**Scientific Method – Notes**

Lab reports are a particular type of scientific writing and generally have the following parts:

* Title – It should be a **clear, concise description** of the investigation.
* Aim – It provides a **summary of the problem** you’re investigating.
* Hypothesis – A **statement** that can be tested.
* Method / materials and methods – A detailed **description of the procedure** adequate for another researcher to duplicate your experiment.
* Results – The **observations or data** from the experiment are found here. This section may include a combination of text, graphs and tables. There should be enough detail for the reader to either view or reconstruct the raw data and make their own interpretations.
* Conclusions – The conclusion is the **interpretation of the results** and shouldn’t repeat the results). It should **come back to the hypothesis** and whether or not the hypothesis is supported by the data. It can mention the significance of the results and any future work that may still be needed.

**Ethics**:

* Voluntary participation – People **shouldn’t be pressured** into taking part of the research.
* Informed consent – Participants should be **fully informed** about the objectives of the research, possible risks and potential benefits. Consent should be sought in writing once all information has been given.
* Risk of harm – Relationship between the risk and benefit **should be assessed** in order to minimize the possibility of harm.
* Confidentiality – Identities of participants **shouldn’t be revealed** except to people directly involved with the study.
* Anonymity – A stronger guarantee of privacy than confidentiality. Participants **remain anonymous even to researchers**. It may not be possible in certain types of research involving measurements over an extended period.

Tables of collected data should follow the following conventions:

* Tables should be drawn with a ruler.
* The independent variable is recorded in the left-hand column.
* The control group should appear above or to the left of the experimental group(s).
* Each column should have a heading followed by units in brackets.
* The table should have a title that includes a number and the variables involved.
* If the table includes any indication of significance between groups, the level of probability should be given in the title.

General graphing rules:

* Graphs should be drawn in **pencil** (or computer).
* Graphs must be **ruled**.
* Graphs must contain a **brief, self-explanatory title** including the dependent and independent variables.
* An axis should only have an **arrow at their heads if the data is continuous**.
* Axes should be **labelled**. The labels should be followed by units in brackets.
* The origin should always go through ̣**(0,0)**.
* The independent variable should be plotted on the x-axis and the dependent variable should be plotted on the y-axis.
* Points on the graph should be plotted accurately. **Equal intervals of units** are used on each axis.
* The **scale on the axis should be even**. However, if there’s a large gap between zero and the first data point, the axis may be broken.
* Data points shouldn’t normally be joined point to point.
* If more than one data set is plotted, a **key should be included**.
* It must take up **at least 60% of the graph paper**.