The **fgruler** package

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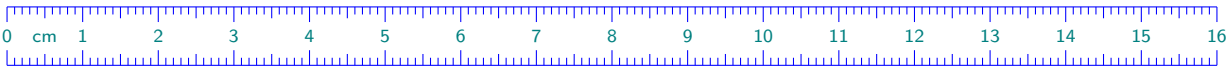


1 Introduction

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.

`hshift=`⟨*length*⟩
: Horizontal shift. The shift direction is right, if the ⟨*type name*⟩ is `upperleft` or `lowerleft`, otherwise it is left. Default: `hshift=0cm`

`vshift=`⟨*length*⟩
: Vertical shift. The shift direction is down, if the ⟨*type name*⟩ is `upperleft` or `upperright`, otherwise it is up. Default: `vshift=0cm`

`color=`⟨*color name*⟩
: Ruler color (see `xcolor` package). Default: `color=black`

`numsep=`⟨*length*⟩
: Separation between number and ruler. Default: `numsep=3pt`

`markthick=`⟨*length*⟩
: Mark thickness. Default: `markthick=0.4pt`

`marklength=`⟨*length*⟩
: Mark length at integer units: 

Default: `marklength=2mm`
See the length of the other marks in Section 6.

`numfont=`⟨*font type*⟩
: Number font type. You can use this option only in `\setfgruler` command.
Default: `numfont=\scriptsize\sffamily`

`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}`

`\squareruler[`⟨*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:

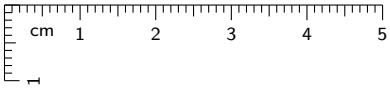
`cm` Metric ruler (centimeter). Default option.
`in` English ruler (inch).

⟨*type name*⟩ parameters:

`upperleft` Directions: down and right.
`upperright` Directions: down and left.
`lowerleft` Directions: up and right.
`lowerright` Directions: up and left.

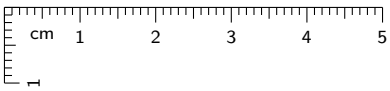
⟨*width*⟩ Square ruler width.

⟨*height*⟩ Square ruler height.

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

`\squareruler*[`⟨*unit*⟩`]{`⟨*type name*⟩`}{`⟨*width*⟩`}{`⟨*height*⟩`}`

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}` 

`\rulerparams{`⟨*markthick*⟩`}{`⟨*numfont*⟩`}{`⟨*color*⟩`}{`⟨*marklength*⟩`}{`⟨*numsep*⟩`}`

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.

⟨*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 `\squareruler`) 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`

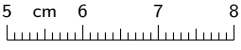
After `\rulernorotatenum`, it reactivates the number rotating. This command is usable only in `document` environment.

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}` 

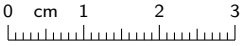
but `{\fgrulernoborderline\ruler{rightup}{3cm}}` 

