10308 ;
10309 \path[hex/terrain/town/house,pic actions]
10310 (-0.4323, 0.3237)
10311 -- (-0.4202, 0.3503)
10312 -- (-0.3713, 0.3280)
10313 -- (-0.3834, 0.3014)
10314 --cycle
10315 ;
10316 \path[hex/terrain/town/house,pic actions]
10317 (-0.4323, 0.3237)
10318 -- (-0.4202, 0.3503)
10319 -- (-0.3713, 0.3280)
10320 -- (-0.3834, 0.3014)
10321 --cycle
10322 ;
10323 \path[hex/terrain/town/house,pic actions]
10324 (-0.3470, 0.2846)
10325 -- (-0.3349, 0.3113)
10326 -- (-0.2859, 0.2891)
10327 -- (-0.2981, 0.2624)
10328 --cycle
10329 ;
10330 \path[hex/terrain/town/house,pic actions]
10331 (-0.3470, 0.2846)
10332 -- (-0.3349, 0.3113)
10333 -- (-0.2859, 0.2891)
10334 -- (-0.2981, 0.2624)
10335 --cycle
10336 ;

```

```

10337 \path[hex/terrain/town/house,pic actions]
10338 (-0.3053, 0.3741)
10339 -- (-0.2932, 0.4008)
10340 -- (-0.2443, 0.3786)
10341 -- (-0.2564, 0.3519)
10342 --cycle
10343 ;
10344 \path[hex/terrain/town/house,pic actions]
10345 (-0.3053, 0.3741)
10346 -- (-0.2932, 0.4008)
10347 -- (-0.2443, 0.3786)
10348 -- (-0.2564, 0.3519)
10349 --cycle
10350 ;
10351 \path[hex/terrain/town/house,pic actions]
10352 (-0.6751, 0.0465)
10353 -- (-0.6666, 0.0746)
10354 -- (-0.6152, 0.0590)
10355 -- (-0.6237, 0.0310)
10356 --cycle
10357 ;
10358 \path[hex/terrain/town/house,pic actions]
10359 (-0.6751, 0.0465)
10360 -- (-0.6666, 0.0746)
10361 -- (-0.6152, 0.0590)
10362 -- (-0.6237, 0.0310)
10363 --cycle
10364 ;
10365 \path[hex/terrain/town/house,pic actions]
10366 (-0.7316,-0.0595)
10367 -- (-0.7215,-0.0320)
10368 -- (-0.6711,-0.0505)
10369 -- (-0.6812,-0.0780)
10370 --cycle
10371 ;
10372 \path[hex/terrain/town/house,pic actions]
10373 (-0.7316,-0.0595)
10374 -- (-0.7215,-0.0320)
10375 -- (-0.6711,-0.0505)
10376 -- (-0.6812,-0.0780)
10377 --cycle
10378 ;
10379 \path[hex/terrain/town/house,pic actions]
10380 (-0.7748,-0.1355)
10381 -- (-0.7629,-0.1088)
10382 -- (-0.7138,-0.1305)
10383 -- (-0.7257,-0.1573)
10384 --cycle
10385 ;
10386 \path[hex/terrain/town/house,pic actions]
10387 (-0.7748,-0.1355)
10388 -- (-0.7629,-0.1088)
10389 -- (-0.7138,-0.1305)

```

```

10390 -- (-0.7257,-0.1573)
10391 --cycle
10392 ;
10393 \path[hex/terrain/town/house,pic actions]
10394 (-0.6698,-0.1385)
10395 -- (-0.6512,-0.1159)
10396 -- (-0.6098,-0.1501)
10397 -- (-0.6284,-0.1727)
10398 --cycle
10399 ;
10400 \path[hex/terrain/town/house,pic actions]
10401 (-0.6698,-0.1385)
10402 -- (-0.6512,-0.1159)
10403 -- (-0.6098,-0.1501)
10404 -- (-0.6284,-0.1727)
10405 --cycle
10406 ;
10407 \path[hex/terrain/town/house,pic actions]
10408 (-0.3325,-0.1175)
10409 -- (-0.3067,-0.1313)
10410 -- (-0.3320,-0.1787)
10411 -- (-0.3579,-0.1649)
10412 --cycle
10413 ;
10414 \path[hex/terrain/town/house,pic actions]
10415 (-0.3325,-0.1175)
10416 -- (-0.3067,-0.1313)
10417 -- (-0.3320,-0.1787)
10418 -- (-0.3579,-0.1649)
10419 --cycle
10420 ;
10421 \path[hex/terrain/town/house,pic actions]
10422 (-0.4097,-0.0630)
10423 -- (-0.3827,-0.0741)
10424 -- (-0.4031,-0.1238)
10425 -- (-0.4302,-0.1127)
10426 --cycle
10427 ;
10428 \path[hex/terrain/town/house,pic actions]
10429 (-0.4097,-0.0630)
10430 -- (-0.3827,-0.0741)
10431 -- (-0.4031,-0.1238)
10432 -- (-0.4302,-0.1127)
10433 --cycle
10434 ;
10435 \path[hex/terrain/town/house,pic actions]
10436 (-0.3028, 0.0016)
10437 -- (-0.2734, 0.0016)
10438 -- (-0.2734,-0.0522)
10439 -- (-0.3028,-0.0522)
10440 --cycle
10441 ;
10442 \path[hex/terrain/town/house,pic actions]

```

```

10443      (-0.3028, 0.0016)
10444      -- (-0.2734, 0.0016)
10445      -- (-0.2734,-0.0522)
10446      -- (-0.3028,-0.0522)
10447      --cycle
10448      ;
10449      \path[hex/terrain/town/house,pic actions]
10450      (-0.2492,-0.0037)
10451      -- (-0.2198,-0.0037)
10452      -- (-0.2198,-0.0574)
10453      -- (-0.2492,-0.0574)
10454      --cycle
10455      ;
10456      \path[hex/terrain/town/house,pic actions]
10457      (-0.2492,-0.0037)
10458      -- (-0.2198,-0.0037)
10459      -- (-0.2198,-0.0574)
10460      -- (-0.2492,-0.0574)
10461      --cycle
10462      ;
10463      \path[hex/terrain/town/house,pic actions]
10464      (-0.4151, 0.0294)
10465      -- (-0.3858, 0.0294)
10466      -- (-0.3858,-0.0243)
10467      -- (-0.4151,-0.0243)
10468      --cycle
10469      ;
10470      \path[hex/terrain/town/house,pic actions]
10471      (-0.4151, 0.0294)
10472      -- (-0.3858, 0.0294)
10473      -- (-0.3858,-0.0243)
10474      -- (-0.4151,-0.0243)
10475      --cycle
10476      ;
10477      \path[hex/terrain/town/house,pic actions]
10478      (-0.4687, 0.0340)
10479      -- (-0.4394, 0.0340)
10480      -- (-0.4394,-0.0197)
10481      -- (-0.4687,-0.0197)
10482      --cycle
10483      ;
10484      \path[hex/terrain/town/house,pic actions]
10485      (-0.4687, 0.0340)
10486      -- (-0.4394, 0.0340)
10487      -- (-0.4394,-0.0197)
10488      -- (-0.4687,-0.0197)
10489      --cycle
10490      ;
10491      \path[hex/terrain/town/house,pic actions]
10492      (-0.5170, 0.0545)
10493      -- (-0.4876, 0.0545)
10494      -- (-0.4876, 0.0008)
10495      -- (-0.5170, 0.0008)

```

```

10496 --cycle
10497 ;
10498 \path[hex/terrain/town/house,pic actions]
10499 (-0.5170, 0.0545)
10500 -- (-0.4876, 0.0545)
10501 -- (-0.4876, 0.0008)
10502 -- (-0.5170, 0.0008)
10503 --cycle
10504 ;
10505 \path[hex/terrain/town/house,pic actions]
10506 (-0.4695, 0.1540)
10507 -- (-0.4413, 0.1461)
10508 -- (-0.4557, 0.0943)
10509 -- (-0.4839, 0.1022)
10510 --cycle
10511 ;
10512 \path[hex/terrain/town/house,pic actions]
10513 (-0.4695, 0.1540)
10514 -- (-0.4413, 0.1461)
10515 -- (-0.4557, 0.0943)
10516 -- (-0.4839, 0.1022)
10517 --cycle
10518 ;
10519 \path[hex/terrain/town/house,pic actions]
10520 (-0.4511, 0.2320)
10521 -- (-0.4227, 0.2241)
10522 -- (-0.4372, 0.1724)
10523 -- (-0.4654, 0.1803)
10524 --cycle
10525 ;
10526 \path[hex/terrain/town/house,pic actions]
10527 (-0.4511, 0.2320)
10528 -- (-0.4227, 0.2241)
10529 -- (-0.4372, 0.1724)
10530 -- (-0.4654, 0.1803)
10531 --cycle
10532 ;
10533 \path[hex/terrain/town/house,pic actions]
10534 (-0.4191, 0.1396)
10535 -- (-0.3904, 0.1335)
10536 -- (-0.4017, 0.0809)
10537 -- (-0.4304, 0.0871)
10538 --cycle
10539 ;
10540 \path[hex/terrain/town/house,pic actions]
10541 (-0.4191, 0.1396)
10542 -- (-0.3904, 0.1335)
10543 -- (-0.4017, 0.0809)
10544 -- (-0.4304, 0.0871)
10545 --cycle
10546 ;
10547 \path[hex/terrain/town/house,pic actions]
10548 (-0.0048,-0.2963)

```

```

10549  -- ( 0.0056,-0.2689)
10550  -- ( 0.0558,-0.2881)
10551  -- ( 0.0453,-0.3155)
10552  --cycle
10553  ;
10554  \path[hex/terrain/town/house,pic actions]
10555  (-0.0048,-0.2963)
10556  -- ( 0.0056,-0.2689)
10557  -- ( 0.0558,-0.2881)
10558  -- ( 0.0453,-0.3155)
10559  --cycle
10560  ;
10561  \path[hex/terrain/town/house,pic actions]
10562  ( 0.0804,-0.1001)
10563  -- ( 0.0908,-0.0728)
10564  -- ( 0.1410,-0.0919)
10565  -- ( 0.1305,-0.1192)
10566  --cycle
10567  ;
10568  \path[hex/terrain/town/house,pic actions]
10569  ( 0.0804,-0.1001)
10570  -- ( 0.0908,-0.0728)
10571  -- ( 0.1410,-0.0919)
10572  -- ( 0.1305,-0.1192)
10573  --cycle
10574  ;
10575  \path[hex/terrain/town/house,pic actions]
10576  (-0.1027,-0.2588)
10577  -- (-0.0979,-0.2299)
10578  -- (-0.0449,-0.2387)
10579  -- (-0.0498,-0.2676)
10580  --cycle
10581  ;
10582  \path[hex/terrain/town/house,pic actions]
10583  (-0.1027,-0.2588)
10584  -- (-0.0979,-0.2299)
10585  -- (-0.0449,-0.2387)
10586  -- (-0.0498,-0.2676)
10587  --cycle
10588  ;
10589  \path[hex/terrain/town/house,pic actions]
10590  (-0.1889,-0.2314)
10591  -- (-0.1776,-0.2043)
10592  -- (-0.1281,-0.2251)
10593  -- (-0.1394,-0.2521)
10594  --cycle
10595  ;
10596  \path[hex/terrain/town/house,pic actions]
10597  (-0.1889,-0.2314)
10598  -- (-0.1776,-0.2043)
10599  -- (-0.1281,-0.2251)
10600  -- (-0.1394,-0.2521)
10601  --cycle

```



```

10602 ;
10603 \path[hex/terrain/town/house,pic actions]
10604 (-0.1180,-0.3033)
10605 -- (-0.1077,-0.2759)
10606 -- (-0.0575,-0.2947)
10607 -- (-0.0677,-0.3221)
10608 --cycle
10609 ;
10610 \path[hex/terrain/town/house,pic actions]
10611 (-0.1180,-0.3033)
10612 -- (-0.1077,-0.2759)
10613 -- (-0.0575,-0.2947)
10614 -- (-0.0677,-0.3221)
10615 --cycle
10616 ;
10617 \path[hex/terrain/town/house,pic actions]
10618 (-0.2120,-0.2801)
10619 -- (-0.2010,-0.2529)
10620 -- (-0.1512,-0.2729)
10621 -- (-0.1622,-0.3002)
10622 --cycle
10623 ;
10624 \path[hex/terrain/town/house,pic actions]
10625 (-0.2120,-0.2801)
10626 -- (-0.2010,-0.2529)
10627 -- (-0.1512,-0.2729)
10628 -- (-0.1622,-0.3002)
10629 --cycle
10630 ;
10631 \path[hex/terrain/town/house,pic actions]
10632 (-0.2265,-0.3343)
10633 -- (-0.2161,-0.3069)
10634 -- (-0.1659,-0.3259)
10635 -- (-0.1762,-0.3533)
10636 --cycle
10637 ;
10638 \path[hex/terrain/town/house,pic actions]
10639 (-0.2265,-0.3343)
10640 -- (-0.2161,-0.3069)
10641 -- (-0.1659,-0.3259)
10642 -- (-0.1762,-0.3533)
10643 --cycle
10644 ;
10645 \path[hex/terrain/town/house,pic actions]
10646 (-0.0728,-0.3520)
10647 -- (-0.0436,-0.3488)
10648 -- (-0.0379,-0.4022)
10649 -- (-0.0670,-0.4054)
10650 --cycle
10651 ;
10652 \path[hex/terrain/town/house,pic actions]
10653 (-0.0728,-0.3520)
10654 -- (-0.0436,-0.3488)

```

```

10655 -- (-0.0379,-0.4022)
10656 -- (-0.0670,-0.4054)
10657 --cycle
10658 ;
10659 \path[hex/terrain/town/house,pic actions]
10660 ( 0.3598,-0.6299)
10661 -- ( 0.3752,-0.6051)
10662 -- ( 0.4209,-0.6334)
10663 -- ( 0.4054,-0.6583)
10664 --cycle
10665 ;
10666 \path[hex/terrain/town/house,pic actions]
10667 ( 0.3598,-0.6299)
10668 -- ( 0.3752,-0.6051)
10669 -- ( 0.4209,-0.6334)
10670 -- ( 0.4054,-0.6583)
10671 --cycle
10672 ;
10673 \path[hex/terrain/town/house,pic actions]
10674 ( 0.3284,-0.6582)
10675 -- ( 0.3482,-0.6365)
10676 -- ( 0.3879,-0.6727)
10677 -- ( 0.3681,-0.6944)
10678 --cycle
10679 ;
10680 \path[hex/terrain/town/house,pic actions]
10681 ( 0.3284,-0.6582)
10682 -- ( 0.3482,-0.6365)
10683 -- ( 0.3879,-0.6727)
10684 -- ( 0.3681,-0.6944)
10685 --cycle
10686 ;
10687 \path[hex/terrain/town/house,pic actions]
10688 (-0.8159,-0.3188)
10689 -- (-0.7892,-0.3067)
10690 -- (-0.7670,-0.3556)
10691 -- (-0.7937,-0.3677)
10692 --cycle
10693 ;
10694 \path[hex/terrain/town/house,pic actions]
10695 (-0.8159,-0.3188)
10696 -- (-0.7892,-0.3067)
10697 -- (-0.7670,-0.3556)
10698 -- (-0.7937,-0.3677)
10699 --cycle
10700 ;
10701 \path[hex/terrain/town/house,pic actions]
10702 (-0.8755, 0.1805)
10703 -- (-0.8623, 0.2066)
10704 -- (-0.8144, 0.1824)
10705 -- (-0.8276, 0.1562)
10706 --cycle
10707 ;

```

```

10708 \path[hex/terrain/town/house,pic actions]
10709 (-0.8755, 0.1805)
10710 -- (-0.8623, 0.2066)
10711 -- (-0.8144, 0.1824)
10712 -- (-0.8276, 0.1562)
10713 --cycle
10714 ;
10715 \path[hex/terrain/town/house,pic actions]
10716 (-0.9400, 0.0507)
10717 -- (-0.9275, 0.0771)
10718 -- (-0.8789, 0.0541)
10719 -- (-0.8916, 0.0276)
10720 --cycle
10721 ;
10722 \path[hex/terrain/town/house,pic actions]
10723 (-0.9400, 0.0507)
10724 -- (-0.9275, 0.0771)
10725 -- (-0.8789, 0.0541)
10726 -- (-0.8916, 0.0276)
10727 --cycle
10728 ;
10729 \path[hex/terrain/town/house,pic actions]
10730 (-0.9500,-0.0171)
10731 -- (-0.9467, 0.0120)
10732 -- (-0.8934, 0.0060)
10733 -- (-0.8966,-0.0232)
10734 --cycle
10735 ;
10736 \path[hex/terrain/town/house,pic actions]
10737 (-0.9500,-0.0171)
10738 -- (-0.9467, 0.0120)
10739 -- (-0.8934, 0.0060)
10740 -- (-0.8966,-0.0232)
10741 --cycle
10742 ;
10743 \path[hex/terrain/town/house,pic actions]
10744 (-0.0374, 0.6594)
10745 -- (-0.0376, 0.6887)
10746 -- ( 0.0161, 0.6890)
10747 -- ( 0.0162, 0.6598)
10748 --cycle
10749 ;
10750 \path[hex/terrain/town/house,pic actions]
10751 (-0.0374, 0.6594)
10752 -- (-0.0376, 0.6887)
10753 -- ( 0.0161, 0.6890)
10754 -- ( 0.0162, 0.6598)
10755 --cycle
10756 ;
10757 \path[hex/terrain/town/house,pic actions]
10758 ( 0.1600, 0.8267)
10759 -- ( 0.1793, 0.8046)
10760 -- ( 0.1388, 0.7692)

```

```

10761 -- ( 0.1195, 0.7913)
10762 --cycle
10763 ;
10764 \path[hex/terrain/town/house,pic actions]
10765 ( 0.1600, 0.8267)
10766 -- ( 0.1793, 0.8046)
10767 -- ( 0.1388, 0.7692)
10768 -- ( 0.1195, 0.7913)
10769 --cycle
10770 ;
10771 \path[hex/terrain/town/house,pic actions]
10772 ( 0.4284, 0.3107)
10773 -- ( 0.4572, 0.3163)
10774 -- ( 0.4672, 0.2634)
10775 -- ( 0.4384, 0.2580)
10776 --cycle
10777 ;
10778 \path[hex/terrain/town/house,pic actions]
10779 ( 0.4284, 0.3107)
10780 -- ( 0.4572, 0.3163)
10781 -- ( 0.4672, 0.2634)
10782 -- ( 0.4384, 0.2580)
10783 --cycle
10784 ;
10785 \path[hex/terrain/town/house,pic actions]
10786 ( 0.4721, 0.3149)
10787 -- ( 0.5003, 0.3230)
10788 -- ( 0.5151, 0.2714)
10789 -- ( 0.4870, 0.2633)
10790 --cycle
10791 ;
10792 \path[hex/terrain/town/house,pic actions]
10793 ( 0.4721, 0.3149)
10794 -- ( 0.5003, 0.3230)
10795 -- ( 0.5151, 0.2714)
10796 -- ( 0.4870, 0.2633)
10797 --cycle
10798 ;
10799 \path[hex/terrain/town/house,pic actions]
10800 ( 0.5761, 0.3388)
10801 -- ( 0.6049, 0.3443)
10802 -- ( 0.6150, 0.2916)
10803 -- ( 0.5862, 0.2860)
10804 --cycle
10805 ;
10806 \path[hex/terrain/town/house,pic actions]
10807 ( 0.5761, 0.3388)
10808 -- ( 0.6049, 0.3443)
10809 -- ( 0.6150, 0.2916)
10810 -- ( 0.5862, 0.2860)
10811 --cycle
10812 ;
10813 \path[hex/terrain/town/house,pic actions]

```

```

10814 ( 0.6283, 0.3369)
10815 -- ( 0.6567, 0.3296)
10816 -- ( 0.6432, 0.2775)
10817 -- ( 0.6148, 0.2849)
10818 --cycle
10819 ;
10820 \path[hex/terrain/town/house,pic actions]
10821 ( 0.6283, 0.3369)
10822 -- ( 0.6567, 0.3296)
10823 -- ( 0.6432, 0.2775)
10824 -- ( 0.6148, 0.2849)
10825 --cycle
10826 ;
10827 \path[hex/terrain/town/house,pic actions]
10828 ( 0.5378, 0.2581)
10829 -- ( 0.5670, 0.2616)
10830 -- ( 0.5734, 0.2083)
10831 -- ( 0.5443, 0.2047)
10832 --cycle
10833 ;
10834 \path[hex/terrain/town/house,pic actions]
10835 ( 0.5378, 0.2581)
10836 -- ( 0.5670, 0.2616)
10837 -- ( 0.5734, 0.2083)
10838 -- ( 0.5443, 0.2047)
10839 --cycle
10840 ;
10841 \path[hex/terrain/town/house,pic actions]
10842 ( 0.4853, 0.2500)
10843 -- ( 0.5140, 0.2555)
10844 -- ( 0.5241, 0.2028)
10845 -- ( 0.4953, 0.1973)
10846 --cycle
10847 ;
10848 \path[hex/terrain/town/house,pic actions]
10849 ( 0.4853, 0.2500)
10850 -- ( 0.5140, 0.2555)
10851 -- ( 0.5241, 0.2028)
10852 -- ( 0.4953, 0.1973)
10853 --cycle
10854 ;
10855 \path[hex/terrain/town/house,pic actions]
10856 ( 0.4028, 0.0895)
10857 -- ( 0.4321, 0.0895)
10858 -- ( 0.4321, 0.0358)
10859 -- ( 0.4028, 0.0358)
10860 --cycle
10861 ;
10862 \path[hex/terrain/town/house,pic actions]
10863 ( 0.4028, 0.0895)
10864 -- ( 0.4321, 0.0895)
10865 -- ( 0.4321, 0.0358)
10866 -- ( 0.4028, 0.0358)

```

```

10867 --cycle
10868 ;
10869 \path[hex/terrain/town/house,pic actions]
10870 ( 0.4612, 0.0957)
10871 -- ( 0.4899, 0.0898)
10872 -- ( 0.4793, 0.0371)
10873 -- ( 0.4506, 0.0430)
10874 --cycle
10875 ;
10876 \path[hex/terrain/town/house,pic actions]
10877 ( 0.4612, 0.0957)
10878 -- ( 0.4899, 0.0898)
10879 -- ( 0.4793, 0.0371)
10880 -- ( 0.4506, 0.0430)
10881 --cycle
10882 ;
10883 \path[hex/terrain/town/house,pic actions]
10884 ( 0.5422,-0.0041)
10885 -- ( 0.5437,-0.0333)
10886 -- ( 0.4900,-0.0361)
10887 -- ( 0.4885,-0.0068)
10888 --cycle
10889 ;
10890 \path[hex/terrain/town/house,pic actions]
10891 ( 0.5422,-0.0041)
10892 -- ( 0.5437,-0.0333)
10893 -- ( 0.4900,-0.0361)
10894 -- ( 0.4885,-0.0068)
10895 --cycle
10896 ;
10897 \path[hex/terrain/town/house,pic actions]
10898 ( 0.6654,-0.0050)
10899 -- ( 0.6664,-0.0343)
10900 -- ( 0.6128,-0.0361)
10901 -- ( 0.6117,-0.0068)
10902 --cycle
10903 ;
10904 \path[hex/terrain/town/house,pic actions]
10905 ( 0.6654,-0.0050)
10906 -- ( 0.6664,-0.0343)
10907 -- ( 0.6128,-0.0361)
10908 -- ( 0.6117,-0.0068)
10909 --cycle
10910 ;
10911 \path[hex/terrain/town/house,pic actions]
10912 ( 0.7573, 0.2817)
10913 -- ( 0.7646, 0.2533)
10914 -- ( 0.7124, 0.2402)
10915 -- ( 0.7053, 0.2686)
10916 --cycle
10917 ;
10918 \path[hex/terrain/town/house,pic actions]
10919 ( 0.7573, 0.2817)

```

```

10920 -- ( 0.7646, 0.2533)
10921 -- ( 0.7124, 0.2402)
10922 -- ( 0.7053, 0.2686)
10923 --cycle
10924 ;
10925 \path[hex/terrain/town/house,pic actions]
10926 ( 0.7393, 0.3502)
10927 -- ( 0.7456, 0.3216)
10928 -- ( 0.6931, 0.3101)
10929 -- ( 0.6868, 0.3387)
10930 --cycle
10931 ;
10932 \path[hex/terrain/town/house,pic actions]
10933 ( 0.7393, 0.3502)
10934 -- ( 0.7456, 0.3216)
10935 -- ( 0.6931, 0.3101)
10936 -- ( 0.6868, 0.3387)
10937 --cycle
10938 ;
10939 \path[hex/terrain/town/house,pic actions]
10940 ( 0.8114, 0.0963)
10941 -- ( 0.8188, 0.0679)
10942 -- ( 0.7668, 0.0543)
10943 -- ( 0.7594, 0.0826)
10944 --cycle
10945 ;
10946 \path[hex/terrain/town/house,pic actions]
10947 ( 0.8114, 0.0963)
10948 -- ( 0.8188, 0.0679)
10949 -- ( 0.7668, 0.0543)
10950 -- ( 0.7594, 0.0826)
10951 --cycle
10952 ;
10953 \path[hex/terrain/town/house,pic actions]
10954 ( 0.8247,-0.0115)
10955 -- ( 0.8312,-0.0401)
10956 -- ( 0.7788,-0.0521)
10957 -- ( 0.7723,-0.0235)
10958 --cycle
10959 ;
10960 \path[hex/terrain/town/house,pic actions]
10961 ( 0.8247,-0.0115)
10962 -- ( 0.8312,-0.0401)
10963 -- ( 0.7788,-0.0521)
10964 -- ( 0.7723,-0.0235)
10965 --cycle
10966 ;
10967 \path[hex/terrain/town/house,pic actions]
10968 ( 0.9279, 0.0392)
10969 -- ( 0.9358, 0.0110)
10970 -- ( 0.8842,-0.0036)
10971 -- ( 0.8762, 0.0245)
10972 --cycle

```

```

10973 ;
10974 \path[hex/terrain/town/house,pic actions]
10975 ( 0.9279, 0.0392)
10976 -- ( 0.9358, 0.0110)
10977 -- ( 0.8842,-0.0036)
10978 -- ( 0.8762, 0.0245)
10979 --cycle
10980 ;
10981 \path[hex/terrain/town/house,pic actions]
10982 ( 0.9473,-0.0199)
10983 -- ( 0.9500,-0.0490)
10984 -- ( 0.8965,-0.0540)
10985 -- ( 0.8939,-0.0248)
10986 --cycle
10987 ;
10988 \path[hex/terrain/town/house,pic actions]
10989 ( 0.9473,-0.0199)
10990 -- ( 0.9500,-0.0490)
10991 -- ( 0.8965,-0.0540)
10992 -- ( 0.8939,-0.0248)
10993 --cycle
10994 ;
10995 \path[hex/terrain/town/house,pic actions]
10996 ( 0.8832, 0.1513)
10997 -- ( 0.8949, 0.1245)
10998 -- ( 0.8456, 0.1031)
10999 -- ( 0.8339, 0.1300)
11000 --cycle
11001 ;
11002 \path[hex/terrain/town/house,pic actions]
11003 ( 0.8832, 0.1513)
11004 -- ( 0.8949, 0.1245)
11005 -- ( 0.8456, 0.1031)
11006 -- ( 0.8339, 0.1300)
11007 --cycle
11008 ;
11009 \path[hex/terrain/town/house,pic actions]
11010 ( 0.8604, 0.2135)
11011 -- ( 0.8734, 0.1872)
11012 -- ( 0.8254, 0.1634)
11013 -- ( 0.8123, 0.1896)
11014 --cycle
11015 ;
11016 \path[hex/terrain/town/house,pic actions]
11017 ( 0.8604, 0.2135)
11018 -- ( 0.8734, 0.1872)
11019 -- ( 0.8254, 0.1634)
11020 -- ( 0.8123, 0.1896)
11021 --cycle
11022 ;
11023 \path[hex/terrain/town/house,pic actions]
11024 ( 0.7675, 0.2368)
11025 -- ( 0.7736, 0.2082)

```



```

11026 -- ( 0.7210, 0.1970)
11027 -- ( 0.7150, 0.2257)
11028 --cycle
11029 ;
11030 \path[hex/terrain/town/house,pic actions]
11031 ( 0.7675, 0.2368)
11032 -- ( 0.7736, 0.2082)
11033 -- ( 0.7210, 0.1970)
11034 -- ( 0.7150, 0.2257)
11035 --cycle
11036 ;
11037 \path[hex/terrain/town/house,pic actions]
11038 ( 0.7696,-0.1796)
11039 -- ( 0.7978,-0.1875)
11040 -- ( 0.7835,-0.2392)
11041 -- ( 0.7552,-0.2314)
11042 --cycle
11043 ;
11044 \path[hex/terrain/town/house,pic actions]
11045 ( 0.7696,-0.1796)
11046 -- ( 0.7978,-0.1875)
11047 -- ( 0.7835,-0.2392)
11048 -- ( 0.7552,-0.2314)
11049 --cycle
11050 ;
11051 \path[hex/terrain/town/house,pic actions]
11052 ( 0.7546,-0.0830)
11053 -- ( 0.7838,-0.0830)
11054 -- ( 0.7838,-0.1367)
11055 -- ( 0.7546,-0.1367)
11056 --cycle
11057 ;
11058 \path[hex/terrain/town/house,pic actions]
11059 ( 0.7546,-0.0830)
11060 -- ( 0.7838,-0.0830)
11061 -- ( 0.7838,-0.1367)
11062 -- ( 0.7546,-0.1367)
11063 --cycle
11064 ;
11065 \path[hex/terrain/town/house,pic actions]
11066 ( 0.7114,-0.1735)
11067 -- ( 0.7402,-0.1784)
11068 -- ( 0.7313,-0.2313)
11069 -- ( 0.7024,-0.2265)
11070 --cycle
11071 ;
11072 \path[hex/terrain/town/house,pic actions]
11073 ( 0.7114,-0.1735)
11074 -- ( 0.7402,-0.1784)
11075 -- ( 0.7313,-0.2313)
11076 -- ( 0.7024,-0.2265)
11077 --cycle
11078 ;

```

```

11079  \path[hex/terrain/town/house,pic actions]
11080  ( 0.6398,-0.0896)
11081  -- ( 0.6691,-0.0896)
11082  -- ( 0.6691,-0.1433)
11083  -- ( 0.6398,-0.1433)
11084  --cycle
11085  ;
11086  \path[hex/terrain/town/house,pic actions]
11087  ( 0.6398,-0.0896)
11088  -- ( 0.6691,-0.0896)
11089  -- ( 0.6691,-0.1433)
11090  -- ( 0.6398,-0.1433)
11091  --cycle
11092  ;
11093  \path[hex/terrain/town/house,pic actions]
11094  ( 0.5390,-0.1093)
11095  -- ( 0.5377,-0.0801)
11096  -- ( 0.5913,-0.0776)
11097  -- ( 0.5927,-0.1069)
11098  --cycle
11099  ;
11100  \path[hex/terrain/town/house,pic actions]
11101  ( 0.5390,-0.1093)
11102  -- ( 0.5377,-0.0801)
11103  -- ( 0.5913,-0.0776)
11104  -- ( 0.5927,-0.1069)
11105  --cycle
11106  ;
11107  \path[hex/terrain/town/house,pic actions]
11108  ( 0.5171,-0.2250)
11109  -- ( 0.5252,-0.1968)
11110  -- ( 0.5767,-0.2117)
11111  -- ( 0.5687,-0.2399)
11112  --cycle
11113  ;
11114  \path[hex/terrain/town/house,pic actions]
11115  ( 0.5171,-0.2250)
11116  -- ( 0.5252,-0.1968)
11117  -- ( 0.5767,-0.2117)
11118  -- ( 0.5687,-0.2399)
11119  --cycle
11120  ;
11121  \path[hex/terrain/town/house,pic actions]
11122  ( 0.5024,-0.2807)
11123  -- ( 0.5066,-0.2517)
11124  -- ( 0.5597,-0.2597)
11125  -- ( 0.5555,-0.2887)
11126  --cycle
11127  ;
11128  \path[hex/terrain/town/house,pic actions]
11129  ( 0.5024,-0.2807)
11130  -- ( 0.5066,-0.2517)
11131  -- ( 0.5597,-0.2597)

```

```

11132  -- ( 0.5555,-0.2887)
11133  --cycle
11134  ;
11135  \path[hex/terrain/town/house,pic actions]
11136  ( 0.6783,-0.2717)
11137  -- ( 0.7056,-0.2824)
11138  -- ( 0.6858,-0.3324)
11139  -- ( 0.6585,-0.3216)
11140  --cycle
11141  ;
11142  \path[hex/terrain/town/house,pic actions]
11143  ( 0.6783,-0.2717)
11144  -- ( 0.7056,-0.2824)
11145  -- ( 0.6858,-0.3324)
11146  -- ( 0.6585,-0.3216)
11147  --cycle
11148  ;
11149  \path[hex/terrain/town/house,pic actions]
11150  ( 0.4010,-0.3903)
11151  -- ( 0.4019,-0.3609)
11152  -- ( 0.4556,-0.3627)
11153  -- ( 0.4547,-0.3921)
11154  --cycle
11155  ;
11156  \path[hex/terrain/town/house,pic actions]
11157  ( 0.4010,-0.3903)
11158  -- ( 0.4019,-0.3609)
11159  -- ( 0.4556,-0.3627)
11160  -- ( 0.4547,-0.3921)
11161  --cycle
11162  ;
11163  \path[hex/terrain/town/house,pic actions]
11164  ( 0.6576,-0.1610)
11165  -- ( 0.6852,-0.1708)
11166  -- ( 0.6672,-0.2214)
11167  -- ( 0.6396,-0.2116)
11168  --cycle
11169  ;
11170  \path[hex/terrain/town/house,pic actions]
11171  ( 0.6576,-0.1610)
11172  -- ( 0.6852,-0.1708)
11173  -- ( 0.6672,-0.2214)
11174  -- ( 0.6396,-0.2116)
11175  --cycle
11176  ;
11177  \path[hex/terrain/town/house,pic actions]
11178  ( 0.4024,-0.7175)
11179  -- ( 0.4484,-0.7175)
11180  -- ( 0.4484,-0.7785)
11181  -- ( 0.4024,-0.7785)
11182  --cycle
11183  ;
11184  \path[hex/terrain/town/house,pic actions]

```

```

11185 ( 0.4024,-0.7175)
11186 -- ( 0.4484,-0.7175)
11187 -- ( 0.4484,-0.7785)
11188 -- ( 0.4024,-0.7785)
11189 --cycle
11190 ;
11191 \path[hex/terrain/town/house,pic actions]
11192 (-0.3999,-0.7917)
11193 -- (-0.3540,-0.7917)
11194 -- (-0.3540,-0.8527)
11195 -- (-0.3999,-0.8527)
11196 --cycle
11197 ;
11198 \path[hex/terrain/town/house,pic actions]
11199 (-0.3999,-0.7917)
11200 -- (-0.3540,-0.7917)
11201 -- (-0.3540,-0.8527)
11202 -- (-0.3999,-0.8527)
11203 --cycle
11204 ;
11205 \path[hex/terrain/town/house,pic actions]
11206 (-0.7770,-0.2886)
11207 -- (-0.7319,-0.2679)
11208 -- (-0.6985,-0.3406)
11209 -- (-0.7437,-0.3613)
11210 --cycle
11211 ;
11212 \path[hex/terrain/town/house,pic actions]
11213 (-0.7770,-0.2886)
11214 -- (-0.7319,-0.2679)
11215 -- (-0.6985,-0.3406)
11216 -- (-0.7437,-0.3613)
11217 --cycle
11218 ;
11219 \path[hex/terrain/town/house,pic actions]
11220 (-0.1783,-0.5367)
11221 -- (-0.1339,-0.5483)
11222 -- (-0.1492,-0.6074)
11223 -- (-0.1937,-0.5958)
11224 --cycle
11225 ;
11226 \path[hex/terrain/town/house,pic actions]
11227 (-0.1783,-0.5367)
11228 -- (-0.1339,-0.5483)
11229 -- (-0.1492,-0.6074)
11230 -- (-0.1937,-0.5958)
11231 --cycle
11232 ;
11233 \path[hex/terrain/town/house,pic actions]
11234 ( 0.3106,-0.7770)
11235 -- ( 0.3564,-0.7770)
11236 -- ( 0.3564,-0.8380)
11237 -- ( 0.3106,-0.8380)

```

```

11238 --cycle
11239 ;
11240 \path[hex/terrain/town/house,pic actions]
11241 ( 0.3106,-0.7770)
11242 -- ( 0.3564,-0.7770)
11243 -- ( 0.3564,-0.8380)
11244 -- ( 0.3106,-0.8380)
11245 --cycle
11246 ;
11247 \path[hex/terrain/town/house,pic actions]
11248 (-0.0626,-0.7954)
11249 -- (-0.0196,-0.8113)
11250 -- (-0.0406,-0.8686)
11251 -- (-0.0837,-0.8527)
11252 --cycle
11253 ;
11254 \path[hex/terrain/town/house,pic actions]
11255 (-0.0626,-0.7954)
11256 -- (-0.0196,-0.8113)
11257 -- (-0.0406,-0.8686)
11258 -- (-0.0837,-0.8527)
11259 --cycle
11260 ;
11261 \path[hex/terrain/town/house,pic actions]
11262 ( 0.0570,-0.7843)
11263 -- ( 0.1025,-0.7910)
11264 -- ( 0.0936,-0.8514)
11265 -- ( 0.0481,-0.8446)
11266 --cycle
11267 ;
11268 \path[hex/terrain/town/house,pic actions]
11269 ( 0.0570,-0.7843)
11270 -- ( 0.1025,-0.7910)
11271 -- ( 0.0936,-0.8514)
11272 -- ( 0.0481,-0.8446)
11273 --cycle
11274 ;
11275 \path[hex/terrain/town/house,pic actions]
11276 ( 0.0906,-0.6908)
11277 -- ( 0.1345,-0.7046)
11278 -- ( 0.1161,-0.7629)
11279 -- ( 0.0723,-0.7490)
11280 --cycle
11281 ;
11282 \path[hex/terrain/town/house,pic actions]
11283 ( 0.0906,-0.6908)
11284 -- ( 0.1345,-0.7046)
11285 -- ( 0.1161,-0.7629)
11286 -- ( 0.0723,-0.7490)
11287 --cycle
11288 ;
11289 \path[hex/terrain/town/house,pic actions]
11290 (-0.4731,-0.7998)

```

```

11291 -- (-0.4283,-0.7899)
11292 -- (-0.4151,-0.8496)
11293 -- (-0.4600,-0.8595)
11294 --cycle
11295 ;
11296 \path[hex/terrain/town/house,pic actions]
11297 (-0.4731,-0.7998)
11298 -- (-0.4283,-0.7899)
11299 -- (-0.4151,-0.8496)
11300 -- (-0.4600,-0.8595)
11301 --cycle
11302 ;
11303 \path[hex/terrain/town/house,pic actions]
11304 ( 0.4125,-0.0879)
11305 -- ( 0.4578,-0.0951)
11306 -- ( 0.4483,-0.1553)
11307 -- ( 0.4029,-0.1481)
11308 --cycle
11309 ;
11310 \path[hex/terrain/town/house,pic actions]
11311 ( 0.4125,-0.0879)
11312 -- ( 0.4578,-0.0951)
11313 -- ( 0.4483,-0.1553)
11314 -- ( 0.4029,-0.1481)
11315 --cycle
11316 ;
11317 \path[hex/terrain/town/house,pic actions]
11318 ( 0.2078, 0.8568)
11319 -- ( 0.2536, 0.8583)
11320 -- ( 0.2555, 0.7973)
11321 -- ( 0.2097, 0.7958)
11322 --cycle
11323 ;
11324 \path[hex/terrain/town/house,pic actions]
11325 ( 0.2078, 0.8568)
11326 -- ( 0.2536, 0.8583)
11327 -- ( 0.2555, 0.7973)
11328 -- ( 0.2097, 0.7958)
11329 --cycle
11330 ;
11331 \path[hex/terrain/town/house,pic actions]
11332 ( 0.5829,-0.2493)
11333 -- ( 0.6289,-0.2493)
11334 -- ( 0.6289,-0.3104)
11335 -- ( 0.5829,-0.3104)
11336 --cycle
11337 ;
11338 \path[hex/terrain/town/house,pic actions]
11339 ( 0.5829,-0.2493)
11340 -- ( 0.6289,-0.2493)
11341 -- ( 0.6289,-0.3104)
11342 -- ( 0.5829,-0.3104)
11343 --cycle

```

```

11344 ;
11345 \path[hex/terrain/town/house,pic actions]
11346 ( 0.2923,-0.1390)
11347 -- ( 0.3109,-0.0970)
11348 -- ( 0.3667,-0.1218)
11349 -- ( 0.3481,-0.1638)
11350 --cycle
11351 ;
11352 \path[hex/terrain/town/house,pic actions]
11353 ( 0.2923,-0.1390)
11354 -- ( 0.3109,-0.0970)
11355 -- ( 0.3667,-0.1218)
11356 -- ( 0.3481,-0.1638)
11357 --cycle
11358 ;
11359 \path[hex/terrain/town/house,pic actions]
11360 ( 0.6866,-0.0789)
11361 -- ( 0.7324,-0.0789)
11362 -- ( 0.7324,-0.1400)
11363 -- ( 0.6866,-0.1400)
11364 --cycle
11365 ;
11366 \path[hex/terrain/town/house,pic actions]
11367 ( 0.6866,-0.0789)
11368 -- ( 0.7324,-0.0789)
11369 -- ( 0.7324,-0.1400)
11370 -- ( 0.6866,-0.1400)
11371 --cycle
11372 ;
11373 \path[hex/terrain/town/house,pic actions]
11374 ( 0.8206,-0.0922)
11375 -- ( 0.8649,-0.1044)
11376 -- ( 0.8487,-0.1632)
11377 -- ( 0.8045,-0.1511)
11378 --cycle
11379 ;
11380 \path[hex/terrain/town/house,pic actions]
11381 ( 0.8206,-0.0922)
11382 -- ( 0.8649,-0.1044)
11383 -- ( 0.8487,-0.1632)
11384 -- ( 0.8045,-0.1511)
11385 --cycle
11386 ;
11387 \path[hex/terrain/town/house,pic actions]
11388 (-0.3075, 0.5809)
11389 -- (-0.2648, 0.5640)
11390 -- (-0.2872, 0.5072)
11391 -- (-0.3299, 0.5241)
11392 --cycle
11393 ;
11394 \path[hex/terrain/town/house,pic actions]
11395 (-0.3075, 0.5809)
11396 -- (-0.2648, 0.5640)

```

```

11397 -- (-0.2872, 0.5072)
11398 -- (-0.3299, 0.5241)
11399 --cycle
11400 ;
11401 \path[hex/terrain/town/house,pic actions]
11402 (-0.7746, 0.3900)
11403 -- (-0.7312, 0.3750)
11404 -- (-0.7511, 0.3173)
11405 -- (-0.7945, 0.3322)
11406 --cycle
11407 ;
11408 \path[hex/terrain/town/house,pic actions]
11409 (-0.7746, 0.3900)
11410 -- (-0.7312, 0.3750)
11411 -- (-0.7511, 0.3173)
11412 -- (-0.7945, 0.3322)
11413 --cycle
11414 ;
11415 \path[hex/terrain/town/house,pic actions]
11416 (-0.8224, 0.3024)
11417 -- (-0.7807, 0.2831)
11418 -- (-0.8064, 0.2277)
11419 -- (-0.8481, 0.2470)
11420 --cycle
11421 ;
11422 \path[hex/terrain/town/house,pic actions]
11423 (-0.8224, 0.3024)
11424 -- (-0.7807, 0.2831)
11425 -- (-0.8064, 0.2277)
11426 -- (-0.8481, 0.2470)
11427 --cycle
11428 ;
11429 \path[hex/terrain/town/house,pic actions]
11430 (-0.7172, 0.2999)
11431 -- (-0.6959, 0.3406)
11432 -- (-0.6418, 0.3122)
11433 -- (-0.6632, 0.2715)
11434 --cycle
11435 ;
11436 \path[hex/terrain/town/house,pic actions]
11437 (-0.7172, 0.2999)
11438 -- (-0.6959, 0.3406)
11439 -- (-0.6418, 0.3122)
11440 -- (-0.6632, 0.2715)
11441 --cycle
11442 ;
11443 \path[hex/terrain/town/house,pic actions]
11444 (-0.7505, 0.2368)
11445 -- (-0.7273, 0.2764)
11446 -- (-0.6746, 0.2456)
11447 -- (-0.6979, 0.2060)
11448 --cycle
11449 ;

```



```

11450 \path[hex/terrain/town/house,pic actions]
11451 (-0.7505, 0.2368)
11452 -- (-0.7273, 0.2764)
11453 -- (-0.6746, 0.2456)
11454 -- (-0.6979, 0.2060)
11455 --cycle
11456 ;
11457 \path[hex/terrain/town/house,pic actions]
11458 (-0.7726, 0.1668)
11459 -- (-0.7521, 0.2080)
11460 -- (-0.6975, 0.1808)
11461 -- (-0.7180, 0.1396)
11462 --cycle
11463 ;
11464 \path[hex/terrain/town/house,pic actions]
11465 (-0.7726, 0.1668)
11466 -- (-0.7521, 0.2080)
11467 -- (-0.6975, 0.1808)
11468 -- (-0.7180, 0.1396)
11469 --cycle
11470 ;
11471 \path[hex/terrain/town/house,pic actions]
11472 (-0.8067, 0.1033)
11473 -- (-0.7877, 0.1452)
11474 -- (-0.7322, 0.1199)
11475 -- (-0.7512, 0.0781)
11476 --cycle
11477 ;
11478 \path[hex/terrain/town/house,pic actions]
11479 (-0.8067, 0.1033)
11480 -- (-0.7877, 0.1452)
11481 -- (-0.7322, 0.1199)
11482 -- (-0.7512, 0.0781)
11483 --cycle
11484 ;
11485 \path[hex/terrain/town/house,pic actions]
11486 (-0.8292, 0.0434)
11487 -- (-0.8106, 0.0854)
11488 -- (-0.7548, 0.0608)
11489 -- (-0.7733, 0.0188)
11490 --cycle
11491 ;
11492 \path[hex/terrain/town/house,pic actions]
11493 (-0.8292, 0.0434)
11494 -- (-0.8106, 0.0854)
11495 -- (-0.7548, 0.0608)
11496 -- (-0.7733, 0.0188)
11497 --cycle
11498 ;
11499 \path[hex/terrain/town/house,pic actions]
11500 (-0.8479,-0.0238)
11501 -- (-0.8336, 0.0199)
11502 -- (-0.7757, 0.0009)

```

```

11503 -- (-0.7899,-0.0427)
11504 --cycle
11505 ;
11506 \path[hex/terrain/town/house,pic actions]
11507 (-0.8479,-0.0238)
11508 -- (-0.8336, 0.0199)
11509 -- (-0.7757, 0.0009)
11510 -- (-0.7899,-0.0427)
11511 --cycle
11512 ;
11513 \path[hex/terrain/town/house,pic actions]
11514 (-0.9015,-0.0795)
11515 -- (-0.8746,-0.0423)
11516 -- (-0.8252,-0.0782)
11517 -- (-0.8521,-0.1153)
11518 --cycle
11519 ;
11520 \path[hex/terrain/town/house,pic actions]
11521 (-0.9015,-0.0795)
11522 -- (-0.8746,-0.0423)
11523 -- (-0.8252,-0.0782)
11524 -- (-0.8521,-0.1153)
11525 --cycle
11526 ;
11527 \path[hex/terrain/town/house,pic actions]
11528 (-0.5616,-0.6142)
11529 -- (-0.5431,-0.6563)
11530 -- (-0.5990,-0.6808)
11531 -- (-0.6175,-0.6387)
11532 --cycle
11533 ;
11534 \path[hex/terrain/town/house,pic actions]
11535 (-0.5616,-0.6142)
11536 -- (-0.5431,-0.6563)
11537 -- (-0.5990,-0.6808)
11538 -- (-0.6175,-0.6387)
11539 --cycle
11540 ;
11541 \path[hex/terrain/town/house,pic actions]
11542 (-0.0094,-0.6230)
11543 -- ( 0.0047,-0.5793)
11544 -- ( 0.0627,-0.5978)
11545 -- ( 0.0487,-0.6416)
11546 --cycle
11547 ;
11548 \path[hex/terrain/town/house,pic actions]
11549 (-0.0094,-0.6230)
11550 -- ( 0.0047,-0.5793)
11551 -- ( 0.0627,-0.5978)
11552 -- ( 0.0487,-0.6416)
11553 --cycle
11554 ;
11555 \path[hex/terrain/town/house,pic actions]

```

```

11556 ( 0.0303,-0.4683)
11557 -- ( 0.0443,-0.4246)
11558 -- ( 0.1024,-0.4432)
11559 -- ( 0.0884,-0.4869)
11560 --cycle
11561 ;
11562 \path[hex/terrain/town/house,pic actions]
11563 ( 0.0303,-0.4683)
11564 -- ( 0.0443,-0.4246)
11565 -- ( 0.1024,-0.4432)
11566 -- ( 0.0884,-0.4869)
11567 --cycle
11568 ;
11569 \path[hex/terrain/town/house,pic actions]
11570 (-0.2507,-0.3956)
11571 -- (-0.2367,-0.3518)
11572 -- (-0.1786,-0.3704)
11573 -- (-0.1926,-0.4142)
11574 --cycle
11575 ;
11576 \path[hex/terrain/town/house,pic actions]
11577 (-0.2507,-0.3956)
11578 -- (-0.2367,-0.3518)
11579 -- (-0.1786,-0.3704)
11580 -- (-0.1926,-0.4142)
11581 --cycle
11582 ;
11583 \path[hex/terrain/town/house,pic actions]
11584 (-0.3208,-0.3936)
11585 -- (-0.3069,-0.3498)
11586 -- (-0.2487,-0.3684)
11587 -- (-0.2627,-0.4122)
11588 --cycle
11589 ;
11590 \path[hex/terrain/town/house,pic actions]
11591 (-0.3208,-0.3936)
11592 -- (-0.3069,-0.3498)
11593 -- (-0.2487,-0.3684)
11594 -- (-0.2627,-0.4122)
11595 --cycle
11596 ;
11597 \path[hex/terrain/town/house,pic actions]
11598 ( 0.1634,-0.1430)
11599 -- ( 0.1790,-0.0997)
11600 -- ( 0.2365,-0.1205)
11601 -- ( 0.2209,-0.1637)
11602 --cycle
11603 ;
11604 \path[hex/terrain/town/house,pic actions]
11605 ( 0.1634,-0.1430)
11606 -- ( 0.1790,-0.0997)
11607 -- ( 0.2365,-0.1205)
11608 -- ( 0.2209,-0.1637)

```

```

11609  --cycle
11610  ;
11611  \path[hex/terrain/town/house,pic actions]
11612  ( 0.1520,-0.2030)
11613  -- ( 0.1715,-0.1614)
11614  -- ( 0.2268,-0.1873)
11615  -- ( 0.2072,-0.2289)
11616  --cycle
11617  ;
11618  \path[hex/terrain/town/house,pic actions]
11619  ( 0.1520,-0.2030)
11620  -- ( 0.1715,-0.1614)
11621  -- ( 0.2268,-0.1873)
11622  -- ( 0.2072,-0.2289)
11623  --cycle
11624  ;
11625  \path[hex/terrain/town/house,pic actions]
11626  ( 0.0852,-0.3696)
11627  -- ( 0.1047,-0.3280)
11628  -- ( 0.1600,-0.3540)
11629  -- ( 0.1404,-0.3956)
11630  --cycle
11631  ;
11632  \path[hex/terrain/town/house,pic actions]
11633  ( 0.0852,-0.3696)
11634  -- ( 0.1047,-0.3280)
11635  -- ( 0.1600,-0.3540)
11636  -- ( 0.1404,-0.3956)
11637  --cycle
11638  ;
11639  \path[hex/terrain/town/house,pic actions]
11640  ( 0.0197,-0.2063)
11641  -- ( 0.0392,-0.1647)
11642  -- ( 0.0944,-0.1907)
11643  -- ( 0.0750,-0.2323)
11644  --cycle
11645  ;
11646  \path[hex/terrain/town/house,pic actions]
11647  ( 0.0197,-0.2063)
11648  -- ( 0.0392,-0.1647)
11649  -- ( 0.0944,-0.1907)
11650  -- ( 0.0750,-0.2323)
11651  --cycle
11652  ;
11653  \path[hex/terrain/town/house,pic actions]
11654  ( 0.3100, 0.7769)
11655  -- ( 0.3513, 0.7971)
11656  -- ( 0.3781, 0.7423)
11657  -- ( 0.3369, 0.7221)
11658  --cycle
11659  ;
11660  \path[hex/terrain/town/house,pic actions]
11661  ( 0.3100, 0.7769)

```

```

11662  -- ( 0.3513, 0.7971)
11663  -- ( 0.3781, 0.7423)
11664  -- ( 0.3369, 0.7221)
11665  --cycle
11666  ;
11667  \path[hex/terrain/town/house,pic actions]
11668  ( 0.5097, 0.3286)
11669  -- ( 0.5510, 0.3488)
11670  -- ( 0.5778, 0.2940)
11671  -- ( 0.5366, 0.2738)
11672  --cycle
11673  ;
11674  \path[hex/terrain/town/house,pic actions]
11675  ( 0.5097, 0.3286)
11676  -- ( 0.5510, 0.3488)
11677  -- ( 0.5778, 0.2940)
11678  -- ( 0.5366, 0.2738)
11679  --cycle
11680  ;
11681  \path[hex/terrain/town/house,pic actions]
11682  ( 0.4014, 0.8173)
11683  -- ( 0.4429, 0.8369)
11684  -- ( 0.4689, 0.7817)
11685  -- ( 0.4274, 0.7621)
11686  --cycle
11687  ;
11688  \path[hex/terrain/town/house,pic actions]
11689  ( 0.4014, 0.8173)
11690  -- ( 0.4429, 0.8369)
11691  -- ( 0.4689, 0.7817)
11692  -- ( 0.4274, 0.7621)
11693  --cycle
11694  ;
11695  \path[hex/terrain/town/house,pic actions]
11696  ( 0.2627, 0.7599)
11697  -- ( 0.3055, 0.7765)
11698  -- ( 0.3276, 0.7196)
11699  -- ( 0.2848, 0.7030)
11700  --cycle
11701  ;
11702  \path[hex/terrain/town/house,pic actions]
11703  ( 0.2627, 0.7599)
11704  -- ( 0.3055, 0.7765)
11705  -- ( 0.3276, 0.7196)
11706  -- ( 0.2848, 0.7030)
11707  --cycle
11708  ;
11709  \path[hex/terrain/town/house,pic actions]
11710  ( 0.1763, 0.7193)
11711  -- ( 0.2174, 0.7400)
11712  -- ( 0.2448, 0.6855)
11713  -- ( 0.2038, 0.6648)
11714  --cycle

```

```

11715 ;
11716 \path[hex/terrain/town/house,pic actions]
11717 ( 0.1763, 0.7193)
11718 -- ( 0.2174, 0.7400)
11719 -- ( 0.2448, 0.6855)
11720 -- ( 0.2038, 0.6648)
11721 --cycle
11722 ;
11723 \path[hex/terrain/town/house,pic actions]
11724 (-0.0655, 0.4707)
11725 -- (-0.0222, 0.4555)
11726 -- (-0.0424, 0.3979)
11727 -- (-0.0858, 0.4131)
11728 --cycle
11729 ;
11730 \path[hex/terrain/town/house,pic actions]
11731 (-0.0655, 0.4707)
11732 -- (-0.0222, 0.4555)
11733 -- (-0.0424, 0.3979)
11734 -- (-0.0858, 0.4131)
11735 --cycle
11736 ;
11737 \path[hex/terrain/town/house,pic actions]
11738 ( 0.0019, 0.5606)
11739 -- ( 0.0452, 0.5454)
11740 -- ( 0.0251, 0.4878)
11741 -- (-0.0183, 0.5030)
11742 --cycle
11743 ;
11744 \path[hex/terrain/town/house,pic actions]
11745 ( 0.0019, 0.5606)
11746 -- ( 0.0452, 0.5454)
11747 -- ( 0.0251, 0.4878)
11748 -- (-0.0183, 0.5030)
11749 --cycle
11750 ;
11751 \path[hex/terrain/town/house,pic actions]
11752 ( 0.0634, 0.0555)
11753 -- ( 0.1067, 0.0403)
11754 -- ( 0.0865,-0.0174)
11755 -- ( 0.0432,-0.0022)
11756 --cycle
11757 ;
11758 \path[hex/terrain/town/house,pic actions]
11759 ( 0.0634, 0.0555)
11760 -- ( 0.1067, 0.0403)
11761 -- ( 0.0865,-0.0174)
11762 -- ( 0.0432,-0.0022)
11763 --cycle
11764 ;
11765 \path[hex/terrain/town/house,pic actions]
11766 (-0.0445, 0.0687)
11767 -- (-0.0010, 0.0535)

```

```

11768 -- (-0.0213,-0.0041)
11769 -- (-0.0646, 0.0110)
11770 --cycle
11771 ;
11772 \path[hex/terrain/town/house,pic actions]
11773 (-0.0445, 0.0687)
11774 -- (-0.0010, 0.0535)
11775 -- (-0.0213,-0.0041)
11776 -- (-0.0646, 0.0110)
11777 --cycle
11778 ;
11779 \path[hex/terrain/town/house,pic actions]
11780 ( 0.0541, 0.5519)
11781 -- ( 0.0966, 0.5344)
11782 -- ( 0.0732, 0.4779)
11783 -- ( 0.0308, 0.4956)
11784 --cycle
11785 ;
11786 \path[hex/terrain/town/house,pic actions]
11787 ( 0.0541, 0.5519)
11788 -- ( 0.0966, 0.5344)
11789 -- ( 0.0732, 0.4779)
11790 -- ( 0.0308, 0.4956)
11791 --cycle
11792 ;
11793 \path[hex/terrain/town/house,pic actions]
11794 ( 0.0096, 0.8274)
11795 -- ( 0.0163, 0.7820)
11796 -- (-0.0441, 0.7731)
11797 -- (-0.0508, 0.8185)
11798 --cycle
11799 ;
11800 \path[hex/terrain/town/house,pic actions]
11801 ( 0.0096, 0.8274)
11802 -- ( 0.0163, 0.7820)
11803 -- (-0.0441, 0.7731)
11804 -- (-0.0508, 0.8185)
11805 --cycle
11806 ;
11807 \path[hex/terrain/town/house,pic actions]
11808 (-0.0878, 0.6237)
11809 -- (-0.0810, 0.5783)
11810 -- (-0.1415, 0.5693)
11811 -- (-0.1482, 0.6147)
11812 --cycle
11813 ;
11814 \path[hex/terrain/town/house,pic actions]
11815 (-0.0878, 0.6237)
11816 -- (-0.0810, 0.5783)
11817 -- (-0.1415, 0.5693)
11818 -- (-0.1482, 0.6147)
11819 --cycle
11820 ;

```

```

11821 \path[hex/terrain/town/house,pic actions]
11822 (-0.0678, 0.8193)
11823 -- (-0.0575, 0.7745)
11824 -- (-0.1168, 0.7608)
11825 -- (-0.1273, 0.8055)
11826 --cycle
11827 ;
11828 \path[hex/terrain/town/house,pic actions]
11829 (-0.0678, 0.8193)
11830 -- (-0.0575, 0.7745)
11831 -- (-0.1168, 0.7608)
11832 -- (-0.1273, 0.8055)
11833 --cycle
11834 ;
11835 \path[hex/terrain/town/house,pic actions]
11836 (-0.1958, 0.8007)
11837 -- (-0.1517, 0.7877)
11838 -- (-0.1688, 0.7292)
11839 -- (-0.2129, 0.7420)
11840 --cycle
11841 ;
11842 \path[hex/terrain/town/house,pic actions]
11843 (-0.1958, 0.8007)
11844 -- (-0.1517, 0.7877)
11845 -- (-0.1688, 0.7292)
11846 -- (-0.2129, 0.7420)
11847 --cycle
11848 ;
11849 \path[hex/terrain/town/house,pic actions]
11850 ( 0.6001, 0.0672)
11851 -- ( 0.6452, 0.0758)
11852 -- ( 0.6566, 0.0159)
11853 -- ( 0.6115, 0.0072)
11854 --cycle
11855 ;
11856 \path[hex/terrain/town/house,pic actions]
11857 ( 0.6001, 0.0672)
11858 -- ( 0.6452, 0.0758)
11859 -- ( 0.6566, 0.0159)
11860 -- ( 0.6115, 0.0072)
11861 --cycle
11862 ;
11863 \path[hex/terrain/town/house,pic actions]
11864 ( 0.8357, 0.2798)
11865 -- ( 0.8514, 0.2365)
11866 -- ( 0.7940, 0.2158)
11867 -- ( 0.7783, 0.2591)
11868 --cycle
11869 ;
11870 \path[hex/terrain/town/house,pic actions]
11871 ( 0.8357, 0.2798)
11872 -- ( 0.8514, 0.2365)
11873 -- ( 0.7940, 0.2158)

```



