1 Introduction

The \texttt{fgruler} package draws horizontal and vertical rulers on the foreground of every (or the current) page at absolute position. In this way, you can check the page layout dimensions. You can also draw various rulers in the text.

The \texttt{fgruler} package requires the services of the following packages: \texttt{kvoptions}, \texttt{etoolbox}, \texttt{xcolor}, \texttt{graphicx}, \texttt{eso-pic}.

2 Loading package

Load the package with

\begin{verbatim}
\usepackage[⟨package options⟩]{fgruler}
\end{verbatim}

or

\begin{verbatim}
\usepackage{fgruler}
\setfgruler[⟨package options⟩]
\end{verbatim}

The \texttt{\setfgruler} command is usable in the document body, too.

3 Package options

By default, the \texttt{fgruler} package draws a square ruler on the foreground of every page. The following package options set the parameters of these rulers.

\begin{verbatim}
unit=⟨unit⟩
\end{verbatim}

Ruler unit. Possible \texttt{(unit)} values:

\begin{verbatim}
\begin{itemize}
\item cm Metric ruler (centimeter). Default value.
\item in English ruler (inch).
\end{itemize}
\end{verbatim}

\begin{verbatim}
type=⟨type name⟩
\end{verbatim}

It determines the origin, directions, and lengths of the ruler. Possible \texttt{(type name)} values:

\begin{verbatim}
\begin{itemize}
\item upperleft Default value. Square ruler (origin: upper left corner of the paper; directions: down and right; lengths: paper sizes). See Example 7.1.
\item upperright Square ruler (origin: upper right corner of the paper; directions: down and left; lengths: paper sizes). See Example 7.3.
\item lowerleft Square ruler (origin: lower left corner of the paper; directions: up and right; lengths: paper sizes). See Example 7.4.
\item lowerright Square ruler (origin: lower right corner of the paper; directions: up and left; lengths: paper sizes). See Example 7.5.
\end{itemize}
\end{verbatim}
upperleftT Square ruler (origin: upper left corner of the text area; directions: down and right; lengths: text area sizes). See Example 7.12.

upperrightT Square ruler (origin: upper right corner of the text area; directions: down and left; lengths: text area sizes). See Example 7.13.

lowerleftT Square ruler (origin: lower left corner of the text area; directions: up and right; lengths: text area sizes). See Example 7.14.

lowerrightT Square ruler (origin: lower right corner of the text area; directions: up and left; lengths: text area sizes). See Example 7.15.

alledges There are rulers on all edges of the paper. Top ruler origin: upper left corner of the paper (direction: right). Bottom ruler origin: lower left corner of the paper (direction: right). Left ruler origin: upper left corner of the paper (direction: down). Right ruler origin: upper right corner of the paper (direction: down). Lengths: paper sizes. See Example 7.10.

alledges* It is similar to alledges option, but bottom ruler origin is lower right corner of the paper (direction: left), and left ruler origin is lower left corner of the paper (direction: up). See Example 7.11.

alledgesT It is similar to alledges option, but on the edges of the text area. See Example 7.16.

alledgesT* It is similar to alledges* option, but on the edges of the text area. See Example 7.17.

user Each \langle unit\rangle-(\langle type name\rangle) pair activates an \fgrulertype{\langle unit\rangle}{\langle type name\rangle} command. So the expansion of \fgrulertype{\langle unit\rangle}{user} determines the effect of this option. It will be \langle code\rangle after using the \fgrulerdefuser{\langle code\rangle} command, where in the \langle code\rangle you have to reference the unit as \fgrulerunit. For example, after \fgrulerdefuser{\fgrulertype{\fgrulerunit}{alledges}} the type=user option will be equivalent to the type=alledges. See also Examples 7.19–7.22.

none No ruler drawn.

type=\langle\langle type name list\rangle\rangle

The \langle type name list\rangle is a list of valid type names separated by commas. These types will be combined. For example type=\langle alledges,alledgesT\rangle. See the result in Example 7.18.

