The **fgruler** package

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1 Introduction

The **fgruler** is an abbreviation for the *foreground ruler*. This package draws a horizontal and a vertical ruler on the foreground of every (or a given) page at absolute position. In this way, you can check the page layout dimensions.

Besides, you can draw various rulers in the text, too.

The **fgruler** package requires the services of the following packages: **kvoptions**, **etoolbox**, **xcolor**, **graphicx**, **eso-pic**.

2 Loading package

Load the package with

```
\usepackage[(options)]{fgruler}
```

or

```
\usepackage{fgruler}
\setfgruler[(options)]
```

The **\setfgruler** command is usable in the **document** environment, too.

3 Options

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

**unit=(unit)**

Ruler unit. The *(unit)* legal values:

- **cm** Metric ruler (centimeter). Default value.
- **in** English ruler (inch).

**type=(type name)**

Origin, directions and lengths of the ruler. The *(type name)* legal values:

- **upperleft** Default value. Origin: upper left corner of the paper. Directions: down and right. Lengths: paper sizes.
- **upppright** Origin: upper right corner of the paper. Directions: down and left. Lengths: paper sizes.
- **lowerleft** Origin: lower left corner of the paper. Directions: up and right. Lengths: paper sizes.
- **lowerright** Origin: lower right corner of the paper. Directions: up and left. Lengths: paper sizes.
upperleftT Origin: upper left corner of the text area. Directions: down and right. Lengths: text area sizes.

upperrightT Origin: upper right corner of the text area. Directions: down and left. Lengths: text area sizes.

lowerleftT Origin: lower left corner of the text area. Directions: up and right. Lengths: text area sizes.

lowerrightT Origin: lower right corner of the text area. Directions: up and left. Lengths: text area sizes.

none Not drawing ruler.

user Each \langle unit⟩–\langle type name⟩ pair activates an \fgruler\langle unit⟩\langle type name⟩\fg command, which is equivalent to \fgrulertype\langle unit⟩\{\langle type name⟩\}. You can control the effect of this option by redefining the \fgruler\langle unit⟩\user\fg commands, which are empty in the default case. \def\fgruler\langle cm\user\fg\langle code⟩ is equivalent to \fgrulerdefusercm\langle code⟩. Similarly, \def\fgruler\langle in\user\fg\langle code⟩ is equivalent to \fgrulerdefuserin\langle code⟩. See 7.8–7.13 examples.

\hshift=\langle length⟩ Horizontal shift of the ruler, if the \langle type name⟩ is upperleft, lowerleft, upperright or lowerright. The shift direction is right, if the \langle type name⟩ is upperleft or lowerleft. The shift direction is left, if the \langle type name⟩ is upperright or lowerright. Default: hshift=0cm.

\vshift=\langle length⟩ Vertical shift of the ruler, if the \langle type name⟩ is upperleft, lowerleft, upperright or lowerright. The shift direction is down, if the \langle type name⟩ is upperleft or upperright. The shift direction is up, if the \langle type name⟩ is lowerleft or lowerright. Default: vshift=0cm.

\color=\langle color name⟩ Ruler color (see xcolor package). Default: color=black.

\numsep=\langle length⟩ Separation between number and ruler. Default: numsep=3pt.

\markthick=\langle length⟩ Mark thickness. Default: markthick=0.4pt.

\marklength=\langle length⟩ 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⟩ Number font type. Default: numfont=\scriptsize\sffamily. You can use this option only in \setfgruler command.

\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.

\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 (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 command and the `showframe` option.
- `type=none` is alterable in any point of the document.
- `type=none` works in document environment, too.
- The fgruler package loads the eso-pic package, if you use the `type=none` option without `nonefgrulers`.

4 Drawing square rulers on the foreground of a given 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 `unit`, `type`, `hshift` and `vshift`, since these are the parameters of the \fgruler.

If you use `nonefgrulers` option in preamble, then this command is effectless.

- ⟨`unit`⟩ options:
  - `cm` Metric ruler (centimeter). Default option.
  - `in` English ruler (inch).

- ⟨`type name`⟩ parameters:
  - `upperleft` Origin: upper left corner. Directions: down and right.
  - `upperright` Origin: upper right corner. Directions: down and left.
  - `lowerleft` Origin: lower left corner. Directions: up and right.
  - `lowerright` Origin: lower right corner. Directions: up and left.

- ⟨`hshift`⟩ Horizontal shift. The shift direction is right, if the ⟨`type name`⟩ is `upperleft` or `lowerright`, otherwise it is left.

