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# Cambridge Primary Science

**Activity  
Book**

**2<sup>nd</sup> Edition**



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RESOURCES**



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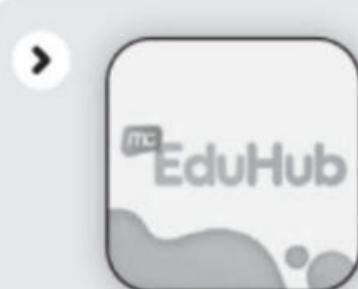


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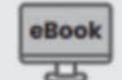
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# Cambridge Primary Science

Activity  
Book

**2<sup>nd</sup> Edition**



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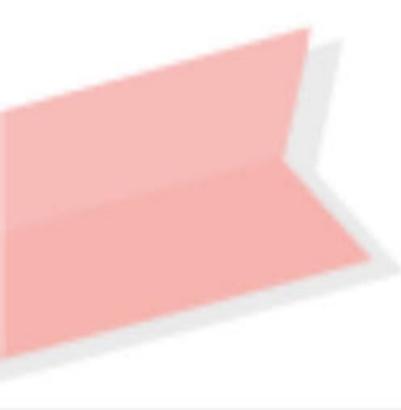
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# How to Use This Book

This book is written to help you learn and enjoy science. You will build the knowledge and skills needed to understand the world around you. You will also learn how to think and work like a scientist!

The Activity Book has the following features:

**CHAPTER 7 Properties of Light**

**Activity 7A How Light Travels**

**Skills:** Learn to predict the possible results of a scientific activity, explain that results are more reliable when the activity is done more than once, analyse results to answer a scientific question

**Materials:**  
Three cardboard cards  
Hole puncher  
Plasticine  
Stick  
Black paper  
Torch

**Method**

- 1 Work in groups.
- 2 Place the three cards together.
- 3 Use a hole puncher to punch a hole in the middle of each card at the same place.
- 4 Place a small ball of plasticine at the bottom of each card to help it stand up as shown.
- 5 Insert the stick through all the holes and adjust to make sure the holes are in a straight line.
- 6 Hold a piece of black paper behind the last card.
- 7 Turn on the torch. Predict what you think will happen when you shine the torch through the holes.

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## Activity

Carry out activities to improve your understanding and skills. Think and work like a scientist and apply science in everyday life!

**Word Whizz**

Help Izzy solve this puzzle. Complete the crossword puzzle using the clues.



**Across**

- 1 Doctors give us \_\_\_\_\_ to help us to feel better when we have an illness.
- 2 A \_\_\_\_\_ may help to prevent us from getting a disease.
- 3 Infectious \_\_\_\_\_ can cause a plant's leaves to drop and turn yellow.
- 4 A \_\_\_\_\_ can cause humans and animals to become ill.
- 5 A worldwide spread of a new disease is also known as a \_\_\_\_\_.
- 6 Vaccines give us \_\_\_\_\_ against many diseases.
- 7 An \_\_\_\_\_ illness spreads from person to person.
- 8 \_\_\_\_\_ can spread when a person with an infectious disease coughs or sneezes.
- 9 When someone is feeling sick, they may have an \_\_\_\_\_.

**Down**

- 1 Doctors give us \_\_\_\_\_ to help us to feel better when we have an illness.
- 2 A \_\_\_\_\_ may help to prevent us from getting a disease.
- 3 Infectious \_\_\_\_\_ can cause a plant's leaves to drop and turn yellow.
- 4 A \_\_\_\_\_ can cause humans and animals to become ill.
- 5 A worldwide spread of a new disease is also known as a \_\_\_\_\_.
- 6 Vaccines give us \_\_\_\_\_ against many diseases.
- 7 An \_\_\_\_\_ illness spreads from person to person.
- 8 \_\_\_\_\_ can spread when a person with an infectious disease coughs or sneezes.
- 9 When someone is feeling sick, they may have an \_\_\_\_\_.

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## Word Whizz

Practise using science words as you complete crosswords, unscramble letters and fill in the blanks.

**CHAPTER 5 Materials, Substances and Particles**

**Activity 5A Making Models of Solids and Liquids**

**Skills:** Explain relationships through models, use science to help me support my points of view, explain why models do not fully represent a situation

**Materials:**  
Yellow plasticine  
Toothpicks  
Blue plasticine  
Pieces of string  
Box without a lid

**Method**

- 1 Work in pairs.
- 2 Use the yellow plasticine to make 27 small balls of the same size.
- 3 Use toothpicks to join the yellow plasticine balls together to make a cube. Make sure the balls are neatly arranged and touching each other. Be careful when using toothpicks. They are sharp.
- 4 Use the blue plasticine to make 27 small balls of the same size.

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### Let's Map It!

Fill in the blanks. Use the following words.

ash cloud    crust    damage    earthquake  
eruption    inner core    mantle    outer core  
tectonic plates    vent    volcano

- The \_\_\_\_\_ is the outermost and thinnest layer.
- The \_\_\_\_\_ is the layer between the crust and the core.
- The \_\_\_\_\_ is made of melted metals like iron and nickel.
- The \_\_\_\_\_ is the deepest layer of the Earth's structure.

The Earth

activities that can take place on the Earth

An \_\_\_\_\_ is the sudden movement of the Earth's surface, caused when the \_\_\_\_\_ on the Earth's crust start to move. It can cause \_\_\_\_\_ to buildings and homes.

A \_\_\_\_\_ is an opening on the surface of the Earth. During an \_\_\_\_\_, magma sheets out of the volcano through a \_\_\_\_\_. An \_\_\_\_\_ is formed when dissolved gases in magma escape into the atmosphere.

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## Let's Map It!

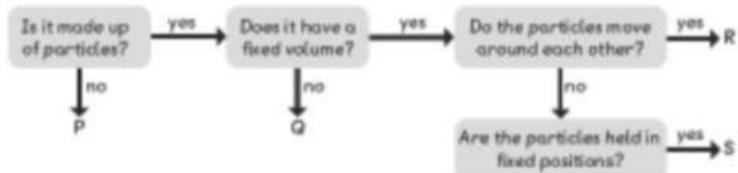
Let's Map It! helps you put the main ideas together in a mind map.

## Let's Review

Let's Review has questions to test your understanding and apply what you have learnt.

### Let's Review

1 Maria draws a flowchart.



In the table, write the letter P, Q, R or S to identify each substance.

Substance	Letter
Rock	
Oil	

2 Ben pours some apple juice into moulds. He places the moulds in the freezer.



a What state of matter is the apple juice in before it is placed in the freezer?

b What will happen to the apple juice after a few hours in the freezer?

Complete the sentence.

The apple juice will \_\_\_\_\_.

50

Two Social and Emotional Learning mascots, Lana and Leo, help you to learn how to work with others and take care of your feelings.

- 5 Mix half a cup of vinegar with one to two drops of red food colouring.
- 6 Gently pour the mixture of vinegar and red food colouring into the beaker of baking soda.
- 7 What you have just observed is a mini volcano eruption! Draw a labelled diagram of the volcano in the space below to record your observations.

If your experiment doesn't work, don't give up. Be positive and keep trying!



- 8 Explain how your model does not fully represent how a volcanic eruption happens in the real world.

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## CHAPTER 4

### Different Habitats

#### Activity 4A What Can I Find?



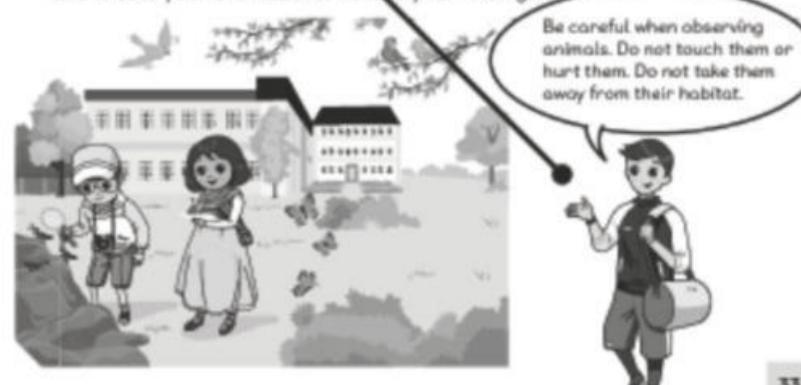
Do practical work safely, create tables to show observations, produce a bar chart to explain results

Large habitats can have smaller habitats within them. There may be many small habitats around your school. Let's find some of them!

##### Materials:

Magnifying glass    Clip board    Sheet of paper    Pencil

- 1 Take a walk outside with your class. Discuss with your class what you need to do to keep safe on your walk.
- 2 Look for different habitats under rocks, in a grassy area or under a bush. You can use the magnifying glass for a closer look.
- 3 Write down the names and numbers of all the animals you find in the habitats on the sheet of paper. Count the number of each animal you find and create your own table to record your findings.



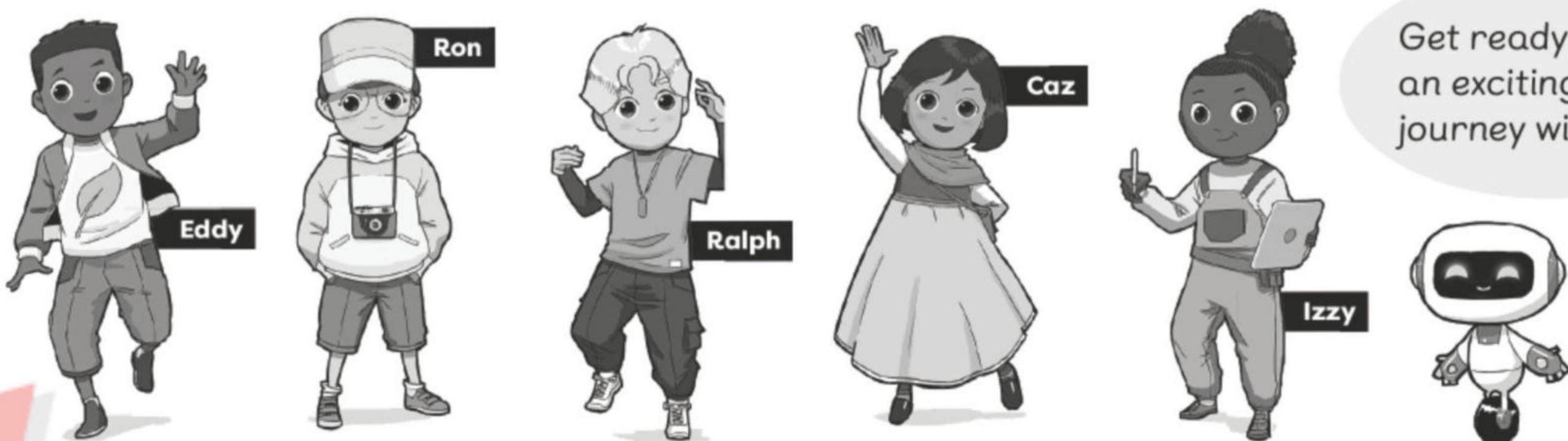
Be careful when observing animals. Do not touch them or hurt them. Do not take them away from their habitat.

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# Bones and Muscles

## Activity

### 1A

## Bones in Your Hand

**Skills:**

Draw a diagram to show a scientific idea, explain why models do not fully represent a situation

**Materials:**

White crayon  
Black paper  
Cotton tips

PVA glue  
Scissors

**Method**

- 1 Use the crayon to trace the outline of your hand on the black paper.
- 2 Use the cotton tips and glue to make the “bones” on the outline.  
Use the X-ray image of the hand shown above to help you.
- 3 You may use the scissors to cut the cotton tips to make the shorter “bones”.

- 4 Wait till the glue is dry. Paste the X-ray image you have created in the box below.



- 5 Models do not fully represent the real world. What are two ways in which the bones in your model are different from real bones?

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## Activity

1B

# How Do My Arm Muscles Work?



**Skill:** Explain relationships through models

In groups, create a model to show the relationships between bones and muscles and how they work together.

