

Activity 7

Putting it All Together!

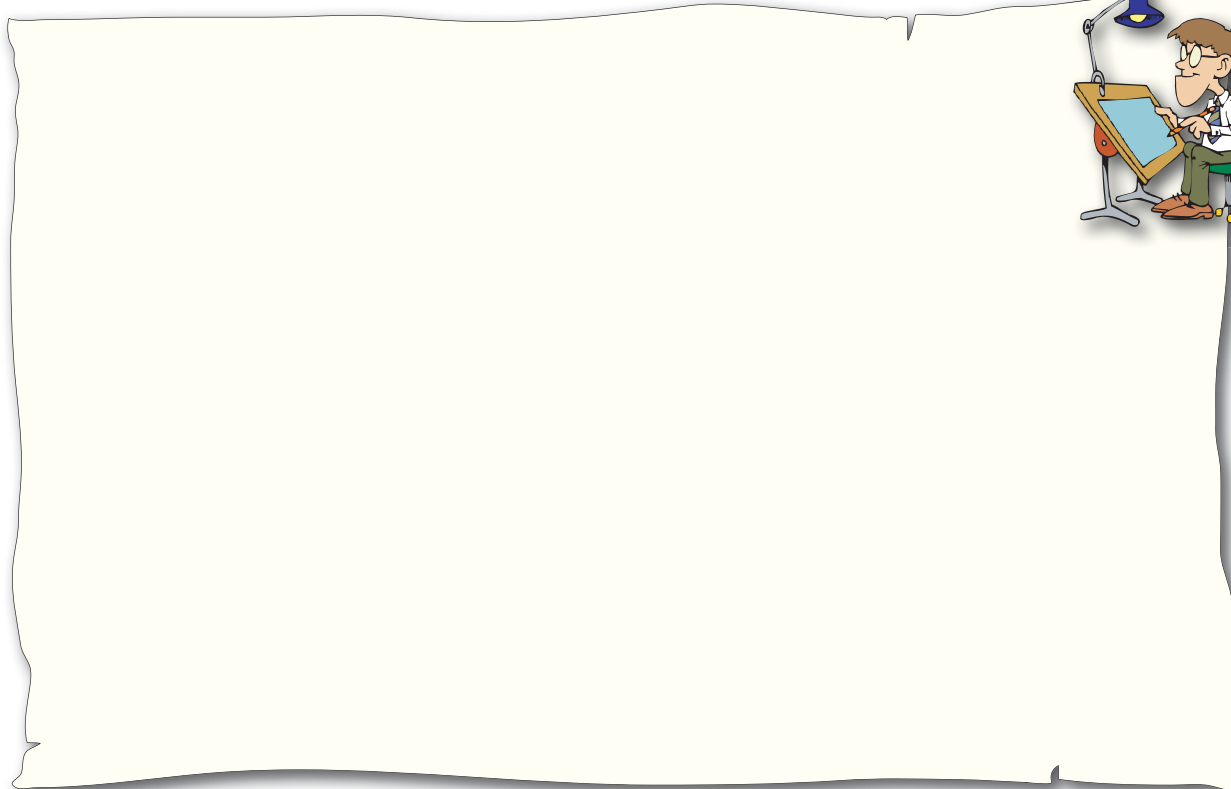
Your teacher will give you a mixture of iron filings, salt and sulfur. You need to separate out all the substances in the mixture into pure samples of each substance!



