

## Writing up experiments

Whenever you write up an experiment, include the following sections.

**Aim** Explains what your experiment is trying to investigate.

**Method** Explains what you did (generally written in the past tense), so someone could repeat the experiment. It should include:

- a list of apparatus;
- a diagram of how the experiment was set up;
- step-by-step instructions for carrying out the experiment; and
- a list of any safety precautions that should be taken.

**Variables** You should list the dependent, independent and fixed (or control) variables in your experiment.

- Dependent variable: the variable you measure
- Independent variable: the variable you change to see its effect on the dependent variable
- Fixed (or control) variables: all the other variables that are kept constant in order to make the experiment fair/valid.

**Prediction** You should state and explain, using scientific reasoning, what you think the results will be.

**Results** The results should generally be presented in a table and, if appropriate, also graphically. You may add a written description of the results, but this can be included in the conclusion, where you also describe their significance.

**Conclusion** The main point of the conclusion is to explain what your results tell you about what you were trying to investigate.

You should include (in this order):

- a description of your results – any trends, patterns, which condition was higher/lower, etc.;
- what you can conclude from your results, which should be related to your aim (e.g. if your aim was to find out if egg yolk was a good emulsifier, your conclusion should say whether it is or not based on the results of your experiment);
- a comment on whether your results agree with your prediction; and, importantly,
- a scientific explanation for your results/conclusion.

**Evaluation** The point of the evaluation is to assess whether the experiment you carried out was valid and whether you can make a reliable conclusion based on the data you collected. To do this, you need to comment on:

- how valid the experiment was (was it a fair test that tested what you wanted it to test?);
- how accurate your results were;
- how reliable the results were; and
- whether the data you collected are sufficient for you to be able to make your conclusion.

After performing this evaluation, you should state how confident you are in your conclusion and then suggest improvements to the way that you carried out the experiment, any further data you would collect in order to make your conclusion more secure, and any further variables that you would like to test based on your results.

## Key terminology

**Accurate results** – results that have been obtained through correct and careful measurement.

**Reliable results** – results you can trust because they have been proved to be right several times.

**Valid results** – results you get when the test has been fair because you've kept all the variables the same except for the one you are testing.

**Variable** – a factor in an experiment that can change.

**Correlation** – when two variables show a similar pattern of change.