### Materials:

Scissors

Ruler

Thin cardboard

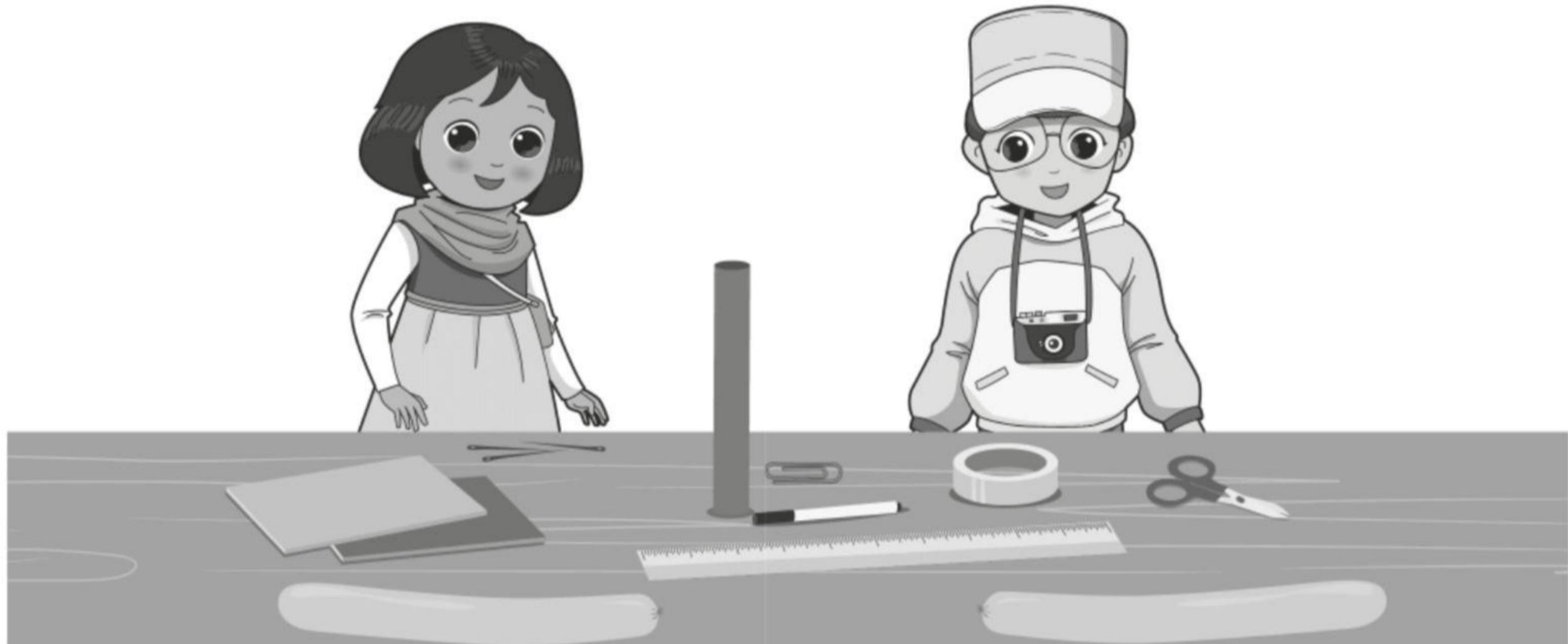
Masking tape

Marker

Three sewing pins

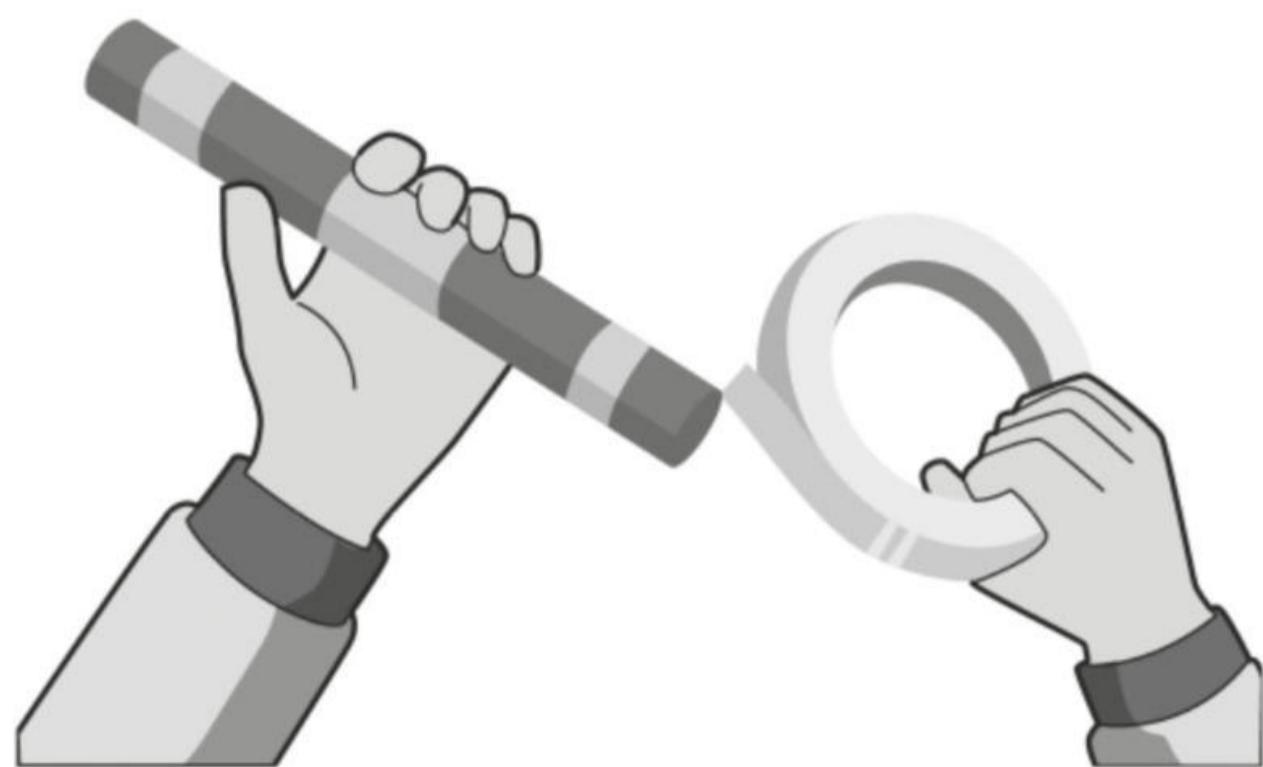
Large paper clip

Two long balloons

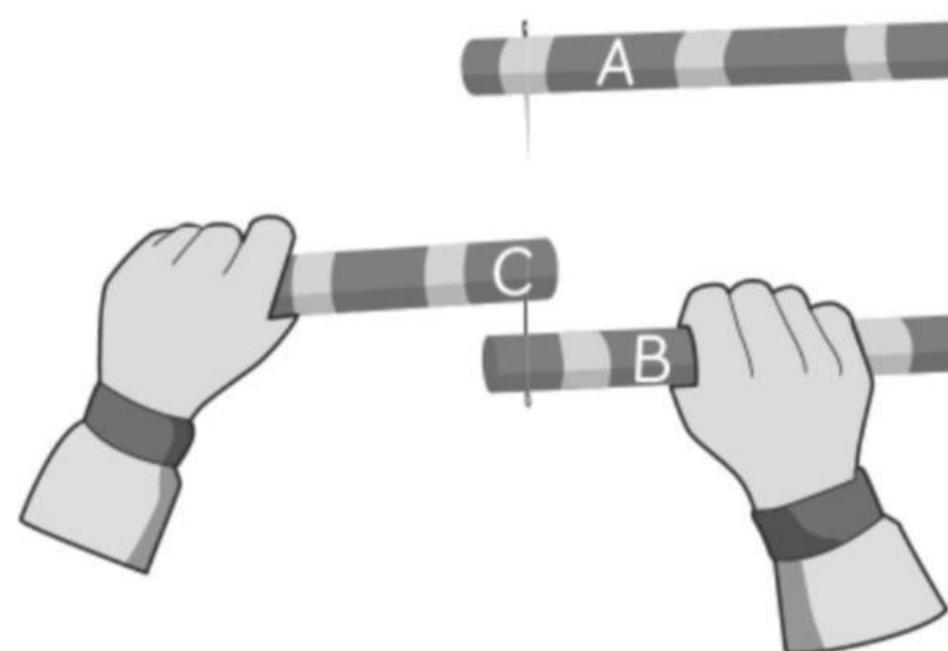


### Method

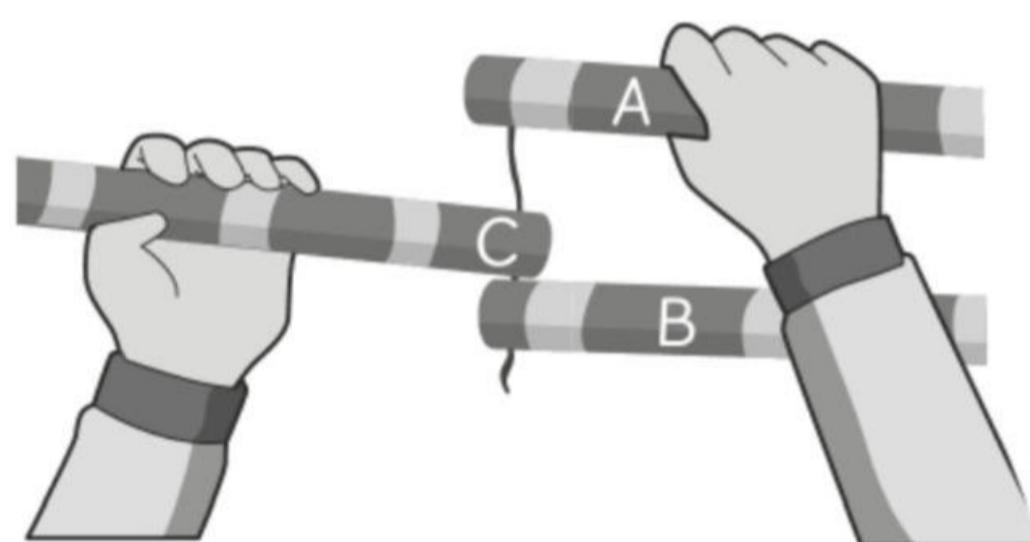
- 1 Use the scissors to cut two strips of size 20 cm by 30 cm from the cardboard.
- 2 Roll each strip into a tube and use the masking tape to form two 20-cm long arm bones.
- 3 Label the tubes "A" and "B".



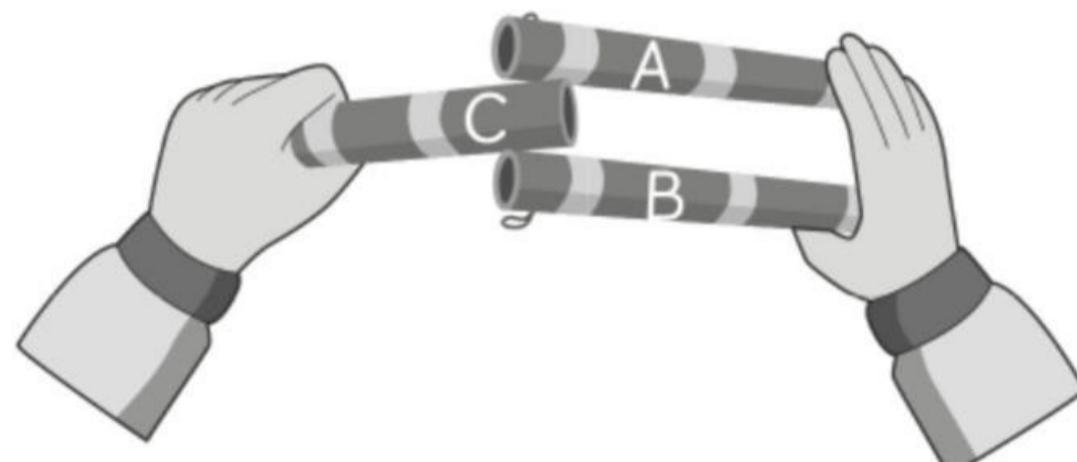
- 4 Use the scissors to cut a strip of size 30 cm by 30 cm from the cardboard.
- 5 Roll the strip into a tube and use masking tape to form a 30-cm long arm bone.
- 6 Label the tube "C".
- 7 Use a sewing pin to make a hole through the end of each tube from one side to the other.



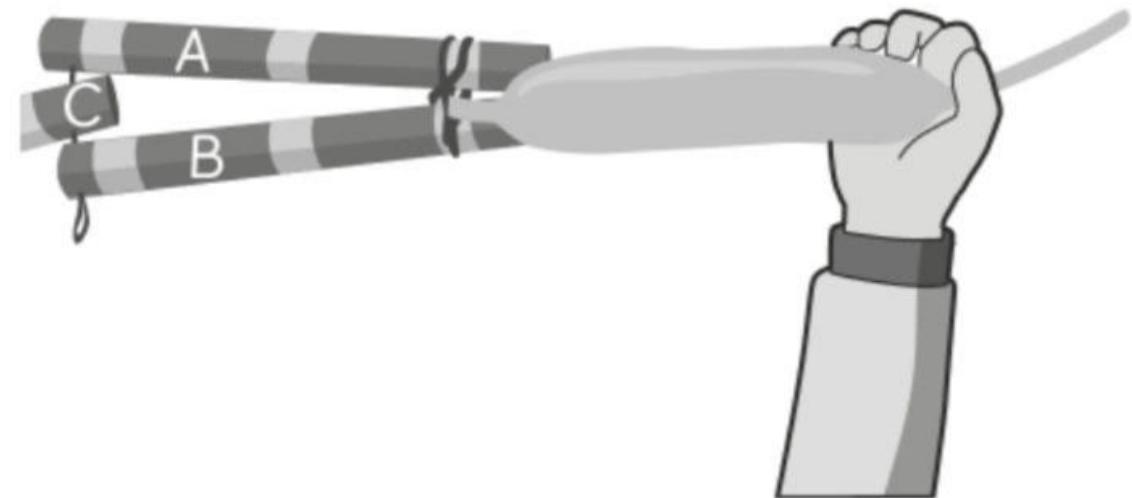
- 8 Straighten the paper clip to create a wire that you can bend.
- 9 Line up the holes of the tubes and thread the wire through them.



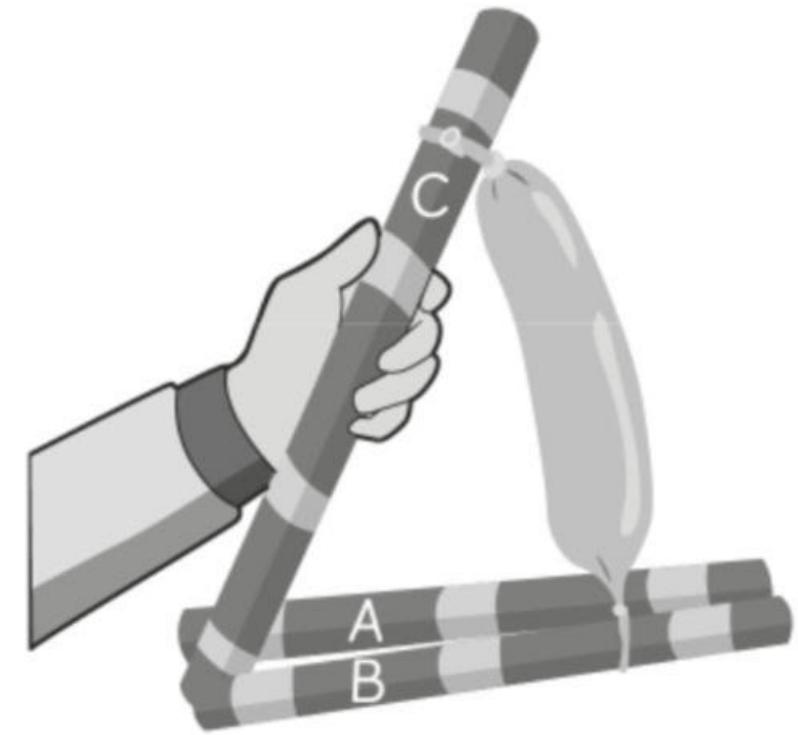
- 10 Bend the ends of the wire to secure the tubes together.  
Use the masking tape to cover the wire so that there are no sharp ends.



- II Blow up two long balloons to form the two arm muscles. Leave a little tail at the two ends of the balloons for tying.  
Tie one end of the balloon to tubes A and B.