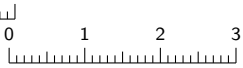
`\fgrulerborderline`

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}}
```

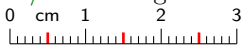

`\fgrulerratiocm{`⟨*ratio1*⟩`}{`⟨*ratio2*⟩`}`

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}`

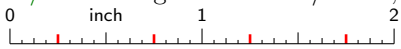
`\fgrulerratioin{`⟨*ratio1*⟩`}{`⟨*ratio2*⟩`}{`⟨*ratio3*⟩`}{`⟨*ratio4*⟩`}`

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

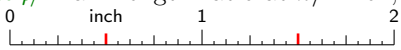
⟨*ratio1*⟩ Mark length ratio at $k/16$ inch, where k is positive odd integer.

⟨*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.

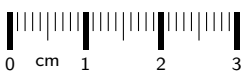
⟨*thick2*⟩ Mark thickness at $k/2$ cm, where k is positive odd integer.

⟨*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.

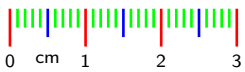
⟨*color2*⟩ Mark color at $k/2$ cm, where k is positive odd integer.

⟨*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 commands[1] 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.

[1] Namely `\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

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

7.4 Shifting in case type=upperright

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

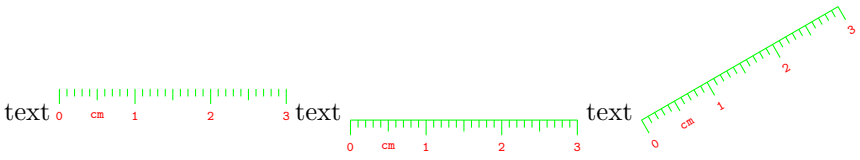
7.5 Shifting in case type=lowerleft

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

7.6 Shifting in case type=lowerright

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

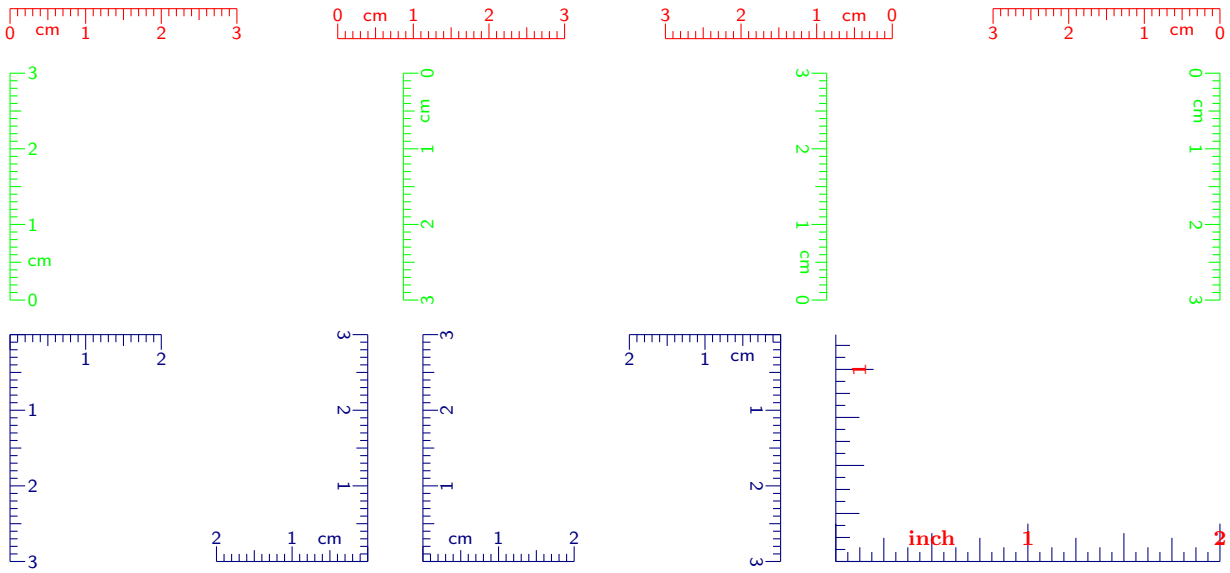
7.7 Rulers on the foreground of a given page, and in text




