

# Introduction to Science Knowledge Organiser

A science laboratory is used for carrying out practical investigations. They involve using dangerous chemicals and practical equipment such as Bunsen burners.

Some practical equipment, such as test tubes, are easily breakable so care must be taken.

The pupils' and teacher's health and safety are very important so that no one gets hurt.

Hazard symbols show people how dangerous a chemical is, and what care should be taken when handling them.

Symbols can be used all over the world and are immediately recognisable, so it doesn't matter which language is used.

flammable –



corrosive –



harmful –



irritant –

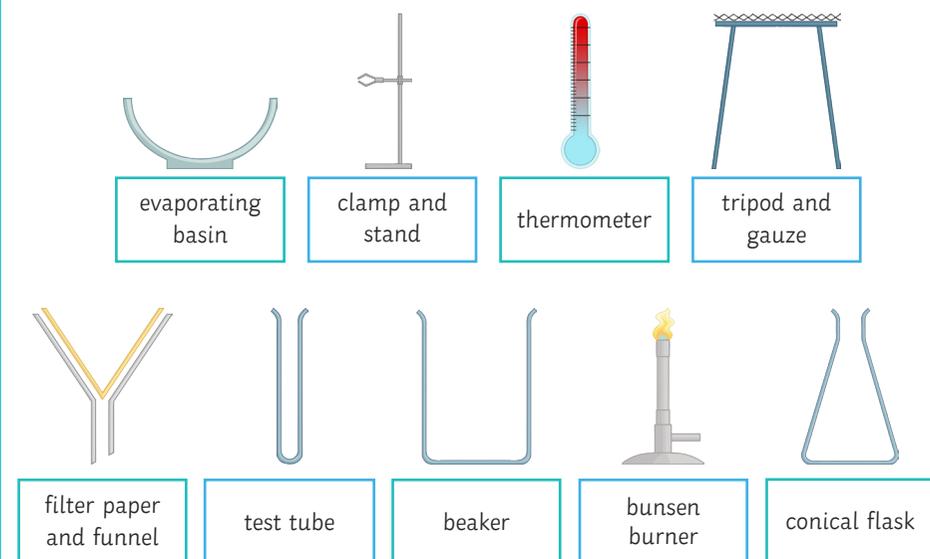


can damage the environment –



## Scientific Equipment

Diagrams are used when drawing practical equipment to make it easier and quicker to draw.



Below are some safety rules that should always be followed in a lab.

- Always wear goggles during a practical.
- Stand up during a practical.
- No running in the lab.
- Tie long hair back with a bobble.
- When something gets broken, tell a teacher.
- Inform a teacher of any spills and mop up immediately.
- Make sure equipment gets put away at the end of a practical.



## The Safety Flame

The safety flame is used when the Bunsen burner is not in use. The flame is easier to see when it is the yellow flame. To produce this flame, the air hole is fully shut. Less oxygen will get into the Bunsen burner, hence the yellow flame.



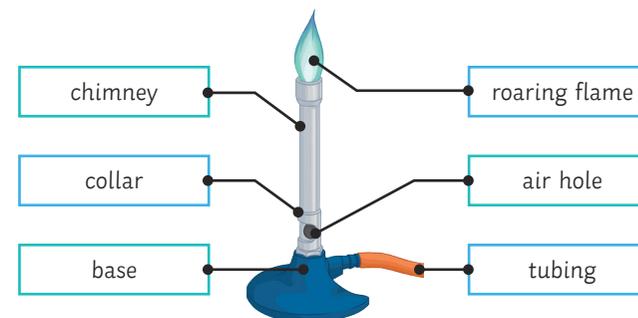
## The Roaring Flame

The roaring flame is used to heat things quickly. To produce this flame, the air hole must be fully open. More oxygen will get into the Bunsen burner, hence the blue flame.



## Bunsen Burner

The Bunsen burner is an important piece of scientific equipment. It is used in many science experiments and uses methane gas.



