

# The `gridpapers` package

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v1.0.1 from 2021/03/19

All development happens at the repo: <https://github.com/mcnees/LaTeX-Graph-Paper>.

## 1 Introduction

Make your own quadrille, graph, hex, etc. paper! Uses the PGF/TikZ package for L<sup>A</sup>T<sub>E</sub>X, which should be part of any modern T<sub>E</sub>X installation. Lots of preset defaults to get started with ease, yet all colors and spacing are customizable.

There are example .tex files in the `examples` directory to help get you started with customization. Each tex file has an almost-empty body, with a `\usepackage` statement that you can customize. For example, `engineer-pad.tex` looks like this:

```

1  \documentclass{article}
2
3  \usepackage[pattern=majmin, colorset=engineer]{gridpapers}
4
5  \begin{document}
6  \thispagestyle{empty}
7  ~
8  \end{document}
```

(The ~ in the body forces a non-empty body, or else latex wouldn't generate a PDF).

## 2 Usage

### 2.1 Options

Your graph paper is configured through a number of key/value options to the `\usepackage` command. Let's go through these options.

`pattern={\langle name \rangle}`  
Default: `std`

Which of the predefined patterns to use for the page or textarea background. The current list of pattern names is: `std`, `stdeight`, `majmin`, `dot`, `hex`, `tri`, `iso`, `lightcone`, `ruled`, `doubleruled`. We describe each of these patterns in Sec. 2.2. Patterns come with default

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page geometry (size and margins; see `geometry`), and default ‘fullness’ (whether they fill the page or not; see options `fullpage` and `textarea`).

<code>colorset={\langle name \rangle}</code> Default: <code>std</code>	Color presets. Valid color preset names are: <code>std</code> , <code>precocious</code> , <code>brickred</code> , <code>engineer</code> , <code>plumpad</code> . A preset determines the <code>majorcolor</code> , <code>minorcolor</code> , and <code>bgcolor</code> all at once. But, you can start from a preset and then override some colors.
<code>majorcolor={\langle color \rangle}</code>	Override the preset “major” color. This can be a named color, or using the syntax from <code>xcolor</code> to mix colors together.
<code>minorcolor={\langle color \rangle}</code>	Override the preset “minor” color. As above.
<code>bgcolor={\langle color \rangle}</code>	Override the preset background color. As above.
<code>patternsize={\langle length \rangle}</code>	Override the preset pattern size. The meaning of this length argument is different for each pattern; see Sec. 2.2 for more.
<code>dotsize={\langle length \rangle}</code> Default: <code>.7pt</code>	Controls the size of the dots themselves for <code>pattern=dot</code> .
<code>fullpage</code>	Make the pattern fill the whole page.
<code>textarea</code>	Make the pattern fill only the text area of the document. At most one of the <code>fullpage</code> or <code>textarea</code> can be specified. If one is specified, it will override the default ‘fullness’ setting of the pattern.
<code>geometry={\langle geometry spec \rangle}</code>	Page geometry specification, using the syntax of the <code>geometry</code> package. This specification will override the pattern’s default page geometry. However, if the <code>geometry</code> package was loaded before <code>gridpapers</code> , this option will be ignored.

## 2.2 Patterns

The current set of patterns:

<code>std</code>	Quadrille, ten squares per inch. The <code>patternsize</code> option controls the side of a square. Default is <code>patternsize=0.1in</code> .
<code>stdeight</code>	Quadrille, eight squares per inch. The <code>patternsize</code> option controls the side of a square. Default is <code>patternsize=0.125in</code> .
<code>majmin</code>	Graph paper, eight squares per inch with a major grid every half-inch. The <code>patternsize</code> option controls the side of a small square (the larger squares are four times bigger). Default is <code>patternsize=0.125in</code> .
<code>dot</code>	Grid of dots. The size of an individual dot is set by <code>dotsize</code> . The <code>patternsize</code> option controls the distance between dots. Default is <code>patternsize=0.1in</code> .
<code>hex</code>	Grid of hexagons. The <code>patternsize</code> option controls the side length of a hexagon. Default is <code>patternsize=0.1666in</code> .
<code>tri</code>	Triangle grid. The <code>patternsize</code> option controls the side length of a triangle. Default is <code>patternsize=0.25in</code> .
<code>iso</code>	Isometric grid. The <code>patternsize</code> option controls the side length of a triangle. Default is <code>patternsize=0.25in</code> .
<code>lightcone</code>	A grid with light cones (45° lines) on a square grid. The <code>patternsize</code> option controls the side of a horizontal square (not the tipped squared). Default is <code>patternsize=0.25in</code> .

ruled	Ruled page with bold lines. The <code>patterns</code> option controls the vertical distance between lines. Default is <code>patterns=0.2in</code> .
doubleruled	Ruled page with bold lines alternating with light lines. The <code>patterns</code> option controls the vertical distance between neighboring lines. Default is <code>patterns=0.125in</code> .