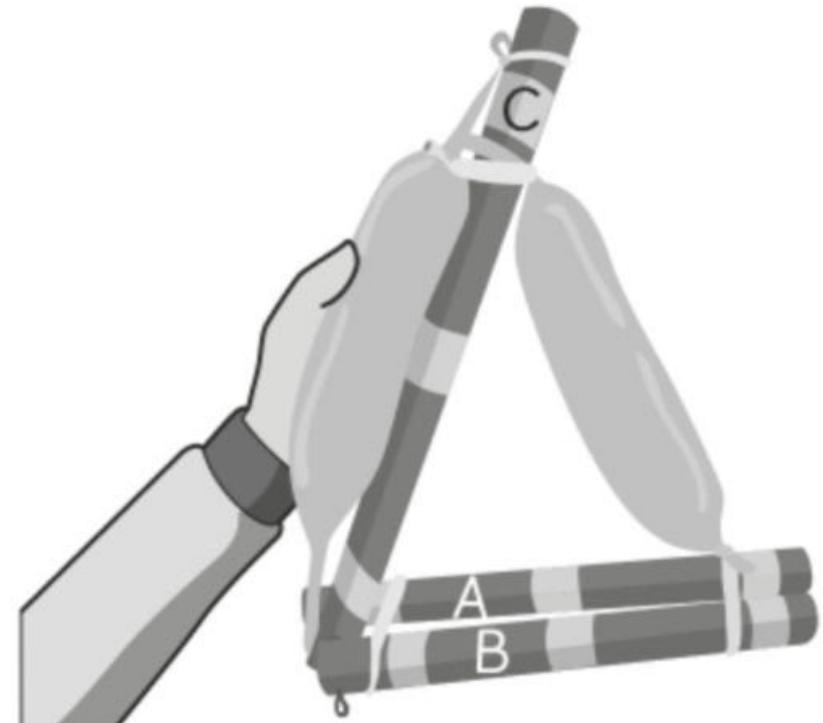
- I2 Tie the other end of the balloon to tube C.



- I3 Tie the other balloon in the same way to the other end of the tubes A and B.  
Tie the remaining end to tube C, where you have tied the first balloon.

Which part of the model represents bones?  
Which part of the model represents muscles?

Bones: \_\_\_\_\_



Muscles: \_\_\_\_\_

- I4 Describe what happens to each balloon as you straighten the "arm".

---

---

- I5 Describe what happens to each balloon as you bend the "arm".

---

---

## Activity

1C

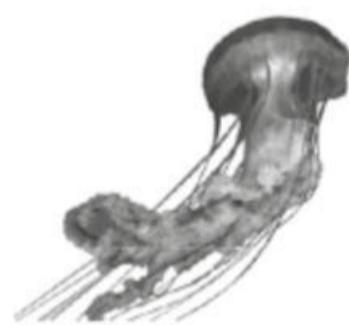
## What Am I?



Skills:

Use a key to classify living and non-living things, identify the five main types of scientific enquiry

A key is a tool used to identify living things and objects using their features. Use the key below to identify the animals. Write the names of animals A, B, C, D, E and F in the boxes.



jellyfish



snail



bird



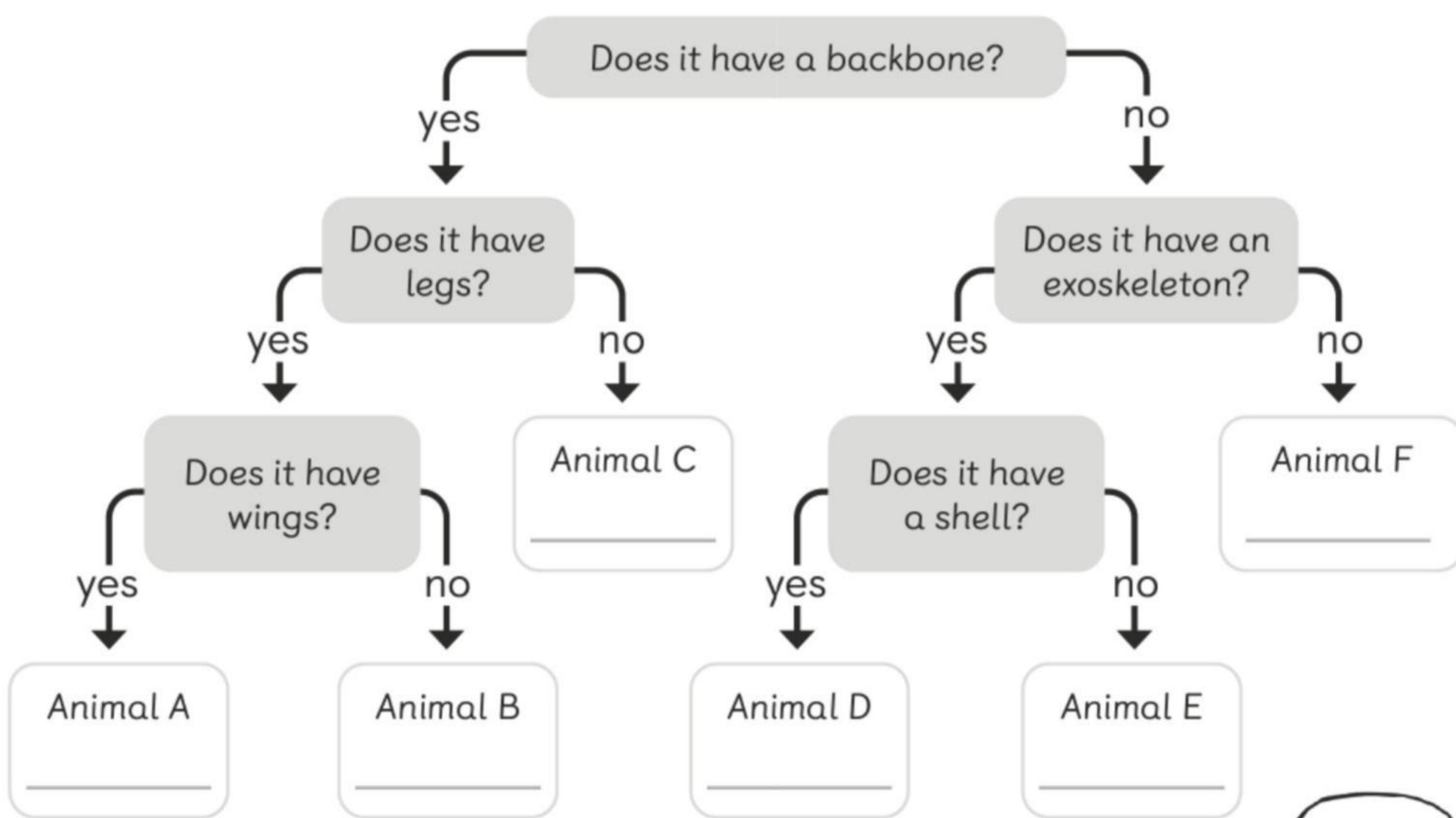
grasshopper



fish



lion



What type of scientific enquiry is used in a key?



## Word Whizz

Unscramble the words below and write the answers in the blanks. Use the clues to help you.

- 1 The \_\_\_\_\_ protects the brain.

u l l k s

- 2 We can move our legs with the help of \_\_\_\_\_.

s l e c s m u

- 3 A crab has an \_\_\_\_\_ on the outside of its body.

e l x e s k e n o t o

- 4 The skeleton \_\_\_\_\_ organs such as the heart.

t s e c t o r p

- 5 Muscles contract and \_\_\_\_\_ to help move our bones.

l r e x a

- 6 A mouse has a backbone, so it is a \_\_\_\_\_.

b v t e r e t a r e



# Let's Map It!

Fill in the blanks. Use the following words.

contract      exoskeleton      invertebrates      move  
muscles      protect      skeleton      vertebrates



Bones form a structure called a \_\_\_\_\_.



The backbone, skull and ribcage support and \_\_\_\_\_ the organs in our body.



Animals that have a backbone are known as \_\_\_\_\_.

Animals that do not have a backbone are known as \_\_\_\_\_.

The hip, arm and leg bones allow us to \_\_\_\_\_ around.



Many invertebrates have a skeleton that is on the outside of their bodies called an \_\_\_\_\_.

We can move because we have \_\_\_\_\_ that cover our skeleton.



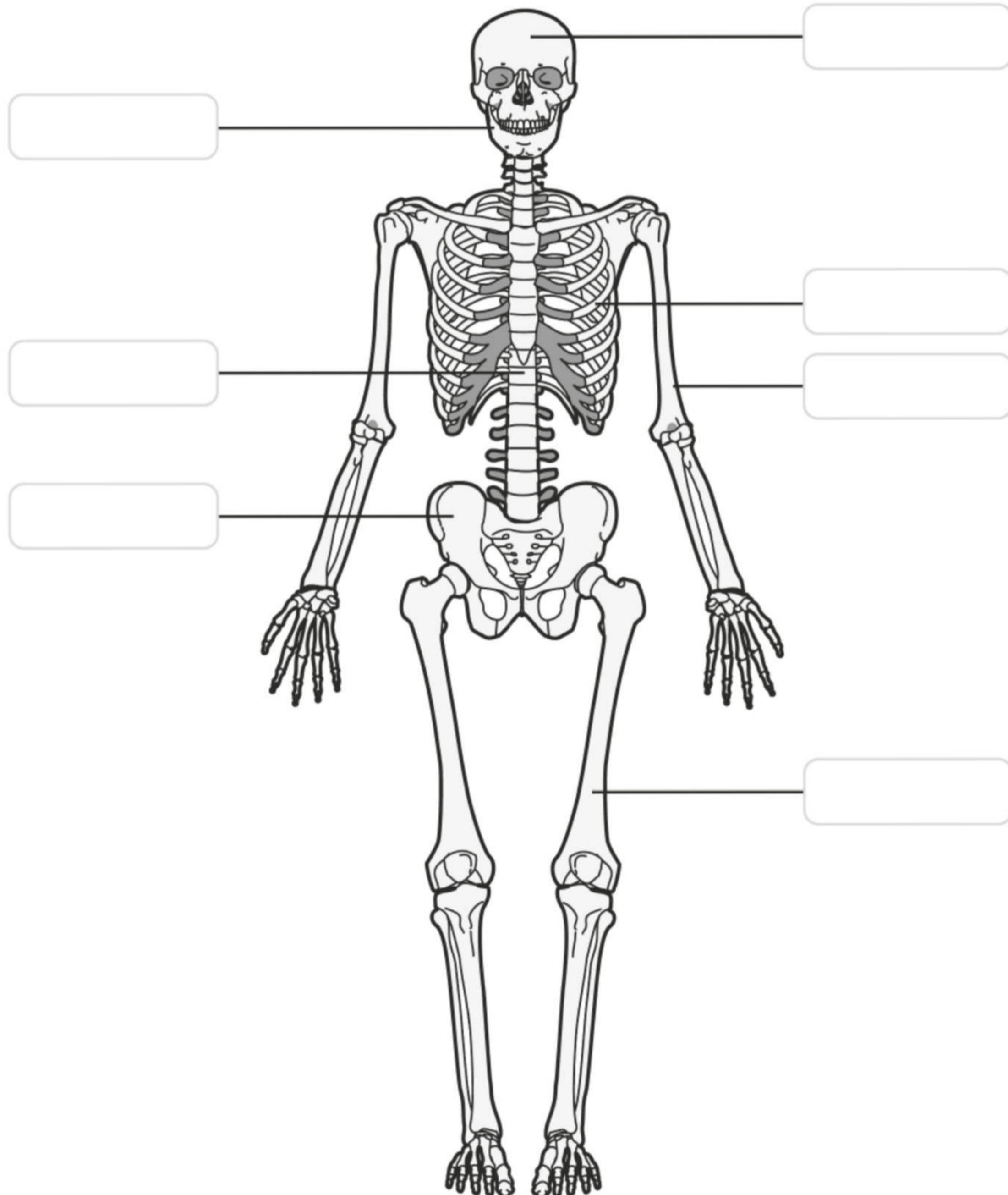
Muscles relax and \_\_\_\_\_ to move the bones in our body.



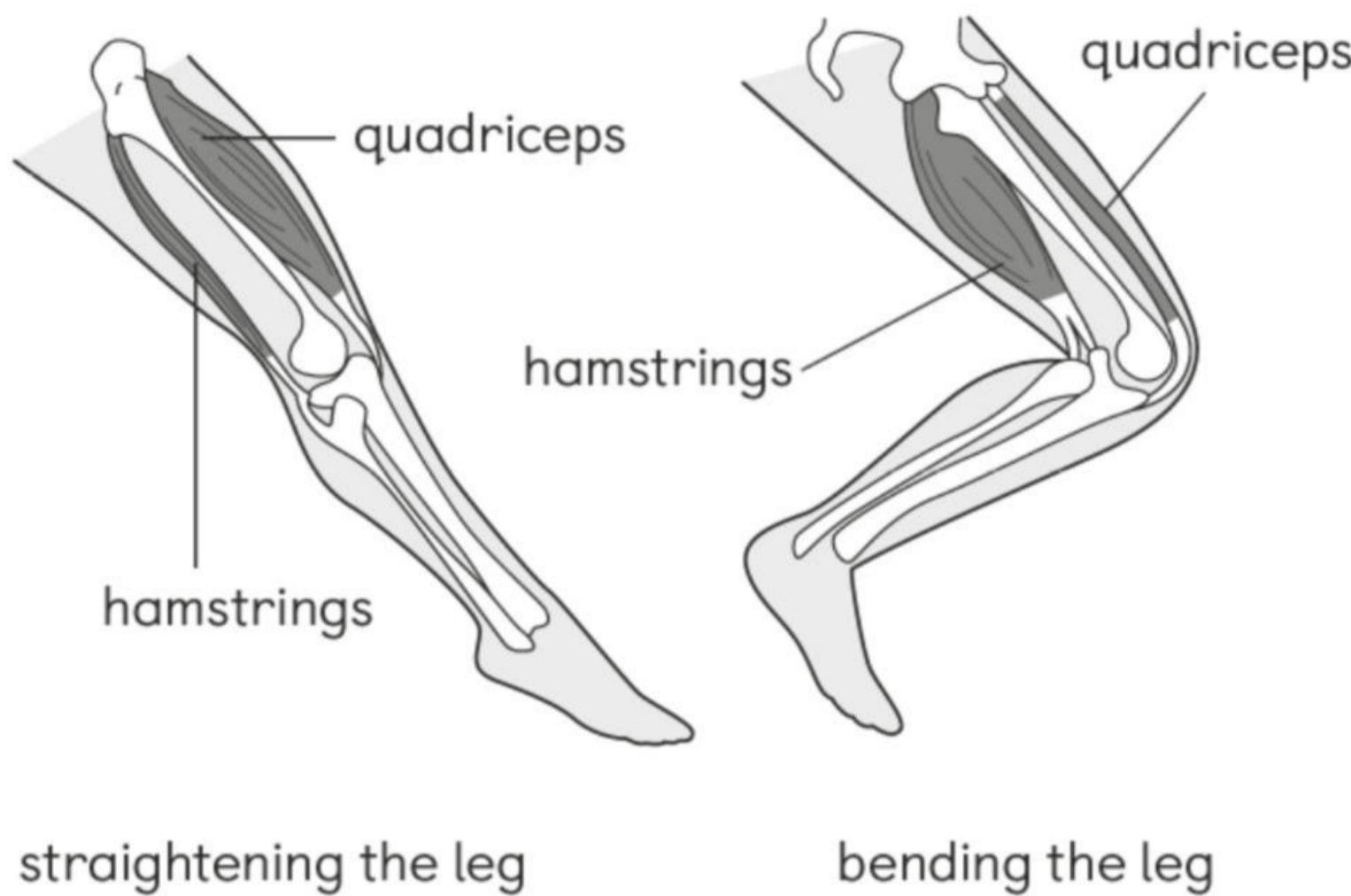
## Let's Review

I Label the main bones of the skeleton. Use the following words.

femur      hip      humerus      jaw  
rib cage      skull      spine



- 2 The diagram below shows a pair of muscles in your legs called quadriceps and hamstrings.



