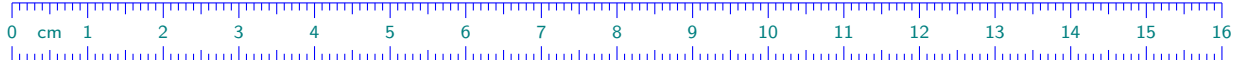


The **fgruler** package

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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.

<unit> values:

cm Metric ruler (centimeter). Default value.

in English ruler (inch).

`type=<type name>`

Origin and directions.

<type name> values:

upperleft Origin: upper left corner. Directions: down and right. Default value.

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.

none Not drawing ruler.

user Each $\langle unit \rangle$ – $\langle type name \rangle$ pair activates an `\fgruler@ $\langle unit \rangle$ @ $\langle type name \rangle$ @fg` command. You can control the effect of this option by redefining the `\fgruler@ $\langle unit \rangle$ @user@fg` commands, which are empty in the default case. (See 7.7, 7.8 and 7.9 examples.)

hshift= $\langle length \rangle$

Horizontal shift. The shift direction is right, if the $\langle type name \rangle$ is `upperleft` or `lowerleft`, otherwise it is left.

Default: `hshift=0cm`.

The $\langle length \rangle$ is saved in `\fgruler@hshift`.

vshift= $\langle length \rangle$

Vertical shift. The shift direction is down, if the $\langle type name \rangle$ is `upperleft` or `upperright`, otherwise it is up.

Default: `vshift=0cm`.

The $\langle length \rangle$ is saved in `\fgruler@vshift`.

color= $\langle color name \rangle$

Ruler color (see `xcolor` package).

Default: `color=black`.

The $\langle color name \rangle$ is saved in `\fgruler@color`.

numsep= $\langle length \rangle$

Separation between number and ruler.

Default: `numsep=3pt`.

The $\langle length \rangle$ is saved in `\fgruler@numsep`.


markthick= $\langle length \rangle$

Mark thickness.

Default: `markthick=0.4pt`.

The $\langle length \rangle$ is saved in `\fgruler@markthick`.

marklength= $\langle length \rangle$

Mark length at integer units: 

Default: `marklength=2mm`.

The $\langle length \rangle$ is saved in `\fgruler@marklength`.

See the length of the other marks in Section 6.

numfont= $\langle font type \rangle$

Number font type.

You can use this option only in `\setfgruler` command.

Default: `numfont=\scriptsize\sffamily`.

The $\langle font type \rangle$ is saved in `\fgruler@numfont`.

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 `lowerleft`, 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[in]{upperright}{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:

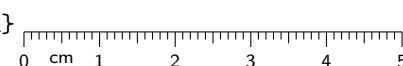
- `downright` Direction: down. The numbers are on the right side.
- `downleft` Direction: down. The numbers are on the left side.
- `upright` Direction: up. The numbers are on the right side.
- `upleft` Direction: up. The numbers are on the left side.
- `rightdown` Direction: right. The numbers are on 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}` 

`\sqruler[<unit>]{<type name>}{<width>}{<height>}`

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.

<unit> options:

cm Metric ruler (centimeter). Default option.

in English ruler (inch).

<type name> parameters:

upperleft Directions: down and right.

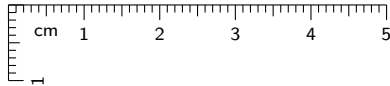
upperright Directions: down and left.

lowerleft Directions: up and right.

lowerright Directions: up and left.

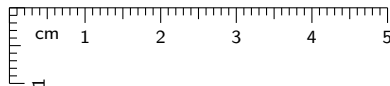
<width> Square ruler width.

<height> Square ruler height.

Example: `\sqruler{upperleft}{5cm}{1cm}` 

`\sqruler*[<unit>]{<type name>}{<width>}{<height>}`

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

Example: `\sqruler*{upperleft}{5cm}{1cm}` 

`\rulerparams{<markthick>}{<numfont>}{<color>}{<marklength>}{<numsep>}`

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

<markthick> Mark thickness. Default: 0.4pt

<numfont> Number font type. Default: `\scriptsize\sffamily`

<color> Ruler line color. Default: **black**


<marklength> Mark length at integer units. Default: 2mm


<numsep> Separation between number and ruler. Default: 3pt

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

`\rulernorotatenum`

By default, the numbers of the vertical rulers (which were generated by `\ruler` or `\sqruler`) are rotated by 90°. It kills this action. This command is usable only in `document` environment.