## 3 Examples

### 3.1 Plenty of customization

Let's say you want to use the `tri` pattern, which by default fills the page. But you want it to fill just the text area of an A4 page with 2cm margins, and you want the triangles to be .75cm long. Finally, you like the colors of the engineer set, but want a white background. Then you would write:

```
\usepackage[pattern=tri,
  patterns=0.75cm,
  textarea,
  colorset=engineer,
  bgcolor=white,
  geometry={a4paper, margin=2cm}]{gridpapers}
```

### 3.2 Custom colors

Using named or blended custom colors is demonstrated in the example file `custom-colors.tex`:

```

1  \documentclass{article}
2
3  \usepackage{xcolor}
4
5  % See the documentation of the xcolor package to learn about different
6  % color models for specifying colors
7  \definecolor{mydeepgreen}{rgb}{0.07, 0.56, 0.04}
8
9  % You can easily mix colors by using the ! syntax from xcolor. Here
10 % we use it to mix 40% of our color with 60% white.
11 \usepackage[pattern=majmin,
12   majorcolor=mydeepgreen,
13   minorcolor={mydeepgreen!40}]{gridpapers}
14
15 \begin{document}
16 \thispagestyle{empty}
17 ~
18 \end{document}
```

## 4 Implementation

1 \NeedsTeXFormat{LaTeX2e}[1994/06/01]

```

2 \ProvidesPackage{gridpapers}
3   [2021/03/19 v1.0.1 Graph paper backgrounds]
4
5 \RequirePackage{xkeyval}
6 \RequirePackage{kvoptions}
7 \RequirePackage{xcolor}
8 \RequirePackage{tikz}
9 \usetikzlibrary{patterns.meta,calc}
10 \RequirePackage{tikzpagenodes}
11 %% everypage has been superseded -- try to use the new builtin
12 %% approach, but fall back to everypage-1x if needed
13 %% This code is roughly taken from the new everypage code
14 \@ifundefined{AddToHook}{%
15   \IfFileExists{everypage-1x.sty}{%
16     %% If everypage is new enough to complain, avoid the complaints
17     \RequirePackage{everypage-1x}
18   }\RequirePackage{everypage}}
19 }{%
20   \newcommand*{\AddEverypageHook}[1]{%
21     \AddToHook{shipout/background}{\put(1in,-1in){#1}}}
22 }
23 \RequirePackage{pagecolor}
24
25 %%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
26 %% Option parsing
27 %% Declare switches for processing the options.
28
29 \newif\ifGP@geometrypreviouslyloaded
30 \newif\ifGP@fullnessset
31 \newif\ifGP@fullpage
32 \newif\ifGP@textarea
33 \GP@geometrypreviouslyloadedfalse
34 \GP@fullnesssetfalse
35 \GP@fullpagefalse
36 \GP@textareafalse
37
38 \SetupKeyvalOptions{%
39   family=GP,%
40   prefix=GPOpt%
41 }
42
43 \DeclareStringOption[std]{pattern}
44 \DeclareStringOption[std]{colorset}
45
46 \DeclareStringOption{majorcolor}
47 \DeclareStringOption{minorcolor}
48 \DeclareStringOption{bgcolor}
49
50 \DeclareStringOption{patternsizesize}
51 \DeclareStringOption[.7pt]{dotsizesize}
52
53 \DeclareVoidOption{fullpage}{\GP@fullpagetrue}
54 \DeclareVoidOption{textareatruetrue}{\GP@textareatrue}
55
56 \DeclareStringOption{geometry}
57
58 \ProcessKeyvalOptions*
59
60 %% Can only have one of fullpage or textarea