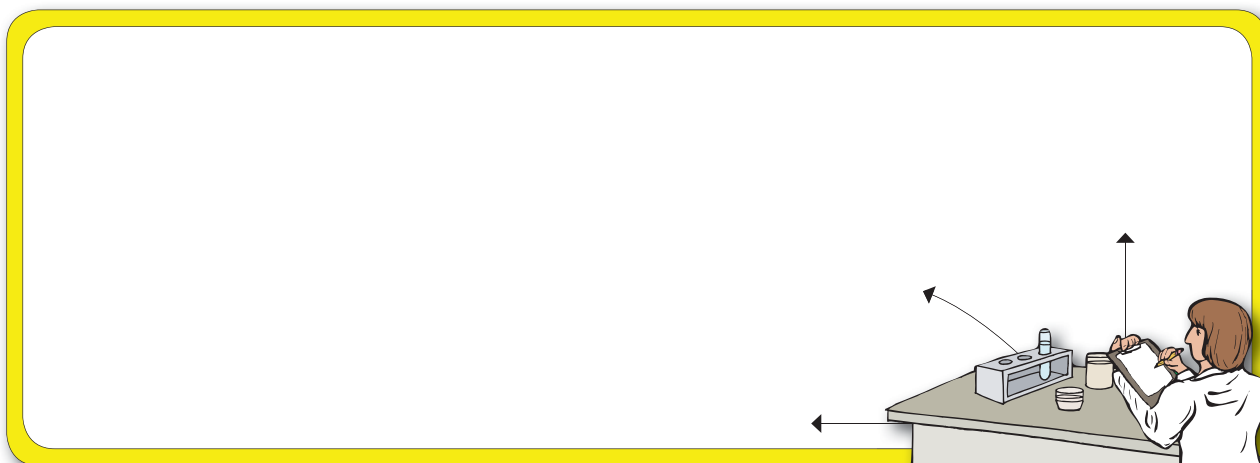
- Hints:
- **Examine the samples** of pure iron, salt and sulfur that the teacher has supplied for you to look at first and record anything that might be important/relevant to your task.
 - **Research the properties** of these substances and record any that might be important/relevant to your task.
 - Any filtrate you may make could be left in a hot water cupboard or warm oven overnight.

Good separating scientists!

1. In the space below, write a method for the experiment. Use labelled diagrams.



2. Describe your results. Remember to use the words you have learnt, e.g. decant, solute, solvent, filtrate, evaporate, etc. (see pages 18 and 19).



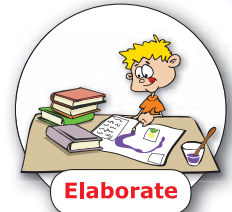
Activity 11

A Burning Question

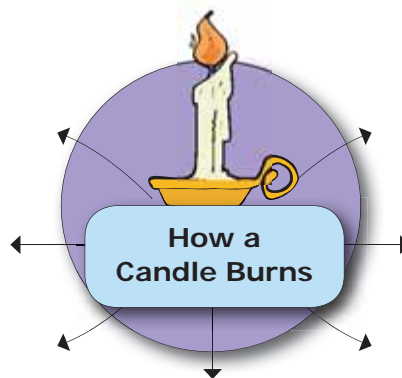
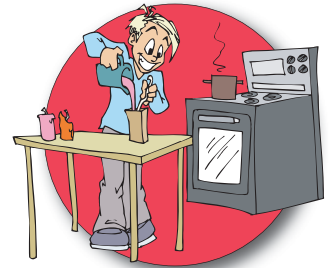
The alchemists and modern day scientists observe carefully. Scientists use their observations to help explain what they see to build scientific knowledge. As they gather more evidence through observation and experiments their ideas may change. We will use a candle burning to illustrate this.

A candle is made up of wax and a wick. The wick is made of material such as a cotton string or cord. How does a candle work? How does it burn?