- ⟨`vshift`⟩ Vertical shift. The shift direction is down, if the ⟨`type name`⟩ is `upperleft` or `upperright`, otherwise it is up.

Example: \fgruler[cm]{upperleft}{1in}{2.5in}

5 Drawing rulers in the text

\ruler[⟨unit⟩]{⟨type name⟩}{⟨length⟩}

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.

- ⟨`unit`⟩ options:
  - `cm` Metric ruler (centimeter). Default option.
  - `in` English ruler (inch).

- ⟨`type name`⟩ 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.
  - `leftdown` Direction: left. The numbers are on the down side.
  - `leftup` Direction: left. The numbers are on the up side.

- ⟨`length`⟩ Ruler length.

Example: \ruler{rightdown}{5cm}

\ruler*[⟨unit⟩]{⟨type name⟩}{⟨length⟩}

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

Example: \ruler*[rightdown]{5cm}
\texttt{squareruler}\(\langle\text{unit}\rangle\{\langle\text{name}\rangle\}\{\langle\text{width}\rangle\}\{\langle\text{height}\rangle\}\)

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.

\(\langle\text{unit}\rangle\) options:
  \texttt{cm} Metric ruler (centimeter). Default option.
  \texttt{in} English ruler (inch).

\(\langle\text{name}\rangle\) parameters:
  \texttt{upperleft} Directions: down and right.
  \texttt{upperright} Directions: down and left.
  \texttt{lowerleft} Directions: up and right.
  \texttt{lowerright} Directions: up and left.

\(\langle\text{width}\rangle\) Square ruler width.

\(\langle\text{height}\rangle\) Square ruler height.

Example: \texttt{squareruler}\{upperleft\}\{5cm\}\{1cm\}

\texttt{squareruler*}\(\langle\text{unit}\rangle\{\langle\text{name}\rangle\}\{\langle\text{width}\rangle\}\{\langle\text{height}\rangle\}\)

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

Example: \texttt{squareruler*}\{upperleft\}\{5cm\}\{1cm\}

\texttt{rulerparams}\(\langle\text{markthick}\rangle\{\langle\text{numfont}\rangle\{\langle\text{color}\rangle\{\langle\text{marklength}\rangle\{\langle\text{numsep}\rangle\)

It sets the parameters of the rulers, which are drawn by \texttt{ruler} or \texttt{squareruler}. If an argument is empty, then that parameter will not be changed.

\(\langle\text{markthick}\rangle\) Mark thickness. Default: 0.4pt
\(\langle\text{numfont}\rangle\) Number font type. Default: \scriptsize\sffamily
\(\langle\text{color}\rangle\) Ruler line color. Default: black
\(\langle\text{marklength}\rangle\) Mark length at integer units. Default: 2mm
\(\langle\text{numsep}\rangle\) 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 actual 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 is usable only in \texttt{document} environment.

Example: {\texttt{rulernorotatenum}\texttt{ruler}\{upright\}\{1cm\}}

\texttt{rulerrotatenum}

After \texttt{rulernorotatenum}, it reactivates the number rotating. This command is usable only in \texttt{document} environment.

\section{Additional setting commands}

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

\texttt{fgrulerstartnum}\{\langle\text{num}\rangle\}

The \texttt{\langle\text{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\}\texttt{squareruler}\{lowerleft\}\{3cm\}\{1cm\}}
\fgrulerstartnumh{⟨num⟩}
The ⟨num⟩ is a nonnegative integer, which will be the starting number on the horizontal rulers. Default: \fgrulerstartnumh{0}

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

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

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

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

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

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

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

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

\fgrulercaptionin{⟨caption⟩}
Unit caption in English ruler. Default: \fgrulercaptionin{inch}

\fgrulerdefnum{⟨definition⟩}
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{⟨ratio1⟩}{⟨ratio2⟩}
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 a positive integer and not divisible by 5.

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

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

Default: \fgrulerratiocm{0.5}{0.75}

\fgrulerratioin{⟨ratio1⟩}{⟨ratio2⟩}{⟨ratio3⟩}{⟨ratio4⟩}
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 a positive odd integer.

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

⟨ratio3⟩ Mark length ratio at \(k/4\) inch, where \(k\) is a positive odd integer.
\{ratio4\} Mark length ratio at \(k/2\) inch, where \(k\) is positive odd integer.

