Topic 15 Floating and sinking

Objectives

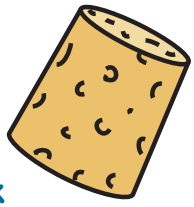
When you have completed this topic you will be able to:

- investigate which objects sink and which float in water
- explain how to make a ball of clay float by making it into a hollow shape
- explain how boats carry cargo

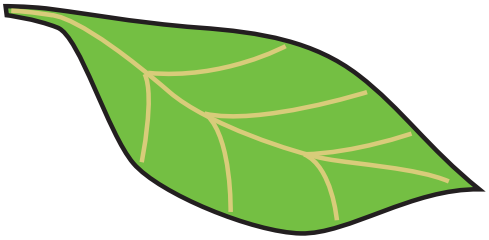
Floating

Some materials **float**.

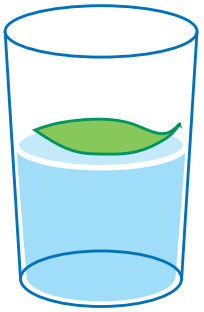
Things that float are **light** for their size.



cork



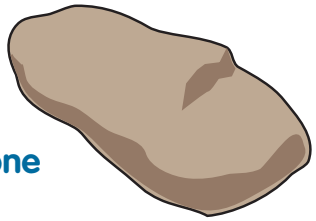
leaf



Sinking

Some materials **sink**.

Things that sink are **heavy** for their size.



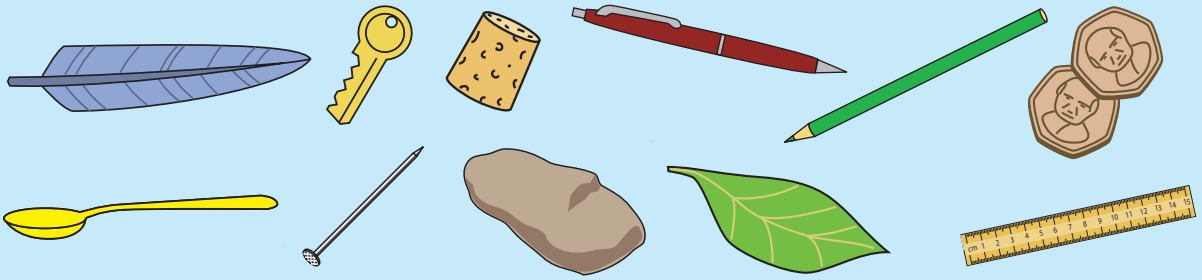
stone

coins

Activity 1

You will need:
- objects to test
- a bowl of water

- Predict which objects will float and which will sink.
- Put each object into the water to see if it floats or sinks.



- Sort your materials into two sets. Make a display.

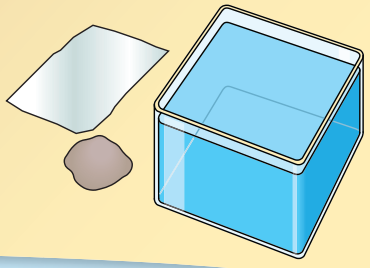
Activity 2

Can you make it float?

- Test a ball of modelling clay (Plasticine) — does it float or sink?
- Test a ball of aluminium foil.
- Can you make the clay and the foil float?
- You can if you make them into boat shapes.

You will need:

- *a bowl of water*
- *modelling clay*
- *aluminium foil*



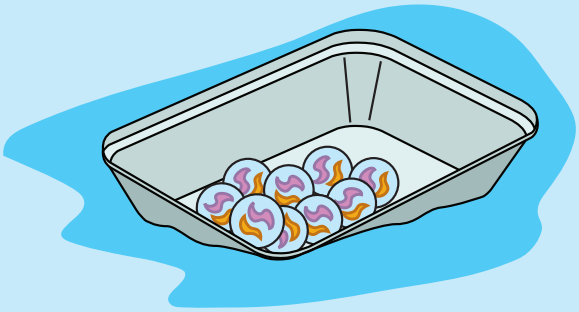
A boat is **hollow** inside, like a bowl. This makes it light for its size and so it floats.

A large ship can carry a heavy cargo.

Activity 3

Testing boats

- Use your containers as model boats.
- Load your boats with cargo.
- How much cargo will they hold before they sink?



You will need:

- *foil and plastic containers*
- *marbles, small stones or similar 'cargo'*
- *a bowl of water*

- Do any of the containers capsize (turn over)?
- Which shape makes the best boat?