```

11874 -- ( 0.7783, 0.2591)
11875 --cycle
11876 ;
11877 \path[hex/terrain/town/house,pic actions]
11878 ( 0.4450, 0.0292)
11879 -- ( 0.4606,-0.0141)
11880 -- ( 0.4032,-0.0348)
11881 -- ( 0.3876, 0.0085)
11882 --cycle
11883 ;
11884 \path[hex/terrain/town/house,pic actions]
11885 ( 0.4450, 0.0292)
11886 -- ( 0.4606,-0.0141)
11887 -- ( 0.4032,-0.0348)
11888 -- ( 0.3876, 0.0085)
11889 --cycle
11890 ;
11891 \path[hex/terrain/town/house,pic actions]
11892 ( 0.9043, 0.1125)
11893 -- ( 0.9184, 0.0687)
11894 -- ( 0.8603, 0.0500)
11895 -- ( 0.8462, 0.0937)
11896 --cycle
11897 ;
11898 \path[hex/terrain/town/house,pic actions]
11899 ( 0.9043, 0.1125)
11900 -- ( 0.9184, 0.0687)
11901 -- ( 0.8603, 0.0500)
11902 -- ( 0.8462, 0.0937)
11903 --cycle
11904 ;
11905 \path[hex/terrain/town/house,pic actions]
11906 ( 0.7148,-0.2814)
11907 -- ( 0.7591,-0.2935)
11908 -- ( 0.7430,-0.3524)
11909 -- ( 0.6987,-0.3402)
11910 --cycle
11911 ;
11912 \path[hex/terrain/town/house,pic actions]
11913 ( 0.7148,-0.2814)
11914 -- ( 0.7591,-0.2935)
11915 -- ( 0.7430,-0.3524)
11916 -- ( 0.6987,-0.3402)
11917 --cycle
11918 ;
11919 \path[hex/terrain/town/house,pic actions]
11920 ( 0.5891,-0.1425)
11921 -- ( 0.5806,-0.1876)
11922 -- ( 0.5207,-0.1764)
11923 -- ( 0.5291,-0.1313)
11924 --cycle
11925 ;
11926 \path[hex/terrain/town/house,pic actions]

```

```

11927 ( 0.5891,-0.1425)
11928 -- ( 0.5806,-0.1876)
11929 -- ( 0.5207,-0.1764)
11930 -- ( 0.5291,-0.1313)
11931 --cycle
11932 ;
11933 \path[hex/terrain/town/house,pic actions]
11934 ( 0.5865, 0.0684)
11935 -- ( 0.5782, 0.0233)
11936 -- ( 0.5181, 0.0345)
11937 -- ( 0.5266, 0.0796)
11938 --cycle
11939 ;
11940 \path[hex/terrain/town/house,pic actions]
11941 ( 0.5865, 0.0684)
11942 -- ( 0.5782, 0.0233)
11943 -- ( 0.5181, 0.0345)
11944 -- ( 0.5266, 0.0796)
11945 --cycle
11946 ;
11947 \path[hex/terrain/town/house,pic actions]
11948 ( 0.4044,-0.3422)
11949 -- ( 0.4189,-0.2987)
11950 -- ( 0.4768,-0.3180)
11951 -- ( 0.4623,-0.3616)
11952 --cycle
11953 ;
11954 \path[hex/terrain/town/house,pic actions]
11955 ( 0.4044,-0.3422)
11956 -- ( 0.4189,-0.2987)
11957 -- ( 0.4768,-0.3180)
11958 -- ( 0.4623,-0.3616)
11959 --cycle
11960 ;
11961 \path[hex/terrain/town/house,pic actions]
11962 ( 0.4665,-0.7188)
11963 -- ( 0.5125,-0.7188)
11964 -- ( 0.5125,-0.7799)
11965 -- ( 0.4665,-0.7799)
11966 --cycle
11967 ;
11968 \path[hex/terrain/town/house,pic actions]
11969 ( 0.4665,-0.7188)
11970 -- ( 0.5125,-0.7188)
11971 -- ( 0.5125,-0.7799)
11972 -- ( 0.4665,-0.7799)
11973 --cycle
11974 ;
11975 \path[hex/terrain/town/house,pic actions]
11976 (-0.1285,-0.5747)
11977 -- (-0.0826,-0.5747)
11978 -- (-0.0826,-0.6356)
11979 -- (-0.1285,-0.6356)

```

```

11980  --cycle
11981  ;
11982  \path[hex/terrain/town/house,pic actions]
11983  (-0.1285,-0.5747)
11984  -- (-0.0826,-0.5747)
11985  -- (-0.0826,-0.6356)
11986  -- (-0.1285,-0.6356)
11987  --cycle
11988  ;
11989  \path[hex/terrain/town/house,pic actions]
11990  (-0.2861,-0.6694)
11991  -- (-0.2789,-0.6240)
11992  -- (-0.2186,-0.6336)
11993  -- (-0.2258,-0.6789)
11994  --cycle
11995  ;
11996  \path[hex/terrain/town/house,pic actions]
11997  (-0.2861,-0.6694)
11998  -- (-0.2789,-0.6240)
11999  -- (-0.2186,-0.6336)
12000  -- (-0.2258,-0.6789)
12001  --cycle
12002  ;
12003  \path[hex/terrain/town/house,pic actions]
12004  (-0.1486,-0.3725)
12005  -- (-0.1414,-0.3271)
12006  -- (-0.0811,-0.3367)
12007  -- (-0.0883,-0.3820)
12008  --cycle
12009  ;
12010  \path[hex/terrain/town/house,pic actions]
12011  (-0.1486,-0.3725)
12012  -- (-0.1414,-0.3271)
12013  -- (-0.0811,-0.3367)
12014  -- (-0.0883,-0.3820)
12015  --cycle
12016  ;
12017  \path[hex/terrain/town/house,pic actions]
12018  (-0.3576,-0.5916)
12019  -- (-0.3319,-0.6297)
12020  -- (-0.3826,-0.6638)
12021  -- (-0.4082,-0.6256)
12022  --cycle
12023  ;
12024  \path[hex/terrain/town/house,pic actions]
12025  (-0.3576,-0.5916)
12026  -- (-0.3319,-0.6297)
12027  -- (-0.3826,-0.6638)
12028  -- (-0.4082,-0.6256)
12029  --cycle
12030  ;
12031  \path[hex/terrain/town/house,pic actions]
12032  (-0.5468,-0.2716)

```

```

12033 -- (-0.5213,-0.3098)
12034 -- (-0.5719,-0.3438)
12035 -- (-0.5976,-0.3056)
12036 --cycle
12037 ;
12038 \path[hex/terrain/town/house,pic actions]
12039 (-0.5468,-0.2716)
12040 -- (-0.5213,-0.3098)
12041 -- (-0.5719,-0.3438)
12042 -- (-0.5976,-0.3056)
12043 --cycle
12044 ;
12045 \path[hex/terrain/town/house,pic actions]
12046 (-0.4969,-0.5222)
12047 -- (-0.4767,-0.5634)
12048 -- (-0.5315,-0.5902)
12049 -- (-0.5518,-0.5490)
12050 --cycle
12051 ;
12052 \path[hex/terrain/town/house,pic actions]
12053 (-0.4969,-0.5222)
12054 -- (-0.4767,-0.5634)
12055 -- (-0.5315,-0.5902)
12056 -- (-0.5518,-0.5490)
12057 --cycle
12058 ;
12059 \path[hex/terrain/town/house,pic actions]
12060 (-0.3963,-0.6922)
12061 -- (-0.3778,-0.7343)
12062 -- (-0.4338,-0.7588)
12063 -- (-0.4522,-0.7168)
12064 --cycle
12065 ;
12066 \path[hex/terrain/town/house,pic actions]
12067 (-0.3963,-0.6922)
12068 -- (-0.3778,-0.7343)
12069 -- (-0.4338,-0.7588)
12070 -- (-0.4522,-0.7168)
12071 --cycle
12072 ;
12073 \path[hex/terrain/town/house,pic actions]
12074 (-0.6145,-0.5157)
12075 -- (-0.5944,-0.5570)
12076 -- (-0.6493,-0.5836)
12077 -- (-0.6694,-0.5423)
12078 --cycle
12079 ;
12080 \path[hex/terrain/town/house,pic actions]
12081 (-0.6145,-0.5157)
12082 -- (-0.5944,-0.5570)
12083 -- (-0.6493,-0.5836)
12084 -- (-0.6694,-0.5423)
12085 --cycle

```

```

12086 ;
12087 \path[hex/terrain/town/house,pic actions]
12088 (-0.8791,-0.2053)
12089 -- (-0.8402,-0.1810)
12090 -- (-0.8079,-0.2327)
12091 -- (-0.8468,-0.2571)
12092 --cycle
12093 ;
12094 \path[hex/terrain/town/house,pic actions]
12095 (-0.8791,-0.2053)
12096 -- (-0.8402,-0.1810)
12097 -- (-0.8079,-0.2327)
12098 -- (-0.8468,-0.2571)
12099 --cycle
12100 ;
12101 \path[hex/terrain/town/house,pic actions]
12102 (-0.9144, 0.1039)
12103 -- (-0.8919, 0.1439)
12104 -- (-0.8388, 0.1140)
12105 -- (-0.8613, 0.0740)
12106 --cycle
12107 ;
12108 \path[hex/terrain/town/house,pic actions]
12109 (-0.9144, 0.1039)
12110 -- (-0.8919, 0.1439)
12111 -- (-0.8388, 0.1140)
12112 -- (-0.8613, 0.0740)
12113 --cycle
12114 ;
12115 \path[hex/terrain/town/house,pic actions]
12116 (-0.4095, 0.2277)
12117 -- (-0.3639, 0.2229)
12118 -- (-0.3703, 0.1622)
12119 -- (-0.4159, 0.1670)
12120 --cycle
12121 ;
12122 \path[hex/terrain/town/house,pic actions]
12123 (-0.4095, 0.2277)
12124 -- (-0.3639, 0.2229)
12125 -- (-0.3703, 0.1622)
12126 -- (-0.4159, 0.1670)
12127 --cycle
12128 ;
12129 \path[hex/terrain/town/house,pic actions]
12130 (-0.3590, 0.4200)
12131 -- (-0.3365, 0.4600)
12132 -- (-0.2833, 0.4302)
12133 -- (-0.3058, 0.3901)
12134 --cycle
12135 ;
12136 \path[hex/terrain/town/house,pic actions]
12137 (-0.3590, 0.4200)
12138 -- (-0.3365, 0.4600)

```

```

12139 -- (-0.2833, 0.4302)
12140 -- (-0.3058, 0.3901)
12141 --cycle
12142 ;
12143 \path[hex/terrain/town/house,pic actions]
12144 (-0.0764, 0.3204)
12145 -- (-0.0539, 0.3604)
12146 -- (-0.0007, 0.3306)
12147 -- (-0.0232, 0.2905)
12148 --cycle
12149 ;
12150 \path[hex/terrain/town/house,pic actions]
12151 (-0.0764, 0.3204)
12152 -- (-0.0539, 0.3604)
12153 -- (-0.0007, 0.3306)
12154 -- (-0.0232, 0.2905)
12155 --cycle
12156 ;
12157 \path[hex/terrain/town/house,pic actions]
12158 (-0.1364, 0.0430)
12159 -- (-0.1139, 0.0831)
12160 -- (-0.0607, 0.0532)
12161 -- (-0.0832, 0.0131)
12162 --cycle
12163 ;
12164 \path[hex/terrain/town/house,pic actions]
12165 (-0.1364, 0.0430)
12166 -- (-0.1139, 0.0831)
12167 -- (-0.0607, 0.0532)
12168 -- (-0.0832, 0.0131)
12169 --cycle
12170 ;
12171 \path[hex/terrain/town/house,pic actions]
12172 (-0.1269, 0.1239)
12173 -- (-0.1149, 0.1681)
12174 -- (-0.0560, 0.1521)
12175 -- (-0.0681, 0.1078)
12176 --cycle
12177 ;
12178 \path[hex/terrain/town/house,pic actions]
12179 (-0.1269, 0.1239)
12180 -- (-0.1149, 0.1681)
12181 -- (-0.0560, 0.1521)
12182 -- (-0.0681, 0.1078)
12183 --cycle
12184 ;
12185 \path[hex/terrain/town/house,pic actions]
12186 (-0.6443,-0.1022)
12187 -- (-0.6321,-0.0579)
12188 -- (-0.5733,-0.0740)
12189 -- (-0.5854,-0.1183)
12190 --cycle
12191 ;

```

```

12192 \path[hex/terrain/town/house,pic actions]
12193 (-0.6443,-0.1022)
12194 -- (-0.6321,-0.0579)
12195 -- (-0.5733,-0.0740)
12196 -- (-0.5854,-0.1183)
12197 --cycle
12198 ;
12199 \path[hex/terrain/town/house,pic actions]
12200 (-0.6032, 0.2357)
12201 -- (-0.5912, 0.2800)
12202 -- (-0.5323, 0.2639)
12203 -- (-0.5443, 0.2196)
12204 --cycle
12205 ;
12206 \path[hex/terrain/town/house,pic actions]
12207 (-0.6032, 0.2357)
12208 -- (-0.5912, 0.2800)
12209 -- (-0.5323, 0.2639)
12210 -- (-0.5443, 0.2196)
12211 --cycle
12212 ;
12213 \path[hex/terrain/town/house,pic actions]
12214 (-0.7230, 0.0020)
12215 -- (-0.7026, 0.0432)
12216 -- (-0.6479, 0.0162)
12217 -- (-0.6682,-0.0250)
12218 --cycle
12219 ;
12220 \path[hex/terrain/town/house,pic actions]
12221 (-0.7230, 0.0020)
12222 -- (-0.7026, 0.0432)
12223 -- (-0.6479, 0.0162)
12224 -- (-0.6682,-0.0250)
12225 --cycle
12226 ;
12227 \path[hex/terrain/town/house,pic actions]
12228 (-0.5055, 0.2596)
12229 -- (-0.4629, 0.2423)
12230 -- (-0.4859, 0.1858)
12231 -- (-0.5285, 0.2031)
12232 --cycle
12233 ;
12234 \path[hex/terrain/town/house,pic actions]
12235 (-0.5055, 0.2596)
12236 -- (-0.4629, 0.2423)
12237 -- (-0.4859, 0.1858)
12238 -- (-0.5285, 0.2031)
12239 --cycle
12240 ;
12241 \path[hex/terrain/town/house,pic actions]
12242 ( 0.1337, 0.3296)
12243 -- ( 0.1283, 0.2840)
12244 -- ( 0.0677, 0.2911)

```

```

12245 -- ( 0.0731, 0.3367)
12246 --cycle
12247 ;
12248 \path[hex/terrain/town/house,pic actions]
12249 ( 0.1337, 0.3296)
12250 -- ( 0.1283, 0.2840)
12251 -- ( 0.0677, 0.2911)
12252 -- ( 0.0731, 0.3367)
12253 --cycle
12254 ;
12255 \path[hex/terrain/town/house,pic actions]
12256 ( 0.1476, 0.4414)
12257 -- ( 0.1506, 0.3955)
12258 -- ( 0.0897, 0.3916)
12259 -- ( 0.0867, 0.4375)
12260 --cycle
12261 ;
12262 \path[hex/terrain/town/house,pic actions]
12263 ( 0.1476, 0.4414)
12264 -- ( 0.1506, 0.3955)
12265 -- ( 0.0897, 0.3916)
12266 -- ( 0.0867, 0.4375)
12267 --cycle
12268 ;
12269 \path[hex/terrain/town/house,pic actions]
12270 ( 0.0539,-0.1542)
12271 -- ( 0.0687,-0.1107)
12272 -- ( 0.1264,-0.1304)
12273 -- ( 0.1116,-0.1738)
12274 --cycle
12275 ;
12276 \path[hex/terrain/town/house,pic actions]
12277 ( 0.0539,-0.1542)
12278 -- ( 0.0687,-0.1107)
12279 -- ( 0.1264,-0.1304)
12280 -- ( 0.1116,-0.1738)
12281 --cycle
12282 ;
12283 \path[hex/terrain/town/house,pic actions]
12284 (-0.0962,-0.1436)
12285 -- (-0.0814,-0.1001)
12286 -- (-0.0237,-0.1198)
12287 -- (-0.0385,-0.1633)
12288 --cycle
12289 ;
12290 \path[hex/terrain/town/house,pic actions]
12291 (-0.0962,-0.1436)
12292 -- (-0.0814,-0.1001)
12293 -- (-0.0237,-0.1198)
12294 -- (-0.0385,-0.1633)
12295 --cycle
12296 ;
12297 \path[hex/terrain/town/house,pic actions]

```



```

12298 (-0.1683,-0.0622)
12299 -- (-0.1535,-0.0188)
12300 -- (-0.0958,-0.0385)
12301 -- (-0.1106,-0.0820)
12302 --cycle
12303 ;
12304 \path[hex/terrain/town/house,pic actions]
12305 (-0.1683,-0.0622)
12306 -- (-0.1535,-0.0188)
12307 -- (-0.0958,-0.0385)
12308 -- (-0.1106,-0.0820)
12309 --cycle
12310 ;
12311 \path[hex/terrain/town/house,pic actions]
12312 (-0.1842,-0.1310)
12313 -- (-0.1694,-0.0876)
12314 -- (-0.1116,-0.1073)
12315 -- (-0.1264,-0.1508)
12316 --cycle
12317 ;
12318 \path[hex/terrain/town/house,pic actions]
12319 (-0.1842,-0.1310)
12320 -- (-0.1694,-0.0876)
12321 -- (-0.1116,-0.1073)
12322 -- (-0.1264,-0.1508)
12323 --cycle
12324 ;
12325 \path[hex/terrain/town/house,pic actions]
12326 ( 0.1167,-0.5813)
12327 -- ( 0.1315,-0.5379)
12328 -- ( 0.1892,-0.5576)
12329 -- ( 0.1744,-0.6011)
12330 --cycle
12331 ;
12332 \path[hex/terrain/town/house,pic actions]
12333 ( 0.1167,-0.5813)
12334 -- ( 0.1315,-0.5379)
12335 -- ( 0.1892,-0.5576)
12336 -- ( 0.1744,-0.6011)
12337 --cycle
12338 ;
12339 \path[hex/terrain/town/house,pic actions]
12340 ( 0.0916,-0.6322)
12341 -- ( 0.1064,-0.5888)
12342 -- ( 0.1642,-0.6085)
12343 -- ( 0.1493,-0.6520)
12344 --cycle
12345 ;
12346 \path[hex/terrain/town/house,pic actions]
12347 ( 0.0916,-0.6322)
12348 -- ( 0.1064,-0.5888)
12349 -- ( 0.1642,-0.6085)
12350 -- ( 0.1493,-0.6520)

```

```

12351  --cycle
12352  ;
12353  \path[hex/terrain/town/house,pic actions]
12354  ( 0.3791,-0.5978)
12355  -- ( 0.3941,-0.5544)
12356  -- ( 0.4518,-0.5741)
12357  -- ( 0.4369,-0.6176)
12358  --cycle
12359  ;
12360  \path[hex/terrain/town/house,pic actions]
12361  ( 0.3791,-0.5978)
12362  -- ( 0.3941,-0.5544)
12363  -- ( 0.4518,-0.5741)
12364  -- ( 0.4369,-0.6176)
12365  --cycle
12366  ;
12367  \path[hex/terrain/town/house,pic actions]
12368  ( 0.4116,-0.5397)
12369  -- ( 0.4392,-0.5029)
12370  -- ( 0.4880,-0.5396)
12371  -- ( 0.4604,-0.5764)
12372  --cycle
12373  ;
12374  \path[hex/terrain/town/house,pic actions]
12375  ( 0.4116,-0.5397)
12376  -- ( 0.4392,-0.5029)
12377  -- ( 0.4880,-0.5396)
12378  -- ( 0.4604,-0.5764)
12379  --cycle
12380  ;
12381  \path[hex/terrain/town/house,pic actions]
12382  ( 0.2218,-0.5853)
12383  -- ( 0.2366,-0.5418)
12384  -- ( 0.2944,-0.5615)
12385  -- ( 0.2796,-0.6051)
12386  --cycle
12387  ;
12388  \path[hex/terrain/town/house,pic actions]
12389  ( 0.2218,-0.5853)
12390  -- ( 0.2366,-0.5418)
12391  -- ( 0.2944,-0.5615)
12392  -- ( 0.2796,-0.6051)
12393  --cycle
12394  ;
12395  \path[hex/terrain/town/house,pic actions]
12396  ( 0.3094, 0.1262)
12397  -- ( 0.3519, 0.1085)
12398  -- ( 0.3284, 0.0522)
12399  -- ( 0.2860, 0.0698)
12400  --cycle
12401  ;
12402  \path[hex/terrain/town/house,pic actions]
12403  ( 0.3094, 0.1262)

```

```

12404 -- ( 0.3519, 0.1085)
12405 -- ( 0.3284, 0.0522)
12406 -- ( 0.2860, 0.0698)
12407 --cycle
12408 ;
12409 \path[hex/terrain/town/house,pic actions]
12410 ( 0.2797, 0.1784)
12411 -- ( 0.3041, 0.1395)
12412 -- ( 0.2524, 0.1070)
12413 -- ( 0.2280, 0.1459)
12414 --cycle
12415 ;
12416 \path[hex/terrain/town/house,pic actions]
12417 ( 0.2797, 0.1784)
12418 -- ( 0.3041, 0.1395)
12419 -- ( 0.2524, 0.1070)
12420 -- ( 0.2280, 0.1459)
12421 --cycle
12422 ;
12423 \path[hex/terrain/town/house,pic actions]
12424 ( 0.7950, 0.1548)
12425 -- ( 0.8065, 0.1103)
12426 -- ( 0.7475, 0.0949)
12427 -- ( 0.7359, 0.1394)
12428 --cycle
12429 ;
12430 \path[hex/terrain/town/house,pic actions]
12431 ( 0.7950, 0.1548)
12432 -- ( 0.8065, 0.1103)
12433 -- ( 0.7475, 0.0949)
12434 -- ( 0.7359, 0.1394)
12435 --cycle
12436 ;
12437 \path[hex/terrain/town/house,pic actions]
12438 ( 0.5739, 0.6926)
12439 -- ( 0.5961, 0.6525)
12440 -- ( 0.5427, 0.6229)
12441 -- ( 0.5205, 0.6632)
12442 --cycle
12443 ;
12444 \path[hex/terrain/town/house,pic actions]
12445 ( 0.5739, 0.6926)
12446 -- ( 0.5961, 0.6525)
12447 -- ( 0.5427, 0.6229)
12448 -- ( 0.5205, 0.6632)
12449 --cycle
12450 ;
12451 \path[hex/terrain/town/house,pic actions]
12452 ( 0.6499, 0.5535)
12453 -- ( 0.6714, 0.5129)
12454 -- ( 0.6174, 0.4844)
12455 -- ( 0.5959, 0.5250)
12456 --cycle

```

```

12457 ;
12458 \path[hex/terrain/town/house,pic actions]
12459 ( 0.6499, 0.5535)
12460 -- ( 0.6714, 0.5129)
12461 -- ( 0.6174, 0.4844)
12462 -- ( 0.5959, 0.5250)
12463 --cycle
12464 ;
12465 \path[hex/terrain/town/house,pic actions]
12466 (-0.4994, 0.7998)
12467 -- (-0.4558, 0.8143)
12468 -- (-0.4364, 0.7565)
12469 -- (-0.4800, 0.7419)
12470 --cycle
12471 ;
12472 \path[hex/terrain/town/house,pic actions]
12473 (-0.4994, 0.7998)
12474 -- (-0.4558, 0.8143)
12475 -- (-0.4364, 0.7565)
12476 -- (-0.4800, 0.7419)
12477 --cycle
12478 ;
12479 \path[hex/terrain/town/house,pic actions]
12480 (-0.3350, 0.7630)
12481 -- (-0.2917, 0.7475)
12482 -- (-0.3125, 0.6901)
12483 -- (-0.3558, 0.7057)
12484 --cycle
12485 ;
12486 \path[hex/terrain/town/house,pic actions]
12487 (-0.3350, 0.7630)
12488 -- (-0.2917, 0.7475)
12489 -- (-0.3125, 0.6901)
12490 -- (-0.3558, 0.7057)
12491 --cycle
12492 ;
12493 \path[hex/terrain/town/house,pic actions]
12494 (-0.4472, 0.6282)
12495 -- (-0.4040, 0.6124)
12496 -- (-0.4252, 0.5551)
12497 -- (-0.4683, 0.5710)
12498 --cycle
12499 ;
12500 \path[hex/terrain/town/house,pic actions]
12501 (-0.4472, 0.6282)
12502 -- (-0.4040, 0.6124)
12503 -- (-0.4252, 0.5551)
12504 -- (-0.4683, 0.5710)
12505 --cycle
12506 ;
12507 \path[hex/terrain/town/house,pic actions]
12508 (-0.5200, 0.6603)
12509 -- (-0.4792, 0.6394)

```

```

12510  -- (-0.5070, 0.5851)
12511  -- (-0.5480, 0.6061)
12512  --cycle
12513  ;
12514  \path[hex/terrain/town/house,pic actions]
12515  (-0.5200, 0.6603)
12516  -- (-0.4792, 0.6394)
12517  -- (-0.5070, 0.5851)
12518  -- (-0.5480, 0.6061)
12519  --cycle
12520  ;
12521  \path[hex/terrain/town/house,pic actions]
12522  (-0.5301, 0.5359)
12523  -- (-0.4915, 0.5109)
12524  -- (-0.5247, 0.4597)
12525  -- (-0.5633, 0.4846)
12526  --cycle
12527  ;
12528  \path[hex/terrain/town/house,pic actions]
12529  (-0.5301, 0.5359)
12530  -- (-0.4915, 0.5109)
12531  -- (-0.5247, 0.4597)
12532  -- (-0.5633, 0.4846)
12533  --cycle
12534  ;
12535  \path[hex/terrain/town/house,pic actions]
12536  (-0.6860, 0.5063)
12537  -- (-0.6426, 0.4914)
12538  -- (-0.6624, 0.4337)
12539  -- (-0.7058, 0.4486)
12540  --cycle
12541  ;
12542  \path[hex/terrain/town/house,pic actions]
12543  (-0.6860, 0.5063)
12544  -- (-0.6426, 0.4914)
12545  -- (-0.6624, 0.4337)
12546  -- (-0.7058, 0.4486)
12547  --cycle
12548  ;
12549  \path[hex/terrain/town/house,pic actions]
12550  (-0.5849, 0.4574)
12551  -- (-0.5414, 0.4425)
12552  -- (-0.5613, 0.3847)
12553  -- (-0.6047, 0.3997)
12554  --cycle
12555  ;
12556  \path[hex/terrain/town/house,pic actions]
12557  (-0.5849, 0.4574)
12558  -- (-0.5414, 0.4425)
12559  -- (-0.5613, 0.3847)
12560  -- (-0.6047, 0.3997)
12561  --cycle
12562  ;

```

```

12563 \path[hex/terrain/town/house,pic actions]
12564 (-0.4531,-0.1794)
12565 -- (-0.4094,-0.1941)
12566 -- (-0.4289,-0.2518)
12567 -- (-0.4725,-0.2372)
12568 --cycle
12569 ;
12570 \path[hex/terrain/town/house,pic actions]
12571 (-0.4531,-0.1794)
12572 -- (-0.4094,-0.1941)
12573 -- (-0.4289,-0.2518)
12574 -- (-0.4725,-0.2372)
12575 --cycle
12576 ;
12577 \path[hex/terrain/town/house,pic actions]
12578 (-0.3573, 0.0277)
12579 -- (-0.3138, 0.0131)
12580 -- (-0.3333,-0.0447)
12581 -- (-0.3768,-0.0300)
12582 --cycle
12583 ;
12584 \path[hex/terrain/town/house,pic actions]
12585 (-0.3573, 0.0277)
12586 -- (-0.3138, 0.0131)
12587 -- (-0.3333,-0.0447)
12588 -- (-0.3768,-0.0300)
12589 --cycle
12590 ;
12591 \path[hex/terrain/town/house,pic actions]
12592 ( 0.3354,-0.4695)
12593 -- ( 0.3141,-0.5101)
12594 -- ( 0.2601,-0.4816)
12595 -- ( 0.2815,-0.4410)
12596 --cycle
12597 ;
12598 \path[hex/terrain/town/house,pic actions]
12599 ( 0.3354,-0.4695)
12600 -- ( 0.3141,-0.5101)
12601 -- ( 0.2601,-0.4816)
12602 -- ( 0.2815,-0.4410)
12603 --cycle
12604 ;
12605 \path[hex/terrain/town/house,pic actions]
12606 ( 0.6206,-0.4111)
12607 -- ( 0.6599,-0.4350)
12608 -- ( 0.6281,-0.4872)
12609 -- ( 0.5889,-0.4632)
12610 --cycle
12611 ;
12612 \path[hex/terrain/town/house,pic actions]
12613 ( 0.6206,-0.4111)
12614 -- ( 0.6599,-0.4350)
12615 -- ( 0.6281,-0.4872)

```

```

12616 -- ( 0.5889,-0.4632)
12617 --cycle
12618 ;
12619 \path[hex/terrain/town/house,pic actions]
12620 ( 0.6061,-0.5834)
12621 -- ( 0.6495,-0.5984)
12622 -- ( 0.6296,-0.6561)
12623 -- ( 0.5861,-0.6411)
12624 --cycle
12625 ;
12626 \path[hex/terrain/town/house,pic actions]
12627 ( 0.6061,-0.5834)
12628 -- ( 0.6495,-0.5984)
12629 -- ( 0.6296,-0.6561)
12630 -- ( 0.5861,-0.6411)
12631 --cycle
12632 ;
12633 \path[hex/terrain/town/house,pic actions]
12634 ( 0.2902, 0.2707)
12635 -- ( 0.3361, 0.2673)
12636 -- ( 0.3317, 0.2065)
12637 -- ( 0.2859, 0.2098)
12638 --cycle
12639 ;
12640 \path[hex/terrain/town/house,pic actions]
12641 ( 0.2902, 0.2707)
12642 -- ( 0.3361, 0.2673)
12643 -- ( 0.3317, 0.2065)
12644 -- ( 0.2859, 0.2098)
12645 --cycle
12646 ;
12647 \path[hex/terrain/town/house,pic actions]
12648 ( 0.2215, 0.2766)
12649 -- ( 0.2673, 0.2733)
12650 -- ( 0.2630, 0.2124)
12651 -- ( 0.2172, 0.2157)
12652 --cycle
12653 ;
12654 \path[hex/terrain/town/house,pic actions]
12655 ( 0.2215, 0.2766)
12656 -- ( 0.2673, 0.2733)
12657 -- ( 0.2630, 0.2124)
12658 -- ( 0.2172, 0.2157)
12659 --cycle
12660 ;
12661 \path[hex/terrain/town/house,pic actions]
12662 (-0.0159, 0.4498)
12663 -- ( 0.0299, 0.4466)
12664 -- ( 0.0256, 0.3857)
12665 -- (-0.0202, 0.3889)
12666 --cycle
12667 ;
12668 \path[hex/terrain/town/house,pic actions]

```

```

12669      (-0.0159, 0.4498)
12670      -- ( 0.0299, 0.4466)
12671      -- ( 0.0256, 0.3857)
12672      -- (-0.0202, 0.3889)
12673      --cycle
12674      ;
12675      \path[hex/terrain/town/house,pic actions]
12676      ( 0.0377, 0.1701)
12677      -- ( 0.0835, 0.1668)
12678      -- ( 0.0791, 0.1060)
12679      -- ( 0.0333, 0.1092)
12680      --cycle
12681      ;
12682      \path[hex/terrain/town/house,pic actions]
12683      ( 0.0377, 0.1701)
12684      -- ( 0.0835, 0.1668)
12685      -- ( 0.0791, 0.1060)
12686      -- ( 0.0333, 0.1092)
12687      --cycle
12688      ;
12689      \path[hex/terrain/town/house,pic actions]
12690      ( 0.0944, 0.1648)
12691      -- ( 0.1403, 0.1657)
12692      -- ( 0.1415, 0.1047)
12693      -- ( 0.0955, 0.1038)
12694      --cycle
12695      ;
12696      \path[hex/terrain/town/house,pic actions]
12697      ( 0.0944, 0.1648)
12698      -- ( 0.1403, 0.1657)
12699      -- ( 0.1415, 0.1047)
12700      -- ( 0.0955, 0.1038)
12701      --cycle
12702      ;
12703      \path[hex/terrain/town/house,pic actions]
12704      ( 0.2434, 0.4429)
12705      -- ( 0.2698, 0.4054)
12706      -- ( 0.2199, 0.3702)
12707      -- ( 0.1935, 0.4077)
12708      --cycle
12709      ;
12710      \path[hex/terrain/town/house,pic actions]
12711      ( 0.2434, 0.4429)
12712      -- ( 0.2698, 0.4054)
12713      -- ( 0.2199, 0.3702)
12714      -- ( 0.1935, 0.4077)
12715      --cycle
12716      ;
12717      \path[hex/terrain/town/house,pic actions]
12718      ( 0.4777, 0.5914)
12719      -- ( 0.4980, 0.5501)
12720      -- ( 0.4432, 0.5232)
12721      -- ( 0.4229, 0.5644)

```



```

12722  --cycle
12723  ;
12724  \path[hex/terrain/town/house,pic actions]
12725  ( 0.4777, 0.5914)
12726  -- ( 0.4980, 0.5501)
12727  -- ( 0.4432, 0.5232)
12728  -- ( 0.4229, 0.5644)
12729  --cycle
12730  ;
12731  \path[hex/terrain/town/house,pic actions]
12732  ( 0.4936, 0.5331)
12733  -- ( 0.5191, 0.4949)
12734  -- ( 0.4683, 0.4611)
12735  -- ( 0.4428, 0.4993)
12736  --cycle
12737  ;
12738  \path[hex/terrain/town/house,pic actions]
12739  ( 0.4936, 0.5331)
12740  -- ( 0.5191, 0.4949)
12741  -- ( 0.4683, 0.4611)
12742  -- ( 0.4428, 0.4993)
12743  --cycle
12744  ;
12745  \path[hex/terrain/town/house,pic actions]
12746  ( 0.4667, 0.4393)
12747  -- ( 0.4871, 0.3980)
12748  -- ( 0.4323, 0.3711)
12749  -- ( 0.4120, 0.4123)
12750  --cycle
12751  ;
12752  \path[hex/terrain/town/house,pic actions]
12753  ( 0.4667, 0.4393)
12754  -- ( 0.4871, 0.3980)
12755  -- ( 0.4323, 0.3711)
12756  -- ( 0.4120, 0.4123)
12757  --cycle
12758  ;
12759  \path[hex/terrain/town/house,pic actions]
12760  (-0.2446,-0.1495)
12761  -- (-0.2153,-0.1488)
12762  -- (-0.2138,-0.2024)
12763  -- (-0.2431,-0.2032)
12764  --cycle
12765  ;
12766  \path[hex/terrain/town/house,pic actions]
12767  (-0.2446,-0.1495)
12768  -- (-0.2153,-0.1488)
12769  -- (-0.2138,-0.2024)
12770  -- (-0.2431,-0.2032)
12771  --cycle
12772  ;
12773  \path[hex/terrain/town/house,pic actions]
12774  (-0.1018, 0.2179)

```

```

12775 -- (-0.0915, 0.2454)
12776 -- (-0.0412, 0.2264)
12777 -- (-0.0516, 0.1989)
12778 --cycle
12779 ;
12780 \path[hex/terrain/town/house,pic actions]
12781 (-0.1018, 0.2179)
12782 -- (-0.0915, 0.2454)
12783 -- (-0.0412, 0.2264)
12784 -- (-0.0516, 0.1989)
12785 --cycle
12786 ;
12787 \path[hex/terrain/town/house,pic actions]
12788 ( 0.4189, 0.2515)
12789 -- ( 0.4645, 0.2567)
12790 -- ( 0.4714, 0.1960)
12791 -- ( 0.4257, 0.1909)
12792 --cycle
12793 ;
12794 \path[hex/terrain/town/house,pic actions]
12795 ( 0.4189, 0.2515)
12796 -- ( 0.4645, 0.2567)
12797 -- ( 0.4714, 0.1960)
12798 -- ( 0.4257, 0.1909)
12799 --cycle
12800 ;
12801 \path[hex/terrain/town/house,pic actions]
12802 ( 0.5784, 0.2650)
12803 -- ( 0.6240, 0.2702)
12804 -- ( 0.6308, 0.2095)
12805 -- ( 0.5852, 0.2043)
12806 --cycle
12807 ;
12808 \path[hex/terrain/town/house,pic actions]
12809 ( 0.5784, 0.2650)
12810 -- ( 0.6240, 0.2702)
12811 -- ( 0.6308, 0.2095)
12812 -- ( 0.5852, 0.2043)
12813 --cycle
12814 ;
12815 \path[hex/terrain/town/house,pic actions]
12816 ( 0.5509, 0.4874)
12817 -- ( 0.5966, 0.4925)
12818 -- ( 0.6034, 0.4319)
12819 -- ( 0.5577, 0.4267)
12820 --cycle
12821 ;
12822 \path[hex/terrain/town/house,pic actions]
12823 ( 0.5509, 0.4874)
12824 -- ( 0.5966, 0.4925)
12825 -- ( 0.6034, 0.4319)
12826 -- ( 0.5577, 0.4267)
12827 --cycle

```

```

12828 ;
12829 \path[hex/terrain/town/house,pic actions]
12830 ( 0.1390, 0.6195)
12831 -- ( 0.1654, 0.5820)
12832 -- ( 0.1155, 0.5468)
12833 -- ( 0.0890, 0.5843)
12834 --cycle
12835 ;
12836 \path[hex/terrain/town/house,pic actions]
12837 ( 0.1390, 0.6195)
12838 -- ( 0.1654, 0.5820)
12839 -- ( 0.1155, 0.5468)
12840 -- ( 0.0890, 0.5843)
12841 --cycle
12842 ;
12843 \path[hex/terrain/town/house,pic actions]
12844 (-0.1780,-0.4082)
12845 -- (-0.1533,-0.3695)
12846 -- (-0.1018,-0.4023)
12847 -- (-0.1265,-0.4410)
12848 --cycle
12849 ;
12850 \path[hex/terrain/town/house,pic actions]
12851 (-0.1780,-0.4082)
12852 -- (-0.1533,-0.3695)
12853 -- (-0.1018,-0.4023)
12854 -- (-0.1265,-0.4410)
12855 --cycle
12856 ;
12857 \path[hex/terrain/town/house,pic actions]
12858 (-0.2611,-0.2396)
12859 -- (-0.2175,-0.2543)
12860 -- (-0.2370,-0.3121)
12861 -- (-0.2805,-0.2974)
12862 --cycle
12863 ;
12864 \path[hex/terrain/town/house,pic actions]
12865 (-0.2611,-0.2396)
12866 -- (-0.2175,-0.2543)
12867 -- (-0.2370,-0.3121)
12868 -- (-0.2805,-0.2974)
12869 --cycle
12870 ;
12871 \path[hex/terrain/town/house,pic actions]
12872 ( 0.1640,-0.8299)
12873 -- ( 0.1872,-0.8299)
12874 -- ( 0.1872,-0.8565)
12875 -- ( 0.1640,-0.8565)
12876 --cycle
12877 ;
12878 \path[hex/terrain/town/house,pic actions]
12879 ( 0.1640,-0.8299)
12880 -- ( 0.1872,-0.8299)

```

```

12881  -- ( 0.1872,-0.8565)
12882  -- ( 0.1640,-0.8565)
12883  --cycle
12884  ;
12885  \path[hex/terrain/town/house,pic actions]
12886  (-0.1330,-0.7413)
12887  -- (-0.1099,-0.7413)
12888  -- (-0.1099,-0.7679)
12889  -- (-0.1330,-0.7679)
12890  --cycle
12891  ;
12892  \path[hex/terrain/town/house,pic actions]
12893  (-0.1330,-0.7413)
12894  -- (-0.1099,-0.7413)
12895  -- (-0.1099,-0.7679)
12896  -- (-0.1330,-0.7679)
12897  --cycle
12898  ;
12899  \path[hex/terrain/town/house,pic actions]
12900  (-0.3280,-0.8061)
12901  -- (-0.3049,-0.8061)
12902  -- (-0.3049,-0.8327)
12903  -- (-0.3280,-0.8327)
12904  --cycle
12905  ;
12906  \path[hex/terrain/town/house,pic actions]
12907  (-0.3280,-0.8061)
12908  -- (-0.3049,-0.8061)
12909  -- (-0.3049,-0.8327)
12910  -- (-0.3280,-0.8327)
12911  --cycle
12912  ;
12913  \path[hex/terrain/town/house,pic actions]
12914  (-0.7302,-0.0754)
12915  -- (-0.7099,-0.0866)
12916  -- (-0.7228,-0.1099)
12917  -- (-0.7430,-0.0988)
12918  --cycle
12919  ;
12920  \path[hex/terrain/town/house,pic actions]
12921  (-0.7302,-0.0754)
12922  -- (-0.7099,-0.0866)
12923  -- (-0.7228,-0.1099)
12924  -- (-0.7430,-0.0988)
12925  --cycle
12926  ;
12927  \path[hex/terrain/town/house,pic actions]
12928  (-0.0147, 0.1985)
12929  -- ( 0.0078, 0.1934)
12930  -- ( 0.0020, 0.1675)
12931  -- (-0.0206, 0.1726)
12932  --cycle
12933  ;

```

```

12934 \path[hex/terrain/town/house,pic actions]
12935 (-0.0147, 0.1985)
12936 -- ( 0.0078, 0.1934)
12937 -- ( 0.0020, 0.1675)
12938 -- (-0.0206, 0.1726)
12939 --cycle
12940 ;
12941 \path[hex/terrain/town/house,pic actions]
12942 ( 0.7613, 0.0272)
12943 -- ( 0.7841, 0.0313)
12944 -- ( 0.7889, 0.0050)
12945 -- ( 0.7661, 0.0009)
12946 --cycle
12947 ;
12948 \path[hex/terrain/town/house,pic actions]
12949 ( 0.7613, 0.0272)
12950 -- ( 0.7841, 0.0313)
12951 -- ( 0.7889, 0.0050)
12952 -- ( 0.7661, 0.0009)
12953 --cycle
12954 ;
12955 \path[hex/terrain/town/house,pic actions]
12956 ( 0.0160, 0.0427)
12957 -- ( 0.0379, 0.0352)
12958 -- ( 0.0294, 0.0100)
12959 -- ( 0.0075, 0.0174)
12960 --cycle
12961 ;
12962 \path[hex/terrain/town/house,pic actions]
12963 ( 0.0160, 0.0427)
12964 -- ( 0.0379, 0.0352)
12965 -- ( 0.0294, 0.0100)
12966 -- ( 0.0075, 0.0174)
12967 --cycle
12968 ;
12969 \path[hex/terrain/town/house,pic actions]
12970 ( 0.3515,-0.2403)
12971 -- ( 0.3743,-0.2442)
12972 -- ( 0.3697,-0.2705)
12973 -- ( 0.3469,-0.2665)
12974 --cycle
12975 ;
12976 \path[hex/terrain/town/house,pic actions]
12977 ( 0.3515,-0.2403)
12978 -- ( 0.3743,-0.2442)
12979 -- ( 0.3697,-0.2705)
12980 -- ( 0.3469,-0.2665)
12981 --cycle
12982 ;
12983 \path[hex/terrain/town/house,pic actions]
12984 ( 0.0718, 0.3637)
12985 -- ( 0.0933, 0.3723)
12986 -- ( 0.1032, 0.3476)

```

```

12987 -- ( 0.0817, 0.3390)
12988 --cycle
12989 ;
12990 \path[hex/terrain/town/house,pic actions]
12991 ( 0.0718, 0.3637)
12992 -- ( 0.0933, 0.3723)
12993 -- ( 0.1032, 0.3476)
12994 -- ( 0.0817, 0.3390)
12995 --cycle
12996 ;
12997 \path[hex/terrain/town/house,pic actions]
12998 (-0.2555, 0.2647)
12999 -- (-0.2413, 0.2902)
13000 -- (-0.1944, 0.2641)
13001 -- (-0.2086, 0.2385)
13002 --cycle
13003 ;
13004 \path[hex/terrain/town/house,pic actions]
13005 (-0.2555, 0.2647)
13006 -- (-0.2413, 0.2902)
13007 -- (-0.1944, 0.2641)
13008 -- (-0.2086, 0.2385)
13009 --cycle
13010 ;
13011 \path[hex/terrain/town/house,pic actions]
13012 (-0.2832, 0.1509)
13013 -- (-0.2826, 0.1802)
13014 -- (-0.2289, 0.1792)
13015 -- (-0.2295, 0.1498)
13016 --cycle
13017 ;
13018 \path[hex/terrain/town/house,pic actions]
13019 (-0.2832, 0.1509)
13020 -- (-0.2826, 0.1802)
13021 -- (-0.2289, 0.1792)
13022 -- (-0.2295, 0.1498)
13023 --cycle
13024 ;
13025 \path[hex/terrain/town/house,pic actions]
13026 (-0.5694, 0.6977)
13027 -- (-0.5248, 0.6870)
13028 -- (-0.5390, 0.6277)
13029 -- (-0.5837, 0.6384)
13030 --cycle
13031 ;
13032 \path[hex/terrain/town/house,pic actions]
13033 (-0.5694, 0.6977)
13034 -- (-0.5248, 0.6870)
13035 -- (-0.5390, 0.6277)
13036 -- (-0.5837, 0.6384)
13037 --cycle
13038 ;
13039 \path[hex/terrain/town/house,pic actions]

```

```

13040 (-0.6046, 0.6071)
13041 -- (-0.5747, 0.5723)
13042 -- (-0.6210, 0.5326)
13043 -- (-0.6509, 0.5674)
13044 --cycle
13045 ;
13046 \path[hex/terrain/town/house,pic actions]
13047 (-0.6046, 0.6071)
13048 -- (-0.5747, 0.5723)
13049 -- (-0.6210, 0.5326)
13050 -- (-0.6509, 0.5674)
13051 --cycle
13052 ;
13053 \path[hex/terrain/town/house,pic actions]
13054 (-0.2915,-0.1208)
13055 -- (-0.2462,-0.1288)
13056 -- (-0.2569,-0.1889)
13057 -- (-0.3021,-0.1809)
13058 --cycle
13059 ;
13060 \path[hex/terrain/town/house,pic actions]
13061 (-0.2915,-0.1208)
13062 -- (-0.2462,-0.1288)
13063 -- (-0.2569,-0.1889)
13064 -- (-0.3021,-0.1809)
13065 --cycle
13066 ;
13067 \path[hex/terrain/town/house,pic actions]
13068 ( 0.1636, 0.0236)
13069 -- ( 0.2095, 0.0215)
13070 -- ( 0.2067,-0.0394)
13071 -- ( 0.1608,-0.0374)
13072 --cycle
13073 ;
13074 \path[hex/terrain/town/house,pic actions]
13075 ( 0.1636, 0.0236)
13076 -- ( 0.2095, 0.0215)
13077 -- ( 0.2067,-0.0394)
13078 -- ( 0.1608,-0.0374)
13079 --cycle
13080 ;
13081 \path[hex/terrain/town/house,pic actions]
13082 (-0.0653,-0.5296)
13083 -- (-0.0423,-0.5269)
13084 -- (-0.0391,-0.5533)
13085 -- (-0.0621,-0.5560)
13086 --cycle
13087 ;
13088 \path[hex/terrain/town/house,pic actions]
13089 (-0.0653,-0.5296)
13090 -- (-0.0423,-0.5269)
13091 -- (-0.0391,-0.5533)
13092 -- (-0.0621,-0.5560)

```

```

13093   --cycle
13094   ;
13095   \path[hex/terrain/town/house,pic actions]
13096   (-0.3393, 0.1912)
13097   -- (-0.3173, 0.1843)
13098   -- (-0.3254, 0.1589)
13099   -- (-0.3474, 0.1659)
13100   --cycle
13101   ;
13102   \path[hex/terrain/town/house,pic actions]
13103   (-0.3393, 0.1912)
13104   -- (-0.3173, 0.1843)
13105   -- (-0.3254, 0.1589)
13106   -- (-0.3474, 0.1659)
13107   --cycle
13108   ;
13109   \path[hex/terrain/town/house,pic actions]
13110   (-0.2247, 0.5875)
13111   -- (-0.2027, 0.5801)
13112   -- (-0.2113, 0.5549)
13113   -- (-0.2332, 0.5623)
13114   --cycle
13115   ;
13116   \path[hex/terrain/town/house,pic actions]
13117   (-0.2247, 0.5875)
13118   -- (-0.2027, 0.5801)
13119   -- (-0.2113, 0.5549)
13120   -- (-0.2332, 0.5623)
13121   --cycle
13122   ;
13123   \path[hex/terrain/town/house,pic actions]
13124   ( 0.3747, 0.1590)
13125   -- ( 0.4022, 0.1690)
13126   -- ( 0.4206, 0.1185)
13127   -- ( 0.3930, 0.1085)
13128   --cycle
13129   ;
13130   \path[hex/terrain/town/house,pic actions]
13131   ( 0.3747, 0.1590)
13132   -- ( 0.4022, 0.1690)
13133   -- ( 0.4206, 0.1185)
13134   -- ( 0.3930, 0.1085)
13135   --cycle
13136   ;
13137 }
13138 }
13139 \fi

```

hex/terrain/mountain

This is an example of a terrain picture.

```

13140 \tikzset{
13141   hex/terrain/mountain/.pic={%

```



```

13142 \path[draw=black,fill=white] (0,0) -- (.3,.9)--(.45,0) -- cycle;
13143 \path[draw=black,fill=lightgray,pic actions]
13144 (-.6 ,-.9) --
13145 (-.3 , .3) --
13146 ( 0, 0) --
13147 ( .45, 0) --
13148 ( .6 , -.9) -- cycle;
13149 }
13150 }

```

hex/terrain/tree

```

13151 \tikzset{
13152   hex/terrain/tree/.pic={
13153     \path[draw,very thick,pic actions]
13154       (-.15,.0)
13155       arc (269:135:.1)
13156       arc (215: 90:.1)
13157       arc (180: 45:.1)
13158       arc (135: 0:.1)
13159       arc ( 90:-45:.1)
13160       arc ( 45:-90:.1)
13161       (-.15,.025)
13162       arc (60:-60:.25)
13163       arc (150:30:.075)
13164       arc (150:30:.075)
13165       arc (150:30:.075)
13166       arc (-120:-240:.25);
13167   }
13168 }
13169 }

```

5.4.6 Ridges

A hex can be decorated with up to 6 ridges — one for each edge of the hexagon. The first thing is to set up the graphics style to use for the ridges. We use the `wave` decoration.

If rounded corners are set for ridges, (e.g., via `every hex ridges`), then it should be 0pt or 4pt (roughly 2mm) or larger. Otherwise, one will get a “dimension too large” error.

```

13170 \tikzset{%
13171   hex/ridges pre/.style={
13172     line cap=round,
13173     draw=pgfstrokecolor,
13174     solid,
13175     /hex/ridges/.cd,%
13176     radius=0.85,%
13177     n=4,
13178     R=.25,
13179   },
13180   hex/ridges/.style={
13181     get scale,

```

```

13182   decoration={
13183     path has corners=true,
13184     waves,
13185     radius=\wg@scale\hex@r@R,
13186     segment length=\wg@scale\hex@r@s,
13187   },
13188   decorate}}

```

To properly set up the ridges, we need to concatenate ridge paths in order. To facilitate that, we define 6 `\ifs` — one for each edge.

```

13189 \newif\ifhex@r@ne
13190 \newif\ifhex@r@n
13191 \newif\ifhex@r@nw
13192 \newif\ifhex@r@sw
13193 \newif\ifhex@r@s
13194 \newif\ifhex@r@se

```

Next is the keys for each edge. These will set the above `\ifs` to `true`. We put these into the family `/hex/r` so that we can parse them separately.

```

13195 \tikzset{%
13196   /hex/ridges/.search also={/tikz},
13197   /hex/ridges/.cd,
13198   north east/.is if=hex@r@ne,
13199   north/.is if=hex@r@n,
13200   north west/.is if=hex@r@nw,
13201   south west/.is if=hex@r@sw,
13202   south/.is if=hex@r@s,
13203   south east/.is if=hex@r@se,
13204   radius/.store in=\hex@r@r,
13205   curve radius/.store in=\hex@r@w,
13206   NE/.is if=hex@r@ne,
13207   N/.is if=hex@r@n,
13208   NW/.is if=hex@r@nw,
13209   SW/.is if=hex@r@sw,
13210   S/.is if=hex@r@s,
13211   SE/.is if=hex@r@se,
13212   r/.store in=\hex@r@r,
13213   n/.store in=\hex@r@n,
13214   R/.store in=\hex@r@w,
13215 }

```

`\hex@do@ridges`

This is the macro that actually generates the ridge. We use the same PGF filtered key parsing trick as above. Note that the routine below is handcrafted since it is relatively simple.

```

13216 \newdimen\hex@r@s
13217 \newdimen\hex@r@R
13218 \def\hex@do@ridges{%
13219   \edef\hex@r@tmp{[
13220     hex/ridges pre,

```

```

13221 /tikz/every hex ridges/.try,
13222 \hex@ridges]]
13223 \expandafter\scope\hex@tmp%
13224 \hex@dbg{3}{Ridges: '\meaning\hex@ridges', '\meaning\hex@tmp'
13225 ^^Jnorth east=\ifhex@one yes\else no\fi
13226 ^^Jnorth      =\ifhex@rn yes\else no\fi
13227 ^^Jnorth west=\ifhex@rnw yes\else no\fi
13228 ^^Jsouth west=\ifhex@rsw yes\else no\fi
13229 ^^Jsouth      =\ifhex@rs yes\else no\fi
13230 ^^Jsouth east=\ifhex@rse yes\else no\fi
13231 ^^Jradius      =\hex@r@r
13232 ^^Jn           =\hex@rn
13233 }
13234 \pgfmathparse{\hex@r@r/\hex@rn}\xdef\hex@rt{\pgfmathresult}
13235 \hex@rs=\hex@rt cm
13236 \hex@R=\hex@rw cm
13237 \def\hex@p{}
13238 % Hand written algorithm
13239 \ifhex@one
13240   \ifhex@rse
13241     \xdef\hex@p{(0:\hex@r)--(60:\hex@r)}
13242   \else
13243     \xdef\hex@p{($ (0:\hex@r)+(-60:\hex@rt/2)$)--(60:\hex@r)}
13244   \fi
13245   \hex@dbg{4}{Ridge along north east edge: '\hex@p'}
13246 \fi
13247 \ifhex@rn
13248   \ifhex@rne\else
13249     \xdef\hex@p{\hex@p ($ ( 60:\hex@r)+(0:\hex@rt/2)$)}
13250   \fi
13251   \xdef\hex@p{\hex@p --(120:\hex@r)}
13252   \hex@dbg{4}{Ridge along north edge: '\hex@p'}
13253 \fi
13254 \ifhex@rnw
13255   \ifhex@rn\else
13256     \xdef\hex@p{\hex@p ($ (120:\hex@r)+(60:\hex@rt/2)$)}
13257   \fi
13258   \xdef\hex@p{\hex@p --(180:\hex@r)}
13259   \hex@dbg{4}{Ridge along north west: '\hex@p'}
13260 \fi
13261 \ifhex@rsw
13262   \ifhex@rnw\else
13263     \xdef\hex@p{\hex@p ($ (180:\hex@r)+(120:\hex@rt/2)$)}
13264   \fi
13265   \ifhex@rs
13266     \xdef\hex@p{\hex@p --(240:\hex@r)}
13267   \else
13268     \xdef\hex@p{\hex@p --(240:\hex@r)}
13269   \fi
13270   \hex@dbg{4}{Ridge along south west: '\hex@p'}
13271 \fi
13272 \ifhex@rs
13273   \ifhex@rsw\else

```

```

13274     \xdef\hex@r@p{\hex@r@p {$(240:\hex@r@r)+(-\hex@r@t/2,0)$}}
13275     \fi
13276     \ifhex@r@se
13277         \xdef\hex@r@p{\hex@r@p --(300:\hex@r@r)}
13278     \else
13279         \xdef\hex@r@p{\hex@r@p --(300.5:\hex@r@r)}
13280     \fi
13281     \hex@dbg{4}{Ridge along south: '\hex@r@p'}
13282 \fi
13283 \ifhex@r@se
13284     \ifhex@r@s\else
13285         \xdef\hex@r@p{\hex@r@p {$(300:\hex@r@r)+(-120:\hex@r@t/2)$}}
13286     \fi
13287     \ifhex@r@ne
13288         %\xdef\hex@r@p{\hex@r@p --cycle}
13289     \xdef\hex@r@p{\hex@r@p -- (0:\hex@r@r)}
13290     \else
13291         \xdef\hex@r@p{\hex@r@p --(.5:\hex@r@r)}
13292     \fi
13293     \hex@dbg{4}{Ridge along south east: '\hex@r@p'}
13294 \fi
13295 \hex@dbg{3}{ Ridges path: \hex@r@p}
13296 % \draw[red] \hex@r@p;
13297 \draw[hex/ridges] \hex@r@p;
13298 \endscope% End of ridges scope
13299 }

```

5.4.7 Towns

Similar to above, we define a namespace and family for towns. First thing is the graphics style for towns.

```

13300 \tikzset{%
13301   hex/town/.style={
13302     scale line widths,
13303     solid,
13304     thin,
13305     fill=pgfstrokecolor,
13306     color=pgfstrokecolor},
13307   hex/town name/.style={
13308     transform shape,
13309     shape=rectangle,
13310     above right=.1,
13311     color=pgfstrokecolor,
13312     font=\sffamily\fontsize{11}{13}\selectfont}
13313 }

```

Next is the namespace for dealing with towns.

```

13314 \tikzset{%
13315   /hex/town/.search also={/tikz},%
13316   /hex/town/.cd,
13317   pic/.store in=\hex@cc@pic,
13318   type/.store in=\hex@cc@pic,

```

```

13319 place/.store in=\hex@c@pos,
13320 location/.store in=\hex@c@pos,
13321 name/.store in=\hex@c@name,
13322 village/.style={pic=hex/town/village},
13323 town/.style={pic=hex/town/town},
13324 city/.style={pic=hex/town/city}
13325 }

```

And some pictures for making the towns.

```

13326 \tikzset{%
13327   hex/town/village/.pic={\path[fill,solid,pic actions] circle(.1);},
13328   hex/town/town/.pic={\path[fill,solid,pic actions] circle(.2);},
13329   hex/town/city/.pic={%
13330     \path[fill,solid,pic actions] circle(.25);
13331     \path[draw,solid,pic actions] circle(.35);}
13332 }

```

\hex@do@town

The macro to make the towns. This uses same tricks as above.

```

13333 \def\hex@c@nameparse{%
13334   \@ifnextchar[{\hex@c@namep@rse}{\hex@c@namep@rse[]}%
13335 }
13336 \def\hex@c@namep@rse[#1]#2\endhex@c@nameparse{%
13337   \def\hex@c@node{node[shape=rectangle,hex/town name,#1]{#2}}
13338
13339 \def\hex@do@town{%
13340   \edef\hex@c@tmp{[
13341     /hex/town/.cd,%
13342     town,%
13343     /tikz/hex/town,%
13344     /tikz/every hex town/.try,
13345     \hex@town]}
13346   \expandafter\scope\hex@c@tmp%
13347     \ifx\hex@c@pic\empty\else%
13348       \@ifundefined{hex@c@pos}{\let\hex@c@pos\empty}{-}
13349       \@ifundefined{hex@c@name}{\let\hex@c@name\empty}{-}
13350       \expandafter\hex@c@nameparse\hex@c@name\endhex@c@nameparse%
13351       \ifx\hex@c@pos\empty\def\hex@c@pos{(0,0)}\fi
13352       \hex@dbg{2}{Town:
13353         ^^J text=\hex@c@name
13354         ^^J pic=\hex@c@pic
13355         ^^J place=\hex@c@pos
13356         ^^J node=\hex@c@node
13357       }
13358       \filldraw \hex@c@pos pic{\hex@c@pic} \hex@c@node;
13359     \fi%
13360   \endscope%
13361 }

```

5.4.8 Labels

Like terrains, we will set up some macros for dealing with labels.

To process coordinates and turn them into labels, we set up two counters.

```
13362 \newcounter{hex@l@c}
13363 \newcounter{hex@l@r}
```

In case we want to invert the row axis, we set-up a key to set the maximum row number.

```
13364 \def\hex@max@row{-1}
13365 \tikzset{
13366   max hex row/.store in=\hex@max@row,
13367 }
```

Again, we will make a separate namespace/family for the handling labels. We also define a counter which we will use to typeset alphabetic column numbers.

First a graphics style.

```
13368 \tikzset{%
13369   hex/label/.style={%
13370     draw=none,%
13371     shape=rectangle,%
13372     anchor=north,%
13373     color=gray,%
13374     font=\sffamily\bfseries\scriptsize,%
13375     inner sep=0},
13376 }
```

Next, the choices of how to make a label. These are put in the `/hex/label` family to make it easy to parse out only these keys. This uses some macros defined below. Note, this uses the macros `\hex@col` and `\hex@row` defined by the hex coordinate system.

```
13377 \tikzset{%
13378   /hex/label/.search also={/tikz},
13379   /hex/label/.cd,
13380   none/.code={\global\let\hex@l@text\@empty},
13381   auto/.is choice,
13382   auto/none/.code={\global\let\hex@l@text\@empty},
13383   auto/numbers/.code={%
13384     \hex@l@abs%
13385     \xdef\hex@l@text{%
13386       \hex@l@n@pad{\the\c@hex@l@c}%
13387       \hex@l@n@pad{\the\c@hex@l@r}}},
13388   auto/alpha column/.code={%
13389     \xdef\hex@l@text{%
13390       \ifnum0>\hex@col\AlphAlph{-\hex@col}\else\AlphAlph{\hex@col}\fi%
13391       \hex@row}},
13392   auto/alpha 2 column/.code={%
13393     \hex@l@abs%
13394     \advance\c@hex@l@c27\relax%
13395     \xdef\hex@l@text{%
13396       \AlphAlph{\value{hex@l@c}}%

```

```

13397     \hex@l@n@pad{\hex@row}},
13398 auto/inv y x plus 1/.code={%
13399   \hex@dbg{3}{Inverse row, add one to column with arg '#1'}
13400   \let\hex@l@text\@empty%
13401   \ifnum\hex@max@row>0%
13402     \pgfmathtruncatemacro{\hex@l@row}{\hex@max@row-\hex@row}
13403     \pgfmathtruncatemacro{\hex@l@col}{1+\hex@col}
13404     \xdef\hex@l@text{%
13405       \hex@l@n@pad{\hex@l@col}%
13406       \hex@l@n@pad{\hex@l@row}}
13407   \else\message{Max row number not set}\fi},
13408 auto/x and y plus 1/.code={%
13409   \hex@dbg{3}{Inverse row, add one to column with arg '#1'}
13410   \pgfmathtruncatemacro{\hex@l@row}{1+\hex@row}
13411   \pgfmathtruncatemacro{\hex@l@col}{1+\hex@col}
13412   \xdef\hex@l@text{%
13413     \hex@l@n@pad{\hex@l@col}%
13414     \hex@l@n@pad{\hex@l@row}}},
13415 auto/.default=numbers,
13416 %text/.store in=\hex@l@text,
13417 text/.code={\gdef\hex@l@text{#1}},
13418 place/.store in=\hex@l@pos,
13419 location/.forward to=/hex/label/place,
13420 rotate/.store in=\hex@l@rot
13421 }

```

`\hex@l@abs`

This takes the absolute value of row and column numbers.