Write **contract** or **relax** to complete these sentences.

- a To straighten your leg, the quadriceps need to \_\_\_\_\_ and the hamstrings need to \_\_\_\_\_.
- b When you bend your leg, the quadriceps \_\_\_\_\_ and the hamstrings \_\_\_\_\_.

- 3 Look at the animals in the pictures below.



animal A



animal B

Which statements best describe the animals?

Circle the **two** correct answers.

A and B are invertebrates

A and B are vertebrates

A has an exoskeleton

B has an exoskeleton

**Activity****2A****Who Caught the Germs?****Skills:**

Create tables to show observations, learn to predict the possible results of a scientific activity, identify and explain patterns in results, check results to see if they support a prediction

**Materials:**

Envelopes

Red stickers

**Method**

1 Get an envelope from your teacher. Open the envelope and secretly look at what you have. If you have a set of red stickers, you have an “infectious disease”. Paste one sticker on your palm.



- 2 At your teacher’s signal, begin walking around among your classmates until your teacher tells you to stop.
- 3 If you have red stickers, whisper the word “infectious” to a classmate next to you. Paste a red sticker on the classmate’s palm. This classmate is now “infectious”.
- 4 “Infected” classmates need to tell the teacher that they are “infectious” and collect a set of red stickers for the next round.
- 5 Your teacher will tell everyone the number of classmates who are “infectious” and “non-infectious” at the end of the round.

- 6 Record the numbers in the table below at the end of round 1.

	Number of students	
	Infectious	Non-infectious
Round 1		
Round 2		
Round 3		
Round 4		

- 7 Predict how many classmates will be “infectious” at the end of round 4.
- 

- 8 Repeat steps 2 to 6 until you have completed four rounds.

- 9 Compare the numbers of classmates who are “infectious” after each round. What pattern do you notice?
- 

- 10 Explain why the number of classmates who are infectious changed with each round. Why do you think this pattern is happening?
- 
- 

- II Was your prediction correct?
- 

- 12 In pairs, discuss how you can stop people from getting infected with diseases. Write your ideas below.
- 
-

## Activity

### 2B

## Measure It Right!



### Skills:

Learn to measure in standard units and explain why they are better than non-standard units, create tables and diagrams to show observations

It is important to take the right amount of medicine using the correct tools. Some people think they can guess the dose of medicine using different objects such as spoons. Giving too much or too little medicine can be harmful.

Let's see if using different objects to measure medicine will affect its amount!



### Materials:

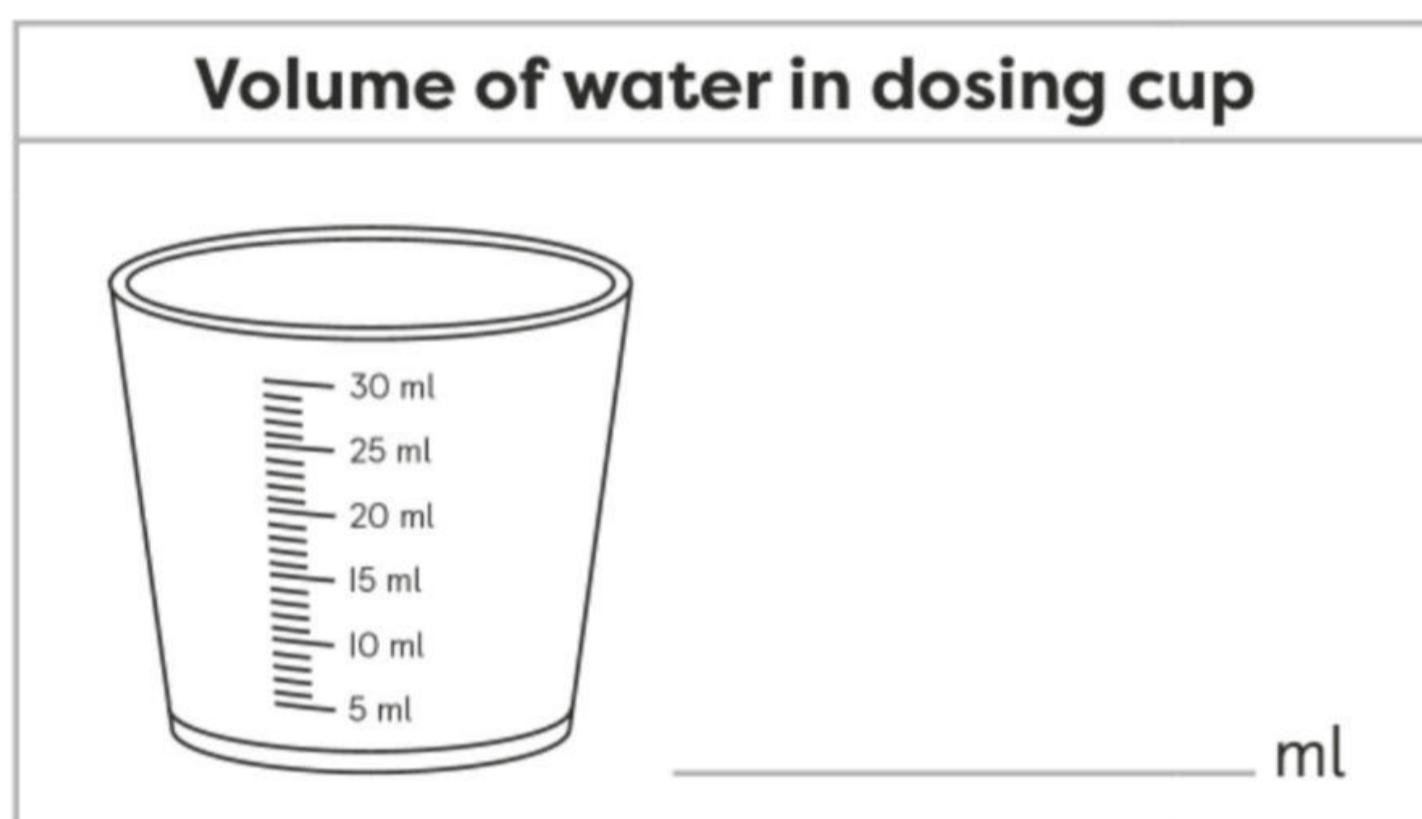
Bottle of coloured water  
Five dosing cups  
Syringe  
Clear plastic cup

Metal tablespoon  
Plastic tablespoon  
Tissue paper

## Method

- 1 Pour 10 ml (millilitres) of coloured water from the bottle into a clean dosing cup. It is best to measure the liquid on a flat surface. You can also hold the dosing cup up at eye level to read the volume.
- 2 Colour to show the water level on the dosing cup below and record the volume of water.

How does putting a cup on a flat surface help with getting an accurate measurement?



- 3 Measure 10 ml of coloured water from the bottle using a syringe.
- 4 Empty the syringe into another clean dosing cup.
- 5 Colour to show the water level on the dosing cup below and record the volume of water.

Measuring tool	Volume of water in dosing cup
 syringe	 <p>ml</p>

- 6 Pour what you guess would be 10 ml of coloured water from the bottle into the plastic cup.
- 7 Pour all the water from the plastic cup into a clean dosing cup.
- 8 Colour to show the water level on the dosing cup and record the volume of water in the table below.
- 9 Repeat steps 6 to 8 for each of the measuring tools in the table.

<b>Measuring tool</b>	<b>Volume of water in dosing cup</b>
 clear plastic cup	 _____ ml
 metal tablespoon	 _____ ml
 plastic tablespoon	 _____ ml

- I Which measuring tools do you think are most accurate for measuring liquid medicine?
- 

- II Is it better to use measuring tools with given units like millilitres or objects such as spoons to measure medicine? Why?
- 
-

## Activity

### 2C

## Medicine Safety

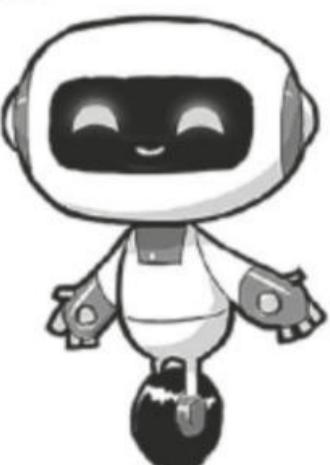


#### Skills:

Do research to find the answer to a question, identify the five main types of scientific enquiry

Find out the names of some common medicines given to children. Design a poster to tell your classmates how to use these medicines safely.

What type of scientific enquiry are you using to find the names of the medicines?



## Activity 2D My Vaccination Record



### Skills:

Produce a dot plot to explain results, do research to find the answer to a question

From the time we are born, we receive several vaccines to help keep us healthy.

- I Which vaccines have you received? You can ask an adult to help you identify which vaccines you have had.

Colour the bottles to show the vaccines you have received.



BCG



Chickenpox



Influenza



Hepatitis A



HiB

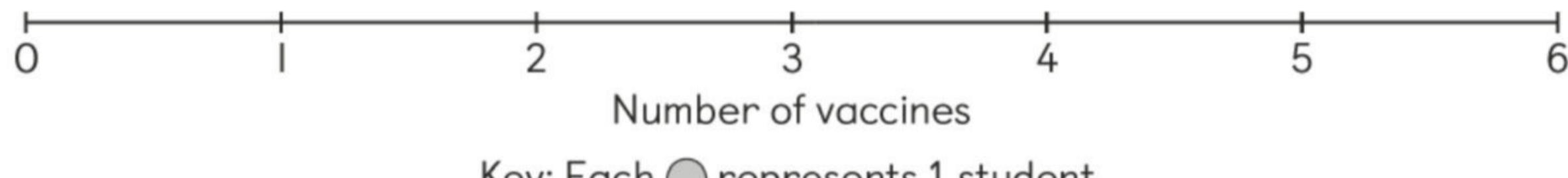


Polio

I have had \_\_\_\_\_ vaccines.

- 2 Conduct a survey in your class to find out how many vaccines each student has had.
- 3 Using the data you have gathered, complete the dot plot below.

**Number of vaccines the students in the class had**



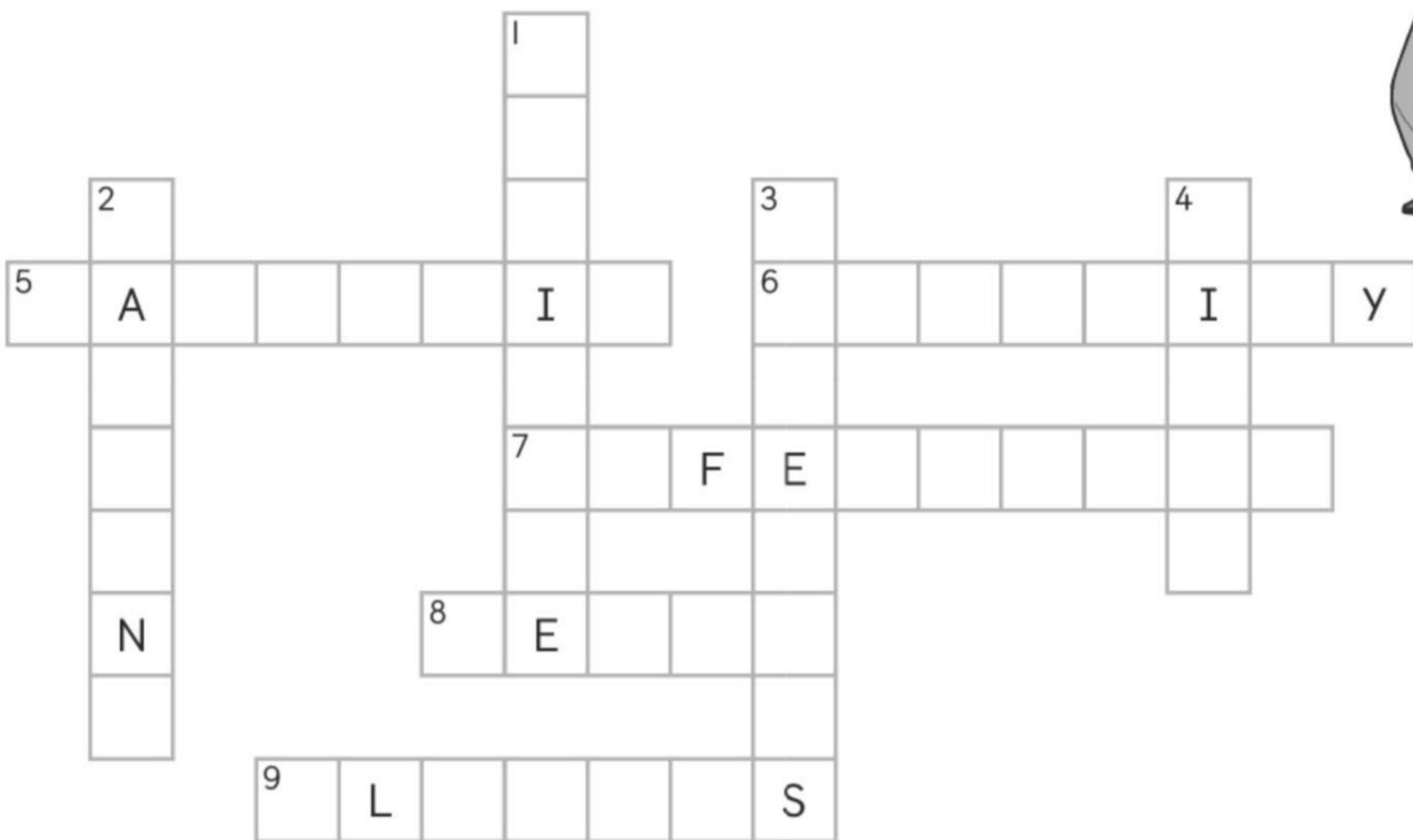
- 4 Which vaccine is the most common among the students in your class?
- 

- 5 Using research, find out information on one of the vaccines in your dot plot above. What disease does it protect you from? Create a mini fact file you can share with your class.