Key words

float
heavy
hollow
light
sink

Check your progress

1 Copy and complete with the key words.

Stones _____ in water. Corks and feathers _____.

Something that sinks is _____ for its size. A ship is _____ inside. This makes it _____ for its size.

2 Draw a ship floating on the sea. Draw and label the ship's cargo. Say why the ship does not sink.

Topic 16 Investigating liquids

Objectives

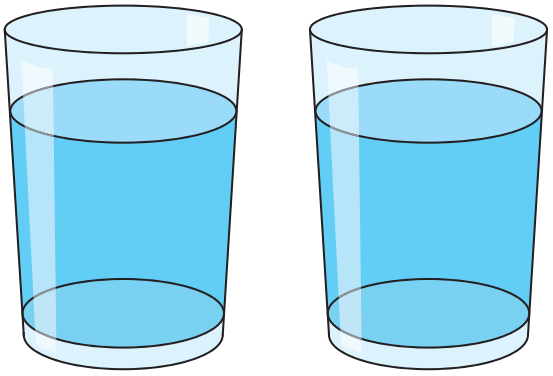
When you have completed this topic you will be able to:

- explain that a liquid takes the shape of its container
- compare how much liquid containers can hold by pouring water between them
- state that salt and sugar dissolve in water
- show that oil and water do not mix

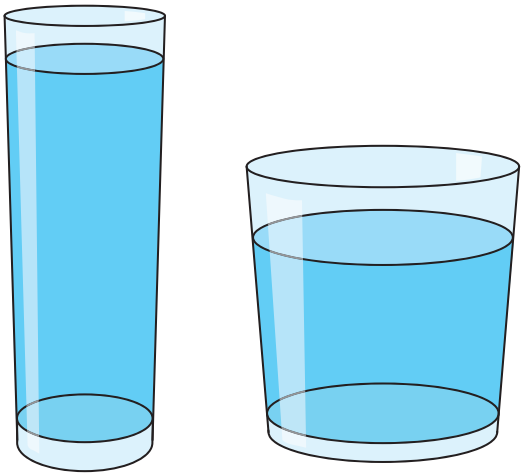
Water

Water is a **liquid** — it pours, flows and changes shape. When you pour water into a glass it takes the shape of the glass.

Two glasses the same size and shape hold the same amount of water.



If the glasses are different shapes, how do we know which holds more water?

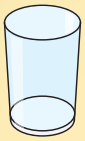


Activity 1

How much does it hold?

You will need:

- three different shaped plastic cups
- a small yoghurt carton or an egg cup
- a jug
- sticky labels
- a pen and paper
- water



- Predict which cup will hold most water and which will hold least. Write down your prediction.
- Fill the yoghurt carton or egg cup with water from the jug. Empty it into one of the cups.
- Count how many yoghurt cartons or egg cups of water it takes to fill the cup.
- Write the number on a label and stick it to the cup.

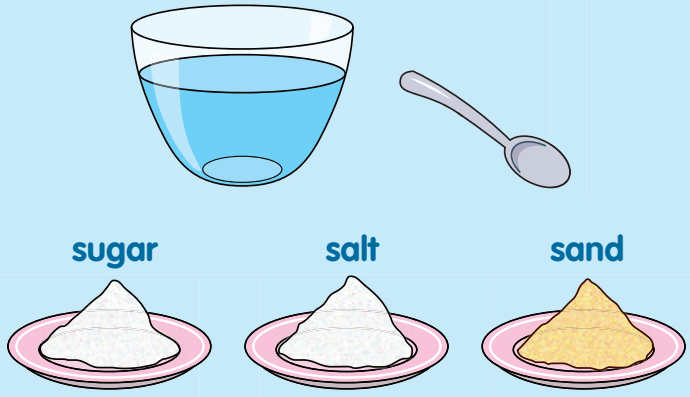
- Repeat the measurement with the other cups in turn.
- Which cup holds most water?
- Which holds least?
- Was your prediction correct?

Solids and liquids

Sugar and salt are **solids**. But when you stir them into water, they seem to disappear.

Activity 2

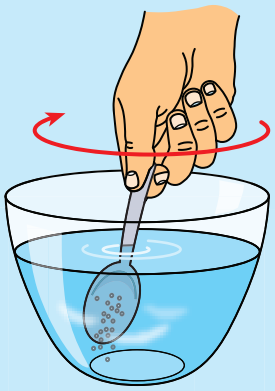
Dissolving things in water



You will need:

- *a large glass bowl or jug*
- *water*
- *spoons*
- *sugar*
- *salt*
- *sand*

- Three-quarters fill the bowl with fresh water.
- Stir a large spoonful of sugar into the water.
- Keep stirring gently with the spoon.
- Observe the sugar crystals. What happens to them?
  The sugar crystals **dissolve**. They become part of the liquid.
- Repeat your experiment with salt and then with sand. Use fresh water each time.
  Record your findings.



