

## Color

```

5 \newgray{color}{num}
5 \newrgbcolor{color}{num1 num2 num3}
5 \newhsbcolor{color}{num1 num2 num3}
5 \newcmykcolor{color}{num1 num2 num3 num4}

```

## Setting graphics parameters

```

6 \psset{par1=value1,par2=value2,...}

```

## Dimensions, coordinates and angles

```

7 unit=dim                      Default: 1cm
7 \pssetlength{cmd}{dim}
7 \psaddtolength{cmd}{dim}
7 xunit=dim                     Default: 1cm
7 yunit=dim                     Default: 1cm
7 runit=dim                     Default: 1cm
8 \degrees[num]
8 \radians

```

## Basic graphics parameters

```

8 linewidth=dim                 Default: .8pt
8 linecolor=color               Default: black
9 showpoints=true/false        Default: false

```

## Lines and polygons

```

10 lineararc=dim                Default: 0pt
10 framearc=num                 Default: 0
10 cornersize=relative/absolute Default: relative
10 \psline*[par]{arrows}(x0,y0)(x1,y1)...(xn,yn)
10 \qline(coor0)(coor1)
11 \pspolygon*[par](x0,y0)(x1,y1)(x2,y2)...(xn,yn)
11 \psframe*[par](x0,y0)(x1,y1)

```

## Arcs, circles and ellipses

```

11 \pscircle*[par](x0,y0){radius}
11 \qdisk(coor){radius}
12 \pswedge*[par](x0,y0){radius}{angle1}{angle2}
12 \psellipse*[par](x0,y0)(x1,y1)
12 \psarc*[par]{arrows}(x,y){radius}{angleA}{angleB}
12 arcsepA=dim                  Default: 0pt
12 arcsepB=dim                  Default: 0pt
13 arcsep=dim                   Default: 0
13 \psarcn*[par]{arrows}(x,y){radius}{angleA}{angleB}

```

## Curves

```

13 \psbezier*[par]{arrows}(x0,y0)(x1,y1)(x2,y2)(x3,y3)
14 \parabola*[par]{arrows}(x0,y0)(x1,y1)
14 curvature=num1 num2 num3     Default: 1 .1 0

```

- 15 `\pscurve*[par]{arrows}(x1,y1)...\(xn,yn)`  
 15 `\psecurve*[par]{arrows}(x1,y1)...\(xn,yn)`  
 15 `\psccurve*[par]{arrows}(x1,y1)...\(xn,yn)`

## Dots

- 15 `\psdots*[par](x1,y1)(x2,y2)...\(xn,yn)`  
 16 `dotstyle=style` Default: \*

### Dot styles

Style	Example	Style	Example
*	• • • • •	square	◻ ◻ ◻ ◻ ◻
o	◦ ◦ ◦ ◦ ◦	square*	◻ ◻ ◻ ◻ ◻
+	+ + + + +	pentagon	◊ ◊ ◊ ◊ ◊
triangle	▲ ▲ ▲ ▲ ▲	pentagon*	◊ ◊ ◊ ◊ ◊
triangle*	▲ ▲ ▲ ▲ ▲		

- 16 `dotscale=num1 num2` Default: 1  
 16 `dotangle=angle` Default: 0

## Grids

- 17 `\psgrid(x0,y0)(x1,y1)(x2,y2)`  
 18 `gridwidth=dim` Default: .8pt  
 18 `gridcolor=color` Default: black  
 18 `griddots=num` Default: 0  
 18 `gridlabels=dim` Default: 10pt

- 18 `gridlabelcolor=color` Default: black  
 18 `subgriddiv=int` Default: 5  
 18 `subgridwidth=dim` Default: .4pt  
 18 `subgridcolor=color` Default: gray  
 18 `subgriddots=num` Default: 0

## Plots

- 19 `plotstyle=style` Default: line  
 20 `\fileplot*[par]{file}`  
 20 `\dataplot*[par]{commands}`  
 20 `\savedata{command}[data]`  
 20 `\readdata{command}{file}`  
 21 `\listplot*[par]{list}`  
 21 `\psplot*[par]{xmin}{xmax}{function}`  
 22 `\parametricplot*[par]{tmin}{tmax}{function}`  
 22 `plotpoints=int` Default: 50