# Word Whizz

Help Izzy solve this puzzle!

Complete the crossword puzzle using the clues.



## Down

- 1 Doctors give us \_\_\_\_\_ to help us to feel better when we have an illness.
- 2 A \_\_\_\_\_ may help to prevent us from getting a disease.
- 3 Infectious \_\_\_\_\_ can cause a plant's leaves to droop and turn yellow.
- 4 A \_\_\_\_\_ can cause humans and animals to become ill.

## Across

- 5 A worldwide spread of a new disease is also known as a \_\_\_\_\_.
- 6 Vaccines give us \_\_\_\_\_ against many diseases.
- 7 An \_\_\_\_\_ illness spreads from person to person.
- 8 \_\_\_\_\_ can spread when a person with an infectious disease coughs or sneezes.
- 9 When someone is feeling sick, they may have an \_\_\_\_\_.

# Let's Map It!

Fill in the blanks. Use the following words.

coughs      disease      droop      germs      infectious  
medicine      plants      saliva      touch      vaccines

\_\_\_\_\_ helps a person to get well when they have an illness or a disease.

A \_\_\_\_\_ is a condition in which your body or a part of your body is not able to function properly.

\_\_\_\_\_ can prevent the spread of some diseases and reduce the risk of an outbreak.

Diseases that can spread from one living thing to another are called \_\_\_\_\_ diseases.

Infectious diseases are caused by tiny living things called \_\_\_\_\_.

Diseases in plants can cause them to lose leaves, \_\_\_\_\_ or even die.

Animals and \_\_\_\_\_ can both get infectious diseases.

Germs are passed when a living thing with an infectious disease \_\_\_\_\_ or sneezes.

Germs can also spread by \_\_\_\_\_.

Germs can be passed by \_\_\_\_\_ from the mouth.

## Let's Review

- 1 Meiling wrote some statements about plant diseases.  
Circle the correct statement.

a sign of a plant disease is yellow and droopy leaves

plants cannot get infectious diseases

vaccines can help to prevent disease in plants

- 2 Three students Ali, Chan and Sarah wrote notes about how vaccines work.

Ali

Vaccines can benefit humans and animals.

Chan

Vaccines are used before a person becomes ill to prevent a disease.

Sarah

Medicines and vaccines are the same.

Only two students are correct.

Circle the names of the students who are correct.

Ali

Chan

Sarah

- 3 Farmer Tan has a chicken farm. One of the birds was infected with bird flu. Soon, many more birds were infected. Farmer Tan caught bird flu too.



Which of the following is correct?

Tick (✓) two correct answers.

Bird flu can spread from one bird to another.

Bird flu cannot spread from one bird to another.

Bird flu can spread from birds to humans.

Bird flu cannot spread from birds to humans.

- 4 Fill in the blanks. Use words from the box.

diseases

research

vaccines

- a Vaccines can be used to prevent some \_\_\_\_\_ but not to treat them.
- b Medicines and \_\_\_\_\_ are used differently.
- c Through \_\_\_\_\_ and enquiry, scientists have learnt more about diseases over time. This has improved the way doctors treat diseases.

# Energy from Food

## Activity

### 3A

## Where Do Plants Grow Better?

**Skills:**

Learn to predict the possible results of a scientific activity, learn to measure in standard units and explain why they are better than non-standard units, create tables and diagrams to show observations, analyse results to answer a scientific question, check results to see if they support a prediction

**Materials:**

Two clear plastic cups  
Soil  
Two bean seeds  
Spoon  
Water  
Marker  
Shoe box  
Ruler  
Camera (optional)

**Method**

- I Fill half of each cup with soil. Place a bean seed in each cup. Sprinkle a thin layer of soil on top of each seed.



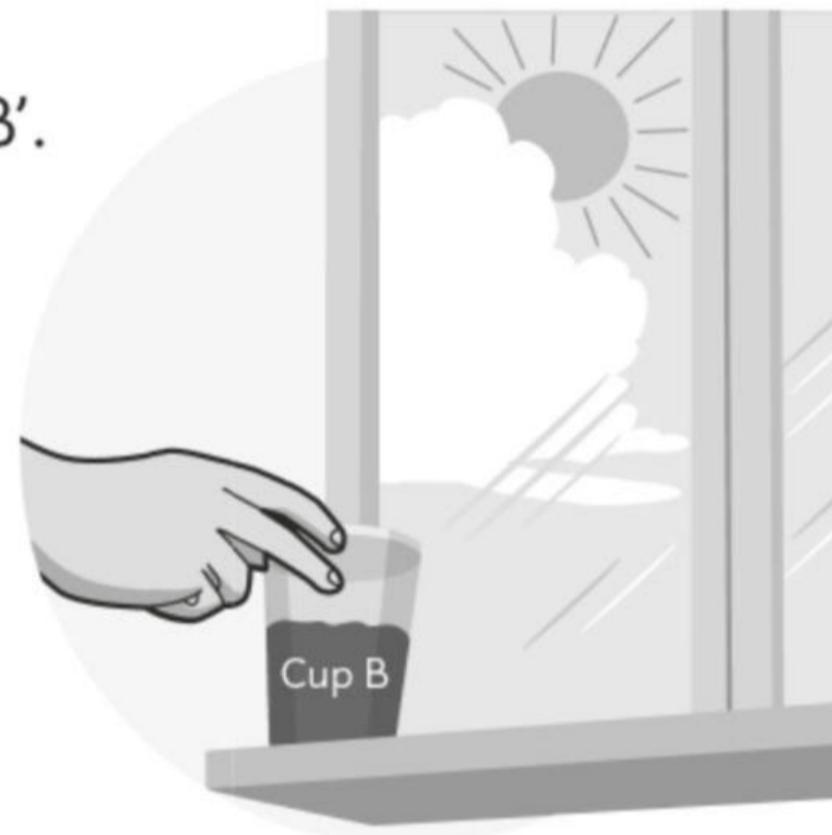
- 2 Put an equal amount of water in each cup until the soil is moist. Do not put too much water.



- 3 Use the marker to label one cup as 'Cup A'. Put it in the shoe box and close the lid. You can also place the cup in a dark cupboard or a drawer if you don't have a shoe box.



- 4 Label the other cup as 'Cup B'. Place it on a window sill or in any place with sunlight.



- 5 Predict what you will see in the two cups after four weeks.

Cup A: \_\_\_\_\_

\_\_\_\_\_

Cup B: \_\_\_\_\_

\_\_\_\_\_

- 6 Observe the height of the plants and the colour of the leaves over four weeks. Water the soil in both cups regularly to keep it moist.
- 7 At the end of each week, measure the height of each plant in centimetres (cm) and record your observations in the table below.

	Height of plant (cm)		Colour of leaves	
	Cup A	Cup B	Cup A	Cup B
Week 1				
Week 2				
Week 3				
Week 4				

- 8 Draw diagrams or paste photographs in the space below to show what the plants in the two cups look like at the end of Week 4. Label your diagrams or photographs.

9 What can you conclude from the experiment? Circle the correct answer.

- a The plant in Cup ( A / B ) grew better than the plant in Cup ( A / B ).
- b Plants need ( light / heat ) to grow, live and be healthy.

10 Was your prediction correct? Do the results support your prediction?

---

II In pairs, discuss how you can improve your experiment.  
Write or draw your ideas in the space below.

Think about what you  
did well in this experiment.  
Think about how you can  
do even better!



## Activity

**3B**

## Spot and Colour!



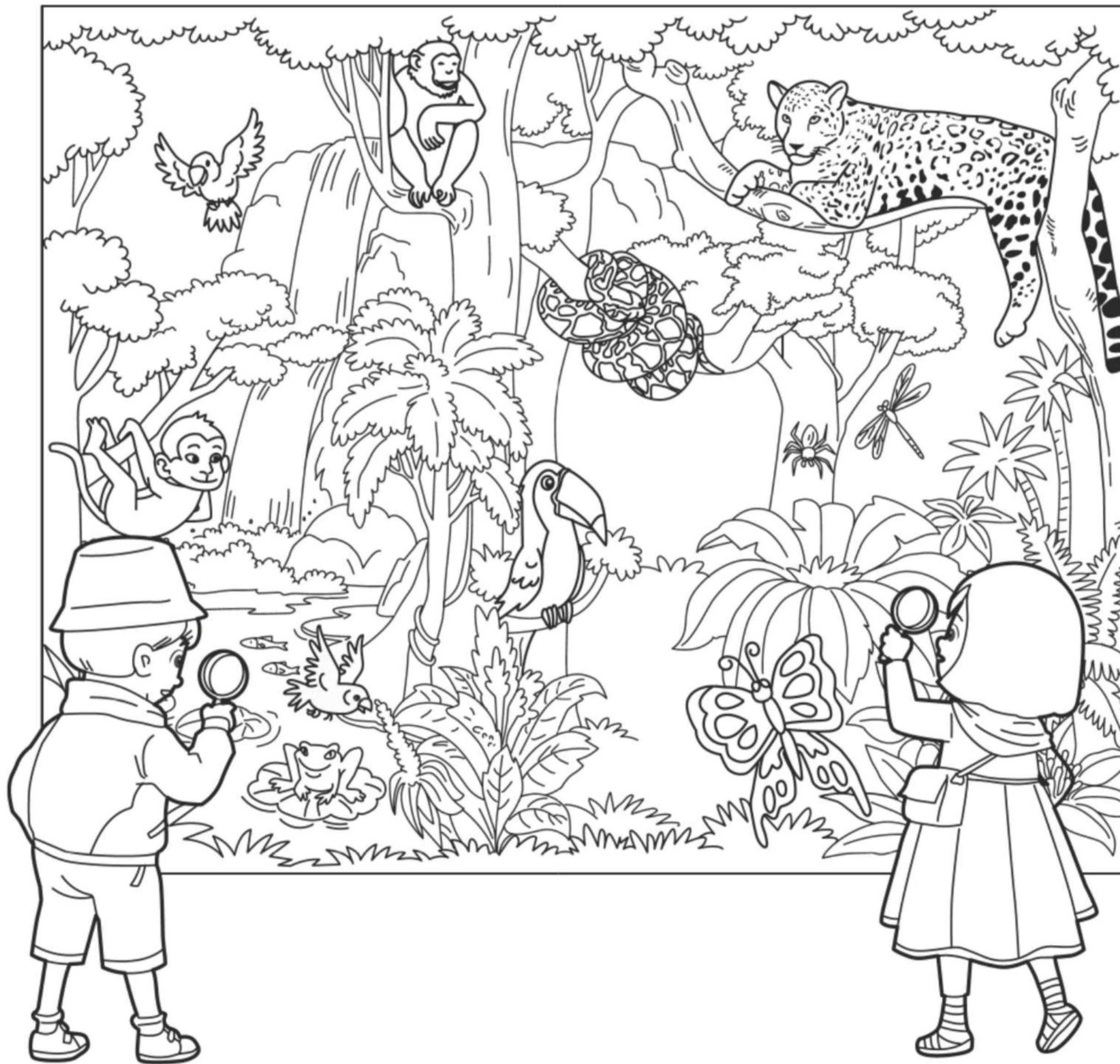
**Skill:** Learn to sort and classify things through observations

Ron and Caz are trying to spot the producers and consumers in this forest. What features do producers have? What features do consumers have?

Can you use these features to classify the plants and animals as producers or consumers?

Colour all the producers green.

Colour all the consumers blue.



## Activity

3C

## Make a Food Chain



### Skills:

Do research to find the answer to a question, identify the five main types of scientific enquiry

Use books or the Internet to find information to complete this activity.

- Look at pictures of the living things below.



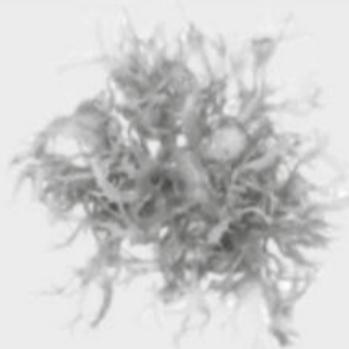
penguin



seal



small fish



seaweed



shark

Classify the living things using the table below. Then complete the food chain.

Producer	Consumer	Predator	Prey

seaweed



- Make another food chain using information from books or the Internet.



What type of scientific enquiry are you using to complete this activity?



## Word Whizz

Use the clues to solve the puzzle. Write your answers in the blanks. Then find and circle the words in the puzzle.

P	M	P	R	O	D	U	C	E	R	S	N	W	J
H	P	Y	B	R	M	L	G	J	V	Y	B	J	K
O	E	R	C	A	R	N	I	V	O	R	E	S	M
T	J	W	E	T	D	G	I	R	P	C	B	M	P
O	R	B	Z	D	N	K	M	V	O	Q	S	D	R
S	N	B	R	Z	A	B	B	N	O	E	R	N	E
Y	X	D	V	Q	K	T	P	T	R	R	R	Y	Y
N	B	J	Z	L	D	W	O	L	Q	Y	E	O	P
T	P	M	R	L	M	R	V	R	K	X	X	S	N
H	Z	Y	B	D	J	I	T	T	S	Q	E	D	G
E	D	Y	S	Z	C	O	N	S	U	M	E	R	S
S	T	K	J	R	R	N	Y	Q	V	R	M	M	M
I	X	P	A	M	R	N	Z	M	N	T	V	R	N
S	L	H	E	R	B	I	V	O	R	E	S	J	T

### Clues

- 1 The process by which plants make their own food \_\_\_\_\_
- 2 Animals that eat only plants \_\_\_\_\_
- 3 Animals that eat only other animals \_\_\_\_\_
- 4 Animals that eat both plants and animals \_\_\_\_\_
- 5 Animals that hunt and eat other animals \_\_\_\_\_
- 6 Animals that are hunted and eaten by other animals \_\_\_\_\_
- 7 Living things that get energy by eating other living things \_\_\_\_\_
- 8 Living things that make their own food \_\_\_\_\_

# Let's Map It!

Fill in the blanks. Use the following words.

carnivores  
food chain  
predators

consumers  
herbivores  
prey

energy  
omnivores  
producers



Plants and animals need \_\_\_\_\_ to grow, live and stay healthy.