Example: `\ruler{upright}{1cm}` 

but `{\rulernorotatenum\ruler{upright}{1cm}}` 

`\rulerrotatenum`

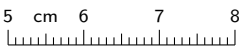
After `\rulernorotatenum`, it reactivates the number rotating. This command is usable only in `document` environment.

6 Additional setting commands

The following commands can work on all of the rulers, which are drawn by `fgruler` package.

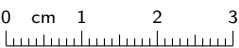

`\fgrulerstartnum{<num>}`

The *<num>* is a nonnegative integer, which will be the starting number on the ruler. Default: `\fgrulerstartnum{0}`

Example: `{\fgrulerstartnum{5}\ruler{rightup}{3cm}}` 

`\fgrulernoborderline`

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


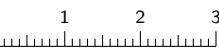
Example: `\ruler{rightup}{3cm}` 
but `{\fgrulernoborderline\ruler{rightup}{3cm}}` 

`\fgrulerborderline`

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

`\fgrulercaptioncm{<caption>}`

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

Example: `\ruler{rightup}{3cm}` 
but `{\fgrulercaptioncm{}}\ruler{rightup}{3cm}` 

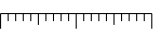
`\fgrulercaptionin{<caption>}`

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>}`

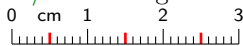
Mark length ratios in metric rulers. If an argument is empty, then that parameter will not be changed.

`<ratio1>` Mark length ratio at $k/10$ cm, where k is 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 positive odd integer.



Default: `\fgrulerratiocm{0.5}{0.75}`

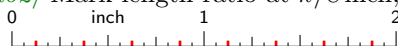
`\fgrulerratioin{<ratio1>}{<ratio2>}{<ratio3>}{<ratio4>}`

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

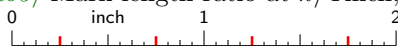
`<ratio1>` Mark length ratio at $k/16$ inch, where k is positive odd integer.



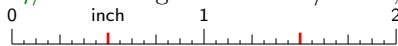
`<ratio2>` Mark length ratio at $k/8$ inch, where k is positive odd integer.



`<ratio3>` Mark length ratio at $k/4$ inch, where k is positive odd integer.



`<ratio4>` Mark length ratio at $k/2$ inch, where k is positive odd integer.



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

`\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 `\rulerparams`, respectively by `markthick` option.

Example:

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



`\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 `\rulerparams`, respectively by `markthick` option.

Example:

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



`\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.

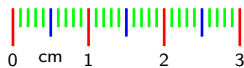
`<color2>` Mark color at $k/2$ cm, where k is positive odd integer.

`<color3>` Mark color at integer units.

The default values are given by `<color>` of `\rulerparams`, respectively by `color` option.

Example:

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



`\fgrulercolorin{<color1>}{<color2>}{<color3>}{<color4>}{<color5>}`

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

`<color1>` Mark color at $k/16$ inch, where k is positive odd integer.

`<color2>` Mark color at $k/8$ inch, where k is positive odd integer.

`<color3>` Mark color at $k/4$ inch, where k is positive odd integer.

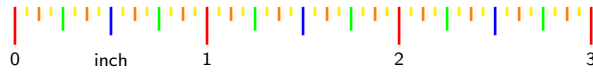
`<color4>` Mark color at $k/2$ inch, where k is positive odd integer.

`<color5>` Mark color at integer units.

The default values are given by `<color>` of `\rulerparams`, respectively by `color` option.

Example:

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



`\fgrulerreset`

It sets all options and parameters to default values. This command is usable only in `document` environment.

⚠ All setting commands¹ 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.

¹Namely `\setfgruler`, `\rulerparams`, `\rulernorotatenum`, `\rulerrotatenum`, furthermore all commands in this section.