```

```

61 \ifGP@fullpage
62   \ifGP@textarea
63     \PackageError{gridpapers}{%
64       Can not specify both fullpage and textarea, please remove one option}{%
65       \fi
66     \GP@fullnesssettrue
67   \fi
68
69 \ifGP@textarea
70   \GP@fullnesssettrue
71 \fi
72
73 %% We keep track of this to know whether or not we would be overriding
74 %% a previously-set page geometry
75 \@ifpackageloaded{geometry}
76   {\GP@geometrypreviouslyloadedtrue}
77   {\GP@geometrypreviouslyloadedfalse}
78   \PassOptionsToPackage{\GPOpt@geometry}{geometry}%
79   \RequirePackage{geometry}%
80 }
81
82 %%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
83 %% Actual package code
84 %%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
85
86 %%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
87 %% Some nice colors.
88 %%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
89 \definecolor{plum}{rgb}{0.36078, 0.20784, 0.4}
90 \definecolor{chameleon}{rgb}{0.30588, 0.60392, 0.023529}
91 \definecolor{cornflower}{rgb}{0.12549, 0.29020, 0.52941}
92 \definecolor{scarlet}{rgb}{0.8, 0, 0}
93 \definecolor{brick}{rgb}{0.64314, 0, 0}
94 \definecolor{sunrise}{rgb}{0.80784, 0.36078, 0}
95 \definecolor{rosiebg}{RGB}{250,247,232}
96 \definecolor{rosiegrid}{RGB}{186,137,113}
97
98 %%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
99 %% The color to use for the null directions when drawing lightcones.
100 %%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
101 \colorlet{lightlines}{scarlet!30}
102
103 %%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
104 %% Pre-defined Color schemes
105 %%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
106 %% Here are some pre-defined color schemes for the paper background
107 %% and the major and minor grid lines. These are switched by using
108 %% the option colorset=<name>. The allowed values for colorset are in
109 %% the list below.
110 \define@choicekey*{GP}{colorset}[\val\nr]%
111 %% Allowed values for colorset:
112 {std,precocious,brickred,engineer,plumpad}[std]{%
113   \ifcase\nr\relax
114     %% std
115     \colorlet{minorcolor}{cornflower!30}
116     \colorlet{majorcolor}{cornflower!50}
117     \colorlet{bgcolor}{white}
118   \or
119     %% precocious

```

```

120 \colorlet{minorcolor}{rosiegrid!50}
121 \colorlet{majorcolor}{rosiegrid}
122 \colorlet{bgcolor}{rosiebg}
123 \or
124 %% brickred
125 \colorlet{minorcolor}{brick!35}
126 \colorlet{majorcolor}{brick!60}
127 \colorlet{bgcolor}{scarlet!8}
128 \or
129 %% engineer
130 \colorlet{minorcolor}{chameleon!50}
131 \colorlet{majorcolor}{chameleon!80}
132 \colorlet{bgcolor}{chameleon!10}
133 \or
134 %% plumpad
135 \colorlet{minorcolor}{cornflower!40}
136 \colorlet{majorcolor}{cornflower!70}
137 \colorlet{bgcolor}{plum!10}
138 \fi
139 }
140
141 %% Get the specified color set from the options
142 \def\@setkeyhelper#1#2{%
143 \setkeys{GP}{#2=#1}
144 }
145 \expandafter\@setkeyhelper\expandafter{\GPOpt@colorset}{colorset}
146
147 %% If the user further specified majorcolor, minorcolor, and/or
148 %% bgcolor, we now override the selected colorset
149 \ifx\GPOpt@majorcolor\@empty
150 \else
151 \colorlet{majorcolor}{\GPOpt@majorcolor}
152 \fi
153 \ifx\GPOpt@minorcolor\@empty
154 \else
155 \colorlet{minorcolor}{\GPOpt@minorcolor}
156 \fi
157 \ifx\GPOpt@bgcolor\@empty
158 \else
159 \colorlet{bgcolor}{\GPOpt@bgcolor}
160 \fi
161
162 %%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
163 %% The size parameter -- different meanings for different patterns
164 %% Will be reset by pattern code
165 %%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
166 \newcommand{\GP@patternsiz}{0.1in}
167
168 %%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
169 %% This section sets up a routine for filling a shape with
170 %% hexagons. Uses code from:
171 %% http://tex.stackexchange.com/questions/6019/drawing-hexagons/6128#6128
172 %%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
173
174 %% We have to delay this definition until after \GP@patternsiz is
175 %% redefined (by the pattern selection and/or user override)
176 \newcommand{\GP@declarehexpat}{
177 \pgfdeclarepatternformonly
178 {hexagons}%% name

