

## 2004 3BA1 Tutorial 1

It was suggested in the lecture that to draw conclusions from data, we need to describe a mathematical model that might have generated the data. In this tutorial we suggest possible models for the examples in lecture 1.

### Velocity of Light data.

Data = value obtained in particular experiment.

The probability model is an algorithm (formula) for generating numbers that look like the real data.

To get the effect of variation from reading to reading we make use of a *random function* – an example of such a function is the Excel function RAND() – Every time the function is invoked (recalculation) we get a random value in the range(0,1) in the cell.

So what would be appropriate here?

Hint:

We have “true value” call it  $c$ . Errors in measuring that value due to imperfections in the equipment and the scientists performing the measurements.

### Bugs in software

Data = number of bugs discovered in each session.

Model?

Hint.

At the beginning of session  $k = 1, 2, \dots$  there are  $Y_k$  bugs in the software. Each of the  $Y_k$  bugs has a chance of being discovered during the  $k$ th session.

### PCs and Macs

Data = number that PC, Macs that crash during the term (not repaired till the end).

Model?