hshift=\langle length\rangle

Horizontal shift of the ruler, if the \langle type name\rangle is upperleft, lowerleft, upperright, or lowerright. The shift direction is right, if the \langle type name\rangle is upperleft or lowerleft. The shift direction is left, if the \langle type name\rangle is upperright or lowerright. Default: hshift=0cm. See Examples 7.6–7.9.

vshift=\langle length\rangle

Vertical shift of the ruler, if the \langle type name\rangle is upperleft, lowerleft, upperright, or lowerright. The shift direction is down, if the \langle type name\rangle is upperleft or upperright. The shift direction is up, if the \langle type name\rangle is lowerleft or lowerright. Default: vshift=0cm. See Examples 7.6–7.9.

color=\langle color name\rangle

Ruler color (see xcolor package). Default: color=black. See Example 7.2.

numsep=\langle length\rangle

Separation between number and ruler. Default: numsep=3pt.

markthick=\langle length\rangle

Mark thickness. Default: markthick=0.4pt.

marklength=\langle length\rangle

Mark length at integer units (see the red marks): 0 1 2 3 Default: marklength=2mm. See the length of the other marks in Section 6.

numfont=\langle font type\rangle

Number font type. Default: numfont=\scriptsize\sffamily. You can use this option only in \setfgruler and \fgruler* (see Section 4) commands.
showframe or showframe=true
It draws visible frames for the text and margin area, and lines for the head and foot. Their color
and thickness are determined by the color and the markthick options. See Example 7.2.

showframe=false
It deactivates the showframe option.

nonefgrulers
It kills all of the rulers on the foreground, including also those, which are generated by \fgruler
or \fgruler* (see Section 4). But the rulers, which were drawn by \ruler and \squareruler (see
Section 5), do not disappear. Furthermore it deactivates the showframe option, too. In this case
the fgruler package does not load the eso-pic package. This option works only in preamble.

It is recommended to use in two cases:
• To draw rulers only in text, there is no need for the checking function.
• To halt the checking function temporarily.

The type=none is not identical with nonefgrulers option. The differences:
• type=none does not kill the \fgruler and \fgruler* commands and the showframe option.
• type=none is alterable in any point of the document.
• The fgruler package loads the eso-pic package, if you use the type=none option without
nonefgrulers.

4 Drawing rulers on the foreground of the current page
\fgruler[⟨unit⟩]{⟨type name⟩}{⟨hshift⟩}{⟨vshift⟩}
It draws a square ruler on the foreground of that page, where this command is expanded. You can
use more \fgruler commands in the same page.

The package options (see Section 3) also work on this command, except for type, hshift, and
vshift.

This command is effectless, if you use the nonefgrulers package option in the preamble.

⟨unit⟩ options: cm, in (see Section 3). Its default value is the same as the value specified by the
unit=⟨unit⟩ package option.

⟨type name⟩ parameters: upperleft, uppright, lowerleft, lowerright (see Section 3).
⟨hshift⟩ Horizontal shift. The shift direction is right, if the ⟨type name⟩ is upperleft or lowerleft,
otherwise left.
⟨vshift⟩ Vertical shift. The shift direction is down, if the ⟨type name⟩ is upperleft or uppright,
otherwise up.

Example: \fgruler[in]{upperright}{1in}{2.5in}

\fgruler*[⟨package options⟩]{⟨type name⟩}
It draws a ruler on the foreground of that page, where this command is expanded. You can use
more \fgruler* commands in the same page.

This command is effectless, if you use the nonefgrulers package option in the preamble.

⟨package options⟩ All options from Section 3, except for type, showframe, and nonefgrulers.
⟨type name⟩ All possible values of the type option from Section 3, except for the none value.

Example: \fgruler*[color=red,type=in]{alledges}
Note that the following two commands are equivalent:
\fgruler*[unit=in,hshift=1in,vshift=2.5in]{upperright}
\fgruler[in]{upperright}{1in}{2.5in}
5 Drawing rulers in the text

\ruler\{\langle unit\rangle\}\{\langle type name\rangle\}\{\langle length\rangle\}

It draws a horizontal or a vertical ruler. The bottom of the ruler is aligned to the baseline of the surrounding text. The package options (see Section 3) do not work on this command.