```

```

179 {\pgfpointorigin}%% lower left
180 {\pgfpoint{3*\GP@patternsize}{0.866025*2*\GP@patternsize}}
181 {\pgfpoint{3*\GP@patternsize}{0.866025*2*\GP@patternsize}}
182 {
183   \pgfsetlinewidth{0.6pt}
184   \pgftransformshift{\pgfpoint{0mm}{0.866025*\GP@patternsize}}
185   \pgfpathmoveto{\pgfpoint{0mm}{0mm}}
186   \pgfpathlineto{\pgfpoint{0.5*\GP@patternsize}{0mm}}
187   \pgfpathlineto{\pgfpoint{\GP@patternsize}{-0.866025*\GP@patternsize}}
188   \pgfpathlineto{\pgfpoint{2*\GP@patternsize}{-0.866025*\GP@patternsize}}
189   \pgfpathlineto{\pgfpoint{2.5*\GP@patternsize}{0mm}}
190   \pgfpathlineto{\pgfpoint{3*\GP@patternsize}{0mm}}
191   \pgfpathmoveto{\pgfpoint{0.5*\GP@patternsize}{0mm}}
192   \pgfpathlineto{\pgfpoint{\GP@patternsize}{0.866025*\GP@patternsize}}
193   \pgfpathlineto{\pgfpoint{2*\GP@patternsize}{0.866025*\GP@patternsize}}
194   \pgfpathlineto{\pgfpoint{2.5*\GP@patternsize}{0mm}}
195   \pgfusepath{stroke}
196 }
197 }
198
199 %%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
200 %% This section sets up a routine for filling a shape with
201 %% triangles.
202 %%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
203
204 %% We have to delay this definition until after \GP@patternsize is
205 %% redefined (by the pattern selection and/or user override)
206 \newcommand{\GP@declaretripat}{
207 \pgfdeclarepatternformonly
208   %% Name of the pattern
209   {triangles}
210   %% Set the lower left corner of the pattern
211   {\pgfpointorigin}
212   %% Set the upper right corner of the pattern
213   {\pgfpoint{\GP@patternsize}{2*0.8660254*\GP@patternsize}}
214   %% Declare the size of the pattern blocks
215   {\pgfpoint{\GP@patternsize}{2*0.8660254*\GP@patternsize}}
216   %% Draw the pattern
217   {
218     \pgfsetlinewidth{0.6pt}
219     \pgfpathmoveto{\pgfpoint{0mm}{0mm}}
220     \pgfpathlineto{\pgfpoint{\GP@patternsize}{2*0.8660254*\GP@patternsize}}
221     \pgfpathlineto{\pgfpoint{0mm}{2*0.8660254*\GP@patternsize}}
222     \pgfpathmoveto{\pgfpoint{0mm}{0.8660254*\GP@patternsize}}
223     \pgfpathlineto{\pgfpoint{\GP@patternsize}{0.8660254*\GP@patternsize}}
224     \pgfpathmoveto{\pgfpoint{0mm}{2*0.8660254*\GP@patternsize}}
225     \pgfpathlineto{\pgfpoint{\GP@patternsize}{0mm}}
226     \pgfpathlineto{\pgfpoint{0mm}{0mm}}
227     \pgfusepath{stroke}
228   }
229 }
230 \newcommand{\GP@declareisopat}{
231 \pgfdeclarepatternformonly
232   %% Name of the pattern
233   {isometric}
234   %% Set the lower left corner of the pattern
235   {\pgfpointorigin}
236   %% Set the upper right corner of the pattern
237   {\pgfpoint{2*0.8660254*\GP@patternsize}{\GP@patternsize}}

