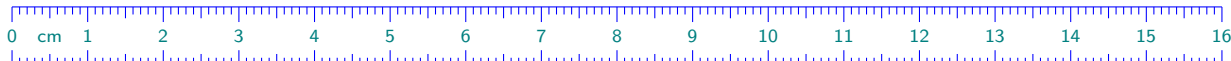


# The **fgruler** package

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Tibor Tómacs

tomacs.tibor@uni-eszterhazy.hu



## 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:

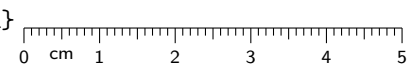
- downright** Direction: down. The numbers are on the right side.
- downleft** Direction: down. The numbers are on the left side.
- upright** Direction: up. The numbers are on the right side.
- upleft** Direction: up. The numbers are on the left side.
- rightdown** Direction: right. The numbers are on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

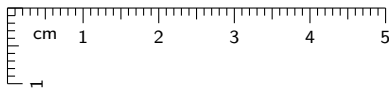
- cm** Metric ruler (centimeter). Default option.
- in** English ruler (inch).

*<type name>* parameters:

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

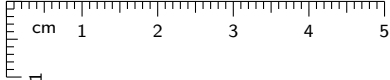
*<width>* Square ruler width.

*<height>* Square ruler height.

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

`\squareruler*[\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}` 

`\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.

`\langle markthick \rangle` Mark thickness. Default: 0.4pt

`\langle numfont \rangle` Number font type. Default: `\scriptsize\sfamily`

`\langle color \rangle` Ruler line color. Default: `black`


`\langle marklength \rangle` Mark length at integer units. Default: 2mm


`\langle numsep \rangle` 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{\langle num \rangle}`

The `\langle num \rangle` 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.


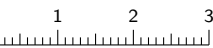
Example: `\ruler{rightup}{3cm}`   
but `{\fgrulernoborderline\ruler{rightup}{3cm}}` 

`\fgrulerborderline`

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

`\fgrulercaptioncm{\langle caption \rangle}`

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

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

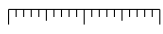
`\fgrulercaptionin{<caption>}`

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}}`.

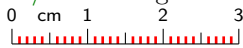
Example:

`{\fgrulerdefnum{\fgrulercaptioncm}\ruler{rightdown}{2cm}}` 

`\fgrulerratiocm{<ratio1>}{<ratio2>}`

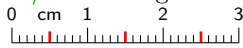
Mark length ratios in metric rulers. If an argument is empty, then that parameter will not be changed.

`<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.

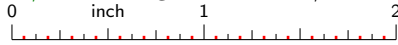


Default: `\fgrulerratiocm{0.5}{0.75}`

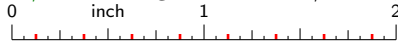
`\fgrulerratioin{<ratio1>}{<ratio2>}{<ratio3>}{<ratio4>}`

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

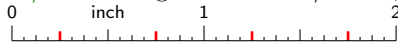
`<ratio1>` Mark length ratio at  $k/16$  inch, where  $k$  is positive odd integer.



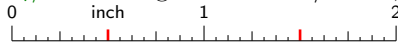
`<ratio2>` Mark length ratio at  $k/8$  inch, where  $k$  is positive odd integer.



`<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>}
```

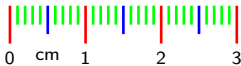
Mark colors in metric rulers. If an argument is empty, then that parameter will not be changed.

- `<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>}
```

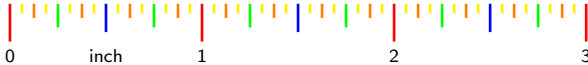
Mark color in English rulers. If an argument is empty, then that parameter will not be changed.

- `<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<sup>1</sup> 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.

<sup>1</sup>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

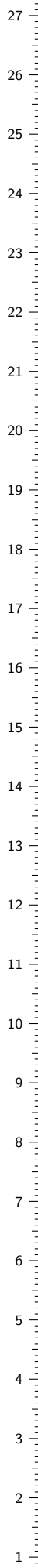
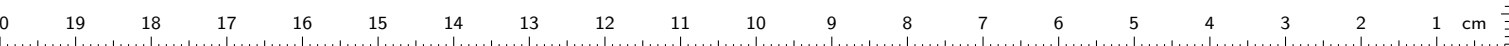
```
\documentclass{article}
\usepackage[type=upperright,hshift=1cm,vshift=2cm]{fgruler}
\begin{document}
% ...
\end{document}
```