7 Examples

7.1 Deafult case

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

```
\documentclass{article}
\usepackage{fgruler}
\begin{document}
...
\end{document}
```


7.2 The ‘showframe’ option

```
\documentclass{article}
\usepackage[color=red,showframe]{fgruler}
\begin{document}
...
\end{document}
```

7.3 Shifting in default case

```
\documentclass{article}
\usepackage[hshift=1cm,vshift=2cm]{fgruler}
\begin{document}
...
\end{document}
```

7.4 Shifting in case ‘type=upperright’ option

```
\documentclass{article}
\usepackage[type=upperright,hshift=1cm,vshift=2cm]{fgruler}
\begin{document}
...
\end{document}
```

7.5 Shifting in case ‘type=lowerleft’ option

```
\documentclass{article}
\usepackage[type=lowerleft,hshift=1cm,vshift=2cm]{fgruler}
\begin{document}
...
\end{document}
```

7.6 Shifting in case ‘type=lowerright’ option

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

7.7 An example for the ‘type=user’ option

```
\documentclass{article}
\usepackage[type=user]{fgruler}
\makeatletter
\def\fgruler@cm@user@fg{%
  \ifodd\value{page}\fgruler@cm@upperright@fg%
  \else\fgruler@cm@upperleft@fg\fi}
\def\fgruler@in@user@fg{%
  \ifodd\value{page}\fgruler@in@upperright@fg%
  \else\fgruler@in@upperleft@fg\fi}
\makeatother
\begin{document}
...
\end{document}
```

In this case the `type=upperright` option will be activated, if the page number is odd. Otherwise `type=upperleft` will be activated.

0 cm 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16

7.8 An other example for the ‘type=user’ option

```
1 \documentclass{article}
2 \usepackage[type=user,color=red]{fgruler}
3 \makeatletter
4 \newlength{\fgruler@tempdim}
5 \newcommand{\fgruler@user}[1]{%
6   \AtTextLowerLeft{% See eso-pic package!
7     \rulerparams{\fgruler@markthick}{\fgruler@numfont}{\fgruler@color}%
8     {\fgruler@marklength}{\fgruler@numsep}%
9     \settowidth{\fgruler@tempdim}{\ruler[#1]{downleft}{\textheight}}%
10    \put(-\fgruler@tempdim,0){%
11      \rulernorotatenum%
12      \fgrulercaptioncm{}%
13      \fgrulercaptionin{}%
14      \ruler[#1]{downleft}{\textheight}%
15    }%
16    \put(0,\textheight){%
17      \ruler[#1]{rightup}{\textwidth}%
18    }%
19  }%
20 }
21 \renewcommand{\fgruler@cm@user@fg}{\fgruler@user{cm}}
22 \renewcommand{\fgruler@in@user@fg}{\fgruler@user{in}}
23 \makeatother
24 \begin{document}
25 ...
26 \end{document}
```

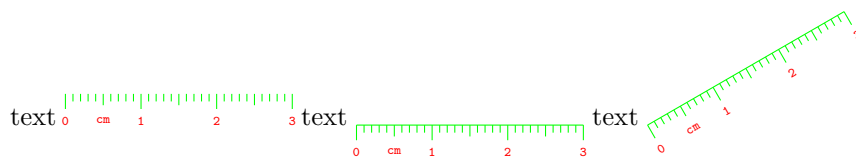
This code places rulers at the left and the top border of the body. In this case the `hshift` and `vshift` options don’t work.

7.9 The third example for the ‘type=user’ option

```
\documentclass{article}
\usepackage[type=user,color=blue]{fgruler}
\makeatletter
\newcommand{\fgruler@user}[1]{%
  \AtTextLowerLeft{% See eso-pic package!
    \rulerparams{\fgruler@markthick}{\fgruler@numfont}{\fgruler@color}%
    {\fgruler@marklength}{\fgruler@numsep}%
    \put(\textwidth,0){%
      \rulernorotatenum%
      \fgrulercaptioncm{}%
      \fgrulercaptionin{}%
      \ruler[#1]{downright}{\textheight}%
    }%
    \put(0,\textheight){%
      \ruler[#1]{rightup}{\textwidth}%
    }%
  }%
}
\renewcommand{\fgruler@cm@user@fg}{\fgruler@cm@upperleft@fg\fgruler@user{cm}}
\renewcommand{\fgruler@in@user@fg}{\fgruler@in@upperleft@fg\fgruler@user{in}}
\makeatother
\begin{document}
...
\end{document}
```

In this code the effect of `type=user` is similar to `type=upperleft`, but it places further rulers at the right and the top border of the body.