\langle unit\rangle options:
- cm Metric ruler (centimeter). Default option.
- in English ruler (inch).

\langle type name\rangle parameters:
- downright Direction: down. The numbers are on the right side.
- downleft Direction: down. The numbers are on the left side.
- upright Direction: up. The numbers are on the right side.
- upleft Direction: up. The numbers are on the left side.
- rightdown Direction: right. The numbers are on the down side.
- rightup Direction: right. The numbers are on the up side.
- leftright Direction: left. The numbers are on the down side.
- leftup Direction: left. The numbers are on the up side.
- taperight Tape measure (direction: right). See Example 7.25.
- tapeleft Tape measure (direction: left). See Example 7.25.

\langle length\rangle Ruler length.

Example: \ruler\{rightdown\}\{5cm\} 0 cm 1 2 3 4 5

\ruler*\{\langle unit\rangle\}\{\langle type name\rangle\}\{\langle length\rangle\}

It works like \ruler, but the top of the ruler is aligned to the baseline of the surrounding text.

Example: \ruler*\{taperight\}\{5cm\} 0 cm 1 2 3 4 5

\squareruler\{\langle unit\rangle\}\{\langle type name\rangle\}\{\langle width\rangle\}\{\langle height\rangle\}

It draws a square ruler. The bottom of the square ruler is aligned to the baseline of the surrounding text. The package options (see Section 3) do not work on this command.

\langle unit\rangle options:
- cm Metric ruler (centimeter). Default option.
- in English ruler (inch).

\langle type name\rangle parameters:
- upperleft Directions: down and right.
- upperright Directions: down and left.
- lowerleft Directions: up and right.
- lowerright Directions: up and left.

\langle width\rangle Square ruler width.
\langle height\rangle Square ruler height.

Example: \squareruler\{upperleft\}\{5cm\}\{1cm\} 0 cm 1 2 3 4 5

\squareruler*\{\langle unit\rangle\}\{\langle type name\rangle\}\{\langle width\rangle\}\{\langle height\rangle\}

It works like \squareruler, but the top of the square ruler is aligned to the baseline of the surrounding text.

Example: \squareruler*\{upperleft\}\{5cm\}\{1cm\} 0 cm 1 2 3 4 5

\rulerparams\{\langle markthick\rangle\}\{\langle numfont\rangle\}\{\langle color\rangle\}\{\langle marklength\rangle\}\{\langle numsep\rangle\}

It sets the parameters of the rulers, which are drawn by \ruler or \squareruler. If an argument is empty, then that parameter will not be changed.
\texttt{markthick} Mark thickness. Default: 0.4pt
\texttt{numfont} Number font type. Default: \texttt{\scriptsize\sffamily}
\texttt{color} Ruler line color. Default: black
\texttt{marklength} Mark length at integer units. Default: 2mm
\texttt{numsep} Separation between number and ruler. Default: 3pt

For example, \texttt{\rulerparams{}{}{red}{}} changes the ruler color to red.

\texttt{\rulerparamsfromfg}
It sets the ruler parameters from the current foreground ruler parameters.

\texttt{\rulernorotatenum}
By default, the numbers of the vertical rulers (which were generated by \texttt{\ruler} or \texttt{\squareruler}) are rotated by 90°. It kills this action. This command can only be expanded in the document body.

\texttt{\rulerrotatenum}
After \texttt{\rulernorotatenum}, it reactivates the number rotating. This command can only be expanded in the document body.

6 Additional setting commands

The following commands can work on all of the rulers, which are drawn by \texttt{fgruler} package.