## 7.5 Shifting in case type=lowerleft

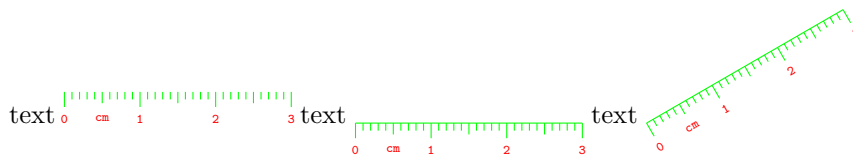
```
\documentclass{article}
\usepackage[type=lowerleft,hshift=1cm,vshift=2cm]{fgruler}
\begin{document}
% ...
\end{document}
```

## 7.6 Shifting in case type=lowerright

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



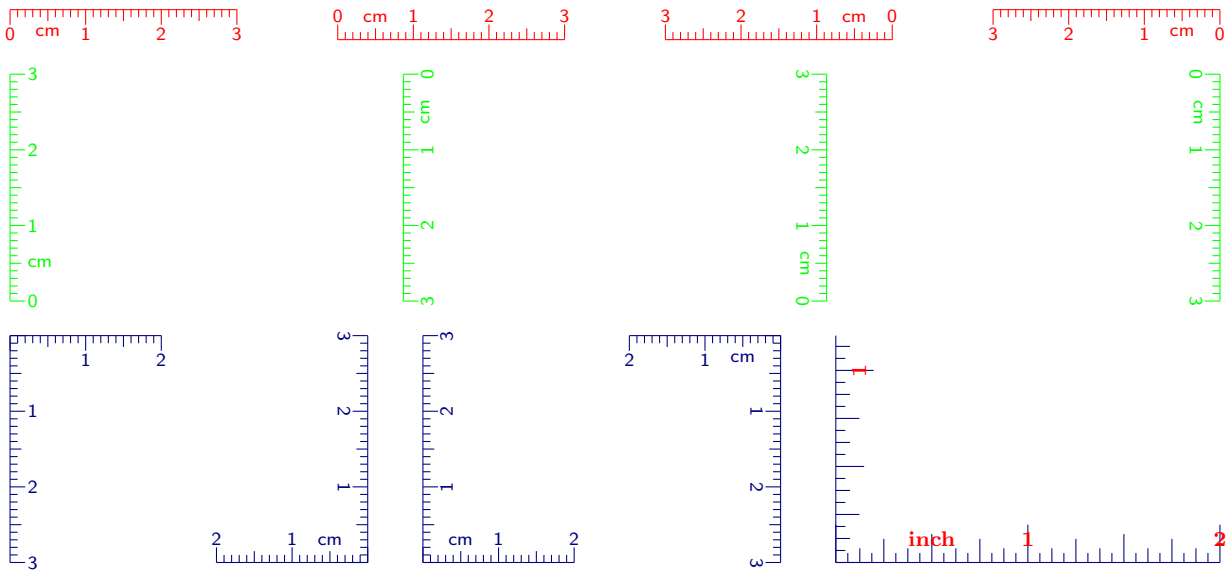
## 7.7 Rulers on the foreground of a given page, and in text



```
\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



```

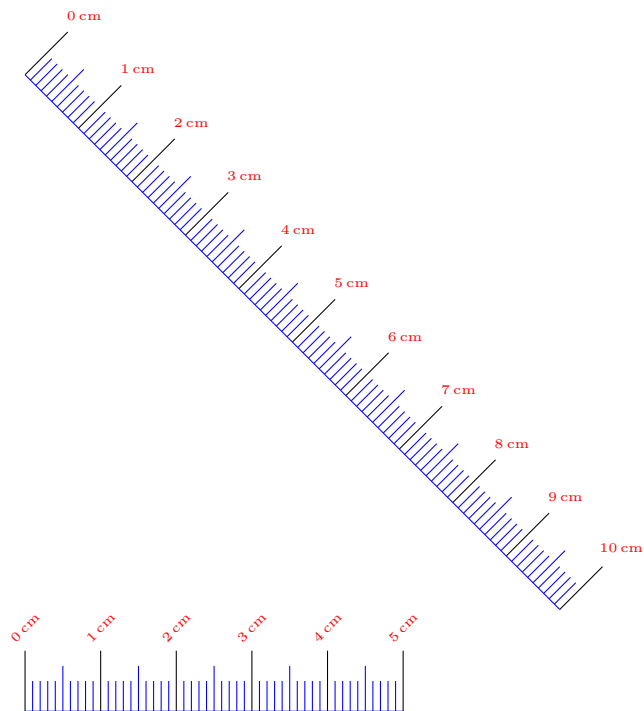
\documentclass{article}
\usepackage[nonefgrulers]{fgruler}
\begin{document}
  \noindent
  \rulerparams{}{}{red}{}{1pt}
  \ruler{rightdown}{3cm}
  \hfill
  \ruler{rightup}{3cm}
  \hfill
  \ruler{leftup}{3cm}
  \hfill
  \ruler{leftdown}{3cm}