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

\texttt{\fgrulerthickcm\{\{thick1\}\{\{thick2\}\{\{thick3\}\}}}

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 \texttt{\rulerparams}, respectively by \texttt{markthick} option.

Example:

\[
\begin{array}{c}
\{fgrulerthickcm\{\{\text{2pt}\}\{\text{5mm}\}\}\}
\{rulerparams\{\{\text{1pt}\}\{\text{5mm}\}\}\}
\{fgrulernoborderline\}
\{ruler\{rightdown\}\{3cm\}\}
\end{array}
\]

\texttt{\fgrulerthickin\{\{thick1\}\{\{thick2\}\{\{thick3\}\{\{thick4\}\{\{thick5\}\}}}

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.
\{thick3\} Mark thickness at \(k/4\) inch, where \(k\) is positive odd integer.
\{thick4\} Mark thickness at \(k/2\) inch, where \(k\) is positive odd integer.
\{thick5\} Mark thickness at integer units.

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

Example:

\[
\begin{array}{c}
\{fgrulerthickin\{\{\text{2pt}\}\{\text{5mm}\}\}\}
\{rulerparams\{\{\text{1pt}\}\{\text{5mm}\}\}\}
\{fgrulernoborderline\}
\{ruler\{in\}\{rightdown\}\{3in\}\}
\end{array}
\]

\texttt{\fgrulercolorcm\{\{color1\}\{\{color2\}\{\{color3\}\}}}

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

\{color1\} Mark color at \(k/10\) cm, where \(k\) is positive integer and not divisible by 5.
\{color2\} Mark color at \(k/2\) cm, where \(k\) is positive odd integer.
\{color3\} Mark color at integer units.

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

Example:

\[
\begin{array}{c}
\{fgrulercolorcm\{\text{green}\}\{\text{blue}\}\{\text{red}\}\}
\{rulerparams\{\{\text{1pt}\}\{\text{5mm}\}\}\}
\{fgrulernoborderline\}
\{ruler\{rightdown\}\{3cm\}\}
\end{array}
\]

\texttt{\fgrulercolorin\{\{color1\}\{\{color2\}\{\{color3\}\{\{color4\}\{\{color5\}\}}}

Mark color in English rulers. If an argument is empty, then that parameter will not be changed.
Mark color at \( \frac{k}{16} \) inch, where \( k \) is positive odd integer.

Mark color at \( \frac{k}{8} \) inch, where \( k \) is positive odd integer.

Mark color at \( \frac{k}{4} \) inch, where \( k \) is positive odd integer.

Mark color at \( \frac{k}{2} \) inch, where \( k \) is positive odd integer.

Mark color at integer units.

The default values are given by \( \textcolor{color}{\text{color}} \) of \texttt{rulerparams}, respectively by \texttt{color} option.

Example:

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

\fgrulerreset

It sets all options and parameters to default values. This command is usable only in \texttt{document} environment.

⚠️ 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

The output of the following example is the ruler in this page. It is the 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 Shift in default case

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

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

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

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

\begin{verbatim}
\documentclass{article}
\usepackage[type=upperleftT]{fgruler}
\begin{document}
...
\end{document}
\end{verbatim}
7.8 Setting the \texttt{type=user} option

In the next example the \texttt{type=user} option activates \texttt{type=upperright} or \texttt{type=upperleft}, depending on the page number is odd or even.

\begin{verbatim}
\documentclass{article}
\usepackage[type=user]{fgruler}
\fgrulerdefusercm{\%
  \ifodd\value{page}\fgrulertype{cm}{upperright}\%
  \else\fgrulertype{cm}{upperleft}\fi}
\fgrulerdefuserin{\%
  \ifodd\value{page}\fgrulertype{in}{upperright}\%
  \else\fgrulertype{in}{upperleft}\fi}
\begin{document}
...
\end{document}
\end{verbatim}
7.9 Setting the type=user option

In the next example the type=user option combines the effect of type=upperleft and type=upperleftT.