A \_\_\_\_\_ shows the transfer of energy from one living thing to another in the form of food.



make their own food through the process of photosynthesis.

Animals that hunt and eat other animals are known as \_\_\_\_\_.

eat other living things.

Animals that are hunted and eaten by predators are known as \_\_\_\_\_.



\_\_\_\_\_ are animals that eat only plants.

\_\_\_\_\_ are animals that eat only other animals.

\_\_\_\_\_ are animals that eat both plants and animals.

## Let's Review

1 How do plants get their energy?

Circle the correct answer.

their roots absorb food from the soil

they eat other plants and animals

they make their own food in the presence of light

2 Three students Ming, Peter and Samir are talking about food chains.



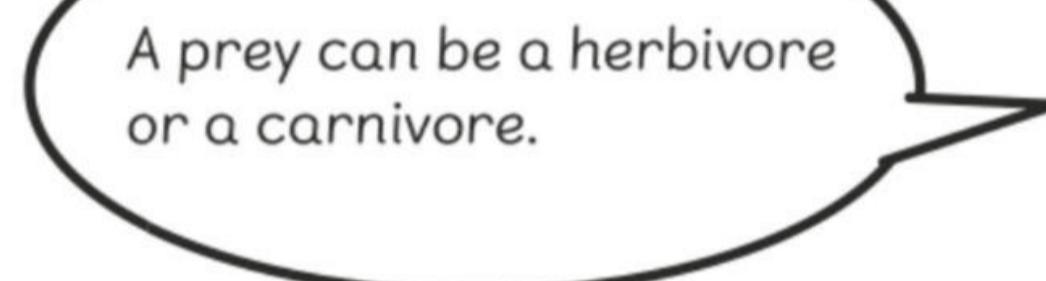
Ming



All consumers  
are predators.



Peter



A prey can be a herbivore  
or a carnivore.



Samir



A food chain always  
begins with a producer.

Only **two** students are correct.

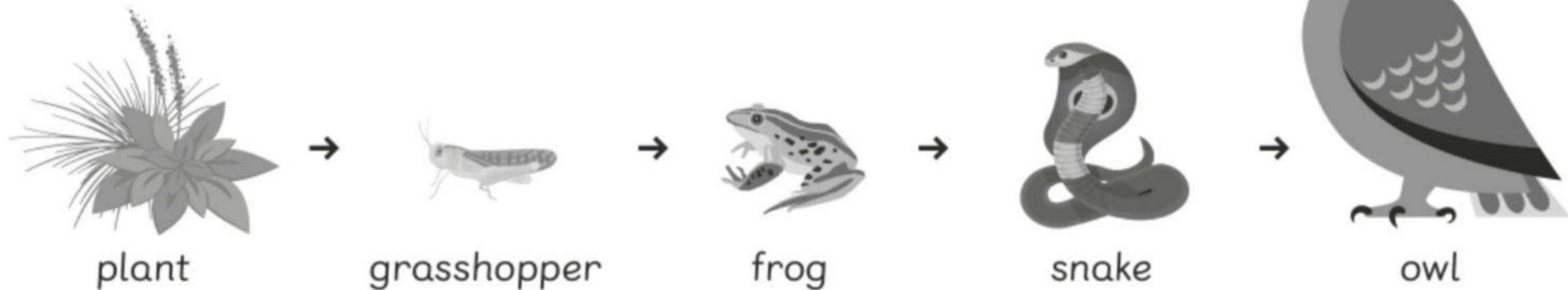
Circle the names of the students who are correct.

Ming

Peter

Samir

3 Look at the food chain below.



a Classify the living things in the food chain using the table below.

Producer	Consumer

b Which are the predators in the food chain?

Tick (✓) the **three** correct answers.

frog

grasshopper

owl

plant

snake

## Activity

### 4A

## What Can I Find?



**Skills:** Do practical work safely, create tables to show observations, produce a bar chart to explain results

Large habitats can have smaller habitats within them. There may be many small habitats around your school. Let's find some of them!

### Materials:

Magnifying glass      Clip board      Sheet of paper      Pencil

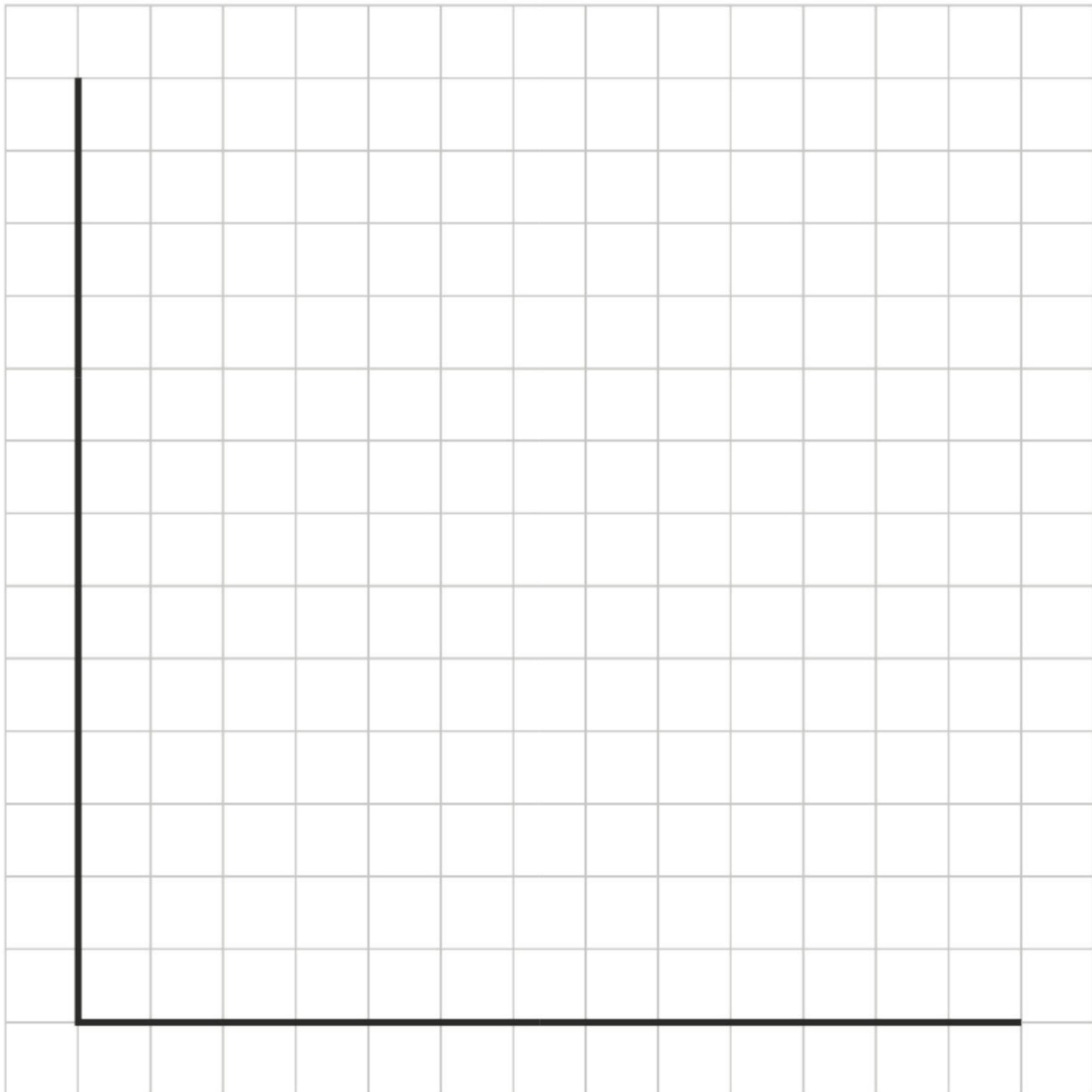
- 1 Take a walk outside with your class. Discuss with your class what you need to do to keep safe on your walk.
- 2 Look for different habitats under rocks, in a grassy area or under a bush. You can use the magnifying glass for a closer look.
- 3 Write down the names and numbers of all the animals you find in the habitats on the sheet of paper. Count the number of each animal you find and create your own table to record your findings.



Be careful when observing animals. Do not touch them or hurt them. Do not take them away from their habitat.



- 4 Present the findings from your observations using a bar chart. Label the axes and give a title to your bar chart.



- 5 Can you find any patterns in the type of animals you have found and where they are mostly found?
- 
-

## Activity

### 4B

## Where Can Orchids Grow?



#### Skills:

Do research to find the answer to a question, ask meaningful scientific questions, identify the five main types of scientific enquiry

Orchids can survive in almost all environments, except those that are very cold or very dry.

- I Use the Internet to find pictures of orchids that can be found in the habitats shown in the table. Draw the orchids or paste their pictures in the table below.

Rainforest	Beach	Swamp
Desert	Mountain	Grassland

- 2 Conduct your own investigation to find out more about one habitat and the orchid that lives there. Write your investigation question below.

---

---

---

- 3 Discuss with a partner which type of enquiry would be best for the investigation. Why do you think so?

---

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## Activity

## 4C

# Where Can Mosquitoes Survive?



### Skills:

Do research to find the answer to a question, describe the use of science where I live

Mosquitoes are insects that can spread dangerous diseases such as malaria, zika and dengue fever. Mosquitoes prefer to live in warm, humid habitats, but they can also survive in other environments.



pond



river



trash



plant pot

1 Use the Internet or books to find answers to complete the sentences.

- a Mosquitoes can be found everywhere on the Earth except extremely cold places like A \_ t \_ \_ c \_ \_ a.
- b Mosquitoes lay their eggs in or around w \_ \_ \_ r.
- c The larvae and p \_ \_ e of mosquitoes live in water with little or no flow.
- d Mosquitos can breed in c \_ \_ t \_ n \_ r \_ such as water-storage tanks, plastic buckets, vases and flower pot saucers.

2 Use the Internet or books to find out how the breeding of mosquitoes is prevented in your local area. List two ways.

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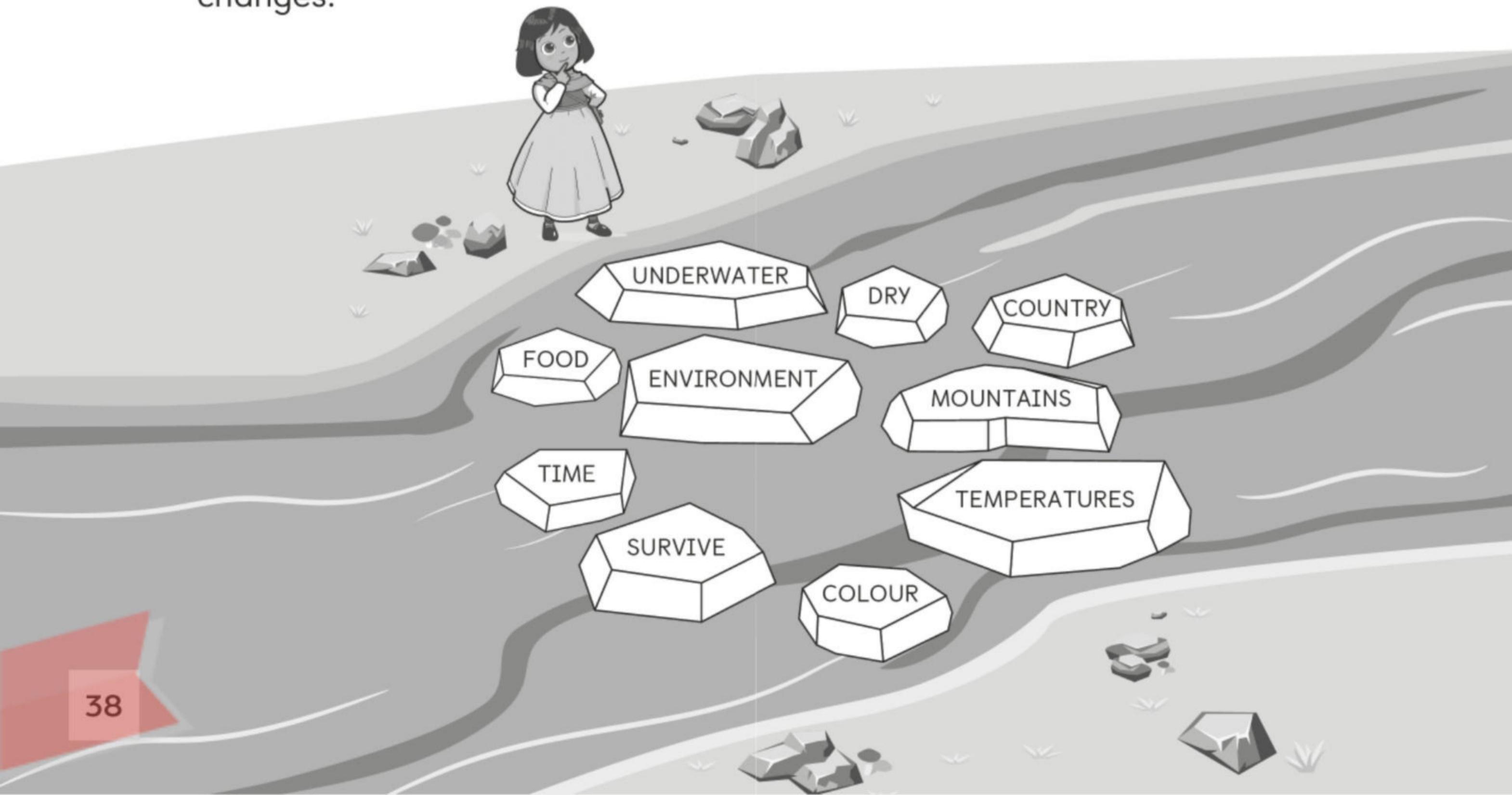
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# Word Whizz

Help Caz cross the river!  
Use the clues to colour the correct stones.

## Clues

- 1 Harp seals and snowy owls are suited to live in habitats with low \_\_\_\_\_.
- 2 Aquatic animals are suited to their habitats as they can breathe \_\_\_\_\_.
- 3 Some animals can change their \_\_\_\_\_ over time to blend into a different environment.
- 4 Plants and animals can change their structure over \_\_\_\_\_ to suit the habitat.
- 5 Plants and animals can change their behaviour to help them to \_\_\_\_\_ in a different environment.
- 6 Some animals move to a different \_\_\_\_\_ when their habitat changes.



# Let's Map It!

Fill in the blanks. Use the following words.

aquatic  
habitat  
rivers

change  
mountains  
suited

cold  
move  
wide

dry  
oceans

environments  
rainforests

A \_\_\_\_\_ is a place where plants and animals live.

