

# Research Methods 2

## Week 5: Exercise Sheet 1

### *Question 1.*

Use the method you used last week to generate a sample from a Normal distribution. Set the mean to be 5 and the SD to be 1. This time only generate a sample of size 10 (i.e. type '10' in the box between the word **Generate** and **rows of data**). How many of these lie between 4 and 6 (i.e. within 1 SD of the mean)? How many would you expect to be between these limits? Repeat the generation of the sample and count again. Do this a few times and comment on the pattern you see. Out of all the samples you generated, how many observations were between 4 and 6?

### *Question 2.*

Repeat question 1 but now generate a sample of 10000. What do you find now? [[Do I really have to count all these by hand? Click here](#)]. How many of the sample lie between 3 and 7, i.e. within 2 SDs of the mean.

### *Question 3.*

Repeat question 2 but now set the mean to be 100 and the SD to be 15. How many of the sample fall outside the range 85 to 115? Outside 70 to 130?

### *Question 4.*

A paper states that some serum bilirubin measurements have been analysed using the assumption that the sample comes from a Normal population. From the data in the paper plausible values for the mean and SD of this distribution are 1 mg/l and 0.75 mg/l respectively. Generate a sample of 10000 observations from a Normal population with this mean and variance. What proportion of values you have generated are negative? What does this imply about the assertion in the paper?

**End of Exercise Sheet 1**