The **graphpap** package[*]

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1994/08/09

`\graphpaper[`$\langle N\rangle$`](`$\langle X,Y\rangle$`)(`$\langle DX,DY\rangle$`)` Makes a grid with left-hand corner at ($\langle X,Y\rangle$), extending (($\langle DX,DY\rangle$)) units in the X and Y directions, where the lines are N units apart. Every fifth line is thick and is numbered. The default value of N is 10. The arguments must all be integers.

First, we define three counters. The first two are defined as raw TeX counters since multiplication and division must be performed in them.

```
 1 ⟨∗package⟩
 2 % \newcount\@gridx% now   (\@tempcnta)
 3 % \newcount\@gridy% now   (\@tempcntb)
 4 % \newcounter{@grid}
 5 \let\c@@grid\count@
```

Next we define the following commands to draw vertical and horizontal grids. The "nonum" commands just draw the grids; the other commands also print numbers. All the arguments must be integers.

VERTICAL GRIDS

`\@vgrid(`$\langle xpos,ypos\rangle$`){`$\langle xincrement\rangle$`}{`$\langle number\text{-}of\text{-}lines\rangle$`}{`$\langle length\text{-}of\text{-}lines\rangle$`}`
`\@nonumvgrid(`$\langle xpos,ypos\rangle$`){`$\langle xincrement\rangle$`}{`$\langle number\text{-}of\text{-}lines\rangle$`}` `{`$\langle length\text{-}of\text{-}lines\rangle$`}`

HORIZONTAL GRIDS

`\@hgrid(`$\langle xpos,ypos\rangle$`){`$\langle yincrement\rangle$`}{`$\langle number\text{-}of\text{-}lines\rangle$`}{`$\langle length\text{-}of\text{-}lines\rangle$`}`
`\@nonumhgrid` same as `\@hgrid` but no numbers drawn

```
 6 \def\@vgrid(#1,#2)#3#4#5{%
 7   \setcounter{@grid}{#1}%
 8   \multiput(#1,#2)(#3,0){#4}{\line(0,1){#5}}%
 9   \multiput(#1,#2)(#3,0){#4}{\@vgridnumber{#3}}}

10 \def\@vgridnumber#1{%
11   \makebox(0,0)[t]{%
12     \shortstack{\rule{0pt}{10pt}\\\arabic{@grid}}}%
13   \addtocounter{@grid}{#1}}

14 \def\@nonumvgrid(#1,#2)#3#4#5{%
15   \multiput(#1,#2)(#3,0){#4}{\line(0,1){#5}}}

16 \def\@hgrid(#1,#2)#3#4#5{%
17   \setcounter{@grid}{#2}%
18   \multiput(#1,#2)(0,#3){#4}{\line(1,0){#5}}%
19   \multiput(#1,#2)(0,#3){#4}{\@hgridnumber{#3}}}

20 \def\@hgridnumber#1{%
21   \makebox(0,0)[r]{\arabic{@grid}\hspace{10pt}}%
22   \addtocounter{@grid}{#1}}

23 \def\@nonumhgrid(#1,#2)#3#4#5{%
24   \multiput(#1,#2)(0,#3){#4}{\line(1,0){#5}}}
```

Finally, `\graphpaper` is defined in a straightforward way in terms of the commands above.

`\graphpaper`

```
25 \newcommand\graphpaper[1][10]{\leavevmode\@grid{#1}}
```

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[*]This file has version number v1.0c, last revised 1994/08/09.

`\@grid`

```
26 \def\@grid#1(#2,#3)#4{\@grid@i{#1}{#2}{#3}()
```

`\@grid@i`

```
27 \def\@grid@i#1#2#3(#4,#5){%
28   \@tempcnta=#4\relax
29   \divide\@tempcnta#1\relax
30   \advance\@tempcnta1\relax
31   {\thinlines\@nonumvgrid(#2,#3){#1}{\@tempcnta}{#5}
32    \@tempcnta#4\relax
33    \divide\@tempcnta5\relax
34    \divide\@tempcnta#1\relax
35    \advance\@tempcnta1\relax
36    \@tempcntb5\relax
37    \multiply\@tempcntb#1\relax
38    \thicklines\@vgrid(#2,#3){\@tempcntb}{\@tempcnta}{#5}
39    \@tempcnta#5\relax
40    \divide\@tempcnta #1\relax
41    \advance\@tempcnta1\relax
42    \thinlines\@nonumhgrid(#2,#3){#1}{\@tempcnta}{#4}
43    \@tempcnta#5\relax
44    \divide\@tempcnta5\relax
45    \divide\@tempcnta#1\relax
46    \advance\@tempcnta1\relax
47    \thicklines\@hgrid(#2,#3){\@tempcntb}{\@tempcnta}{#4}}%
48   \ignorespaces}
49 ⟨/package⟩
```