```

```

238 %% Declare the size of the pattern blocks
239 {\pgfpoint{2*0.8660254*\GP@patternsiz}{\GP@patternsiz}}
240 %% Draw the pattern
241 {
242   \pgfsetlinewidth{0.6pt}
243   \pgfpathmoveto{\pgfpoint{0mm}{0mm}}
244   \pgfpathlineto{\pgfpoint{2*0.8660254*\GP@patternsiz}{\GP@patternsiz}}
245   \pgfpathlineto{\pgfpoint{2*0.8660254*\GP@patternsiz}{0mm}}
246   \pgfpathlineto{\pgfpoint{0mm}{\GP@patternsiz}}
247   \pgfpathlineto{\pgfpoint{0mm}{0mm}}
248   \pgfpathmoveto{\pgfpoint{0.8660254*\GP@patternsiz}{0mm}}
249   \pgfpathlineto{\pgfpoint{0.8660254*\GP@patternsiz}{\GP@patternsiz}}
250   \pgfusepath{stroke}
251 }
252 }
253
254 %%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
255 %% This section sets up a routine for filling the squares in a
256 %% grid with null lines.
257 %% %%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
258 %% TODO Still can't figure out the correct pattern shift!!
259 \newcommand{\GP@declarelightconepat}{
260 \pgfkeys{
261   /pgf/pattern keys/myshift/.store in=\myshift,
262   /pgf/pattern keys/myshift/.initial={(0,0)},
263 }
264 \tikzdeclarepattern{
265   name=lightcones,
266   type=uncolored,
267   parameters={\myshift},
268   bounding box={(0,0) and (\GP@patternsiz,\GP@patternsiz)},
269   tile size={(\GP@patternsiz, \GP@patternsiz)},
270   tile transformation={
271     shift=\myshift,
272   },
273   defaults={
274     myshift/.store in=\myshift,myshift={(0,0)},
275   },
276   code={
277     %% TODO Make the dashing an option
278     \tikzset{lightlines/.style={line width=0.4pt,dash=on 0.05cm off 0.05cm phase 0.025cm}}
279     \draw [lightlines] (0,0) -- (\GP@patternsiz,\GP@patternsiz);
280     \draw [lightlines] (0,\GP@patternsiz) -- (\GP@patternsiz,0);
281   },
282 }
283 }
284 %% \pgfdeclarepatternformonly
285 %% {lightcones}% name
286 %% {\pgfpointorigin}% lower left
287 %% {\pgfpoint{\GP@patternsiz}{\GP@patternsiz}}% upper right
288 %% {\pgfpoint{\GP@patternsiz}{\GP@patternsiz}}% tile size
289 %% {% shape description
290 %%   \pgfsetlinewidth{0.4pt}
291 %%   %% TODO Make an option
292 %%   %Comment out this line for solid lines on light cones, instead of dashes.
293 %%   \pgfsetdash{{0.05cm}{0.05cm}}{0.025cm}
294 %%   \pgfpathmoveto{\pgfpoint{0in}{0in}}
295 %%   \pgfpathlineto{\pgfpoint{\GP@patternsiz}{\GP@patternsiz}}
296 %%   \pgfpathmoveto{\pgfpoint{0in}{\GP@patternsiz}}

```



```

297 %%      \pgfpathlineto{\pgfpoint{\GP@patternsiz}{0in}}
298 %%      \pgfusepath{stroke}
299 %%    }
300
301 %%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
302 %% This section sets up a routine for filling a region with dots
303 %% Slightly modified version of code added by Leo
304 %% Stein (@duetosymmetry on Twitter).
305 %%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
306 %% We have to delay this definition until after \GP@patternsiz is
307 %% redefined (by the pattern selection and/or user override)
308 \newcommand{\GP@declaredotpat}{
309 \pgfdeclarepatternformonly
310 {dotgrid}%% name
311 {\pgfpoint{-0.5*\GP@patternsiz}{-0.5*\GP@patternsiz}}%% lower left
312 {\pgfpoint{0.5*\GP@patternsiz}{0.5*\GP@patternsiz}}%% upper right
313 {\pgfpoint{\GP@patternsiz}{\GP@patternsiz}}%% tile size
314 {%% shape description
315   \pgfpathcircle{\pgfpoint{0pt}{0pt}}{\GP@pt@dotsiz}
316   \pgfusepath{fill}
317 }
318 }
319
320 %%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
321 %% Begin pattern execution infrastructure
322 %%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
323
324 %% This inner code will be set by the choicekey pattern=...
325 \newcommand{\GP@innerpatterncode}{
326 %% This is the "outer" code to hook into every page
327 \newcommand{\GP@patterncode}{% No blank lines in this code!
328 \begin{tikzpicture}[remember picture, overlay]
329 %%
330 %% Change "thin" to "very thin" if the lines are too thick.
331 \tikzset{
332   minorgrid/.style={minorcolor, thin},
333   majorgrid/.style={majorcolor, thin},
334 }
335 \ifGP@fullpage%
336 \coordinate (a) at (current page.south west);
337 \coordinate (b) at (current page.north east);
338 \else%
339 \coordinate (a) at (current page text area.south west);
340 \coordinate (b) at (current page text area.north east);
341 \fi
342 %%
343 \GP@innerpatterncode%
344 %%
345 \end{tikzpicture}
346 }
347
348 %%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
349 %% Begin pattern definition code
350 %%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
351
352 \define@boolkey{GP}{patterndefaultfullness}{
353 \newcommand{\GP@patterndefaultgeometry}{
354 \newcommand{\GP@patterndefaultsize}{
355

