Base plots

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Outline

Plot Types
plot, barplot, hist, boxplot

Interface
vectors, formula, special object

Annotation
points, lines, text, legend

Details
axis, symbols, color, size, multipanel

Devices
aspect ratio, pdf, png

Plot types

```
plot(x, y)
    plot(cars$speed, cars$dist)

barplot(x)
    barplot(cars$dist)

hist(x)
    hist(cars$dist)

boxplot(x)
    boxplot(cars$dist)
```

Plot interface

```
plot(x, y)
    plot(cars$speed, cars$dist)

plot(y~x, data=obj)
    plot(dist~speed, data=cars)

plot(obj)
    plot(cars)  # data frame
    cars.lm <- lm(dist~speed, data=cars)
    par(mfrow=c(2,2))
    plot(cars.lm)  # lm
```

Plot annotation

```
points(x, y)


lines(x, y)


abline(a, b)
abline(obj)
abline(h)
abline(v)


text(x, y, label)
```

Plot details

`main` `xlab` `ylab`	label
`xlim` `ylim`	axis limits
`lty` `lwd`	line
`pch`	symbol
`col`	color
`cex`	size
`type`	type

Color

Name

Specify color name:
```
barplot(1, col="darkgreen")
```
Show all recognized color names:
```
colors()
```

Number

Select color from the default palette of 8 colors:
```
barplot(1, col=2)
```
Show full palette:
```
barplot(rep(1,8), names=1:8, col=1:8)
palette()
```

Graphical parameters

Complete list of all graphical parameters

`?par`

Graphical parameters

```
plot(c(1,10), c(1,100),
     main="title", xlab="x", ylab="y",
     xlim=c(0,20), ylim=c(0,120),
     pch=2, lwd=5, col="orange", cex=2)


lines(c(5,15), c(50,60), lty=2, lwd=5, col="purple")


text(10, 20, "here", col="brown")
```

Multipanel

Rows and columns

```
par(mfrow=c(2,3))

plot(0, main=1)
plot(0, main=2)
plot(0, main=3)
plot(0, main=4)
plot(0, main=5)
plot(0, main=6)

par(mfrow=c(1,1))
```

Devices

Write plot to file (vector graphics)

```
pdf("figure_1.pdf")
plot(cars)
dev.off()
```

Write plot to file (bitmap)

```
png("figure_2.png")
plot(cars)
dev.off()
```

Aspect ratio

Boxplots can be narrow

```
boxplot(count ~ spray, data=InsectSprays)
```

Scatterplots can show trend at 45° banking

```
plot(sunspots)
```

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