## Coordinate systems

- 24 `origin={coor}` Default: 0pt,0pt  
 24 `swapaxes=true` Default: false

## Line styles

- 24 `linestyle=style` Default: solid  
 25 `dash=dim1 dim2` Default: 5pt 3pt

25	<code>dotsep=dim</code>	Default: 3pt
25	<code>border=dim</code>	Default: 0pt
25	<code>bordercolor=color</code>	Default: white
25	<code>doubleline=true/false</code>	Default: false
25	<code>doublesep=dim</code>	Default: 1.25\pslinewidth
26	<code>doublecolor=color</code>	Default: white
26	<code>shadow=true/false</code>	Default: false
26	<code>shadowsize=dim</code>	Default: 3pt
26	<code>shadowangle=angle</code>	Default: -45
26	<code>shadowcolor=color</code>	Default: darkgray
26	<code>dimen=outer/inner/middle</code>	Default: outer

















## Fill styles

27	<code>fillstyle=style</code>	Default: none
27	<code>fillcolor=color</code>	Default: white
27	<code>hatchwidth=dim</code>	Default: .8pt
27	<code>hatchsep=dim</code>	Default: 4pt
27	<code>hatchcolor=color</code>	Default: black
27	<code>hatchangle=rot</code>	Default: 45

## Arrowheads and such

28	<code>arrows=style</code>	Default: -
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## Arrows

<i>Value</i>	<i>Example</i>	<i>Name</i>
-		None
<->		Arrowheads.
>-<		Reverse arrowheads.
<<->>		Double arrowheads.
>>-<<		Double reverse arrowheads.
-		T-bars, flush to endpoints.
* -   *		T-bars, centered on endpoints.
[ - ]		Square brackets.
( - )		Rounded brackets.
o - o		Circles, centered on endpoints.
* - *		Disks, centered on endpoints.
oo - oo		Circles, flush to endpoints.
** - **		Disks, flush to endpoints.
c - c		Extended, rounded ends.
cc - cc		Flush round ends.
C - C		Extended, square ends.

30	<code>arrowsize=dim num</code>	Default: 2pt 3
30	<code>arrowlength=num</code>	Default: 1.4
30	<code>arrowinset=num</code>	Default: .4
30	<code>tbarsize=dim num</code>	Default: 2pt 5
30	<code>bracketlength=num</code>	Default: .15
30	<code>rbracketlength=num</code>	Default: .15
30	<code>dotsize=dim num</code>	Default: .5pt 2.5
30	<code>arrowscale=arrowscale=num1 num2</code>	Default: 1

## Custom styles

31 `\newpsobject{name}{object}{par1=value1,...}`

31 `\newpsstyle{name}{par1=value1,...}`

## The basics

32 `\pscustom*[par]{commands}`

## Parameters

33 `linetype=int`

Default: 0

## Graphics objects

35 `liftpen=0/1/2`

Default: 0

## Safe tricks

36 `\newpath`

36 `\moveto(coor)`

36 `\closepath`

36 `\stroke[par]`

37 `\fill[par]`

37 `\gsave`

37 `\grestore`

38 `\translate(coor)`

38 `\scale{num1 num2}`

38 `\rotate{angle}`

38 `\swapaxes`

38 `\msave`

38 `\mrestore`

38 `\openshadow[par]`

38 `\closedshadow[par]`

38 `\movepath(coor)`

## Pretty safe tricks

39 `\lineto(coor)`

39 `\rlineto(coor)`

39 `\curveto(x1,y1)(x2,y2)(x3,y3)`

39 `\rcurveto(x1,y1)(x2,y2)(x3,y3)`

## For hackers only

39 `\code{code}`

39 `\dim{dim}`

39 `\coor(x1,y1)(x2,y2)...(xn,yn)`

40 `\rcoor(x1,y1)(x2,y2)...(xn,yn)`

40 `\file{file}`

40 `\arrows{arrows}`

40 `\setcolor{color}`

## Pictures

41 `\pspicture*[baseline](x0,y0)(x1,y1)`

41 `\endpspicture`

## Placing and rotating whatever

43 `\rput*[refpoint]{rotation}(x,y){stuff}`  
 44 `\uput*[labelsep][refangle]{rotation}(x,y){stuff}`  
 44 `\pslabelsep`  
 44 `labelsep=dim`