```

```

356 %% Pattern-definer-helper
357 %% The interface is:
358 %% \GP@setpattern
359 %% {<true for default fullpage, false for default textarea>}
360 %% {<default geometry config>}
361 %% {<default pattern size>} %% NOTE, not tile length
362 %% {<contents of inner pattern code>}
363 \newcommand{\GP@setpattern}[4]{%
364 \setkeys{GP}{patterndefaultfullness=#1}
365 \renewcommand{\GP@patterndefaultgeometry}{#2}
366 \renewcommand{\GP@patterndefaultsize}{#3}
367 \renewcommand{\GP@innerpatterncode}{#4}
368 }
369
370 \define@choicekey*{GP}{pattern}[\val\nr]%
371 %% Allowed values for pattern:
372 {std,stdeight,majmin,dot,hex,tri,iso,lightcone,ruled,doubleruled}{%
373 \ifcase\nr\relax
374 %% std
375 %%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
376 %% Quadrille, ten squares per inch.
377 %%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
378 \GP@setpattern{false}{letterpaper, margin=0.2in}{0.1in}{%
379 %% Draw a grid with 10 squares per inch.
380 \draw[style=minorgrid, shift={(a)}] (0,0) grid [step=\GP@patternsiz] (b);
381 %%
382 %% Draw a frame around the grid.
383 \draw[style=majorgrid] (a) rectangle (b);
384 }
385 \or
386 %% stdeight
387 %%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
388 %% Quadrille, eight squares per inch.
389 %%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
390 \GP@setpattern{false}{letterpaper, margin=0.1875in}{0.125in}{%
391 %% Draw a grid with 10 squares per inch.
392 \draw[style=minorgrid, shift={(a)}] (0,0) grid [step=\GP@patternsiz] (b);
393 %%
394 %% Draw a frame around the grid.
395 \draw[style=majorgrid] (a) rectangle (b);
396 }
397 \or
398 %% majmin
399 %%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
400 %% Graph paper, eight squares per inch with a major grid
401 %% every half-inch.
402 %%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
403 \GP@setpattern{false}{letterpaper, margin=0.25in}{0.125in}{%
404 %% Draw a grid with 10 squares per inch.
405 \draw[style=minorgrid, shift={(a)}] (0,0) grid [step=\GP@patternsiz] (b);
406 %%
407 \draw[style=majorgrid, shift={(a)}] (0,0) grid [step=4*\GP@patternsiz] (b);
408 %%
409 %% Draw a frame around the grid.
410 \draw[style=majorgrid] (a) rectangle (b);
411 }
412 \or
413 %% dot
414 %%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%