```

13422 \def\hex@l@abs{
13423   \setcounter{hex@l@c}{\hex@col}
13424   \setcounter{hex@l@r}{\hex@row}
13425   \expandafter\ifnum\value{hex@l@c}<0\multiply\c@hex@l@c by-1\fi%
13426   \expandafter\ifnum\value{hex@l@r}<0\multiply\c@hex@l@r by-1\fi%
13427   % \hex@dbg{0}{\hex@col->\the\c@hex@l@c\space\hex@row->\the\c@hex@l@r}
13428 }

```

`\hex@l@n@pad`

This will pad a number with a 0 if the number is smaller than 10.

```

13429 \long\def\hex@l@n@pad#1{%
13430   \ifnum#1<10 0\fi%
13431   #1}

```

`\hex@do@label`

This macro puts in the label. First, we reset label keys, then we read in the keys from the argument. If this results in the macro `\hex@l@text` to be non-empty, then we set the label via a `TikZ node`.

```

13432 \def\hex@do@label{%
13433   \hex@dbg{3}{Hex label: '\meaning\hex@label'}%
13434   \edef\hex@l@tmp{[%
13435     /hex/label/.cd,%
13436     rotate=0,%
13437     place={(90:.8)},%
13438     /tikz/hex/label/.try,%
13439     /tikz/every hex label/.try,%
13440     \hex@label]}%
13441   \expandafter\scope\hex@l@tmp%
13442   \hex@dbg{1}{Label:
13443     ^^J Text: '\meaning\hex@l@text'
13444     ^^J Location: '\meaning\hex@l@pos'
13445     ^^J Rotation: '\meaning\hex@l@rot'
13446   }%
13447   \@ifundefined{hex@l@text}{\let\hex@l@text\empty}{}%
13448   \ifx\hex@l@text\empty\else%
13449     \node[rotate=\hex@l@rot] at \hex@l@pos {\hex@l@text};%
13450   \fi%
13451   \endscope%
13452 }

```

5.4.9 Extra graphics

To make the interface a bit more flexible we allow for adding arbitrary stuff to the hexes. Some examples of pictures to add in the `extra` stuff.

hex/fortress

Draw a fortress. An example of a extra graphics entity.

```

13453 \tikzset{%
13454   hex/fortress/.pic={
13455     \path[draw,solid,pic actions]
13456       (0: .9) --
13457       (0: .7) --
13458       (60: .7) -- ( 60:.9) -- ( 60:.7) --
13459       (120:.7) -- (120:.9) -- (120:.7) --
13460       (180:.7) -- (180:.9) -- (180:.7) --
13461       (240:.7) -- (240:.9) -- (240:.7) --
13462       (300:.7) -- (300:.9) -- (300:.7) --
13463       (0: .7) -- cycle;}}

```

hex/fortress 2

Draw a fortress. An example of a extra graphics entity.

```

13464 \tikzset{
13465   hex/fortress 2/.pic={%
13466     \draw[pic actions,transform shape] (0:0.64)
13467     foreach \a in {15,45,...,345}{

```



```

13468     --(\a:0.64)
13469     --(\a:0.80)
13470     --(\a+15:0.80)
13471     --(\a+15:0.64)}
13472   --cycle;
13473 },
13474 }

```

5.4.10 Some macros

```

13475 \DeclareRobustCommand\fortmark[1][scale=.25]{\tikz[#1,transform shape]{%
13476   \pic{hex/fortress 2}}}}
13477 \providecommand\terrainmark[2][scale=.2]{%
13478   \tikz[#1]{\hex[label=,terrain=#2]}}
13479 \providecommand\clearhex[1][scale=.2]{\tikz[#1]{\hex[label=]}}
13480 \providecommand\woodshex[1][scale=.2]{\terrainmark[#1]{woods}}
13481 \providecommand\mountainhex[1][scale=.2]{\terrainmark[#1]{mountains}}
13482 \providecommand\cityhex[1][scale=.2]{\terrainmark[#1]{city}}
13483 \providecommand\beachhex[1][scale=.2]{\terrainmark[#1]{beach}}
13484 \providecommand\seahex[1][scale=.2]{\tikz[#1]{\hex[label=,fill=sea]}}
13485 \providecommand\riverhex[1][scale=.2]{%
13486   \tikz[#1]{%
13487     \hex[label=](c=0,r=0)%
13488     \river[](\hex cs:e=SW)--(\hex cs:e=NE);}}
13489 \providecommand\roadhex[1][scale=.2]{%
13490   \tikz[#1]{%
13491     \hex[label=](c=0,r=0)%
13492     \road(\hex cs:e=SW)--(\hex cs:e=NE);}}

```

5.4.11 Edges, borders, roads, rivers, and so on

Styles of drawing edges, borders, rivers, roads, and railroads.

```

13493 % A decoration to extract outline of a path
13494 \pgfdeclaredecoration{outline}{init}
13495 {%
13496   \state{init}[next state=tick,width=0pt]{
13497     \xdef\outlinerev{}}
13498   \state{tick}[%
13499     width=+\pgfdecorationsegmentlength]%
13500   {
13501     \pgfpathlineto{\pgfpointadd{\pgfpointorigin}{
13502       \pgfpointpolar{\pgfdecorationsegmentangle}{
13503         +\pgfdecorationsegmentamplitude}}}}
13504     \pgf@xa=\pgf@x
13505     \pgf@ya=\pgf@y
13506     \message{^^J\the\pgf@x,\the\pgf@y}
13507     \pgfpointadd{\pgfpointorigin}{
13508       \pgfpointpolar{-\pgfdecorationsegmentangle}{
13509         \pgfdecorationsegmentamplitude}}
13510     \pgfpointtransformed{\pgfpoint{\pgf@x}{\pgf@y}}%
13511     \message{^^J\the\pgf@x,\the\pgf@y}
13512     \xdef\outlinerev{\the\pgf@x/\the\pgf@y,\outlinerev}

```

```

13513 \pgf@x=\pgf@xa
13514 \pgf@y=\pgf@ya
13515 }%
13516 \state{final}
13517 {
13518 \pgfpathlineto{\pgfpointdecoratedpathlast}
13519 \foreach \x/\y in \outlinerev{
13520 \ifx\x\empty\else
13521 \ifx\y\empty\else
13522 \pgf@xa=\x
13523 \pgf@ya=\y
13524 \pgf@nlt@lineto{\pgf@xa}{\pgf@ya}
13525 \fi
13526 \fi
13527 }
13528 }%
13529 }%

```

A decoration to make a fortification line

```

13530 \pgfdeclaredecoration{fortification}{initial}
13531 {
13532 \state{initial}[width=4\pgflinewidth]
13533 {
13534 \pgfpathlineto{\pgfpoint{2\pgflinewidth}{0}}
13535 \pgfpathlineto{\pgfpoint{2\pgflinewidth}{2\pgflinewidth}}
13536 \pgfpathlineto{\pgfpoint{4\pgflinewidth}{2\pgflinewidth}}
13537 \pgfpathlineto{\pgfpoint{4\pgflinewidth}{0}}
13538 }
13539 \state{final}
13540 {
13541 \pgfpathlineto{\pgfpointdecoratedpathlast}
13542 }
13543 }

```

Roads, railroads, rivers, borders.

```

13544 \tikzset{
13545 hex/road/.style={
13546 rounded corners=3\pgflinewidth,% .25cm,
13547 color=black,
13548 transform shape,
13549 scale line widths,
13550 thick,
13551 every hex road/.try,
13552 },
13553 hex/railroad/.style={
13554 %scale line widths,
13555 rounded corners=.25cm,
13556 color=gray!50!black,
13557 transform shape,
13558 every hex railroad/.try,
13559 postaction={draw,decorate},
13560 decoration={ticks,

```

```

13561     segment length=9\pgflinewidth,
13562     amplitude=3\pgflinewidth,%.1cm
13563   }
13564 },
13565 hex/river/.style={
13566   color=blue,
13567   scale line widths,
13568   scale rounded corners,
13569   line width=3pt,
13570   transform shape,
13571   every hex river/.try,
13572   decorate,
13573   decoration={random steps,
13574     segment length=3\pgflinewidth,
13575     amplitude=1.5\pgflinewidth,
13576     pre=lineto,
13577     post=lineto,
13578     pre length=.5\pgflinewidth,
13579     post length=.5\pgflinewidth},
13580   rounded corners=.75\pgflinewidth},
13581 hex/border/.style={
13582   color=gray,
13583   dashed,
13584   transform shape,
13585   scale line widths,
13586   very thick,
13587   rounded corners=3\pgflinewidth,
13588   every hex border/.try
13589 },
13590 %
13591 % Fortification line
13592 %
13593 hex/fortified line/.style={
13594   draw=brown!50!black,
13595   scale line widths,
13596   line width=2pt,
13597   every hex fortification line/.try,
13598   decoration={fortification,raise=-2\pgflinewidth},
13599   decorate},
13600 % every river/.style={},
13601 % every road/.style={},
13602 % every railroad/.style={},
13603 % every border/.style={},
13604 }

```

```

\road
\railroad
\river
\border

```

```

13605 \def\road{%
13606   %\hex@dbg{3}{Road}

```

```

13607 \@ifnextchar[{\road@}{\road@[]}]%
13608 }
13609 \def\road@[#1]{\draw[hex/road,every hex road/.try,#1]}
13610 \def\railroad{%
13611 %\hex@dbg{3}{Rail road}
13612 \@ifnextchar[{\railroad@}{\railroad@[]}]%
13613 }
13614 \def\railroad@[#1]{\draw[hex/railroad,every hex railroad/.try,#1]}
13615 \def\river{%
13616 %\hex@dbg{3}{River}
13617 \@ifnextchar[{\river@}{\river@[]}]%
13618 }
13619 \def\river@[#1]{\draw[hex/river,#1]}
13620 \def\border{%
13621 \hex@dbg{3}{Border}
13622 \@ifnextchar[{\border@}{\border@[]}]%
13623 }
13624 \def\border@[#1]{\draw[hex/border,every hex border/.try,#1]}
13625 \def\fortifiedline{%
13626 \@ifnextchar[{\fortifiedline@}{\fortifiedline@[]}]%
13627 }%
13628 \def\fortifiedline@[#1]{%
13629 \draw[hex/fortified line,every hex fortified line/.try,#1]}

```

5.4.12 Other paths

`\shiftScalePath`

Shifts and scales a path and defines a macro to contain the path

`\shiftScalePath{<macro>}{<relative-coordinates>}`

where *<relative-coordinates>* is a comma separated list of relative coordinates (to the lower-left and upper-right corners)

`<x>/<y>`

Note, this requires that `\boardXmin`, `\boardYmin` and `\boardXmax`, `\boardYmax` is defined. This can be done using the `\boardframe` macro.

```

13630 \def\shiftScalePath#1#2{%
13631 \let\tmp@path\undefined%
13632 \foreach \x/\y in {#2}{%
13633 \pgfmathparse{\x*\boardW+\boardXmin}\xdef\tmp@x{\pgfmathresult}%
13634 \pgfmathparse{\y*\boardH+\boardYmin}\xdef\tmp@y{\pgfmathresult}%
13635 \@ifundefined{tmp@path}{\def\tmp@path{}}{\xdef\tmp@path{\tmp@path--}}%
13636 \xdef\tmp@path{\tmp@path(\tmp@x,\tmp@y)}%
13637 \expandafter\xdef\csname #1\endcsname{\tmp@path}}

```

5.4.13 Move, attacks, retreats from hex to hex

`\hex@getscale`

Get current scaling factor.

```
13638 \def\hex@getscale#1{%
13639   \begingroup
13640   \pgfgettransformentries{%
13641     \scaleA}{%
13642     \scaleB}{%
13643     \scaleC}{%
13644     \scaleD}{%
13645     \whatevs}{%
13646     \whatevs}%
13647   \pgfmathsetmacro{#1}{sqrt(abs(\scaleA*\scaleD-\scaleB*\scaleC))}%
13648   \expandafter
13649   \endgroup
13650   \expandafter\def\expandafter#1\expandafter{#1}%
13651 }
```

Key to get the scale

```
13652 \tikzset{%
13653   hex/get scale/.code={
13654     \hex@getscale{\hex@scale}},
13655 }
```

Style for moves. Use like

```
\path[move] <coordinates>;
```

```
13656 \tikzset{%
13657   % Argument is colour
13658   hex/move/.style={
13659     hex/get scale,
13660     decorate,
13661     decoration={
13662       markings,
13663       mark=between positions 0 and 1 step 0.75*\hex@scale*\hex@dy with {
13664         \node [single arrow,
13665           single arrow head extend=.1*\hex@scale*\hex@dy,
13666           fill=#1,
13667           inner sep=0.05*\hex@scale*\hex@dy,
13668           minimum width=0.02*\hex@scale*\hex@dy,
13669           minimum height=\hex@scale*\hex@dy/2,
13670           transform shape]{};
13671       }
13672     },
13673   },
```

A short move style

```
\path[short move] <coordinates>;
```

```
13674   % Argument is colour
13675   hex/short move/.style={
13676     hex/get scale,
13677     decorate,
```

```

13678   decoration={
13679     markings,
13680     mark=between positions 0 and 1 step 0.5*\hex@scale*\hex@dy with {
13681       \node [single arrow,
13682           single arrow head extend=.1*\hex@scale*\hex@dy,
13683           fill=#1,
13684           inner sep=0.05*\hex@scale*\hex@dy,
13685           minimum width=0.02*\hex@scale*\hex@dy,
13686           minimum height=\hex@scale*\hex@dy/3,
13687           transform shape]{};
13688     }
13689   },
13690 },

```

A short move style

```
\path[long move] <coordinates>;
```

```

13691 % Argument is colour
13692 hex/long move/.style={
13693   hex/get scale,
13694   transform shape,
13695   decorate,
13696   decoration={
13697     markings,
13698     mark=between positions 0 and -.7*\hex@scale*\hex@dy
13699     step 2*\hex@scale*\hex@dy with {
13700       \node [single arrow,
13701           single arrow head extend=3pt,
13702           fill=#1,
13703           anchor=west,
13704           inner sep=\hex@scale*.25mm,
13705           outer sep=.3*\hex@scale*\hex@dy,
13706           minimum width=0.02*\hex@scale*\hex@dy,
13707           minimum height=1.4*\hex@scale*\hex@dy,
13708           transform shape]{};
13709     }
13710   },
13711 },

```

A short move style

```
\path[move with start] <coordinates>;
```

```

13712 % Argument is colour
13713 hex/move with start/.style={
13714   hex/get scale,
13715   decorate,
13716   decoration={
13717     markings,
13718     mark=at position 0 with {
13719       \node [inner sep=0,
13720           circle,
13721           minimum size=\hex@scale*5mm,
13722           fill=#1,

```

```

13723     transform shape] {};},
13724 mark=between positions 0 and 1 step 0.75*\hex@scale*\hex@dy with {
13725     \node [single arrow,
13726         single arrow head extend=.1*\hex@scale*\hex@dy,
13727         fill=#1,
13728         inner sep=0.05*\hex@scale*\hex@dy,
13729         minimum width=0.02*\hex@scale*\hex@dy,
13730         minimum height=\hex@scale*\hex@dy/2,
13731         transform shape]{};
13732     }
13733 },
13734 },
13735 % Default fill colour is black
13736 hex/move/.default=black,
13737 hex/move with start/.default=black,
13738 hex/short move/.default=black,
13739 hex/long move/.default=black,
13740 % Arguments are draw and fill color

```

A move cost style

```
\path[move] ... (coordinate) node[hex/move cost] ...;
```

```

13741 hex/move cost/.style 2 args={
13742     minimum size=1mm,
13743     inner sep=0.1mm,
13744     circle,
13745     fill=#2,
13746     transform shape,
13747     text=#1,
13748     font=\sffamily\bfseries\fontsize{14.4}{17}\selectfont},
13749 hex/move cost/.default={black}{none},
13750 % Argument is fill colour

```

A short line style for retreats, advances, and so on

```
\path[short line] (start)--(end);
```

```

13751 hex/short line/.style={%
13752     hex/get scale,
13753     inherit options/.code={\csname tikz@options\endcsname},
13754     inherit options,
13755     decorate,
13756     decoration={
13757         markings,
13758         mark=between positions \hex@scale*\hex@dy
13759         and 1 step 2*\hex@scale*\hex@dy with {
13760             \node [single arrow,draw=black,fill=#1,
13761                 single arrow head extend=\hex@scale*3pt,
13762                 inner sep=1mm,
13763                 minimum width=0.75*\hex@scale*\hex@dy,
13764                 minimum height=\hex@scale*\hex@dy,
13765                 transform shape]{};
13766         }
13767     },

```

```
13768 },
```

An attack indication style

```
\path[attack] (start)--(end);
```

```
13769 % Argument is fill color
13770 hex/attack/.style={
13771   hex/get scale,
13772   inherit options/.code={\csname tikz@options\endcsname},
13773   inherit options,
13774   decorate,
13775   decoration={
13776     markings,
13777     mark=between positions \hex@scale*\hex@dy
13778     and 1 step 2*\hex@scale*\hex@dy with {
13779       \node [regular polygon,
13780         fill=#1,
13781         draw=#1,
13782         regular polygon sides=3,
13783         inner sep=0,
13784         minimum size=0.75*\hex@scale*\hex@dy,
13785         rotate=-90,
13786         transform shape]{};
13787     }
13788   },
13789 },
```

Short hands

```
\path[attack] (start)--(end);
```

```
13790 % Default colour is red for attacks
13791 hex/attack/.default=red!70!black,
13792 %%
13793 hex/retreat/.style={hex/short line=#1},
13794 hex/retreat/.default=white,
13795 %%
13796 hex/advance/.style={hex/short line=#1},
13797 hex/advance/.default={green!70!black},
13798 }
```

5.4.14 Board clipping and frame

```
\boardframe
```

Define the bounding box around the board

```
\boardframe[margin](lower-left)(upper-right){margin}
```

where *lower-left* and *upper-right* specifies the lower left and upper right hexes (inclusive) of the board.

```
13799 \def\boardframe{%
13800   \@ifnextchar[{\boardframe}{\boardframe[0]}%]
```


13801 }

Below is our new implementation of `\boardframe`. This is split into parts.

First, a macro that will define the path around rectangular placed hexes. This takes 4 mandatory arguments: lower left column and row, and upper right column and row, in that order. It also accepts an optional argument. If this is not empty, then it is assumed to be a style to apply, and hexes will be drawn using that style. The style will be passed the hex coordinates and can react accordingly.

```
13802 \def\bo@rdfr@me{
13803   \@ifnextchar[{\bo@rdfr@me@}{\bo@rdfr@me@[]}%
13804 }
13805 \def\bo@rdfr@me@(#1)#2#3#4#5{
13806   \hex@coords@conv{#1}
13807   % \hex@dbg{0}{#1 -> '\hex@x', '\hex@y'}
13808   \pgfmathparse{min(#2, \hex@x)}\xdef#2{\pgfmathresult}
13809   \pgfmathparse{min(#3, \hex@y)}\xdef#3{\pgfmathresult}
13810   \pgfmathparse{max(#4, \hex@x)}\xdef#4{\pgfmathresult}
13811   \pgfmathparse{max(#5, \hex@y)}\xdef#5{\pgfmathresult}
13812   \hex@dbg{2}{#1 -> ll='#2', '#3', ur='#4', '#5'}
13813 }
13814 \def\bo@rdfr@me@[#1]#2#3#4#5{
13815   % Define rtmp and a ctmp to by directions
13816   \pgfmathparse{int(\hex@coords@row@fac)}\edef\rtmp{\pgfmathresult}
13817   \pgfmathparse{int(\hex@coords@col@fac)}\edef\ctmp{\pgfmathresult}
13818   % Define vertices for path
13819   \def\ctfv{SW}
13820   \def\ctsv{SE}
13821   \def\cbfv{NE}
13822   \def\cbsv{NW}
13823   \def\rrfv{E}
13824   \def\rrsv{NE}
13825   \def\rlfv{W}
13826   \def\rlsv{SW}
13827   % Swap around some definitions based on the row direction
13828   \ifnum\rtmp<0
13829     \let\max@short\hex@bot@short@col
13830     \let\min@short\hex@top@short@col
13831     \let\swp\ctfv\let\ctfv\cbsv\let\cbsv\swp
13832     \let\swp\ctsv\let\ctsv\cbfv\let\cbfv\swp
13833     \def\rrsv{SE}
13834     \def\rlsv{NW}
13835   \else
13836     \let\max@short\hex@top@short@col
13837     \let\min@short\hex@bot@short@col
13838   \fi
13839   % Swap around some definitions based on the column direction
13840   \ifnum\ctmp<0
13841     \let\swp\ctfv\let\ctfv\ctsv\let\ctsv\swp
13842     \let\swp\cbfv\let\cbfv\cbsv\let\cbsv\swp
13843     \let\swp\rrfv\let\rrfv\rlsv\let\rlsv\swp
13844     \let\swp\rrsv\let\rrsv\rlfv\let\rlfv\swp
13845   \fi
13846   % Define tmp = 0 if no shorts, 1 if top short, 2 if both
```

```

13847 \pgfmathparse{ifthenelse(\hex@got@top@short,
13848   ifthenelse(\hex@got@bot@short,2,1),0)}\edef\tmp{\pgfmathresult}
13849 % If top-short, set factors
13850 \ifnum\tmp=1
13851   \def\mnf{-1}
13852   \def\mxf{-1}
13853   \def\mnn{}
13854   \def\mxn{}
13855 % If both short, set factors
13856 \else\ifnum\tmp=2
13857   \def\mnf{\rtmp}
13858   \def\mxf{(-\rtmp)}
13859 % If inverse rows, set factors
13860 \ifnum\rtmp<0
13861   \def\mnn{}
13862   \def\mxn{not}
13863 \else
13864   \def\mnn{not}
13865   \def\mxn{}
13866 \fi
13867 % If none is short
13868 \else
13869   \def\mnf{1}
13870   \def\mxf{1}
13871   \def\mnn{not}
13872   \def\mxn{not}
13873 \fi\fi
13874 % Define row@mn to give least row of column
13875 \def\row@mn##1{%
13876   \pgfmathparse{int(#3+\mnf*
13877     \hex@coords@row@fac*\min@short(##1)*
13878     \mnn(\min@short(\hex@coords@col@off)))}
13879   \edef\lr{\pgfmathresult}}
13880 % Define row@mx to give largest row of column
13881 \def\row@mx##1{%
13882   \pgfmathparse{int(#5+\mxf*
13883     \hex@coords@row@fac*\max@short(##1)*
13884     \mxn(\max@short(\hex@coords@col@off)))}
13885   \edef\ur{\pgfmathresult}}
13886 %
13887 %
13888 % Below defines a path around the perimeter of the hexes.
13889 %
13890 \def@llx{10000}
13891 \def@lly{10000}
13892 \def@urx{-10000}
13893 \def@ury{-10000}
13894 % Start with an empty path
13895 \def\p{}
13896 % Loop across least row (can be top if \rtmp<0)
13897 \foreach \c in {#2,...,#4}{%
13898   \row@mn{\c}
13899   \row@mx{\c}

```

```

13900 % \message{^^JColumn: '\c' -> '\lr', '\ur' (#3,#5)}
13901 }
13902 \foreach \c in {#2,...,#4}{%
13903   \row@mn{\c}
13904   \xdef\p{\p
13905     (hex cs:c=\c,r=\lr,v=\ctfv)--
13906     (hex cs:c=\c,r=\lr,v=\ctsv)--}
13907   \bo@rdfr@me@u(c=\c,r=\lr,v=\ctfv)\@llx\@lly\@urx\@ury
13908   \bo@rdfr@me@u(c=\c,r=\lr,v=\ctsv)\@llx\@lly\@urx\@ury
13909 }
13910 % Go up (down if \rtmp<0) right side
13911 \row@mn{#4}
13912 \row@mx{#4}
13913 \foreach \r in {\lr,...,\ur}{%
13914   \xdef\p{\p
13915     (hex cs:c=#4,r=\r,v=\rrfv)--
13916     (hex cs:c=#4,r=\r,v=\rrsv)--}
13917   \bo@rdfr@me@u(c=#4,r=\r,v=\rrfv)\@llx\@lly\@urx\@ury
13918   \bo@rdfr@me@u(c=#4,r=\r,v=\rrsv)\@llx\@lly\@urx\@ury
13919 }
13920 % Go across largest row (can be bottom if \rtmp<0)
13921 \foreach \c in {#4,...,#2}{%
13922   \row@mx{\c}
13923   % \message{^^JColumn: '\c', max: '\ur'}
13924   \xdef\p{\p
13925     (hex cs:c=\c,r=\ur,v=\cbfv)--
13926     (hex cs:c=\c,r=\ur,v=\cbsv)--}
13927   \bo@rdfr@me@u(c=\c,r=\ur,v=\cbfv)\@llx\@lly\@urx\@ury
13928   \bo@rdfr@me@u(c=\c,r=\ur,v=\cbsv)\@llx\@lly\@urx\@ury
13929 }
13930 % Go up (down if \rtmp<0) left side.
13931 \row@mn{#2}
13932 \row@mx{#2}
13933 \foreach \r in {\ur,...,\lr}{%
13934   \xdef\p{\p
13935     (hex cs:c=#2,r=\r,v=\rlfv)--
13936     (hex cs:c=#2,r=\r,v=\rlsv)--}
13937   \bo@rdfr@me@u(c=#2,r=\r,v=\rlfv)\@llx\@lly\@urx\@ury
13938   \bo@rdfr@me@u(c=#2,r=\r,v=\rlsv)\@llx\@lly\@urx\@ury
13939 }
13940 % End path with cycle
13941 \edef\p{\p cycle}
13942 % Define global path
13943 \global\let\hex@board@path\p
13944 \hex@dbg{3}{Hex board path: '\meaning\hex@board@path'}
13945 % If an optional argument was given, then use that to actually make
13946 % hexes.
13947 \ifx|#1|\else
13948   \foreach[count=\nc] \c in {#2,...,#4}{%
13949     \row@mn{\c}
13950     \row@mx{\c}
13951     \foreach \r in {\lr,...,\ur}{%
13952       \hex[#1={\c,\r}](c=\c,r=\r)

```

```

13953     }
13954   }
13955   \fi
13956 }

```

This is a no operations style used as default for the macro `\boardhexes` below.

```

13957 \tikzset{%
13958   /hex/board/no op/.style args={#1,#2}{}}

```

This macro will make the actual hexes using the specified, optional, style. It builds on `\bo@rdfr@me` above.

```

13959 \def\boardhexes{%
13960   \@ifnextchar[{\bo@rdhexes}{\bo@rdhexes[board/no op]}%]
13961 }
13962 \def\bo@rdhexes[#1](#2)(#3){%
13963   \hex@coords@conv{#2}
13964   \edef\llc{\hex@col}
13965   \edef\llr{\hex@row}
13966   \hex@coords@conv{#3}
13967   \edef\urc{\hex@col}
13968   \edef\urr{\hex@row}
13969   \bo@rdfr@me[#1]{\llc}{\llr}{\urc}{\urr}}

```

Creates a board frame using `\bo@rdfr@me`.

```

13970 \tikzset{board frame bb/.code={
13971   \pgfkeys{
13972     %/tikz/local bounding box=tmp board frame,
13973     /tikz/transform shape,
13974     /tikz/execute at end scope={%
13975       % \hex@dbg{1}{Getting board frame BB}
13976       %\wg@get@bb{tmp board frame}
13977       \global\let\llx\@llx
13978       \global\let\lly\@lly
13979       \global\let\urx\@urx
13980       \global\let\ury\@ury
13981       % \hex@dbg{0}{Board bounding box (\llx,\lly)x(\urx,\ury)}
13982     }}}
13983
13984 \def\bo@rdframe[#1](#2)(#3){%
13985   \hex@coords@conv{#2}
13986   \edef\llc{\hex@col}
13987   \edef\llr{\hex@row}
13988   %
13989   \hex@coords@conv{#3}
13990   \edef\urc{\hex@col}
13991   \edef\urr{\hex@row}
13992   %
13993   \def\margin{#1}
13994   %
13995   % This will store the bounding box in tmp node 'board frame'
13996   \bo@rdfr@me{\llc}{\llr}{\urc}{\urr}%
13997   \begin{scope}[board frame bb]

```

```

13998   \expandafter\path\hex@board@path;
13999   \end{scope}
14000   \hex@dbg{1}{Board frame LL: -> '\llx','\lly'}
14001   \pgfmathparse{\llx+ifthenelse(\llx<0,-1,1)*\margin}\edef\llx{\pgfmathresult}
14002   \pgfmathparse{\lly+ifthenelse(\lly<0,-1,1)*\margin}\edef\lly{\pgfmathresult}
14003   %
14004   \hex@dbg{1}{Board frame UR: -> '\urx','\ury'}
14005   \pgfmathparse{\urx+ifthenelse(\urx<0,-1,1)*\margin}\edef\urx{\pgfmathresult}
14006   \pgfmathparse{\ury+ifthenelse(\ury<0,-1,1)*\margin}\edef\ury{\pgfmathresult}
14007   %
14008   \pgfmathparse{\urx-\llx}\edef\w{\pgfmathresult}
14009   \pgfmathparse{\ury-\lly}\edef\h{\pgfmathresult}
14010   %% Print to the log
14011   \hex@dbg{0}{Board Frame: (\llx,\lly)x(\urx,\ury) (\w x\h) (\llc,\llr)x(\urc,\urr)}
14012   %% Possibly draw
14013   \draw[hex/board frame/.try](\llx,\lly) rectangle(\urx,\ury);
14014   %% Store macros
14015   \xdef\boardXmin{\llx}%
14016   \xdef\boardYmin{\lly}%
14017   \xdef\boardXmax{\urx}%
14018   \xdef\boardYmax{\ury}%
14019 }

```

`\boardclip`

Clip the board to not show incomplete hexes

`\boardclip{<nx>}{<ny>}{<preaction>}`

```

14020 \def\boardpath(#1)(#2){
14021   \hex@coords@reset%
14022   \tikzset{/hex/coords/.cd, #1}
14023   \edef\llc{\hex@col}
14024   \edef\llr{\hex@row}
14025   %%
14026   \hex@coords@reset%
14027   \tikzset{/hex/coords/.cd, #2}
14028   \edef\urc{\hex@col}
14029   \edef\urr{\hex@row}
14030
14031   % This will store the bounding box in tmp node 'board frame'
14032   \boardframe{\llc}{\llr}{\urc}{\urr}%
14033   %% Use the path to extract the bounding box
14034   %%\begin{scope}[local bounding box=board frame]
14035   % \expandafter\path\hex@board@path;
14036   %\end{scope}
14037   \global\let\hexboardpath\hex@board@path
14038 }
14039
14040 \def\boardclip(#1)(#2)#3{%
14041   \boardpath(#1)(#2)
14042   \draw \ifx|#3|\else[preaction={#3}]\fi%

```

```

14043 [clip] \hexboardpath;
14044 }
14045

```

\debuggrid

Show a debug grid. This requires \boardframe.

```

14046 \def\debuggrid{%
14047   \foreach \i in {0,0.1,0.2,0.3,0.4,0.5,0.6,0.7,0.8,0.9,1} {%
14048     \pgfmathparse{\i*\boardW+\boardXmin}%
14049     \edef\debug@x{\pgfmathresult}%
14050     \draw [very thin,gray](\debug@x,\boardYmin) --
14051       (\debug@x,\boardYmax) node [below,rotate=90] at
14052       (\debug@x,\boardYmin) {\i}; }%
14053   \foreach \i in {0,0.1,0.2,0.3,0.4,0.5,0.6,0.7,0.8,0.9,1} {%
14054     \pgfmathparse{\i*\boardH+\boardYmin}%
14055     \edef\debug@x{\pgfmathresult}%
14056     \draw [very thin,gray] (\boardXmin,\debug@x) --
14057       (\boardXmax,\debug@x) node [left,rotate=90] at
14058       (\boardXmin,\debug@x) {\i}; } }

```

Some dummy styles. These will be defined by the export class to facilitate getting information from the board.

```

14059 \tikzset{%
14060   zoned/.style={},
14061   zone scope/.style={},
14062   zone path/.style={}
14063 }

```

5.4.15 Board splitting

\splitboard

Calculates how to split a board into sheets of paper.

\splitboard[*options*]

where options are

- **paper**=*format*: Specifies the paper format. One of **a4**, **a3**, **letter**, **tabloid**. Default is **a4**.
- **landscape**: Sets the paper format to be in landscape mode (default is portrait).
- **margin**=*size in centimetres*: Size of margins on each sheet in centimetres *without* unit. That is put 0.6 for 6mm, *not* 6mm. Default is 0.6. This should be *slightly* larger (by roughly 5%) than the *least* margin required by the printer used. *Must* be given *before* **paper** to have any effect.
- **ncol**=*number of columns*: Sets the number of columns of sheets.
- **nrow**=*number of rows*: Set the number of rows of sheets.

- `overlap= $\langle size in centimetres \rangle$` : Sets the size of the overlap between sheets in centimetres *without* unit. That is put 2 for 2cm, *not* 2cm. Default is 2.
- `image= $\langle file name \rangle$` : File name of the board image (a PDF). Default is `board`
- `output= $\langle file name \rangle$` : File name (without `.tex` ending) to write calculated split to.
- `standalone`: Boolean flag. If true, then output file will be a standalone document (i.e., has a `\documentclass`).
- `scale= $\langle scale \rangle$` : Set scale of board.

The macro will produce a file named `\jobname_out.tex` which can be included in another document to generate the split board PDF.

To use, make, for example, the file `calcsplit.tex` with the content

```
\documentclass[11pt]{standalone}
\usepackage{wargame}
\usepackage{mystyle}
\begin{document}
\splitboard{paper=letter,margin=.7,ncol=2,nrow=2,overlap=1}
\end{document}
```

to calculate the split of `board.pdf` over 2×2 letter paper sheets, with a non-printable margin of 7mm, and an overlap between the segments of 1cm.

The final split document can then be

```
\documentclass[11pt]{article}
\usepackage[letterpaper,margin=7mm]{geometry}
\begin{document}
\input{calcsplit_out}
\end{document}
```

If you need to scale down the board, define the style `board scale`. E.g.,

```
\tikzset{board scale/.style={scale=.9}}
```

Styles used for drawing things.

```
14064 \tikzset{%
14065   % Margin must be <1cm
14066   split/paper outline/.style={
14067     shape=rectangle,
14068     draw=red!50!black,
14069     line width=.5mm},
14070   split/effective outline/.style={
14071     shape=rectangle,
14072     draw=green!50!black,
14073     dashed,
```

```

14074   line width=.5mm},
14075   split/board outline/.style={%
14076     draw=magenta,
14077     line width=.5mm,
14078     dotted},
14079 }

```

A scratch dimension used

```
14080 \newdimen\split@tmp
```

Get upper right and lower left corners of node. Argument is node name.

```

14081 \def\split@getem#1{%
14082   \draw (#1.north east);%
14083   \pgfgetlastxy{\split@ulx}{\split@uly}%
14084   \xdef\split@ulx{\split@ulx}%
14085   \xdef\split@uly{\split@uly}%
14086   \draw (#1.south west);%
14087   \pgfgetlastxy{\split@lrx}{\split@lry}%
14088   \xdef\split@lrx{\split@lrx}%
14089   \xdef\split@lry{\split@lry}%
14090 }

```

Get board dimensions. Argument is node name.

```

14091 \def\split@getboard#1{%
14092   \split@getem{#1}%
14093   \xdef\split@bulx{\split@ulx}%
14094   \xdef\split@buly{\split@uly}%
14095   \xdef\split@blrx{\split@lrx}%
14096   \xdef\split@blry{\split@lry}%
14097   \split@w{\@percentchar\space Board:
14098     (\split@bulx,\split@buly)(\split@blrx,\split@blry)}}

```

Adjust placement of markers and cut lines.

1. Dimension to adjust
2. Overlap dimension (with units)

```

14099 \def\split@adj#1#2{%
14100   \split@tmp=#2%
14101   \divide\split@tmp by 2%
14102   \advance\split@tmp by #1%
14103   \edef\t{\the\split@tmp}}

```

Get initial offset in a direction.

1. Number of segments in direction
2. Overlap in centimetres (without unit)
3. Effective size, in centimetres (without unit), of sheets in direction

4. Full size, in centimetres (without unit), of board in direction.

```
14104 \def\split@get@init#1#2#3#4{%
14105   \pgfmathparse{((#1 * #3 - (#1 - 1) * #2) - #4)/2}%
14106   \xdef\split@off{\pgfmathresult}%
14107   \hex@dbg{2}{((#1 * #3 - (#1 - 1) * #2) - #4)/2 -> '\split@off'}}
```

Get initial offset of first segment.

1. Number of rows
2. Number of columns
3. Overlap in centimetres (without unit)
4. Effective height, in centimetres (without unit), of sheets
5. Effective width, in centimetres (without unit), of sheets
6. Full height, in centimetres (without unit), of board
7. Full width, in centimetres (without unit), of board

```
14108 \def\split@get@init#1#2#3#4#5#6#7{%
14109   \split@get@init{#1}{#3}{#4}{#6}\xdef\dy{\split@off cm}
14110   \split@get@init{#2}{#3}{#5}{#7}\xdef\dx{\split@off cm}}
```

Get coordinates of a segment

1. Column number
2. Row number
3. Overlap, in centimetres (without unit)

```
14111 \def\split@get@coords#1#2#3{%
14112   \hex@dbg{2}{Getting coords 'c#1r#2'}%
14113   \split@getem{c#1r#2}%
14114   \edef\sulx{\split@ulx}%
14115   \edef\suly{\split@uly}%
14116   \edef\slrx{\split@lrx}%
14117   \edef\slry{\split@lry}%
14118   \edef\mlx{\split@blrx}%
14119   \edef\mrx{\split@bulx}%
14120   \edef\mty{\split@buly}%
14121   \edef\mby{\split@blry}%
14122   \pgfmathparse{int(#1-1)}\edef\pc{\pgfmathresult}%
14123   \pgfmathparse{int(#2-1)}\edef\pr{\pgfmathresult}%
14124   \pgfmathparse{int(#1+1)}\edef\nc{\pgfmathresult}%
14125   \pgfmathparse{int(#2+1)}\edef\nr{\pgfmathresult}%
14126   \pgfutil@ifundefined{pgf@sh@ns@c\pc r#2}{}{% Left
14127     \hex@dbg{3}{\space Getting left 'c\pc r#2'}%
14128     \split@getem{c\pc r#2}\split@adj{\split@ulx}{-#3}\edef\mlx{\t}}%
14129   \pgfutil@ifundefined{pgf@sh@ns@c\nc r#2}{}{% Right
14130     \hex@dbg{3}{\space Getting right 'c\nc r#2'}%
```

```

14131 \split@getem{c\nc r#2}\split@adj{\split@lrx}{#3}\edef\mrx{\t}%
14132 \pgfutil@ifundefined{pgf@sh@ns@c#1r\pr}{\space Above
14133 \hex@dbg{3}{\space Getting above 'c#1 r\pr'}%
14134 \split@getem{c#1r\pr}\split@adj{\split@lry}{#3} \edef\mty{\t}%
14135 \pgfutil@ifundefined{pgf@sh@ns@c#1r\nr}{\space Below
14136 \hex@dbg{3}{\space Getting below 'c#1 r\nr'}%
14137 \split@getem{c#1r\nr}\split@adj{\split@uly}{-#3}\edef\mby{\t}%
14138 \draw[fill=red] (\mlx,\mty) circle(.2);%
14139 \draw[fill=green] (\mrx,\mty) circle(.4);%
14140 \draw[fill=blue] (\mlx,\mby) circle(.6);%
14141 \draw[fill=cyan] (\mrx,\mby) circle(.8);%
14142 \split@w{%
14143 \@percentchar^^J%
14144 \string\segment(\sulx,\suly)(\slrx,\slry){\mlx}{\mrx}{\mby}{\mty}
14145 \@percentchar\space c#1r#2}
14146 }

```

Stream to write to

```
14147 \newwrite\split@calcout
```

Short-hand for write outs.

```
14148 \def\split@w{\immediate\write\split@calcout}
```

Open stream and set-up

```

14149 \def\split@header#1{%
14150 \immediate\openout\split@calcout=#1.tex
14151 \ifsplit@standalone
14152 \pgfmathparse{\split@margin*.95}\edef\tmp{\pgfmathresult}
14153 \split@w{\@percentchar\@percentchar\space These are made with
14154 'calcsplit' with '-jobname \jobname'}
14155 \split@w{
14156 ^^J\string\documentclass[twoside]{article}
14157 ^^J\string\usepackage{geometry}
14158 ^^J\string\geometry{papersize={\the\paperwidth,\the\paperheight},margin=\tmp cm}
14159 ^^J\string\usepackage{wargame}
14160 ^^J\string\setlength{\string\parindent}{0pt}
14161 ^^J\string\setlength{\string\parskip}{0pt}
14162 ^^J\string\begin{document}
14163 ^^J\string\ignorespaces\@percentchar}
14164 \fi
14165 \split@w{\string\def\string\boardfile{\split@img}\@percentchar}
14166 \split@w{\string\def\string\boardscale{\split@scale}\@percentchar}
14167 }

```

Write final stuff and close stream

```

14168 \def\split@footer{%
14169 \ifsplit@standalone
14170 \split@w{^^J\string\end{document}}
14171 \fi
14172 \split@w{^^J\@percentchar\@percentchar End of '\jobname'^^J}
14173 \immediate\closeout\split@calcout

```

14174 }

Initial calculations. This draws the board and then extracts the dimensions of the board. It also defines some styles for drawing the board segments.

```
14175 \def\split@init#1{%
14176   \node[scale=\split@scale,
14177     inner sep=0pt,
14178     outer sep=0pt,
14179     anchor=north west,
14180     transform shape](b){\includegraphics{#1}};
14181   \split@getboard{b}
14182   %x
14183   \split@tmp=\split@blrx cm\advance\split@tmp by -\split@bulx%
14184   \wg@pt@to@cm{\split@tmp}\edef\split@bw{\pgfmathresult}%
14185   \pgfmathparse{abs(\split@bw)}\edef\split@bw{\pgfmathresult}%
14186   %
14187   \split@tmp=\split@buly cm\advance\split@tmp by -\split@blry%
14188   \wg@pt@to@cm{\split@tmp}\edef\split@bh{\pgfmathresult}%
14189   \pgfmathparse{abs(\split@bh)}\edef\split@bh{\pgfmathresult}%
14190   %
14191   \wg@pt@to@cm{\paperwidth}\edef\split@pw{\pgfmathresult}%
14192   \wg@pt@to@cm{\paperheight}\edef\split@ph{\pgfmathresult}%
14193   %
14194   \wg@pt@to@cm{\textwidth}\edef\split@ew{\pgfmathresult}%
14195   \wg@pt@to@cm{\textheight}\edef\split@eh{\pgfmathresult}%
14196   %
14197   \hex@dbg{1}{Board:
14198     (\split@bulx,\split@buly)(\split@blrx,\split@blry) \split@bw x\split@bh
14199     ^^JPaper: \split@pw x\split@ph
14200     ^^JEffective: \split@ew x\split@eh
14201   }
14202   \tikzset{
14203     split/paper size/.style={
14204       shape=rectangle,
14205       minimum width=\paperwidth,
14206       minimum height=\paperheight,
14207       split/paper outline,
14208     },
14209     split/effective size/.style={
14210       shape=rectangle,
14211       minimum width=\textwidth,
14212       minimum height=\textheight,
14213       split/effective outline},
14214     split/board size/.style={
14215       shape=rectangle,
14216       minimum width=\split@bw cm,
14217       minimum height=\split@bh cm,
14218       split/board outline}}
14219   \node[board/.try,split/board size,anchor=north west] {};
14220 }
```

Calculate effective sheet sizes from sheet dimensions and the defined margin.

```

14221 \def\split@text@dim#1{%
14222   \textwidth=\paperwidth%
14223   \textheight=\paperheight%
14224   \advance\textwidth by -#1cm%
14225   \advance\textwidth by -#1cm%
14226   \advance\textheight by -#1cm%
14227   \advance\textheight by -#1cm%
14228   \global\textwidth=\textwidth%
14229   \global\textheight=\textheight%
14230 }

```

Options for the `\splitboard` macro.

```

14231 \newif\ifsplit@standalone\split@standalonetrue
14232 \tikzset{%
14233   split/.search also={/tikz},%
14234   split/.cd,%
14235   margin/.store in=\split@margin,%
14236   paper/.is choice,%
14237   paper/a4/.code={%
14238     \hex@dbg{3}{A4 paper for split}%
14239     \global\paperwidth=21cm%
14240     \global\paperheight=29.7cm%
14241     \split@text@dim{\split@margin}},
14242   paper/a3/.code={%
14243     \hex@dbg{3}{A3 paper for split}%
14244     \global\paperheight=42cm%
14245     \global\paperwidth=29.7cm%
14246     \split@text@dim{\split@margin}},
14247   paper/letter/.code={%
14248     \hex@dbg{3}{Letter paper for split}
14249     \paperheight=27.9cm,%
14250     \paperwidth=21.6cm,%
14251     \split@text@dim{\split@margin}},%
14252   paper/tabloid/.code={%
14253     \hex@dbg{3}{Tabloid paper for split}%
14254     \paperheight=43.2cm,%
14255     \paperwidth=27.9cm,%
14256     \split@text@dim{\split@margin}},
14257   landscape/.code={%
14258     \hex@dbg{3}{Landscape option for split}
14259     \split@tmp=\paperheight
14260     \global\paperheight=\paperwidth
14261     \global\paperwidth=\split@tmp
14262     \split@tmp=\textheight
14263     \global\textheight=\textwidth
14264     \global\textwidth=\split@tmp},
14265   standalone/.is if=split@standalone,
14266   scale/.store in=\split@scale,
14267   output/.store in=\split@out,
14268   ncol/.store in=\split@ncol,
14269   nrow/.store in=\split@nrow,
14270   overlap/.store in=\split@ov, % Centimeter, no unit
14271   image/.store in=\split@img,

```

```

14272 paper/.default=a4, paper/.initial=a4,
14273 margin/.default=.6, margin/.initial=.6,
14274 ncol/.default=0, ncol/.initial=0,
14275 nrow/.default=0, nrow/.initial=0,
14276 overlap/.default=2, overlap/.initial=2,
14277 image/.default=board, image/.initial=board,
14278 output/.default=\jobname_out,
14279 standalone/.default=true,
14280 scale/.default=1,
14281 }

```

The actual macro. The argument is key-value pairs of options.

```

14282 \def\splitboard#1{%
14283   \pgfkeys{/tikz/split/.cd,%
14284     standalone,%
14285     output,%
14286     margin,%
14287     paper,%
14288     image,%
14289     overlap,%
14290     scale,%
14291     ncol,%
14292     nrow,%
14293     #1}
14294   \hex@dbg{1}{%
14295     Paper:      '\the\paperwidth'x'\the\paperheight'
14296     ^^JEffective: '\the\textwidth'x'\the\textheight'
14297     ^^JNcols:   '\split@ncol'
14298     ^^JNrows:   '\split@nrow'
14299     ^^JOverlap: '\split@ov' cm}
14300   \split@header{\split@out}
14301   \begin{tikzpicture}
14302     \split@init{\split@img}
14303     \split@getinit{%
14304       \split@nrow}{%
14305       \split@ncol}{%
14306       \split@ov}{\split@eh}{\split@ew}{\split@bh}{\split@bw}
14307   \node[split/effective size,
14308     above left=\dy and \dx of b.north west,
14309     anchor=north west] (c1r1) {};
14310   \node[split/paper size] at (c1r1) {};
14311   %
14312   \foreach \r [remember=\r as \pr (initially 0)] in {1,...,\split@nrow}{%
14313     \ifnum\r>1
14314       \hex@dbg{3}{Placing first column of row '\r'}
14315       \node[split/effective size,
14316         below=-\split@ov cm of c1r\pr.south west,anchor=north west] (c1r\r){};
14317       \node[split/paper size] at (c1r\r) {};
14318     \fi
14319     \foreach \c [remember=\c as \pc (initially 1)] in {2,...,\split@ncol}{%
14320       \ifnum\c>\split@ncol\else%
14321         \ifnum\c>\pc
14322           \hex@dbg{3}{Placing column '\c' ('\pc') of row '\r'}

```

```

14323     \node[split/effective size,
14324     right=-\split@ov cm of c\pc r\r.north east,anchor=north west]
14325     (c\c r\r) {};
14326     \node[split/paper size] at (c\c r\r) {};
14327     \fi
14328     \fi
14329   }
14330 }
14331 \foreach \r [remember=\r as \pr (initially 0)] in {1,...,\split@nrow}{%
14332   \foreach \c [remember=\c as \pc (initially 0)] in {1,...,\split@ncol}{%
14333     \split@getcoords{\c}{\r}{\split@ov cm}}
14334 \end{tikzpicture}
14335 \split@footer
14336 }

```

Macro used by the written file.

1. first coordinate (e.g., (hex ak:c=C,r=17))
2. second coordinate (e.g., (hex ak:c=M,r=33))
3. Crop mark left
4. Crop mark right
5. Crop mark bottom
6. Crop mark top

```

14337 \def\segment(#1)(#2)#3#4#5#6{%
14338   \begin{tikzpicture}%
14339     \begin{scope}
14340       \clip (#1) rectangle (#2);
14341       \node[scale=\boardscale,
14342       inner sep=0pt,
14343       outer sep=0pt,
14344       anchor=north west,
14345       transform shape]{\includegraphics{\boardfile}};
14346     \end{scope}
14347     \pgfinterruptboundingbox
14348     \draw(#3,#6)--++( 0.0, 0.3);
14349     \draw(#3,#6)--++(-0.3, 0.0);
14350     \draw(#3,#5)--++( 0.0,-0.3);
14351     \draw(#3,#5)--++(-0.3, 0.0);
14352     \draw(#4,#6)--++( 0.0, 0.3);
14353     \draw(#4,#6)--++( 0.3, 0.0);
14354     \draw(#4,#5)--++( 0.0,-0.3);
14355     \draw(#4,#5)--++( 0.3, 0.0);
14356     \endpgfinterruptboundingbox
14357   \end{tikzpicture}%
14358   \cleardoublepage}%

```

5.5 The `wargame.chit` TikZ library

We define the library for making chits. We load the hex TikZ `wargame.natoapp6c` library and the `amsmath` and `amstext` packages as we need those.

```
14359 \RequirePackage{amsmath}
14360 \RequirePackage{amstext}
14361 \usetikzlibrary{wargame.util,wargame.natoapp6c,math}
```

5.5.1 Debugging

```
\chitdbglvl
\chit@dbg
```

Some macros for debugging. Similar to what we have in `wargame.hex` (see Section 5.4).

```
14362 \newcount\chitdbglvl\chitdbglvl=\wargamedbglvl
14363 \def\chit@dbg#1#2{%
14364   \ifnum#1>\chitdbglvl\relax\else\message{^^J#2}\fi}
```

5.5.2 The `chit` key namespace

Some stuff to consider wrt. line widths. Setting the line width in the `chit` scope overrides frame settings. The frame stroke can be larger but not smaller. Setting the stroke width in the symbol scope sets it for the symbol only. Thus, to get a thin border, we need to

- Set a small line width in the top `chit` scope.
- Possible set a larger line width in the frame sub-scope.
- Set a larger line width in the symbol sub-scope.

I do not know why this is.

```
/chit/full
/chit/symbol
/chit/left
/chit/right
/chit/upper left
/chit/upper right
/chit/lower left
/chit/lower right
/chit/factors
/chit/extra
/chit/setup
/chit/bevel
/chit/id
```

The parts of a chit

```

14365 \newif\ifchit@clip\chit@cliptrue
14366 \tikzset{%
14367 /chit/.search also={/tikz},
14368 /chit/.cd,
14369 full/.store in=\chit@full,          full/.initial=,%
14370 symbol/.store in=\chit@symbol,     symbol/.initial=,%
14371 left/.store in=\chit@left,         left/.initial=,%
14372 unique/.style={/chit/left={#1}},%
14373 right/.store in=\chit@right,       right/.initial=,%
14374 parent/.style={/chit/right={#1}},%
14375 upper left/.store in=\chit@upper@left, upper left/.initial=,%
14376 upper right/.store in=\chit@upper@right, upper right/.initial=,%
14377 lower left/.store in=\chit@lower@left, lower left/.initial=,%
14378 lower right/.store in=\chit@lower@right, lower right/.initial=,%
14379 factors/.store in=\chit@factors,  factors/.initial=,%
14380 setup/.store in=\chit@setup,      setup/.initial=,%
14381 id/.store in=\chit@id,            id/.initial=,%
14382 frame/.store in=\chit@frame,      frame/.initial=,%
14383 extra/.store in=\chit@extra,      extra/.initial=,%
14384 bev/.store in=\chit@bevel,        bev/.initial=,%
14385 bevel fraction/.store in=\chit@bevel@frac, bevel fraction/.initial=10,
14386 bevel/.is choice,
14387 bevel/none/.style = {/chit/bev=},
14388 bevel/north west/.style = {/chit/bev=1},
14389 bevel/north east/.style = {/chit/bev=2},
14390 bevel/south west/.style = {/chit/bev=3},
14391 bevel/south east/.style = {/chit/bev=4},
14392 bevel/NW/.style = {/chit/bev=1},
14393 bevel/NE/.style = {/chit/bev=2},
14394 bevel/SW/.style = {/chit/bev=3},
14395 bevel/SE/.style = {/chit/bev=4},
14396 bevel/.default = north west,
14397 clip/.is if=chit@clip%
14398 }

```

```

/tikz/chit/full
/tikz/chit/symbol
/tikz/chit/left
/tikz/chit/right
/tikz/chit/upper left
/tikz/chit/upper right
/tikz/chit/lower left
/tikz/chit/lower right
/tikz/chit/factors
/tikz/chit/setup
/tikz/chit/id

```

Styles of each element in a chit. Users may override these at their own peril. That is, it is OK to override them, but the user should be careful.

```

14399 \tikzset{
14400 chit/symbol/.style={scale=.4,transform shape},

```



```

14401 chit/parts/.style={shape=rectangle,transform shape},
14402 chit/factors/.style={chit/parts,anchor=south},
14403 chit/left/.style={chit/parts,anchor=base,rotate=90},%Anchor was south
14404 chit/right/.style={chit/parts,anchor=north,rotate=90},
14405 chit/upper left/.style={chit/parts,anchor=north west},
14406 chit/upper right/.style={chit/parts,anchor=north east},
14407 chit/lower left/.style={chit/parts,anchor=south west},
14408 chit/lower right/.style={chit/parts,anchor=south east},
14409 chit/setup/.style={chit/parts},
14410 chit/full/.style={chit/parts},
14411 chit/frame/.try={draw=pgfstrokecolor},
14412 chit/bevel highlight/.style={fill=white,opacity=.25},
14413 chit/bevel shadow/.style={fill=black,opacity=.25},
14414 }
14415 \def\chit@bevel@frac{10}
14416 \newif\ifchit@draw@frame\chit@draw@frametrue
14417 \tikzset{
14418 chit/frame style/.search also={/tikz},
14419 chit/frame style/.cd,
14420 none/.code={\chit@draw@framefalse},
14421 draw/.code={%
14422   \chit@dbg{2}{Frame draw option '#1'}
14423   \edef\tikz@temp{#1}%
14424   \ifx\tikz@temp\tikz@nonetext%
14425     \chit@draw@framefalse%
14426   \else%
14427     \chit@draw@frametrue%
14428     \tikzset{/tikz/draw=#1}
14429   \fi
14430 }
14431 }
14432

```

5.5.3 The chit styles

/tikz/chit

This key sets up a node to make a chit. The key takes a single argument which in turn must contain key–value pairs in the /chit (or /tikz) namespace(s). We set the `shape` parameter of the node, and calls the passed keys in the /chit namespace to set-up elements of the chit.

```

14433 \tikzset{%
14434 chit/.code={%
14435   \chit@dbg{2}{chit arguments are '#1'}%
14436   \pgfkeys{/tikz/transform shape,/tikz/shape=chit}%
14437   \pgfkeys{/chit/.cd,#1}}

```

We define a counter to set-up unique names for chit nodes.

```

14438 \newcounter{chit@id}\setcounter{chit@id}{0}

```

5.5.4 The \chit shape

```
\chit@n@to
\@chit@n@to
\@@chit@n@to
\@chit@n@to@
```

These macros puts the NATO App6(c) symbol into a chit. The first macro takes the identifier and position of the symbol, and then scans for options. If no options are given, then we go directly to the rendering (\@chit@n@to@). Otherwise, we may also need to scan for an offset given as ($\langle\delta-x,\delta-y\rangle$).

```
14439 \def\chit@n@to#1#2{%
14440   %% Without a following start square bracket '[' by-pass to final
14441   \chit@dbg{1}{Chit NATO App6(c) first step '#1' '#2'}
14442   \@ifnextchar[{%
14443     \%message{^^JStart square bracket}%
14444     \@chit@n@to{#1}{#2}}{%
14445     \%message{^^JNo start square bracket}%
14446     \@chit@n@to@{#1}{#2}}}]
14447 }
```

The following macro is called if we had no options.

```
14448 \def\@chit@n@to@#1#2#3\@end@chit@n@to{%
14449   \chit@dbg{1}{Chit NATO App6(c) w/o offset:
14450     ^^J Options: #3
14451     ^^J ID: #1
14452     ^^J Position: #2}
14453   \node[chit/symbol,natoapp6c={#3,id=#1}] (#1) at (#2) {};
14454   \chit@dbg{4}{Chit NATO App6(c) ended}%
14455 }
```

This is called if we had an option-like argument. Check if we have an offset

```
14456 \def\@chit@n@to#1#2[#3]{%
14457   \chit@dbg{1}{Chit NATO App6(c) second step '#1' '#2' '#3'}
14458   \@ifnextchar({\@chit@n@to{#1}{#2}{#3}}{\@chit@n@to{#1}{#2}{#3}(0,0)}%)
14459 }
```

This called if we had option-like argument.

```
14460 \def\@@chit@n@to#1#2#3(#4)\@end@chit@n@to{%
14461   \chit@dbg{1}{Chit NATO App6(c) w/offset:
14462     ^^J Options: #3
14463     ^^J ID: #1
14464     ^^J Position: #2
14465     ^^J Offset: #4}
14466   \node[chit/symbol,natoapp6c={#3,id=#1}] (#1) at ($(#2)+(#4)$) {};
```

```
\chit@tr@ns@nchor
\chit@nchor
```

Get anchor of sub-symbol element in chit. We need to do this, because the symbol is translated and scaled.

```

14467 \def\chit@tr@ns@nchor#1{%
14468   \pgf@x=0.4\pgf@x%
14469   \pgf@y=0.4\pgf@y\advance\pgf@y#1}

14470 \def\chit@nchor#1#2#3{%
14471   \wg@sub@nchor{#1}{#2}
14472   \chit@tr@ns@nchor{#3}}
14473 \def\chit@report{}
14474 \tikzset{
14475   zone turn/.style={},
14476   zone mult/.style={}
14477 }

```

Now follows the actual chit shape. This is rather long, so we will break it up a bit

```

14478 \def\chit@bevel@path#1{
14479   \scope[#1]
14480   \wg@tmpc=\wg@tmpa\multiply\wg@tmpc by \chit@bevel@frac
14481   \wg@tmpd=\wg@tmpb\multiply\wg@tmpd by \chit@bevel@frac
14482   \divide\wg@tmpc100
14483   \divide\wg@tmpd100
14484   \pgfpathmoveto{\pgfqpoint{\wg@tmpa}{\wg@tmpb}}%
14485   % Move down along edge
14486   \wg@tmpb=-\wg@tmpb
14487   \pgfpathlineto{\pgfqpoint{\wg@tmpa}{\wg@tmpb}}%
14488   % Move left along edge
14489   \wg@tmpa=-\wg@tmpa
14490   \pgfpathlineto{\pgfqpoint{\wg@tmpa}{\wg@tmpb}}%
14491   % Move in and up
14492   \advance\wg@tmpa\wg@tmpc%
14493   \advance\wg@tmpb\wg@tmpd%
14494   \pgfpathlineto{\pgfqpoint{\wg@tmpa}{\wg@tmpb}}%
14495   % Move right, but in
14496   \advance\wg@tmpa-\wg@tmpc\wg@tmpa=-\wg@tmpa%
14497   \advance\wg@tmpa-\wg@tmpc%
14498   \pgfpathlineto{\pgfqpoint{\wg@tmpa}{\wg@tmpb}}%
14499   % Move up but down
14500   \advance\wg@tmpb-\wg@tmpd\wg@tmpb=-\wg@tmpb%
14501   \advance\wg@tmpb-\wg@tmpd%
14502   \pgfpathlineto{\pgfqpoint{\wg@tmpa}{\wg@tmpb}}%
14503   \pgfclosepath%
14504   \pgfusepath{fill}
14505   \endscope
14506 }
14507

```

The first thing is we declare some saved anchors. These are computed (and defined as internal macros) when the shape is instantiated. The anchors give the centre and north east corner of the node, the place to put the NATO App6(c) symbol and factors. We also set a dimension for the margins (corner and factors elements).