Default: 5pt

## Repetition

46 `\multirput*[refpoint]{angle}(x0,y0)(x1,y1){int}{stuff}`  
 46 `\multips{angle}(x0,y0)(x1,y1){int}{graphics}`

## Axes

48 `\psaxes*[par]{arrows}(x0,y0)(x1,y1)(x2,y2)`

Axes label parameters

<i>Horitontal</i>	<i>Vertical</i>	<i>Dflt</i>	<i>Description</i>
<b>Ox=num</b>	<b>Oy=num</b>	0	Label at origin.
<b>Dx=num</b>	<b>Dy=num</b>	1	Label increment.
<b>dx=dim</b>	<b>oy=dim</b>	Opt	Dist btwn labels.

50 `labels=all/x/y/none` Default: all  
 50 `showorigin=true/false` Default: true  
 50 `ticks=all/x/y/none` Default: all

50 `tickstyle=full/top/bottom` Default: full  
 50 `ticksize=dim` Default: 3pt  
 51 `\psxlabel`  
 51 `\psylabel`  
 51 `axesstyle=axes/frame/none` Default: axes

## Framed boxes

52 `framesep=dim` Default: 3pt  
 52 `boxsep=true/false` Default: true  
 52 `\psframebox*[par]{stuff}`  
 53 `\psdblframebox*[par]{stuff}`  
 53 `\psshadowbox*[par]{stuff}`  
 53 `\pscirclebox*[par]{stuff}`  
 53 `\cput*[par]{angle}(x,y){stuff}`  
 54 `\psovalbox*[par]{stuff}`