# Introduction to Science Knowledge Organiser

## How to Use a Microscope

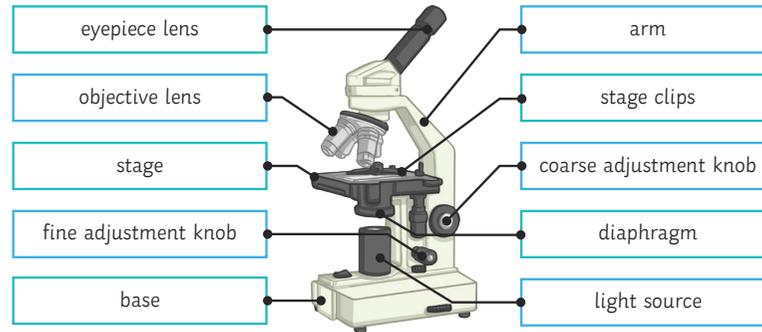
1. Plug in the microscope and turn on the light.
2. Place the specimen (the object to be observed) on the stage.
3. Turn the magnification to the smallest.
4. Make sure that the specimen is in the centre; fasten it with the clips.
5. Look down the microscope.
6. Use the fine focussing wheel to observe the specimen.
7. Increase the magnification.
8. Draw/write down any observations.

## Using a Microscope

Microscopes have been used for years to observe objects that are too small to see with the naked eye.

Over time, the magnification of microscopes has significantly improved due to developments in technology. We now have microscopes that can examine specimens at an atomic level.

We have made many important scientific discoveries thanks to microscopes.

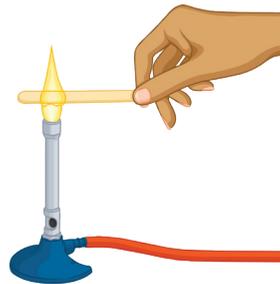


## The Flame Test

This test is used to find out what metal ion is in a compound. Each metal will burn with a different colour when placed into a Bunsen burner.

1. Dip the splint in some water.
2. Dip the wet end in a test tube sample of metal chloride e.g. copper chloride.
3. Turn the Bunsen burner to the blue flame and carefully place the end of the splint with the metal into the flame.
4. Write down any observations/colours in the results table.

Chemical	Flame Test Colour
potassium (K)	purple
calcium (Ca)	yellow-red
lithium (Li)	red
sodium (Na)	orange
copper (Cu)	green-blue



## Investigation Skills

**Independent variable** – the variable you change.

**Dependent variable** – the variable you measure.

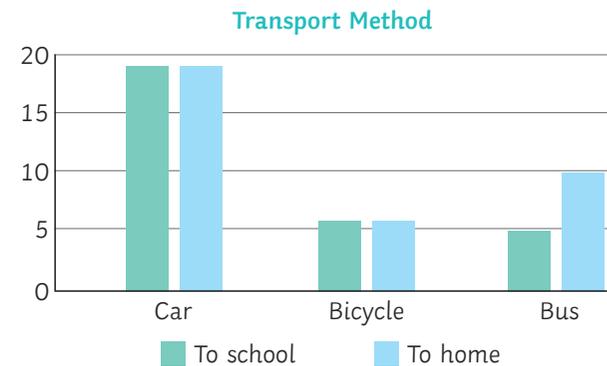
**Control variables** – the variables you keep the same.

**Prediction** – what you think will happen and why?

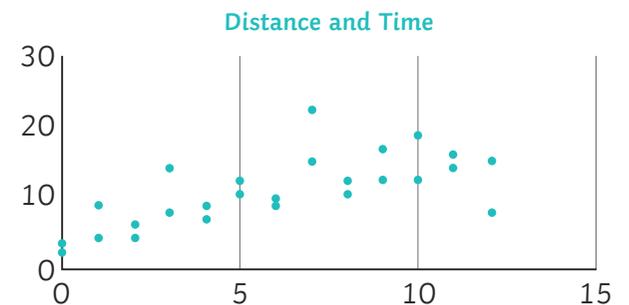
**Method** – how to carry out the practical investigation.

**Results table** – as the practical is carried out, write the results in a table.

**Bar graph** – used with categorical data.



**Scatter graph** – used with continuous data.



**Conclusion and analysis** – look at the results and discuss what you found out from the practical.

**Evaluation** – how can you improve the practical?