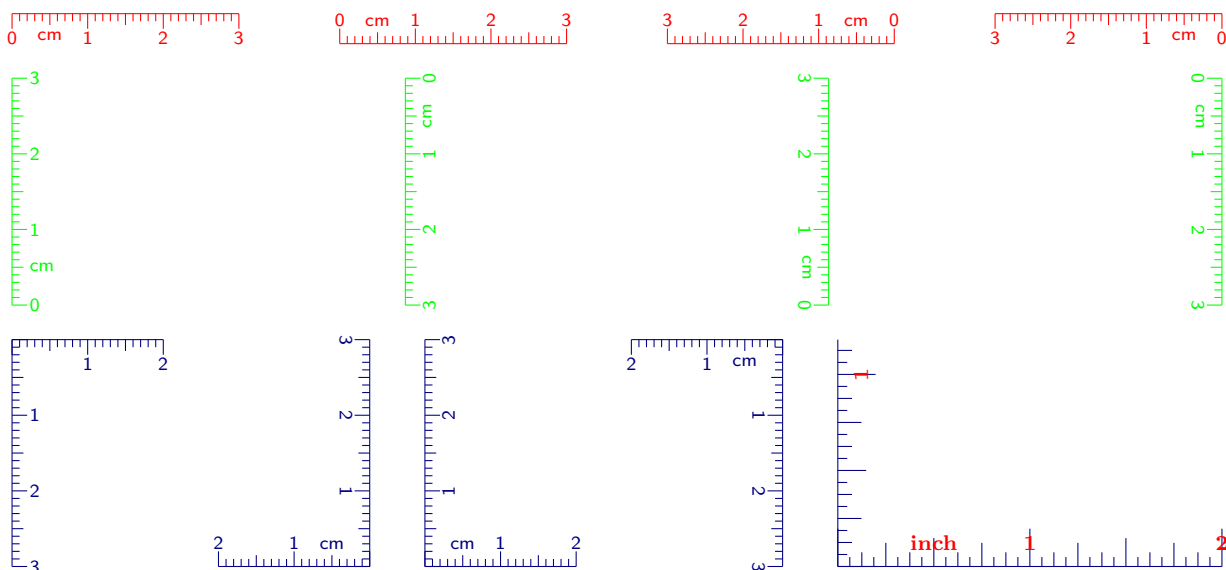
7.10 Rulers on the foreground of a given page, and in text



```
\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}}
\end{document}
```

Remark. The `\rotatebox` command is defined in the `graphicx` package!