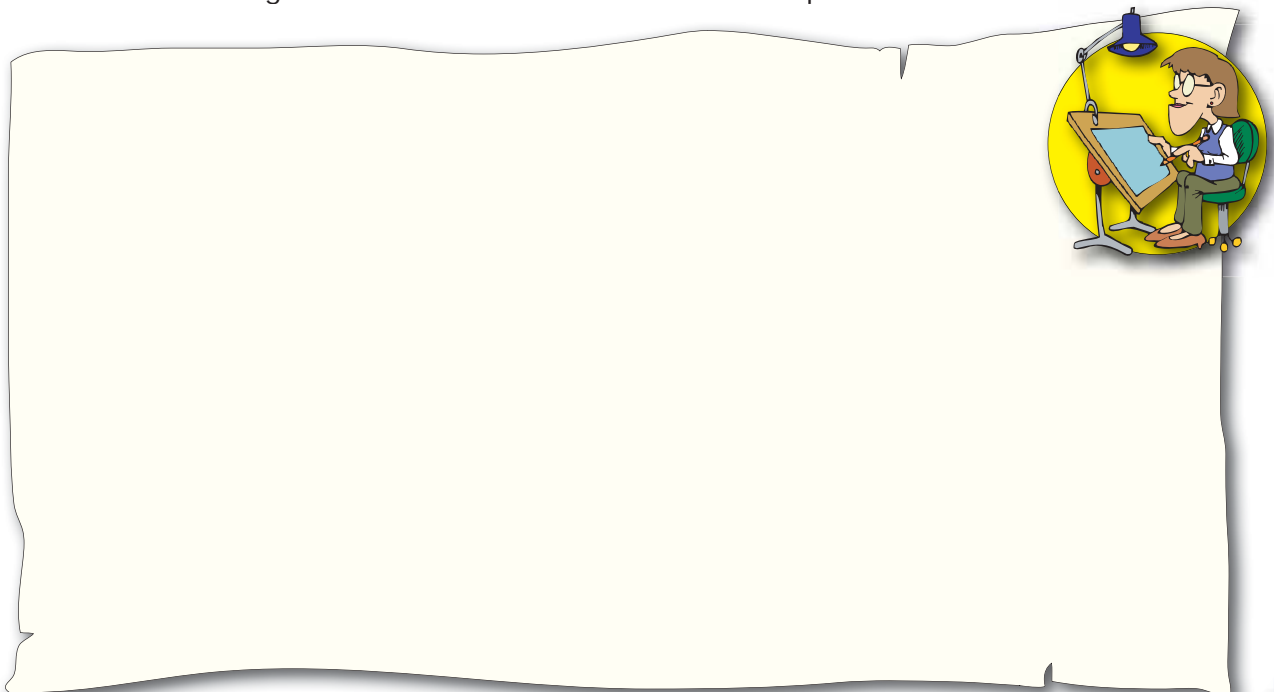
1. Use the mind map below to write down your ideas about how a candle burns.



Elaborate

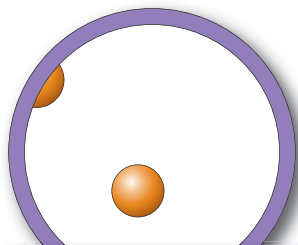


2. Draw a labelled diagram of an unlit candle and describe its parts.

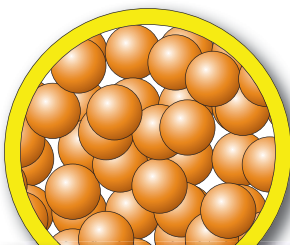


Using Models

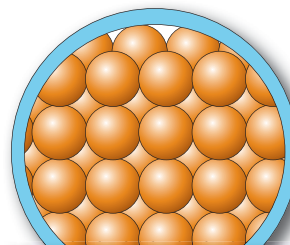
Scientists use **models** to help explain how substances change state. In the *particle nature of matter* model, scientists imagine that matter is made up of tiny particles which cannot be seen even with a very powerful microscope. Although scientists can't actually see these microscopic particles, they imagine them as small spheres because it helps to explain their behaviour. Gases, liquids and solids are all made up of these microscopic particles but the particles move around and are packed together differently in the three *phases*.



Microscopic view of a gas.



Microscopic view of a liquid.



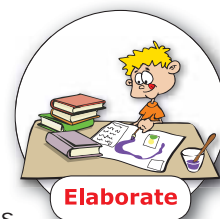
Microscopic view of a solid.

Go to: <http://www.chem.purdue.edu/gchelp/atoms/states.html> and you can see the particles moving around.

Activity 14

Out of Phase

Complete the table below to compare and contrast the structure of gases, liquids and solids.



gases

Particles are far apart so can be compressed into a smaller volume.

liquids

Flows easily. Particles can move past each other.

solids

Has a fixed volume and shape. Particles are packed together in a regular way and cannot move around.