```
\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}
```

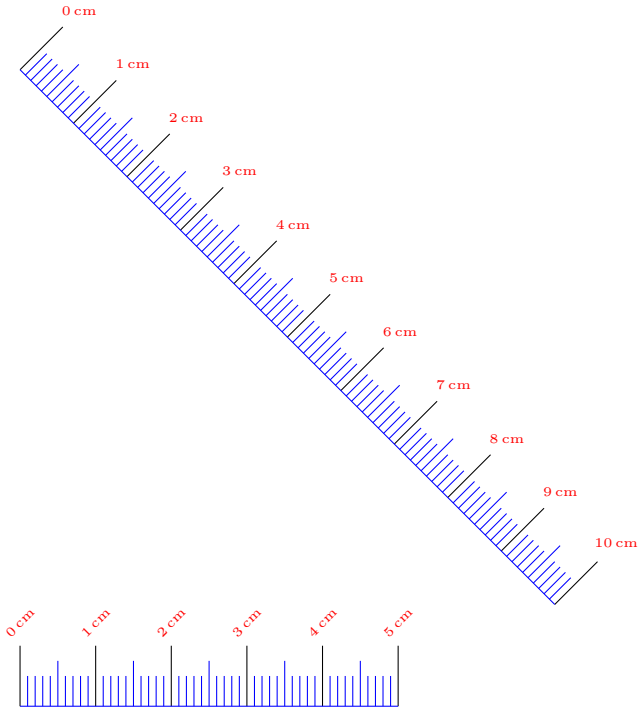
Remark. The `\rotatebox` command is defined in the `graphicx` package!

7.8 Ruler types in text



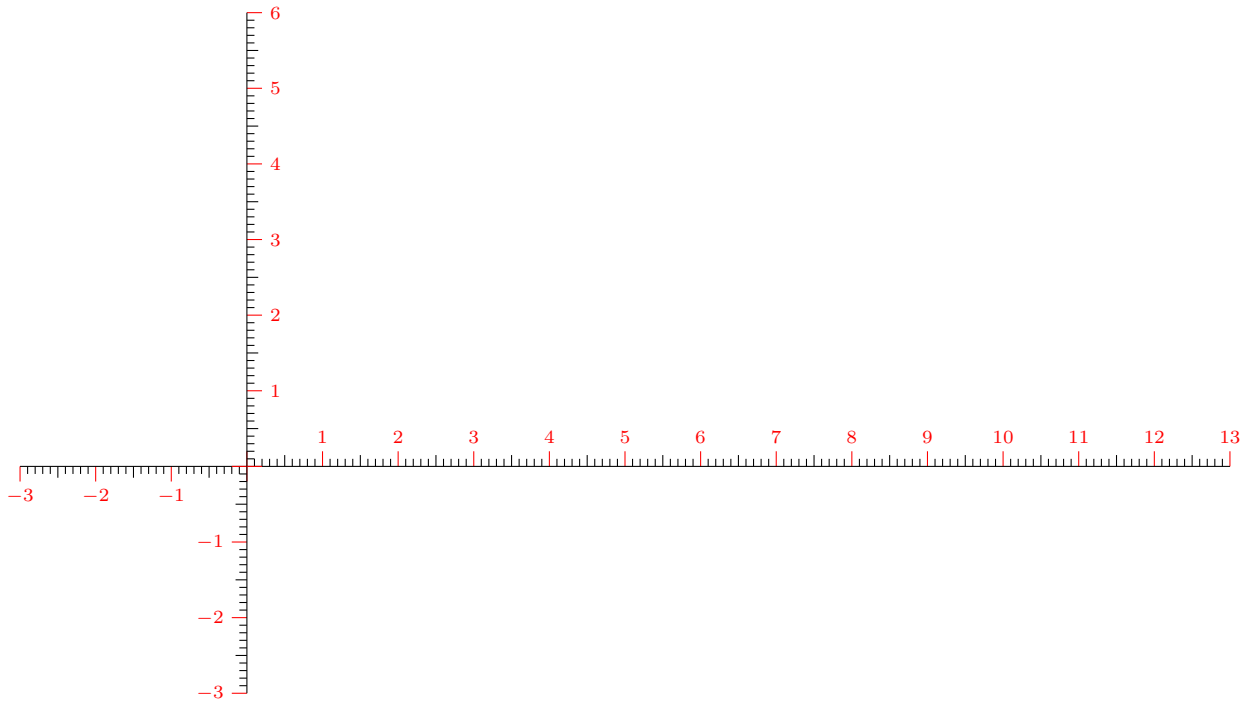
```
\documentclass{article}
\usepackage[nonefgrulers]{fgruler}
\begin{document}
    \noindent
    \rulerparams{}{}{red}{}{1pt}
    \ruler{rightdown}{3cm}
    \hfill
    \ruler{rightup}{3cm}
    \hfill
    \ruler{leftup}{3cm}
    \hfill
    \ruler{leftdown}{3cm}

    \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}
```

7.9 Mark length and rotating



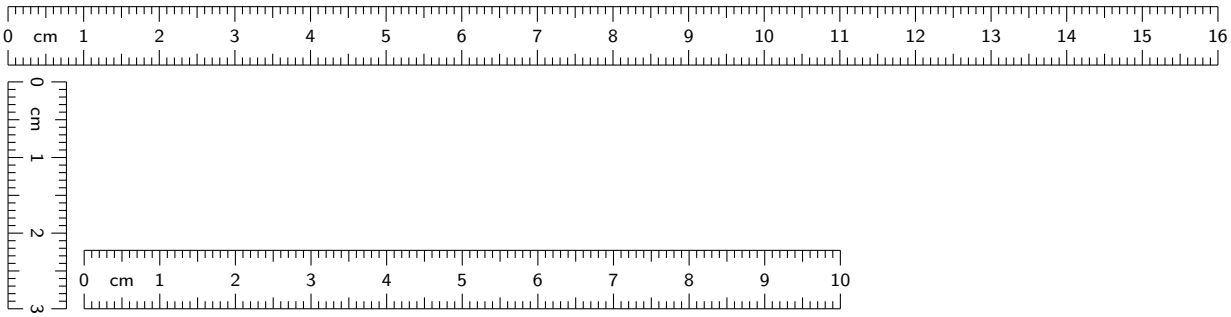

```
\documentclass{article}
\usepackage[nonefgrulers]{fgruler}
\begin{document}
    \noindent
    {\fgrulerdefnum{\rotatebox{45}{\arabic{fgrulernum}\,cm}}
    \fgrulercaptioncm{}
    \rulerparams{}{\tiny\color{red}}{blue}{8mm}{}
    \fgrulercolorcm{}{}{black}
    \rotatebox{-45}{\ruler{rightup}{10cm}}\\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

7.10 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}
```

7.11 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}
```