7.11 Ruler types in text

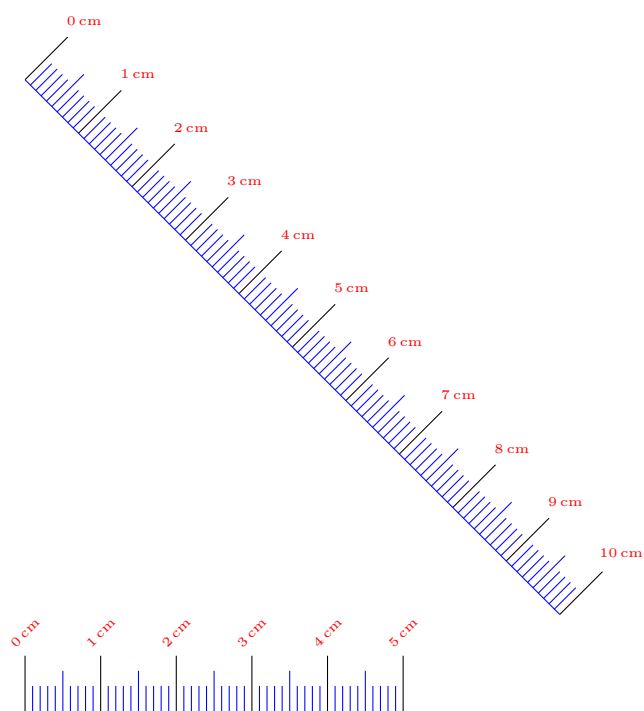


```
\documentclass{article}
\usepackage[nonefgrulers]{fgruler}
\begin{document}
  \noindent
  \rulerparams{}{}{red}{}{1pt}
  \ruler{rightdown}{3cm}
  \hfill
  \ruler{rightup}{3cm}
  \hfill
  \ruler{leftup}{3cm}
  \hfill
  \ruler{leftdown}{3cm}

  \bigskip\noindent
  \rulerparams{}{}{green}{}{}
  {\\rulernorotatenum\ruler{upright}{3cm}}
  \hfill
  \ruler{downright}{3cm}
  \hfill
  \ruler{upleft}{3cm}
  \hfill
  \ruler{downleft}{3cm}

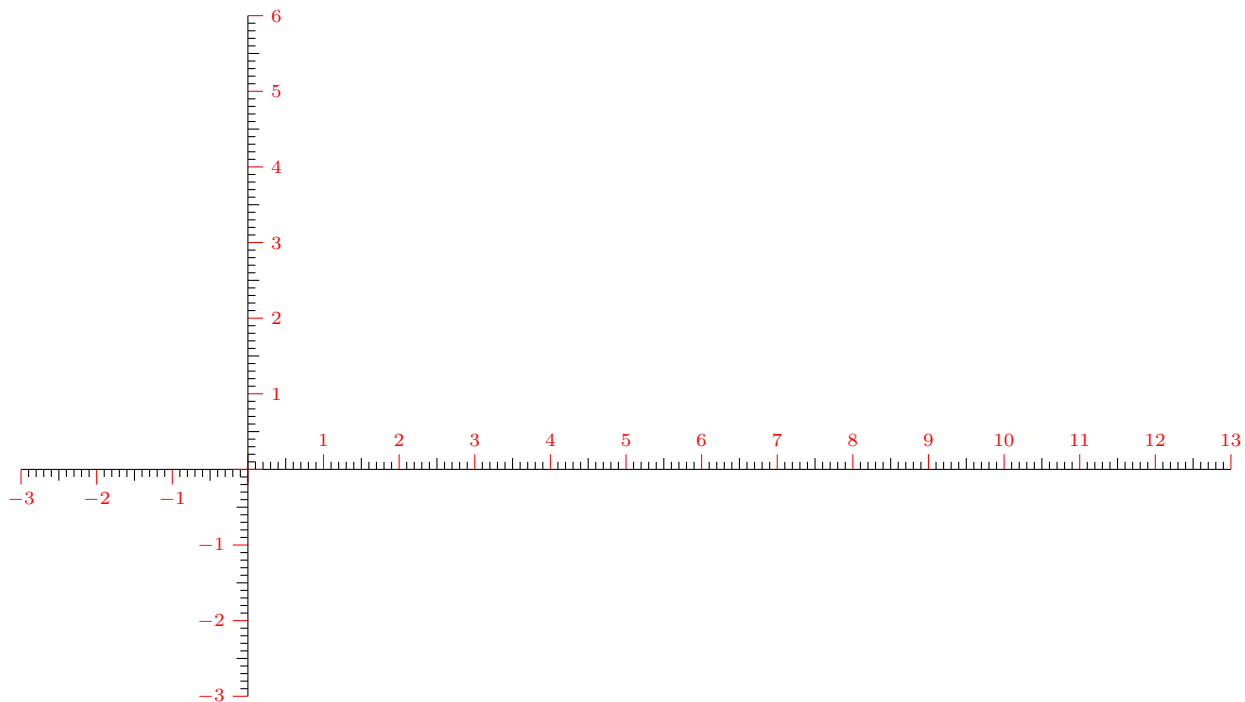
  \bigskip\noindent
  \rulerparams{}{}{blue!50!black}{}{}
  {\\rulernorotatenum\fgrulercaptioncm{}\squareruler{upperleft}{2cm}{3cm}}
  \hfill
  \squareruler{lowerright}{2cm}{3cm}
  \hfill
  \squareruler{lowerleft}{2cm}{3cm}
  \hfill
  \squareruler{upperright}{2cm}{3cm}
  \hfill
  {\\rulerparams{}{\footnotesize\bfseries\color{red}}{}{5mm}{-8pt}}
  \squareruler[in]{lowerleft}{2in}{3cm}
\end{document}
```