```

14508 \pgfdeclareshape{chit}{
14509   \savedanchor\center{\pgf@x=0cm\pgf@y=0cm}
14510   \savedanchor\northeast{\pgf@x=0.6cm\pgf@y=0.6cm}

```

```

14511 \savedanchor\symbol{\pgf@x=0cm\pgf@y=0.2cm}
14512 \savedanchor\factors{\pgf@x=0cm\pgf@y=-0.5cm}
14513 \saveddimen\margin{\pgf@x=0.04cm}

```

Next, we define some saved macros. These are called (and declares internal macros) when the shape is instantiated. We define macros for the identifier,

```

14514 \savedmacro\id{%
14515   \chit@dbg{4}{Chit ID: \meaning\chit@id}%
14516   \@ifundefined{chit@id}{\let\chit@id\pgfutil@empty}{}%
14517   \ifx\chit@id\pgfutil@empty%
14518     \wg@r@ndom@id%
14519     \edef\id{chit\wg@u@id}%
14520   \else%
14521     \edef\id{\chit@id}%
14522   \fi%
14523   \chit@dbg{4}{Chit ID stored: \meaning\chit@id}
14524 }
14525 \savedmacro\chitframeopt{%
14526   \let\chitframeopt\pgfutil@empty%
14527   \@ifundefined{chit@frame}{}{%
14528     \edef\chitframeopt{\chit@frame}}
14529   \chit@dbg{3}{Chit Frame options: \meaning\chitframeopt}%
14530 }

```

We define the regular anchors of the shape. That is, the centre, corners, and edges.

```

14531 \anchor{center}{\center}
14532 \anchor{north east}{\northeast}
14533 \anchor{north west}{\northeast\pgf@x=-\pgf@x}
14534 \anchor{south west}{\northeast\pgf@x=-\pgf@x\pgf@y=-\pgf@y}
14535 \anchor{south east}{\northeast\pgf@y=-\pgf@y}
14536 \anchor{north}    {\northeast\pgf@x=0cm}
14537 \anchor{south}    {\northeast\pgf@x=0cm\pgf@y=-\pgf@y}
14538 \anchor{east}     {\northeast\pgf@y=0cm}
14539 \anchor{west}     {\northeast\pgf@x=-\pgf@x\pgf@y=0cm}

```

Next, we want to be able to reference the symbol anchors too. So we define these anchors from the embedded node anchors. Note, these anchors will not exist if the chit is made with `full=<args>`.

```

14540 \anchor{symbol north east}{\chit@nchor{M\id symbol}{north east}{0.2cm}}
14541 \anchor{symbol north west}{\chit@nchor{M\id symbol}{north west}{0.2cm}}
14542 \anchor{symbol south east}{\chit@nchor{M\id symbol}{south east}{0.2cm}}
14543 \anchor{symbol south west}{\chit@nchor{M\id symbol}{south west}{0.2cm}}
14544 \anchor{symbol north}    {\chit@nchor{M\id symbol}{north}{0.2cm}}
14545 \anchor{symbol west}     {\chit@nchor{M\id symbol}{west}{0.2cm}}
14546 \anchor{symbol south}    {\chit@nchor{M\id symbol}{south}{0.2cm}}
14547 \anchor{symbol east}     {\chit@nchor{M\id symbol}{east}{0.2cm}}
14548 \anchor{symbol upper}    {\chit@nchor{M\id symbol}{upper}{0.2cm}}
14549 \anchor{symbol lower}    {\chit@nchor{M\id symbol}{lower}{0.2cm}}
14550 \anchor{symbol left}     {\chit@nchor{M\id symbol}{left}{0.2cm}}
14551 \anchor{symbol right}    {\chit@nchor{M\id symbol}{right}{0.2cm}}
14552 \anchor{symbol echelon}  {\chit@nchor{M\id symbol}{north}{0.2cm}}
14553 \anchor{symbol below}    {\chit@nchor{M\id symbol}{south}{0.1cm}}

```

Some anchors to sub-elements. Some of them only exists if we have NATO App6(c) symbol in the chit.

```

14554 \anchor{symbol}    {\symbol}
14555 \anchor{factors}    {\factors}
14556 \anchor{left}    {\chit@anchor{M{id symbol}}{west}{.2cm}\advance\pgf@x-\margin}
14557 \anchor{right}{\chit@anchor{M{id symbol}}{east}{.2cm}\advance\pgf@x+\margin}
14558 \anchor{upper right} {%
14559     \northeast \advance\pgf@x-\margin \advance\pgf@y-\margin%
14560 }
14561 \anchor{upper left}{
14562     \northeast \advance\pgf@x-\margin \advance\pgf@y-\margin \pgf@x=-\pgf@x%
14563 }
14564 \anchor{lower right} {%
14565     \northeast \advance\pgf@x-\margin \advance\pgf@y-\margin \pgf@y=-\pgf@y%
14566 }
14567 \anchor{lower left}{
14568     \northeast \advance\pgf@x-\margin \advance\pgf@y-\margin%
14569     \pgf@x=-\pgf@x \pgf@y=-\pgf@y%
14570 }

```

Now for the actual path. For the background path, we simply specify the frame. This is so that this will get drawn (and possibly filled) using the appropriate options.

```

14571 \backgroundpath{%
14572     %% This is the outline of the chit only. The rest of the chit is
14573     %% made on the foreground "path".
14574     \chit@dbg{1}{Chit drawing background path}
14575     \northeast%
14576     \wg@tmpa=\pgf@x\wg@tmpb=\pgf@y%
14577     \pgfpathmoveto{\pgfpoint{\wg@tmpa}{\wg@tmpb}}%
14578     \wg@tmpa=-\wg@tmpa \pgfpathlineto{\pgfpoint{\wg@tmpa}{\wg@tmpb}}%
14579     \wg@tmpb=-\wg@tmpb \pgfpathlineto{\pgfpoint{\wg@tmpa}{\wg@tmpb}}%
14580     \wg@tmpa=-\wg@tmpa \pgfpathlineto{\pgfpoint{\wg@tmpa}{\wg@tmpb}}%
14581     \pgfclosepath
14582 }

```

Finally, we make the foreground rendered path. This is where we do the most stuff. We do it in the *behind* foreground path so that we can ensure things are drawn the way we want it.

The first thing is to set-up the clipping to the chit frame.

```

14583 \behindforegroundpath{%
14584     \chit@dbg{1}{Chit drawing foreground path}
14585     % \chit@dbg{4}{%
14586     %   Chit foreground: \meaning{id
14587     %   ^^J ID (set):     \meaning{chit@id
14588     %   ^^J Symbol:      \meaning{chit@symbol
14589     %   ^^J Full:       \meaning{chit@full
14590     %   ^^J Factors:    \meaning{chit@factors
14591     %   ^^J Left:      \meaning{chit@left
14592     %   ^^J Right:     \meaning{chit@right
14593     %   ^^J Upper left: \meaning{chit@upper@left
14594     %   ^^J Lower left: \meaning{chit@lower@left
14595     %   ^^J Upper right: \meaning{chit@upper@right
14596     %   ^^J Lower right: \meaning{chit@lower@right

```

```

14597 % ^^J Extra: \meaning\chit@extra
14598 % ^^J Bevel: \meaning\chit@bevel
14599 % ^^J Frame: \meaning\chit@frame}
14600 \chit@dbg{1}{Chit report}
14601 \chit@report{ }
14602 \chit@dbg{1}{Chit start scope}
14603 \pgfscope
14604 %
14605 \ifchit@clip%
14606 \chit@dbg{1}{Chit clip path}
14607 \northeast%
14608 \wg@tmpa=\pgf@x\wg@tmpb=\pgf@y%
14609 \pgfpathmoveto{\pgfpoint{\wg@tmpa}{\wg@tmpb}}%
14610 \wg@tmpa=-\wg@tmpa \pgfpathlineto{\pgfpoint{\wg@tmpa}{\wg@tmpb}}%
14611 \wg@tmpb=-\wg@tmpb \pgfpathlineto{\pgfpoint{\wg@tmpa}{\wg@tmpb}}%
14612 \wg@tmpa=-\wg@tmpa \pgfpathlineto{\pgfpoint{\wg@tmpa}{\wg@tmpb}}%
14613 \pgfclosepath%
14614 \pgfusepath{clip}%
14615 \fi%

```

If we do not have the symbol key set, then we set the full key as a picture.

```

14616 \@ifundefined{chit@symbol}{%
14617 %% Draw full stuff
14618 \@ifundefined{chit@full}{}{%
14619 \chit@dbg{1}{Chit draw full image: '\meaning\chit@full'}
14620 \center\wg@tmpa=\pgf@x\wg@tmpb=\pgf@y%
14621 \wg@pic@all{\chit@full}{\the\wg@tmpa,\the\wg@tmpb}{chit/full}}%
14622 }{% With NATO symbol

```

Otherwise, we put in a node with shape `natoapp6c` and pass the `symbol` key–value pairs as options.

```

14623 \chit@dbg{1}{Chit draw symbol image}
14624 \edef\symid{\id symbol}%
14625 \symbol%
14626 \edef\args{{\symid}{\the\pgf@x,\the\pgf@y}\chit@symbol}%
14627 \chit@dbg{6}{Arguments to chit NATO symbol: \meaning\args}%
14628 \chit@dbg{1}{Chit draw nato image}
14629 \expandafter\chit@n@to\args@end@chit@n@to%
14630 \chit@dbg{6}{After making NATO symbol in chit}%

```

Having made the NATO App6(c) symbol, which we gave the node name `<id>symbol` where `<id>` is the ID of this chit, we can make the rest of the chit elements. These are the left and right elements, which are set west and east of the symbol, respectively; the factors; and the four corner elements.

If the respective elements have not been specified, we do not make them.

First the left and right elements. Note that these uses the anchors of the embedded `natoapp6c` node for placement.

```

14631 % Put in left of symbol
14632 \@ifundefined{chit@left}{}{%
14633 \chit@dbg{1}{Chit draw left: '\meaning\chit@left'}
14634 \begin{scope}[
14635 \pgfpointanchor{\symid}{west}%
14636 \wg@tmpa=\pgf@x\advance\wg@tmpa-\margin%

```

```

14637     \wg@tmpb=\pgf@y%
14638     \wg@pic@all{\chit@left}{\the\wg@tmpa,\the\wg@tmpb}{chit/left}%
14639     \end{scope}}%
14640 % Put in right of symbol
14641 \ifundefined{chit@right}{}{%
14642     \chit@dbg{1}{Chit draw left: '\meaning\chit@right'}
14643     \begin{scope}[]
14644         \pgfpointanchor{\symid}{east}%
14645         \wg@tmpa=\pgf@x\advance\wg@tmpa+\margin%
14646         \wg@tmpb=\pgf@y%
14647         \wg@pic@all{\chit@right}{\the\wg@tmpa,\the\wg@tmpb}{chit/right}%
14648     \end{scope}}%

```

Next, we want to put in the corner elements. But before we do that, we use our saved anchors and dimensions to calculate the coordinates. Note that the corner elements are anchored to the corners (plus margin) of the chit frame.

```

14649 % Get coordinates
14650 \northeast%
14651 \wg@tmpa=\pgf@x%
14652 \wg@tmpb=\pgf@y%
14653 \advance\wg@tmpa-\margin%
14654 \advance\wg@tmpb-\margin%

```

With the coordinates extracted, we set the four corner elements. Note, for the anchoring to work, we should specify pictures that have anchors (e.g., nodes). If not, we must take care to give offsets or the like.

```

14655 % Put in upper left corner
14656 \ifundefined{chit@upper@left}{}{%
14657     \chit@dbg{1}{Chit draw upper left: '\meaning\chit@upper@left'}
14658     \begin{scope}[]
14659         \wg@pic@all{\chit@upper@left}{-\the\wg@tmpa,\the\wg@tmpb}{%
14660             chit/upper left}%
14661     \end{scope}}
14662 % Put in upper right corner
14663 \ifundefined{chit@upper@right}{}{%
14664     \chit@dbg{1}{Chit draw upper right: '\meaning\chit@upper@right'}
14665     \begin{scope}[]
14666         \wg@pic@all{\chit@upper@right}{\the\wg@tmpa,\the\wg@tmpb}{%
14667             chit/upper right}%
14668     \end{scope}}
14669 % Put in lower left corner
14670 \ifundefined{chit@lower@left}{}{%
14671     \chit@dbg{1}{Chit draw lower left: '\meaning\chit@lower@left'}
14672     \begin{scope}[]
14673         \wg@pic@all{\chit@lower@left}{-\the\wg@tmpa,-\the\wg@tmpb}{%
14674             chit/lower left}%
14675     \end{scope}}
14676 % Put in lower right corner
14677 \ifundefined{chit@lower@right}{}{%
14678     \chit@dbg{1}{Chit draw lower right: '\meaning\chit@lower@right'}
14679     \begin{scope}[]
14680         \wg@pic@all{\chit@lower@right}{\the\wg@tmpa,-\the\wg@tmpb}{%
14681             chit/lower right}%
14682     \end{scope}}

```

Finally, we put in the unit factors. They are put at the bottom of the chit frame (plus margin) and are typically anchored to the south anchor of the element. Note, we can put in several factors if need be.

```

14683 % Put in factors
14684 \@ifundefined{chit@factors}{}{%
14685   \chit@dbg{1}{Chit draw factors: '\meaning\chit@factors'}
14686   \advance\wg@tmpb-\margin%
14687   \begin{scope}[]
14688     \wg@pic@all{\chit@factors}{}{0,-\the\wg@tmpb}{chit/factors}%
14689   \end{scope}}%
14690 % Put in extra
14691 \@ifundefined{chit@extra}{}{%
14692   \chit@dbg{1}{Chit draw extra: '\meaning\chit@extra'}
14693   \begin{scope}[]
14694     \wg@pic@all{\chit@extra}{}{0,0}{chit/factors}%
14695   \end{scope}}%
14696 }% End of full or symbol
14697 \endpgfscope%
14698 % Make bevel?
14699 \@ifundefined{chit@bevel}{\let\chit@bevel\empty}{}
14700 \ifx\chit@bevel\empty\else%
14701   \chit@dbg{1}{Chit draw bevel}
14702   %% South east bevel
14703   \northeast%
14704   \wg@tmpa=-\pgf@x\wg@tmpb=-\pgf@y%
14705   \ifcase\chit@bevel\relax%
14706   \or% 1
14707   \or\wg@tmpa=-\wg@tmpa% 2
14708   \or\wg@tmpb=-\wg@tmpb% 3
14709   \or\wg@tmpa=-\wg@tmpa\wg@tmpb=-\wg@tmpb%4
14710   \fi
14711   \chit@bevel@path{chit/bevel highlight}
14712   %% North west bevel
14713   \northeast%
14714   \wg@tmpa=\pgf@x\wg@tmpb=\pgf@y%
14715   \ifcase\chit@bevel\relax%
14716   \or% 1
14717   \or\wg@tmpa=-\wg@tmpa% 2
14718   \or\wg@tmpb=-\wg@tmpb% 3
14719   \or\wg@tmpa=-\wg@tmpa\wg@tmpb=-\wg@tmpb%4
14720   \fi
14721   \chit@bevel@path{chit/bevel shadow}
14722 \fi
14723 % Draw frame?
14724 \chit@dbg{1}{Chit draw frame: '\meaning\chitframeopt'}
14725 \edef\tmp@opt{[chit/frame style/.cd,chit/frame/.try,\chitframeopt]}
14726 \chit@dbg{1}{Chit draw frame: '\meaning\tmp@opt}
14727 \expandafter\scope\tmp@opt
14728   \northeast%
14729   \wg@tmpa=\pgf@x\wg@tmpb=\pgf@y%
14730   \pgfpathmoveto{\pgfqpoint{\wg@tmpa}{\wg@tmpb}}%
14731   \wg@tmpa=-\wg@tmpa \pgfpathlineto{\pgfqpoint{\wg@tmpa}{\wg@tmpb}}%
14732   \wg@tmpb=-\wg@tmpb \pgfpathlineto{\pgfqpoint{\wg@tmpa}{\wg@tmpb}}%
14733   \wg@tmpa=-\wg@tmpa \pgfpathlineto{\pgfqpoint{\wg@tmpa}{\wg@tmpb}}%

```



```

14734     \pgfclosepath%
14735     \chit@dbg{3}{Line width for frame: '\the\pgflinewidth'}
14736     \ifchit@draw@frame\pgfusepath{stroke}\fi%
14737     \chit@draw@frametrue%
14738     %\iftikz@mode@fill\pgfusepath{fill}\fi%
14739     \endscope%
14740     \chit@dbg{1}{Chit end of shape}
14741 }
14742 }

```

5.5.5 The `\chit` wrapper macro

```

\chit
\chit@
\chit@@

```

The macro to make the chits. This is a wrapper around a `node` with shape `chit`. The syntax of this macro is

```

\chit[<chit options>](<position>)(<identifier>);

```

Note that the trailing semi-colon is optional. Here *<chit options>* are any key-value pairs in the `/chit` (and `/tikz`) namespace.

The first macro parses for options.

```

14743 \def\chit{%
14744   \chit@dbg{5}{Chit}
14745   \@ifnextchar[{\chit@}{\chit@[]}%
14746 }

```

Parse for coordinates.

```

14747 \def\chit@[#1]{%
14748   \chit@dbg{5}{Chit second: '#1'}
14749   \@ifnextchar({\chit@@{#1}}{\chit@@{#1}(0,0)}%)
14750 }

```

Parse for name.

```

14751 \def\chit@@#1(#2){%
14752   \@ifnextchar({\chit@@@{#1}{#2}}{\chit@@@{#1}{#2}()})%
14753 }

```

The work horse. This simply makes a `node` with the shape `chit`. Note, we allow for a trailing semi-colon (`;`) to have a similar feel to other TikZ macros.

The macro will execute the style `/tikz/every chit` if defined. Note that this will be executed *before* the usual `every chip node` style.

```

14754 \def\chit@@@#1#2(#3){%
14755   \chit@dbg{5}{Chit final:
14756     ^^J Options:   #1
14757     ^^J Position:  #2
14758     ^^J Name:     '#3'}

```

```

14759 \let\name\pgfutil@empty%
14760 \chit@dbg{1}{=== Before chit node}%
14761 \node[chit={/tikz/every chit/.try,id=#3,#1}] (tmp) at (#2) {};
14762 \chit@dbg{2}{=== After chit node}%
14763 \ifx|#3|\relax%
14764 \else%
14765 \chit@dbg{3}{=== Renaming chit to user defined name '#3'}%
14766 \pgfnoderename{#3}{tmp}%
14767 \fi%
14768 \@ifnextchar;{\@gobble}{}%
14769 }

```

5.5.6 Predefined chit element pictures

```

14770 \DeclareRobustCommand\chit@sep[2][/]{%
14771 \foreach[count=\is] \s in {#2}{%
14772 \ifnum\is>1\relax#1\fi%
14773 \s}}

```

```

/tikz/pics/chit/1 factor
/tikz/pics/chit/2 factors
/tikz/pics/chit/2 factors artillery
/tikz/pics/chit/3 factors
/tikz/pics/chit/4 factors
/tikz/pics/chit/identifier
/tikz/pics/chit/small identifier
/tikz/pics/chit/identifier macro

```

These pictures can be used as the value of `chit` keys.

```

14774 \tikzset{%
14775 chit/1 factor/.pic={
14776 \chit@dbg{4}{ Chit 1 factor: #1}%
14777 \node[chit/factor,chit/1 factor,pic actions]{#1};},
14778 pics/chit/2 factors/.style args={#1,#2}{%
14779 code={%
14780 \chit@dbg{4}{ Chit 2 factors: #1 and #2}%
14781 \node[chit/factor,chit/2 factors,pic actions]{#1--#2};}},
14782 pics/chit/2 factors artillery/.style args={#1,#2,#3}{%
14783 code={
14784 \chit@dbg{4}{ Chit 2 factors w/artillery: '#1' '#2' '#3'}%
14785 \node[chit/factor,chit/2 factors]{%
14786 {#1}$\overset{\text{\scriptsize #3}}{\text{--}}$#2}};}},
14787 pics/chit/3 factors/.style args={#1,#2,#3}{%
14788 code={
14789 \chit@dbg{4}{ Chit 3 factors: '#1' '#2' '#3'}%
14790 \node[chit/factor,chit/3 factors]{#1-#2-#3};}},
14791 pics/chit/4 factors/.style args={#1,#2,#3,#4}{%
14792 code={
14793 \chit@dbg{4}{ Chit 3 factors: '#1' '#2' '#3' '#4'}%
14794 \node[chit/factor,chit/4 factors]{#1-#2-#3-#4};}},
14795 chit/identifier/.pic={
14796 \chit@dbg{4}{ Chit identifier: '#1'}%

```

```

14797 \node[chit/identifier,pic actions]{#1};
14798 },
14799 chit/identifiers/.pic={
14800 \chit@dbg{4}{ Chit identifiers: '#1'}%
14801 \node[chit/identifier,pic actions]{\chit@sep{#1}};
14802 },
14803 chit/small identifier/.pic={
14804 \chit@dbg{4}{ Chit small identifier: '#1'}%
14805 \node[chit/small identifier,pic actions]{#1};
14806 },
14807 chit/small identifiers/.pic={
14808 \chit@dbg{4}{ Chit small identifiers: '#1'}%
14809 \node[chit/small identifier,pic actions]{\chit@sep{#1}};
14810 },
14811 chit/identifier macro/.pic={%
14812 \chit@dbg{4}{ Chit identifier macro: \meaning#1}
14813 \edef\chit@i@tmp{#1}
14814 \node[chit/identifier,pic actions]{\chit@i@tmp};},
14815 }

```

```

/tikz/chit/factor
/tikz/chit/1 factor
/tikz/chit/2 factors
/tikz/chit/3 factors
/tikz/chit/4 factors
/tikz/chit/identifier
/tikz/chit/small identifier

```

Styles used by the above pictures. Users can change these as they see fit.

```

14816 \tikzset{%
14817 chit/factor/.style={
14818 shape=rectangle,
14819 font=\sffamily\bfseries\fontsize{12}{14}\selectfont,
14820 anchor=base,
14821 inner sep=0,
14822 %text=pgfstrokecolor,
14823 draw=none,
14824 fill=none,
14825 transform shape,
14826 },
14827 chit/1 factor/.style={},
14828 chit/2 factors/.style={},
14829 chit/3 factors/.style={},
14830 chit/4 factors/.style={text/.append style=\fontsize{10}{12}\selectfont},
14831 chit/identifier/.style={
14832 shape=rectangle,
14833 font=\sffamily\bfseries\fontsize{8}{9}\selectfont,
14834 inner sep=0,
14835 % text=pgfstrokecolor,
14836 draw=none,
14837 fill=none,
14838 transform shape,

```

```

14839 },
14840 chit/small identifier/.style={
14841   shape=rectangle,
14842   font=\sffamily\bfseries\fontsize{6}{7}\selectfont,
14843   inner sep=0,
14844   % text=pgfstrokecolor,
14845   draw=none,
14846   fill=none,
14847   transform shape,
14848 },
14849 }

```

5.5.7 Modifications to chits

These defines overlays one can add on top of chits, for example to shade a chit, put a semi-transparent red cover to indicate elimination, and similar.

```

14850 \tikzset{
14851   pics/chit/shade/.style={
14852     code={%
14853       \path[fill=white,opacity=#1,pic actions] (-.6,-.6) rectangle(.6,.6);}},
14854   pics/chit/eliminate/.style={
14855     code={%
14856       \path[fill=red,opacity=#1,pic actions] (-.6,-.6) rectangle(.6,.6);}},
14857   pics/chit/shade/.default=0.5,
14858   pics/chit/eliminate/.default=0.25,
14859   dummy chit/.style={draw=none,fill=none,chit={}},
14860 }
14861 \def\sh@dechit{%
14862   \@ifnextchar[{\sh@dechit}{\sh@dechit[.5]}%}
14863 }
14864 \def\elimin@techit{%
14865   \@ifnextchar[{\elimin@techit}{\elimin@techit[.25]}%}
14866 }
14867 \def\sh@dechit[#1](#2){%
14868   % \message{^^JShading chit with opacity '#1'}%
14869   \pic[transform shape] at (#2) {chit/shade=#1};%
14870   \@ifnextchar;{\@gobble}{}}
14871 \def\elimin@techit[#1](#2){%
14872   \pic[transform shape] at (#2) {chit/eliminate=#1};%
14873   \@ifnextchar;{\@gobble}{}}

```

5.5.8 Stacking of chits

Stacking of chits. The key `chit/stack direction` sets the default direction to make the stack in.

```

14874 % offset, location, direction, list
14875 \tikzset{%
14876   chit/stack direction/.store in=\chit@stack@dir,
14877   chit/stack direction/.initial={(.3,.3)},
14878 }

```

Now the code

```

14879 \def\chit@stack@dir{(.3,.3)}
14880 \def\stackchits(#1){%
14881   \@ifnextchar({\st@ckchits{#1}}{\st@ckchits{#1}(.3,.3)}%)
14882 }
14883 \def\st@ckchits#1(#2)#3{%
14884   \chit@dbg{2}{Stacking chits '#1', '#2', '#3'}%
14885   \edef\xy{#1}%
14886   \chit@dbg{4}{Stack start at \xy}%
14887   \foreach[count=\i from 0] \c/\o in {#3} {%
14888     \ifx\c\empty\else%
14889       \edef\ccc{\c}%
14890       \chit@dbg{2}{Adding \meaning\ccc\space to stack at (\xy)' '\o'}%
14891       \expandafter\ccc(\xy)%
14892       %%
14893       \ifx\c\o\else%
14894         %\chit@dbg{0}{Option: \o}
14895         \edef\ccc{\o}%
14896         \expandafter\ccc(\xy)%
14897         \fi
14898         \expandafter\ccc(\xy)%
14899         \tikzmath{%
14900           coordinate \cc;%
14901           \cc = (\xy) + (#2);}
14902         \xdef\xy{\cc}%
14903         \fi%
14904     }%
14905   \@ifnextchar;{\@gobble}{}%
14906 }

```

5.5.9 Making order of battle charts

Macros for making OOBs

Style for turns

```

14907 \tikzset{
14908   chit/oob turn/.pic={\node[pic actions]{#1};}}

```

current c, current r, n-columns, cell size, y

```

14909 \def\chit@oob@cellupdate(#1,#2)#3#4#5{%
14910   \edef\ff{\ifwg@oob@inv-1\else1\fi}%
14911   \chit@dbg{1}{ \space Cell update 'c=|#1|' vs '#4'*('#3'-1)}
14912   \pgfmathparse{int(ifthenelse(abs(#1)>=#4*(#3-1),#5-1,#5))}%
14913   \xdef#5{\pgfmathresult}
14914   \pgfmathparse{ifthenelse(abs(#1)>=#4*(#3-1),#2-#4,#2)}%
14915   \xdef#2{\pgfmathresult}%
14916   \pgfmathparse{ifthenelse(abs(#1)>=#4*(#3-1),0,#1+\ff*#4)}%
14917   \xdef#1{\pgfmathresult}%
14918   \chit@dbg{1}{ \space\space-> '\string#5'=#5 '\string#2'=#2 '\string#1'=#1}
14919 }

```

current c, current r, cell size, extra vertical spacing

```

14920 \def\chit@oob@rowupdate(#1,#2)#3#4{%
14921   \chit@dbg{2}{ Row update  c='#1',r='#2',s='#3',e='#4'}
14922   %\pgfmathparse{ifthenelse(#1>0,#2-#3,#2)}%
14923   \pgfmathparse{#2-#3-#4}%
14924   \xdef#2{\pgfmathresult}%
14925   \xdef#1{0}\pgfmathresult}%
14926   %\xdef#1{0}
14927   \chit@dbg{2}{ \space\space-> update '\string#2'=#2}
14928 }

```

current c, current r, cell size, extra spacing

```

14929 \def\chit@oob@turnupdate(#1,#2)#3#4{%
14930   \chit@dbg{2}{ Turn update c='#1',r='#2',s='#3',e='#4'}
14931   % \pgfmathparse{#2-ifthenelse(#1>0,#3,0)-#4}%
14932   \pgfmathparse{#2-#4-ifthenelse(abs(#1)>0.0001,#3,0)}
14933   \xdef#2{\pgfmathresult}%
14934   \xdef#1{0}%
14935   \chit@dbg{2}{ \space\space-> update '\string#1'=#1,'\string#2'=#2}
14936 }

```

chit list, n-colls, cell size, extra vertical spacing

This expects a list of lists of chits, one list per turn; the maximum number of columns; the size of cells, extra spacing between turns.

Note, the list of lists leaf elements should be styles for the chits.

This depends on the Tikz pic `chit/oob turn` which takes the number as argument.

```

14937 \newif\ifwg@oob@inv\wg@oob@invfalse
14938 \def\chit@oob@spacer{hspace}
14939 \def\chit@oob@vspacer{vspace}
14940 \def\wg@star@oob{\wg@oob@invtrue\wg@oob}
14941 \def\wg@nostar@oob{\wg@oob@invfalse\wg@oob}
14942 \def\oob{%
14943   \@ifstar{\wg@star@oob%
14944   }{\wg@nostar@oob%
14945   }%
14946 }

```

The inner macro of `\oob`. The arguments are

1. The list of lists of chits styles
2. The maximum number of columns
3. The width of each cell
4. Additional row spacing between turns

```

14947 \def\wg@oob#1#2#3#4{
14948   \def\r{0}
14949   \pgfmathparse{#3*(#2-1)}%
14950   \edef\a{\pgfmathresult}
14951   \chit@dbg{2}{OOB: '#1'}

```

```

14952 \foreach[count=\ti from 0] \t/\y in #1{
14953   \xdef\o{\r}
14954   \def\c{0}
14955   \ifx\t\y\def\y{0}\fi
14956   \chit@dbg{2}{Turn \ti\space(\r,\t,y=\y):'}
14957   \ifwg@oob@inv%
14958     \pic[transform shape] at (.5*#3,\r) {chit/oob turn=\ti};% was dx=0.5
14959   \else
14960     \pic[transform shape] at (-.5*#3,\r) {chit/oob turn=\ti};% was dx=-0.5
14961   \fi%
14962   \ifx\t\empty\else%
14963     \foreach \u/\m in \t{
14964       %% \chit@dbg{2}{ '\u'='\m'}
14965       \ifx\u\empty\else
14966         \ifx\m\@empty\def\m{1}\fi
14967         \ifx\u\m\def\m{1}\fi
14968         \foreach \n in {1,...,\m}{%
14969           \chit@dbg{2}{00B Chit is '\u' '\chit@oob@spacer'}%
14970           \ifx\u\chit@oob@spacer%
14971             \chit@dbg{3}{Chit '\u' is spacer '\chit@oob@spacer'}
14972             \pgfmathparse{\c+#4}%
14973             \xdef\c{\pgfmathresult}%
14974           \else%
14975             \ifx\u\chit@oob@vspacer%
14976               \chit@dbg{3}{Chit '\u' is vspacer '\chit@oob@vspacer'}
14977               \pgfmathparse{ifthenelse(abs(\c)<0.0001,0,#3)}
14978               \xdef\ll{\pgfmathresult}
14979               \chit@dbg{2}{\string\ll='\ll'}
14980               \chit@oob@rowupdate(\c,\r){\ll}{#4}
14981             \else
14982               \ifnum\chit@dbg{1}>2%
14983                 \node[minimum width=#3cm,minimum height=#3cm,
14984                       draw,transform shape] at (\c,\r) {};
14985               \fi
14986               \ifx\u\chit@blank\else%
14987                 \chit[\u=\ti,zone oob point={\u}{\c}{\r}](\c,\r);%
14988               \fi%
14989               \chit@oob@cellupdate(\c,\r){#2}{#3}{\y}
14990             \fi
14991           \fi
14992         }
14993       \fi
14994     }
14995   \fi
14996   \chit@dbg{1}{ End of chits in turn
14997     \ti\space(c='\c',r='\r',o='\o',y='\y')}
14998   % IF no units where given, then we force \c to be non-zero so that
14999   % \chit@oob@turnupdate increments the row
15000   \ifx\t\@empty
15001     \def\c{#3}
15002     \chit@dbg{2}{ Turn is empty, set c='\c'}
15003   \fi
15004   %\ifnum\y<0% No explicit number of rows given

```

```

15005 % \def\c{#3}
15006 % \chit@dbg{2}{ No explicit number of rows given, set c='c'}
15007 %\fi
15008 % In case the user gave and explicit number of rows, add the rows
15009 % that are missing. \y is initially set to the number of
15010 % requested rows, and then decremented every time we go down one
15011 % row. So if the number of rows we did so far is N, and the
15012 % requested number of rows is M, then the loop below adds M-N
15013 % rows.
15014 \ifnum\y>0%
15015 \chit@dbg{2}{ Looping rows from 2 to \y, break when row > \y}%
15016 \foreach \rr in {2,...,\y}{
15017 %\ifnum\rr>\y% A little funny, but \y can be negative!
15018 % \chit@dbg{2}{ \space Breaking loop \rr\space > \y}%
15019 % \breakforeach%
15020 %\else%
15021 \chit@oob@rowupdate(\c,\r){#3}{0}% Extra spacing?
15022 %\fi
15023 }
15024 \fi
15025 % This will zero \c. However, if on entry |\c|>0, then we also
15026 % increment the row
15027 \chit@oob@turnupdate(\c,\r){#3}{#4}
15028 \chit@dbg{2}{End of turn \ti\space(c='c',r='r',o='o',y='y')}
15029 }
15030 \chit@dbg{3}{End of OOB (c='c',r='r',y='y')}
15031 \@ifnextchar;{\@gobble}{}

```

Horizontal flow OOB

```

15032 \def\wg@star@hoob{\wg@oob@invtrue\wg@hoob}
15033 \def\wg@nostar@hoob{\wg@oob@invfalse\wg@hoob}
15034 \def\hoob{%
15035 \@ifstar{\wg@star@hoob%
15036 }{\wg@nostar@hoob%
15037 }%
15038 }

```

The inner macro of \hoob. The arguments are

1. The list of lists of chits styles
2. The maximum number of columns
3. The width of each cell
4. Additional row spacing between turns

```

15039 \def\wg@hoob#1#2#3#4{
15040 \def\r{0}
15041 \def\c{0}
15042 \pgfmathparse{#3*(#2-1)}%
15043 \edef\a{\pgfmathresult}
15044 \chit@dbg{2}{OOB: '#1'}
15045 \foreach[count=\ti from 0] \t/\y in #1{

```



```

15046 \xdef\o{\r}
15047 % \def\c{0}
15048 \ifx\t\y\def\y{0}\fi
15049 \chit@dbg{2}{Turn \ti\space(\r,\t,y=\y):'}
15050 \ifx\t\empty\else
15051   % Count how many are left for this turn
15052   \chit@dbg{2}{At start of turn \t\space\string\c=\c}
15053   \def\l{\c}%
15054   \let\ig\empty
15055   \foreach \u/\m in \t{
15056     \ifx\ig\empty
15057       \ifx\u\empty\else
15058         \ifx\u\m\def\m{1}\fi
15059         \ifx\u\chit@oob@spacer%
15060           \pgfmathparse{\l+\m*#4}\xdef\l{\pgfmathresult}
15061           \chit@dbg{2}{Got \m\space hspace (#4) -> \l}
15062         \else
15063           \ifx\u\chit@oob@vspace%
15064             \xdef\ig{1}
15065             \chit@dbg{2}{Got vspace -> \l (\ig)}
15066           \else
15067             \pgfmathparse{\l+\m*#3}
15068             \xdef\l{\pgfmathresult}
15069             \chit@dbg{2}{Got \m\space units -> \l}
15070           \fi
15071         \fi
15072       \fi
15073     \fi}
15074   % Check if there's enough room
15075   \chit@dbg{2}{To fill the rest of turn needs '\l' compared to
15076     '\a' (#3*(#2-1))}
15077   \pgfmathparse{ifthenelse(abs(\l)>=#3*(#2-1),0,1)}%
15078   \xdef\l{\pgfmathresult}%
15079   \chit@dbg{2}{Break or not '\l'}
15080   \ifnum\l=0\chit@oob@turnupdate(\c,\r){#3}{#4}\fi
15081 \fi
15082 \ifwg@oob@inv%
15083   \pic[transform shape] at (\c+.5*#3,\r) {chit/oob turn=\ti};% was dx=0.5
15084 \else
15085   \pic[transform shape] at (\c+-.5*#3,\r) {chit/oob turn=\ti};% was dx=-0.5
15086 \fi%
15087 %\chit@oob@cellupdate(\c,\r){#2}{#3}{\y}
15088 \ifx\t\empty\else%
15089   \def\lv{0}
15090   \foreach \u/\m in \t{
15091     %% \chit@dbg{2}{ '\u'='\m'}
15092     \ifx\u\empty\else
15093       \ifx\m\empty\def\m{1}\fi
15094       \ifx\u\m\def\m{1}\fi
15095       \foreach \n in {1,...,\m}{%
15096         \chit@dbg{2}{00B Chit is '\u' '\chit@oob@spacer'}%
15097         \ifx\u\chit@oob@spacer%
15098           \chit@dbg{3}{Chit '\u' is spacer '\chit@oob@spacer'}

```

```

15099     \pgfmathparse{\c+#4}%
15100     \xdef\c{\pgfmathresult}%
15101   \else%
15102     \ifx\u\chit@oob@vspacer%
15103       \chit@dbg{3}{Chit '\u' is vspacer '\chit@oob@vspacer'}
15104       \pgfmathparse{ifthenelse(abs(\c)<0.0001,0,#3)}
15105       \xdef\ll{\pgfmathresult}
15106       \chit@dbg{2}{\string\ll='\ll'}
15107       \chit@oob@rowupdate(\c,\r){\ll}{#4}
15108       \xdef\lv{1}
15109     \else
15110       \ifnum\chit@dbglvl>2%
15111         \node[minimum width=#3cm,minimum height=#3cm,
15112               draw,transform shape] at (\c,\r) {};
15113       \fi
15114       \ifx\u\chit@blank\else%
15115         \chit[\u=\ti,zone oob point={\u}{\c}{\r}](\c,\r);%
15116       \fi%
15117       \chit@oob@cellupdate(\c,\r){#2}{#3}{\y}
15118     \fi
15119   \fi
15120 }
15121 \fi
15122 }
15123 \fi
15124 \chit@dbg{2}{ End of chits in turn
15125   \ti\space(c='\c',r='\r',o='\o',y='\y')}
15126 % --- Not relevant, I think
15127 % IF no units where given, then we force \c to be non-zero so that
15128 % \chit@oob@turnupdate increments the row
15129 % \ifx\t\@empty
15130 %   \def\c{#3}
15131 %   \chit@dbg{2}{ Turn is empty, set c='\c'}
15132 % \fi
15133 % ---
15134 %\ifnum\y<0% No explicit number of rows given
15135 %   \def\c{#3}
15136 %   \chit@dbg{2}{ No explicit number of rows given, set c='\c'}
15137 %\fi
15138 % In case the user gave and explicit number of rows, add the rows
15139 % that are missing. \y is initially set to the number of
15140 % requested rows, and then decremented every time we go down one
15141 % row. So if the number of rows we did so far is N, and the
15142 % requested number of rows is M, then the loop below adds M-N
15143 % rows.
15144 \ifnum\y>0%
15145   \chit@dbg{2}{ Looping rows from 2 to \y, break when row > \y}%
15146   \foreach \rr in {2,...,\y}{
15147     %\ifnum\rr>\y% A little funny, but \y can be negative!
15148     % \chit@dbg{2}{ \space Breaking loop \rr\space > \y}%
15149     % \breakforeach%
15150     %\else%
15151     \chit@oob@rowupdate(\c,\r){#3}{0}% Extra spacing?

```

```

15152     %\fi
15153   }
15154   \fi
15155   % --- Not relevant I think
15156   % This will zero \c. However, if on entry |\c|>0, then we also
15157   % increment the row
15158   % \chit@oob@turnupdate(\c,\r){#3}{#4}
15159   % ---
15160   % Horizontal spacer
15161
15162   %\pgfmathparse{ifthenelse(abs(\c)>=\a,1,0)}\xdef\l{\pgfmathresult}
15163   \pgfmathparse{\c+1.5*#4}%
15164   \xdef\c{\pgfmathresult}%
15165   \ifnum\lv=1%
15166     \pgfmathparse{\r-#4}
15167     \chit@oob@rowupdate(\c,\r){0}{#4}
15168   \else
15169     \chit@oob@cellupdate(\c,\r){#2}{#3}{\y}
15170     \ifnum\y<0
15171       \chit@oob@turnupdate(\c,\r){#3}{#4}
15172     \else
15173       \fi
15174     \fi
15175     % \xdef\y{0}
15176     \chit@dbg{2}{End of turn \ti\space(c='c',r='r',o='o',y='y')}
15177   }
15178   \chit@dbg{3}{End of OOB (c='c',r='r',y='y')}
15179   \@ifnextchar;{\@gobble}{}

```

5.5.10 Table of chits

```

15180 \tikzset{
15181   chit/cell background/.style={fill=black},
15182   %chit/cell background flipped/.style={fill=black},
15183   blank chit/.style={/chit/frame={draw=none,fill=none}},
15184   chit/grid lines/.style={dashed},
15185 }

```

These macros are used when we set tables of chits. This allows us to define blank spaces in the table by giving the element `blank chit`.

```

15186 \def\chit@blank{blank chit}
15187 \def\chit@cellbg(#1,#2)#3{%
15188   \draw[chit/cell background](#1-#3/2,#2-#3/2) rectangle++(#3,#3);
15189 }
15190 \def\chit@celldbldbg(#1,#2)#3{%
15191   \draw[chit/cell background,chit/cell background flipped/.try%
15192     (#1-#3/2,#2-#3/2) rectangle++(#3,#3);
15193 }

```

`\ifchits@reset`

This ‘if’ controls whether to reset the coordinates to the origin when `\chits` is called. If true, then reset for a new

table.

```
15194 \newif\ifchits@reset\chits@resettrue
```

```
\chits
\@chits
\chit@sng@cellupdate
```

```
15195 \def\chit@sng@cellupdate(#1,#2)#3#4{%
15196 \chit@dbg{2}{Current '#1' vs '#4'*('#3'+1)}
15197 \pgfmathparse{ifthenelse(#1>=#4*(#3-1),#2-#4,#2)}%
15198 \xdef#2{\pgfmathresult}%
15199 \pgfmathparse{ifthenelse(#1>=#4*(#3-1),0,#1+#4)}%
15200 \xdef#1{\pgfmathresult}%
15201 }
```

The starred version (`\chits*`) of this macro continues the previously set chit table.

```
15202 \def\chits{%
15203 \ifstar{\chits@resetfalse\@chits}{\chits@resettrue\@chits}}

15204 \def\@chits#1#2#3{
15205 \ifchits@reset
15206 \def\r{0}%
15207 \def\c{0}%
15208 \fi
15209 \chit@dbg{1}{Chits to make: #1}%
15210 \foreach[count=\ti from 0] \t/\x in #1{%
15211 \chit@dbg{2}{Turn '\t' with option '\x'}
15212 \ifx\t\empty\else%
15213 \foreach \u/\m in \t{%
15214 \ifx\u\empty\else%
15215 \chit@dbg{2}{Next chit '\u' with possible multiplicity '\m'}%
15216 \ifx\m\empty\def\m{1}\fi%
15217 \ifx\u\m\def\m{1}\fi%
15218 \chit@dbg{2}{Next chit '\u' multiplicity '\m'}%
15219 \foreach \n in {1,...,\m}{%
15220 \ifx\u\chit@blank%
15221 \chit@dbg{3}{Ignoring blank chit:\u}%
15222 \else%
15223 \chit@cellbg(\c,\r){#3}%
15224 \chit[\u=\ti](\c,\r)%
15225 \chit@sng@cellupdate(\c,\r){#2}{#3}%
15226 \fi%
15227 }%
15228 \fi%
15229 }%
15230 \fi%
15231 }%
15232 \ifnextchar;{\@gobble{}}}
```

```
\chitgrid
```

1. columns

2. rows
3. cell-size

```

15233 \def\chitgrid#1#2#3{%
15234   \pgfmathparse{#3/2}\edef\rmin{\pgfmathresult}%
15235   \pgfmathparse{#2*#3-#3/2}\edef\rmax{\pgfmathresult}%
15236   %\draw[red](-#3/2,\rmin)rectangle(#3*#1-#3/2,-\rmax);
15237   \foreach \cc in {0,...,#1}{
15238     \draw[chit/grid lines] (\cc*#3-#3/2,3*#3/4)--(\cc*#3-#3/2,-\rmax-#3/4);}
15239   %\chit@dbg{0}{Drawing horizontal lines from '\rmin', '-\rmin', ..., '-\rmax'}
15240   \foreach \rr in {\rmin,-\rmin,...,-\rmax}{
15241     %\chit@dbg{0}{Horizontal line at '\rr'}
15242     \draw[chit/grid lines] (-3*#3/4,\rr)--(#1*#3-#3/4,\rr);}
15243 }

```

```

\doublechits
\@doublechits
\chit@dbl@cellupdate
\chit@dbl@flip

```

1. coordinates
2. coordinates
3. cell-size

```

15244 \def\chit@dbl@flip(#1,#2)#3#4{%
15245   \pgfmathparse{-#1}%
15246   \xdef\mc{\pgfmathresult}%
15247 }

```

1. coordinates
2. coordinates
3. Number of columns
4. cell-size

```

15248 \def\chit@dbl@cellupdate(#1,#2)#3#4{%
15249   \pgfmathparse{ifthenelse(#1<-#4/2,#2,#4+#2)}%
15250   \xdef#2{\pgfmathresult}%
15251   \pgfmathparse{ifthenelse(#1<-#4/2,#4+#1,-(#3-.5)*#4)}%
15252   \xdef#1{\pgfmathresult}%
15253 }

```

1. List of list of keys
2. Number of columns
3. size of each cell

The starred version (`\doublechits*`) of this macro continues the previously set chit table.

```

15254 \def\doublechits{%
15255   \@ifstar{\chits@resetfalse\@doublechits}{\chits@resettrue\@doublechits}}

15256 \def\@doublechits#1#2#3{%
15257   \chit@dbg{1}{Setting double-sided chits: #1}
15258   \ifchits@reset
15259     \pgfmathparse{-(#2-.5)*#3}
15260     \xdef\c{\pgfmathresult}
15261     \def\r{0}
15262   \fi
15263
15264   \foreach[count=\ti from 0] \t/\x in #1{
15265     \ifx\t\empty\else%
15266       \foreach \u/\m in \t{
15267         \ifx\u\empty\else
15268           \ifx\m\@empty\def\m{1}\else%
15269             \ifx\u\m\def\m{1}\fi\fi
15270           \chit@dbg{2}{‘\u’=‘\m’ (\c,\r)}
15271           \foreach \n in {1,...,\m}{%
15272             \ifx\u\chit@blank
15273               \chit@dbg{3}{Ignoring blank chit:\u}
15274             \else
15275               \chit@cellbg(\c,\r){#3}
15276               \chit[\u=\ti](\c,\r)
15277               \chit@dbl@flip(\c,\r){#3}
15278               \chit@celldblbg(\mc,\r){#3}
15279               \chit[\u space flipped=\ti,zone turn=\t,zone mult=\n](\mc,\r)
15280               \chit@dbl@cellupdate(\c,\r){#2}{#3}
15281             \fi
15282           }
15283         \fi
15284       }
15285     \fi
15286   }
15287   \draw[dashed](0,-3*#3/4)--(0,\r-#3/4);%
15288   \draw[dashed,<-] (#3/5,-2*#3/3)--(#3/2,-2*#3/3) node[transform shape,anchor=west]{Back};%
15289   \draw[dashed,<-] (-#3/5,-2*#3/3)--(-#3/2,-2*#3/3) node[transform shape,anchor=east]{Front};%
15290   % \foreach \cc in {0,...,#2}{
15291   %   \draw[dashed] (\cc*#3,-3*#3/4)--(\cc*#3,\r-#3/4);
15292   %   \draw[dashed] (-\cc*#3,-3*#3/4)--(-\cc*#3,\r-#3/4);}
15293   % \pgfmathparse{#3/2}\edef\rmin{\pgfmathresult}%
15294   % \chit@dbg{0}{Drawing horizontal lines from ‘-\rmin’, ‘\rmin’, ..., ‘\r’}
15295   % \foreach \rr in {-\rmin,\rmin,...,\r}{
15296   %   \chit@dbg{0}{Horizontal line at ‘\rr’}
15297   %   \draw[dashed] (-#2*#3-#3/4,\rr)--(#2*#3+#3/4,\rr);}
15298   \@ifnextchar;{\@gobble{}}

```

`\doublechitgrid`

1. columns

2. rows

3. cell-size

```
15299 \def\doublechitgrid#1#2#3{%
15300 \pgfmathparse{#3/2}\edef\rmin{\pgfmathresult}%
15301 \pgfmathparse{#2*#3-#3/2}\edef\rmax{\pgfmathresult}%
15302 \foreach \cc in {0,...,#1}{
15303   \draw[chit/grid lines] (\cc*#3,-3*#3/4)--(\cc*#3,\rmax+#3/4);
15304   \draw[chit/grid lines] (-\cc*#3,-3*#3/4)--(-\cc*#3,\rmax+#3/4);}
15305 %\chit@dbg{0}{Drawing horizontal lines from '-\rmin', '\rmin', ..., '\rmax'}
15306 \foreach \rr in {-\rmin,\rmin,...,\rmax}{
15307   %\chit@dbg{0}{Horizontal line at '\rr'}
15308   \draw[chit/grid lines] (-#1*#3-#3/4,\rr)--(#1*#3+#3/4,\rr);}
15309 }
```

5.5.11 Battle markers

Takes 1 arguments - the identifier.

Define every battle marker to change the style.

```
15310 \tikzset{%
15311   battle marker/.pic={
15312     \node[shape=circle,
15313       font=\sffamily\bfseries,
15314       inner sep=0pt,
15315       minimum size=5mm,
15316       draw=black,
15317       fill=yellow!85!black,
15318       every battle marker/.try] at (-.3,.3) {%
15319       \ifnum#1>0\relax #1\fi%
15320     };
15321   },
15322   battle marker/.style={
15323     chit={full={battle marker=#1},frame={draw=none}}},
15324 }
```

Takes two arguments - the odds and the fill colour. The latter is useful to differentiate the severity of an attack.

Define every odds marker to change the style.

```
15325 \tikzset{%
15326   pics/odds marker/.style args={#1,#2}{
15327     code={
15328       \node[shape=circle,
15329         font=\sffamily\bfseries\large,
15330         inner sep=0pt,
15331         minimum size=8mm,
15332         draw=black,
15333         fill=#2,
15334         every odds marker/.try] at (.16,-.16) {#1};
15335     }
15336   },
15337   odds marker/.style args={#1,#2}{
```

```

15338   chit={full={odds marker={#1,#2}},frame={draw=none}}},
15339 }

```

Takes two arguments - the result and the fill colour. The latter is useful to differentiate the severity of an attack. Define every result marker to change the style.

```

15340 \tikzset{
15341   pics/result marker/.style args={#1,#2}{
15342     code={
15343       \message{^^JResults marker #1 (#2)}
15344       \node[shape=circle,
15345         font=\sffamily\bfseries\large,
15346         inner sep=0pt,
15347         minimum size=8mm,
15348         draw=black,
15349         fill=#2,
15350         every result marker/.try] at (0,0) {#1};}},
15351   result marker/.style args={#1,#2}{
15352     chit={full={result marker={#1,#2}},frame={draw=none}}}
15353 }

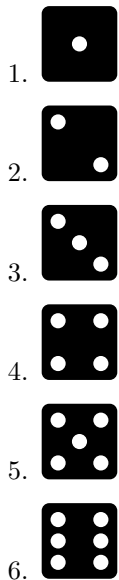
```

5.5.12 Dice

First, a regular 6-sided dice with configurable number of dots. Use like

```
\pic[<pic options>]{dice=<eyes>}
```

For example:



```

15354 \tikzset{
15355   dice bg/.style={
15356     % /utils/exec={

```



```

15357 % \pgfgettransformentries{%
15358 %   \wg@jaca}{%
15359 %   \wg@jacb}{%
15360 %   \wg@jacc}{%
15361 %   \wg@jacd}{%
15362 %   \wg@tmp}{%
15363 %   \wg@tmp}%
15364 % \pgfmathsetmacro{\wg@tmp}{%
15365 %   sqrt(abs(\wg@jaca*\wg@jacd-\wg@jacb*\wg@jacc))}
15366 % \xdef\wg@tmp{\wg@tmp}},%
15367 fill=black,
15368 draw=none,
15369 minimum width=1cm,
15370 minimum height=1cm,
15371 scale rounded corners,
15372 rounded corners=.1cm,
15373 inner sep=0pt,
15374 transform shape},
15375 dice fg/.style={
15376   fill=white,
15377   shape=circle,
15378   inner sep=0pt,
15379   minimum size=.2cm,
15380   transform shape},
15381 pics/dice/.style={
15382   code={
15383     \node[dice bg] (dice bg) {};
15384     \ifodd#1\node[dice fg] at (dice bg) {};\fi
15385     \ifnum#1>1%
15386     \node[dice fg] at ($(dice bg)+(-45:.4)$){};%
15387     \node[dice fg] at ($(dice bg)+(135:.4)$){};%
15388     \fi%
15389     \ifnum#1>3%
15390     \node[dice fg] at ($(dice bg)+( 45:.4)$){};%
15391     \node[dice fg] at ($(dice bg)+(-135:.4)$){};%
15392     \fi%
15393     \ifnum#1=6%
15394     \node[dice fg] at ($(dice bg)+(-.282,0)$){};
15395     \node[dice fg] at ($(dice bg)+(.282,0)$){};
15396     \fi
15397   }
15398 },
15399 pics/dice/.default=3
15400 }
15401 \newcommand\dicemark[2][scale=.5]{%
15402   \tikz[baseline={($(dice bg.south east)!.25!(dice bg.north east)$)},#1]{
15403     \pic[transform shape]{dice=3};}}

```

Now some shapes of different dice. This was originally done by [David Carlisle](#). Usage is for example

```
\node[shape=dice],node options] {value};
```

where *dice* is one of d4, d6, d8, d10, d12, or d20.

Tetrahedron



```
15404 \pgfdeclareshape{d4}{
15405   \anchor{center}{\pgfpointorigin}    % within the node, (0,0) is the center
15406   \anchor{text}{
15407     % this is used to center the text in the node
15408     \pgfpoint{-.5\wd\pgfnodeparttextbox}{-.5\ht\pgfnodeparttextbox}}
15409   \backgroundpath{ % draw border
15410     \pgfpathmoveto{\pgfpoint{0cm}{.4cm}}
15411     \pgfpathlineto{\pgfpoint{.433cm}{-.35cm}}
15412     \pgfpathlineto{\pgfpoint{-.433cm}{-.35cm}}
15413     \pgfpathlineto{\pgfpoint{0cm}{.4cm}}
15414     % \pgfusepath{draw} %draw border
15415     % \pgfusepath{draw} %draw rectangle
15416   }}
```

Cubic



```
15417 \pgfdeclareshape{d6}{
15418   \anchor{center}{\pgfpointorigin}    % within the node, (0,0) is the center
15419   \anchor{text}{
15420     % this is used to center the text in the node
15421     \pgfpoint{-.5\wd\pgfnodeparttextbox}{-.5\ht\pgfnodeparttextbox}}
15422   \backgroundpath{ % draw border
15423     \pgfpathrectanglecorners{\pgfpoint{.4cm}{.4cm}}{\pgfpoint{-.4cm}{-.4cm}}
15424     % \pgfusepath{draw} %draw rectangle
15425   }}
```

Octahedron



```
15426 \pgfdeclareshape{d8}{
15427   \anchor{center}{\pgfpointorigin}    % within the node, (0,0) is the center
15428   \anchor{text}{
15429     % this is used to center the text in the node
15430     \pgfpoint{-.5\wd\pgfnodeparttextbox}{-.5\ht\pgfnodeparttextbox}}
15431   \backgroundpath{ % draw border
15432     \pgfpathmoveto{\pgfpoint{0cm}{.5cm}}
15433     \pgfpathlineto{\pgfpoint{.433cm}{.25cm}}
15434     \pgfpathlineto{\pgfpoint{.433cm}{-.25cm}}
15435     \pgfpathlineto{\pgfpoint{0cm}{-.5cm}}
15436     \pgfpathlineto{\pgfpoint{-.433cm}{-.25cm}}
15437     \pgfpathlineto{\pgfpoint{-.433cm}{.25cm}}
15438     \pgfpathlineto{\pgfpoint{0cm}{.5cm}}
15439     \pgfpathlineto{\pgfpoint{.433cm}{-.25cm}}
15440     \pgfpathlineto{\pgfpoint{-.433cm}{-.25cm}}
15441     \pgfpathlineto{\pgfpoint{0cm}{.5cm}}
15442     % \pgfusepath{draw} %draw interior
15443   }}
```

Decahedron



```
15444 \pgfdeclareshape{d10}{
15445   \anchor{center}{\pgfpointorigin}    % within the node, (0,0) is the center
15446   \anchor{text}{
15447     % this is used to center the text in the node
15448     \pgfpoint{-.5\wd\pgfnodeparttextbox}{-.5\ht\pgfnodeparttextbox}}
15449   \backgroundpath{ % draw border
15450     \pgfpathmoveto{\pgfpoint{0cm}{.5cm}}
15451     \pgfpathlineto{\pgfpoint{.294cm}{-.154cm}}
15452     \pgfpathlineto{\pgfpoint{0cm}{-.3cm}}
15453     \pgfpathlineto{\pgfpoint{-.294cm}{-.154cm}}
15454     \pgfpathlineto{\pgfpoint{0cm}{.5cm}}
15455     \pgfpathlineto{\pgfpoint{.475cm}{.1cm}}
15456     \pgfpathlineto{\pgfpoint{.475cm}{-.1cm}}
15457     \pgfpathlineto{\pgfpoint{0cm}{-.5cm}}
15458     \pgfpathlineto{\pgfpoint{-.475cm}{-.1cm}}
15459     \pgfpathlineto{\pgfpoint{-.475cm}{.1cm}}
15460     \pgfpathlineto{\pgfpoint{0cm}{.5cm}}
15461     \pgfpathmoveto{\pgfpoint{.294cm}{-.154cm}}
15462     \pgfpathlineto{\pgfpoint{.475cm}{-.1cm}}
15463     \pgfpathmoveto{\pgfpoint{-.475cm}{-.1cm}}
15464     \pgfpathlineto{\pgfpoint{-.294cm}{-.154cm}}
15465     \pgfpathmoveto{\pgfpoint{0cm}{-.5cm}}
15466     \pgfpathlineto{\pgfpoint{0cm}{-.3cm}}
15467     % \pgfusepath{draw} %draw interior
15468   }}
```

Dodecahedron



```
15469 \pgfdeclareshape{d12}{
15470   \anchor{center}{\pgfpointorigin}    % within the node, (0,0) is the center
15471   \anchor{text}{ % this is used to center the text in the node
15472     \pgfpoint{-.5\wd\pgfnodeparttextbox}{-.5\ht\pgfnodeparttextbox}}
15473   \backgroundpath{ % draw border
15474     \pgfpathmoveto{\pgfpoint{0cm}{.5cm}}
15475     \pgfpathlineto{\pgfpoint{0.294cm}{.405cm}}
15476     \pgfpathlineto{\pgfpoint{.475cm}{.173cm}}
15477     \pgfpathlineto{\pgfpoint{.475cm}{-.173cm}}
15478     \pgfpathlineto{\pgfpoint{.294cm}{-.405cm}}
15479     \pgfpathlineto{\pgfpoint{0cm}{-.5cm}}
15480     \pgfpathlineto{\pgfpoint{-.294cm}{-.405cm}}
15481     \pgfpathlineto{\pgfpoint{-.475cm}{-.173cm}}
15482     \pgfpathlineto{\pgfpoint{-.475cm}{.173cm}}
15483     \pgfpathlineto{\pgfpoint{-.294cm}{.405cm}}
15484     \pgfpathlineto{\pgfpoint{0cm}{.5cm}}
15485     \pgfpathlineto{\pgfpoint{0cm}{.349cm}}
15486     \pgfpathlineto{\pgfpoint{.332cm}{.108cm}}
15487     \pgfpathlineto{\pgfpoint{.205cm}{-.282cm}}
15488     \pgfpathlineto{\pgfpoint{-.205cm}{-.282cm}}
```

```

15489 \pgfpathlineto{\pgfpoint{-.332cm}{.108cm}}
15490 \pgfpathlineto{\pgfpoint{0cm}{.349cm}}
15491 \pgfpathmoveto{\pgfpoint{.475cm}{.173cm}}
15492 \pgfpathlineto{\pgfpoint{.332cm}{.108cm}}
15493 \pgfpathmoveto{\pgfpoint{.294cm}{-.405cm}}
15494 \pgfpathlineto{\pgfpoint{.205cm}{-.282cm}}
15495 \pgfpathmoveto{\pgfpoint{-.294cm}{-.405cm}}
15496 \pgfpathlineto{\pgfpoint{-.205cm}{-.282cm}}
15497 \pgfpathmoveto{\pgfpoint{-.475cm}{.173cm}}
15498 \pgfpathlineto{\pgfpoint{-.332cm}{.108cm}}
15499 % \pgfusepath{draw} %draw interior
15500 }}

```



Icosohedron

```

15501 \pgfdeclareshape{d20}{
15502 \anchor{center}{\pgfpointorigin} % within the node, (0,0) is the center
15503 \anchor{text}{ % this is used to center the text in the node
15504 \pgfpoint{-.5\wd\pgfnodeparttextbox}{-.5\ht\pgfnodeparttextbox}}
15505 \backgroundpath{ % draw border
15506 \pgfpathmoveto{\pgfpoint{0cm}{.5cm}}
15507 \pgfpathlineto{\pgfpoint{.454cm}{.262cm}}
15508 \pgfpathlineto{\pgfpoint{.454cm}{-.262cm}}
15509 \pgfpathlineto{\pgfpoint{0cm}{-.5cm}}
15510 \pgfpathlineto{\pgfpoint{-.454cm}{-.262cm}}
15511 \pgfpathlineto{\pgfpoint{-.454cm}{.262cm}}
15512 \pgfpathlineto{\pgfpoint{0cm}{.5cm}}
15513 \pgfpathlineto{\pgfpoint{0cm}{.292cm}}
15514 \pgfpathlineto{\pgfpoint{.253cm}{-.146cm}}
15515 \pgfpathlineto{\pgfpoint{-.253cm}{-.146cm}}
15516 \pgfpathlineto{\pgfpoint{0cm}{.292cm}}
15517 \pgfpathlineto{\pgfpoint{.454cm}{.262cm}}
15518 \pgfpathlineto{\pgfpoint{.253cm}{-.146cm}}
15519 \pgfpathlineto{\pgfpoint{0cm}{-.5cm}}
15520 \pgfpathlineto{\pgfpoint{-.253cm}{-.146cm}}
15521 \pgfpathlineto{\pgfpoint{-.454cm}{.262cm}}
15522 \pgfpathlineto{\pgfpoint{0cm}{.292cm}}
15523 \pgfpathmoveto{\pgfpoint{.454cm}{-.262cm}}
15524 \pgfpathlineto{\pgfpoint{.253cm}{-.146cm}}
15525 \pgfpathmoveto{\pgfpoint{-.454cm}{-.262cm}}
15526 \pgfpathlineto{\pgfpoint{-.253cm}{-.146cm}}
15527 % \pgfusepath{draw} %draw interior
15528 }}

```

5.5.13 Some utilities

This style allows us to add a fading drop-shadow to chits.