## Clipping

54 `\clipbox[dim]{stuff}`  
 54 `\psclip{graphics} ... \endpsclip`

## Rotation and scaling boxes

55 `\rotateleft{stuff}`  
 55 `\rotateright{stuff}`  
 56 `\rotatedown{stuff}`

56 `\scalebox{num1 num2}{stuff}`

56 `\scaleboxto(x,y){stuff}`

## Nodes

59 `\node[refpoint]{name}{stuff}`

59 `\Rnode(x,y){name}{stuff}`

59 `\RnodeRef`

60 `\pnode(x,y){name}`

60 `\cnode*[par](x,y){radius}{name}`

60 `\circlenode*[par]{name}{stuff}`

60 `\cnodeput*[par]{angle}(x,y){name}{stuff}`

60 `\ovalnode*[par]{name}{stuff}`

## Node connections

61 `nodesep=dim` Default: 0

61 `offset=dim` Default: 0

61 `arm=dim` Default: 10pt

61 `angle=angle` Default: 0

61 `arcangle=angle` Default: 8

61 `ncurv=num` Default: .67

62 `loopsize=dim` Default: 1cm

62 `\incline*[par]{arrows}{nodeA}{nodeB}`

62 `\inclLine*[par]{arrows}{nodeA}{nodeB}`

62 `\nccurve*[par]{arrows}{nodeA}{nodeB}`

63 `\ncarc*[par]{arrows}{nodeA}{nodeB}`

63 `\ncbar*[par]{arrows}{nodeA}{nodeB}`

63 `\ncdiag*[par]{arrows}{nodeA}{nodeB}`

64 `\ncdiagg*[par]{arrows}{nodeA}{nodeB}`

64 `\ncangle*[par]{arrows}{nodeA}{nodeB}`

64 `\ncangles*[par]{arrows}{nodeA}{nodeB}`

65 `\ncloop*[par]{arrows}{nodeA}{nodeB}`

65 `\nccircle*[par]{arrows}{node}{radius}`

65 `\pcline*[par]{arrows}(x1,y1)(x2,y2)`

65 `\pccurve*[par]{arrows}(x1,y1)(x2,y2)`

65 `\pcarc*[par]{arrows}(x1,y1)(x2,y2)`

65 `\pcbar*[par]{arrows}(x1,y1)(x2,y2)`

65 `\pcdiag*[par]{arrows}(x1,y1)(x2,y2)`

66 `\pcangle*[par]{arrows}(x1,y1)(x2,y2)`

66 `\pcloop*[par]{arrows}(x1,y1)(x2,y2)`

## Attaching labels to node connections

67 `\lput*[refpoint]{rotation}(pos){stuff}`

68 `\aput*[labelsep]{angle}(pos){stuff}`

68 `\bput*[labelsep]{angle}(pos){stuff}`

68 `\mput*[refpoint]{stuff}`

68 `\Aput*[labelsep]{stuff}`

68 `\Bput*[labelsep]{stuff}`

## Coils and zigzags

70 `\pscoil*[par]{arrows}(x0,y0)(x1,y1)`

70	<code>\psCoil*[par]{angle1}{angle2}</code>	
70	<code>\pszigzag*[par]{arrows}(x0,y0)(x1,y1)</code>	
70	<code>coilwidth=dim</code>	Default: 1cm
70	<code>coilheight=num</code>	Default: 1
70	<code>coilarm=dim</code>	Default: .5cm
70	<code>coilaspect=angle</code>	Default: 45
70	<code>coilinc=angle</code>	Default: 10
71	<code>\nccoil*[par]{arrows}{nodeA}{nodeB}</code>	
71	<code>\nczigzag*[par]{arrows}{nodeA}{nodeB}</code>	
71	<code>\pccoil*[par]{arrows}(x1,y1)(x2,y2)</code>	
71	<code>\pczigzag*[par]{arrows}(x1,y1)(x2,y2)</code>	

<i>Coordinate</i>	<i>Example</i>	<i>Description</i>
$(x,y)$	(3,4)	Cartesian coordinate.
$(r;a)$	(3;110)	Polar coordinate.
$(node)$	(A)	Center of <i>node</i> .
$([par]node)$	([angle=45]A)	Relative to <i>node</i> .
$(!ps)$	(!5 3.3 2 exp)	Raw PostScript.
$(coord1 coord2)$	(A 1in;30)	Combination.

<i>Angle</i>	<i>Example</i>	<i>Description</i>
<i>num</i>	45	Angle.
$(coord)$	(-1,1)	Coordinate (vector).
<i>!ps</i>	!33 sqrt	Raw PostScript.

73 `\NormalCoor`

## Special coordinates

72 `\SpecialCoor`

### Special coordinates and angles

## Overlays

73	<code>\overlaybox stuff\endoverlaybox</code>	
73	<code>\psoverlay{string}</code>	
74	<code>\putoverlaybox{string}</code>	
74	<code>gradbegin=color</code>	Default: gradbegin
74	<code>gradend=color</code>	Default: gradend
75	<code>gradlines=int</code>	Default: 500
75	<code>gradmidpoint=num</code>	Default: .9
75	<code>gradangle=angle</code>	Default: 0

## Typesetting text along a path

76 `\pstextpath[pos](x,y){graphics object}{text}`

## Stroking and filling character paths

77 `\pscharpath*[par]{text}`  
 78 `\pscharclip*[par]{text} ... \endpscharclip`

## Including PostScript code

87 `\pslbrace`  
 87 `\psrbrace`

## Exporting EPS files

79 `\TeXtoEPS`  
 79 `\endTeXtoEPS`  
 80 `\PSTtoEPS[par]{file}{graphics objects}`  
 80 `bblx=dim` Default: -1pt  
 80 `bblly=dim` Default: -1pt  
 80 `bburx=dim` Default: 1pt  
 80 `bbury=dim` Default: 1pt  
 81 `headerfile=file` Default: s  
 81 `headers=none/all/user` Default: none

## Boxes

83 `\psmathboxtrue`  
 83 `\psmathboxfalse`  
 83 `\everypsbox{commands}`  
 83 `\pslongbox{name}{cmd}`  
 84 `\psverbboxtrue`  
 84 `\psverbboxfalse`

## Tips and More Tricks

85 `\PSTricksOff`