In these labs you should work through the problems on the sheet and type your answers into a Microsoft Word document. When you have completed the tasks, print the document and hand it in.

Your answers can benefit from having small sections of R output and graphs copied and pasted into your word document. It can be useful to limit the width of output produced by R so that it fits into your document. You can change the width of output produced by R with a command like: `options(width=50)`.

The labs will count for 1 mark in the current assignment. They will be graded on a 0-1 basis. Don't forget to put your name and student ID on the document.

This lab looks at some basic techniques for numerical data. we'll work on the Old Faithful erruptions data. This data set is built in to R. To load it up, type the command

`data(faithful)`

The variable `faithful` which this creates is a data frame which contains the variables `eruptions` and `waiting`. You can obtain the documentation for the data sets with the command

`?faithful`

What information do the variables `eruptions` and `waiting` contain?

You can make the variables in the `faithful` data frame available by issuing the command

`attach(faithful)`

After this command you can use the variables `eruptions` and `waiting` as though you had typed them in yourself.

Produce a histogram and a density plot of the `waiting` variable. First use the default bandwidth and then try to find a better value. Produce the density plot with function `dtrace`. The command

`library(dtrace)`

will get you access to the dtrace command.

Produce a normal QQ plot of the `waiting` variable. What does the plot show?

Produce a plot of `waiting` against `eruptions` and add a smooth curve to the plot using `lowess`. Can you interpret what the plot is saying?