\texttt{\fgrulerstartnum\{\texttt{num}\}}
The \texttt{\langle num \rangle} is a nonnegative integer, which will be the starting number on the horizontal and vertical rulers. Default: \texttt{\fgrulerstartnum\{0\}}

Example: \texttt{\{\fgrulerstartnum\{5\}\squareruler\{lowerleft\}\{3cm\}\{1cm\}\}}

\texttt{\fgrulerstartnumh\{\texttt{num}\}}
The \texttt{\langle num \rangle} is a nonnegative integer, which will be the starting number on the horizontal rulers. Default: \texttt{\fgrulerstartnumh\{0\}}

Example: \texttt{\{\fgrulerstartnumh\{5\}\squareruler\{lowerleft\}\{3cm\}\{1cm\}\}}

\texttt{\fgrulerstartnumv\{\texttt{num}\}}
The \texttt{\langle num \rangle} is a nonnegative integer, which will be the starting number on the vertical rulers. Default: \texttt{\fgrulerstartnumv\{0\}}

Example: \texttt{\{\fgrulerstartnumv\{5\}\squareruler\{lowerleft\}\{3cm\}\{1cm\}\}}

\texttt{\fgrulernoborderline}
By default, there is a borderline on one side of the ruler. It disappears by this command.

Example: \texttt{\{\fgrulernoborderline\ruler\{rightup\}\{3cm\}\}}

\texttt{\fgrulerborderline}
After \texttt{\fgrulernoborderline}, it reactivates the previous default effect.

\texttt{\fgrulercaptioncm\{\texttt{caption}\}}
Unit caption in metric ruler. Default: \texttt{\fgrulercaptioncm\{cm\}}

Example: \texttt{\{\fgrulercaptioncm\{}\ruler\{rightup\}\{3cm\}\}}

\texttt{\fgrulercaptionin\{\texttt{caption}\}}
Unit caption in English ruler. Default: \texttt{\fgrulercaptionin\{inch\}}
The ruler numbers are determined by the \fgrulernum counter. Its current value is printed by the \thefgrulernum. Its default definition is \def\thefgrulernum{\arabic{fgrulernum}}, which is equivalent to \fgrulerdefnum{\arabic{fgrulernum}}.

Example: \{\fgrulerdefnum{}\fgrulercaptioncm{}\ruler{rightdown}{2cm}\}

\fgrulerratiocm\{\langle ratio1 \rangle\}\{\langle ratio2 \rangle\}

Mark length ratios in metric rulers. If an argument is empty, then that parameter will not be changed.

⟨ratio1⟩ Mark length ratio at \(k/10\) cm, where \(k\) is positive integer and not divisible by 5.

\begin{verbatim}
\begin{tabular}{ccc}
0 & 1 & 2 \\
\hline
\end{tabular}
\end{verbatim}

For example, if this ratio is 0.5 and the mark length at integer unit is 2 mm, then this mark length will be \(0.5 \times 2\) mm = 1 mm.

⟨ratio2⟩ Mark length ratio at \(k/2\) cm, where \(k\) is positive odd integer.

\begin{verbatim}
\begin{tabular}{ccc}
0 & 1 & 2 \\
\hline
\end{tabular}
\end{verbatim}

Default: \fgrulerratiocm{0.5}{0.75}

\fgrulerratioin\{\langle ratio1 \rangle\}\{\langle ratio2 \rangle\}\{\langle ratio3 \rangle\}\{\langle ratio4 \rangle\}

Mark length ratios in English rulers. If an argument is empty, then that parameter will not be changed.

⟨ratio1⟩ Mark length ratio at \(k/16\) inch, where \(k\) is positive odd integer.

\begin{verbatim}
\begin{tabular}{ccc}
0 & 1 & 2 \\
\hline
\end{tabular}
\end{verbatim}

⟨ratio2⟩ Mark length ratio at \(k/8\) inch, where \(k\) is positive odd integer.

\begin{verbatim}
\begin{tabular}{ccc}
0 & 1 & 2 \\
\hline
\end{tabular}
\end{verbatim}

⟨ratio3⟩ Mark length ratio at \(k/4\) inch, where \(k\) is positive odd integer.

\begin{verbatim}
\begin{tabular}{ccc}
0 & 1 & 2 \\
\hline
\end{tabular}
\end{verbatim}

⟨ratio4⟩ Mark length ratio at \(k/2\) inch, where \(k\) is positive odd integer.

\begin{verbatim}
\begin{tabular}{ccc}
0 & 1 & 2 \\
\hline
\end{tabular}
\end{verbatim}

Default: \fgrulerratioin{0.25}{0.375}{0.625}{0.75}

\fgrulerthickcm\{\langle thick1 \rangle\}\{\langle thick2 \rangle\}\{\langle thick3 \rangle\}

Mark thicknesses in metric rulers. If an argument is empty, then that parameter will not be changed.