  \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}

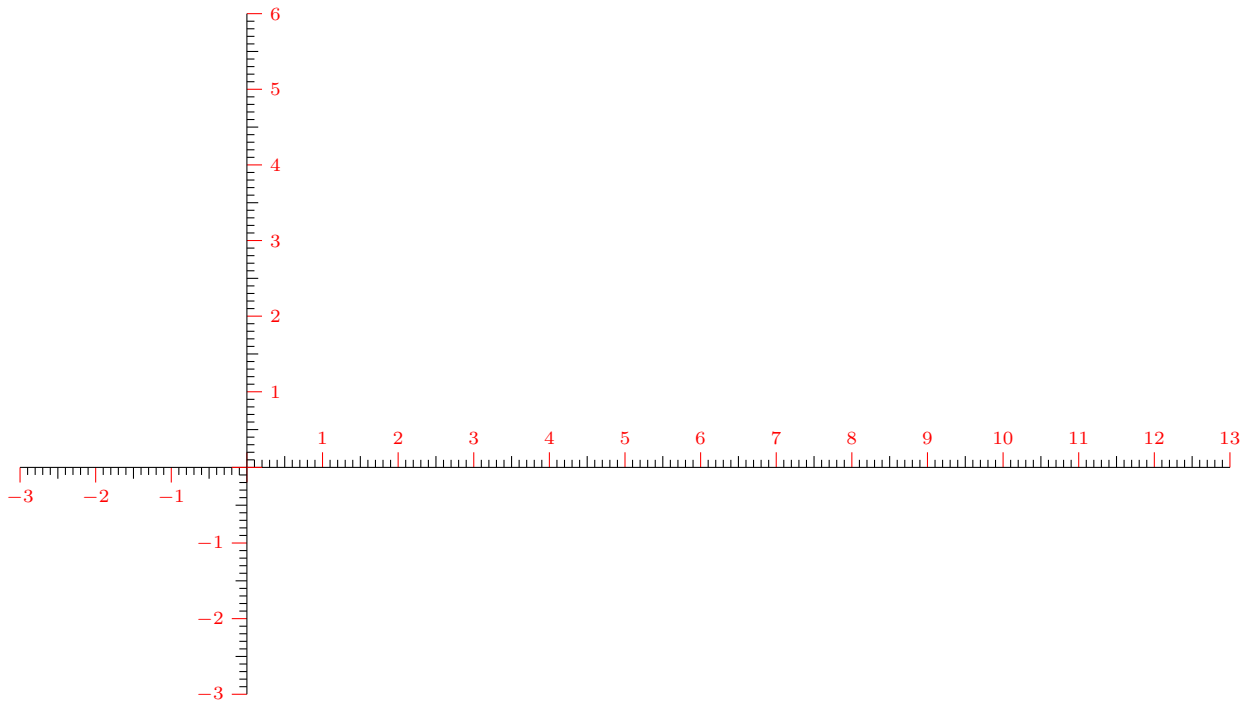
```

## 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}
```

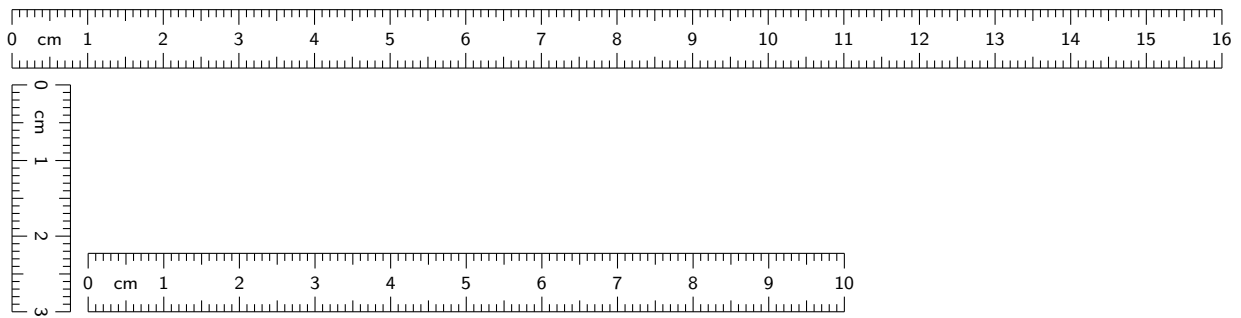
## 7.10 Coordinate system



```
\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}
```