You cannot see a dissolved substance in water, but sometimes you can taste that it is there. When there is sugar in tea or coffee, the liquid tastes sweet.

Oil and water

Oil and water are both liquids. But they have different properties.

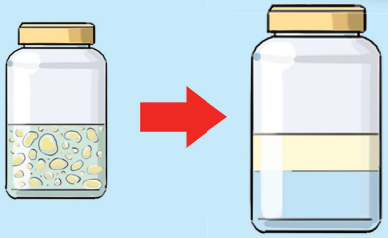
Activity 3

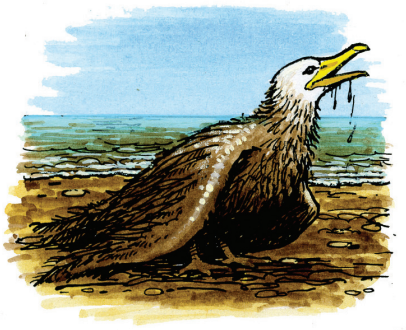
Do oil and water mix?

- Quarter fill the jar with water.
- Pour in oil until the jar is half full.
- Screw on the lid.
- Shake the jar.
- Leave the jar to stand. What do you observe?
- Do they **mix**? What happens to the oil?

You will need:

- *cooking oil*
- *water*
- *a glass jar with a lid*





When there is an oil spill, the oil floats on the surface of the sea. Oil on the water harms wildlife.

Key words

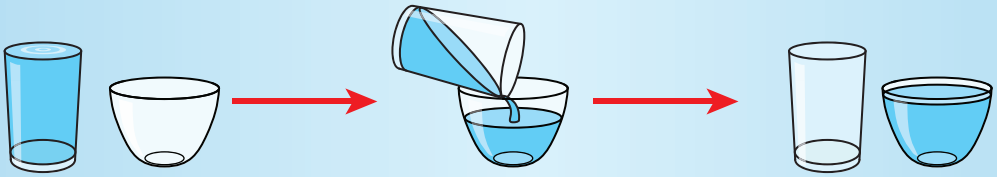
dissolve
liquid
mix
solid

Check your progress

1 Copy and complete with three of the key words.

A _____ pours and flows. Salt and sugar _____ in water. Oil and water do not _____.

2 Which glass holds more? Say how you know.



Topic 17 Heat: sources and dangers

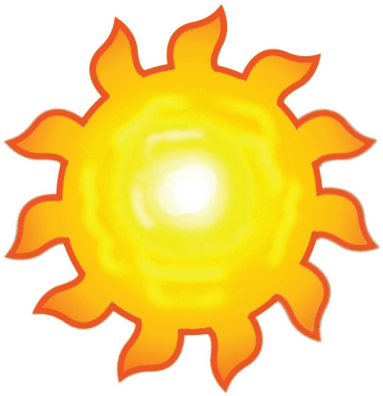
Objectives

When you have completed this topic you will be able to:

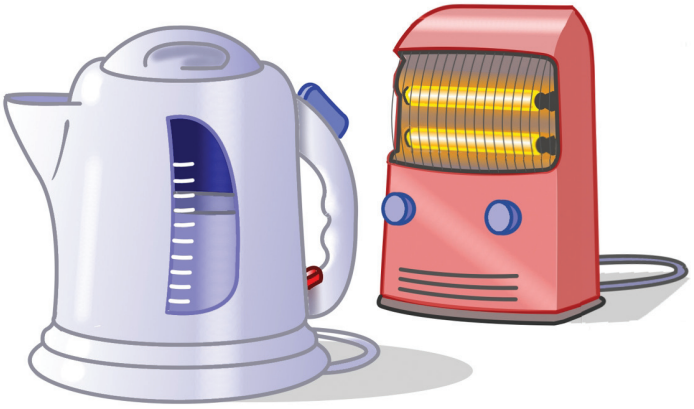
- identify some common heat sources
- describe some of the ways we use heat
- identify the dangers of heat and flames
- discuss fire safety

Heat sources

We get **heat** from different sources:

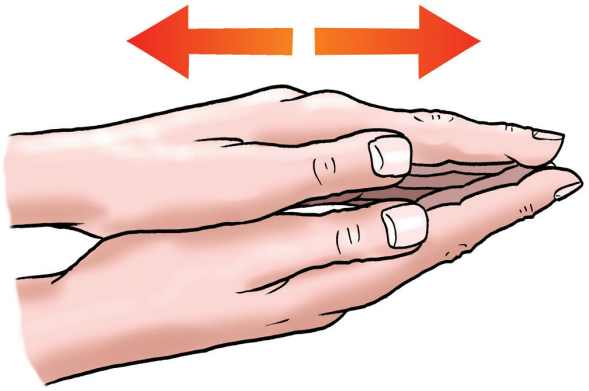


sun



electricity

fire



friction

Activity 1

Think about your school. What are the heat sources?

We need heat to:

keep warm

iron clothes

boil water

cook

Activity 2

Look at the list you made in Activity 1. Now say what you use the heat sources for.

Activity 3

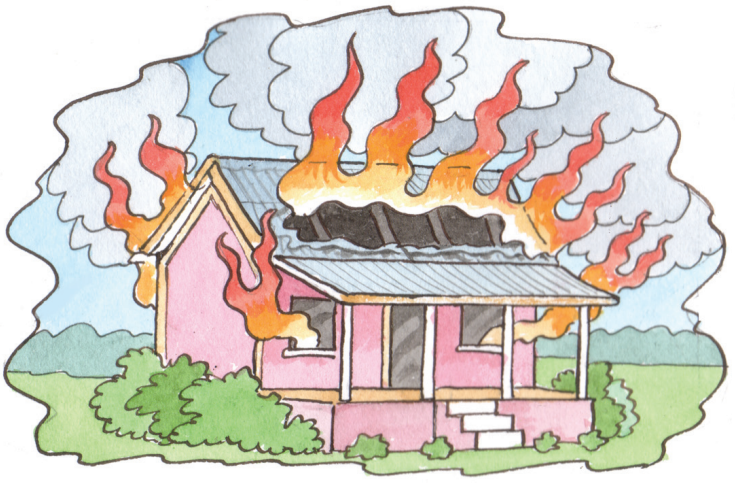
Say how you use heat in your home. Where does the heat come from?

Fire safety

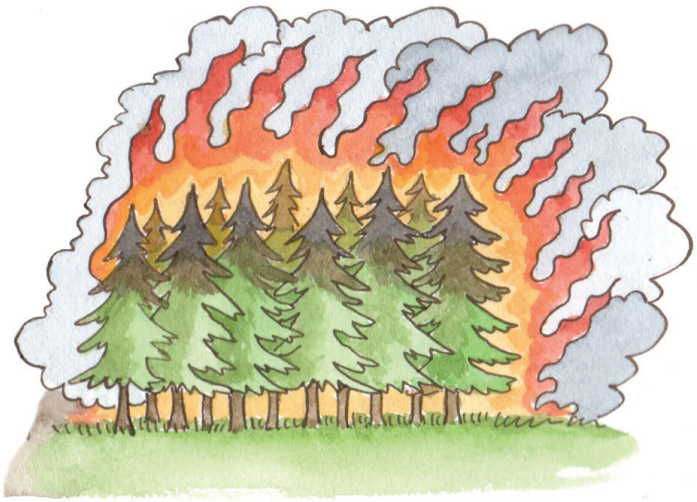
A fire burns. It has **flames**.

Take care! The flames are very hot and dangerous.

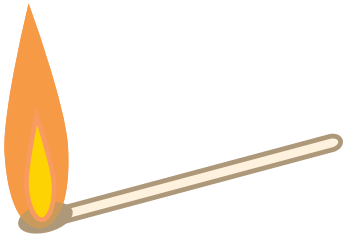
Fire can burn your skin.



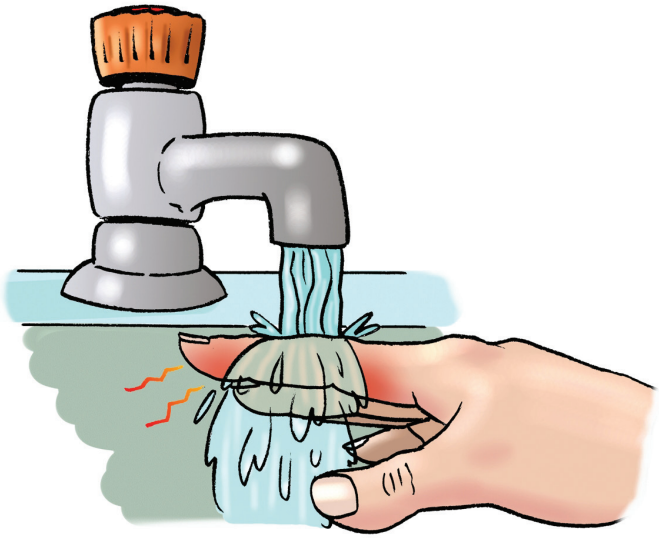
Fire can burn buildings.