Plants can live in \_\_\_\_\_ other than their habitats.

Some animals can \_\_\_\_\_ to a different environment if their habitat changes.

The animals are \_\_\_\_\_ to live in their habitats.

Some types of animals can \_\_\_\_\_ their behaviour or structure over time to suit a different environment.

Land habitats

\_\_\_\_\_ habitats

Polar regions are very \_\_\_\_\_ and covered with snow.

\_\_\_\_\_ are rocky areas that are cold.

Deserts are very hot and \_\_\_\_\_ with little rainfall.

\_\_\_\_\_ are hot and very humid, with many trees.

Grasslands are \_\_\_\_\_ open areas where mostly grass grows.

\_\_\_\_\_ and seas have water that contain a lot of salt. Ponds, lakes and \_\_\_\_\_ have water that contain very little salt.

Animals:  
Polar bears  
Snowy owls  
Plants:  
Grass

Animals:  
Mountain goats  
Grizzly bears  
Plants:  
Pine trees

Animals:  
Camels  
Desert rats  
Plants:  
Cactus

Animals:  
Orangutans  
Toucans  
Plants:  
Vines

Animals:  
Zebras  
Ostriches  
Plants:  
Grass

Animals:  
Sharks  
Sea turtles  
Plants:  
Seagrass

Animals:  
Crayfish  
Alligators  
Plants:  
Water lilies

# Let's Review

I Draw a line from each animal to the habitat it is suited for.

animal



fish

habitat



grassland



giraffe



ocean



mountain goat



rainforest



tree frog



mountain

- 2 Raj wrote some statements about living things and their habitats. Circle the **two** correct statements.

an animal can change its behaviour to suit an environment other than its habitat

a plant can move to a different environment if its habitat changes

plants and animals can only survive in one habitat

some animals can change their colour over time to blend into the new environment

- 3 Fill in the blanks with the following words.

behaviour    different    habitats    suited

Red foxes can survive in many \_\_\_\_\_ including deserts, forests, mountains and grasslands. They change their \_\_\_\_\_ by eating \_\_\_\_\_ things in different habitats. They usually eat small animals but they also feed on fruit, fish and even worms when they are in other habitats. They can also find food at night because their eyes are \_\_\_\_\_ to see in the dark.



# Materials, Substances and Particles

## Activity

### 5A

## Making Models of Solids and Liquids

**Skills:**

Explain relationships through models, use science to help me support my points of view, explain why models do not fully represent a situation

**Materials:**

Yellow plasticine  
Toothpicks  
Blue plasticine

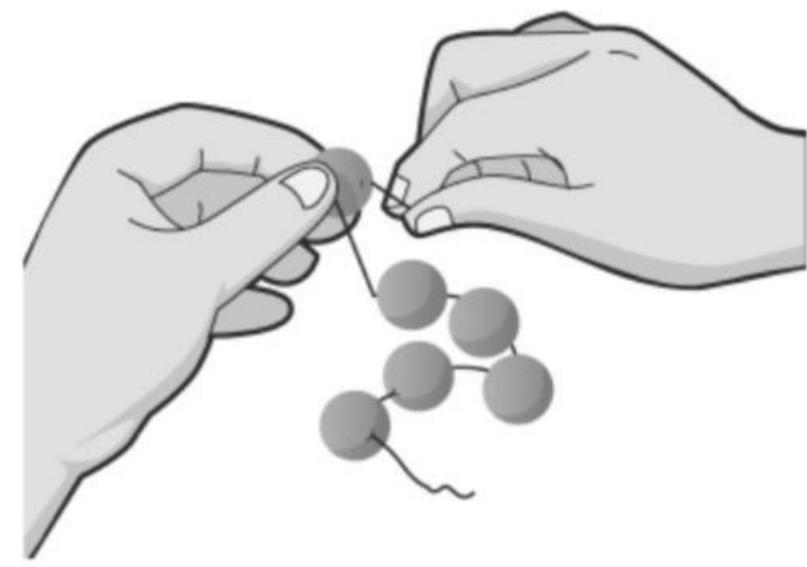
Pieces of string  
Box without a lid

**Method**

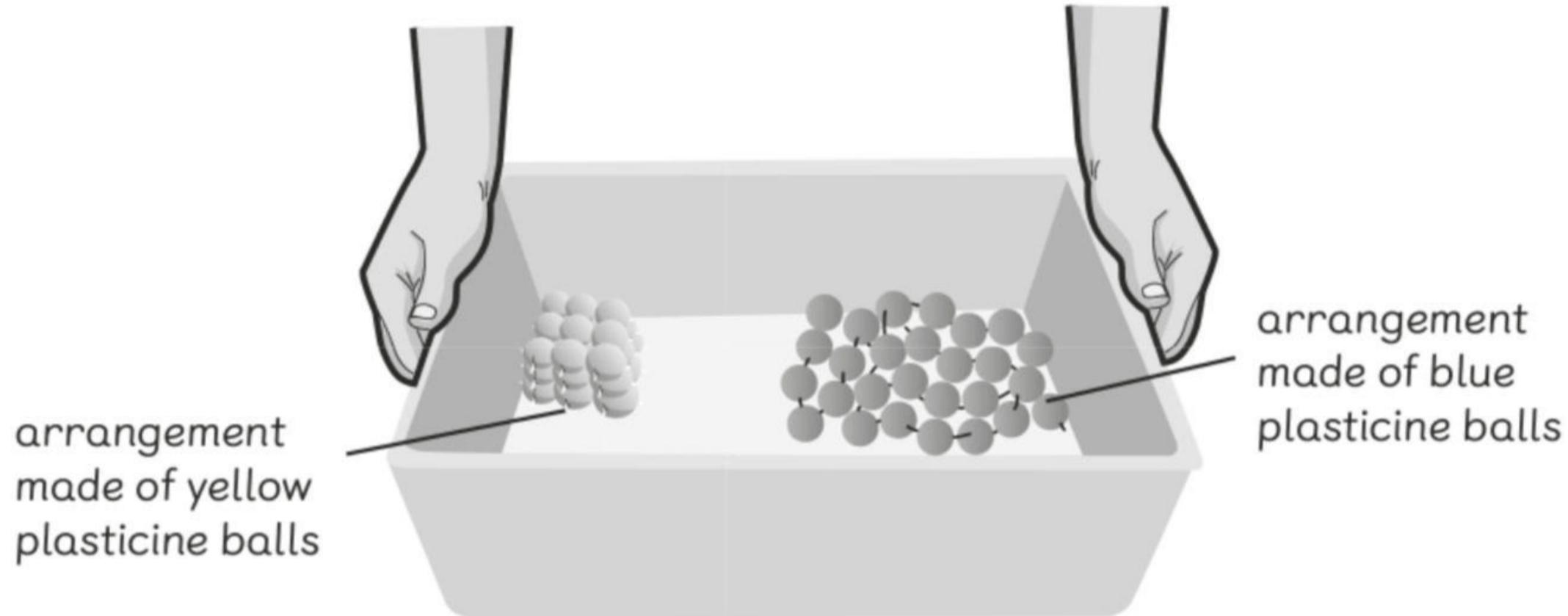
- 1 Work in pairs.
- 2 Use the yellow plasticine to make 27 small balls of the same size.
- 3 Use toothpicks to join the yellow plasticine balls together to make a cube. Make sure the balls are neatly arranged and touching each other. Be careful when using toothpicks. They are sharp.
- 4 Use the blue plasticine to make 27 small balls of the same size.



- 5 Join the blue plasticine balls together with pieces of string. Make sure the balls are not neatly arranged.



- 6 Place both arrangements in a box. Shake them. Observe their shapes and how they move.



- 7 Which arrangement is a model of a solid? Explain your answer in terms of the movement of the plasticine balls.

---

---

- 8 Which arrangement is a model of a liquid? Explain your answer in terms of the movement of the plasticine balls.

---

---

- 9 How do you think the models of the solid and liquid particles you have created are different from the real particles found in solids and liquids?

---

---

## Activity

## 5B

# Make Your Own Slushies!



### Skills:

Do practical work safely, learn to identify risks and explain how to be safe during practical work

### Materials:

Fruit juice  
Small resealable plastic bag  
Large resealable plastic bag  
Ice cubes  
Salt  
Teaspoon  
Towel

### Method

- Pour the fruit juice into a clean, small plastic bag. Seal the bag completely to make sure no liquid spills out.
- Put the bag of juice into a large plastic bag.
- Fill the large plastic bag with some ice cubes. Add three teaspoonfuls of salt.
- Seal the bag. Shake it for five to ten minutes.
- Take the bag of juice out of the large plastic bag. What has happened to the fruit juice?

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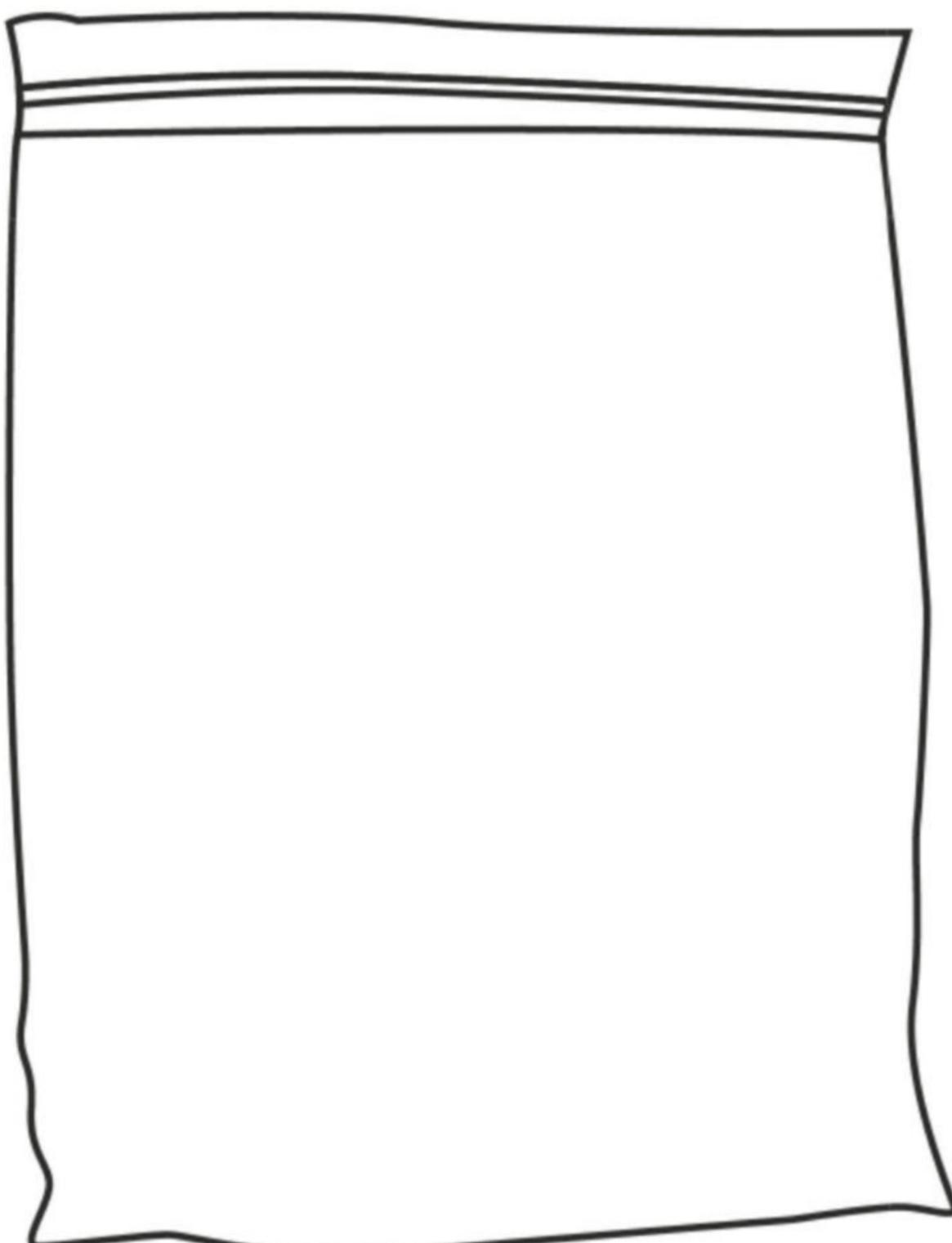


The bag can become very cold. What can you do to handle the bag safely?

