A hypothesis is a testable, predictive statement. The hypothesis will state what the researcher expects to find out. For example, participants who are tested at 10am will perform significantly better on a memory test than participants who are tested at 10pm. It is important that the independent and dependent variables are clearly stated in the hypothesis. When a hypothesis predicts the expected direction of the results it is referred to as a one-tailed hypothesis. For example the hypothesis above is stating that participants will perform better in the morning than the evening and is therefore a one-tailed hypothesis. When a hypothesis does not predict the expected direction of the results it is referred to as a two-tailed hypothesis. For example a two tailed hypothesis might be that there will be a difference in performance on a memory test between participants who are tested at 10am and participants who are tested at 10pm. The hypothesis that states the expected results is called the alternate hypothesis because it is alternative to the null hypothesis. When conducting an experiment it is important that we have an alternate hypothesis and a null hypothesis. The null hypothesis is not the opposite of the alternate hypothesis it is a statement of no difference. A null hypothesis might be that there will be no significant difference on the performance on a memory test between participants who are tested at 10am and participants whom are tested at 10pm. The reason we have a null hypothesis is that the statistical tests that we use are designed to test the null hypothesis.

More about extraneous variables and control
Extraneous variables are often classified as participant and situational variables. When carrying out an experiment using an independent measures design it may be possible that participant differences are a confounding variable. For example if we find out that participants perform better on a test in a morning than an evening it may be that the participants who took the test in the morning are better at memory tests. An obvious way of controlling for participant variables is using a repeated measures design. Furthermore having a larger sample and randomly allocating participants to each condition may reduce participant variables. It might be possible to use a matched pairs design where each participant could be matched with another in terms of their memory performance. Situational variables are any feature of the experiment which could influence the participant's behaviour. Experimenters attempt to control for situational factors such as noise by ensuring that these are consistent for both conditions. With a repeated measures design order effects can be controlled for by counterbalancing.
A way of reducing order and characterises is to use a single blind technique whereby participants are not aware of what part of the experiment. Furthermore, to reduce investigator or experimenter bias a double blind technique could be employed whereby both the participant and the researcher carrying out the experiment are unaware of the aim of the experiment.

Descriptive Statistics
Experiments produce quantitative data which can be analysed statistically. Statistics are a method of summarising and analysing data for the purpose of drawing conclusions about the data. We can make a distinction between descriptive and inferential statistics. Descriptive statistics simply offer us a way to describe a summary of our data. Inferential statistics go a step further and allow us to make a conclusion related to our hypothesis. You may be pleased to know that we will not be doing inferential statistics until the second year.
Descriptive statistics give us a way to summarise and describe our data but do not allow us to make a conclusion related to our hypothesis. When carrying out an experiment there are two main ways of summarising the data using descriptive statistics. The first way is to carry out of measure of central tendency (mean, median or mode) for each of the two conditions. The mean is the arithmetic average that indicates the typical score in a data set and is calculated by adding all the scores together in each condition and then dividing by the number of scores. This is a useful statistic as it takes all of the scores into account but can be misleading if there are extreme values. For example if the scores on a memory test were 2, 4, 5, 6, 7, 42, the mean would be 10 which is not typical or representative of the data. The mean can not be used with nominal data. Nominal data are data in the form of separate categories such as grouping people according to their favourite type of cheese.
The median is calculated by finding the mid point in on ordered list. The median is calculated by placing all the values of one condition in order and finding the mid-point. This is a more useful measure than the mean when there are extreme values. For example, six scores on a test out of 100