\documentclass{article}
\usepackage[type=user]{fgruler}
\fgrulerdefusercm{\fgrulertype{cm}{upperleft}\fgrulertype{cm}{upperleftT}}
\fgrulerdefuserin{\fgrulertype{in}{upperleft}\fgrulertype{in}{upperleftT}}
\begin{document}
...
\end{document}
7.10 Setting the \texttt{type=user} option

In this example the \texttt{type=user} option combines the effect of \texttt{type=upperleftT} and \texttt{type=lowerrightT}.

\begin{verbatim}
\documentclass{article}
\usepackage[type=user]{fgruler}
\fgrulerdefusercm{\fgrulertype{cm}{upperleftT}\fgrulertype{cm}{lowerrightT}}
\fgrulerdefuserin{\fgrulertype{in}{upperleftT}\fgrulertype{in}{lowerrightT}}
\begin{document}
...\end{document}
\end{verbatim}
7.11 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.

\begin{verbatim}
\documentclass{article}
\usepackage[type=user]{fgruler}
\newcommand{\fgruleruser}[1]{%
  \AtTextLowerLeft{% See eso-pic package!
    \rulerparamsfromfg%
    \llap{\ruler[#1]{downleft}{\textheight}}%
  }
}
\fgrulerdefusercm{\fgruleruser{cm}}
\fgrulerdefuserin{\fgruleruser{in}}
\begin{document}
...
\end{document}
\end{verbatim}
7.12 Setting the \texttt{type=user} option

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

\begin{verbatim}
\documentclass{article}
\usepackage[type=user]{fgruler}
\newcommand{\fgruleruser}[1]{% 
    \AtTextLowerLeft{% See eso-pic package!
        \rulerparamsfromfg%
        \rulernorotatenum%
        \llap{\ruler[#1]{downleft}{\textheight}}%
        \ruler*[#1]{rightdown}{\textwidth}%
    }
}
\fgrulerdefusercm{\fgruleruser{cm}}
\fgrulerdefuserin{\fgruleruser{in}}
\begin{document}
\ldots
\end{document}
\end{verbatim}
7.13 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.

\documentclass{article}
\usepackage[type=user]{fgruler}
\newcommand{\fgruleruser}[1]{%
  \AtTextUpperLeft{\% See eso-pic package!
    \rulerparamsfromfg%
    \ruler[#1]{rightup}{\textwidth}%
    \rulernorotatenum{\fgrulercaptioncm}{\fgrulercaptionin}{%}
    \ruler*[#1]{downright}{\textheight}%
  }
}
\fgrulerdefusercm{\fgruleruser{cm}}
\fgrulerdefuserin{\fgruleruser{in}}
\begin{document}
...
\end{document}
7.14 Rulers on the foreground of a given page, and in text

\documentclass{article}
\usepackage[color=blue]{fgruler}
\begin{document}
\fgruler{upperleft}{1cm}{1.5cm}
\noindent
\text
\rulerparams{}{\color{red}\tiny\ttfamily}{green}{}
{\fgrulernoborderline}\ruler{rightdown}{3cm}
\text
\ruler*{rightdown}{3cm}
\text
\rotatebox[origin=tl]{30}{\ruler*{rightdown}{3cm}}
% \rotatebox is defined in graphicx package
\end{document}
7.15 Ruler types in text

\documentclass{article}
\usepackage[nonefgrulers]{fgruler}
\begin{document}
\noindent
\rulerparams{}{}{red}{}{1pt}
\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}{}{}
{\rulernorotatatenum \fgrulercaptioncm{} \squareruler[upperleft]{2cm}{3cm}} \hfill \squareruler[lowerright]{2cm}{3cm} \hfill \squareruler[lowerleft]{2cm}{3cm} \hfill \squareruler[upperright]{2cm}{3cm} \hfill \squareruler[in]{lowerleft}{2in}{3cm}
\end{document}
Mark length and rotating

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

\documentclass{article}
\usepackage[nonefgrulers]{fgruler}
\begin{document}
\noindent
\rulernorotatenum
\fgrulercaptioncm{}
\fgrulercolorcm{}{}{red}
\rulerparams{}{\scriptsize\color{red}}{}{}{}
\{\fgrulerdefnum{$-\arabic{fgrulernum}$}\squareruler*{upperright}{3cm}{3cm}\}
\{\fgrulerdefnum{$-\arabic{fgrulernum}$}\squareruler{lowerleft}{13cm}{6cm}\}
\end{document}
7.18  Tape measure

\documentclass{article}
\usepackage[a4paper,margin=25mm]{geometry}
\usepackage[nofgrulers]{fgruler}
\newcommand{\tapemeasure}[1]{\parbox{#1}{\fgrulerdefnum{}\fgrulercaptioncm{}\ruler[rightdown]{#1}\[2pt]\ruler[rightup]{#1}}}
\begin{document}
\noindent\tapemeasure{\textwidth}\[2pt]\rotatebox[origin=br]{-90}{\tapemeasure{3cm}}\tapemeasure{10cm}
\end{document}
7.19 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}