⟨thick1⟩ Mark thickness at \(k/10\) cm, where \(k\) is positive integer and not divisible by 5.

⟨thick2⟩ Mark thickness at \(k/2\) cm, where \(k\) is positive odd integer.

⟨thick3⟩ Mark thickness at integer units.

The default values are given by ⟨markthick⟩ of \rulerparams, respectively by markthick option.

Example: \{\fgrulerthickcm{\{}{\} \{2pt\} \rulerparams{\} \{5mm\} \fgrulernoborderline \ruler{rightdown}{3cm}\}

\fgrulerthickin\{\langle thick1 \rangle\}\{\langle thick2 \rangle\}\{\langle thick3 \rangle\}\{\langle thick4 \rangle\}\{\langle thick5 \rangle\}

Mark thicknesses in English rulers. If an argument is empty, then that parameter will not be changed.

⟨thick1⟩ Mark thickness at \(k/16\) inch, where \(k\) is positive odd integer.

⟨thick2⟩ Mark thickness at \(k/8\) inch, where \(k\) is positive odd integer.
Mark thickness at $k/4$ inch, where $k$ is positive odd integer.

Mark thickness at $k/2$ inch, where $k$ is positive odd integer.

Mark thickness at integer units.

The default values are given by \emph{markthick} of \texttt{rulerparams}, respectively by \texttt{markthick} option. Example:

\begin{verbatim}
{\fgrulerthickin{}{}{}{}{2pt}
\rulerparams{}{}{}{5mm}{}
\fgrulernoborderline
\ruler[in]{rightdown}{3in}}
\end{verbatim}

Mark colors in metric rulers. If an argument is empty, then that parameter will not be changed.

Mark color at $k/10$ cm, where $k$ is positive integer and not divisible by 5.

Mark color at $k/2$ cm, where $k$ is positive odd integer.

Mark color at integer units.

The default values are given by \emph{color} of \texttt{rulerparams}, respectively by \texttt{color} option. Example:

\begin{verbatim}
{\fgrulercolorcm{green}{blue}{red}
\rulerparams{1pt}{}{}{5mm}{}
\fgrulernoborderline
\ruler{rightdown}{3cm}}
\end{verbatim}

Mark color in English rulers. If an argument is empty, then that parameter will not be changed.

Mark color at $k/16$ inch, where $k$ is positive odd integer.

Mark color at $k/8$ inch, where $k$ is positive odd integer.

Mark color at $k/4$ inch, where $k$ is positive odd integer.

Mark color at $k/2$ inch, where $k$ is positive odd integer.

Mark color at integer units.

The default values are given by \emph{color} of \texttt{rulerparams}, respectively by \texttt{color} option. Example:

\begin{verbatim}
{\fgrulercolorin{yellow}{orange}{green}{blue}{red}
\rulerparams{1pt}{}{}{5mm}{}
\fgrulernoborderline
\ruler[in]{rightdown}{3in}}
\end{verbatim}

It sets all options and parameters to default values. This command can only be expanded in the document body.

\textbf{Warning:} All setting commands obey the normal scoping rules, i.e. if you use them inside a group, then the changing of the parameters is not valid outside the group.
7 Examples

7.1 Default case

\documentclass{article}
\usepackage{fgruler}
\begin{document}
...
\end{document}
7.2 The showframe and color options

\documentclass{article}
\usepackage[color=red,showframe]{fgruler}
\begin{document}
...
\end{document}
7.3 The type=upperright option

\documentclass{article}
\usepackage[type=upperright]{fgruler}
\begin{document}
...
\end{document}
7.4 The type=lowerleft option

\documentclass{article}
\usepackage[type=lowerleft]{fgruler}
\begin{document}
...
\end{document}
7.5 The type=lowerright option

\documentclass{article}
\usepackage[type=lowerright]{fgruler}
\begin{document}
...
\end{document}
7.6 Shift in default case