```

15529 \usetikzlibrary{shadows.blur}
15530 \newif\ifwg@chit@drop\wg@chit@dropfalse
15531 \tikzset{

```

```

15532 chit has drop/.is if=wg@chit@drop,
15533 chit has drop/.default=true,
15534 chit has drop/.initial=false,
15535 /tikz/render blur shadow/.add code={%
15536   \chit@dbg{2}{Number of blur steps: \pgfbs@steps}%
15537   \ifnum\pgfbs@steps=0\else
15538   \chit@dbg{2}{Making shadow blur}%
15539   }\fi}}
15540 \tikzset{%
15541   chit drop/.code={%
15542     %% \message{^^J Args '#1'}%
15543     \pgfkeysalso{%
15544       chit has drop=true,
15545       /tikz/blur shadow={shadow blur steps=5,
15546         shadow opacity=25,
15547         shadow xshift=.05cm,
15548         shadow yshift=-.05cm,
15549         shadow blur radius=.05cm,
15550         #1}}%
15551     \ifnum\pgfbs@steps=0%
15552     \gdef\wg@drop@margin{0pt}%
15553     \else%
15554     \ifwg@chit@drop%
15555     \pgfmathparse{
15556       \pgfbs@radius+
15557       veclen(
15558         \pgfkeysvalueof{/tikz/shadow xshift},
15559         \pgfkeysvalueof{/tikz/shadow yshift})}
15560     \xdef\wg@drop@margin{\pgfmathresult pt}%
15561     \else%
15562     \gdef\wg@drop@margin{0pt}%
15563     \fi
15564     %% \message{^^J Drop margin is '\wg@drop@margin'}
15565     %% '\pgfbs@radius'
15566     %% '\pgfkeysvalueof{/tikz/shadow xshift}',
15567     %% '\pgfkeysvalueof{/tikz/shadow yshift}'}}%
15568   \fi%
15569 },%
15570 chit drop/.default=,%
15571 no chit drop/.code={%
15572   \pgfkeysalso{
15573     /tikz/blur shadow={shadow blur steps=0}}
15574   \gdef\wg@drop@margin{0pt}%
15575 }
15576 }%

```

Game turn marker

```

15577 \tikzset{
15578   chit/text base/.style={
15579     shape=rectangle,
15580     inner sep=0pt,
15581     align=center,
15582     text width=1.1cm},

```

```

15583 chit/number/.style={
15584   chit/text base,
15585   font=\sffamily\bfseries\fontsize{12}{14}\selectfont},
15586 chit/game turn/.style={
15587   chit/text base,
15588   font=\sffamily\bfseries},
15589 chit/text/.style={
15590   chit/text base,
15591   font=\sffamily\bfseries},
15592 chit/small text/.style={
15593   chit/text base,
15594   font=\sffamily\bfseries\fontsize{9}{10}\selectfont},
15595 chit/number/.pic={\node[chit/number]{#1};},
15596 chit/game turn/.pic={\node[chit/game turn]{Game\Turn};},
15597 chit/text/.pic={\node[chit/text]{#1};},
15598 chit/small text/.pic={\node[chit/small text]{#1};},
15599 game turn chit/.style={
15600   /chit/full={chit/game turn},
15601   color=black,
15602   fill=white},
15603 game turn chit flipped/.style={game turn chit},
15604 dummy chit/.style={fill=white},
15605 }

```

Marks of chits

```

15606 \providecommand\chitmark[2] [] {\tikz[scale=.25,#1]{\chit[#2]}}

```

Stacking mark

```

15607 \tikzset{
15608   wg stacking/.style={fill=white,
15609   /chit/symbol={[faction=friendly,command=land]}}},
15610 }
15611 \DeclareRobustCommand\stackmark[1] [] {%
15612   \tikz[baseline=(current bounding box.center),scale=.3,#1]{
15613     \stackchits(0,0)(.3,-.3){%
15614       \noexpand\chit[wg stacking],
15615       \noexpand\chit[wg stacking],
15616       \noexpand\chit[wg stacking]}}}

```

ZOC mark

```

15617 \DeclareRobustCommand\zocmark[1] [] {%
15618   \tikz[baseline=(current bounding box.center)!.5!(current bounding box.south)$],scale=.1,#1]{%
15619     \begin{scope}[hex/first row and column are=0,
15620     hex/row direction is=normal,
15621     hex/column direction is=normal,
15622     hex/short columns=none]
15623     \hex[label=,fill=gray](c=1,r=1)%
15624     \hex[label=,fill=white](c=1,r=2)%
15625     \hex[label=,fill=white](c=1,r=0)%
15626     \hex[label=,fill=white](c=0,r=0)%
15627     \hex[label=,fill=white](c=0,r=1)%

```

```

15628     \hex[label=,fill=white](c=2,r=1)%
15629     \hex[label=,fill=white](c=2,r=0)
15630     \end{scope}}

```

Dummy implementations of zones hooks when exporting. Here, these do nothing, but in the `wgexport` class these are re-implemented.

```

15631 \tikzset{
15632   zone point/.code n args={3}{},
15633   zone oob point/.code n args={3}{}}

```

5.6 The `wargame.natoapp6c` TikZ library

In this section we define the code for the Tikz library. The library defines a number of `pic` keys we can use to draw various parts of a marker. The markers conform to NATO App 6(c) specification. The implementation here is heavily inspired by the package `milsymb` [4] available at CTAN.

5.6.1 Debugging

```

\natoappdbglvl
\n@to@pp@dbg

```

Set the debug level, and make debug message.

```

15634 \usetikzlibrary{wargame.util}
15635 \usetikzlibrary{calc}
15636 \usetikzlibrary{arrows.meta}
15637 \usetikzlibrary{shapes.symbols}
15638 \usetikzlibrary{positioning,intersections}
15639 \newcount\natoappdbglvl\natoappdbglvl=\wargamedbglvl
15640 \def\n@to@pp@dbg#1#2{%
15641   \ifnum#1>\natoappdbglvl\relax\else\message{^^J#2}\fi}

```





5.6.2 Colours

```

\c@friendly
\c@hostile
\c@neutral
\c@unknown

```

Define standard colours for marker affiliations.

Name	
friendly	
hostile	
neutral	
unknown	

```

15642 \definecolor{friendly}{RGB}{128, 224, 255}
15643 \definecolor{hostile}{RGB}{255, 128, 128}
15644 \definecolor{neutral}{RGB}{170, 255, 170}

```

```

15645 \definecolor{unknown}{RGB}{255, 255, 128}
15646 \tikzset{%
15647   faction/.code={%
15648     \@ifundefined{natoapp@fac}{%
15649       }\tikzset{fill=\natoapp@fac}}}}

```

5.6.3 Some dimensions

We define a number of dimensions which we will use in the following. They provide a rough parameterisation of the node shapes, but shouldn't really be changed. We have them here so that the code uses as few hard coded numbers as possible.

The dimensions are

- Installation 'hat' x coordinate
- Installation 'hat' height
- Activity width of boxes
- Height of space bar
- Radius of the symbol

```

15650 \newdimen\n@to@pp@inst@x\n@to@pp@inst@x=0.2cm
15651 \newdimen\n@to@pp@inst@h\n@to@pp@inst@h=0.15cm
15652 \newdimen\n@to@pp@act@w\n@to@pp@act@w=0.15cm
15653 \newdimen\n@to@pp@space@h\n@to@pp@space@h=0.1cm
15654 \newdimen\n@to@pp@r\n@to@pp@r=0.5cm

```

5.6.4 Some utilities

`\n@to@pp@isclip`

This detects if we're in a node that is being used for clipping

```

15655 %\def\n@to@pp@cliptoken{clip}
15656 %\def\n@to@pp@isclip{FF\fi%
15657 %  % \message{^^Jclip is \meaning\pgf@up@clip}%
15658 %  \ifx\pgf@up@clip\n@to@pp@cliptoken}
15659 \newif\ifn@to@pp@isclip\n@to@pp@isclipfalse

```

`\n@to@pp@saved@fill@color` `\n@to@pp@saved@stroke@color`

Macros to hold saved colours.

```

15660 \let\n@to@pp@saved@stroke@color\relax
15661 \let\n@to@pp@saved@fill@color\relax

```



```
\n@to@pp@stroke@to@fill
\n@to@pp@restore@fill
```

Macro to get stroke and fill colours and set the fill colour to the stroke colour, and to restore to the old setting. This is used by the frame shapes below to make sure that filled elements of the frame uses the same colour as the for strokes.

```
15662 \newcommand\n@to@pp@stroke@to@fill{%
15663   %
15664   \expandafter\let\expandafter\n@to@pp@sav@stroke@color%
15665   \csname\string\color@pgfstrokecolor\endcsname%
15666   %
15667   \expandafter\let\expandafter\n@to@pp@sav@fill@color%
15668   \csname\string\color@pgffillcolor\endcsname%
15669   %
15670   \expandafter\pgf@setfillcolor\n@to@pp@sav@stroke@color%
15671   %
15672   % \message{^^J=== Set fill to stroke color
15673   %   ^^J Old fill: \meaning\n@to@pp@sav@fill@color
15674   %   ^^J Old stroke: \meaning\n@to@pp@sav@stroke@color}
15675 }

15676 \newcommand\n@to@pp@restore@fill{%
15677   % \message{^^J=== Restore fill color
15678   %   ^^J Old fill: \meaning\n@to@pp@sav@fill@color
15679   %   ^^J Old stroke: \meaning\n@to@pp@sav@stroke@color}
15680   %
15681   \ifx\n@to@pp@sav@fill@color\relax\else%
15682     \expandafter\pgf@setfillcolor\n@to@pp@sav@fill@color%
15683   \fi%
15684   \global\let\n@to@pp@sav@fill@color\relax
15685   \global\let\n@to@pp@sav@stroke@color\relax
15686 }
```

We also make an environment, just to simplify the use

```
15687 \newenvironment{n@to@pp@stroketofill}{%
15688   \pgfscope%
15689   \n@to@pp@stroke@to@fill%
15690 }{%
15691   \n@to@pp@restore@fill%
15692   \endpgfscope%
15693 }
```

5.6.5 Faction names as macros

```
15694 \def\n@to@pp@friendly{friendly}
15695 \def\n@to@pp@hostile{hostile}
15696 \def\n@to@pp@neutral{neutral}
15697 \def\n@to@pp@unknown{unknown}
```

5.6.6 Node shapes

Here we define bases for all commands and affiliations. These are defined as node shapes. This means we will render the NATO App6(c) symbols as nodes with embedded nodes of the relevant shape.

First, the generic bounding box symbol for all markers.



Place-holder symbol. This shape will form the basis of many of the other frame shapes. We define the relevant sizes and anchors.

```

15698 \pgfdeclareshape{natoapp6c base}{%
15699   \saveddimen\radius{\pgf@x=\n@to@pp@r}
15700   \saveddimen\liney{\pgf@x=.2cm}
15701   \saveddimen\linex{\pgf@x=0.41cm}
15702   \savedanchor\center{\pgf@x=0cm\pgf@y=0cm}
15703   \savedanchor\upper{\pgf@x=0cm\pgf@y=0.35cm}
15704   \anchor{north east}{\pgf@x=\radius\pgf@y=\radius}
15705   \anchor{south west}{\pgf@x=-\radius\pgf@y=-\radius}
15706   \anchor{north west}{\pgf@x=-\radius\pgf@y=\radius}
15707   \anchor{south east}{\pgf@x=\radius\pgf@y=-\radius}
15708   \anchor{south}{\pgf@x=0cm\pgf@y=-\radius}
15709   \anchor{north}{\pgf@x=0cm\pgf@y=\radius}
15710   \anchor{west}{\pgf@x=-\radius\pgf@y=0cm}
15711   \anchor{east}{\pgf@x=\radius\pgf@y=0cm}
15712   \anchor{center}{\center}
15713   \anchor{upper}{\upper}
15714   \anchor{lower}{\upper\pgf@y=-\pgf@y}
15715   \anchor{left}{\upper\pgf@x=-\pgf@y\pgf@y=0cm}
15716   \anchor{right}{\upper\pgf@x=\pgf@y\pgf@y=0cm}
15717   \savedmacro\init{
15718     \def\octagon{%
15719       \pgfpathmoveto{\pgfpointpolar{0}{\radius}}%
15720       \pgfpathlineto{\pgfpointpolar{45}{\radius}}%
15721       \pgfpathlineto{\pgfpointpolar{90}{\radius}}%
15722       \pgfpathlineto{\pgfpointpolar{135}{\radius}}%
15723       \pgfpathlineto{\pgfpointpolar{180}{\radius}}%
15724       \pgfpathlineto{\pgfpointpolar{225}{\radius}}%
15725       \pgfpathlineto{\pgfpointpolar{270}{\radius}}%
15726       \pgfpathlineto{\pgfpointpolar{315}{\radius}}%
15727       \pgfpathclose}
15728     \def\topline{%
15729       \pgfpathmoveto{\pgfpoint{\linex}{\liney}}%
15730       \pgfpathlineto{\pgfpoint{-\linex}{\liney}}}
15731     \def\bottomline{%
15732       \pgfpathmoveto{\pgfpoint{\linex}{-\liney}}%
15733       \pgfpathlineto{\pgfpoint{-\linex}{-\liney}}}
15734   }
15735   \backgroundpath{%
15736     \init%
15737     \octagon}
15738   \behindforegroundpath{%
15739     \init%
15740     \octagon%
15741     \pgfusepath{stroke}%

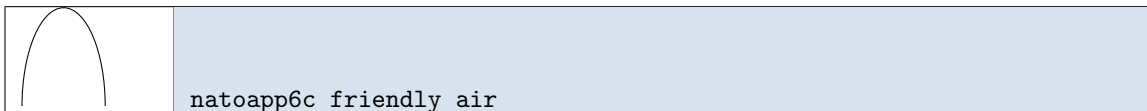
```

```

15742 \topline%
15743 \pgfusepath{stroke}%
15744 \bottomline%
15745 \pgfusepath{stroke}%
15746 }
15747 }

```

5.6.7 ‘Friendly’ node shapes



Macro for friendly air shape

```

15748 \def\n@to@friendly@air{%
15749 \southeast \wg@tmpa=\pgf@x\wg@tmpb=\pgf@y%
15750 \pgfpathmoveto{\pgfqpoint{-\wg@tmpa}{\wg@tmpb}}%
15751 \cntrl \wg@tmpb=\pgf@y%
15752 \pgfpatharc{180}{0}{\wg@tmpa and \wg@tmpb}}

```

The friendly air command.

```

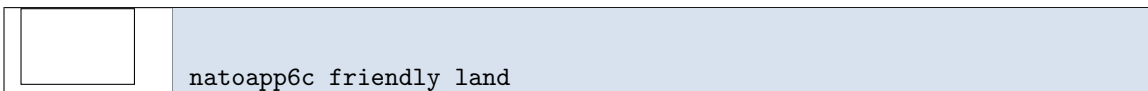
15753 \pgfdeclareshape{natoapp6c friendly air}{%
15754 \inheritsavedanchors[from=natoapp6c base]
15755 \savedanchor\southeast{%
15756 \pgf@x=1.1\n@to@pp@r%
15757 \pgf@y=-\n@to@pp@r}
15758 \savedanchor\cntrl{\pgf@x=0cm\pgf@y=2.6\n@to@pp@r}
15759 \savedanchor\north{\pgf@x=0cm\pgf@y=1.6\n@to@pp@r}
15760 \anchor{south east}{\southeast}
15761 \anchor{south west}{\southeast\pgf@x=-\pgf@x}
15762 \anchor{north east}{\southeast\wg@tmpa=\pgf@x\north\pgf@x=\wg@tmpa}
15763 \anchor{north west}{\southeast\wg@tmpa=\pgf@x\north\pgf@x=-\wg@tmpa}
15764 \anchor{north}{\north}
15765 \anchor{east}{%
15766 \north\wg@tmpb\pgf@y%
15767 \southeast\wg@tmpc=\pgf@y\wg@tmpa=\pgf@x%
15768 \advance\wg@tmpb-\wg@tmpc
15769 \divide\wg@tmpb2%
15770 \advance\wg@tmpb\wg@tmpc%
15771 \pgf@x=\wg@tmpa%
15772 \pgf@y=\wg@tmpb}
15773 \anchor{west}{%
15774 \north\wg@tmpb\pgf@y%
15775 \southeast\wg@tmpc=\pgf@y\wg@tmpa=\pgf@x%
15776 \advance\wg@tmpb-\wg@tmpc
15777 \divide\wg@tmpb2%
15778 \advance\wg@tmpb\wg@tmpc%
15779 \pgf@x=-\wg@tmpa%
15780 \pgf@y=\wg@tmpb}
15781 \anchor{south}{\southeast\pgf@x=0cm}

```

```

15782 \inheritanchor[from=natoapp6c base]{upper}
15783 \inheritanchor[from=natoapp6c base]{lower}
15784 \inheritanchor[from=natoapp6c base]{left}
15785 \inheritanchor[from=natoapp6c base]{right}
15786 \inheritanchor[from=natoapp6c base]{center}
15787 \backgroundpath{%
15788   \n@to@friendly@@ir%
15789 }
15790 \behindforegroundpath{%
15791   \n@to@friendly@@ir%
15792   \pgfusepath{stroke}%
15793 }
15794 }

```



Macro for friendly land command

```

15795 \def\n@to@friendly@l@nd{%
15796   \northeast \wg@tmpa=\pgf@x\wg@tmpb=\pgf@y%
15797   \pgfpathmoveto{\pgfqpoint{ \wg@tmpa}{ \wg@tmpb}}%
15798   \pgfpathlineto{\pgfqpoint{-\wg@tmpa}{ \wg@tmpb}}%
15799   \pgfpathlineto{\pgfqpoint{-\wg@tmpa}{-\wg@tmpb}}%
15800   \pgfpathlineto{\pgfqpoint{ \wg@tmpa}{-\wg@tmpb}}%
15801   \pgfclosepath}

```

The friendly land command. The most used command frame.

```

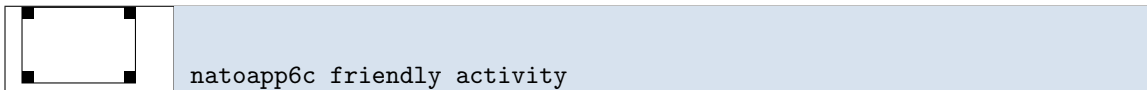
15802 \pgfdeclareshape{natoapp6c friendly land}{%
15803   \inheritsavedanchors[from=natoapp6c base]
15804   \savedanchor\northeast{%
15805     \pgf@x=1.5\n@to@pp@r%
15806     \pgf@y=\n@to@pp@r}
15807   \anchor{north east}{\northeast}
15808   \anchor{north west}{\northeast\pgf@x=-\pgf@x}
15809   \anchor{south east}{\northeast\pgf@y=-\pgf@y}
15810   \anchor{south west}{\northeast\pgf@x=-\pgf@x\pgf@y=-\pgf@y}
15811   \anchor{north}{\northeast\pgf@x=0cm}
15812   \anchor{south}{\northeast\pgf@x=0cm\pgf@y=-\pgf@y}
15813   \anchor{east}{\northeast\pgf@y=0cm}
15814   \anchor{west}{\northeast\pgf@x=-\pgf@x\pgf@y=0cm}
15815   \inheritanchor[from=natoapp6c base]{upper}
15816   \inheritanchor[from=natoapp6c base]{lower}
15817   \inheritanchor[from=natoapp6c base]{left}
15818   \inheritanchor[from=natoapp6c base]{right}
15819   \inheritanchor[from=natoapp6c base]{center}
15820   \backgroundpath{%
15821     \n@to@friendly@l@nd%
15822   }
15823   \behindforegroundpath{%
15824     \n@to@friendly@l@nd%

```

```

15825 \pgfusepath{stroke}%
15826 }
15827 }

```



The friendly activity command. Similar to land command, but with boxes in the corners.

```

15828 \pgfdeclareshape{natoapp6c friendly activity}{%
15829 \inheritshadedanchors[from=natoapp6c friendly land]
15830 \inheritanchor[from=natoapp6c friendly land]{center}
15831 \inheritanchor[from=natoapp6c friendly land]{inner north east}
15832 \inheritanchor[from=natoapp6c friendly land]{inner north west}
15833 \inheritanchor[from=natoapp6c friendly land]{inner south west}
15834 \inheritanchor[from=natoapp6c friendly land]{inner south east}
15835 \inheritanchor[from=natoapp6c friendly land]{north east}
15836 \inheritanchor[from=natoapp6c friendly land]{north west}
15837 \inheritanchor[from=natoapp6c friendly land]{south east}
15838 \inheritanchor[from=natoapp6c friendly land]{south west}
15839 \inheritanchor[from=natoapp6c friendly land]{north}
15840 \inheritanchor[from=natoapp6c friendly land]{west}
15841 \inheritanchor[from=natoapp6c friendly land]{east}
15842 \inheritanchor[from=natoapp6c friendly land]{south}
15843 \inheritanchor[from=natoapp6c friendly land]{upper}
15844 \inheritanchor[from=natoapp6c friendly land]{lower}
15845 \inheritanchor[from=natoapp6c friendly land]{left}
15846 \inheritanchor[from=natoapp6c friendly land]{right}
15847 \inheritanchor[from=natoapp6c friendly land]{center}
15848 \inheritbackgroundpath[from=natoapp6c friendly land]
15849 \behindforegroundpath{
15850 \begin{n@to@pp@stroketofill}
15851 \n@to@friendly@l@nd%
15852 \pgfusepath{stroke}
15853 %
15854 \northeast \wg@tmpa=\pgf@x\wg@tmpb\pgf@y%
15855 \wg@tmpc=\wg@tmpa\advance\wg@tmpc-\n@to@pp@act@w
15856 \wg@tmpd=\wg@tmpb\advance\wg@tmpd-\n@to@pp@act@w
15857 %
15858 \pgfpathmoveto{\pgfqpoint{\wg@tmpa}{\wg@tmpb}}%
15859 \pgfpathlineto{\pgfqpoint{\wg@tmpc}{\wg@tmpb}}%
15860 \pgfpathlineto{\pgfqpoint{\wg@tmpc}{\wg@tmpd}}%
15861 \pgfpathlineto{\pgfqpoint{\wg@tmpa}{\wg@tmpd}}%
15862 \pgfclosepath
15863 %
15864 \pgfusepath{fill}%
15865 \pgfpathmoveto{\pgfqpoint{\wg@tmpa}{-\wg@tmpd}}%
15866 \pgfpathlineto{\pgfqpoint{\wg@tmpc}{-\wg@tmpd}}%
15867 \pgfpathlineto{\pgfqpoint{\wg@tmpc}{-\wg@tmpb}}%
15868 \pgfpathlineto{\pgfqpoint{\wg@tmpa}{-\wg@tmpb}}%
15869 \pgfclosepath
15870 \pgfusepath{fill}%

```

```

15871 %
15872 \pgfpathmoveto{\pgfqpoint{-\wg@tmpc}{\wg@tmpb}}%
15873 \pgfpathlineto{\pgfqpoint{-\wg@tmpa}{\wg@tmpb}}%
15874 \pgfpathlineto{\pgfqpoint{-\wg@tmpa}{\wg@tmpd}}%
15875 \pgfpathlineto{\pgfqpoint{-\wg@tmpc}{\wg@tmpd}}%
15876 \pgfclosepath
15877 \pgfusepath{fill}%
15878 %
15879 \pgfpathmoveto{\pgfqpoint{-\wg@tmpc}{-\wg@tmpd}}%
15880 \pgfpathlineto{\pgfqpoint{-\wg@tmpa}{-\wg@tmpd}}%
15881 \pgfpathlineto{\pgfqpoint{-\wg@tmpa}{-\wg@tmpb}}%
15882 \pgfpathlineto{\pgfqpoint{-\wg@tmpc}{-\wg@tmpb}}%
15883 \pgfclosepath
15884 \pgfusepath{fill}%
15885 \end{n@to@pp@stroketofill}
15886 }
15887 }

```



natoapp6c friendly equipment

The friendly equipment command. A circle.

```

15888 \pgfdeclareshape{natoapp6c friendly equipment}{%
15889 \inheritsavedanchors[from=natoapp6c base]
15890 \savedanchor\northeast{%
15891 \pgf@x=\n@to@pp@r%
15892 \pgf@y=\n@to@pp@r}
15893 \anchor{north east}{\northeast}
15894 \anchor{north west}{\northeast\pgf@x=-\pgf@x}
15895 \anchor{south east}{\northeast\pgf@y=-\pgf@y}
15896 \anchor{south west}{\northeast\pgf@x=-\pgf@x\pgf@y=-\pgf@y}
15897 \anchor{north}{\northeast\pgf@x=0cm}
15898 \anchor{south}{\northeast\pgf@x=0cm\pgf@y=-\pgf@y}
15899 \anchor{east}{\northeast\pgf@y=0cm}
15900 \anchor{west}{\northeast\pgf@x=-\pgf@x\pgf@y=0cm}
15901 \inheritanchor[from=natoapp6c base]{upper}
15902 \inheritanchor[from=natoapp6c base]{lower}
15903 \inheritanchor[from=natoapp6c base]{left}
15904 \inheritanchor[from=natoapp6c base]{right}
15905 \inheritanchor[from=natoapp6c base]{center}
15906 \backgroundpath{%
15907 \northeast\wg@tmpa\pgf@x%
15908 \pgfpathcircle{\pgfqpoint{0cm}{0cm}}{\wg@tmpa}
15909 }
15910 \behindforegroundpath{%
15911 \northeast\wg@tmpa\pgf@x%
15912 \pgfpathcircle{\pgfqpoint{0cm}{0cm}}{\wg@tmpa}
15913 \pgfusepath{stroke}%
15914 }
15915 }

```



natoapp6c friendly installation

The friendly installation command. Similar to the land command, but with a ‘hat’ on top.

```

15916 \pgfdeclareshape{natoapp6c friendly installation}{%
15917   \inheritssavedanchors[from=natoapp6c friendly land]
15918   \inheritanchor[from=natoapp6c friendly land]{center}
15919   \inheritanchor[from=natoapp6c friendly land]{inner north east}
15920   \inheritanchor[from=natoapp6c friendly land]{inner north west}
15921   \inheritanchor[from=natoapp6c friendly land]{inner south west}
15922   \inheritanchor[from=natoapp6c friendly land]{inner south east}
15923   \inheritanchor[from=natoapp6c friendly land]{north east}
15924   \inheritanchor[from=natoapp6c friendly land]{north west}
15925   \inheritanchor[from=natoapp6c friendly land]{south east}
15926   \inheritanchor[from=natoapp6c friendly land]{south west}
15927   \inheritanchor[from=natoapp6c friendly land]{north}
15928   \inheritanchor[from=natoapp6c friendly land]{west}
15929   \inheritanchor[from=natoapp6c friendly land]{east}
15930   \inheritanchor[from=natoapp6c friendly land]{south}
15931   \inheritanchor[from=natoapp6c friendly land]{upper}
15932   \inheritanchor[from=natoapp6c friendly land]{lower}
15933   \inheritanchor[from=natoapp6c friendly land]{left}
15934   \inheritanchor[from=natoapp6c friendly land]{right}
15935   \inheritanchor[from=natoapp6c friendly land]{center}
15936   \inheritbackgroundpath[from=natoapp6c friendly land]
15937   \behindforegroundpath{
15938     \begin{n@to@pp@stroketo@fill}
15939       \n@to@friendly@l@nd%
15940       \pgfusepath{stroke}
15941       %
15942       \northeast \wg@tmpa=\pgf@y%
15943       \wg@tmpb=\wg@tmpa\advance\wg@tmpb\n@to@pp@inst@h%
15944       %
15945       \pgfpathmoveto{\pgfqpoint{ \n@to@pp@inst@x}{\wg@tmpb}}%
15946       \pgfpathlineto{\pgfqpoint{-\n@to@pp@inst@x}{\wg@tmpb}}%
15947       \pgfpathlineto{\pgfqpoint{-\n@to@pp@inst@x}{\wg@tmpa}}%
15948       \pgfpathlineto{\pgfqpoint{ \n@to@pp@inst@x}{\wg@tmpa}}%
15949       \pgfclosepath
15950       \pgfusepath{fill}%
15951     \end{n@to@pp@stroketo@fill}
15952   }
15953 }

```



natoapp6c friendly sea surface

The friendly sea surface command. Same as equipment command.

```

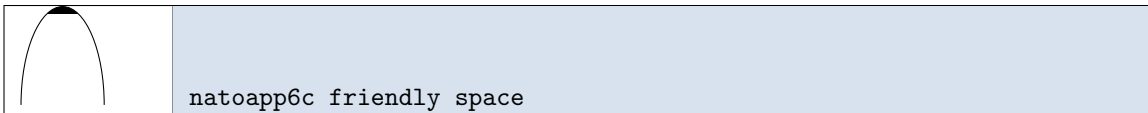
15954 \pgfdeclareshape{natoapp6c friendly sea surface}{%

```

```

15955 \inheritssavedanchors[from=natoapp6c friendly equipment]
15956 \inheritanchor[from=natoapp6c friendly equipment]{inner north east}
15957 \inheritanchor[from=natoapp6c friendly equipment]{inner north west}
15958 \inheritanchor[from=natoapp6c friendly equipment]{inner south west}
15959 \inheritanchor[from=natoapp6c friendly equipment]{inner south east}
15960 \inheritanchor[from=natoapp6c friendly equipment]{north east}
15961 \inheritanchor[from=natoapp6c friendly equipment]{north west}
15962 \inheritanchor[from=natoapp6c friendly equipment]{south east}
15963 \inheritanchor[from=natoapp6c friendly equipment]{south west}
15964 \inheritanchor[from=natoapp6c friendly equipment]{north}
15965 \inheritanchor[from=natoapp6c friendly equipment]{west}
15966 \inheritanchor[from=natoapp6c friendly equipment]{east}
15967 \inheritanchor[from=natoapp6c friendly equipment]{south}
15968 \inheritanchor[from=natoapp6c friendly equipment]{upper}
15969 \inheritanchor[from=natoapp6c friendly equipment]{lower}
15970 \inheritanchor[from=natoapp6c friendly equipment]{left}
15971 \inheritanchor[from=natoapp6c friendly equipment]{right}
15972 \inheritanchor[from=natoapp6c friendly equipment]{center}
15973 \inheritbackgroundpath[from=natoapp6c friendly equipment]
15974 \inheritbehindforegroundpath[from=natoapp6c friendly equipment]
15975 }

```



The friendly space command. Similar to air command, but with a bar on top.

```

15976 \pgfdeclareshape{natoapp6c friendly space}{%
15977 \inheritssavedanchors[from=natoapp6c friendly air]
15978 \inheritanchor[from=natoapp6c friendly air]{north east}
15979 \inheritanchor[from=natoapp6c friendly air]{north west}
15980 \inheritanchor[from=natoapp6c friendly air]{south east}
15981 \inheritanchor[from=natoapp6c friendly air]{south west}
15982 \inheritanchor[from=natoapp6c friendly air]{north}
15983 \inheritanchor[from=natoapp6c friendly air]{west}
15984 \inheritanchor[from=natoapp6c friendly air]{east}
15985 \inheritanchor[from=natoapp6c friendly air]{south}
15986 \inheritanchor[from=natoapp6c friendly air]{upper}
15987 \inheritanchor[from=natoapp6c friendly air]{lower}
15988 \inheritanchor[from=natoapp6c friendly air]{left}
15989 \inheritanchor[from=natoapp6c friendly air]{right}
15990 \inheritanchor[from=natoapp6c friendly air]{center}
15991 \inheritbackgroundpath[from=natoapp6c friendly air]
15992 \behindforegroundpath{%
15993 \begin{n@to@pp@stroketo@fill}
15994 \n@to@friendly@air%
15995 \pgfusepath{stroke,clip}%
15996 %
15997 \cntrl\wg@tmpa=\pgf@y%
15998 \north\wg@tmpb=\pgf@y
15999 \advance\wg@tmpb-\n@to@pp@space@h

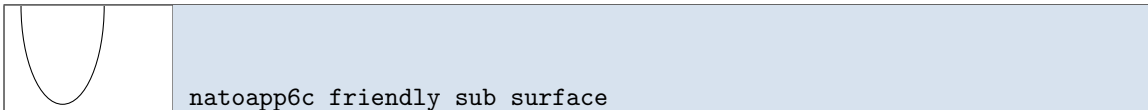
```



```

16000 %
16001 \pgfpathmoveto{\pgfqpoint{ \n@to@pp@r}{\wg@tmpa}}%
16002 \pgfpathlineto{\pgfqpoint{-\n@to@pp@r}{\wg@tmpa}}%
16003 \pgfpathlineto{\pgfqpoint{-\n@to@pp@r}{\wg@tmpb}}%
16004 \pgfpathlineto{\pgfqpoint{ \n@to@pp@r}{\wg@tmpb}}%
16005 \pgfclosepath%
16006 \pgfusepath{fill}%
16007 \end{n@to@pp@stroketo@fill}
16008 }
16009 }

```



Macro for friendly sub surface command

```

16010 \def\n@to@friendly@sub{%
16011 \northeast \wg@tmpa=\pgf@x\wg@tmpb=\pgf@y%
16012 \pgfpathmoveto{\pgfqpoint{-\wg@tmpa}{\wg@tmpb}}%
16013 \cntrl \wg@tmpb=\pgf@y%
16014 \pgfpatharc{180}{0}{\wg@tmpa and \wg@tmpb}}

```

The friendly sub surface command.

```

16015 \pgfdeclareshape{natoapp6c friendly sub surface}{%
16016 \inheritsavedanchors[from=natoapp6c base]
16017 \savedanchor\northeast{%
16018 \pgf@x=1.1\n@to@pp@r%
16019 \pgf@y=\n@to@pp@r}
16020 \savedanchor\cntrl{\pgf@x=0cm\pgf@y=-2.6\n@to@pp@r}
16021 \savedanchor\south{\pgf@x=0cm\pgf@y=-1.6\n@to@pp@r}
16022 \anchor{north east}{\northeast}
16023 \anchor{north west}{\northeast\pgf@x=-\pgf@x}
16024 \anchor{south east}{\northeast\wg@tmpa=\pgf@x\south\pgf@x=\wg@tmpa}
16025 \anchor{south west}{\northeast\wg@tmpa=\pgf@x\south\pgf@x=-\wg@tmpa}
16026 \anchor{south}{\south}
16027 \anchor{east}{
16028 \northeast\wg@tmpb=\pgf@y\wg@tmpa=\pgf@x%
16029 \south\wg@tmpc\pgf@y%
16030 \advance\wg@tmpb-\wg@tmpc
16031 \divide\wg@tmpb2%
16032 \advance\wg@tmpb\wg@tmpc%
16033 \pgf@x=\wg@tmpa%
16034 \pgf@y=\wg@tmpb}
16035 \anchor{west}{
16036 \northeast\wg@tmpb=\pgf@y\wg@tmpa=\pgf@x%
16037 \south\wg@tmpc\pgf@y%
16038 \advance\wg@tmpb-\wg@tmpc
16039 \divide\wg@tmpb2%
16040 \advance\wg@tmpb\wg@tmpc%
16041 \pgf@x=-\wg@tmpa%

```

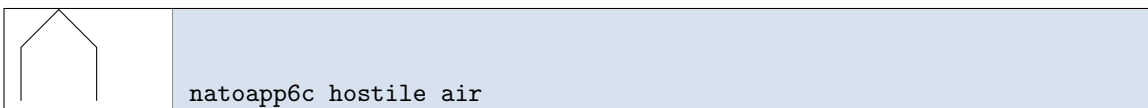
```

16042   \pgf@y=\wg@tmpb}
16043   \anchor{north}{\northeast\pgf@x=0cm}
16044   \inheritanchor[from=natoapp6c base]{upper}
16045   \inheritanchor[from=natoapp6c base]{lower}
16046   \inheritanchor[from=natoapp6c base]{left}
16047   \inheritanchor[from=natoapp6c base]{right}
16048   \inheritanchor[from=natoapp6c base]{center}
16049   \backgroundpath{%
16050     \n@to@friendly@sub%
16051   }
16052   \behindforegroundpath{%
16053     \n@to@friendly@sub%
16054     \pgfusepath{stroke}%
16055   }
16056 }

16057 \pgfdeclareshape{natoapp6c friendly none}{%
16058   \inheritsavedanchors[from=natoapp6c base]
16059   \savedanchor\northeast{%
16060     \pgf@x=1.5\n@to@pp@r%
16061     \pgf@y=\n@to@pp@r}
16062   \anchor{north east}{\northeast}
16063   \anchor{north west}{\northeast\pgf@x=-\pgf@x}
16064   \anchor{south east}{\northeast\pgf@y=-\pgf@y}
16065   \anchor{south west}{\northeast\pgf@x=-\pgf@x\pgf@y=-\pgf@y}
16066   \anchor{north}{\northeast\pgf@x=0cm}
16067   \anchor{south}{\northeast\pgf@x=0cm\pgf@y=-\pgf@y}
16068   \anchor{east}{\northeast\pgf@y=0cm}
16069   \anchor{west}{\northeast\pgf@x=-\pgf@x\pgf@y=0cm}
16070   \inheritanchor[from=natoapp6c base]{upper}
16071   \inheritanchor[from=natoapp6c base]{lower}
16072   \inheritanchor[from=natoapp6c base]{left}
16073   \inheritanchor[from=natoapp6c base]{right}
16074   \inheritanchor[from=natoapp6c base]{center}
16075   \backgroundpath{}
16076   \behindforegroundpath{}
16077 }

```

5.6.8 ‘Hostile’ node shapes



The hostile air command

Macro for hostile air shape

```

16078 \def\n@to@hostile@air{%
16079   \southeast \wg@tmpa=\pgf@x\wg@tmpb=\pgf@y%
16080   \cntrl \wg@tmpc=\pgf@y%
16081   \north \wg@tmpd=\pgf@y%
16082   \pgfpathmoveto{\pgfqpoint{-\wg@tmpa}{\wg@tmpb}}%

```

```

16083 \pgfpathlineto{\pgfqpoint{-\wg@tmpa}{\wg@tmpc}}%
16084 \pgfpathlineto{\pgfqpoint{ 0cm}{\wg@tmpd}}%
16085 \pgfpathlineto{\pgfqpoint{\wg@tmpa}{\wg@tmpc}}%
16086 \pgfpathlineto{\pgfqpoint{\wg@tmpa}{\wg@tmpb}}%
16087 }

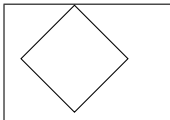
```

The hostile air command.

```

16088 \pgfdeclareshape{natoapp6c hostile air}{%
16089 \inheritshapedanchors[from=natoapp6c base]
16090 \savedanchor\southeast{%
16091 \pgf@x=\n@to@pp@r%
16092 \pgf@y=-\n@to@pp@r}
16093 \savedanchor\cntrl{%
16094 \pgf@x=\n@to@pp@r%
16095 \pgf@y=0.414\n@to@pp@r% (sqrt(2)-1)
16096 }
16097 \savedanchor\north{\pgf@x=0cm\pgf@y=1.414\n@to@pp@r}
16098 \anchor{south east}{\southeast}
16099 \anchor{south west}{\southeast\pgf@x=-\pgf@x}
16100 \anchor{north east}{\southeast\wg@tmpa=\pgf@x\north\pgf@x=\wg@tmpa}
16101 \anchor{north west}{\southeast\wg@tmpa=\pgf@x\north\pgf@x=-\wg@tmpa}
16102 \anchor{north}{\north}
16103 \anchor{east}{%
16104 \north\wg@tmpb\pgf@y%
16105 \southeast\wg@tmpc=\pgf@y\wg@tmpa=\pgf@x%
16106 \advance\wg@tmpb-\wg@tmpc
16107 \divide\wg@tmpb2%
16108 \advance\wg@tmpb\wg@tmpc%
16109 \pgf@x=\wg@tmpa%
16110 \pgf@y=\wg@tmpb}
16111 \anchor{west}{%
16112 \north\wg@tmpb\pgf@y%
16113 \southeast\wg@tmpc=\pgf@y\wg@tmpa=\pgf@x%
16114 \advance\wg@tmpb-\wg@tmpc
16115 \divide\wg@tmpb2%
16116 \advance\wg@tmpb\wg@tmpc%
16117 \pgf@x=-\wg@tmpa%
16118 \pgf@y=\wg@tmpb}
16119 \anchor{south}{\southeast\pgf@x=0cm}
16120 \inheritanchor[from=natoapp6c base]{upper}
16121 \inheritanchor[from=natoapp6c base]{lower}
16122 \inheritanchor[from=natoapp6c base]{left}
16123 \inheritanchor[from=natoapp6c base]{right}
16124 \inheritanchor[from=natoapp6c base]{center}
16125 \backgroundpath{%
16126 \n@to@hostile@air%
16127 }
16128 \behindforegroundpath{%
16129 \n@to@hostile@air%
16130 \pgfusepath{stroke}%
16131 }
16132 }

```



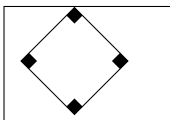
natoapp6c hostile land

Macro for hostile land command

```
16133 \def\n@to@hostile@l@nd{%
16134 \northeast \wg@tmpa=\pgf@x\wg@tmpb=\pgf@y%
16135 \pgfpathmoveto{\pgfqpoint{ \wg@tmpa}{ 0cm}}%
16136 \pgfpathlineto{\pgfqpoint{ 0cm}{ \wg@tmpb}}%
16137 \pgfpathlineto{\pgfqpoint{-\wg@tmpa}{ 0cm}}%
16138 \pgfpathlineto{\pgfqpoint{ 0cm}{-\wg@tmpb}}%
16139 \pgfclosepath}
```

The hostile land command.

```
16140 \pgfdeclareshape{natoapp6c hostile land}{%
16141 \inheritshapedanchors[from=natoapp6c base]
16142 \savedanchor\northeast{%
16143 \pgf@x=1.414\n@to@pp@r%
16144 \pgf@y=1.414\n@to@pp@r}
16145 \anchor{north east}{\northeast}
16146 \anchor{north west}{\northeast\pgf@x=-\pgf@x}
16147 \anchor{south east}{\northeast\pgf@y=-\pgf@y}
16148 \anchor{south west}{\northeast\pgf@x=-\pgf@x\pgf@y=-\pgf@y}
16149 \anchor{north}{\northeast\pgf@x=0cm}
16150 \anchor{south}{\northeast\pgf@x=0cm\pgf@y=-\pgf@y}
16151 \anchor{east}{\northeast\pgf@y=0cm}
16152 \anchor{west}{\northeast\pgf@x=-\pgf@x\pgf@y=0cm}
16153 \inheritanchor[from=natoapp6c base]{upper}
16154 \inheritanchor[from=natoapp6c base]{lower}
16155 \inheritanchor[from=natoapp6c base]{left}
16156 \inheritanchor[from=natoapp6c base]{right}
16157 \inheritanchor[from=natoapp6c base]{center}
16158 \backgroundpath{%
16159 \n@to@hostile@l@nd%
16160 }
16161 \behindforegroundpath{%
16162 \n@to@hostile@l@nd%
16163 \pgfusepath{stroke}%
16164 }
16165 }
```



natoapp6c hostile activity

The hostile activity command. Similar to land command, but with boxes in the corners.

```
16166 \pgfdeclareshape{natoapp6c hostile activity}{%
```

```

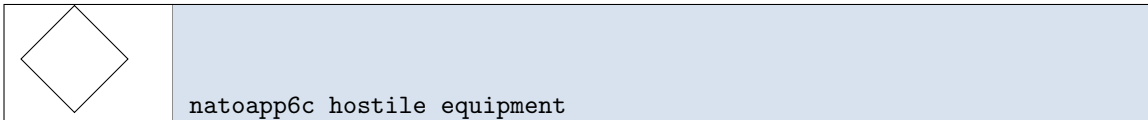
16167 \inheritssavedanchors[from=natoapp6c hostile land]
16168 \inheritanchor[from=natoapp6c hostile land]{center}
16169 \inheritanchor[from=natoapp6c hostile land]{inner north east}
16170 \inheritanchor[from=natoapp6c hostile land]{inner north west}
16171 \inheritanchor[from=natoapp6c hostile land]{inner south west}
16172 \inheritanchor[from=natoapp6c hostile land]{inner south east}
16173 \inheritanchor[from=natoapp6c hostile land]{north east}
16174 \inheritanchor[from=natoapp6c hostile land]{north west}
16175 \inheritanchor[from=natoapp6c hostile land]{south east}
16176 \inheritanchor[from=natoapp6c hostile land]{south west}
16177 \inheritanchor[from=natoapp6c hostile land]{north}
16178 \inheritanchor[from=natoapp6c hostile land]{west}
16179 \inheritanchor[from=natoapp6c hostile land]{east}
16180 \inheritanchor[from=natoapp6c hostile land]{south}
16181 \inheritanchor[from=natoapp6c hostile land]{upper}
16182 \inheritanchor[from=natoapp6c hostile land]{lower}
16183 \inheritanchor[from=natoapp6c hostile land]{left}
16184 \inheritanchor[from=natoapp6c hostile land]{right}
16185 \inheritanchor[from=natoapp6c hostile land]{center}
16186 \inheritbackgroundpath[from=natoapp6c hostile land]
16187 \behindforegroundpath{
16188   \begin{n@to@pp@stroketofill}
16189     \n@to@hostile@l@nd%
16190     \pgfusepath{stroke}
16191     %
16192     \northeast \wg@tmpb=\pgf@y%
16193     \wg@tmpa=0.707\n@to@pp@act@w
16194     \wg@tmpc=\wg@tmpb\advance\wg@tmpc-1.414\n@to@pp@act@w
16195     \wg@tmpd=\wg@tmpb\advance\wg@tmpd-\wg@tmpa
16196     %
16197     \pgfpathmoveto{\pgfqpoint{ \wg@tmpa}{\wg@tmpd}}%
16198     \pgfpathlineto{\pgfqpoint{ 0cm}{\wg@tmpb}}%
16199     \pgfpathlineto{\pgfqpoint{-\wg@tmpa}{\wg@tmpd}}%
16200     \pgfpathlineto{\pgfqpoint{ 0cm}{\wg@tmpc}}%
16201     \pgfclosepath
16202     \pgfusepath{fill}%
16203     %
16204     \pgfpathmoveto{\pgfqpoint{-\wg@tmpc}{0cm}}%
16205     \pgfpathlineto{\pgfqpoint{-\wg@tmpd}{\wg@tmpa}}%
16206     \pgfpathlineto{\pgfqpoint{-\wg@tmpb}{0cm}}%
16207     \pgfpathlineto{\pgfqpoint{-\wg@tmpd}{-\wg@tmpa}}%
16208     \pgfclosepath
16209     \pgfusepath{fill}%
16210     %
16211     \pgfpathmoveto{\pgfqpoint{ \wg@tmpa}{-\wg@tmpd}}%
16212     \pgfpathlineto{\pgfqpoint{ 0cm}{-\wg@tmpc}}%
16213     \pgfpathlineto{\pgfqpoint{-\wg@tmpa}{-\wg@tmpd}}%
16214     \pgfpathlineto{\pgfqpoint{ 0cm}{-\wg@tmpb}}%
16215     \pgfclosepath
16216     \pgfusepath{fill}%
16217     %
16218     \pgfpathmoveto{\pgfqpoint{\wg@tmpb}{0cm}}%
16219     \pgfpathlineto{\pgfqpoint{\wg@tmpd}{\wg@tmpa}}%

```

```

16220     \pgfpathlineto{\pgfqpoint{\wg@tmpc}{0cm}}%
16221     \pgfpathlineto{\pgfqpoint{\wg@tmpd}{-\wg@tmpa}}%
16222     \pgfclosepath
16223     \pgfusepath{fill}%
16224 \end{in@to@pp@stroketo@fill}
16225 }
16226 }

```

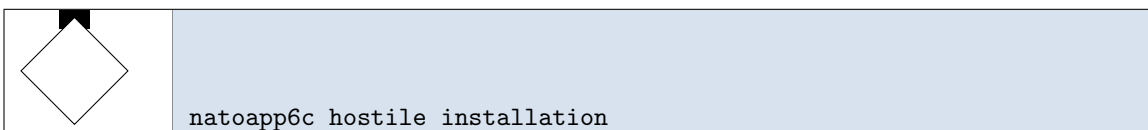


The hostile equipment command. Same as land command.

```

16227 \pgfdeclareshape{natoapp6c hostile equipment}{%
16228   \inheritssavedanchors[from=natoapp6c hostile land]
16229   \inheritanchor[from=natoapp6c hostile land]{inner north east}
16230   \inheritanchor[from=natoapp6c hostile land]{inner north west}
16231   \inheritanchor[from=natoapp6c hostile land]{inner south west}
16232   \inheritanchor[from=natoapp6c hostile land]{inner south east}
16233   \inheritanchor[from=natoapp6c hostile land]{north east}
16234   \inheritanchor[from=natoapp6c hostile land]{north west}
16235   \inheritanchor[from=natoapp6c hostile land]{south east}
16236   \inheritanchor[from=natoapp6c hostile land]{south west}
16237   \inheritanchor[from=natoapp6c hostile land]{north}
16238   \inheritanchor[from=natoapp6c hostile land]{west}
16239   \inheritanchor[from=natoapp6c hostile land]{east}
16240   \inheritanchor[from=natoapp6c hostile land]{south}
16241   \inheritanchor[from=natoapp6c hostile land]{upper}
16242   \inheritanchor[from=natoapp6c hostile land]{lower}
16243   \inheritanchor[from=natoapp6c hostile land]{left}
16244   \inheritanchor[from=natoapp6c hostile land]{right}
16245   \inheritanchor[from=natoapp6c hostile land]{center}
16246   \inheritbackgroundpath[from=natoapp6c hostile land]
16247   \inheritbehindforegroundpath[from=natoapp6c hostile land]
16248 }

```



The hostile installation command. Similar to land command, but with a ‘hat’ on top.

```

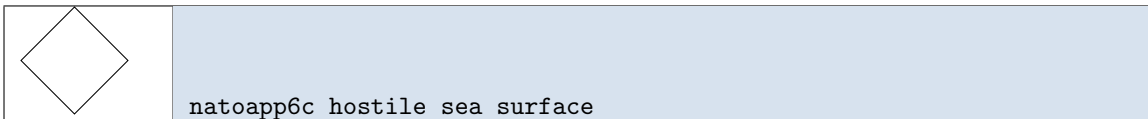
16249 \pgfdeclareshape{natoapp6c hostile installation}{%
16250   \inheritssavedanchors[from=natoapp6c hostile land]
16251   \inheritanchor[from=natoapp6c hostile land]{center}
16252   \inheritanchor[from=natoapp6c hostile land]{inner north east}
16253   \inheritanchor[from=natoapp6c hostile land]{inner north west}
16254   \inheritanchor[from=natoapp6c hostile land]{inner south west}
16255   \inheritanchor[from=natoapp6c hostile land]{inner south east}

```

```

16256 \inheritanchor[from=natoapp6c hostile land]{north east}
16257 \inheritanchor[from=natoapp6c hostile land]{north west}
16258 \inheritanchor[from=natoapp6c hostile land]{south east}
16259 \inheritanchor[from=natoapp6c hostile land]{south west}
16260 \inheritanchor[from=natoapp6c hostile land]{north}
16261 \inheritanchor[from=natoapp6c hostile land]{west}
16262 \inheritanchor[from=natoapp6c hostile land]{east}
16263 \inheritanchor[from=natoapp6c hostile land]{south}
16264 \inheritanchor[from=natoapp6c hostile land]{upper}
16265 \inheritanchor[from=natoapp6c hostile land]{lower}
16266 \inheritanchor[from=natoapp6c hostile land]{left}
16267 \inheritanchor[from=natoapp6c hostile land]{right}
16268 \inheritanchor[from=natoapp6c hostile land]{center}
16269 \inheritbackgroundpath[from=natoapp6c hostile land]
16270 \behindforegroundpath{
16271   \begin{n@to@pp@stroketofill}
16272     \n@to@hostile@l@nd%
16273     \pgfusepath{stroke}
16274     %
16275     \northeast \wg@tmpa=\pgf@x\wg@tmpb\pgf@y%
16276     \wg@tmpc=\wg@tmpb
16277     \advance\wg@tmpc\n@to@pp@inst@h%
16278     \advance\wg@tmpc-0.05cm%
16279     %
16280     \pgfpathmoveto{\pgfpoint{ \wg@tmpa}{0cm}}
16281     \pgfpathlineto{\pgfpoint{ \wg@tmpa}{\wg@tmpc}}
16282     \pgfpathlineto{\pgfpoint{-\wg@tmpa}{\wg@tmpc}}
16283     \pgfpathlineto{\pgfpoint{-\wg@tmpa}{0cm}}
16284     \pgfpathlineto{\pgfpoint{ 0cm}{\wg@tmpb}}
16285     \pgfclosepath%
16286     \pgfusepath{clip}
16287     %
16288     \wg@tmpd=\wg@tmpb%
16289     \advance\wg@tmpd-\n@to@pp@inst@h%
16290     %
16291     \pgfpathmoveto{\pgfpoint{ \n@to@pp@inst@x}{\wg@tmpc}}%
16292     \pgfpathlineto{\pgfpoint{-\n@to@pp@inst@x}{\wg@tmpc}}%
16293     \pgfpathlineto{\pgfpoint{-\n@to@pp@inst@x}{\wg@tmpd}}%
16294     \pgfpathlineto{\pgfpoint{ \n@to@pp@inst@x}{\wg@tmpd}}%
16295     \pgfclosepath
16296     \pgfusepath{fill}%
16297   \end{n@to@pp@stroketofill}
16298 }
16299 }

```



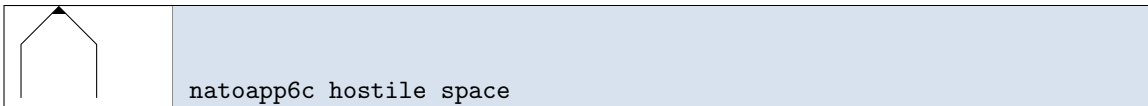
The hostile sea surface command. Same as land command

```
16300 \pgfdeclareshape{natoapp6c hostile sea surface}{%
```

```

16301 \inheritssavedanchors[from=natoapp6c hostile equipment]
16302 \inheritanchor[from=natoapp6c hostile equipment]{inner north east}
16303 \inheritanchor[from=natoapp6c hostile equipment]{inner north west}
16304 \inheritanchor[from=natoapp6c hostile equipment]{inner south west}
16305 \inheritanchor[from=natoapp6c hostile equipment]{inner south east}
16306 \inheritanchor[from=natoapp6c hostile equipment]{north east}
16307 \inheritanchor[from=natoapp6c hostile equipment]{north west}
16308 \inheritanchor[from=natoapp6c hostile equipment]{south east}
16309 \inheritanchor[from=natoapp6c hostile equipment]{south west}
16310 \inheritanchor[from=natoapp6c hostile equipment]{north}
16311 \inheritanchor[from=natoapp6c hostile equipment]{west}
16312 \inheritanchor[from=natoapp6c hostile equipment]{east}
16313 \inheritanchor[from=natoapp6c hostile equipment]{south}
16314 \inheritanchor[from=natoapp6c hostile equipment]{upper}
16315 \inheritanchor[from=natoapp6c hostile equipment]{lower}
16316 \inheritanchor[from=natoapp6c hostile equipment]{left}
16317 \inheritanchor[from=natoapp6c hostile equipment]{right}
16318 \inheritanchor[from=natoapp6c hostile equipment]{center}
16319 \inheritbackgroundpath[from=natoapp6c hostile equipment]
16320 \inheritbehindforegroundpath[from=natoapp6c hostile equipment]
16321 }

```



The hostile space command. Similar to air command, but with bar on top.