7.12 Mark length and rotating



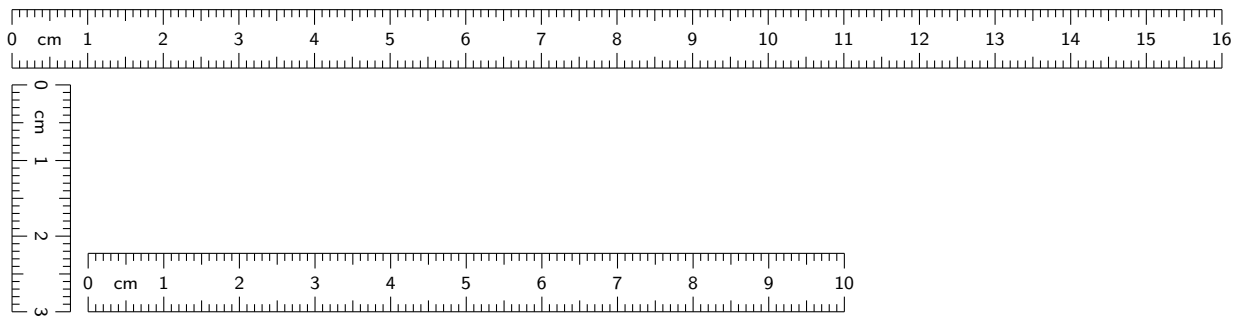
```
\documentclass{article}
\usepackage[nonefgrulers]{fgruler}
\begin{document}
  \noindent
  {\fgrulerdefnum{\rotatebox{45}{\arabic{fgrulernum}\,cm}}
  \fgrulercaptioncm{}
  \rulerparams{\tiny\color{red}}{blue}{8mm}{}
  \fgrulercolorcm{}{}{black}
  \rotatebox{-45}{\ruler{rightup}{10cm}}\
  \ruler{rightup}{5cm}}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

7.13 Coordinate system



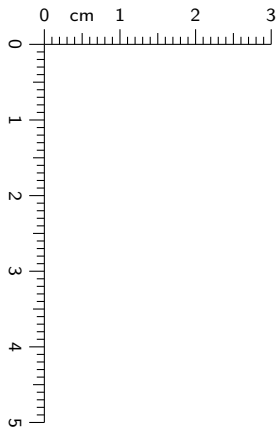
```
\documentclass{article}
\usepackage[nonefgrulers]{fgruler}
\begin{document}
  \noindent
  \rulernorotatenum
  \fgrulercaptioncm{}
  \fgrulercolorcm{}{}{red}
  \rulerparams{}{\scriptsize\color{red}}{}{}{}
  {\fgrulerdefnum{$-\arabic{fgrulernum}$}\squareruler*{upperright}{3cm}{3cm}}%
  \squareruler{lowerleft}{13cm}{6cm}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

7.14 Tape measure



```
\documentclass{article}
\usepackage[a4paper,margin=25mm]{geometry}
\usepackage[nonefgrulers]{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}
```

7.15 A new square ruler



```
\documentclass{article}
\usepackage[type=none]{fgruler}
\makeatletter
\newcommand{\usersquareruler}[2]{%
  \begin{picture}(\#1+1em+\fgruler@marklength,\#2+1em+\fgruler@marklength)%
    {\fgrulercaptioncm{}}%
    \ruler{downleft}{\#2}}%
    \put(0,\#2){\ruler{rightup}{\#1}}%
  \end{picture}}
\makeatother
\begin{document}
\usersquareruler{3cm}{5cm}
\end{document}
```