**Advanced Research Methodology**

**Simple Research Report (in English)**

Write a report for your GPS experiment. It should be in **simple English** and 1-2 pages in length. Grammar errors will be ignored ☺.

It should be divided into sections: Introduction, Background, Method, Results and Discussion, Conclusion. Make sure to add a **formal hypothesis**: it might read like this:

The hypothesis tested was “It was assumed that GPS measurements show random variations from a mean, so that **If** we took sufficient measurements at a single place, then **we** would observe a normal distribution of deviations from the mean.”

**Background** could describe (very simply) how the GPS reading is made. Wikipedia can be used as a reference.

**Method** section should mention which software (app) was used to record GPS readings. It should also describe (simply but precisely) what you did.

You should also report the **accuracy, precision and resolution** of your measurements.

**Accuracy** can be estimated by assuming that the reading of your position from Google Earth was the correct position, so work out the difference from your mean to Google Earth’s mean. You can calculate the distance roughly between two points on the Earth’s surface by converting the differences between the latitudes and longitudes, converting to meters and calculating the length of the diagonal, i.e. for (latA,longA) and (latB,longB) in degrees,

lat distance, p = (latA – latB)\*60\*1860 meters

long distance, q = (longA – longB)\*60\*1860 meters

distance = sqrt(p2 + q2)

An example of this calculation can be downloaded from the GPS spreadsheet (v2) – see the cells highlighted in colour on Sheet 1 (rows 52-54). Copy the cells to the correct position on your spreadsheet – change the cell addresses as necessary.

For **resolution,** note that your GPS will read degrees to six decimal digits, i.e. 0.000001 degrees.

The **conclusion** should summarize your result (how far your GPS reading was from the ‘correct’ one from Google Earth) **and confirm that your hypothesis was supported** by your results.

Due: Fri Aug 30 (2 pages max!)