```

16322 \pgfdeclareshape{natoapp6c hostile space}{%
16323 \inheritssavedanchors[from=natoapp6c hostile air]
16324 \inheritanchor[from=natoapp6c hostile air]{north east}
16325 \inheritanchor[from=natoapp6c hostile air]{north west}
16326 \inheritanchor[from=natoapp6c hostile air]{south east}
16327 \inheritanchor[from=natoapp6c hostile air]{south west}
16328 \inheritanchor[from=natoapp6c hostile air]{north}
16329 \inheritanchor[from=natoapp6c hostile air]{west}
16330 \inheritanchor[from=natoapp6c hostile air]{east}
16331 \inheritanchor[from=natoapp6c hostile air]{south}
16332 \inheritanchor[from=natoapp6c hostile air]{upper}
16333 \inheritanchor[from=natoapp6c hostile air]{lower}
16334 \inheritanchor[from=natoapp6c hostile air]{left}
16335 \inheritanchor[from=natoapp6c hostile air]{right}
16336 \inheritanchor[from=natoapp6c hostile air]{center}
16337 \inheritbackgroundpath[from=natoapp6c hostile air]
16338 \behindforegroundpath{%
16339 \begin{n@to@pp@stroketo@fill}
16340 \n@to@hostile@@ir%
16341 \pgfusepath{stroke,clip}%
16342 %
16343 \north\wg@tmpa=\pgf@y\wg@tmpb=\pgf@y
16344 \advance\wg@tmpb-\n@to@pp@space@h
16345 %

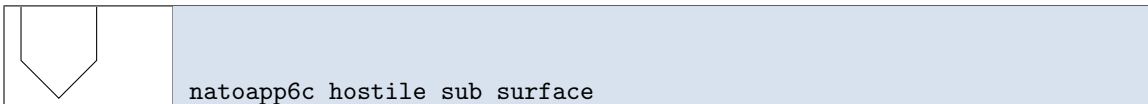
```



```

16346 \pgfpathmoveto{\pgfqpoint{ \n@to@pp@r}{\wg@tmpa}}%
16347 \pgfpathlineto{\pgfqpoint{-\n@to@pp@r}{\wg@tmpa}}%
16348 \pgfpathlineto{\pgfqpoint{-\n@to@pp@r}{\wg@tmpb}}%
16349 \pgfpathlineto{\pgfqpoint{ \n@to@pp@r}{\wg@tmpb}}%
16350 \pgfclosepath%
16351 \pgfusepath{fill}%
16352 \end{n@to@pp@stroketo@fill}
16353 }
16354 }

```



natoapp6c hostile sub surface

Macro for hostile sub surface command

```

16355 \def\n@to@hostile@sub{%
16356 \northeast \wg@tmpa=\pgf@x\wg@tmpb=\pgf@y%
16357 \cntrl \wg@tmpc=\pgf@y%
16358 \south \wg@tmpd=\pgf@y%
16359 \pgfpathmoveto{\pgfqpoint{-\wg@tmpa}{\wg@tmpb}}%
16360 \pgfpathlineto{\pgfqpoint{-\wg@tmpa}{\wg@tmpc}}%
16361 \pgfpathlineto{\pgfqpoint{ 0cm}{\wg@tmpd}}%
16362 \pgfpathlineto{\pgfqpoint{\wg@tmpa}{\wg@tmpc}}%
16363 \pgfpathlineto{\pgfqpoint{\wg@tmpa}{\wg@tmpb}}%
16364 }

```

The hostile sub surface command

```

16365 \pgfdeclareshape{natoapp6c hostile sub surface}{%
16366 \inheritsavedanchors[from=natoapp6c base]
16367 \savedanchor\northeast{%
16368 \pgf@x=\n@to@pp@r%
16369 \pgf@y=\n@to@pp@r}
16370 \savedanchor\cntrl{\pgf@x=\n@to@pp@r\pgf@y=-0.414\n@to@pp@r}
16371 \savedanchor\south{\pgf@x=0cm\pgf@y=-1.414\n@to@pp@r}
16372 \anchor{north east}{\northeast}
16373 \anchor{north west}{\northeast\pgf@x=-\pgf@x}
16374 \anchor{south east}{\northeast\wg@tmpa=\pgf@x\south\pgf@x=\wg@tmpa}
16375 \anchor{south west}{\northeast\wg@tmpa=\pgf@x\south\pgf@x=-\wg@tmpa}
16376 \anchor{south}{\south}
16377 \anchor{east}{%
16378 \northeast\wg@tmpb=\pgf@y\wg@tmpa=\pgf@x%
16379 \south\wg@tmpc\pgf@y%
16380 \advance\wg@tmpb-\wg@tmpc
16381 \divide\wg@tmpb2%
16382 \advance\wg@tmpb\wg@tmpc%
16383 \pgf@x=\wg@tmpa%
16384 \pgf@y=\wg@tmpb}
16385 \anchor{west}{%
16386 \northeast\wg@tmpb=\pgf@y\wg@tmpa=\pgf@x%
16387 \south\wg@tmpc\pgf@y%
16388 \advance\wg@tmpb-\wg@tmpc

```

```

16389 \divide\wg@tmpb2%
16390 \advance\wg@tmpb\wg@tmpc%
16391 \pgf@x=-\wg@tmpa%
16392 \pgf@y=\wg@tmpb}
16393 \anchor{north}{\northeast\pgf@x=0cm}
16394 \inheritanchor[from=natoapp6c base]{upper}
16395 \inheritanchor[from=natoapp6c base]{lower}
16396 \inheritanchor[from=natoapp6c base]{left}
16397 \inheritanchor[from=natoapp6c base]{right}
16398 \inheritanchor[from=natoapp6c base]{center}
16399 \backgroundpath{%
16400 \n@to@hostile@sub%
16401 }
16402 \behindforegroundpath{%
16403 \n@to@hostile@sub%
16404 \pgfusepath{stroke}%
16405 }
16406 }

```

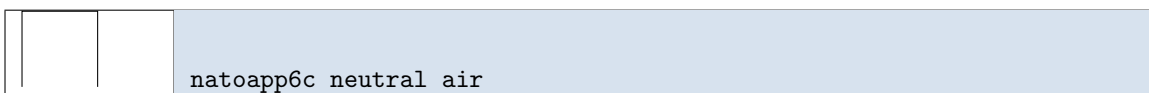
5.6.9 ‘Neutral’ node shapes

Macro for neutral shapes

```

16407 \def\n@to@pp@neutr@l@init{%
16408 \northeast\wg@tmpa=\pgf@x\wg@tmpb=\pgf@y%
16409 \def\n@to@pp@neutr@l@left {\pgflineto{\pgfqpoint{-\wg@tmpa}{-\wg@tmpb}}}%
16410 \def\n@to@pp@neutr@l@right {\pgflineto{\pgfqpoint{ \wg@tmpa}{ \wg@tmpb}}}%
16411 \def\n@to@pp@neutr@l@top {\pgflineto{\pgfqpoint{-\wg@tmpa}{ \wg@tmpb}}}%
16412 \def\n@to@pp@neutr@l@bottom{\pgflineto{\pgfqpoint{ \wg@tmpa}{-\wg@tmpb}}}%
16413 \def\n@to@pp@neutr@l@nw {\pgfmoveto{\pgfqpoint{-\wg@tmpa}{ \wg@tmpb}}}%
16414 \def\n@to@pp@neutr@l@ne {\pgfmoveto{\pgfqpoint{ \wg@tmpa}{ \wg@tmpb}}}%
16415 \def\n@to@pp@neutr@l@se {\pgfmoveto{\pgfqpoint{ \wg@tmpa}{-\wg@tmpb}}}%
16416 \def\n@to@pp@neutr@l@sw {\pgfmoveto{\pgfqpoint{-\wg@tmpa}{-\wg@tmpb}}}%
16417 }

```



The neutral air command

```

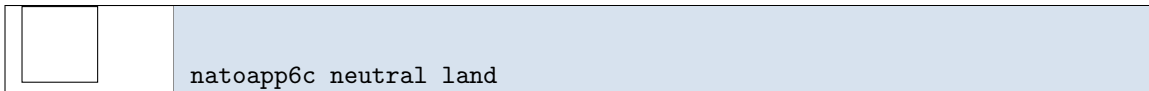
16418 \pgfdeclareshape{natoapp6c neutral air}{%
16419 \inheritsavedanchors[from=natoapp6c base]
16420 \savedanchor\northeast{\pgf@x=\n@to@pp@r\pgf@y=\n@to@pp@r}
16421 \anchor{north east}{\northeast}
16422 \anchor{north west}{\northeast\pgf@x=-\pgf@x}
16423 \anchor{south east}{\northeast\pgf@y=-\pgf@y}
16424 \anchor{south west}{\northeast\pgf@x=-\pgf@x\pgf@y=-\pgf@y}
16425 \anchor{north}{\northeast\pgf@x=0cm}
16426 \anchor{east}{\northeast\pgf@y=0cm}
16427 \anchor{west}{\northeast\pgf@x=-\pgf@x\pgf@y=0cm}
16428 \anchor{south}{\northeast\pgf@x=0cm\pgf@y=-\pgf@y}

```

```

16429 \inheritanchor[from=natoapp6c base]{upper}
16430 \inheritanchor[from=natoapp6c base]{lower}
16431 \inheritanchor[from=natoapp6c base]{left}
16432 \inheritanchor[from=natoapp6c base]{right}
16433 \inheritanchor[from=natoapp6c base]{center}
16434 \backgroundpath{%
16435   \n@to@pp@neutr@l@init%
16436   \n@to@pp@neutr@l@se
16437   \n@to@pp@neutr@l@right%
16438   \n@to@pp@neutr@l@top%
16439   \n@to@pp@neutr@l@left%
16440 }
16441 \behindforegroundpath{%
16442   \n@to@pp@neutr@l@init%
16443   \n@to@pp@neutr@l@se
16444   \n@to@pp@neutr@l@right%
16445   \n@to@pp@neutr@l@top%
16446   \n@to@pp@neutr@l@left%
16447   \pgfusepath{stroke}%
16448 }
16449 }

```



The neutral land command

```

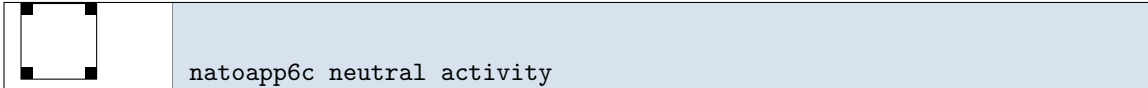
16450 \pgfdeclareshape{natoapp6c neutral land}{%
16451   \inheritsavedanchors[from=natoapp6c neutral air]
16452   \inheritanchor[from=natoapp6c neutral air]{north east}
16453   \inheritanchor[from=natoapp6c neutral air]{north west}
16454   \inheritanchor[from=natoapp6c neutral air]{south east}
16455   \inheritanchor[from=natoapp6c neutral air]{south west}
16456   \inheritanchor[from=natoapp6c neutral air]{north}
16457   \inheritanchor[from=natoapp6c neutral air]{west}
16458   \inheritanchor[from=natoapp6c neutral air]{east}
16459   \inheritanchor[from=natoapp6c neutral air]{south}
16460   \inheritanchor[from=natoapp6c neutral air]{upper}
16461   \inheritanchor[from=natoapp6c neutral air]{lower}
16462   \inheritanchor[from=natoapp6c neutral air]{left}
16463   \inheritanchor[from=natoapp6c neutral air]{right}
16464   \inheritanchor[from=natoapp6c neutral air]{center}
16465   \backgroundpath{%
16466     \n@to@pp@neutr@l@init%
16467     \n@to@pp@neutr@l@se
16468     \n@to@pp@neutr@l@top%
16469     \n@to@pp@neutr@l@left%
16470     \n@to@pp@neutr@l@bottom%
16471     \pgfclosepath
16472   }
16473   \behindforegroundpath{%
16474     \n@to@pp@neutr@l@init%

```

```

16475 \n@to@pp@neutr@l@ne
16476 \n@to@pp@neutr@l@top%
16477 \n@to@pp@neutr@l@left%
16478 \n@to@pp@neutr@l@bottom%
16479 \pgfclosepath
16480 \pgfusepath{stroke}%
16481 }
16482 }

```



The neutral activity command. Similar to land command but with boxes added in the corners.

```

16483 \pgfdeclareshape{natoapp6c neutral activity}{%
16484 \inheritssavedanchors[from=natoapp6c neutral land]
16485 \inheritanchor[from=natoapp6c neutral land]{center}
16486 \inheritanchor[from=natoapp6c neutral land]{inner north east}
16487 \inheritanchor[from=natoapp6c neutral land]{inner north west}
16488 \inheritanchor[from=natoapp6c neutral land]{inner south west}
16489 \inheritanchor[from=natoapp6c neutral land]{inner south east}
16490 \inheritanchor[from=natoapp6c neutral land]{north east}
16491 \inheritanchor[from=natoapp6c neutral land]{north west}
16492 \inheritanchor[from=natoapp6c neutral land]{south east}
16493 \inheritanchor[from=natoapp6c neutral land]{south west}
16494 \inheritanchor[from=natoapp6c neutral land]{north}
16495 \inheritanchor[from=natoapp6c neutral land]{west}
16496 \inheritanchor[from=natoapp6c neutral land]{east}
16497 \inheritanchor[from=natoapp6c neutral land]{south}
16498 \inheritanchor[from=natoapp6c neutral land]{upper}
16499 \inheritanchor[from=natoapp6c neutral land]{lower}
16500 \inheritanchor[from=natoapp6c neutral land]{left}
16501 \inheritanchor[from=natoapp6c neutral land]{right}
16502 \inheritanchor[from=natoapp6c neutral land]{center}
16503 \inheritbackgroundpath[from=natoapp6c neutral land]
16504 \behindforegroundpath{
16505 \begin{n@to@pp@stroketofill}
16506 \n@to@pp@neutr@l@init%
16507 \n@to@pp@neutr@l@ne
16508 \n@to@pp@neutr@l@top%
16509 \n@to@pp@neutr@l@left%
16510 \n@to@pp@neutr@l@bottom%
16511 \pgfclosepath
16512 \pgfusepath{stroke}
16513 %
16514 \northeast \wg@tmpa=\pgf@x\wg@tmpb\pgf@y%
16515 \wg@tmpc=\wg@tmpa\advance\wg@tmpc-\n@to@pp@act@w
16516 \wg@tmpd=\wg@tmpb\advance\wg@tmpd-\n@to@pp@act@w
16517 %
16518 \pgfpathmoveto{\pgfqpoint{\wg@tmpa}{\wg@tmpb}}%
16519 \pgfpathlineto{\pgfqpoint{\wg@tmpc}{\wg@tmpb}}%
16520 \pgfpathlineto{\pgfqpoint{\wg@tmpc}{\wg@tmpd}}%

```

```

16521 \pgfpathlineto{\pgfqpoint{\wg@tmpa}{\wg@tmpd}}%
16522 \pgfclosepath
16523 \pgfusepath{fill}%
16524 %
16525 \pgfpathmoveto{\pgfqpoint{\wg@tmpa}{-\wg@tmpd}}%
16526 \pgfpathlineto{\pgfqpoint{\wg@tmpc}{-\wg@tmpd}}%
16527 \pgfpathlineto{\pgfqpoint{\wg@tmpc}{-\wg@tmpb}}%
16528 \pgfpathlineto{\pgfqpoint{\wg@tmpa}{-\wg@tmpb}}%
16529 \pgfclosepath
16530 \pgfusepath{fill}%
16531 %
16532 \pgfpathmoveto{\pgfqpoint{-\wg@tmpc}{\wg@tmpb}}%
16533 \pgfpathlineto{\pgfqpoint{-\wg@tmpa}{\wg@tmpb}}%
16534 \pgfpathlineto{\pgfqpoint{-\wg@tmpa}{\wg@tmpd}}%
16535 \pgfpathlineto{\pgfqpoint{-\wg@tmpc}{\wg@tmpd}}%
16536 \pgfclosepath
16537 \pgfusepath{fill}%
16538 %
16539 \pgfpathmoveto{\pgfqpoint{-\wg@tmpc}{-\wg@tmpd}}%
16540 \pgfpathlineto{\pgfqpoint{-\wg@tmpa}{-\wg@tmpd}}%
16541 \pgfpathlineto{\pgfqpoint{-\wg@tmpa}{-\wg@tmpb}}%
16542 \pgfpathlineto{\pgfqpoint{-\wg@tmpc}{-\wg@tmpb}}%
16543 \pgfclosepath
16544 \pgfusepath{fill}%
16545 \end{n@to@pp@stroketofill}
16546 }
16547 }

```

	natoapp6c neutral equipment
--	-----------------------------

The neutral equipment command. Same as land command

```

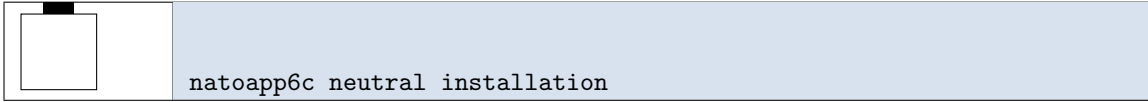
16548 \pgfdeclareshape{natoapp6c neutral equipment}{%
16549 \inheritssavedanchors[from=natoapp6c neutral land]
16550 \inheritanchor[from=natoapp6c neutral land]{center}
16551 \inheritanchor[from=natoapp6c neutral land]{inner north east}
16552 \inheritanchor[from=natoapp6c neutral land]{inner north west}
16553 \inheritanchor[from=natoapp6c neutral land]{inner south west}
16554 \inheritanchor[from=natoapp6c neutral land]{inner south east}
16555 \inheritanchor[from=natoapp6c neutral land]{north east}
16556 \inheritanchor[from=natoapp6c neutral land]{north west}
16557 \inheritanchor[from=natoapp6c neutral land]{south east}
16558 \inheritanchor[from=natoapp6c neutral land]{south west}
16559 \inheritanchor[from=natoapp6c neutral land]{north}
16560 \inheritanchor[from=natoapp6c neutral land]{west}
16561 \inheritanchor[from=natoapp6c neutral land]{east}
16562 \inheritanchor[from=natoapp6c neutral land]{south}
16563 \inheritanchor[from=natoapp6c neutral land]{upper}
16564 \inheritanchor[from=natoapp6c neutral land]{lower}
16565 \inheritanchor[from=natoapp6c neutral land]{left}
16566 \inheritanchor[from=natoapp6c neutral land]{right}

```

```

16567 \inheritanchor[from=natoapp6c neutral land]{center}
16568 \inheritbackgroundpath[from=natoapp6c neutral land]
16569 \inheritbehindbackgroundpath[from=natoapp6c neutral land]
16570 }

```



The neutral installation command. Similar to land command but with a ‘hat’ on top.

```

16571 \pgfdeclareshape{natoapp6c neutral installation}{%
16572 \inheritsavedanchors[from=natoapp6c neutral land]
16573 \inheritanchor[from=natoapp6c neutral land]{center}
16574 \inheritanchor[from=natoapp6c neutral land]{inner north east}
16575 \inheritanchor[from=natoapp6c neutral land]{inner north west}
16576 \inheritanchor[from=natoapp6c neutral land]{inner south west}
16577 \inheritanchor[from=natoapp6c neutral land]{inner south east}
16578 \inheritanchor[from=natoapp6c neutral land]{north east}
16579 \inheritanchor[from=natoapp6c neutral land]{north west}
16580 \inheritanchor[from=natoapp6c neutral land]{south east}
16581 \inheritanchor[from=natoapp6c neutral land]{south west}
16582 \inheritanchor[from=natoapp6c neutral land]{north}
16583 \inheritanchor[from=natoapp6c neutral land]{west}
16584 \inheritanchor[from=natoapp6c neutral land]{east}
16585 \inheritanchor[from=natoapp6c neutral land]{south}
16586 \inheritanchor[from=natoapp6c neutral land]{upper}
16587 \inheritanchor[from=natoapp6c neutral land]{lower}
16588 \inheritanchor[from=natoapp6c neutral land]{left}
16589 \inheritanchor[from=natoapp6c neutral land]{right}
16590 \inheritanchor[from=natoapp6c neutral land]{center}
16591 \inheritbackgroundpath[from=natoapp6c neutral land]
16592 \behindforegroundpath{
16593 \begin{n@to@pp@stroketofill}
16594 \n@to@pp@neutr@l@init%
16595 \n@to@pp@neutr@l@ne
16596 \n@to@pp@neutr@l@top%
16597 \n@to@pp@neutr@l@left%
16598 \n@to@pp@neutr@l@bottom%
16599 \pgfclosepath
16600 \pgfusepath{stroke}
16601 %
16602 \northeast \wg@tmpa=\pgf@y%
16603 \wg@tmpb=\wg@tmpa\advance\wg@tmpb\n@to@pp@inst@h%
16604 %
16605 \pgfpathmoveto{\pgfqpoint{ \n@to@pp@inst@x}{\wg@tmpb}}}%
16606 \pgfpathlineto{\pgfqpoint{-\n@to@pp@inst@x}{\wg@tmpb}}}%
16607 \pgfpathlineto{\pgfqpoint{-\n@to@pp@inst@x}{\wg@tmpa}}}%
16608 \pgfpathlineto{\pgfqpoint{ \n@to@pp@inst@x}{\wg@tmpa}}}%
16609 \pgfclosepath
16610 \pgfusepath{fill}%
16611 \end{n@to@pp@stroketofill}
16612 }

```

16613 }

	natoapp6c neutral sea surface
--	-------------------------------

The neutral sea surface command. Same as land command.

```
16614 \pgfdeclareshape{natoapp6c neutral sea surface}{%
16615   \inheritssavedanchors[from=natoapp6c neutral equipment]
16616   \inheritanchor[from=natoapp6c neutral equipment]{inner north east}
16617   \inheritanchor[from=natoapp6c neutral equipment]{inner north west}
16618   \inheritanchor[from=natoapp6c neutral equipment]{inner south west}
16619   \inheritanchor[from=natoapp6c neutral equipment]{inner south east}
16620   \inheritanchor[from=natoapp6c neutral equipment]{north east}
16621   \inheritanchor[from=natoapp6c neutral equipment]{north west}
16622   \inheritanchor[from=natoapp6c neutral equipment]{south east}
16623   \inheritanchor[from=natoapp6c neutral equipment]{south west}
16624   \inheritanchor[from=natoapp6c neutral equipment]{north}
16625   \inheritanchor[from=natoapp6c neutral equipment]{west}
16626   \inheritanchor[from=natoapp6c neutral equipment]{east}
16627   \inheritanchor[from=natoapp6c neutral equipment]{south}
16628   \inheritanchor[from=natoapp6c neutral equipment]{upper}
16629   \inheritanchor[from=natoapp6c neutral equipment]{lower}
16630   \inheritanchor[from=natoapp6c neutral equipment]{left}
16631   \inheritanchor[from=natoapp6c neutral equipment]{right}
16632   \inheritanchor[from=natoapp6c neutral equipment]{center}
16633   \inheritbackgroundpath[from=natoapp6c neutral equipment]
16634   \inheritbehindforegroundpath[from=natoapp6c neutral equipment]
16635 }
```

	natoapp6c neutral space
--	-------------------------

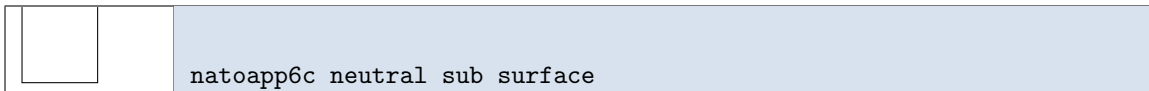
The neutral space command. Similar to air command but with a bar.

```
16636 \pgfdeclareshape{natoapp6c neutral space}{%
16637   \inheritssavedanchors[from=natoapp6c neutral air]
16638   \inheritanchor[from=natoapp6c neutral air]{north east}
16639   \inheritanchor[from=natoapp6c neutral air]{north west}
16640   \inheritanchor[from=natoapp6c neutral air]{south east}
16641   \inheritanchor[from=natoapp6c neutral air]{south west}
16642   \inheritanchor[from=natoapp6c neutral air]{north}
16643   \inheritanchor[from=natoapp6c neutral air]{west}
16644   \inheritanchor[from=natoapp6c neutral air]{east}
16645   \inheritanchor[from=natoapp6c neutral air]{south}
16646   \inheritanchor[from=natoapp6c neutral air]{upper}
16647   \inheritanchor[from=natoapp6c neutral air]{lower}
16648   \inheritanchor[from=natoapp6c neutral air]{left}
16649   \inheritanchor[from=natoapp6c neutral air]{right}
16650   \inheritanchor[from=natoapp6c neutral air]{center}
```

```

16651 \inheritbackgroundpath[from=natoapp6c neutral air]
16652 \behindforegroundpath{%
16653   \begin{n@to@pp@stroketo@fill}
16654     \n@to@pp@neutr@l@init%
16655     \n@to@pp@neutr@l@se
16656     \n@to@pp@neutr@l@right%
16657     \n@to@pp@neutr@l@top%
16658     \n@to@pp@neutr@l@left%
16659     \pgfusepath{stroke}%
16660     %
16661     \n@to@pp@neutr@l@ne
16662     \n@to@pp@neutr@l@top%
16663     \northeast\wg@tmpa=\pgf@x\wg@tmpb=\pgf@y%
16664     \advance\wg@tmpb-\n@to@pp@space@h
16665     %
16666     \pgfpathlineto{\pgfqpoint{-\wg@tmpa}{\wg@tmpc}}%
16667     \pgfpathlineto{\pgfqpoint{-\wg@tmpa}{\wg@tmpb}}%
16668     \pgfpathlineto{\pgfqpoint{\wg@tmpa}{\wg@tmpb}}%
16669     \pgfclosepath%
16670     \pgfusepath{fill}%
16671   \end{n@to@pp@stroketo@fill}
16672 }
16673 }

```



The neutral sub surface command

```

16674 \pgfdeclareshape{natoapp6c neutral sub surface}{%
16675   \inherit@savedanchors[from=natoapp6c neutral air]
16676   \inheritanchor[from=natoapp6c neutral air]{north east}
16677   \inheritanchor[from=natoapp6c neutral air]{north west}
16678   \inheritanchor[from=natoapp6c neutral air]{south east}
16679   \inheritanchor[from=natoapp6c neutral air]{south west}
16680   \inheritanchor[from=natoapp6c neutral air]{north}
16681   \inheritanchor[from=natoapp6c neutral air]{west}
16682   \inheritanchor[from=natoapp6c neutral air]{east}
16683   \inheritanchor[from=natoapp6c neutral air]{south}
16684   \inheritanchor[from=natoapp6c neutral air]{upper}
16685   \inheritanchor[from=natoapp6c neutral air]{lower}
16686   \inheritanchor[from=natoapp6c neutral air]{left}
16687   \inheritanchor[from=natoapp6c neutral air]{right}
16688   \inheritanchor[from=natoapp6c neutral air]{center}
16689   \backgroundpath{%
16690     \n@to@pp@neutr@l@init%
16691     \n@to@pp@neutr@l@nw
16692     \n@to@pp@neutr@l@left%
16693     \n@to@pp@neutr@l@bottom%
16694     \n@to@pp@neutr@l@right%
16695   }
16696   \behindforegroundpath{%

```



```

16697 \n@to@pp@neutr@l@init%
16698 \n@to@pp@neutr@l@nw
16699 \n@to@pp@neutr@l@left%
16700 \n@to@pp@neutr@l@bottom%
16701 \n@to@pp@neutr@l@right%
16702 \pgfusepath{stroke}%
16703 }
16704 }

```

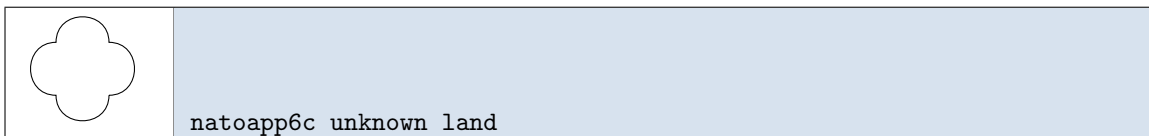
5.6.10 ‘Unknown’ node shapes

Macro to define unknown path elements

```

16705 \def\n@to@pp@unknown@init{%
16706 \def\n@to@pp@unknown@top{%
16707 \innernortheast \wg@tmpa=\pgf@x%
16708 \cntrlnortheast \wg@tmpb=\pgf@x%
16709 \pgfpathcurveto{%
16710 \pgfqpoint{ \wg@tmpa}{\wg@tmpb}}{%
16711 \pgfqpoint{-\wg@tmpa}{\wg@tmpb}}{%
16712 \pgfqpoint{-\wg@tmpa}{\wg@tmpa}}}
16713 \def\n@to@pp@unknown@left{%
16714 \innernortheast \wg@tmpa=\pgf@x%
16715 \cntrlnortheast \wg@tmpb=\pgf@x%
16716 \pgfpathcurveto{%
16717 \pgfqpoint{-\wg@tmpb}{ \wg@tmpa}}{%
16718 \pgfqpoint{-\wg@tmpb}{-\wg@tmpa}}{%
16719 \pgfqpoint{-\wg@tmpa}{-\wg@tmpa}}}
16720 \def\n@to@pp@unknown@bottom{%
16721 \innernortheast \wg@tmpa=\pgf@x%
16722 \cntrlnortheast \wg@tmpb=\pgf@x%
16723 \pgfpathcurveto{%
16724 \pgfqpoint{-\wg@tmpa}{-\wg@tmpb}}{%
16725 \pgfqpoint{ \wg@tmpa}{-\wg@tmpb}}{%
16726 \pgfqpoint{ \wg@tmpa}{-\wg@tmpa}}}
16727 \def\n@to@pp@unknown@right{%
16728 \innernortheast \wg@tmpa=\pgf@x%
16729 \cntrlnortheast \wg@tmpb=\pgf@x%
16730 \pgfpathcurveto{%
16731 \pgfqpoint{ \wg@tmpb}{-\wg@tmpa}}{%
16732 \pgfqpoint{ \wg@tmpb}{ \wg@tmpa}}{%
16733 \pgfqpoint{ \wg@tmpa}{ \wg@tmpa}}}
16734 }

```



The unknown land command

```

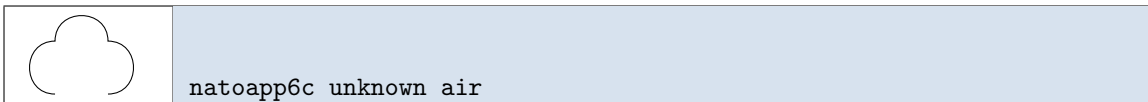
16735 \pgfdeclareshape{natoapp6c unknown land}{%

```

```

16736 \inheritsavedanchors[from=natoapp6c base]
16737 \savedanchor\innernortheast{\pgf@x=.7\n@to@pp@r\pgf@y=.7\n@to@pp@r}
16738 \savedanchor\cntrlnortheast{\pgf@x=1.6\n@to@pp@r\pgf@y=1.6\n@to@pp@r}
16739 \savedanchor\northeast{\pgf@x=1.4\n@to@pp@r\pgf@y=1.4\n@to@pp@r}
16740 \anchor{inner north east}{\innernortheast}
16741 \anchor{inner north west}{\innernortheast\pgf@x=-\pgf@x}
16742 \anchor{inner south west}{\innernortheast\pgf@x=-\pgf@x\pgf@y=-\pgf@y}
16743 \anchor{inner south east}{\innernortheast\pgf@y=-\pgf@y}
16744 \anchor{north east}{\northeast}
16745 \anchor{north west}{\northeast\pgf@x=-\pgf@x}
16746 \anchor{south west}{\northeast\pgf@x=-\pgf@x\pgf@y=-\pgf@y}
16747 \anchor{south east}{\northeast\pgf@y=-\pgf@y}
16748 \anchor{north}{\northeast\pgf@x=0cm}
16749 \anchor{east}{\northeast\pgf@y=0cm}
16750 \anchor{south}{\northeast\pgf@x=0cm\pgf@y=-\pgf@y}
16751 \anchor{west}{\northeast\pgf@x=-\pgf@x\pgf@y=0cm}
16752 \inheritanchor[from=natoapp6c base]{center}
16753 \inheritanchor[from=natoapp6c base]{upper}
16754 \inheritanchor[from=natoapp6c base]{lower}
16755 \inheritanchor[from=natoapp6c base]{left}
16756 \inheritanchor[from=natoapp6c base]{right}
16757 \backgroundpath{%
16758   \n@to@pp@unknown@init
16759   \innernortheast \wg@tmpa=\pgf@x%
16760   \pgfpathmoveto{\pgfqpoint{\wg@tmpa}{-\wg@tmpa}}%
16761   \n@to@pp@unknown@right %
16762   \n@to@pp@unknown@top %
16763   \n@to@pp@unknown@left %
16764   \n@to@pp@unknown@bottom%
16765 }
16766 \behindforegroundpath{%
16767   \n@to@pp@unknown@init
16768   \innernortheast \wg@tmpa=\pgf@x%
16769   \pgfpathmoveto{\pgfqpoint{\wg@tmpa}{-\wg@tmpa}}%
16770   \n@to@pp@unknown@right %
16771   \n@to@pp@unknown@top %
16772   \n@to@pp@unknown@left %
16773   \n@to@pp@unknown@bottom%
16774   \pgfusepath{stroke}}
16775 }

```



The unknown air command. To consider: Should clipping path extend below the actual symbol to include that part of the base symbol?

```

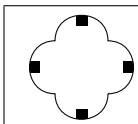
16776 \pgfdeclareshape{natoapp6c unknown air}{%
16777   \inheritsavedanchors[from=natoapp6c unknown land]
16778   \inheritanchor[from=natoapp6c unknown land]{inner north east}
16779   \inheritanchor[from=natoapp6c unknown land]{inner north west}

```

```

16780 \inheritanchor[from=natoapp6c unknown land]{inner south west}
16781 \inheritanchor[from=natoapp6c unknown land]{inner south east}
16782 \inheritanchor[from=natoapp6c unknown land]{north east}
16783 \inheritanchor[from=natoapp6c unknown land]{north west}
16784 \inheritanchor[from=natoapp6c unknown land]{north}
16785 \inheritanchor[from=natoapp6c unknown land]{west}
16786 \inheritanchor[from=natoapp6c unknown land]{east}
16787 \inheritanchor[from=natoapp6c unknown land]{upper}
16788 \inheritanchor[from=natoapp6c unknown land]{lower}
16789 \inheritanchor[from=natoapp6c unknown land]{left}
16790 \inheritanchor[from=natoapp6c unknown land]{right}
16791 \inheritanchor[from=natoapp6c unknown land]{center}
16792 \anchor{south}{\innernortheast\pgf@x=0cm\pgf@y=-\pgf@y}
16793 \anchor{south east}{
16794   \northeast\wg@tmpa=\pgf@x
16795   \innernortheast\pgf@y=-\pgf@y
16796   \pgf@x=\wg@tmpa}
16797 \anchor{south west}{
16798   \northeast\wg@tmpa=\pgf@x
16799   \innernortheast\pgf@y=-\pgf@y
16800   \pgf@x=-\wg@tmpa}
16801 \backgroundpath{%
16802   \n@to@pp@unknown@init
16803   \innernortheast \wg@tmpa=\pgf@x%
16804   \pgfpathmoveto{\pgfqpoint{\wg@tmpa}{-\wg@tmpa}}%
16805   \n@to@pp@unknown@right %
16806   \n@to@pp@unknown@top %
16807   \n@to@pp@unknown@left %
16808   \ifn@to@pp@isclip
16809   \pgfpathlineto{\pgfqpoint{0cm}{-\radius}}
16810   \pgfpathclose
16811   \fi
16812 }
16813 \behindforegroundpath{%
16814   \n@to@pp@unknown@init
16815   \innernortheast \wg@tmpa=\pgf@x%
16816   \pgfpathmoveto{\pgfqpoint{\wg@tmpa}{-\wg@tmpa}}%
16817   \n@to@pp@unknown@right %
16818   \n@to@pp@unknown@top %
16819   \n@to@pp@unknown@left %
16820   \pgfusepath{stroke}%
16821 }
16822 }

```



natoapp6c unknown activity

The unknown activity command. Similar to land command, but with boxes in the the ‘corners’.

```
16823 \pgfdeclareshape{natoapp6c unknown activity}{%
```

```

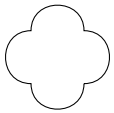
16824 \inheritssavedanchors[from=natoapp6c unknown land]
16825 \inheritanchor[from=natoapp6c unknown land]{inner north east}
16826 \inheritanchor[from=natoapp6c unknown land]{inner north west}
16827 \inheritanchor[from=natoapp6c unknown land]{inner south west}
16828 \inheritanchor[from=natoapp6c unknown land]{inner south east}
16829 \inheritanchor[from=natoapp6c unknown land]{north east}
16830 \inheritanchor[from=natoapp6c unknown land]{north west}
16831 \inheritanchor[from=natoapp6c unknown land]{south east}
16832 \inheritanchor[from=natoapp6c unknown land]{south west}
16833 \inheritanchor[from=natoapp6c unknown land]{north}
16834 \inheritanchor[from=natoapp6c unknown land]{west}
16835 \inheritanchor[from=natoapp6c unknown land]{east}
16836 \inheritanchor[from=natoapp6c unknown land]{south}
16837 \inheritanchor[from=natoapp6c unknown land]{upper}
16838 \inheritanchor[from=natoapp6c unknown land]{lower}
16839 \inheritanchor[from=natoapp6c unknown land]{left}
16840 \inheritanchor[from=natoapp6c unknown land]{right}
16841 \inheritanchor[from=natoapp6c unknown land]{center}
16842 \inheritbackgroundpath[from=natoapp6c unknown land]
16843 \behindforegroundpath{
16844   \n@to@pp@unknown@init
16845   \innernortheast \wg@tmpa=\pgf@x%
16846   \begin{n@to@pp@stroketo@fill}
16847     \pgfpathmoveto{\pgfqpoint{\wg@tmpa}{-\wg@tmpa}}%
16848     \n@to@pp@unknown@right %
16849     \n@to@pp@unknown@top %
16850     \n@to@pp@unknown@left %
16851     \n@to@pp@unknown@bottom%
16852     \pgfusepath{stroke,clip}
16853     %
16854     \northeast\wg@tmpa\pgf@x
16855     \advance\wg@tmpa0.005cm
16856     \wg@tmpb=\wg@tmpa
16857     \advance\wg@tmpb-\n@to@pp@act@w
16858     \wg@tmpc=\n@to@pp@act@w
16859     \divide\wg@tmpc2
16860     %
16861     \pgfpathmoveto{\pgfqpoint{ \wg@tmpc}{\wg@tmpa}}%
16862     \pgfpathlineto{\pgfqpoint{-\wg@tmpc}{\wg@tmpa}}%
16863     \pgfpathlineto{\pgfqpoint{-\wg@tmpc}{\wg@tmpb}}%
16864     \pgfpathlineto{\pgfqpoint{ \wg@tmpc}{\wg@tmpb}}%
16865     \pgfclosepath%
16866     \pgfusepath{fill}
16867     %
16868     \pgfpathmoveto{\pgfqpoint{ \wg@tmpc}{-\wg@tmpb}}%
16869     \pgfpathlineto{\pgfqpoint{-\wg@tmpc}{-\wg@tmpb}}%
16870     \pgfpathlineto{\pgfqpoint{-\wg@tmpc}{-\wg@tmpa}}%
16871     \pgfpathlineto{\pgfqpoint{ \wg@tmpc}{-\wg@tmpa}}%
16872     \pgfclosepath%
16873     \pgfusepath{fill}
16874     %
16875     \pgfpathmoveto{\pgfqpoint{ \wg@tmpa}{ \wg@tmpc}}%
16876     \pgfpathlineto{\pgfqpoint{ \wg@tmpb}{ \wg@tmpc}}%

```

```

16877 \pgfpathlineto{\pgfqpoint{ \wg@tmpb}{-\wg@tmpc}}%
16878 \pgfpathlineto{\pgfqpoint{ \wg@tmpa}{-\wg@tmpc}}%
16879 \pgfclosepath%
16880 \pgfusepath{fill}
16881 %
16882 \pgfpathmoveto{\pgfqpoint{-\wg@tmpb}{ \wg@tmpc}}%
16883 \pgfpathlineto{\pgfqpoint{-\wg@tmpa}{ \wg@tmpc}}%
16884 \pgfpathlineto{\pgfqpoint{-\wg@tmpa}{-\wg@tmpc}}%
16885 \pgfpathlineto{\pgfqpoint{-\wg@tmpb}{-\wg@tmpc}}%
16886 \pgfclosepath%
16887 \pgfusepath{fill}
16888 \end{n@to@pp@stroketo@fill}
16889 }
16890 }

```



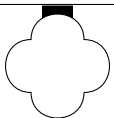
natoapp6c unknown equipment

The unknown equipment command. Same as land command.

```

16891 \pgfdeclareshape{natoapp6c unknown equipment}{%
16892 \inheritssavedanchors[from=natoapp6c unknown land]
16893 \inheritanchor[from=natoapp6c unknown land]{inner north east}
16894 \inheritanchor[from=natoapp6c unknown land]{inner north west}
16895 \inheritanchor[from=natoapp6c unknown land]{inner south west}
16896 \inheritanchor[from=natoapp6c unknown land]{inner south east}
16897 \inheritanchor[from=natoapp6c unknown land]{north east}
16898 \inheritanchor[from=natoapp6c unknown land]{north west}
16899 \inheritanchor[from=natoapp6c unknown land]{south east}
16900 \inheritanchor[from=natoapp6c unknown land]{south west}
16901 \inheritanchor[from=natoapp6c unknown land]{north}
16902 \inheritanchor[from=natoapp6c unknown land]{west}
16903 \inheritanchor[from=natoapp6c unknown land]{east}
16904 \inheritanchor[from=natoapp6c unknown land]{south}
16905 \inheritanchor[from=natoapp6c unknown land]{upper}
16906 \inheritanchor[from=natoapp6c unknown land]{lower}
16907 \inheritanchor[from=natoapp6c unknown land]{left}
16908 \inheritanchor[from=natoapp6c unknown land]{right}
16909 \inheritanchor[from=natoapp6c unknown land]{center}
16910 \inheritbackgroundpath[from=natoapp6c unknown land]
16911 \inheritbehindforegroundpath[from=natoapp6c unknown land]
16912 }

```



natoapp6c unknown installation

The unknown installation command. Similar to land command, but with a ‘hat’ on top. Note, NATO App6(d) makes

the ‘hat’ lower part disconnected from the main symbol. I find that ugly, so we do it like NATO App6(c).

```

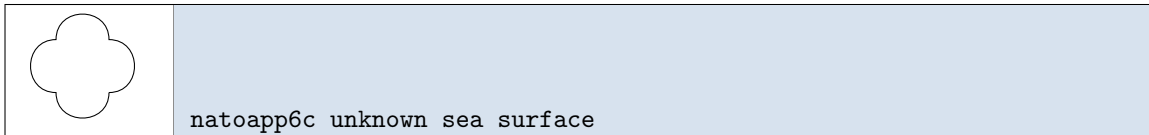
16913 \pgfdeclareshape{natoapp6c unknown installation}{%
16914 \inheritssavedanchors[from=natoapp6c unknown land]
16915 \inheritanchor[from=natoapp6c unknown land]{center}
16916 \inheritanchor[from=natoapp6c unknown land]{inner north east}
16917 \inheritanchor[from=natoapp6c unknown land]{inner north west}
16918 \inheritanchor[from=natoapp6c unknown land]{inner south west}
16919 \inheritanchor[from=natoapp6c unknown land]{inner south east}
16920 \inheritanchor[from=natoapp6c unknown land]{north east}
16921 \inheritanchor[from=natoapp6c unknown land]{north west}
16922 \inheritanchor[from=natoapp6c unknown land]{south east}
16923 \inheritanchor[from=natoapp6c unknown land]{south west}
16924 \inheritanchor[from=natoapp6c unknown land]{north}
16925 \inheritanchor[from=natoapp6c unknown land]{west}
16926 \inheritanchor[from=natoapp6c unknown land]{east}
16927 \inheritanchor[from=natoapp6c unknown land]{south}
16928 \inheritanchor[from=natoapp6c unknown land]{upper}
16929 \inheritanchor[from=natoapp6c unknown land]{lower}
16930 \inheritanchor[from=natoapp6c unknown land]{left}
16931 \inheritanchor[from=natoapp6c unknown land]{right}
16932 \inheritanchor[from=natoapp6c unknown land]{center}
16933 \inheritbackgroundpath[from=natoapp6c unknown land]
16934 \behindforegroundpath{
16935 \n@to@pp@unknown@init
16936 \innernortheast \wg@tmpa=\pgf@x%
16937
16938 \pgfpathmoveto{\pgfqpoint{\wg@tmpa}{-\wg@tmpa}}%
16939 \n@to@pp@unknown@right %
16940 \n@to@pp@unknown@top %
16941 \n@to@pp@unknown@left %
16942 \n@to@pp@unknown@bottom%
16943 \pgfusepath{stroke}
16944 %
16945 \begin{n@to@pp@stroketofill}
16946 \pgfpathmoveto{\pgfqpoint{\wg@tmpa}{\wg@tmpa}}%
16947 \n@to@pp@unknown@top %
16948 %
16949 \northeast\wg@tmpb=\pgf@y\wg@tmpc=\pgf@y%
16950 \advance\wg@tmpb\n@to@pp@inst@h%
16951 \advance\wg@tmpb-0.05cm%
16952 \advance\wg@tmpc-\n@to@pp@inst@h%
16953 \advance\wg@tmpc-\n@to@pp@inst@h%
16954 %
16955 \pgfpathlineto{\pgfqpoint{-\wg@tmpa}{\wg@tmpb}}%
16956 \pgfpathlineto{\pgfqpoint{\wg@tmpa}{\wg@tmpb}}%
16957 \pgfclosepath%
16958 \pgfusepath{clip}%
16959 %
16960 \pgfpathmoveto{\pgfqpoint{\n@to@pp@inst@x}{\wg@tmpb}}%
16961 \pgfpathlineto{\pgfqpoint{-\n@to@pp@inst@x}{\wg@tmpb}}%
16962 \pgfpathlineto{\pgfqpoint{-\n@to@pp@inst@x}{\wg@tmpc}}%
16963 \pgfpathlineto{\pgfqpoint{\n@to@pp@inst@x}{\wg@tmpc}}%
16964 \pgfclosepath%

```

```

16965     \pgfusepath{fill}%
16966     \end{n@to@pp@stroketofill}
16967   }
16968 }

```

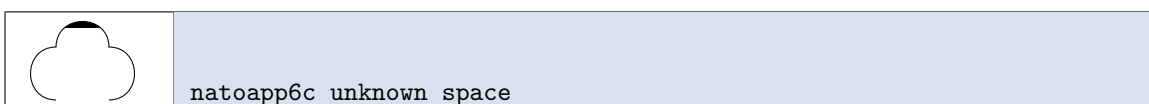


The unknown sea surface command. Same as land command

```

16969 \pgfdeclareshape{natoapp6c unknown sea surface}{%
16970   \inheritsavedanchors[from=natoapp6c unknown land]
16971   \inheritanchor[from=natoapp6c unknown land]{inner north east}
16972   \inheritanchor[from=natoapp6c unknown land]{inner north west}
16973   \inheritanchor[from=natoapp6c unknown land]{inner south west}
16974   \inheritanchor[from=natoapp6c unknown land]{inner south east}
16975   \inheritanchor[from=natoapp6c unknown land]{north east}
16976   \inheritanchor[from=natoapp6c unknown land]{north west}
16977   \inheritanchor[from=natoapp6c unknown land]{south east}
16978   \inheritanchor[from=natoapp6c unknown land]{south west}
16979   \inheritanchor[from=natoapp6c unknown land]{north}
16980   \inheritanchor[from=natoapp6c unknown land]{west}
16981   \inheritanchor[from=natoapp6c unknown land]{east}
16982   \inheritanchor[from=natoapp6c unknown land]{south}
16983   \inheritanchor[from=natoapp6c unknown land]{upper}
16984   \inheritanchor[from=natoapp6c unknown land]{lower}
16985   \inheritanchor[from=natoapp6c unknown land]{left}
16986   \inheritanchor[from=natoapp6c unknown land]{right}
16987   \inheritanchor[from=natoapp6c unknown land]{center}
16988   \inheritbackgroundpath[from=natoapp6c unknown land]
16989   \inheritbehindforegroundpath[from=natoapp6c unknown land]
16990 }

```



The unknown space command. Similar to air command, but with a top bar.

```

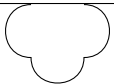
16991 \pgfdeclareshape{natoapp6c unknown space}{%
16992   \inheritsavedanchors[from=natoapp6c unknown air]
16993   \inheritanchor[from=natoapp6c unknown air]{inner north east}
16994   \inheritanchor[from=natoapp6c unknown air]{inner north west}
16995   \inheritanchor[from=natoapp6c unknown air]{inner south west}
16996   \inheritanchor[from=natoapp6c unknown air]{inner south east}
16997   \inheritanchor[from=natoapp6c unknown air]{north east}
16998   \inheritanchor[from=natoapp6c unknown air]{north west}
16999   \inheritanchor[from=natoapp6c unknown air]{south east}
17000   \inheritanchor[from=natoapp6c unknown air]{south west}

```

```

17001 \inheritanchor[from=natoapp6c unknown air]{north}
17002 \inheritanchor[from=natoapp6c unknown air]{west}
17003 \inheritanchor[from=natoapp6c unknown air]{east}
17004 \inheritanchor[from=natoapp6c unknown air]{south}
17005 \inheritanchor[from=natoapp6c unknown air]{upper}
17006 \inheritanchor[from=natoapp6c unknown air]{lower}
17007 \inheritanchor[from=natoapp6c unknown air]{left}
17008 \inheritanchor[from=natoapp6c unknown air]{right}
17009 \inheritanchor[from=natoapp6c unknown air]{center}
17010 \inheritbackgroundpath[from=natoapp6c unknown air]
17011 \behindforegroundpath{%
17012   \n@to@pp@unknown@init
17013   \innernortheast \wg@tmpa=\pgf@x%
17014   \begin{n@to@pp@stroketo@fill}
17015     \pgfpathmoveto{\pgfqpoint{\wg@tmpa}{-\wg@tmpa}}%
17016     \n@to@pp@unknown@right %
17017     \n@to@pp@unknown@top %
17018     \n@to@pp@unknown@left %
17019     \pgfusepath{stroke,clip}%
17020     %
17021     \northeast\wg@tmpa=\pgf@y\wg@tmpb=\pgf@y
17022     \advance\wg@tmpb-\n@to@pp@space@h
17023     %
17024     \pgfpathmoveto{\pgfqpoint{ \radius}{\wg@tmpa}}%
17025     \pgfpathlineto{\pgfqpoint{-\radius}{\wg@tmpa}}%
17026     \pgfpathlineto{\pgfqpoint{-\radius}{\wg@tmpb}}%
17027     \pgfpathlineto{\pgfqpoint{ \radius}{\wg@tmpb}}%
17028     \pgfclosepath%
17029     \pgfusepath{fill}%
17030   \end{n@to@pp@stroketo@fill}
17031 }
17032 }

```



natoapp6c unknown sub surface

The unknown sub surface command.

```

17033 \pgfdeclareshape{natoapp6c unknown sub surface}{%
17034   \inheritsavedanchors[from=natoapp6c unknown land]
17035   \inheritanchor[from=natoapp6c unknown land]{inner north east}
17036   \inheritanchor[from=natoapp6c unknown land]{inner north west}
17037   \inheritanchor[from=natoapp6c unknown land]{inner south west}
17038   \inheritanchor[from=natoapp6c unknown land]{inner south east}
17039   \inheritanchor[from=natoapp6c unknown land]{south east}
17040   \inheritanchor[from=natoapp6c unknown land]{south west}
17041   \inheritanchor[from=natoapp6c unknown land]{south}
17042   \inheritanchor[from=natoapp6c unknown land]{west}
17043   \inheritanchor[from=natoapp6c unknown land]{east}
17044   \inheritanchor[from=natoapp6c unknown land]{upper}
17045   \inheritanchor[from=natoapp6c unknown land]{lower}
17046   \inheritanchor[from=natoapp6c unknown land]{left}

```



```

17047 \inheritanchor[from=natoapp6c unknown land]{right}
17048 \inheritanchor[from=natoapp6c unknown land]{center}
17049 \anchor{north}{\innernortheast\pgf@x=0cm}
17050 \anchor{north east}{
17051   \northeast\wg@tmpa=\pgf@x
17052   \innernortheast\pgf@y=\pgf@y
17053   \pgf@x=\wg@tmpa}
17054 \anchor{north west}{
17055   \northeast\wg@tmpa=\pgf@x
17056   \innernortheast\pgf@y=\pgf@y
17057   \pgf@x=-\wg@tmpa}
17058 \backgroundpath{%
17059   \n@to@pp@unknown@init
17060   \innernortheast \wg@tmpa=\pgf@x%
17061   \pgfpathmoveto{\pgfqpoint{-\wg@tmpa}{\wg@tmpa}}%
17062   \n@to@pp@unknown@left %
17063   \n@to@pp@unknown@bottom %
17064   \n@to@pp@unknown@right %
17065   \ifn@to@pp@isclip
17066   \pgfpathlineto{\pgfqpoint{0cm}{\radius}}
17067   \pgfpathclose
17068   \fi
17069 }
17070 \behindforegroundpath{%
17071   \n@to@pp@unknown@init
17072   \innernortheast \wg@tmpa=\pgf@x%
17073   \pgfpathmoveto{\pgfqpoint{-\wg@tmpa}{\wg@tmpa}}%
17074   \n@to@pp@unknown@left %
17075   \n@to@pp@unknown@bottom %
17076   \n@to@pp@unknown@right %
17077   \pgfusepath{stroke}}
17078 }

```

5.6.11 Echelons

Dimensions

```

17079 \def\n@to@pp@e@y{.12}
17080 \def\n@to@pp@e@yy{.24}

```

Paths as macros

```

17081 \def\n@to@pp@e@d#1{(#1*\n@to@pp@e@y,0)$ circle(0.09)}
17082 \def\n@to@pp@e@b#1{%
17083   ($(#1*\n@to@pp@e@y,-\n@to@pp@e@y)$ -- ($(#1*\n@to@pp@e@y,\n@to@pp@e@y)$)}
17084 \def\n@to@pp@e@x#1{%
17085   ($(-\n@to@pp@e@y,-\n@to@pp@e@y)+(#1*\n@to@pp@e@y,0)$)--
17086   ++(\n@to@pp@e@yy,\n@to@pp@e@yy)
17087   ($(-\n@to@pp@e@y,\n@to@pp@e@y)+(#1*\n@to@pp@e@y,0)$)--
17088   ++(\n@to@pp@e@yy,-\n@to@pp@e@yy)}

```

Pictures

```

17089 \tikzset{

```

```

17090 pics/natoapp6c/s/echelon/.is choice,
17091 pics/natoapp6c/s/echelon/squad/.style={code={
17092   \path[draw,fill=pgfstrokecolor,pic actions]
17093   \foreach \o in {0}{\n@to@pp@e@d{\o}};}},
17094 pics/natoapp6c/s/echelon/section/.style={code={
17095   \path[draw,fill=pgfstrokecolor,pic actions]
17096   \foreach \o in {-1,1}{\n@to@pp@e@d{\o}};}},
17097 pics/natoapp6c/s/echelon/platoon/.style={code={
17098   \path[draw,fill=pgfstrokecolor,pic actions]
17099   \foreach \o in {-2,0,2}{\n@to@pp@e@d{\o}};}},
17100 pics/natoapp6c/s/echelon/company/.style={code={
17101   \path[draw,pic actions]
17102   \foreach \o in {0}{\n@to@pp@e@b{\o}};}},
17103 pics/natoapp6c/s/echelon/battalion/.style={code={
17104   \path[draw,pic actions]
17105   \foreach \o in {-1,1}{\n@to@pp@e@b{\o}};}},
17106 pics/natoapp6c/s/echelon/regiment/.style={code={
17107   \path[draw,pic actions]
17108   \foreach \o in {-2,0,2}{\n@to@pp@e@b{\o}};}},
17109 pics/natoapp6c/s/echelon/brigade/.style={code={
17110   \path[draw,pic actions]
17111   \foreach \o in {0}{\n@to@pp@e@x{\o}};}},
17112 pics/natoapp6c/s/echelon/division/.style={code={
17113   \path[draw,pic actions]
17114   \foreach \o in {-1,1}{\n@to@pp@e@x{\o}};}},
17115 pics/natoapp6c/s/echelon/corps/.style={code={
17116   \path[draw,pic actions]
17117   \foreach \o in {-2,0,2}{\n@to@pp@e@x{\o}};}},
17118 pics/natoapp6c/s/echelon/army/.style={code={
17119   \path[draw,pic actions]
17120   \foreach \o in {-3,-1,1,3}{\n@to@pp@e@x{\o}};}},
17121 pics/natoapp6c/s/echelon/army group/.style={code={
17122   \path[draw,pic actions]
17123   \foreach \o in {-4,-2,0,2,4}{\n@to@pp@e@x{\o}};}},
17124 pics/natoapp6c/s/echelon/theatre/.style={code={
17125   \path[draw,pic actions]
17126   \foreach \o in {-5,-3,-1,1,3,5}{\n@to@pp@e@x{\o}};}},
17127 pics/natoapp6c/s/echelon/command/.style={code={
17128   \path[draw,pic actions]
17129   (-.3,-.1) -- (-.3,.1) (-.4, 0) -- (-.2, 0)
17130   (.3,-.1) -- (.3,.1) (.4, 0) -- (.2, 0)};}},
17131 pics/natoapp6c/s/echelon/dummy/.style={code={%
17132   \path[draw,pic actions] (M.north west) rectangle
17133   ($(M.north east)+(0,.1)$)};}},
17134 }

```

5.6.12 Text on symbols

```

/tikz/natoapp6c/normal text
/tikz/natoapp6c/squashed text
/tikz/natoapp6c/small text
/tikz/natoapp6c/small squashed text

```

NATO App6 does not specify any particular font for text symbols (main, modifiers, or amplifiers) but here we choose to use T_EX Gyro Heros (a Gothic font, i.e., Helvetica-like).

```

17135 \newcommand\n@to@ppfont[2][b]{%
17136   \fontencoding{T1}\fontfamily{qhv}\fontseries{#1}\fontsize{#2}{0}\selectfont}
17137 \tikzset{%
17138   natoapp6c/text/.style={%
17139     shape=rectangle,%
17140     draw=none,%
17141     fill=none,%
17142     transform shape,%
17143     anchor=center},
17144   natoapp6c/normal text/.style={font=\n@to@ppfont{12}},
17145   natoapp6c/squashed text/.style={font=\n@to@ppfont[bc]{12}},
17146   natoapp6c/small text/.style={font=\n@to@ppfont{10}},
17147   natoapp6c/squashed small text/.style={font=\n@to@ppfont[bc]{10}},
17148 }

```

```

\n@to@pp@text@normal
\n@to@pp@text@squashed
\n@to@pp@text@small
\n@to@pp@text@smallsquashed

```

These macros are short-hands for making a node at (0,0) in the local scope.

```

17149 \newcommand\n@to@pp@text@normal[2][ ] {%
17150   \node[natoapp6c/text,natoapp6c/normal text,#1]{#2}}
17151 \newcommand\n@to@pp@text@squashed[2][ ] {%
17152   \node[natoapp6c/text,natoapp6c/squashed text,#1]{#2}}
17153 \newcommand\n@to@pp@text@small[2][ ] {%
17154   \node[natoapp6c/text,natoapp6c/small text,#1]{#2}}
17155 \newcommand\n@to@pp@text@smallsquashed[2][ ] {%
17156   \node[natoapp6c/text,natoapp6c/squashed small text,#1]{#2}}

```

5.6.13 Text natoapp6c namespace

```

/natoapp6c

```

Here, we set up the key path /natoapp6c

```

17157 \def\natoapp@report{}
17158 \tikzset{
17159   /natoapp6c/.search also={/tikz},
17160   /natoapp6c/.cd,
17161 }

```

Choices of faction, command, and echelon

```
natoapp6c/id
natoapp6c/fac
natoapp6c/cmd
natoapp6c/ech
```

The keys `id`, `specfac`, `cmd`, and `ech` are internal keys used to store the choice of faction, command, and echelon, respectively, in.

```
17162 \tikzset{
17163   /natoapp6c/.cd,
17164   id/.store in=\natoapp@id,
17165   fac/.store in=\natoapp@fac,
17166   cmd/.store in=\natoapp@cmd,
17167   ech/.store in=\natoapp@ech,
17168 }
```

```
natoapp6c/faction
```

Choice of \langle *faction* \rangle . This is limited to predefined values. The choice is stored in the key `natoapp6c/fac`.

```
17169 \tikzset{
17170   /natoapp6c/.cd,
17171   faction/.is choice,
17172   faction/none/.code={\let\natoapp@fac\@undefined},
17173   faction/friendly/.style={fac=friendly},
17174   faction/friend/.style={fac=friendly},
17175   faction/hostile/.style={fac=hostile},
17176   faction/enemy/.style={fac=hostile},
17177   faction/neutral/.style={fac=neutral},
17178   faction/unknown/.style={fac=unknown},
17179   faction/?/.style={fac=unknown},
17180   faction/.initial=friendly,
17181 }
```

```
natoapp6c/command
```

Choice of \langle *command* \rangle . This is limited to predefined values. The choice is stored in the key `natoapp6c/cmd`.

```
17182 \tikzset{
17183   /natoapp6c/.cd,
17184   command/.is choice,
17185   command/base/.style={cmd=base},
17186   command/activity/.style={cmd=activity},
17187   command/air/.style={cmd=air},
17188   command/missile/.style={cmd=air},
17189   command/equipment/.style={cmd=equipment},
17190   command/installation/.style={cmd=installation},
17191   command/land/.style={cmd=land},
17192   command/sea surface/.style={cmd=sea surface},
17193   command/space/.style={cmd=space},
17194   command/sub surface/.style={cmd=sub surface},
17195   command/sea mine/.style={cmd=sub surface},
```

```
17196 command/none/.style={cmd=none},
17197 }
```

natoapp6c/echolon

Unit size. The choice is limited to one of the below. The choice is stored in the key `natoapp6c/ech`.

```
17198 \tikzset{
17199 /natoapp6c/.cd,
17200 echolon/.is choice,
17201 echolon/none/.style={ech=},
17202 echolon/team/.style={ech=},
17203 echolon/squad/.style={ech=squad},
17204 echolon/section/.style={ech=section},
17205 echolon/platoon/.style={ech=platoon},
17206 echolon/company/.style={ech=company},
17207 echolon/battalion/.style={ech=battalion},
17208 echolon/regiment/.style={ech=regiment},
17209 echolon/brigade/.style={ech=brigade},
17210 echolon/division/.style={ech=division},
17211 echolon/corps/.style={ech=corps},
17212 echolon/army/.style={ech=army},
17213 echolon/army group/.style={ech=army group},
17214 echolon/theatre/.style={ech=theatre},
17215 echolon/command/.style={ech=command},
17216 echolon/dummy/.style={ech=dummy},
17217 }
```

```
natoapp6c/main
natoapp6c/left
natoapp6c/right
natoapp6c/top
natoapp6c/bottom
natoapp6c/below
natoapp6c/frame
```

```
\natoapp@main
\natoapp@left
\natoapp@right
\natoapp@upper
\natoapp@lower
\natoapp@below
```

The various parts of the symbols. The keys `upper` and `lower` are aliases for `top` and `bottom`, respectively. The choices are stored in macros

```
17218 \newif\ifnatoapp@decoy\natoapp@decoyfalse
17219 \tikzset{
17220 /natoapp6c/.cd,
17221 main/.store in=\natoapp@main, main/.initial=,%
```

```

17222 left/.store in=\natoapp@left, left/.initial=,%
17223 right/.store in=\natoapp@right, right/.initial=,%
17224 upper/.store in=\natoapp@upper, upper/.initial=,%
17225 lower/.store in=\natoapp@lower, lower/.initial=,%
17226 top/.store in=\natoapp@upper,%
17227 bottom/.store in=\natoapp@lower,%
17228 below/.store in=\natoapp@below, below/.initial=,%
17229 frame/.store in=\natoapp@frame, frame/.initial=,%
17230 decoy/.is if=natoapp@decoy,%
17231 }

```

```

/tikz/natoapp6c/main
/tikz/natoapp6c/modifiers
/tikz/natoapp6c/lower
/tikz/natoapp6c/upper
/tikz/natoapp6c/left
/tikz/natoapp6c/right
/tikz/natoapp6c/echelon
/tikz/natoapp6c/below

```

Styles used by the various parts of the symbol.

```

17232 \tikzset{
17233   natoapp6c/parts/.style={
17234     scale line widths,
17235     draw,
17236     shape=rectangle,
17237     transform shape},
17238   natoapp6c/main/.style={natoapp6c/parts},
17239   natoapp6c/modifiers/.style={natoapp6c/parts,scale=.6},
17240   natoapp6c/lower/.style={natoapp6c/parts},
17241   natoapp6c/upper/.style={natoapp6c/parts},
17242   natoapp6c/left/.style={natoapp6c/parts},
17243   natoapp6c/right/.style={natoapp6c/parts},
17244   natoapp6c/echelon/.style={natoapp6c/parts},
17245   natoapp6c/below/.style={natoapp6c/parts}
17246 }

```

5.6.14 The natoapp6c styles

```

/tikz/natoapp6c

```

This key sets up a node to make a NATO App6(c) symbol. The key takes a single argument which in turn must contain key–value pairs in the /natoapp6c (or /tikz) namespace(s). We set the `shape` parameter of the node, and calls the passed keys in the /natoapp6c namespace to set-up elements of the chit.

```

17247 \tikzset{%
17248   natoapp6c/.code={%
17249     \pgfkeys{/tikz/transform shape,/tikz/shape=natoapp6c}
17250     \pgfkeys{/natoapp6c/.cd,#1}}

```

We define a counter to set-up unique names for symbol nodes.

```
17251 \newcounter{natoappid}\setcounter{natoappid}{0}
```

5.6.15 The \natoapp6c shape

```
\ifn@to@pp@below
\ifn@to@pp@mod
```

We define an \if to allow us to detect if something is rendered below the frame

```
17252 \newif\ifn@to@pp@below\n@to@pp@belowfalse%
17253 \newif\ifn@to@pp@mod\n@to@pp@modfalse%
```



natoapp6c

Next, we define the mother shape of NATO App6(c) nodes. This is a composite node with sub-nodes for the various parts (including the frame) of the symbol.

It is quite complex so we will go through the implementation in bits.

First, we make some saved anchors (the centre) and macros (identifier, frame type, and frame options).

