

**Advanced Psychological Statistics**  
PSYCH-UA.11  
Department of Psychology  
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abline (displaying a line on a pre-existing plot)  
abline()

This is used to place straight lines on a plot and where “b’ represents the slope and “a” represents the intercept

Example. abline(intercept, slope)

abline(5,0) would display a horizontal line at 5 on the y-axis and 0 slope

Best fit line (the linear model)

lm(y~x) - Note – this is the reverse of the usual plot(x,y). In this case y is being computed from the linear fit and the x values

Displaying the best fit line –

abline is used here (and it is assumed that a scatterplot has already been created)

Example

Step 1 – create a container holding the output of lm()

fit = lm(y~x)

Step 2 – display line with abline

abline(fit)

You can view the slope and intercepts by simply displaying the container (“fit” – in this case)  
> fit

Scatterplot

Plot(x,y)

creates a scatterplot of x against y values

Example

plot(x,y)

The “plot()” command takes additional arguments for

symbols – use “pch= number”, so plot(x,y, pch = 5)

colors – use “col = ‘color’”, so plot(x,y, pch =5, col = ‘blue’)

line width – use “lwd = number”, so plot(x,y, col=’blue, lwd = 3)

type – use “type = “letter””, so plot(x,y, col=’green’, pch=4, type = ‘b’)

Standard deviation

Note - it defaults to sample standard deviation

sd(data set)

Population standard deviation is simply the sample standard deviation (sd(<container>)) times the square root of ((n-1) divided by n)

## Variance

The command for variance (assume a set of values is stored as “set1”) –

```
> var(set1)
```

This will be the sample variance. You can check by squaring the output of `var(set1)` with

Step 1 – `set1_var = var(set1)` - get variance of “set1” and store output in container “set1\_var”

Step 2 - `set1_sd = sd(set1)` - get standard deviation of “set1” and store output in container “set1\_sd”

Step 3 - `set1_sd` - display standard deviation, the information stored in “set1\_sd”

Step 4 - `set1_var` - display variance, the information stored in “set1\_var”

Step 5 – `set1_sd^2` - square and display the standard deviation (the information stored in “set1\_sd”) to see that it is the same (assuming rounding) as the variance