\documentclass{article}
\usepackage[hshift=1cm,vshift=2cm]{fgruler}
\begin{document}
...
\end{document}
7.7 Shift in case type=upperright option

\documentclass{article}
\usepackage[type=upperright,hshift=1cm,vshift=2cm]{fgruler}
\begin{document}
...
\end{document}
7.8 Shift in case type=lowerleft option

\documentclass{article}
\usepackage[type=lowerleft,hshift=1cm,vshift=2cm]{fgruler}
\begin{document}
...
\end{document}
7.9 Shift in case type=lowerright option

\documentclass{article}
\usepackage[type=lowerright,hshift=1cm,vshift=2cm]{fgruler}
\begin{document}
...
\end{document}
7.10 The type=alledges option

\documentclass{article}
\usepackage[type=alledges]{fgruler}
\begin{document}
...
\end{document}
7.11 The type=alledges* option

\documentclass{article}
\usepackage[type=alledges*]{fgruler}
\begin{document}
...
\end{document}
7.12 The `type=upperleft` option

\documentclass{article}
\usepackage[type=upperleft]{fgruler}
\begin{document}
...
\end{document}
7.13 The \texttt{type=upperrightT} option

\begin{verbatim}
\documentclass{article}
\usepackage[type=upperrightT]{fgruler}
\begin{document}
...
\end{document}
\end{verbatim}
The `type=lowerleftT` option

```latex
\documentclass{article}
\usepackage[type=lowerleftT]{fgruler}
\begin{document}
...
\end{document}
```
7.15 The \texttt{type=lowerrightT} option

\documentclass{article}
\usepackage[type=lowerrightT]{fgruler}
\begin{document}
...
\end{document}
7.16 The \texttt{type=alledgesT} option

\documentclass{article}
\usepackage[type=alledgesT]{fgruler}
\begin{document}
...
\end{document}
The type=alledgesT* option

\documentclass{article}
\usepackage[type=alledgesT*]{fgruler}
\begin{document}
...
\end{document}
7.18 Combining type names

\documentclass{article}
\usepackage[type={alledges,alledgesT}]{fgruler}
\begin{document}
...
\end{document}
7.19 Setting the type=user option

In the next example the type=user option activates type=upprerright or type=upperleft, depending on the page number is odd or even.

\documentclass{article}
\usepackage[type=user]{fgruler}
\fgrulerdefuser{
    \ifodd\value{page}\fgrulertype{\fgrulerunit}{upperright}
    \else\fgrulertype{\fgrulerunit}{upperleft}\fi
}
\begin{document}
...
\end{document}
7.20 Setting the type=user option

In the next example the type=user option places a vertical ruler at the left border of the text area.

```latex
\documentclass{article}
\usepackage[type=user]{fgruler}
\fgrulerdefuser{
  \AtTextLowerLeft{\% See eso-pic package!
    \rulerparamsfromfg
    \llap{\ruler[\fgrulerunit]{downleft}{\textheight}}
  }
}
\begin{document}
...
\end{document}
```
7.21 Setting the type=user option

In the next example the type=user option places rulers at the right and bottom borders of the text area.

\documentclass{article}
\usepackage[type=user]{fgruler}
\fgrulerdefuser{
  \AtTextLowerLeft{% See eso-pic package!
    \rulerparamfromfg
    \rulernorotatenum
    \llap{\ruler[\fgrulerunit]{downleft}{\textheight}}% 
    \ruler*[\fgrulerunit]{rightdown}{\textwidth}
  }
}
\begin{document}
  ...
\end{document}
7.22 Setting the \texttt{type=user} option

In the next example the \texttt{type=user} option places rulers at the right and top borders of the text area.

\begin{verbatim}
\documentclass{article}
\usepackage[type=user]{fgruler}
\fgrulerdefuser{
  \AtTextUpperLeft{% See eso-pic package!
    \rulerparamsfromfg
    \ruler[\fgrulerunit]{rightup}{\textwidth}\
    \rulernorotatenum
    \csname fgrulercaption\fgrulerunit\endcsname{}\
    \ruler*[\fgrulerunit]{downright}{\textheight}
  }
}\begin{document}
...
\end{document}
\end{verbatim}
7.23  Rulers on the foreground of the current page and in the text