```
17254 \pgfdeclareshape{natoapp6c}{%
17255   \savedanchor\center{\pgf@x=0cm\pgf@y=0cm}
17256   \savedmacro\id{%
17257     \n@to@pp@dbg{3}{NATO App6(c) id (set): \meaning\natoapp@id}
17258     \@ifundefined{natoapp@id}{\let\natoapp@id\pgfutil@empty}{}%
17259     \ifx\natoapp@id\pgfutil@empty\relax%
17260       \wg@r@ndom@id%
17261       \edef\id{natoapp6c\wg@uuid}%
17262     \else%
17263       \edef\id{\natoapp@id}%
17264     \fi%
17265     \n@to@pp@dbg{3}{NATO App6(c) id: \meaning\id}}
17266   \savedmacro\frameshape{%
17267     \let\frameshape\pgfutil@empty%
17268     \@ifundefined{natoapp@cmd}{\def\frameshape{base}}{%
17269       \edef\frameshape{\natoapp@cmd}
17270       \@ifundefined{natoapp@fac}{\def\frameshape{base}}{%
17271         \edef\frameshape{\natoapp@fac\space\frameshape}}}
17272   \n@to@pp@dbg{3}{NATO App6(c) frame shape: \meaning\frameshape}}
17273   \savedmacro\frameopt{%
17274     \let\frameopt\pgfutil@empty%
17275     \@ifundefined{natoapp@frame}{}%
17276     \edef\frameopt{\natoapp@frame}}
17277   \n@to@pp@dbg{3}{NATO App6(c) Frame options: \meaning\frameopt}%
17278 }
```

Then we define a number of regular anchors

```
17279 \anchor{center} {\center}
```

The remaining anchors depend on the shape being used. We reference the anchors of the embedded node of the frame.

```

17280 \anchor{north east}{\wg@sub@nchor{M\id}{north east}}
17281 \anchor{north west}{\wg@sub@nchor{M\id}{north west}}
17282 \anchor{south east}{\wg@sub@nchor{M\id}{south east}}
17283 \anchor{south west}{\wg@sub@nchor{M\id}{south west}}
17284 \anchor{north}      {\wg@sub@nchor{M\id}{north}}
17285 \anchor{west}      {\wg@sub@nchor{M\id}{west}}
17286 \anchor{south}     {\wg@sub@nchor{M\id}{south}}
17287 \anchor{east}      {\wg@sub@nchor{M\id}{east}}
17288 \anchor{upper}     {\wg@sub@nchor{M\id}{upper}}
17289 \anchor{lower}     {\wg@sub@nchor{M\id}{lower}}
17290 \anchor{left}      {\wg@sub@nchor{M\id}{left}}
17291 \anchor{right}     {\wg@sub@nchor{M\id}{right}}

```

The next two anchors are a little funny.

```

17292 \anchor{echelon}  {%
17293   \n@to@pp@dbg{3}{NATO App6(c) get echelon anchor}%
17294   \wg@sub@nchor{M\id}{north}%
17295   \wg@tmpa=\n@to@pp@e@y cm%
17296   \advance\pgf@y\wg@tmpa%
17297 }%
17298 \anchor{below}    {%
17299   \n@to@pp@dbg{3}{NATO App6(c) get below anchor}%
17300   \wg@sub@nchor{M\id}{south}
17301   \wg@tmpa=\n@to@pp@e@yy cm%
17302   \advance\pgf@y-\wg@tmpa}

```

All right, so time to make the actual frame. Note that we do this in a ‘behind’ path so we can actually draw stuff. First, we flag that we’re not in a modifier, nor in the ‘below’ part.

```

17303 \behindbackgroundpath{%
17304   \n@to@pp@dbg{3}{NATO App6(c) background path: \meaning\id
17305   ^^J ID:      \meaning\natoapp@id
17306   ^^J Faction: \meaning\natoapp@fac
17307   ^^J Command: \meaning\natoapp@cmd
17308   ^^J Echelon: \meaning\natoapp@ech
17309   ^^J Main:    \meaning\natoapp@main
17310   ^^J Left:    \meaning\natoapp@left
17311   ^^J Right:   \meaning\natoapp@right
17312   ^^J Upper:   \meaning\natoapp@upper
17313   ^^J Lower:   \meaning\natoapp@lower
17314   ^^J Below:   \meaning\natoapp@below
17315   ^^J Shape:   \meaning\frameshape
17316   ^^J Options: \meaning\frameopt}
17317   \natoapp@report
17318   \n@to@pp@modfalse
17319   \n@to@pp@belowfalse

```

If the symbol is empty, then do nothing.

```

17320   \ifx\frameshape\pgfutil@empty%
17321   \n@to@pp@dbg{2}{NATO App6(c) has no frame!}
17322   \else

```


We start a scope because we want to do some clipping here. Then, we use the frame to clip the remaining part. Note that we do this via a node which we give the identifier M. Various elements of the symbol can then refer to this shape to define paths, etc.

```

17323 \begin{scope}
17324 \pgfinterruptboundingbox
17325 %% Clip to shape in scope
17326 %% \message{^^JClipping to NATO App6(c) shape}
17327 \n@to@pp@iscliptrue%
17328 \n@to@pp@dbg{2}{NATO App6(c) frame node M (clip)}
17329 \pgfnode{natoapp6c \frameshape}{center}{M}{\pgfusepath{clip}}
17330 \n@to@pp@isclipfalse%

```

Next, we should see if we need to fill the frame. We do that by expanding the passed `frame` key-values in a scope, and *then* get the fill colour.

```

17331 %% Start new scope including frame key options
17332 \edef\tmp@opt{[\frameopt]}
17333 \expandafter\scope\tmp@opt
17334 % Get fill color {possibly from frame key}
17335 \expandafter\let\expandafter\tmp@fill%
17336 \csname\string\color@pgffillcolor\endcsname%

```

If the fill colour is not `\relax`, then we fill the frame. Note that this is done in the background, so when we draw in the foreground we will render on top of the fill.

```

17337 % Check if we need to fill shape (fill colour us not \relax)
17338 \ifx\tmp@fill\relax\else%
17339 \n@to@pp@dbg{2}{NATO App6(c) frame fill}
17340 \pgfnode{natoapp6c \frameshape}{center}{M}{\pgfusepath{fill}}%
17341 \fi%
17342 % End the fill scope
17343 \endscope%

```

Now we need to render some of the elements of the symbol. We start with the main elements. We can specify many main elements (to make composite symbols).

```

17344 % Render mains
17345 \@ifundefined{natoapp@main}{%
17346 \n@to@pp@dbg{2}{NATO App6(c) mains: \meaning\natoapp@main}
17347 \begin{scope}[natoapp6c/main]
17348 \wg@pic@all{\natoapp@main}{natoapp6c/s/}{M.center}{natoapp6c/main}%
17349 \end{scope}}%
17350 % Modifiers flagged

```

The next thing is to render the various modifiers. We start by flagging this globally.

```

17351 \n@to@pp@modtrue
17352 \n@to@pp@dbg{2}{NATO App6(c) modifiers}

```

Below we render the lower, upper, left, and right elements. This is all done in the same way. Note that the elements positions are dictated by anchors of the frame shape (via shape identifier M).

```

17353 % Render lowers
17354 \@ifundefined{natoapp@lower}{%

```

```

17355     \begin{scope}%
17356         \wg@pic@all{\natoapp@lower}{\natoapp6c/s/}{M.lower}{%
17357             natoapp6c/modifiers,natoapp6c/lower}%
17358     \end{scope}}%
17359 % Render uppers
17360 \@ifundefined{natoapp@upper}{}{%
17361     \begin{scope}[]
17362         \wg@pic@all{\natoapp@upper}{\natoapp6c/s/}{M.upper}{%
17363             natoapp6c/modifiers,natoapp6c/upper}%
17364     \end{scope}}%
17365 % Render lefts
17366 \@ifundefined{natoapp@left}{}{%
17367     \begin{scope}[]
17368         \wg@pic@all{\natoapp@left}{\natoapp6c/s/}{M.left}{%
17369             natoapp6c/modifiers,natoapp6c/left}%
17370     \end{scope}}%
17371 % Render rights
17372 \@ifundefined{natoapp@right}{}{%
17373     \begin{scope}[]
17374         \wg@pic@all{\natoapp@right}{\natoapp6c/s/}{M.right}{%
17375             natoapp6c/modifiers,natoapp6c/right}%
17376     \end{scope}}%
17377 % Modifiers end
17378 \n@to@pp@modfalse%
17379 \endpgfinterruptboundingbox
17380 \end{scope}}%
17381 \fi%
17382 }

```

That concludes rendering most of the symbol. We have not put in the echelon, below element, or drawn the frame yet. That we will do on the foreground path.

In the foreground ‘behind’ path we render the echelon, below element, and draw the frame.

```

17383 \behindforegroundpath{%
17384     \n@to@pp@dbg{2}{NATO App6(c) foreground path:
17385     ^^J Echelon: \meaning\natoapp@ech
17386     ^^J Symbol: \meaning\frameshape
17387     ^^J Below: \meaning\natoapp@below
17388     ^^J Frame: \meaning\frameopt}
17389 %

```

We check if we have a frame. If not, stop.

```

17390 \ifx\frameshape\pgfutil@empty%
17391     \n@to@pp@dbg{2}{NATO App6(c) has no frame shape!}%
17392 \else%

```

We want to draw the rest of the symbol as a part of the frame, so we expand the `frame` options in a scope.

```

17393
17394 \edef\tmp@opt{[\frameopt]}
17395 \expandafter\scope\tmp@opt

```

First thing in this scope is to draw the actual frame. Again, this is done via a node with the right shape. Note that we label this node as $M\langle id \rangle$ so we way refer to it later on.

```
17396 \n@to@pp@dbg{2}{NATO App6(c) inner node 'M\id' ===}
17397 \pgfnode{natoapp6c \frameshape}{center}{M\id}{\pgfusepath{stroke}}
```

If the user gave an echelon, then put that in. Note that echelons are limited to predefined values.

```
17398 % Put in the echelon
17399 \@ifundefined{natoapp@ech}{}{%
17400 \ifx\natoapp@ech\pgfutil@empty\else%
17401 \def\args{echelon=\natoapp@ech}
17402 \expandafter\wg@pic\args@endwg@pic%
17403 {natoapp6c/s/}{$(M.north)+(0,1.2*\n@to@pp@e@y)}{natoapp6c/echelon}
17404 \fi%
17405 }
```

If the user want something under the frame, put that in.

```
17406 % Put in stuff below main
17407 \@ifundefined{natoapp@below}{}{%
17408 \n@to@pp@belowtrue
17409 \begin{scope}
17410 \wg@pic@all{\natoapp@below}{natoapp6c/s/}{%
17411 $(M.south)+(0,-\n@to@pp@e@yy)}{%
17412 natoapp6c/below}%
17413 \end{scope}%
17414 \n@to@pp@belowfalse}
```

If the decoy flag was set, we draw that.

```
17415 \ifnatoapp@decoy%
17416 \scope[dash pattern=on 3\pgflinewidth off 2\pgflinewidth]%
17417 \n@to@pp@dbg{1}{Drawing decoy modifier}%
17418 \wg@sub@nchor{M\id}{north east}
17419 \wg@tmpa=\pgf@x%
17420 \wg@tmpb=\pgf@y%
17421 \pgfpathmoveto{\pgfqpoint{\wg@tmpa}{\wg@tmpb}}%
17422 \wg@tmpc=\n@to@pp@e@yy cm%
17423 \advance\wg@tmpc\n@to@pp@e@yy cm%
17424 \advance\wg@tmpc\wg@tmpb%
17425 \pgfpathlineto{\pgfqpoint{0cm}{\wg@tmpc}}%
17426 \pgfpathlineto{\pgfqpoint{-\wg@tmpa}{\wg@tmpb}}%
17427 \pgfusepath{stroke}%
17428 \endscope%
17429 \fi%
17430 \endscope%
17431 \fi%
17432 }
17433 }
```

That finished the shape for NATO App6(c) symbols. We could stop here, but for convenience we define a wrapper macro.

5.6.16 The `\natoapp` wrapper macro

`\natoapp`

This is a wrapper macro for inserting a node with a NATO App6(c) symbol in it. The syntax of the macro is

```
\natoapp[<natoapp6c options>](<position>)(<identifier>);
```

Note that the trailing semi-colon (;) is optional.

This macro forwards to `\n@toapp`.

```
17434 \newcommand\natoapp[1] [] {%
17435   \n@to@pp@dbg{2}{NATO App6(c) macro -> '#1'}
17436   \tikzset{/natoapp6c/.cd,faction=friendly,command=land}%
17437   \@ifnextchar({\n@toapp{#1}}{\n@toapp{#1}(0,0)}%)
17438 }
```

`\n@toapp`

This macro takes care to parse the location argument — if any. It forwards to `\n@to@pp`.

```
17439 \def\n@toapp#1(#2){%
17440   \n@to@pp@dbg{2}{NATO App6(c) second macro -> '#1', '#2'}
17441   \@ifnextchar({\n@to@pp{#1}{#2}}{\n@to@pp{#1}{#2}()})%
17442 }
```

`\n@to@pp`

This is the main work-horse of the wrapper. It makes a node with the shape `natoapp6c` passing the relevant parameters. The syntax of the macro is

```
17443 \def\n@to@pp#1#2(#3){%
17444   %\let\name\pgfutil@empty%
17445   %\ifx|#3|\else\edef\name{(#3)}\fi%
17446   %\n@to@pp@dbg{3}{Arguments: #1}%
17447   %\edef\args{[natoapp6c=#1],transform shape] \name at (#2) {}}
17448   %\expandafter\node\args;%
17449   \node[draw,transform shape,natoapp6c=#1] (#3) at (#2) {};%
17450   \@ifnextchar;{\@gobble{}}}
```

5.6.17 Macros for markings

`\natoappmark`

A macro for making NATO App6(c) markings.

```
17451 \providecommand\natoappmark[2] [] {%
17452   \tikz[transform shape,
17453     scale=.25,
17454     baseline=(natoapp6c mark.south east),
```

```

17455 natoapp6c mark/.try,
17456 #1]{%1
17457 \node[draw,transform
17458 shape,natoapp6c={faction=friendly,command=land,
17459 main=#2}] (natoapp6c mark){}}
17460 % \natoapp[faction=friendly,command=land,main=#2](0,0)(natoapp6c mark)}}

```

`\echelonmark`

```

17461 \providecommand\echelonmark[2][]{\tikz[transform shape,scale=.5,#1]{%
17462 \pic[scale line widths,line width=1pt] {natoapp6c/s/echelon=#2};}}

```

Some specific NATO App6(c) markers.

```

17463 \DeclareRobustCommand\armouredmark[1][]{\natoappmark[#1]{armoured}}
17464 \DeclareRobustCommand\infantrymark[1][]{\natoappmark[#1]{infantry}}
17465 \DeclareRobustCommand\artillerymark[1][]{%
17466 \natoappmark[#1]{\pgfstrokecolor{artillery}}}
17467 \DeclareRobustCommand\combinedmark[1][]{\natoappmark[#1]{combined arms}}
17468 \DeclareRobustCommand\pgmark[1][]{\natoappmark[#1]{armoured,infantry}}
17469 \DeclareRobustCommand\reconnaissancemark[1][]{\natoappmark[#1]{reconnaissance}}
17470 \DeclareRobustCommand\corpsmark[1][]{\natoappmark[#1]{,echelon=corps}}
17471 \DeclareRobustCommand\divisionmark[1][]{\natoappmark[#1]{,echelon=division}}
17472 \DeclareRobustCommand\brigademark[1][]{\natoappmark[#1]{,echelon=brigade}}
17473 \DeclareRobustCommand\regimentmark[1][]{\natoappmark[#1]{,echelon=regiment}}
17474 \DeclareRobustCommand\sofmark[1][]{\natoappmark[#1]{infantry,text=SOF}}
17475 \DeclareRobustCommand\mountaineermark[1][]{%
17476 \natoappmark[#1]{infantry,lower=mountain}}
17477 \DeclareRobustCommand\airbornemark[1][]{%
17478 \natoappmark[#1]{infantry,lower=airborne}}
17479 \DeclareRobustCommand\amphibiousmark[1][]{\natoappmark[#1]{,lower=amphibious}}
17480 \DeclareRobustCommand\airassaultmark[1][]{%
17481 \natoappmark[#1]{infantry,upper=air assault}}

```

5.6.18 Utility macros used in the symbols

Here, we define the main symbols used when making markers. Since some of these symbols share code, we will create some regular \TeX macros to hold the path definitions. This is by far the simplest way of storing just the path specifications.

`\testpath`

```

17482 \def\testpath#1{\csname n@toapp@#1\endcsname}

```

Corps support for friendly, hostile, neutral, and unknown factions.

```

\n@toapp@corps@sup@friendly
\n@toapp@corps@sup@hostile
\n@toapp@corps@sup@neutral
\n@toapp@corps@sup@unknown

```

```

17483 \def\n@toapp@corps@sup@friendly{(.75,.5)--(.5,0)--(.75,-.5)}
17484 % (M.north east)--(M.east-.25,0)--(M.south east)}
17485 \def\n@toapp@corps@sup@hostile{(.95,.5)--(.45,0)--(.95,-.5)}
17486 \def\n@toapp@corps@sup@neutral{(.5,.5)--(.35,0)--(.5,-.5)}
17487 \def\n@toapp@corps@sup@unknown{(.75,.5)--(.5,0)--(.75,-.5)}

```

Corps support, base

```

\n@toapp@corps@support

```

```

17488 \def\n@toapp@corps@support#1{
17489 \ifx\n@to@pp@friendly#1\n@toapp@corps@sup@friendly%
17490 \else\ifx\n@to@pp@hostile#1\n@toapp@corps@sup@hostile%
17491 \else\ifx\n@to@pp@neutral#1\n@toapp@corps@sup@neutral%
17492 \else\ifx\n@to@pp@unknown#1\n@toapp@corps@sup@unknown%
17493 \fi\fi\fi\fi}

```



natoapp6c/s/TBD

Special placeholder for symbols To Be Done.

```

17494 \tikzset{
17495 natoapp6c/s/TBD/.pic={\n@to@pp@text@normal{\color{magenta}TBD};}
17496 }

```

5.6.19 Symbols used when defining weaponry



natoapp6c/s/weapon

```

17497 \tikzset{
17498 pics/natoapp6c/s/weapon/.is choice,
17499 pics/natoapp6c/s/weapon/base/.style={
17500 code={\path [pic actions] (0,-0.2)--(0,.2);}},
17501 pics/natoapp6c/s/weapon/top/.style={
17502 code={\path [pic actions] (0,.2)--(0,.35);}},
17503 pics/natoapp6c/s/weapon/bottom/.style={
17504 code={\path [pic actions] (0,-.35)--(0,-.2);}},
17505 pics/natoapp6c/s/weapon/rifle/.style={
17506 code={\path [pic actions] (0.2, 0.1)--(0, 0.35)--(-0.2,0.1);}},
17507 pics/natoapp6c/s/weapon/machine gun/.style={
17508 code={\path [pic actions] (0.2, -0.35)--(-0.2, -0.35);}},
17509 pics/natoapp6c/s/weapon/grenade launcher/.style={
17510 code={\path [pic actions] (0,0) circle (0.1);}},
17511 pics/natoapp6c/s/weapon/missile launcher/.style={

```

```

17512     code={%
17513       \path [pic actions] (0.2, 0.15)
17514         to[out=90,in=90,looseness=1.75] (-0.2, 0.15);}},
17515 pics/natoapp6c/s/weapon/non lethal/.style={
17516   code={\path [pic actions] (-.2,.35) -- (.2,.35);}},
17517 pics/natoapp6c/s/weapon/multi fire/.style={
17518   code={\path[pic actions] (.2,-.2)--(.2, .2) (-.2,-.2)--(-.2,0.2);}},
17519 pics/natoapp6c/s/weapon/air defence/.style={
17520   code={%
17521     \path[pic actions] (0.2, -0.4)
17522       to[out=90,in=90,looseness=1.7] (-0.2, -0.4) -- cycle;}},
17523 pics/natoapp6c/s/weapon/anti tank/.style={
17524   code={\path[pic actions] (0.2, -0.4)--(0,-0.2)--(-0.2,-0.4);}},
17525 pics/natoapp6c/s/weapon/full/.style={
17526   code={%
17527     \pic[draw]{natoapp6c/s/weapon=base};
17528     \pic[draw]{natoapp6c/s/weapon=top};
17529     \pic[draw]{natoapp6c/s/weapon=bottom};}},
17530 pics/natoapp6c/s/weapon/.default=full
17531 }

```



natoapp6c/s/type

(Weight) class of weapons: light, medium, heavy

```


17532 \tikzset{
17533   pics/natoapp6c/s/type/.is choice,
17534   pics/natoapp6c/s/type/light/.style={
17535     code={\path [fill=pgfstrokecolor,pic actions] (-0.2, -0.12) rectangle (.2,-.08);}},
17536   pics/natoapp6c/s/type/medium/.style={
17537     code={
17538       \path [fill=pgfstrokecolor,pic actions]
17539         (-0.2, -0.12) rectangle (.2,-.08)
17540         (-0.2, -0.22) rectangle (.2,-.18);}},
17541   pics/natoapp6c/s/type/heavy/.style={
17542     code={
17543       \path [fill=pgfstrokecolor,pic actions]
17544         (-0.2, -0.12) rectangle (.2,-.08)
17545         (-0.2, -0.22) rectangle (.2,-.18)
17546         (-0.2, -0.32) rectangle (.2,-.28);}},
17547   pics/natoapp6c/s/type/vlight/.style={
17548     code={\path [fill=pgfstrokecolor,pic actions]
17549       (-.025,-0.2) rectangle (.025,.2);}},
17550   pics/natoapp6c/s/type/vmedium/.style={
17551     code={\path [fill=pgfstrokecolor,pic actions]
17552       (-.075,-0.2) rectangle (-.025,.2)
17553       (.025, -0.2) rectangle (.075,.2);}},
17554   pics/natoapp6c/s/type/vheavy/.style={
17555     code={\path [fill=pgfstrokecolor,pic actions]
17556       (-.125,-0.2) rectangle (-.075,.2)
17557       (-.025,-0.2) rectangle (.025,.2)
17558       (.075,-0.2) rectangle (.125,.2);}},

```


```
17559 pics/natoapp6c/s/type/.default=light,
17560 }
```

5.6.20 The symbols


Next, we define all the symbols. Note that we define them all as if they are in the main section of the symbol, since top, bottom, and below symbols are automatically scaled.

	natoapp6c/s/above corps support
---	---------------------------------

```
17561 \tikzset{%
17562   natoapp6c/s/above corps support/.pic={%
17563     \edef\n@toapp@path{\n@toapp@corps@support{\natoapp@fac}}
17564     \expandafter\path[draw] \n@toapp@path;
17565     \expandafter\path[draw,xscale=-1] \n@toapp@path;},
17566 }
```

	natoapp6c/s/air assault with organic lift
---	---

```
17567 \tikzset{%
17568   natoapp6c/s/air assault with organic lift/.pic={%
17569     \ifx\n@toapp@hostile\natoapp@fac%
17570     \def\n@toapp@path{(-.75,-.2)--(-.15,-.2)--(0,-.5)--(.15,-.2)--(.75,-.2)}
17571     \else
17572     \def\n@toapp@path{(-.75,-.2)--(-.1,-.2)--(0,-.325)--(.1,-.2)--(.75,-.2)}
17573     \fi
17574     \path[draw] \n@toapp@path;},
17575 }
```

	natoapp6c/s/air decoy
---	-----------------------

```
17576 \tikzset{%
17577   natoapp6c/s/air decoy/.pic={%
17578     \pic[pic actions]{natoapp6c/s/decoy};
17579     \path[fill=pgfstrokelcolor,pic actions] (0.4, -0.2) rectangle (-0.4, -0.15);},
17580 }
```

	natoapp6c/s/air assault
---	-------------------------

```
17581 \tikzset{%
17582   natoapp6c/s/air assault/.pic={%
17583     \path[draw] ([shift={(150:.4)}]0,-.1)--(0,-.1)--([shift={(30:.4)}]0,-.1);},
17584 }
```




natoapp6c/s/air defence

```
17585 \tikzset{%
17586   natoapp6c/s/air defence/.pic={%
17587     \ifx\natoapp@fac\n@to@pp@friendly%
17588     \def\n@toapp@opt{[out=90,in=90,looseness=.675]}%
17589     \else\ifx\natoapp@fac\n@to@pp@neutral%
17590     \def\n@toapp@opt{[out=90,in=90,looseness=1]}%
17591     \else%
17592     \def\n@toapp@opt{[out=45,in=135,looseness=1.5]}%
17593     \fi\fi%
17594     \edef\n@toapp@path{(M.south west) to\n@toapp@opt (M.south east)}
17595     \path[draw] \n@toapp@path;},
17596 }
```



natoapp6c/s/air strip

```
17597 \tikzset{%
17598   natoapp6c/s/air strip/.pic={%
17599     \path[fill=pgfstrokelcolor] (-.4,-.1) rectangle(.4,0);
17600     \path[rotate=45,fill=pgfstrokelcolor] (-.4,0) rectangle (.4,.1);
17601   }
17602 }
```



natoapp6c/s/air traffic

```
17603 \tikzset{%
17604   natoapp6c/s/air traffic/.pic={
17605     \path[fill=pgfstrokelcolor]
17606     (0.33,0.21)--
17607     (0.33, -0.21)--
17608     (-0.33, 0.21)--
17609     (-0.33,-0.21)--
17610     cycle;},
17611 }
```



natoapp6c/s/airship

```
17612 \tikzset{%
17613   natoapp6c/s/airship/.pic={%
17614     % \path (0.45, 0.175) rectangle (-0.45, -0.175);
17615     \path[pic actions] (0, 0) ellipse (0.45 and 0.15);
17616     \begin{scope}
17617       \clip (0, 0) ellipse (0.45 and 0.15) [reverseclip];
17618       \path[pic actions]
17619       (0.2,0)--(0.3,0.175)--(0.4,0.175)--(0.375,0)
17620       --(0.4,-0.175)--(0.3, -0.175)--cycle;
```

```

17621 \end{scope}},
17622 }

```



natoapp6c/s/airborne

```

17623 \tikzset{%
17624   natoapp6c/s/airborne/.pic={%
17625     \ifx\n@to@pp@neutral\natoapp@fac%
17626       \draw (0,-0.05) arc(0:180:0.15);
17627       \draw (0,-0.05) arc(180:0:0.15);
17628     \else%
17629       \draw (0,-0.05) arc(0:180:0.2);
17630       \draw (0,-0.05) arc(180:0:0.2);
17631     \fi},
17632 }

```



natoapp6c/s/ammunition

```

17633 \tikzset{%
17634   natoapp6c/s/ammunition/.pic={\path[draw]
17635     (0.175,-0.175)--(-0.175,-0.175)
17636     (0.125,-0.175)--(0.125, 0) to[out=90,in=90,looseness=2.75]
17637     (-0.125, 0)--(-0.125, -0.175)};},
17638 }

```



natoapp6c/s/amphibious

```

17639 \tikzset{%
17640   natoapp6c/s/amphibious/.pic={
17641     \def\n@to@pp@tmp{0}
17642     \ifn@to@pp@below\def\n@to@pp@tmp{- .1}\fi
17643     \ifn@to@pp@mod
17644       \path[draw,shift={(0,\n@to@pp@tmp)}](1.21,0)
17645       to[out=-90,in=-90,looseness=2.25] (1.05, 0)
17646       to[out= 90,in= 90,looseness=2.25] (0.89, 0)
17647       to[out=-90,in=-90,looseness=2.25] (0.73, 0)
17648       to[out= 90,in= 90,looseness=2.25] (0.57, 0)
17649       to[out=-90,in=-90,looseness=2.25] (0.41, 0)
17650       to[out= 90,in= 90,looseness=2.25] (0.25, 0)
17651       to[out=-90,in=-90,looseness=2.25] (0.08, 0)
17652       to[out= 90,in= 90,looseness=2.25] (-0.08, 0)
17653       to[out=-90,in=-90,looseness=2.25] (-0.25, 0)
17654       to[out= 90,in= 90,looseness=2.25] (-0.41, 0)
17655       to[out=-90,in=-90,looseness=2.25] (-0.57, 0)
17656       to[out= 90,in= 90,looseness=2.25] (-0.73, 0)
17657       to[out=-90,in=-90,looseness=2.25] (-0.89, 0)
17658       to[out= 90,in= 90,looseness=2.25] (-1.05, 0)
17659       to[out=-90,in=-90,looseness=2.25] (-1.21, 0)

```

```

17660 \else
17661 \path[draw,shift={(0,\n@to@pp@tmp)}](0.73, 0)
17662 to[out= 90,in= 90, looseness=2.25] (0.57, 0)
17663 to[out=-90,in=-90, looseness=2.25] (0.41, 0)
17664 to[out= 90,in= 90, looseness=2.25] (0.25, 0)
17665 to[out=-90,in=-90, looseness=2.25] (0.08, 0)
17666 to[out= 90,in= 90, looseness=2.25] (-0.08, 0)
17667 to[out=-90,in=-90, looseness=2.25] (-0.25, 0)
17668 to[out= 90,in= 90, looseness=2.25] (-0.41, 0)
17669 to[out=-90,in=-90, looseness=2.25] (-0.57, 0)
17670 to[out= 90,in= 90, looseness=2.25] (-0.73, 0)
17671 \fi
17672 ;
17673 },
17674 }

```



natoapp6c/s/amphibious warfare ship

```

17675 \tikzset{%
17676 natoapp6c/s/amphibious warfare ship/.pic={
17677 \pic{natoapp6c/s/warfare vessel};
17678 \path[draw,fill=pgfstrokecolor]
17679 (0.15, 0.05) --
17680 (0.15, 0.2) --
17681 (-0.15, 0.2) --
17682 (-0.15, 0.05) -- cycle
17683 (0, -0.2) rectangle (0.25, -0.175);},
17684 }

```



natoapp6c/s/analysis

```

17685 \tikzset{%
17686 natoapp6c/s/analysis/.pic={
17687 \path[pic actions]
17688 (-0.3,-0.2)--(0.3,-0.2)--(0, -0.4)--cycle (0,-0.2)--(0,0.4);},
17689 }

```



natoapp6c/s/arrest

```

17690 \tikzset{%
17691 natoapp6c/s/arrest/.pic={
17692 \path[pic actions] circle(0.2);
17693 \pic[scale=.8]{natoapp6c/s/individual};},
17694 }

```



natoapp6c/s/artillery

```
17695 \tikzset{%
17696   natoapp6c/s/artillery/.pic={
17697     \path[pic actions] circle(0.2);},
17698 }
```



natoapp6c/s/anti tank anti armour

```
17699 \tikzset{%
17700   natoapp6c/s/anti tank anti armour/.pic={%
17701     \ifx\natoapp@fac\n@to@pp@unknown%
17702     \path[draw,pic actions] (225:.5)--(M.north)--(315:.5);
17703     \else%
17704     \path[draw,pic actions] (M.south west)--(M.north)--(M.south east);%
17705     \fi},
17706 }
```



natoapp6c/s/antenna

```
17707 \tikzset{%
17708   natoapp6c/s/antenna/.pic={\path[draw]
17709     (0, -0.3) -- (0, 0.3) (-0.125, 0.3) -- (0, 0.2) -- (0.125, 0.3);},
17710 }
```



natoapp6c/s/armoured

```
17711 \tikzset{%
17712   natoapp6c/s/armoured/.pic={\path[draw]
17713     (-0.275,0.2) arc(90:270:0.2)--(0.275, -0.2) arc(270:450:0.2)--cycle;},
17714 }
```



natoapp6c/s/armoured fighting vehicle

```
17715 \tikzset{%
17716   natoapp6c/s/armoured fighting vehicle/.pic={
17717     \path[fill=pgfstrokecolor] (-.4,-.2) rectangle (-.3,.2) (.3,-.2) rectangle (.4,.2);
17718     \path[pic actions] (-.3,0) -- (0,.2) -- (.3,0) -- (0,-.2) -- cycle;},
17719 }
```



natoapp6c/s/armoured personnel carrier

```
17720 \tikzset{%
```

```

17721 natoapp6c/s/armoured personnel carrier/.pic={
17722   \pic[sub pic actions,draw]{natoapp6c/s/vehicle};
17723   \path[pic actions] (.35,.15)--(0,.3)--(-.35,.15)};
17724 }

```



natoapp6c/s/arctic

```

17725 \tikzset{%
17726   natoapp6c/s/arctic/.pic={
17727     \draw (-0.325,0.135) arc(180:270:0.075 and 0.15) --
17728       +(0.5, 0) arc(-90:0:0.075 and 0.15)};
17729 }

```



natoapp6c/s/automobile

```

17730 \tikzset{%
17731   natoapp6c/s/automobile/.pic={
17732     \begin{scope}
17733       \clip (0.2,-0.15) circle(0.05) (-0.2,-0.15) circle(0.05) [reverseclip];
17734       \path[pic actions]
17735         (0.3, -0.15) --
17736         (-0.3, -0.15) --
17737         (-0.3, 0.025) --
17738         (-0.1, 0.025) --
17739         (-0.1, 0.2) --
17740         ( 0.1, 0.2) --
17741         ( 0.1, 0.025) --
17742         ( 0.3, 0.025) -- cycle
17743         ( 0.075, 0.025) rectangle (-0.075, 0.175);
17744     \end{scope}
17745     \path[pic actions]
17746       ( 0.2, -0.15) circle (0.05)
17747       (-0.2, -0.15) circle (0.05);
17748   },
17749 }

```



natoapp6c/s/balloon

```

17750 \tikzset{%
17751   natoapp6c/s/balloon/.pic={%
17752     \path[pic actions] (0, 0.025) circle (0.175);
17753     \begin{scope}
17754       \clip (0, 0.025) circle (0.175) [reverseclip];
17755       \path[pic actions] (-0.05,0) rectangle (0.05,-0.2)--(0.05,0);
17756     \end{scope}};
17757 }

```



natoapp6c/s/bar

```

17758 \tikzset{
17759   natoapp6c/s/bar/.pic={
17760     \path[fill=pgfstrokecolor] (-.3,-.1) rectangle (.3,.1);},
17761 }

```



natoapp6c/s/base

```

17762 \tikzset{
17763   natoapp6c/s/base/.pic={
17764     \path[pic actions] circle(.2);
17765     \path[pic actions]
17766     (-.2,0) -- (.2,0)
17767     ( 0,-.2) -- (0 ,.2)
17768     (225:.2) -- (45:.2)
17769     (135:.2) -- (-45:.2);
17770   }
17771 }

```



natoapp6c/s/bicycle equipped

```

17772 \tikzset{%
17773   natoapp6c/s/bicycle equipped/.pic={\draw(0,0) circle(.1);},
17774 }

```



natoapp6c/s/boat

```

17775 \tikzset{%
17776   natoapp6c/s/boat/.pic={
17777     \path[pic actions]
17778     (-0.2, -0.2) --
17779     ( 0.2, -0.2) --
17780     ( 0.35, 0.05) --
17781     (-0.15, 0.05) --
17782     (-0.075, 0.2) --
17783     (-0.175, 0.2) --
17784     (-0.25, 0.05) --
17785     (-0.35, 0.05) --
17786     cycle;},
17787 }

```



natoapp6c/s/booby trap

```

17788 \tikzset{%

```

```

17789 natoapp6c/s/booby trap/.pic={
17790   \path[draw] (0, -0.2) ellipse(0.2 and 0.065);
17791   \begin{scope}
17792     \clip (0, -0.2) ellipse(0.2 and 0.065) [reverseclip];
17793     \path[draw] (-0.2, -0.2) -- (0, 0.2) -- (0.2, -0.2);
17794   \end{scope}}},
17795 }

```



natoapp6c/s/bottomed

```

17796 \tikzset{%
17797   natoapp6c/s/bottomed/.pic={
17798     \path[draw,fill=pgfstrokelcolor] (-0.33,.1) rectangle(0.33,.2);},
17799 }

```



natoapp6c/s/bridge

```

17800 \tikzset{%
17801   pics/natoapp6c/s/bridge/.is choice,
17802   pics/natoapp6c/s/bridge/none/.style={
17803     code={\path[pic actions]
17804       (0.35,-0.15)--(0.25,-0.05)--(-0.25,-0.05)--(-0.35,-0.15)
17805       (0.35, 0.15)--(0.25, 0.05)--(-0.25, 0.05)--(-0.35, 0.15);}},
17806   pics/natoapp6c/s/bridge/fixed/.style={
17807     code={\pic{natoapp6c/s/bridge};\pic{natoapp6c/s/type=vlight};}},
17808   pics/natoapp6c/s/bridge/folding/.style={
17809     code={\pic{natoapp6c/s/bridge=none};
17810       \path[draw] (.1,-.2) -- (-.1,-.2) -- (-.1,.2) -- (.1,.2);}},
17811   pics/natoapp6c/s/bridge/hollow/.style={
17812     code={\pic{natoapp6c/s/bridge=none};
17813       \path[draw] (.1,-.2) -- (-.1,-.2) -- (-.1,.2) -- (.1,.2) -- cycle;}},
17814   pics/natoapp6c/s/bridge/.default=none,
17815 }

```



natoapp6c/s/capsule

```

17816 \tikzset{%
17817   natoapp6c/s/capsule/.pic={
17818     \path[pic actions]
17819     ($(0.25, -0.2)!0.1!(0, 0.5)$) --
17820     ($(0.25, -0.2)!0.5!(0, 0.5)$) to[in=75, out=105, looseness=0.75]
17821     ($(0, 0.5)!0.5!(-0.25, -0.2)$) --
17822     ($(0, 0.5)!0.9!(-0.25, -0.2)$) to[in=285, out=255, looseness=0.55]
17823     cycle;},
17824 }

```



natoapp6c/s/carrier

```
17825 \tikzset{%
17826   natoapp6c/s/carrier/.pic={
17827     \pic{natoapp6c/s/warfare vessel};
17828     \path[draw,fill=pgfstrokecolor]
17829       (-0.15, 0.05) --
17830       (-0.15, 0.2) --
17831       (-0.3, 0.2) --
17832       (-0.3, 0.05) -- cycle;},
17833 }
```



natoapp6c/s/chemical biological radiological nuclear

```
17834 \tikzset{%
17835   natoapp6c/s/chemical biological radiological nuclear/.pic={
17836     \path[draw,fill=pgfstrokecolor] (-0.29,0.1) circle(0.096) (0.29,0.1) circle(0.096);
17837     \path[pic actions] (0.15,-0.2) arc(0:90:0.45 and 0.375)
17838     (-0.15,-0.2) arc(180:90:0.45 and 0.375);},
17839 }
```



natoapp6c/s/civilian military cooperation

```
17840 \tikzset{%
17841   natoapp6c/s/civilian military cooperation/.pic={%
17842     \path[draw] (.375,.2)--(-.375,.2)--(-.375,-.025)
17843     to[in=270, out=270, looseness=0.75] (.375,-.025)--cycle;},
17844 }
```



natoapp6c/s/civilian police

```
17845 \tikzset{%
17846   natoapp6c/s/civilian police/.pic={%
17847     \path[draw] (0.225, 0.2)
17848     to[in=270, out=270, looseness=3] (-0.225, 0.2)
17849     to [in=270, out=270, looseness=1.5] (0,0.2)
17850     to [in=270, out=270, looseness=1.5] (0.225, 0.2) -- cycle;},
17851 }
```



natoapp6c/s/civilian telecommunications

```
17852 \tikzset{%
17853   natoapp6c/s/civilian telecommunications/.pic={
17854     \path[draw] (0.075, -0.2){[line join=bevel] -- (0, 0.1) -- (-0.075, -0.2)}
17855     (0.065, -0.05) -- (-0.065, -0.05)
```



```

17856      (-0.325, 0.2) -- (-0.15, 0.125) -- (-0.15, 0.175) -- (0, 0.1) -- (0.15, 0.175) -- (0.15, 0.125) -- (0.3
17857    },
17858 }

```



natoapp6c/s/coast guard vessel

```

17859 \tikzset{%
17860   natoapp6c/s/coast guard vessel/.pic={%
17861     \pic[draw] {natoapp6c/s/ship};
17862     \path[pic actions] (0.15, 0.05) -- (0, -0.2) (0.2, 0.05)--(0.05, -0.2);}
17863 }

```



natoapp6c/s/combat support

```

17864 \tikzset{%
17865   natoapp6c/s/combat support/.pic={%
17866     \path[fill=pgfstrokecolor]
17867     (.15,.2)--(-.15,.2)--(-.15,-.05)--(0,-.2)--(.15,-.05) -- cycle;}
17868 }

```



natoapp6c/s/combatant

```

17869 \tikzset{%
17870   natoapp6c/s/combatant/.pic={%
17871     \begin{scope}[xshift=-4.5, yshift=-5]
17872       \path[pic actions]
17873       (0.3213,0.0534) .. controls (0.3186,0.0295) and (0.3072,0.0136) ..
17874       (0.2925,0.0063) .. controls (0.2777,-0.0010) and (0.2605,0.0001) ..
17875       (0.2461,0.0068) .. controls (0.2317,0.0136) and (0.2198,0.0265) ..
17876       (0.2163,0.0433) .. controls (0.2147,0.0513) and (0.2150,0.0601) ..
17877       (0.2179,0.0694) .. controls (0.1304,0.1129) and (0.0223,0.1961) ..
17878       (0.0013,0.3209) .. controls (0.0601,0.1809) and (0.1770,0.0912) ..
17879       (0.3213,0.0534) -- cycle
17880       (0.2304,0.0633) .. controls (0.2287,0.0570) and (0.2287,0.0513) ..
17881       (0.2298,0.0461) .. controls (0.2323,0.0340) and (0.2409,0.0245) ..
17882       (0.2520,0.0193) .. controls (0.2630,0.0141) and (0.2760,0.0135) ..
17883       (0.2864,0.0186) .. controls (0.2932,0.0220) and (0.2992,0.0277) ..
17884       (0.3033,0.0370) .. controls (0.2845,0.0413) and (0.2597,0.0498) ..
17885       (0.2304,0.0633) -- cycle
17886       (0.1785,0.1137) .. controls (0.2446,0.1612) and (0.3061,0.2300) ..
17887       (0.3214,0.3209) .. controls (0.2864,0.2377) and (0.2310,0.1723) ..
17888       (0.1614,0.1249)
17889       (0.1443,0.1138) .. controls (0.1011,0.0871) and (0.0530,0.0670) ..
17890       (0.0014,0.0535) .. controls (0.0041,0.0295) and (0.0154,0.0136) ..
17891       (0.0302,0.0063) .. controls (0.0449,-0.0010) and (0.0621,0.0001) ..
17892       (0.0765,0.0069) .. controls (0.0909,0.0137) and (0.1028,0.0265) ..
17893       (0.1063,0.0433) .. controls (0.1079,0.0513) and (0.1076,0.0602) ..
17894       (0.1047,0.0694) .. controls (0.1230,0.0785) and (0.1422,0.0893) ..

```

```

17895     (0.1613,0.1019)
17896     (0.0928,0.0461) .. controls (0.0903,0.0340) and (0.0816,0.0245) ..
17897     (0.0706,0.0193) .. controls (0.0596,0.0141) and (0.0466,0.0135) ..
17898     (0.0362,0.0186) .. controls (0.0294,0.0220) and (0.0234,0.0277) ..
17899     (0.0193,0.0370) .. controls (0.0381,0.0413) and (0.0629,0.0498) ..
17900     (0.0921,0.0633) --
17901     (0.0921,0.0633) .. controls (0.0938,0.0570) and (0.0938,0.0512) ..
17902     (0.0928,0.0461) -- cycle;
17903     \end{scope}
17904   },
17905 }

```



natoapp6c/s/combined arms

```

17906 \tikzset{%
17907   natoapp6c/s/combined arms/.pic={%
17908     \path[draw] pic {natoapp6c/s/armoured};
17909     \path[draw] (0.275, 0.2) -- (-0.275, -0.2) (0.275, -0.2) -- (-0.275, 0.2)};
17910 }

```



natoapp6c/s/computer system

```

17911 \tikzset{%
17912   natoapp6c/s/computer system/.pic={
17913     \path[draw,fill=pgfstrokecolor,pic actions]
17914     (-.3, .28) rectangle (.3, .3)
17915     (-.3, -.18) rectangle (.3, -.2)
17916     (-.3, -.18) rectangle (-.3, .28)
17917     (.3, -.18) rectangle (.3, .28)
17918     (-.3, -.3) rectangle (.3, -.28)
17919     (-.05,-.28) rectangle (.05,-.18)};
17920 }

```



natoapp6c/s/control

```

17921 \tikzset{%
17922   natoapp6c/s/control/.pic={
17923     \path[pic actions]
17924     [{Stealth[inset=0pt,scale=0.5]}--{Stealth[inset=0pt,scale=0.5]}]
17925     (0, .2) -- (0, -.2);
17926     \path[pic actions]
17927     [{Stealth[inset=0pt,scale=0.5]}--{Stealth[inset=0pt,scale=0.5]}]
17928     (-.2, 0) -- (.2, 0)};
17929 }

```



natoapp6c/s/convoy

```
17930 \tikzset{%
17931   natoapp6c/s/convoy/.pic={
17932     \path[draw,fill=pgfstrokecolor]
17933       (0.35, 0.175) --
17934       (-0.35, 0.175) --
17935       (-0.35, -0.175) --
17936       (-0.2, -0.175) --
17937       (-0.2, 0.025) --
17938       (0.2, 0.025) --
17939       (0.2, -0.175) --
17940       (0.35, -0.175) -- cycle;},
17941 }
```



natoapp6c/s/corps support

```
17942 \tikzset{%
17943   natoapp6c/s/corps support/.pic={%
17944     \edef\n@toapp@path{\n@toapp@corps@support{\natoapp@fac}}
17945     \expandafter\path[draw] \n@toapp@path;},
17946 }
```



natoapp6c/s/crime

```
17947 \tikzset{%
17948   natoapp6c/s/crime/.pic={\path[draw,dashed] (-.45,.25)--(.45,-.25);},
17949 }
```



natoapp6c/s/decoy

```
17950 \tikzset{%
17951   natoapp6c/s/decoy/.pic={%
17952     \path[fill=pgfstrokecolor,draw,yshift=1.5]
17953       (0.2, 0) -- (0.4, 0.15) -- (0.4, -0.15) -- cycle
17954       (-0.1, 0) -- (0.1, 0.15) -- (0.1, -0.15) -- cycle
17955       (-0.4, 0) -- (-0.2, 0.15) -- (-0.2, -0.15) -- cycle;},
17956 }
```



natoapp6c/s/direct communications

```
17957 \tikzset{%
17958   natoapp6c/s/direct communications/.pic={
17959     \path[draw] (-.35,0) circle(.1) (.35,0) circle(.1);
17960     \pic[fill=pgfstrokecolor]{natoapp6c/s/intermodal};
}
```

```
17961 },
17962 }
```



natoapp6c/s/direction finding

```
17963 \tikzset{%
17964   natoapp6c/s/direction finding/.pic={%
17965     \path[draw] (-.3,.2)--(0,.4)--(.3,.2) (0,.4)--(0,-.4)};
17966 }
```



natoapp6c/s/diving

```
17967 \tikzset{%
17968   pics/natoapp6c/s/diving/.is choice,
17969   pics/natoapp6c/s/diving/none/.style={
17970     code={
17971       \path[pic actions] (0,0) circle(.1) (0,0) circle(.25);
17972       \begin{scope}
17973         \clip (0,0) circle(.25) [reverseclip];
17974         \path[pic actions] (-.3,-.1) rectangle(.3,.1)
17975           (0,0) -- (-45:.4) -- (-135:.4) -- cycle;
17976       \end{scope}}},
17977   pics/natoapp6c/s/diving/military/.style={
17978     code={
17979       \begin{scope}[even odd rule]
17980         \clip (0,0) circle(0.1)[reverseclip];
17981         \pic[fill=pgfstrokecolor]{natoapp6c/s/diving=none};
17982       \end{scope}
17983       \path[fill=pgfstrokecolor] (0,0) circle(0.08);
17984     }},
17985   pics/natoapp6c/s/diving/.default=none,
17986 }
```



natoapp6c/s/drilling

```
17987 \tikzset{%
17988   natoapp6c/s/drilling/.pic={\path[fill=pgfstrokecolor]
17989     (-0.1,-0.2) -- (0.1,-0.2) -- (0.2, 0.2) -- (-0.2, 0.2) -- cycle};
17990 }
```



natoapp6c/s/earthmover

```
17991 \tikzset{%
17992   natoapp6c/s/earthmover/.pic={
17993     \pic{natoapp6c/s/tank};
17994     \path[pic actions] (.3,
```

```

17995     .3)--(.175,.35)--(-.175,.35)--(-.3,.3)
17996     (0,.2)--(0,.35);
17997   },
17998 }

```



natoapp6c/s/electric power

```

17999 \tikzset{%
18000   natoapp6c/s/electric power/.pic={
18001     \path[pic actions]
18002       (-0.05, 0) .. controls(-0.06, 0.14) ..
18003       ( 0, 0.09) .. controls( 0.03, 0.06) ..
18004       ( 0, 0.06) .. controls(-0.03, 0.06) ..
18005       ( 0, 0.09) .. controls( 0.06, 0.14) ..
18006       (0.05, 0)
18007       ($(-55:0.125) + (0, 0.075)$) arc(-55:235:0.125) arc(415:360:0.05) --
18008       +(0, -0.08) arc(180:360:0.05035) --
18009       +(0, 0.08) arc(180:125:0.05) -- cycle;
18010   },
18011 }

```



natoapp6c/s/electronic ranging

```

18012 \tikzset{%
18013   natoapp6c/s/electronic ranging/.pic={%
18014     \path[draw] (135:.225) arc (135:315:.225)--cycle (0,0)--(225:-.225)};
18015 }

```



natoapp6c/s/electronic warfare wide

```

18016 \tikzset{%
18017   natoapp6c/s/electronic warfare wide/.pic={%
18018     % OBS
18019     \node[natoapp6c/text,natoapp6c/normal text] at(-.25,0){E};
18020     \node[natoapp6c/text,natoapp6c/normal text] at(.25,0){W};
18021   },
18022 }

```



natoapp6c/s/engineer

```

18023 \tikzset{%
18024   natoapp6c/s/engineer/.pic={\path[draw]
18025     (.4,-.2)--(.4,.2)--(-.4,.2)--(-.4,-.2) (0,.2)--(0,-.2)};
18026 }

```



natoapp6c/s/enhanced location reporting system

```
18027 \tikzset{%
18028   natoapp6c/s/enhanced location reporting system/.pic={\path[draw]
18029     (0, -0.3) -- (0, 0.3) (-0.2, -.3) -- (0, 0.-.1) -- (0.2, -.3);},
18030 }
```



natoapp6c/s/environmental protection

```
18031 \tikzset{%
18032   natoapp6c/s/environmental protection/.pic={%
18033     \path[draw] (0, 0.2)
18034     -- (0.1, 0.05)
18035     -- (0.05, 0.05)
18036     -- (0.15, -0.05)
18037     -- (0.1, -0.05)
18038     -- (0.2, -0.15)
18039     -- (0.15, -0.15)
18040     -- (0.05, -0.15)
18041     -- (0.05, -0.2)
18042     -- (-0.05, -0.2)
18043     -- (-0.05, -0.15)
18044     -- (-0.2, -0.15)
18045     -- (-0.1, -0.05)
18046     -- (-0.15, -0.05)
18047     -- (-0.05, 0.05)
18048     -- (-0.1, 0.05)
18049     -- cycle;},
18050 }
```



natoapp6c/s/explosion

```
18051 \tikzset{%
18052   natoapp6c/s/explosion/.pic={%
18053     \node [shape=rectangle,
18054     starburst,
18055     draw,
18056     minimum width=0.9cm,
18057     minimum height=0.9cm,
18058     starburst point height=0.25cm,
18059     starburst points=12] {};},
18060 }
```



natoapp6c/s/finance

```
18061 \tikzset{%
18062   natoapp6c/s/finance/.pic={%
```

```

18063 \path[draw] (-.3,-.25) rectangle(.3,0)
18064 (-.3,0) -- ++(60:.28) -- ([shift=(120:.28)].3,0) -- (.3,0);},
18065 }

```



natoapp6c/s/fishing vessel

```

18066 \tikzset{%
18067 natoapp6c/s/fishing vessel/.pic={
18068 \path[pic actions]
18069 (-0.15, -0.2) --
18070 ( 0.15, -0.2) --
18071 ( 0.25, 0.025) --
18072 (-0.05, 0.025) --
18073 (-0.05, 0.125) --
18074 (-0.2, 0.125) --
18075 (-0.2, 0.025) --
18076 (-0.25, 0.025) -- cycle
18077 (0.025, 0.025) -- (0.025, 0.2)
18078 (0.025, 0.025) -- +(45:0.2);},
18079 }

```



natoapp6c/s/fire protection

```

18080 \tikzset{%
18081 natoapp6c/s/fire protection/.pic={%
18082 \path[fill=pgfstrokecolor] (0,0) circle(.2)
18083 (0,0) -- (60:.3) -- (120:.3) -- cycle
18084 (0,0) -- (-30:.3) -- (30:.3) -- cycle
18085 (0,0) -- (150:.3) -- (210:.3) -- cycle
18086 (0,0) -- (240:.3) -- (300:.3) -- cycle;
18087 },
18088 }

```



natoapp6c/s/fixed and rotary wing

```

18089 \tikzset{%
18090 natoapp6c/s/fixed and rotary wing/.pic={%
18091 \path[xscale=.45,yscale=.75,pic actions] pic {natoapp6c/s/fixed wing};
18092 \path[yscale=.45,xscale=.7,rotate=90, pic actions] pic {
18093 natoapp6c/s/rotary wing};
18094 },
18095 }

```



natoapp6c/s/fixed wing

```

18096 \tikzset{%

```

```

18097 natoapp6c/s/fixed wing/.pic={
18098   \path[pic actions]
18099     (-0.36,0.125) arc (77:275:0.075 and 0.125) -- (0,0) -- cycle
18100     ( 0.36,0.125) arc (-275:-77:-0.075 and 0.125) -- (0,0)
18101     --cycle;},
18102 }

```



natoapp6c/s/flame thrower

```

18103 \tikzset{%
18104   natoapp6c/s/flame thrower/.pic={
18105     \path[pic actions]
18106       (-0.1, -0.4) -- (-0.1, 0.3) to[out=90,in=90,looseness=2]
18107       (0.1, 0.3) -- (0.1, 0.275);},
18108 }

```



natoapp6c/s/floating

```

18109 \tikzset{%
18110   natoapp6c/s/floating/.pic={
18111     \path[draw]
18112       (-0.5, 0.100) --
18113       (-0.417, 0.242) --
18114       (-0.333, 0.100) --
18115       (-0.250, 0.242) --
18116       (-0.167, 0.100) --
18117       (-0.083, 0.242) --
18118       (0.0, 0.100) --
18119       (0.083, 0.242) --
18120       (0.167, 0.100) --
18121       (0.250, 0.242) --
18122       (0.333, 0.100) --
18123       (0.417, 0.242) --
18124       (0.5, 0.100);},
18125   pics/natoapp6c/s/surfaced/.style=natoapp6c/s/floating,
18126 }

```



natoapp6c/s/food

```

18127 \tikzset{%
18128   natoapp6c/s/food/.pic={
18129     \path[pic actions]
18130       (0.075, 0.2) to[out=210, in=150, looseness=1]
18131       (0.075, -0.2) to[out=180, in=180, looseness=1.5]
18132       (0.075, 0.2) -- cycle;},
18133 }

```




natoapp6c/s/fuel

```
18134 \tikzset{%
18135   natoapp6c/s/fuel/.pic={
18136     \path[draw] (0,0) -- (135:.3) -- (45:.3) -- cycle (0,0) -- (0,-.3)};
18137 }
```



natoapp6c/s/grenade launcher

```
18138 \tikzset{%
18139   pics/natoapp6c/s/grenade launcher/.is choice,%
18140   pics/natoapp6c/s/grenade launcher/none/.style={%
18141     code={%
18142       \pic[draw]{natoapp6c/s/rifle};
18143       \pic[draw]{natoapp6c/s/weapon=grenade launcher}};,%
18144   pics/natoapp6c/s/grenade launcher/non lethal/.style={
18145     code={%
18146       \pic[draw]{natoapp6c/s/non lethal weapon};
18147       \pic[draw]{natoapp6c/s/weapon=grenade launcher}};},
18148   pics/natoapp6c/s/grenade launcher/.default=none,
18149 }
```



natoapp6c/s/graffiti

```
18150 \tikzset{%
18151   natoapp6c/s/graffiti/.pic={
18152     \path[pic actions]
18153       (0.05, 0.2)
18154       arc (90:270:0.05)
18155       arc (450:270:0.05)
18156       arc (90:270:0.05)
18157       arc (450:270:0.05)
18158       (-0.05, 0.2)
18159       arc (90:270:0.05)
18160       arc (450:270:0.05)
18161       arc (90:270:0.05)
18162       arc (450:270:0.05)};},
18163 }
```



natoapp6c/s/group

```
18164 \tikzset{%
18165   natoapp6c/s/group/.pic={
18166     \path(-.23,.05) pic [draw,scale=.8] {natoapp6c/s/individual};
18167     \path(0,-.05) pic [draw,scale=.8] {natoapp6c/s/individual};
18168     \path(.23,.05) pic [draw,scale=.8] {natoapp6c/s/individual}};},
18169 }
```



natoapp6c/s/gun

```
18170 \tikzset{%
18171   pics/natoapp6c/s/gun/.is choice,
18172   pics/natoapp6c/s/gun/base/.style={
18173     code={
18174       \pic[draw]{natoapp6c/s/weapon=base};
18175       \pic[draw]{natoapp6c/s/weapon=top};
18176       \pic[draw]{natoapp6c/s/weapon=multi fire};}},
18177   pics/natoapp6c/s/gun/air defence/.style={
18178     code={
18179       \pic[draw]{natoapp6c/s/gun/base};
18180       \pic[draw]{natoapp6c/s/weapon=air defence};}},
18181   pics/natoapp6c/s/gun/anti tank/.style={
18182     code={
18183       \pic[draw]{natoapp6c/s/gun/base};
18184       \pic[draw]{natoapp6c/s/weapon/anti tank};}},
18185   pics/natoapp6c/s/gun/direct/.style={
18186     code={
18187       \pic[draw]{natoapp6c/s/gun/base};
18188       \pic[draw]{natoapp6c/s/weapon=bottom};}},
18189   pics/natoapp6c/s/gun/recoilless/.style={
18190     code={
18191       \pic[draw]{natoapp6c/s/rifle};
18192       \pic[yshift=-4,draw]{natoapp6c/s/weapon=multi fire};}},
18193   pics/natoapp6c/s/gun/.default=direct,
18194 }
```



natoapp6c/s/headquarters

```
18195 \tikzset{%
18196   natoapp6c/s/headquarters/.pic={
18197     \path[pic actions] (M.north west) -- ++(0,-.3) --
18198       ([shift=(-90:.3)]M.north east) -- (M.north east) -- cycle;},
18199 }
```



natoapp6c/s/house

```
18200 \tikzset{%
18201   natoapp6c/s/house/.pic={
18202     \path[pic actions]
18203       (-.125,-.175) rectangle (.125,.075)
18204       (-.167,.075) -- (0,.225) -- (.167,.075) -- cycle;},
18205 }
```



natoapp6c/s/howitzer

```
18206 \tikzset{%
18207   natoapp6c/s/howitzer/.pic={
18208     \pic[draw]{natoapp6c/s/weapon=base};
18209     \pic[draw]{natoapp6c/s/weapon=top};
18210     \pic[draw]{natoapp6c/s/weapon=multi fire};
18211     \pic[yshift=-8,draw]{natoapp6c/s/weapon=grenade launcher};
18212   },
18213 }
```



natoapp6c/s/in position

```
18214 \tikzset{%
18215   natoapp6c/s/in position/.pic={
18216     \path[draw,fill=pgfstrokecolor]
18217       (-.3,-.01) rectangle (-.2,.01) (.2,-.01) rectangle (.3,.01);},
18218 }
```



natoapp6c/s/individual

```
18219 \tikzset{%
18220   natoapp6c/s/individual/.pic={
18221     \path[pic actions]
18222       (0,.08) -- (0,-.3) (-.15,0) -- (.15,0) (0,.18) circle(.1);},
18223 }
```



natoapp6c/s/infantry

```
18224 \tikzset{%
18225   natoapp6c/s/infantry/.pic={
18226     \path[draw] (-.75,.5) -- (.75,-.5) (-.75,-.5) -- (.75,.5);},
18227 }
```



natoapp6c/s/intermodal

```
18228 \tikzset{%
18229   natoapp6c/s/intermodal/.pic={
18230     \path[pic actions]
18231       ( 0.15,  0.025) --
18232       (-0.15,  0.025) --
18233       (-0.15,  0.075) --
18234       (-0.25,  0) --
18235       (-0.15, -0.075) --
18236       (-0.15, -0.025) --
```

```

18237 ( 0.15, -0.025) --
18238 ( 0.15, -0.075) --
18239 ( 0.25, 0) --
18240 ( 0.15, 0.075) -- cycle;},
18241 }

```



natoapp6c/s/jagged wave

```

18242 \tikzset{%
18243   natoapp6c/s/jagged wave/.pic={
18244     \draw (0.3, -0.05) --
18245           (0.2, 0.05) --
18246           (0.1, -0.05) --
18247           (0, 0.05) --
18248           (-0.1, -0.05) --
18249           (-0.2, 0.05) --
18250           (-0.3, -0.05);},
18251 }

```



natoapp6c/s/jam

```

18252 \tikzset{%
18253   natoapp6c/s/jam/.pic={%
18254     \path[draw]
18255       (0.75, 0)
18256       to[out=90, in=90, looseness=2.25] ( 0.65, 0)
18257       to[out=-90, in=-90, looseness=2.25] ( 0.55, 0)
18258       to[out=90, in=90, looseness=2.25] ( 0.45, 0)
18259       to[out=-90, in=-90, looseness=2.25] ( 0.35, 0)
18260       to[out=90, in=90, looseness=2.25] ( 0.25, 0)
18261       to[out=-90, in=-90, looseness=2.25] ( 0.15, 0)
18262       to[out=90, in=90, looseness=2.25] ( 0.05, 0)
18263       to[out=-90, in=-90, looseness=2.25] (-0.05, 0)
18264       to[out=90, in=90, looseness=2.25] (-0.15, 0)
18265       to[out=-90, in=-90, looseness=2.25] (-0.25, 0)
18266       to[out=90, in=90, looseness=2.25] (-0.35, 0)
18267       to[out=-90, in=-90, looseness=2.25] (-0.45, 0)
18268       to[out=90, in=90, looseness=2.25] (-0.55, 0)
18269       to[out=-90, in=-90, looseness=2.25] (-0.65, 0)
18270       to[out=90, in=90, looseness=2.25] (-0.75, 0)
18271     ;},
18272 }

```



natoapp6c/s/jamming

