

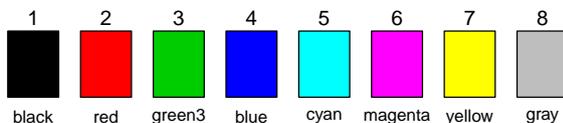
## Plotting

```
## Basic plots
plot(x, y)
hist(x)
barplot(table(x))
boxplot(x)
stem(x)
pie(x)
pairs(matrix) #Scatterplots
coplot() # conditional plot
stripplot() # strip plot
qqplot() # quantile-quantile plot
qqnorm()
qqline() # fit normal distribution
## Standard plotting arguments
xlab = "x-axis label" #See also ylab
xlim = c(0, 10) #x axis range
main = "Main title"
sub = "sub title"
```

### Graphical parameters

These are set globally with `par(...)`; many can be passed as parameters to plotting commands.

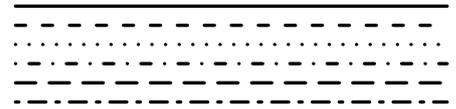
- `adj` controls text justification: 0 left-justified, 0.5 centred, 1 right-justified.
- `bg` specifies the background colour, e.g. `bg="red"` or `bg="blue"`. See `colors()` for a list of the 657 available colours.
- `bty` controls the type of box drawn around the plot, allowed values are: "o", "l", "7", "c", "u" or "]" (the box looks like the corresponding character). If `bty="n"` the box is not drawn
- `cex` a value controlling the size of texts and symbols with respect to the default. Related options are: `cex.axis`, `cex.lab`, `cex.main` and `cex.sub`.
- `col` controls the color of symbols and lines. Use color names: "red", "blue" (see `colors()`) or numbers.



See also `rgb()`, `hsv()`, `gray()`, and `rainbow()`; as for `cex` there are: `col.axis`, `col.lab`, `col.main` and `col.sub`

- `font`: an integer which controls the style of text (1: normal, 2: italics, 3:bold, 4: bold italics); as for `cex` there are: `font.axis`, `font.lab`, `font.main` and `font.sub`
- `las`: an integer which controls the orientation of the axis labels (0: parallel to the axes, 1: horizontal, 2: perpendicular to the axes, 3: vertical)
- `lty` controls the type of lines. The value can be an integer or string

6: "twodash"  
5: "longdash"  
4: "dotdash"  
3: "dotted"  
2: "dashed"  
1: "solid"



Alternatively, a string of up to eight characters (between "0" and "9") which specifies alternatively the length, in points or pixels, of the drawn elements and the blanks, for example `lty="44"` will have the same effect than `lty=2`

- `lwd` a numeric which controls the width of lines, default 1 `mar` a vector of 4 numeric values which control the space between the axes and the border of the graph of the form `c(bottom, left, top, right)`, the default values are `c(5.1, 4.1, 4.1, 2.1)`
- `mfcol` a vector of the form `c(nr,nc)` which partitions the graphic window as a matrix of `nr` lines and `nc` columns, the plots are then drawn in columns
- `mfrow` as `mfcol`, but the plots are drawn by row
- `pch` controls the type of symbol, either an integer between 1 and 25, or any single character within ""
  - 13: ⊗, 14: ◻, 15: ◼, 16: ●, 17: ▲, 18: ◆, 19: ○, 20: ●, 21: ◯, 22: ◻, 23: ◇, 24: △, 25: ▽
  - 0: ◻, 1: ○, 2: △, 3: +, 4: ×, 5: ◇, 6: ▽, 7: ⊗, 8: ✱, 9: ⊕, 10: ⊗, 11: ⊗, 12: ⊕
- `ps` an integer which controls the size in points of texts and symbols
- `pty` a character which specifies the type of the plotting region, "s": square, "m": maximal
- `tck` a value which specifies the length of tick-marks on the axes as a fraction of the smallest of the width or height of the plot; if `tck=1` a grid is drawn
- `tcl` a value which specifies the length of tick-marks on the axes as a fraction of the height of a line of text (by default `tcl=-0.5`)
- `xaxt` if `xaxt="n"` the x-axis is set but not drawn (useful in conjunction with `axis(side=1, ...)`)
- `yaxt` if `yaxt="n"` the y-axis is set but not drawn (useful in conjunction with `axis(side=2, ...)`)