\documentclass{article}
\usepackage[color=blue]{fgruler}
\begin{document}
  \fgruler{upperleft}{1cm}{1.5cm}
  \fgruler*[color=red,unit=in]{lowerrightT}
  \noindent
  \rulerparams{}{\color{red}\tiny\ttfamily}{green}{}{}
  \ruler{rightdown}{3cm}
  \ruler*{rightdown}{3cm}
  \text\rotatebox[origin=tl]{30}{\ruler*{rightdown}{3cm}}
\end{document}
7.24 Ruler types in the text

\documentclass{article}
\usepackage[a4paper,margin=25mm]{geometry}
\usepackage[nonefgrulers]{fgruler}
\begin{document}
\noindent
\rulerparams{}{}{red}{}{3pt}
\ruler{rightdown}{3cm}
\hfill
\ruler{rightup}{3cm}
\hfill
\ruler{leftup}{3cm}
\hfill
\ruler{leftdown}{3cm}
\bigskip
\noindent
\rulerparams{}{}{green}{}{}
{\rulernorotatenum\ruler{upright}{3cm}}
\hfill
\ruler{downright}{3cm}
\hfill
\ruler{upleft}{3cm}
\hfill
\ruler{downleft}{3cm}
\bigskip
\noindent
\rulerparams{}{}{blue!50!black}{}{}
{\rulernorotatenum\fgrulercaptioncm\squareruler{upperleft}{2cm}{3cm}}
\hfill
\squareruler{lowerright}{2cm}{3cm}
\hfill
\squareruler{lowerleft}{2cm}{3cm}
\hfill
\squareruler{upperright}{2cm}{3cm}
\hfill
{\rulerparams{}{\footnotesize\bfseries\color{red}}{}{5mm}{}}
\squareruler{in}{lowerleft}{2in}{3cm}
\end{document}
7.25 Measuring tapes

\documentclass{article}
\usepackage[a4paper,margin=25mm]{geometry}
\usepackage[nonefgrulers]{fgruler}
\begin{document}
\noindent \ruler{taperight}{\textwidth}\[2pt\]
\rotatebox[origin=br]{-90}{\ruler{tapeleft}{3cm}}
\ruler{taperight}{10cm}
\medskip \noindent \fgrulerdefnum{}
\medskip \noindent \fgrulercaptioncm{}
\rulerparams{}{}{red}{}{0pt}
\ruler{taperight}{\textwidth}
\end{document}
7.26 Mark length and rotating

\documentclass{article}
\usepackage{fgruler}
\begin{document}
\noindent
{\fgrulerdefnum{\rotatebox{45}{\arabic{fgrulernum}\,cm}}
{\fgrulercaptioncm{}}
rulerparams{}{\tiny\color{red}}{blue}{8mm}{}
{\fgrulercolorcm{}}{}{black}
\rotatebox{-45}{\ruler{rightup}{10cm}}\\ruler{rightup}{5cm}
\end{document}
7.27 Coordinate system

\documentclass{article}
\usepackage[a4paper,margin=25mm]{geometry}
\usepackage{nofgrulers}{fgruler}
\begin{document}
\noindent
\rulernorotatenum
\fgrulercaptioncm{}
\fgrulercolorcm{}{}{red}
\rulerparams{}{\scriptsize\color{red}}{}{}{}
{\fgrulerdefnum{$-\arabic{fgrulernum}$}\squareruler*{upperright}{3cm}{3cm}}\
\squareruler{lowerleft}{13cm}{6cm}
\end{document}
7.28 A new square ruler type

\documentclass{article}
\usepackage[type=none]{fgruler}
\newcommand{\usersquareruler}[2]{% 
  {\rulernorotatenum\fgrulercaptioncm{}\ruler*{downleft}{#2}}% 
  \ruler{rightup}{#1} %
}%
\begin{document}
\usersquareruler{3cm}{5cm}
\end{document}