```

```

415 %% Dot grid
416 %% Slightly modified version of code added by Leo
417 %% Stein (@duetosymmetry).
418 %%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
419 \GP@setpattern{true}{0.1in}{%
420 \fill [pattern=dotgrid,pattern color=minorcolor] (a) rectangle (b);
421 }
422 \or
423 %% hex
424 %%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
425 %% Hex grid
426 %%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
427 \GP@setpattern{true}{0.1666in}{%
428 \fill [pattern=hexagons,pattern color=minorcolor] (a) rectangle (b);
429 }
430 \or
431 %% tri
432 %%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
433 %% Triangle grid, adjust triangle size in the preamble
434 %%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
435 \GP@setpattern{true}{0.25in}{%
436 \fill [pattern=triangles,pattern color=minorcolor] (a) rectangle (b);
437 }
438 \or
439 %% iso
440 %%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
441 %% Isometric grid
442 %%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
443 \GP@setpattern{true}{0.25in}{%
444 \fill [pattern=isometric, pattern color=minorcolor] (a) rectangle (b);
445 }
446 \or
447 %% lightcone
448 %%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
449 %% A grid with light cones.
450 %%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
451 \GP@setpattern{false}{letterpaper, margin=.125in}{0.25in}{%
452 %% Draw a grid with 4 squares per inch.
453 \draw[style=minorgrid, shift={(a)}] (0,0) coordinate grid [step=\GP@patternsiz] (b);
454 %%
455 %% Draw a border around the grid.
456 \draw[style=majorgrid, pattern={lightcones[myshift={(a)}]}, pattern color=lightlines] (a) rectangle (b);
457 }
458 \or
459 %% ruled
460 %%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
461 %% Ruled page with bold lines every 0.2in or 0.25in
462 %%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
463 \GP@setpattern{false}{letterpaper, body={8in,10.8in}}{0.2in}{%
464 %% Draw a ruled page with lines every 0.2in
465 \draw[style=majorgrid, shift={(a)}] (0,0) grid [ystep=\GP@patternsiz, xstep=\paperwidth] (b);
466 %% Draw a frame around the grid.
467 \draw[style=majorgrid] (a) rectangle (b);
468 }
469 \or
470 %% doubleruled
471 %%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
472 %% Ruled page with bold lines every 0.25in and light lines
473 %% every 0.125 in.

```

```

474 %%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
475 \GP@setpattern{false}{letterpaper, margin=.25in}{0.125in}{%
476 %% Draw a ruled pattern with thin lines every 0.125 in and bold lines every 0.25 in.
477 \draw[style=minorgrid, shift={(a)}] (0,0) grid [ystep=\GP@patternsizex, xstep=\paperwidth] (b);
478 %%
479 \draw[style=majorgrid, shift={(a)}] (0,0) grid [ystep=2*\GP@patternsizex, xstep=\paperwidth] (b);
480 %%
481 %% Draw a frame around the grid.
482 \draw[style=majorgrid] (a) rectangle (b);
483 }
484 \fi
485 }
486
487 %% Use the passed package option to set the above key
488 \expandafter\@setkeyhelper\expandafter{\GP@opt@pattern}{pattern}
489
490 %% Determine whether or not to (re)set fullpage vs textarea
491 \ifGP@fullnessset
492 %% Respect their choice
493 \else
494 %% Reset the value of \GP@fullpage based on the pattern's default
495 %% There's probably a more idiomatic way to do this but I can't
496 %% figure it out
497 \ifKV@GP@patterndefaultfullness
498 \GP@fullpagetrue
499 \else
500 \GP@fullpagefalse
501 \fi
502 \fi
503
504 %% Determine whether or not to fiddle with the page geometry
505 \ifGP@geometrypreviouslyloaded
506 %% Respect their previous choice
507 \PackageWarning{gridpapers}{'geometry' package was previously loaded, will not use pattern default}
508 \else
509 %% Use the pattern's defaults,
510 \expandafter\geometry\expandafter{\GP@patterndefaultgeometry}
511 %% And then override with any more specific settings passed by the user
512 \expandafter\geometry\expandafter{\GP@opt@geometry}
513 \fi
514
515 %% Determine the correct pattern length
516 \ifx\GP@opt@patternsizex\empty
517 %% Use the pattern's preferred length
518 \renewcommand{\GP@patternsizex}{\GP@patterndefaultsize}
519 \else
520 %% Override with the user's choice
521 \renewcommand{\GP@patternsizex}{\GP@opt@patternsizex}
522 \fi
523
524 %% Now that everything has been set up, we can finally define the
525 %% patterns with the correct lengths.
526 \GP@declarehexpat
527 \GP@declaretripat
528 \GP@declareisopat
529 \GP@declarelightconepat
530 \GP@declaredotpat
531
532 %% Set the background color.

```

```

533 \AtBeginDocument{\pagecolor{bgcolor}}
534 %% Actually hook it in!
535 \AddEverypageHook{%
536 \GP@patterncode%
537 }
538
539 \endinput

```

## Change History

v1.0.0	v1.0.1
General: Converted to DTX file . . . . . 1	General: Hotfix: old installs don't have everypage-1x, use everypage . . . . . 1