```

18273 \tikzset{%
18274   natoapp6c/s/jamming/.pic={%
18275     \path(0,.4) pic {natoapp6c/s/jam} (0,.26) pic {natoapp6c/s/jam};},

```

18276 }



natoapp6c/s/jetski

```
18277 \tikzset{%
18278   natoapp6c/s/jetski/.pic={
18279     \path[pic actions]
18280       ( 0.3, -0.2) --
18281       (-0.3, -0.2) --
18282       (-0.35,-0.1) --
18283       (-0.1,  0.2) --
18284       ( 0,   0.2) --
18285       ( 0,   0.1) --
18286       (-0.05, 0.1) --
18287       (-0.1, -0.05) --
18288       ( 0.3, -0.05) --
18289       ( 0.3, -0.2) -- cycle;
18290 },
18291 }
```



natoapp6c/s/killing

```
18292 \tikzset{%
18293   natoapp6c/s/killing/.pic={\path[draw] (-.45,.25)--(.45,-.25);},
18294 }
```



natoapp6c/s/labour

```
18295 \tikzset{%
18296   natoapp6c/s/labour/.pic={%
18297     \path[draw] (-.15,.2) -- (.15,.2) (0,.2) -- (0,0)
18298     (-.15,0) -- ++(300:.3) -- ++(60:.3) -- cycle;},
18299 }
```



natoapp6c/s/land mine

```
18300 \tikzset{%
18301   pics/natoapp6c/s/land mine/.is choice,
18302   pics/natoapp6c/s/land mine/personnel/.style={
18303     code={\pic[fill=pgfstrokecolor]{natoapp6c/s/land mine=none};
18304           \path[pic actions] (135:0.35) -- (0, 0) -- (45:0.35);}},
18305   pics/natoapp6c/s/land mine/tank/.style={
18306     code={\pic[fill=pgfstrokecolor]{natoapp6c/s/land mine=none};}},
18307   pics/natoapp6c/s/land mine/none/.style={
18308     code={\path[pic actions] (0,0) circle(0.25);}},
18309   pics/natoapp6c/s/land mine/.default=none,
```

18310 }



natoapp6c/s/land missile

```
18311 \tikzset{%
18312   natoapp6c/s/land missile/.pic={\pic{natoapp6c/s/missile launcher};},
18313 }
```



natoapp6c/s/laser

```
18314 \tikzset{%
18315   natoapp6c/s/laser/.pic={
18316     \path[draw,line join=round,line cap=round,pic actions]
18317       ( 0.1, -0.25)  --
18318       (-0.1, -0.225) --
18319       ( 0.1, -0.2)  --
18320       (-0.1, -0.175) --
18321       ( 0.1, -0.15) --
18322       ( 0,   -0.1375) --
18323       ( 0,   -0.0125) --
18324       (-0.1,  0)    --
18325       ( 0.1,  0.025) --
18326       (-0.1,  0.05) --
18327       ( 0.1,  0.075) --
18328       ( 0,   0.0875) --
18329       ( 0,   0.25)
18330       ( 0.1,  0.2)  --
18331       ( 0,   0.25) --
18332       (-0.1, 0.2);},
18333 }
```



natoapp6c/s/launcher

```
18334 \tikzset{%
18335   natoapp6c/s/launcher/.pic={
18336     \path[draw] (-.3,-.2) -- (.3,.2) -- (.3,-.2);},
18337 }
```



natoapp6c/s/laundry

```
18338 \tikzset{%
18339   natoapp6c/s/laundry/.pic={%
18340     \path[draw] (0,-.3) -- (0,.1)
18341       (0,.1) -- ++(150:.25)
18342       (0,.1) -- ++(180:.2)
18343       (0,.1) -- ++(210:.25);},
```

18344 }



natoapp6c/s/machine gun

```
18345 \tikzset{%
18346   natoapp6c/s/machine gun/.pic={%
18347     \pic[draw]{natoapp6c/s/rifle};
18348     \pic[draw]{natoapp6c/s/weapon=machine gun};},
18349 }
```



natoapp6c/s/main gun

```
18350 \tikzset{%
18351   natoapp6c/s/main gun/.pic={
18352     \path[pic actions] (M.north west) -- ++(.25,0) --
18353       ([shift=(0:.25)]M.south west) -- (M.south west) -- cycle;},
18354 }
```



natoapp6c/s/maintenance

```
18355 \tikzset{%
18356   natoapp6c/s/maintenance/.pic={
18357     \path[fill=pgfstrokecolor]
18358       (-.38,.25)
18359       to[out=0,in=90,looseness=1.5] (-.2,.05) -- (.2,.05)
18360       to [out=90,in=180,looseness=1.5] (.38,.25) -- ++(0,-.08)
18361       to [out=180,in=90,looseness=1.5] (.28,0)
18362       to [out=-90,in=180,looseness=1.5] (.38,-.17) -- ++(0,-.08)
18363       to [out=180,in=-90,looseness=1.5] (.2,-.05) -- (-.2,-.05)
18364       to [out=-90,in=0,looseness=1.5] (-.38,-.25) -- ++(0,.08)
18365       to [out=0,in=-90,looseness=1.5] (-.28,0)
18366       to [out=90,in=0,looseness=1.5] (-.38,.17) -- cycle;
18367   },
18368 }
```



natoapp6c/s/medic

```
18369 \tikzset{%
18370   natoapp6c/s/medic/.pic={
18371     \path[pic actions]
18372       (-0.075,-0.2)
18373       --(0.075,-.2)
18374       --(.075,-.075)
18375       --(.2,-.075)
18376       --(.2,.075)
18377       --(.075,.075)
```

```

18378      --(.075,.2)
18379      --(-0.075,.2)
18380      --(-0.075,.075)
18381      --(-.2,.075)
18382      --(-.2,-.075)
18383      --(-.075,-.075)
18384      --cycle;},
18385 }

```



natoapp6c/s/medical

```

18386 \tikzset{%
18387   natoapp6c/s/medical/.pic={\path[draw] (-1,0) -- (1,0) (0,-1) -- (0,1);},
18388 }

```



natoapp6c/s/medical treatment

```

18389 \tikzset{%
18390   natoapp6c/s/medical treatment/.pic={
18391     \path[draw] (0,0) pic {natoapp6c/s/medical}
18392     ([xscale=.5,shift={(0,-.2)}]M.west) -- ([xscale=.5,shift={(0,.2)}]M.west)
18393     ([xscale=.5,shift={(0,-.2)}]M.east) -- ([xscale=.5,shift={(0,.2)}]M.east);},
18394 }

```



natoapp6c/s/mine

```

18395 \tikzset{%
18396   natoapp6c/s/mine/.pic={
18397     \path[fill=pgfstrokecolor,draw] (0,0) ellipse(.2 and .15)
18398     (0,0) -- ++(60:.3)
18399     (0,0) -- ++(90:.3)
18400     (0,0) -- ++(120:.3)
18401     (0,0) -- ++(240:.3)
18402     (0,0) -- ++(270:.3)
18403     (0,0) -- ++(300:.3)
18404     ;},
18405 }

```



natoapp6c/s/mine clearing equipment

```

18406 \tikzset{%
18407   natoapp6c/s/mine clearing equipment/.pic={
18408     \path[pic actions]
18409     (0, 0.2) -- (0, 0) -- (0.35, -0.2) -- (-0.35, -0.2) -- (0, 0);},
18410 }

```




natoapp6c/s/mine warfare vessel

```
18411 \tikzset{%
18412   natoapp6c/s/mine warfare vessel/.pic={%
18413     \pic[scale=.8,fill=pgfstrokecolor,yshift=2.5]{natoapp6c/s/sea mine=top half};
18414     \pic          {natoapp6c/s/warfare vessel};
18415   },
18416 }
```



natoapp6c/s/missile

```
18417 \tikzset{%
18418   natoapp6c/s/missile/.pic={%
18419     \path[pic actions,draw]
18420       (0, 0.3)
18421       -- (-0.05, 0.2)
18422       -- (-0.05, -0.2)
18423       -- (-0.125,-0.3)
18424       -- (-0.125,-0.4)
18425       -- (0, -0.265)
18426       -- (0.125,-0.4)
18427       -- (0.125,-0.3)
18428       -- (0.05,-0.2)
18429       -- (0.05,0.2)
18430       -- cycle;},
18431 }
```



natoapp6c/s/missile launcher

```
18432 \tikzset{%
18433   pics/natoapp6c/s/missile launcher/.is choice,
18434   pics/natoapp6c/s/missile launcher/base/.style={
18435     code={
18436       \pic[draw]{natoapp6c/s/weapon=base};
18437       \pic[draw]{natoapp6c/s/weapon=top};
18438       \pic[draw]{natoapp6c/s/weapon=multi fire};
18439       \pic[draw]{natoapp6c/s/weapon=missile launcher};}},
18440   pics/natoapp6c/s/missile launcher/none/.style={
18441     code={
18442       \pic[draw]{natoapp6c/s/missile launcher=base};
18443       \path[pic actions] (-.2,-.2)--(-.2,-.35) (.2,-.2)--(.2,-.35);}},
18444   pics/natoapp6c/s/missile launcher/air defence/.style={
18445     code={
18446       \pic[draw]{natoapp6c/s/missile launcher=none};
18447       \pic[draw]{natoapp6c/s/weapon=air defence};}},
18448   pics/natoapp6c/s/missile launcher/anti tank/.style={
18449     code={
18450       \pic[draw]{natoapp6c/s/missile launcher=base};
```

```

18451     \pic[draw]{natoapp6c/s/weapon=anti tank};}},
18452 pics/natoapp6c/s/missile launcher/surface to surface/.style={
18453     code={%
18454     \pic[draw]{natoapp6c/s/missile launcher=none};
18455     \pic[draw]{natoapp6c/s/weapon=bottom};
18456     \pic[draw]{natoapp6c/s/weapon=machine gun};
18457     }},
18458 pics/natoapp6c/s/missile launcher/.default=none,
18459 }

```



natoapp6c/s/mobile advisor and support

```

18460 \tikzset{%
18461 natoapp6c/s/mobile advisor and support/.pic={
18462     \path[draw] (-.35,0) circle(.1) (.35,0) circle(.1);
18463     \path[draw,fill=pgfstrokecolor,pic actions]
18464     ( 0.15,  0.025) --
18465     (-0.25,  0.025) --
18466     (-0.25, -0.025) --
18467     ( 0.15, -0.025) --
18468     ( 0.15, -0.075) --
18469     ( 0.25,  0) --
18470     ( 0.15,  0.075) -- cycle;},
18471 }

```



natoapp6c/s/moored

```

18472 \tikzset{%
18473 natoapp6c/s/moored/.pic={
18474     \path[draw] (0,.2) -- (0,-.05) (-.3,-.05) -- (.3,-.05);},
18475 }

```



natoapp6c/s/mortar

```

18476 \tikzset{%
18477 natoapp6c/s/mortar/.pic={
18478     \path[draw] (0,-.15) circle(.05) (0,-.1) -- (0,.2)
18479     ([shift=(225:.1)]0,.2) -- (0,.2) -- ([shift=(-45:.1)]0,.2);},
18480 }

```



natoapp6c/s/motorized

```

18481 \tikzset{%
18482 natoapp6c/s/motorized/.pic={\path[draw] (M.north) -- (M.south);},
18483 pics/natoapp6c/s/motorised/.style={natoapp6c/s/motorized},
18484 }

```



natoapp6c/s/mortuary affairs

```
18485 \tikzset{%
18486   natoapp6c/s/mortuary affairs/.pic={
18487     \path[draw] (-.1,-.2) rectangle (.1,.2)
18488       (0,-.17) -- (0,.17) (-.07,.1) -- (.07,.1)};},
18489 }
```



natoapp6c/s/mountain

```
18490 \tikzset{%
18491   natoapp6c/s/mountain/.pic={
18492     \path[draw,fill=pgfstrokecolor] (0,.2) -- ++(-60:.7) -- ++(180:.7) -- cycle;
18493   },
18494 }
```



natoapp6c/s/naval

```
18495 \tikzset{%
18496   natoapp6c/s/naval/.pic={
18497     \def\arrow{(0,0) -- (-.02,0) -- ++(60:.04) -- ++(-60:.04) -- cycle}
18498     \begin{scope}[pic actions]
18499       \path[draw]
18500         (0,.13) circle (.08) (-.2,.04) -- (.2,.04) (0,.04)
18501         -- (0,-.25) (210:.25) arc (210:340:.25);
18502       \path[draw,shift=(210:.25),rotate=30] \arrow;
18503       \path[draw,shift=(340:.25),rotate=-30] \arrow;
18504     \end{scope}};},
18505 }
```



natoapp6c/s/navigation

```
18506 \tikzset{%
18507   natoapp6c/s/navigation/.pic={
18508     \path[draw]
18509       (.17,-.2) -- (0,.2) -- (-.17,-.2)
18510       ($(-180:.17)+(0,.05)$) arc[radius=.17,start angle=-180,end angle=0]};},
18511 }
```



natoapp6c/s/navy task

```
18512 \tikzset{%
18513   natoapp6c/s/navy task/.pic={
18514     \path[pic actions]
```

```

18515      (-0.25, -0.2) -- (-0.25, 0.1) -- (-0.15, 0.2)
18516      ( 0.25, -0.2) -- ( 0.25, 0.1) -- ( 0.15, 0.2);},
18517 }


```

	natoapp6c/s/non combatant
--	---------------------------

```

18518 \tikzset{%
18519   natoapp6c/s/non combatant/.pic={
18520     \path[draw,fill=pgfstrokecolor]
18521     (-0.25, -0.2) --
18522     (-0.25, 0.05) --
18523     (-0.15, 0.05) --
18524     (-0.15, 0.2) --
18525     (0.15, 0.2) --
18526     (0.15, 0.05) --
18527     (0.25, 0.05) --
18528     (0.25, -0.2) -- cycle;},
18529 }


```

	natoapp6c/s/non lethal weapon
--	-------------------------------

```

18530 \tikzset{%
18531   natoapp6c/s/non lethal weapon/.pic={%
18532     \pic[draw]{natoapp6c/s/weapon};%
18533     \pic[draw]{natoapp6c/s/weapon=non lethal};},
18534 }

```

	natoapp6c/s/nuclear
--	---------------------

```

18535 \tikzset{%
18536   natoapp6c/s/nuclear/.pic={
18537     \path[fill=pgfstrokecolor,pic actions] (0,0) circle(.05)
18538     (0: .3) arc(0 : 60:.3) -- ( 60:.1) arc( 60: 0: .1) -- cycle
18539     (180:.3) arc(180: 120:.3) -- ( 120:.1) arc( 120: 180:.1) -- cycle
18540     (-60:.3) arc(-60:-120:.3) -- (-120:.1) arc(-120:-60: .1) -- cycle;
18541   },
18542 }

```

	natoapp6c/s/observer
--	----------------------

```

18543 \tikzset{%
18544   natoapp6c/s/observer/.pic={
18545     \path[pic actions] (0.25,-.2)--(-.25,-.2)--(0,.2)--cycle;},
18546 }

```



natoapp6c/s/orbiter shuttle

```
18547 \tikzset{%
18548   natoapp6c/s/orbiter shuttle/.pic={
18549     \path[pic actions]
18550       ($(0, 0.3)!0.35!(0.125, -0.15)$) --
18551       (0.125, -0.15) -- (-0.125, -0.15) --
18552       ($(-0.125, -0.15)!0.65!(0, 0.3)$)
18553       to[in=105, out=75] cycle
18554       (0, -0.20) -- (0, -0.15); },
18555 }
```



natoapp6c/s/ordnance

```
18556 \tikzset{%
18557   natoapp6c/s/ordnance/.pic={
18558     \path[draw] (0,0) ellipse(.2 and .15);
18559     \begin{scope}
18560       \clip (0,0) ellipse(.2 and .15) [reverseclip];
18561       \path[draw] (0,0) -- ++(50:.3)
18562         (0,0) -- ++(70:.3)
18563         (0,0) -- ++(110:.3)
18564         (0,0) -- ++(130:.3)
18565         ;
18566     \end{scope}},
18567 }
```



natoapp6c/s/organisation

```
18568 \tikzset{%
18569   pics/natoapp6c/s/organisation/.style={natoapp6c/s/group},
18570 }
```



natoapp6c/s/over snow

```
18571 \tikzset{%
18572   natoapp6c/s/over snow/.pic={
18573     \ifn@to@pp@below%
18574       \draw ([shift={(-.15,.15)}]M.south west) to[in=180, out=270]
18575         ++(.15,-.15) -- (M.south east);
18576     \else%
18577       \draw ([shift={(.3,.1)}]M.west) to[in=180, out=-90]
18578         ([shift={(.5,-.1)}]M.west) --
18579         ([shift={(-.3,-.1)}]M.east);
18580     \fi},
18581 }
```



natoapp6c/s/pack animal

```
18582 \tikzset{%
18583   natoapp6c/s/pack animal/.pic={
18584     \def\n@to@pp@tmp{0}
18585     \ifn@to@pp@below\def\n@to@pp@tmp{-0.15}\fi
18586     \path[draw,shift={(0,\n@to@pp@tmp)}]
18587       (-0.3,-0.15) -- (-0.15,0.15) -- (0,-0.15) -- (0.15,0.15) -- (0.3,-0.15);},
18588 }
```



natoapp6c/s/patrol

```
18589 \tikzset{%
18590   natoapp6c/s/patrol/.pic={
18591     \pic{natoapp6c/s/warfare vessel};
18592     \path[draw,fill=pgfstrokecolor] (0.125, 0) -- (0, 0.2) -- (-0.125, 0) -- cycle;},
18593 }
```



natoapp6c/s/patrolling

```
18594 \tikzset{%
18595   natoapp6c/s/patrolling/.pic={
18596     % OBS
18597     \path[draw]
18598       (0.25, 0.05) -- (-0.05, 0.05) -- (0.05, -0.05) -- (-0.4, -0.05)
18599       (-0.3, 0) -- (-0.4, -0.05) -- (-0.3, -0.1)
18600     node [natoapp6c/text,natoapp6c/small text,
18601           scale=.5,anchor=west,inner sep=0] at (0.25, 0.05) {P};
18602   },
18603 }
```



natoapp6c/s/physician

```
18604 \tikzset{%
18605   natoapp6c/s/physician/.pic={
18606     \pic{natoapp6c/s/medical};
18607     \path[draw] (0.1, 0.05) -- (-0.1, 0.05);},
18608 }
```



natoapp6c/s/pipeline

```
18609 \tikzset{%
18610   natoapp6c/s/pipeline/.pic={
18611     \path[draw] (-0.15,-0.15) rectangle (0.15,0.15)
18612     (-0.3,.1) -- (-0.15,.1) (-0.3,-0.1) -- (-0.15,-0.1)
```

```

18613 (.3,.1) -- (.15,.1) (.3,-.1) -- (.15,-.1)
18614 (-.05,.15) rectangle (.05,.25) (-.1,.25) rectangle (.1,.30);},
18615 }

```



natoapp6c/s/poisoning

```

18616 \tikzset{%
18617   natoapp6c/s/poisoning/.pic={
18618     \path[pic actions] (0, 0.055) circle (0.145)
18619     (0.3, 0) -- (-0.3, -0.2)
18620     (-0.3, 0) -- (0.3, -0.2)};},
18621 }

```



natoapp6c/s/postal

```

18622 \tikzset{%
18623   natoapp6c/s/postal/.pic={
18624     \path[draw] (-.25,.25) -- (.08,.25)
18625     to [out=-90,in=120,looseness=1] (.25,-.25)
18626     to [out=150,in=-90,looseness=1] (-.25,.25);
18627   },
18628 }

```



natoapp6c/s/printed media

```

18629 \tikzset{%
18630   natoapp6c/s/printed media/.pic={
18631     \path[pic actions] (0.2, 0) -- (-0.2, 0)
18632     (0, 0.1) circle (0.085)
18633     (0, -0.1) circle (0.085)};},
18634 }

```



natoapp6c/s/psychological

```

18635 \tikzset{%
18636   natoapp6c/s/psychological/.pic={
18637     \path[pic actions] (-.25,.15) -- (-.1,.15) -- (.1,.25)
18638     -- ++(0,-.5) -- (-.1,-.15) -- (-.25,-.15) -- cycle
18639     (.1,.15) -- (.25,.15)
18640     (.1,.05) -- (.25,.05)
18641     (.1,-.05) -- (.25,-.05)
18642     (.1,-.15) -- (.25,-.15)};},
18643 }

```



natoapp6c/s/quarry

```
18644 \tikzset{%
18645   natoapp6c/s/quarry/.pic={
18646     \path[draw] (-.2,-.2) -- (.18,.18) (.2,-.2) -- (-.18,.18)
18647       (25:.255) arc(25:65:.255)
18648       (115:.255) arc(115:155:.255);
18649     %([shift={(115:.08)}]-.1,.1) arc (115:155:.08)
18650     %([shift={(70:.08)}].1,.1) arc (70:110:.08);
18651   },
18652 }
```



natoapp6c/s/quartermaster

```
18653 \tikzset{%
18654   natoapp6c/s/quartermaster/.pic={
18655     \path[draw] (-.4,.1) -- (.1,.1) (.25,.1) circle(.15)
18656       (-.3,.1) -- (-.3,-.15) (-.15,.1) -- (-.15,-.15)
18657       (-.3,-.08) -- (-.15,-.08);},
18658 }
```



natoapp6c/s/radar

```
18659 \tikzset{%
18660   natoapp6c/s/radar/.pic={%
18661     \path[draw] (-.2,.2) arc (150:300:.25) (-.24,.01) -- (0,.2) --
18662       (0,0) -- (.2,.2);},
18663 }
```



natoapp6c/s/radio

```
18664 \tikzset{%
18665   natoapp6c/s/radio/.pic={%
18666     \path[draw] (-.2,.2) -- (-.13,.25) -- (-.07,.2) -- (0,.25) --
18667       (.07,.2) -- (.13,.25) -- (.2,.2) (0,.25) -- (0,-.05) (0,-.15) circle(.1);},
18668 }
```



natoapp6c/s/radio relay

```
18669 \tikzset{%
18670   natoapp6c/s/radio relay/.pic={%
18671     \path[draw] (-.2,.25) -- (.2,.25) (0,.25) -- (0,-.05) (0,-.15) circle(.1);},
18672 }
```




natoapp6c/s/radio relay line of sight

```

18673 \tikzset{%
18674   natoapp6c/s/radio relay line of sight/.pic={%
18675     \path[draw] (0,0) circle(.2);
18676     \path[fill=pgfstrokecolor] (0,0) -- (45:.2) arc(45:-45:.2) -- cycle;
18677     \path[fill=pgfstrokecolor] (0,0) -- (135:.2) arc(135:225:.2) -- cycle;},
18678 }

```



natoapp6c/s/radio teletype

```

18679 \tikzset{%
18680   natoapp6c/s/radio teletype/.pic={%
18681     \path[draw] (-.2,.25) -- (.2,.25) (-.15,.18) -- (.15,.18)
18682               (0,.25) -- (0,-.25)
18683               ([shift=(30:.1)]0,-.15) arc(30:330:.1);},
18684 }

```



natoapp6c/s/railroad

```

18685 \tikzset{%
18686   natoapp6c/s/railroad/.pic={%
18687     \ifn@to@pp@below%
18688       \path[pic actions] (M.south west) -- (M.south east)
18689         ([shift={(.08,-0.08)}]M.south west) circle(.08)
18690         ([shift={(.24,-0.08)}]M.south west) circle(.08)
18691         ([shift={(-.08,-0.08)}]M.south east) circle(.08)
18692         ([shift={(-.24,-0.08)}]M.south east) circle(.08);
18693     \else
18694       \path[pic actions] (-.45,.08) -- (.45,.08)
18695         (-.37,0) circle(0.08)
18696         (-.21,0) circle(0.08)
18697         (.21,0) circle(0.08)
18698         (.37,0) circle(0.08);
18699     \fi
18700   },
18701 }

```



natoapp6c/s/reconnaissance

```

18702 \tikzset{%
18703   natoapp6c/s/reconnaissance/.pic={%
18704     \path[draw] (M.north east)--(M.south west);},
18705 }

```



natoapp6c/s/recovery unmanned systems

```
18706 \tikzset{%
18707   natoapp6c/s/recovery unmanned systems/.pic={%
18708     \path[draw] (-.5,.15) to [out=-80,in=180] (0,-.15) to
18709     [out=0,in=260] (.5,.15);},
18710 }
```



natoapp6c/s/rifle

```
18711 \tikzset{%
18712   natoapp6c/s/rifle/.pic={%
18713     \pic[draw]{natoapp6c/s/weapon=full};
18714     \pic[draw]{natoapp6c/s/weapon=rifle};},
18715 }
```



natoapp6c/s/rising

```
18716 \tikzset{%
18717   natoapp6c/s/rising/.pic={
18718     \path[draw,fill=pgfstrokecolor] (0, 0.2) -- (0, -0.167)
18719     (0.1, -0.2) -- (-0.1, -0.2) -- (0, 0.0);},
18720 }
```



natoapp6c/s/riverine

```
18721 \tikzset{%
18722   natoapp6c/s/riverine/.pic={%
18723     \ifn@to@pp@below%
18724       \path[pic actions] (M.south west)
18725       to [out=-90,in=-90,looseness=.5] (M.south east) -- cycle;
18726     \else%
18727       \path[pic actions] (-.5,.15) to [out=-80,in=180] (0,-.15) to
18728       [out=0,in=260] (.5,.15) -- cycle;
18729     \fi},
18730 }
```



natoapp6c/s/rocket launcher

```
18731 \tikzset{%
18732   pics/natoapp6c/s/rocket launcher/.is choice,
18733   pics/natoapp6c/s/rocket launcher/base/.style={
18734     code={
18735       \pic[draw]{natoapp6c/s/weapon=base};
18736       \pic[draw]{natoapp6c/s/weapon=rifle};
```

```

18737     \pic[yshift=-4,draw]{natoapp6c/s/weapon=rifle};
18738   }},
18739   pics/natoapp6c/s/rocket launcher/anti tank/.style={
18740     code={
18741       \pic[draw]{natoapp6c/s/rocket launcher=base};
18742       \pic[draw]{natoapp6c/s/weapon=anti tank};
18743     }},
18744   pics/natoapp6c/s/rocket launcher/single/.style={
18745     code={
18746       \pic[draw]{natoapp6c/s/rocket launcher=base};
18747       \pic[draw]{natoapp6c/s/weapon=bottom}}},
18748   pics/natoapp6c/s/rocket launcher/multiple/.style={
18749     code={
18750       \pic[draw]{natoapp6c/s/rocket launcher=single};
18751       \pic[yshift=-6,draw]{natoapp6c/s/weapon=multi fire}}},
18752   pics/natoapp6c/s/rocket launcher/single head/.style={
18753     code={%
18754       \pic[yshift=4,draw]{natoapp6c/s/weapon=rifle}}},
18755   pics/natoapp6c/s/rocket launcher/multiple head/.style={
18756     code={
18757       \pic[yshift=-4,draw]{natoapp6c/s/weapon=rifle};
18758       \pic[yshift=-6,draw]{natoapp6c/s/weapon=rifle};
18759     }},
18760   pics/natoapp6c/s/rocket launcher/.default=single,
18761 }

```



natoapp6c/s/rotary wing

```

18762 \tikzset{%
18763   natoapp6c/s/rotary wing/.pic={
18764     \path[pic actions]
18765       (0.44, 0.15) -- (0.44, -0.15) -- (-0.44, 0.15) -- (-0.44, -0.15) --
18766       cycle;},
18767 }

```



natoapp6c/s/runway

```

18768 \tikzset{%
18769   natoapp6c/s/runway/.pic={%
18770     \path[draw] (-.3,-.15) -- (.3,-.15) (-.2,-.2) -- (.2,.2);},
18771 }

```



natoapp6c/s/sailing boat

```

18772 \tikzset{%
18773   natoapp6c/s/sailing boat/.pic={%
18774     \path[draw]
18775       (-0.15, -0.2) --

```

```

18776 ( 0.15, -0.2) --
18777 ( 0.25, -0.025) --
18778 (-0.25, -0.025) -- cycle
18779 ( 0, -0.025) -- (0, 0.2)
18780 (0.025, 0) -- (0.025, 0.19) -- (0.225, 0) -- cycle;},
18781 }

```



natoapp6c/s/satellite

```

18782 \tikzset{%
18783 pics/natoapp6c/s/satellite/.is choice,
18784 pics/natoapp6c/s/satellite/none/.style={
18785 code={
18786 \iftikz@mode@fill
18787 \def\n@to@pp@next{\path[draw,fill=pgfstrokecolor,pic actions]}
18788 \else
18789 \def\n@to@pp@next{\path[pic actions]}
18790 \fi
18791 \n@to@pp@next
18792 ( 0.45, 0.075) rectangle ( 0.15, -0.075)
18793 ( 0.075, 0.075) rectangle (-0.075, -0.075)
18794 (-0.45, 0.075) rectangle (-0.15, -0.075)
18795 ( 0.15, 0) -- (0.075, 0)
18796 (-0.15, 0) -- (-0.075, 0);
18797 }},
18798 pics/natoapp6c/s/satellite/astronomical/.style={
18799 code={
18800 \begingroup\tikz@picmode
18801 \pic{natoapp6c/s/satellite=none};
18802 \endgroup
18803 \path[pic actions]
18804 (0.04, 0.075) rectangle (-0.04, 0.2)
18805 (0.02, -0.075) rectangle (-0.02, -0.2);}},
18806 pics/natoapp6c/s/satellite/bio/.style={
18807 code={
18808 \begingroup\tikz@picmode
18809 \pic[yshift=-1]{natoapp6c/s/satellite=none};
18810 \endgroup
18811 \path[pic actions]
18812 (-0.075, 0.13) circle (0.07)
18813 ($(-0.075, 0.13) + (60:0.07)$) --
18814 ++(-30:0.22) -- ++(0, -0.025) -- (-0.005, 0.13) -- cycle;
18815 }},
18816 pics/natoapp6c/s/satellite/communications/.style={
18817 code={
18818 \begingroup\tikz@picmode
18819 \pic[yshift=-1]{natoapp6c/s/satellite=none};
18820 \endgroup
18821 \path[pic actions]
18822 (0, 0.075) -- (0, 0.125)
18823 (0, 0.125) arc (270:340:0.25 and 0.1)
18824 (0, 0.125) arc (270:200:0.25 and 0.1);

```

```

18825     }},
18826 pics/natoapp6c/s/satellite/navigation/.style={
18827     code={
18828         \beginpgfgroup\tikz@picmode
18829         \pic[yshift=-3.75,scale=.9]{natoapp6c/s/satellite=none};
18830         \endpgfgroup
18831         \pic[scale=.5,yshift=3.5]{natoapp6c/s/navigation};
18832     }},
18833 pics/natoapp6c/s/satellite/earth observing/.style={
18834     code={
18835         \beginpgfgroup\tikz@picmode
18836         \pic[yshift=3.75, scale=0.9]{natoapp6c/s/satellite=none};
18837         \endpgfgroup
18838         \path[pic actions]
18839         (0, 0.065) -- +(315:0.125)
18840         (0, 0.065) -- +(225:0.125)
18841         (0, -0.12) circle (0.08);
18842     }},
18843 pics/natoapp6c/s/satellite/tether/.style={
18844     code={
18845         \beginpgfgroup\tikz@picmode
18846         \pic[yshift=-3.75, scale=0.9]{natoapp6c/s/satellite=none};
18847         \endpgfgroup
18848         \path[pic actions]
18849         (0, -0.066) -- +(30:0.3)
18850         (0, -0.066) +(30:0.375) circle(0.075);
18851     }},
18852 pics/natoapp6c/s/satellite/small/.style={
18853     code={
18854         \beginpgfgroup\tikz@picmode
18855         \pic[scale=0.6]{natoapp6c/s/satellite=none};
18856         \endpgfgroup
18857         \path[pic actions]
18858         (0.05, 0.2) -- ( 0, 0.1) -- (-0.05, 0.2)
18859         (0.05, -0.2) -- ( 0, -0.1) -- (-0.05, -0.2)
18860         (-0.4, 0.05) -- (-0.3, 0) -- (-0.4, -0.05)
18861         ( 0.4, 0.05) -- ( 0.3, 0) -- ( 0.4, -0.05);
18862     }},
18863 pics/natoapp6c/s/satellite/reconnaissance/.style={
18864     code={
18865         \pic[yshift=-1,fill=pgfstrokecolor]{natoapp6c/s/satellite=none};
18866         \path[pic actions]
18867         (-0.075, -0.05) -- +(250:0.1)
18868         (-0.025, -0.05) -- +(260:0.1)
18869         ( 0.025, -0.05) -- +(280:0.1)
18870         ( 0.075, -0.05) -- +(290:0.1);
18871     }},
18872 pics/natoapp6c/s/satellite/.default=none,
18873 }

```



natoapp6c/s/sea mine

```

18874 \tikzset{%
18875   pics/natoapp6c/s/sea mine/.is choice,
18876   pics/natoapp6c/s/sea mine/top half/.style={
18877     code={\path[draw,join=bevel,pic actions]
18878       (.2,0) arc(0:35:.2 and .175) --
18879       (42:.34 and .3) -- (48:.34 and .3) --
18880       % (($45:.1) + (40:.2)$) -- (($45:.1)+(50:.2)$) --
18881       (55:.2 and .175) arc(50:75:.2 and .175) --
18882       (80:.26 and .23) -- (100:.26 and .23) --
18883       (105:.2 and .175) arc(100:125:.2 and .175) --
18884       (132:.34 and .3) -- (138:.34 and .3) --
18885       %(($135:.1)+(130:.2)$) -- (($135:.1)+(140:.2)$) --
18886       (145:.2 and .175) arc(145:180:.2 and .175);
18887     }},
18888   pics/natoapp6c/s/sea mine/bottom half/.style={
18889     code={
18890       \path[pic actions] (.2,0) arc(0:-180:.2);}},
18891   pics/natoapp6c/s/sea mine/full/.style={
18892     code={
18893       \pic[fill=pgfstrokecolor]{natoapp6c/s/sea mine/top half};
18894       \pic[fill=pgfstrokecolor]{natoapp6c/s/sea mine/bottom half};}},
18895   pics/natoapp6c/s/sea mine/neutralised/.style={
18896     code={
18897       \begin{scope}[even odd rule]
18898         \clip [rotate=42] (-.4,-.015) rectangle (.4,.015) [reverseclip];
18899         \clip [rotate=-42] (-.4,-.015) rectangle (.4,.015) [reverseclip];
18900         \pic {natoapp6c/s/sea mine=full};
18901       \end{scope}
18902     }},
18903   pics/natoapp6c/s/sea mine/neutralized/.style=natoapp6c/s/sea mine/neutralised,
18904   pics/natoapp6c/s/sea mine/.default=full,
18905 }

```



natoapp6c/s/seabed installation

```

18906 \tikzset{%
18907   natoapp6c/s/seabed installation/.pic={%
18908     \path[pic actions]
18909     (-0.25, -0.2) --
18910     ( 0.25, -0.2) --
18911     ( 0.25, -0.075) --
18912     ( 0.05, -0.075) --
18913     ( 0.05,  0.025) --
18914     (-0.125, 0.025) --
18915     (-0.125, 0.2) --
18916     (-0.25, 0.2) -- cycle;},
18917 }

```



natoapp6c/s/search

```
18918 \tikzset{%
18919   natoapp6c/s/search/.pic={%
18920     \path[draw] (-.3,-.2)--(0,-.4)--(.3,-.2) (0,.4)--(0,-.4);},
18921 }
```



natoapp6c/s/searching

```
18922 \tikzset{%
18923   natoapp6c/s/searching/.pic={%
18924     \path[pic actions]
18925       (-0.4, 0)
18926       arc (180:0:0.1)
18927       arc (180:360:0.1)
18928       arc (180:0:0.1)
18929       arc (180:270:0.1) -- +(0.1, 0)
18930       (0.3, -0.05) -- (0.4, -0.1) -- (0.3, -0.15)};},
18931 }
```



natoapp6c/s/semi trailer truck

```
18932 \tikzset{%
18933   natoapp6c/s/semi trailer truck/.pic={
18934     \pic[scale=.75,xshift=-2,draw]{natoapp6c/s/utility vehicle};
18935     \path[pic actions] (0.21, -0.025) -- (0.35, -0.025)
18936       (0.35, 0.05) -- (0.35, -0.1)};},
18937 }
```



natoapp6c/s/sensor

```
18938 \tikzset{%
18939   natoapp6c/s/sensor/.pic={%
18940     \path[fill=pgfstrokecolor] (-.3,0) arc (270:360:.3) arc (180:270:.3) arc
18941       (90:180:.3) arc (0:90:.3)};},
18942 }
```



natoapp6c/s/ship

```
18943 \tikzset{%
18944   natoapp6c/s/ship/.pic={%
18945     \path[pic actions]
18946       (-0.2, -0.2) --
18947       ( 0.2, -0.2) --
18948       ( 0.35, 0.05) --
```

```

18949 ( 0.15, 0.05) --
18950 ( 0.15, 0.2) --
18951 (-0.15, 0.2) --
18952 (-0.15, 0.05) --
18953 (-0.35, 0.05) --
18954 cycle;},
18955 }

```



natoapp6c/s/signal

```

18956 \tikzset{%
18957 natoapp6c/s/signal/.pic={%
18958 \path[draw] (M.north west) -- (0,-.1) -- (0,.1) -- (M.south east);},
18959 }

```



natoapp6c/s/signals intelligence

```

18960 \tikzset{%
18961 natoapp6c/s/signals intelligence/.pic={%
18962 \path[draw] (-.2,.2) -- (-.13,.25) -- (-.07,.2) -- (0,.25) --
18963 (.07,.2) -- (.13,.25) -- (.2,.2) (0,.25) -- (0,-.2);},
18964 }

```



natoapp6c/s/ski

```

18965 \tikzset{%
18966 natoapp6c/s/ski/.pic={
18967 \path[draw] (-.15,-.15) -- (.1,.2) (.15,-.15) -- (-.1,.2)
18968 (-.1,-.2) -- (-.2,-.1)
18969 (.1,-.2) -- (.2,-.1);
18970 },
18971 }

```



natoapp6c/s/sled

```

18972 \tikzset{%
18973 natoapp6c/s/sled/.pic={
18974 \ifn@to@pp@below%
18975 \draw ([shift={(-.15,.15)}]M.south west) to[in=180, out=-90]
18976 ++(.15,-.15) -- (M.south east) to[in=-90, out=0]
18977 ([shift={(.15,.15)}]M.south east);
18978 \else%
18979 \draw ([shift={(.3,.1)}]M.west) to[in=180, out=-90]
18980 ([shift={(.5,-.1)}]M.west) --
18981 ([shift={(-.5,-.1)}]M.east) to[in=-90, out=0]
18982 ([shift={(-.3,.1)}]M.east);


```



```

18983 \fi
18984 },
18985 }


```

 natoapp6c/s/small squashed text

```

18986 \tikzset{%
18987   pics/natoapp6c/s/small squashed text/.style={
18988     code={\n@to@pp@text@smallsquashed{#1}}},
18989 }

```

 natoapp6c/s/small text

```

18990 \tikzset{%
18991   pics/natoapp6c/s/small text/.style={code={\n@to@pp@text@small{#1}}},
18992 }

```

 natoapp6c/s/sniper

```

18993 \tikzset{%
18994   natoapp6c/s/sniper/.pic={%
18995     \path[draw] (-.2,.2)--(-.05,.2) (.05,.2)--(.2,.2) (0,.15)--(0,-.2)};
18996 }


```

 natoapp6c/s/space station

```

18997 \tikzset{%
18998   natoapp6c/s/space station/.pic={
18999     \path[join=bevel,pic actions]
19000     (-80:.15 and .06) -- (0.025, 0.175) arc(0:180:0.025) -- (-100:.15 and .06)
19001     ($(80:.25 and 0.1)+(0,-.0125)$) arc(80:-260:.25 and .1) --
19002     (-260:.15 and .06) arc (-260:80:.15 and .06) -- cycle
19003     (-82:.25 and .1) -- (0.025, -0.175) arc(360:180:0.025) -- (-98:.25 and .1);
19004   },
19005 }

```

 natoapp6c/s/squashed text

```

19006 \tikzset{%
19007   pics/natoapp6c/s/squashed text/.style={code={\n@to@pp@text@squashed{#1}}},
19008 }

```



natoapp6c/s/submarine

```
19009 \tikzset{%
19010   natoapp6c/s/submarine/.pic={
19011     \path[fill=pgfstrokecolor,pic actions]
19012       (0.4, 0) --
19013       (0.25, 0.15) --
19014       (-0.25, 0.15) --
19015       (-0.4, 0) --
19016       (-0.25, -0.15) --
19017       (0.25, -0.15) -- cycle;},
19018 }
```



natoapp6c/s/submersible

```
19019 \tikzset{%
19020   natoapp6c/s/submersible/.pic={
19021     \path[pic actions]
19022       ($(0, -0.05) + (106.6:0.35 and 0.15)$)
19023     arc (106.6:433.4:0.35 and 0.15) |- (0, 0.2) -| cycle;
19024   },
19025 }
```



natoapp6c/s/supply

```
19026 \tikzset{%
19027   natoapp6c/s/supply/.pic={
19028     \path[pic actions]
19029     ($ (M.east) - (0,.25)$ ) -- ($ (M.west) - (0,.25)$ );},
19030 }
```



natoapp6c/s/surface combatant

```
19031 \tikzset{%
19032   natoapp6c/s/surface combatant/.pic={
19033     \pic {natoapp6c/s/warfare vessel};
19034     \path[draw,fill=pgfstrokecolor]
19035       (0.12, 0.05) --
19036       (0.12, 0.14) --
19037       (0.06, 0.14) --
19038       (0.06, 0.2) --
19039       (0.24, 0.2) --
19040       (0.24, 0.272) --
19041       (0.06, 0.272) --
19042       (0.06, 0.35) --
19043       (-0.06, 0.35) --
19044       (-0.06, 0.272) --
```

```

19045 (-0.24, 0.272) --
19046 (-0.24, 0.2) --
19047 (-0.06, 0.2) --
19048 (-0.06, 0.14) --
19049 (-0.12, 0.14) --
19050 (-0.12, 0.05) -- cycle;},
19051 }

```



natoapp6c/s/survey

```

19052 \tikzset{%
19053   natoapp6c/s/survey/.pic={
19054     \path[draw,fill=pgfstrokecolor,pic actions]
19055       (0, -0.1) -- (0, 0.195) -- (0.25, 0.0475) -- cycle;
19056     \path[pic actions] (0.1, -0.2) -- (0, -0.1) -- (-0.1, -0.2);},
19057 }

```



natoapp6c/s/tactical satellite

```

19058 \tikzset{%
19059   natoapp6c/s/tactical satellite/.pic={
19060     \path[fill=pgfstrokecolor,draw]
19061       (-.3,-.2) rectangle(-.15,.2)
19062       (.15,-.2) rectangle( .3,.2)
19063       (-.075,-.15) rectangle (.075,.15)
19064       (-.15,0) -- (.15,0)
19065       (0,-.15) -- (0,-.3);
19066     \path[draw] (-.2,-.35) to [out=40,in=140,looseness=1] (.2,-.35);},
19067 }

```



natoapp6c/s/tank

```

19068 \tikzset{%
19069   natoapp6c/s/tank/.pic={%
19070     \pic[draw]{natoapp6c/s/vehicle};
19071     \path[pic actions] ( 0.35, 0.2) -- (-0.35, 0.2);},
19072 }

```



natoapp6c/s/text

```

19073 \tikzset{%
19074   pics/natoapp6c/s/text/.style={code={%
19075     \n@to@pp@dbg{3}{Text: '#1'}%
19076     \n@to@pp@text@normal{#1};}},
19077 }

```



natoapp6c/s/topographic

```

19078 \tikzset{%
19079   natoapp6c/s/topographic/.pic={
19080     \path[draw] (0,.05) -- (0,.2)
19081       (0,.05) -- (-.1,-.2)
19082       (0,.05) -- (.1,-.2)
19083       (-30:.15) arc[radius=.15,start angle=-30,end angle=-150];},
19084 }

```



natoapp6c/s/torpedo

```

19085 \tikzset{%
19086   natoapp6c/s/torpedo/.pic={
19087     \path[draw,fill=pgfstrokecolor,pic actions]
19088       (-0.35, 0) --
19089       (-0.3, 0.075) --
19090       ( 0.25, 0.075) --
19091       ( 0.35, -0.075) --
19092       ( 0.35, 0.075) --
19093       ( 0.25, -0.075) --
19094       (-0.3, -0.075) -- cycle;},
19095 }

```



natoapp6c/s/towed

```

19096 \tikzset{%
19097   natoapp6c/s/towed/.pic={
19098     \ifn@to@pp@below%
19099       \path[pic actions] (M.south east) -- (M.south west)
19100       ([shift={(.08,0)}]M.south east) circle(.08)
19101       ([shift={(-.08,0)}]M.south west) circle(.08);
19102     \else%
19103       \path[draw] (-.32,0) -- (.32,0) (-.4,0) circle(.08) (.4,0) circle(.08);%
19104     \fi},
19105 }

```



natoapp6c/s/tracked

```

19106 \tikzset{%
19107   natoapp6c/s/tracked/.pic={
19108     \ifn@to@pp@below%
19109       \path[pic actions]
19110       ([shift={(.08,-.16)}]M.south west)
19111       arc [radius=.08,start angle=-90,end angle=-270]
19112       -- ([shift={(-.08,0)}]M.south east)

```

```

19113     arc [radius=.08,start angle=90,end angle=-90]
19114     -- cycle;
19115     \else%
19116     \path[pic actions]
19117     (-.3,-.1) arc [radius=.1,start angle=-90,end angle=-270]
19118     -- (.3,.1) arc [radius=.1,start angle=90,end angle=-90]
19119     -- cycle;
19120     \fi},
19121 }

```



natoapp6c/s/train locomotive

```

19122 \tikzset{%
19123   natoapp6c/s/train locomotive/.pic={
19124     \path[pic actions]
19125     (.35,-.3)--(-.35,-.3)--(-.35,.3)--(0,.3)--(0,0)--(0.35,0)--cycle;},
19126 }

```



natoapp6c/s/transportation

```

19127 \tikzset{%
19128   natoapp6c/s/transportation/.pic={
19129     \path[pic actions] (0,0) circle(.2)
19130     (180:.2) -- (0:.2)
19131     (225:.2) -- (45:.2)
19132     (270:.2) -- (90:.2)
19133     (315:.2) -- (135:.2) ;},
19134 }

```



natoapp6c/s/unexploded ordnance

```

19135 \tikzset{%
19136   natoapp6c/s/unexploded ordnance/.pic={
19137     \begin{scope}[transparency group=knockout]
19138       \path[draw,fill=pgfstrokecolor,pic actions] (0,0) circle(.2);
19139       \pic[opacity=0]{natoapp6c/s/small squashed text=UXO};
19140     \end{scope}},
19141 }

```



natoapp6c/s/unmanned

```

19142 \tikzset{%
19143   natoapp6c/s/unmanned/.pic={
19144     \path[pic actions]
19145     (0,-0.1)
19146     --(0.45,0.05)

```

```

19147    --(0.45,0.1)
19148    --(0,0.025)
19149    --(-0.45,0.1)
19150    --(-0.45,0.05)
19151    --cycle;},
19152 }

```



natoapp6c/s/utility vehicle

```

19153 \tikzset{%
19154   natoapp6c/s/utility vehicle/.pic={%
19155     \pic[draw]{natoapp6c/s/vehicle};
19156     \path[pic actions]
19157       (0.35, 0.3) to[in=-90, out=-90, looseness=1] (-0.35, 0.3); },
19158 }

```



natoapp6c/s/vehicle

```

19159 \tikzset{%
19160   natoapp6c/s/vehicle/.pic={
19161     \path[pic actions]
19162       (-0.35, 0.2) -- (-0.35, -0.2) -- ( 0.35, -0.2) -- ( 0.35, 0.2)
19163       (-0.35, -0.2) -- (-0.35, -0.3)
19164       (0.35, -0.2) -- ( 0.35, -0.3)
19165       (-0.35, 0.2) -- (-0.35, 0.3)
19166       (0.35, 0.2) -- ( 0.35, 0.3);}
19167 }

```



natoapp6c/s/video imagery

```

19168 \tikzset{%
19169   natoapp6c/s/video imagery/.pic={
19170     \path[pic actions]
19171       (-0.4, 0.2) -- (-0.4, -0.2) -- (0.05, -0.2) -- (0.2, 0.2) -- cycle
19172       (0.075, -0.15) -- (0.4, -0.15)
19173       (0.16, 0.1) -- (0.4, 0.1);
19174     \path[draw,fill=pgfstrokecolor,pic actions](0.38,-.2) rectangle (0.42,.15);}
19175 }

```



natoapp6c/s/warfare vessel

```

19176 \tikzset{%
19177   natoapp6c/s/warfare vessel/.pic={
19178     \path[draw,fill=pgfstrokecolor] (0, -0.2) -- (0.3, 0.05) -- (-0.3, 0.05) -- cycle;},
19179 }

```



natoapp6c/s/water

```

19180 \tikzset{%
19181   natoapp6c/s/water/.pic={
19182     \path[pic actions]
19183       (-0.3, 0.05) -- (0, 0.05) to[in=90, out=0] (0.3, -0.2)
19184       (0, 0.05) -- (0, 0.2)
19185       (0.075, 0.2) -- (-0.075, 0.2);},
19186 }

```



natoapp6c/s/wheeled

```

19187 \tikzset{%
19188   pics/natoapp6c/s/wheeled/.is choice,
19189   pics/natoapp6c/s/wheeled/and tracked/.style={
19190     code={
19191       \ifn@to@pp@below%
19192         \path[pic actions]
19193           ([shift={(.4,-.16)}]M.south west)
19194           arc [radius=.08,start angle=-90,end angle=-270]
19195           -- ([shift={(-.08,0)}]M.south east)
19196           arc [radius=.08,start angle=90,end angle=-90]
19197           -- cycle
19198           ([shift={(.08,-.08)}]M.south west) circle(.08);
19199       \else%
19200         \path[pic actions]
19201           (-.1,-.08) arc [radius=.08,start angle=-90,end angle=-270]
19202           -- (.32,.08) arc [radius=.08,start angle=90,end angle=-90]
19203           -- cycle
19204           (-.4,0) circle(0.08);
19205       \fi}},
19206   pics/natoapp6c/s/wheeled/limited/.style={
19207     code={
19208       \ifn@to@pp@below%
19209         \path[pic actions] (M.south west) -- (M.south east)
19210           ([shift={(.08,-.08)}]M.south west) circle(.08)
19211           ([shift={(-.08,-.08)}]M.south east) circle(.08);
19212       \else
19213         \path[pic actions] (-.4,.08) -- (.4,.08)
19214           (-.32,0) circle(0.08) (.32,0) circle(0.08);
19215       \fi}},
19216   pics/natoapp6c/s/wheeled/cross country/.style={
19217     code={\pic{natoapp6c/s/wheeled=limited};
19218       \ifn@to@pp@below%
19219         \path[pic actions] ([shift={(0,-.08)}]M.south) circle(.08);
19220       \else
19221         \path[pic actions] (0,0) circle(0.08);
19222       \fi}},
19223   pics/natoapp6c/s/wheeled/semi/.style={
19224     code={\pic{natoapp6c/s/wheeled=limited};

```

```

19225     \ifn@to@pp@below%
19226         \path[pic actions] ([shift={(.24,-.08)}]M.south west) circle(.08);
19227     \else
19228         \path[pic actions] (-.16,0) circle(0.08);
19229     \fi}},
19230     pics/natoapp6c/s/wheeled/.default=limited,
19231 }

```

5.6.21 Some extra MIL-STD symbols

Extra NATO App6(c) symbol (from MIL-STD)



natoapp6c/s/prison

```

19232 \tikzset{%
19233     natoapp6c/s/prison/.pic={
19234         \path[pic actions] (-.3,-.3)rectangle(.3,.3)
19235         (-.23,-.30)--(-.23, .3)
19236         (.23,-.30)--(.23, .3)
19237         (-.08,-.30)--(-.08,-.2)
19238         (-.08,-.15) circle (.05)
19239         (-.08,-.1) --(-.08, .3)
19240         (.08,-.30)--(.08,-.2)
19241         (.08,-.15) circle (.05)
19242         (.08,-.1) --(.08, .3)
19243         (0,.15) circle(.07 and .1);
19244     },
19245 }

```

\n@to@pp@s@ll

A list of all defined symbols

```

19246 \def\n@to@pp@s@ll{
19247     weapon=base,
19248     weapon=top,
19249     weapon=bottom,
19250     weapon=rifle,
19251     weapon=machine gun,
19252     weapon=grenade launcher,
19253     weapon=missile launcher,
19254     weapon=non lethal,
19255     weapon=multi fire,
19256     weapon=air defence,
19257     weapon=anti tank,
19258     weapon=full,
19259     weapon,
19260     type=light,
19261     type=medium,
19262     type=heavy,
19263     type=vlight,

```


19264 type=vmedium,
19265 type=vheavy,
19266 type,
19267 above corps support,
19268 air assault with organic lift,
19269 air decoy,
19270 air assault,
19271 air defence,
19272 air strip,
19273 air traffic,
19274 airship,
19275 airborne,
19276 ammunition,
19277 amphibious,
19278 amphibious warfare ship,
19279 analysis,
19280 arrest,
19281 artillery,
19282 anti tank anti armour,
19283 antenna,
19284 armoured,
19285 armoured fighting vehicle,
19286 armoured personnel carrier,
19287 arctic,
19288 automobile,
19289 balloon,
19290 bar,
19291 base,
19292 bicycle equipped,
19293 boat,
19294 booby trap,
19295 bottomed,
19296 bridge=none,
19297 bridge=fixed,
19298 bridge=folding,
19299 bridge=hollow,
19300 bridge,
19301 capsule,
19302 carrier,
19303 chemical biological radiological nuclear,
19304 civilian military cooperation,
19305 civilian police,
19306 civilian telecommunications,
19307 coast guard vessel,
19308 combat support,
19309 combatant,
19310 combined arms,
19311 computer system,
19312 control,
19313 convoy,
19314 corps support,
19315 crime,
19316 decoy,

19317 direct communications,
19318 direction finding,
19319 diving=none,
19320 diving=military,
19321 diving,
19322 drilling,
19323 earthmover,
19324 electric power,
19325 electronic ranging,
19326 electronic warfare wide,
19327 engineer,
19328 enhanced location reporting system,
19329 environmental protection,
19330 explosion,
19331 finance,
19332 fishing vessel,
19333 fire protection,
19334 fixed and rotary wing,
19335 fixed wing,
19336 flame thrower,
19337 floating,
19338 surfaced,
19339 food,
19340 fuel,
19341 grenade launcher=none,
19342 grenade launcher=non lethal,
19343 grenade launcher,
19344 graffiti,
19345 group,
19346 gun=base,
19347 gun=air defence,
19348 gun=anti tank,
19349 gun=direct,
19350 gun=recoilless,
19351 gun,
19352 headquarters,
19353 house,
19354 howitzer,
19355 in position,
19356 individual,
19357 infantry,
19358 intermodal,
19359 jagged wave,
19360 jam,
19361 jamming,
19362 jetski,
19363 killing,
19364 labour,
19365 land mine=personnel,
19366 land mine=tank,
19367 land mine=none,
19368 land mine,
19369 land missile,

19370 laser,
19371 launcher,
19372 laundry,
19373 machine gun,
19374 main gun,
19375 maintenance,
19376 medic,
19377 medical,
19378 medical treatment,
19379 mine,
19380 mine clearing equipment,
19381 mine warfare vessel,
19382 missile,
19383 missile launcher=base,
19384 missile launcher=none,
19385 missile launcher=air defence,
19386 missile launcher=anti tank,
19387 missile launcher=surface to surface,
19388 missile launcher,
19389 mobile advisor and support,
19390 moored,
19391 mortar,
19392 motorized,
19393 mortuary affairs,
19394 mountain,
19395 naval,
19396 navigation,
19397 navy task,
19398 non combatant,
19399 non lethal weapon,
19400 nuclear,
19401 observer,
19402 orbiter shuttle,
19403 ordnance,
19404 organisation,
19405 over snow,
19406 pack animal,
19407 patrol,
19408 patrolling,
19409 physician,
19410 pipeline,
19411 poisoning,
19412 postal,
19413 printed media,
19414 psychological,
19415 quarry,
19416 quartermaster,
19417 radar,
19418 radio,
19419 radio relay,
19420 radio relay line of sight,
19421 radio teletype,
19422 railroad,

19423 reconnaissance,
19424 recovery unmanned systems,
19425 rifle,
19426 rising,
19427 riverine,
19428 rocket launcher=base,
19429 rocket launcher=anti tank,
19430 rocket launcher=single,
19431 rocket launcher=multiple,
19432 rocket launcher=single head,
19433 rocket launcher=multiple head,
19434 rocket launcher,
19435 rotary wing,
19436 runway,
19437 sailing boat,
19438 satellite=none,
19439 satellite=astronomical,
19440 satellite=bio,
19441 satellite=communications,
19442 satellite=navigation,
19443 satellite=earth observing,
19444 satellite=tether,
19445 satellite=small,
19446 satellite=reconnaissance,
19447 satellite,
19448 sea mine=top half,
19449 sea mine=bottom half,
19450 sea mine=full,
19451 sea mine=neutralised,
19452 sea mine=neutralized,
19453 sea mine,
19454 seabed installation,
19455 search,
19456 searching,
19457 semi trailer truck,
19458 sensor,
19459 ship,
19460 signal,
19461 signals intelligence,
19462 ski,
19463 sled,
19464 small squashed text=TXT,
19465 small text=TXT,
19466 sniper,
19467 space station,
19468 squashed text=TXT,
19469 submarine,
19470 submersible,
19471 supply,
19472 surface combatant,
19473 survey,
19474 tactical satellite,
19475 tank,

```

19476 text=TXT,
19477 topographic,
19478 torpedo,
19479 towed,
19480 tracked,
19481 train locomotive,
19482 transportation,
19483 unexploded ordnance,
19484 unmanned,
19485 utility vehicle,
19486 vehicle,
19487 video imagery,
19488 warfare vessel,
19489 water,
19490 wheeled=and tracked,
19491 wheeled=limited,
19492 wheeled=cross country,
19493 wheeled=semi,
19494 wheeled
19495 }

```

A Generate draft VASSAL module

We can use the code you wrote for your game pieces (counters, maps, tables), to generate a draft VASSAL module. To that end, use the document class `wgexport`, and some simple macros to export your graphics to a single PDF. A provided Python script then processes this to generate the draft VASSAL module.

The generated VASSAL module is not the final thing, but it is a good start.

A.1 Example

Suppose we have defined counters and markers like

```

allied 1 id      axis 1 ad      out of supply
allied 2 ad      axis 2 ad      game turn
allied 3 abid    axis 3 ic

```

via Tikz styles. Also assume that we have macros

```

\board  \oob  \charts  \front

```

which produces tikzpictures to the board, OOBs, charts, and cover, respectively. All this is defined in our package `mygame`. Of course that we have our rules in the file `game.pdf`.

We prepare a simple L^AT_EX source file

```

\documentclass{wgexport}
\usepackage{mygame}
\begin{document}

```

```

\begin{imagelist} %% Records image meta info
\chitimages{%
  {allied 1 id,allied 2 ad,allied 3 abid}/Allied,%
  {axis 1 ad,axis 2 ad,axis 3 ic}/Axis,%
  {out of supply, game turn}/Markers}}
\info{Board}{board}{} \board
\info{OOB}{oob}{} \oob
\info{Charts}{chart}{} \chart
\info{Cover}{front}{} \front
\end{imagelist}
\end{document}

```

When we run \LaTeX on this, we will get a PDF where each page is a separate image and the page is cropped to image. *In addition* we will get a CSV (comma-separated-values) file `export.csv` which contains some meta information about each page. In particular, it identifies the name of each page, the category, and sub category of the image.

For chits, the name of the image is the style name (e.g., `game turn`). For other images, it is the first argument to `\info` above.

The category is for chits is always `counter`. For other images, it is the second argument to the `\info` macro (e.g., `board`).

The category of an image is important later on when we generate the VASSAL module. Recognised categories are

- `counter` for counter images. Such an image will trigger the creation of a VASSAL game piece.
- `board` for board images. Images of this kind will result in VASSAL board (or Map) elements.
- `oob` for Order of Battle tables. This will also result in a VASSAL map being created, but one that is displayed as a pop-up and with a rectangular grid. This is useful for placing units in an Order of Battle chart.
- `chart` for charts. These images will be made VASSAL charts — i.e., pop-up windows which contains some graphics for the players reference.
- `front` for the cover image. This will become the module splash image. Only one such image (the first) will be used.

Other categories may be used, and the corresponding image will be added to the VASSAL module. However, they will no be processed in any specific way.

The *sub-category* is mainly used for counters. Above, we gave the sub-categories `Allied`, `Axis`, and `Markers`. The sub-categories will help to identify the factions of the game, and counter prototypes will be made for each category. The sub-categories of `board`, `charts`, `oob`, and `front` has no or little effect.

Once we have processed the file above to generate our PDF (Say `export.pdf`), then we can process it (and the CSV file) with a Python script to make our draft VASSAL module

```

export.py export.pdf export.csv -o Game.vmod -t Game -v 0.1 \
  -d "My game" -r rules.pdf

```

This will generate the draft module `Game.vmod`. Note that we add the rules (`-r rules.pdf`) to the module so that the module is complete.

Once the module has been generated, one can open it in the VASSAL editor and further customise it. For example, the grids used in the boards needs to be adjusted, and one may want to make initial set-ups or add all counters to the OOB.

Of course, running the Python script will overwrite all changes, so perhaps it is a good idea to work on a copy of the output file.

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