Fire can burn a forest.



Never play with matches.
You might start a fire.



If you burn your skin, hold it under cold water.

Water or sand put out a fire. They make it safe.

STOP – DROP – ROLL!

If your clothes catch fire, DO NOT RUN. Lie down and roll slowly.

Someone should roll you in a rug or a blanket.

Activity 4

Say how you can stay safe from fire.
Show what to do if your clothes catch fire.

Key words
boil
burn
cook
fire
flames
heat

Check your progress

1 Copy and complete with three of the key words.

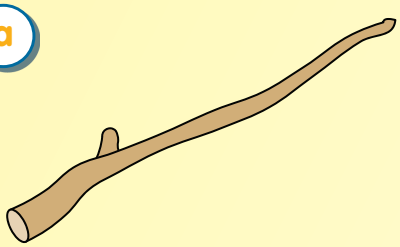
A fire is a source of _____. We use heat to _____ water and _____ food.

2 Give three reasons why fire is dangerous.

Review questions

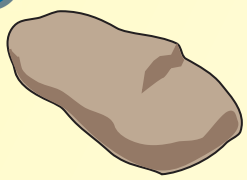
1 Which things float? Which things sink?

a



b

c



d

2 True ✔ or false ✘?

a A coin floats.

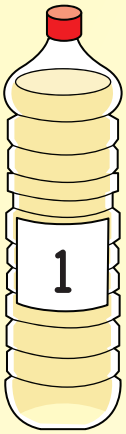
b When something floats it is light for its size.

c A metal boat will not float.

d A ship floats because it is hollow inside.

3 Oil or water? Read the properties of the two liquids. Say which is oil, and which is water.

a

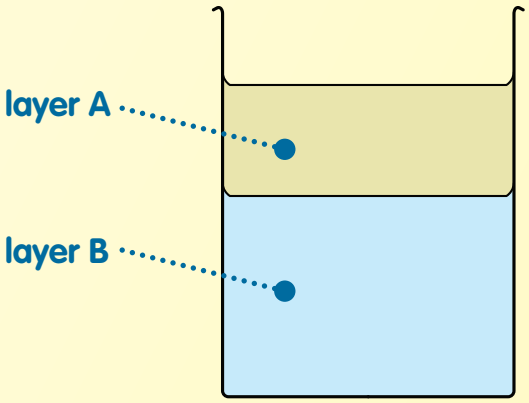


Liquid 1 pours slowly, feels slippery, burns.

b

Liquid 2 pours quickly, is not as slippery as 1, does not burn.

4 Oil and water are mixed in a jar. The jar is left to stand. After ten minutes the jar looks like this.

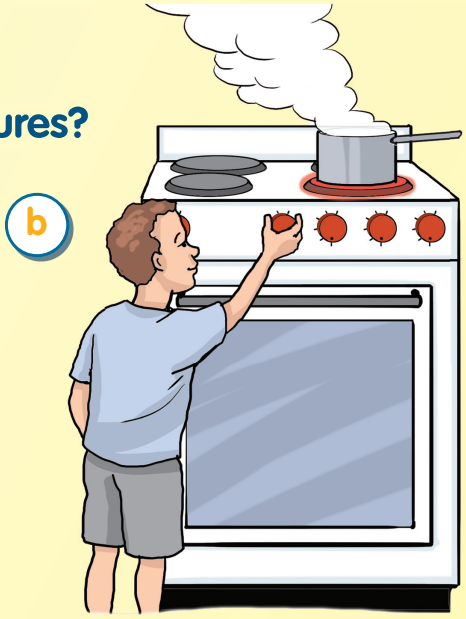


Which layer is water?
Which layer is oil?
How do you know?

5 Copy the table. Write the names of two substances that dissolve in water in the left column. Write the names of two substances that do not dissolve in water in the right column.

Dissolve in water	Do not dissolve in water

6 What are the dangers in these pictures?



Say or draw what you should do if:

a you burn your fingers by touching a hot plate.

b your clothes catch fire.