Writing a practical report.

A statement about why you did the experiment.

A list of all the equipment you used, including safety equipment.

A list of hazards and safety precautions that must be followed.

A description in your own words of how you carried out the experiment. You may include a diagram to show how your equipment was set up.

A description or record of what happened.

An explanation of your results and a discussion of any difficulties you had.

A short statement of your findings.

DISSOLVING SUGAR

NAME: Sue Smith DATE: 3rd May 2002
PARTNER: Ian Wilson

AIM:
To compare how much sugar will dissolve in hot water compared to cold water.

EQUIPMENT:
- beaker
- Bunsen burner
- gauze mat
- stirring rod
- water
- safety glasses
- heatproof mat
- tripod
- matches
- sugar
- lab coat

SAFETY PRECAUTIONS:
- Wear a lab coat and safety glasses
- Beware of the Bunsen burner flame
- Do not handle hot equipment

METHOD:
1. 100ml of cold water was added to a beaker.
2. A spatula of sugar was added to the water and stirred.
3. More sugar was added until no more would dissolve.
4. The number of spatulas of sugar that dissolved was recorded.
5. The beaker containing the sugar solution was then heated over the Bunsen burner for four minutes.
6. More sugar was added to the water and stirred until no more sugar would dissolve.
7. The extra amount of sugar that was added was recorded.

RESULTS:

Water	No. of spatulas of sugar that dissolved
Cold	2
Hot	4
Total amount of sugar that dissolved	6

DISCUSSION:
1. Did the temperature of the water affect the amount of sugar that dissolved?

Yes, the temperature of the water did affect the amount of sugar that dissolved. Only two spatulas of sugar dissolved in the cold water while six dissolved in the hot water.

2. How could the method used be improved?

The method could be improved by measuring more accurately the amount of sugar that was added.

CONCLUSION:
It was found that three times as much sugar dissolves in hot water as in cold water.

The aim should begin:

To test ....
To find ....
To compare ....

Write the equipment as a list.

Write the safety precautions in point form.

Each step should be numbered. Write in the past tense and do not include yourself (this is called passive voice).

e.g. Two grams of sugar was added.

NOT

I added two grams of sugar.

Your results may be presented in a table, graph, diagram or a written description.

Answer any set questions. Use your results to support your answers.

Your conclusion should include a rewording of the aim and a summary of your findings.

Below is some suggestions for the content and format of practical reports.

Title

Name: _____

Date: _____

Partner's names: _____ _____ _____

Aim

- **A precise statement of what you are doing in the experiment.**
- Usually one or two sentences (at most).
- It could begin with:
  - To find ....
  - To investigate ....
  - To test ....
- E.g. 'To investigate how the size of sugar granules is related to dissolving rate' (how fast it dissolves).

Hypothesis

- **A precise statement of the expected outcome(s) of the experiment.**
- Usually one or two sentences (at most).
- It could be in the form of:
  - If _____(something happens) then _____ (something else will happen).
- **A hypothesis has to be <u>testable</u>. Can it be supported or not supported by evidence?**
  - E.g. 'If plants are not given light then they will not grow.'
  - Or 'Plants which are not given light will not grow.'

Equipment (can also be termed 'Apparatus' or 'Materials')

- **A list of all equipment used in the experiment.**
- It includes the <u>quantities</u> of substances used. (e.g. 10 mL of 0.1M HCL)
- You do not need to include commonly used safety and other equipment such as labcoats, goggles and matches.
- You do need to include beakers (including their size), Bunsen burners etc..

Method (can also be termed 'Procedure')

- **A list of steps you took to perform the experiment.**
- The steps should be numbered and one underneath another, not across the page.
- If possible written in the past tense. (e.g. *The water <u>was</u> heated to 80^0C)*
- A good method includes a <u>labelled scientific diagram</u> of the experimental setup.
- The method will look like:

1. (Step 1)
2. (Step 2)
3. (Step 3) ...

Results

Quantitative results (results in numbers)

- Most of your results in science will be quantitative.
- Normally, these are presented in tables. Tables should be properly labelled with a title, column headings (including units).
- Often these results are also presented in graphs. (Also properly labelled). Graphs are normally drawn, for example, if you are measuring something over time.

Qualitative results (results in words)

- Sometimes, your results might be in the form of qualitative observations (e.g. describing the colour of a flame produced by burning chemicals.)
- Qualitative results may also be presented in table if suitable.
- In Biology, scientific drawings of what you see under a microscope may be the results.

Discussion

- **Often your teacher will set questions to answer for your discussion section.**
- Normally, you do not need to write out the question.
- Discussion questions should be answered in full sentences.
- Your answers should always refer directly to results.
- If you teacher has not set questions and you need to write a discussion section, you should write a paragraph or so briefly answering the following questions:
    - What did my results show? (Analyse your data and interpret your results)
    - What variables were not controlled properly? (Was the experiment a fair test of the hypothesis?) (Was the method not carried out correctly?)
    - How did these uncontrolled variables affect my results?
    - If the experiment was repeated, how could the method (and perhaps equipment) be improved to make the experiment a fair test?

Conclusion

- A short summary of your findings.
    - E.g. 'It was found that castor sugar dissolved faster than white sugar, which dissolved faster than raw sugar.'
- A statement of whether your results supported or did not support your hypothesis.
    - E.g. 'The results supported the hypothesis that powdered sugar dissolved faster than larger granulated sugar.

Some general hints:

- Practical reports should be precise (straight to the point) and the sections should be in the correct order.
- A test of a good report is: If it was given to someone else, could they duplicate your experiment based on your report? (If not, what is missing?)
- The results should always be what you found out, not what you hoped, or expected would happen (that would be unscientific).
- Whenever possible, you should use appropriate scientific language.
- Always use correct punctuation and grammar.
- Write in the third person – try to avoid using 'I', 'We' etc – but this is a skill which takes some time to master.
- A report much over two pages long is probably too long, under one page, probably too short.
- It is not necessary to type your report and you will receive no more marks for doing so. It is often difficult to construct tables, graphs and draw diagrams on the computer.

METHOD	CONCLUSION
AIM	RESULTS & OBSERVATIONS
APPARATUS/MATERIALS	TITLE
HYPOTHESIS	DISCUSSION/ANALYSIS

What you intend to find out by completing the experiment.

A heading that tells you something about the experiment. Should include a list of partners and the date.

Measurements taken and observations made during the experiment. Should include a table.

Includes any problems encountered, what you think the results show and what you have found out about the experiment from other sources.

A detailed list of what you did in the experiment.

An educated guess about what you think may happen. This part of the report is optional.

A summary of what you found out in the experiment.

A list of all the important equipment and chemicals used in the experiment.