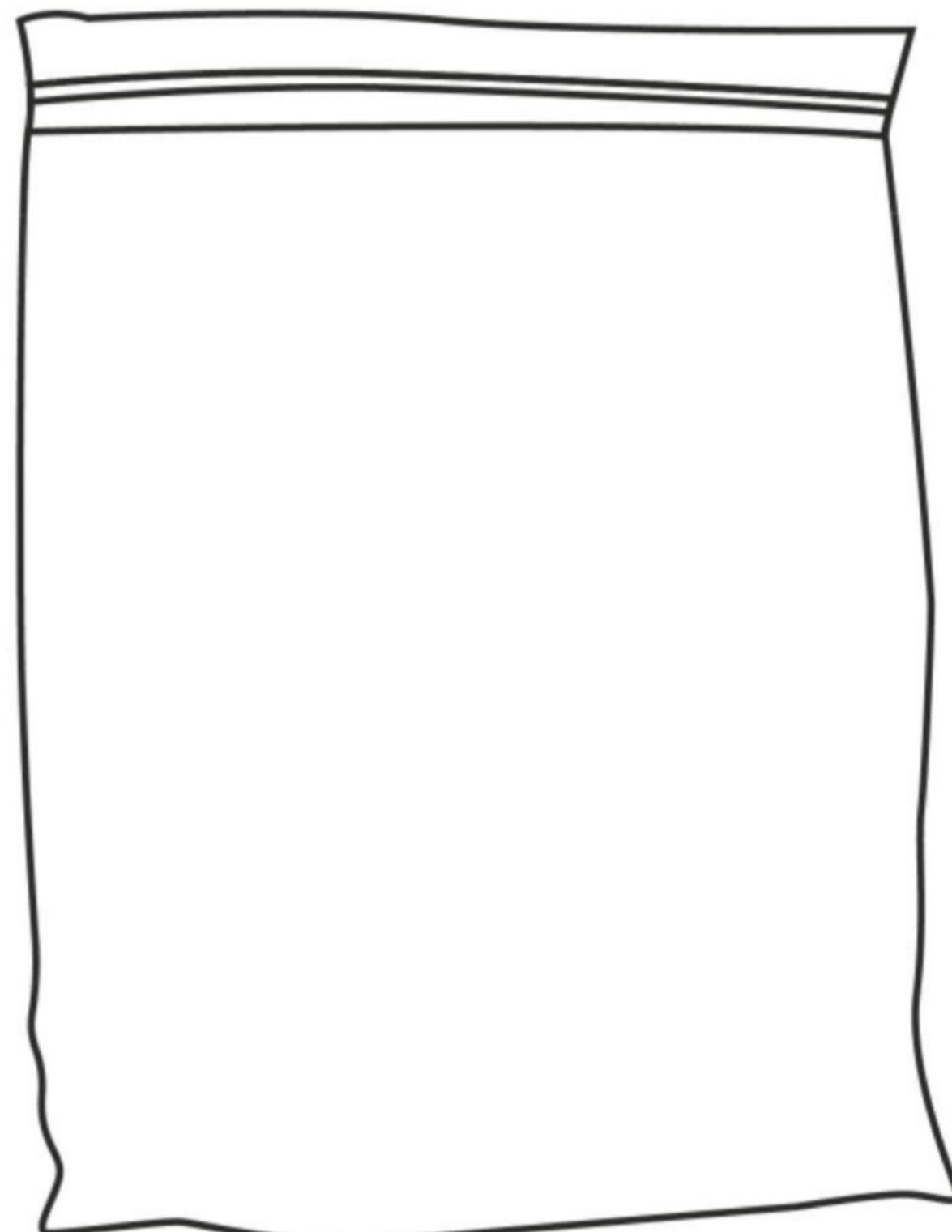


- 6 What has happened to the movement of the particles as the fruit juice cools down?
- 
- 

- 7 Draw a model of the particles in each of the plastic bags below. Label your drawing.



particles at the start



particles at the end

## Activity

5C

## Fizzing Lemon



**Skills:** Do practical work safely, use science to help me support my points of view

### Materials:

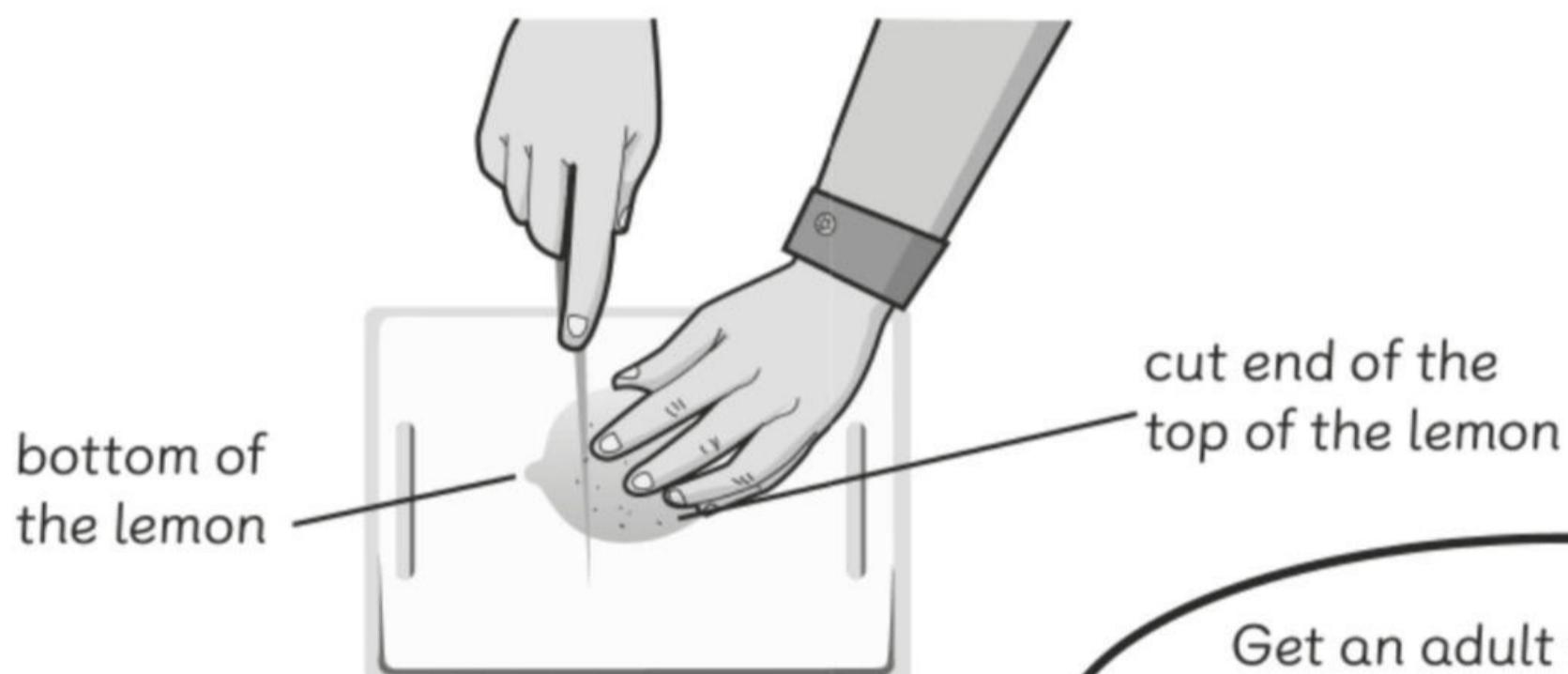
Lemon  
Small knife  
Tray

Ice cream stick  
Teaspoon

Baking soda  
Food colouring (optional)

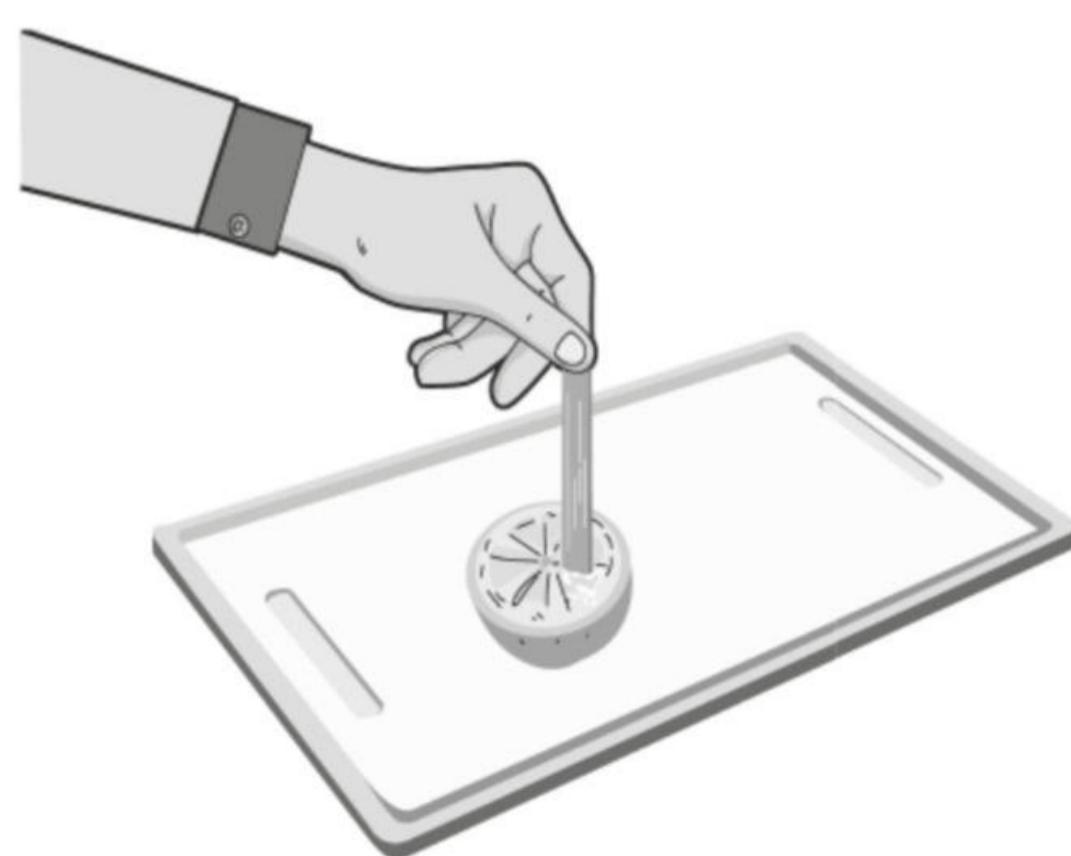
### Method

- 1 Cut the top off a lemon to expose the inside.
- 2 Cut a thin slice off the bottom of the lemon so that it can sit flat. Make sure you do not cut into the flesh of the lemon.



- 3 Place the lemon on a tray.
- 4 Use the ice cream stick to mash the centre of the lemon to bring out the juice.

Get an adult to help you with steps 1 and 2. You may get hurt when using a knife if you are not careful.



- 5 Add a spoonful of baking soda into the lemon.



- 6 What do you observe when you add baking soda to the lemon?
- 
- 

- 7 A gas is given out when you mix the baking soda and the lemon.

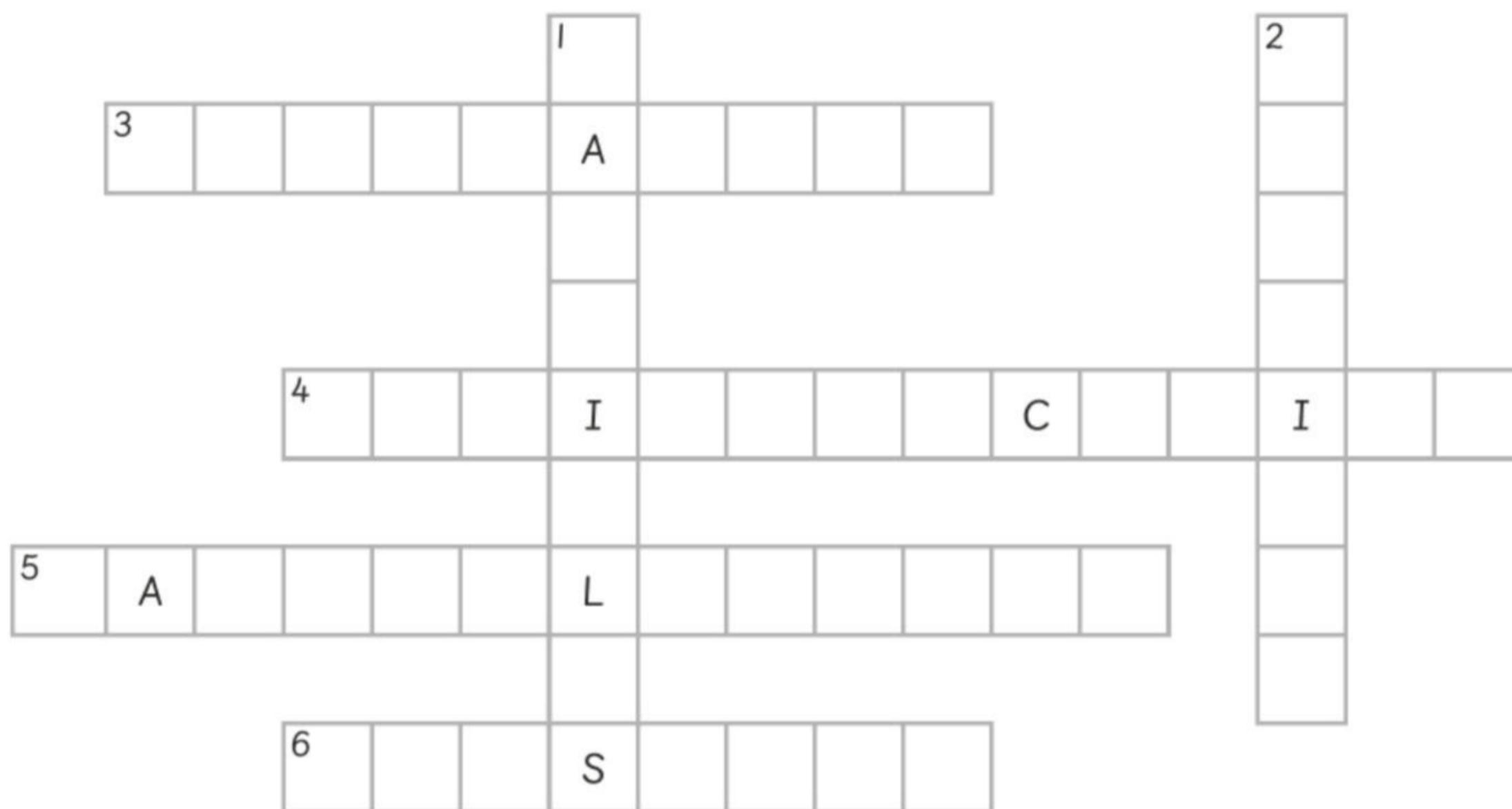
What type of change, physical or chemical, has taken place?  
Explain your answer.

---

---

## Word Whizz

Complete the crossword puzzle using the given clues.



### Down

1 The tiny units that make up matter are called \_\_\_\_\_.

2 New substances are formed during \_\_\_\_\_ reactions.

### Across

3 Materials are made of \_\_\_\_\_.

4 \_\_\_\_\_ takes place when you place water in a freezer.

5 The \_\_\_\_\_ explains the properties of matter and what happens during changes of state.

6 Melting is a \_\_\_\_\_ change.

# Let's Map It!

Fill in the blanks. Use the following words.

chemical freezing liquids material  
matter melting particles physical  
properties solids space vibrate

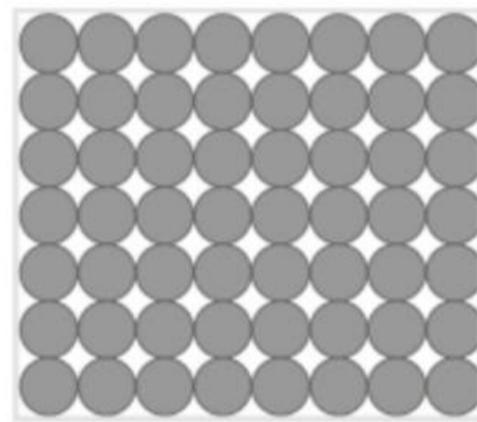
A \_\_\_\_\_ can be made of one or more substances. Each substance is made of one type of \_\_\_\_\_.

All matter is made up of \_\_\_\_\_. We use the particle model to explain the \_\_\_\_\_ of matter.

During a \_\_\_\_\_ reaction, substances react with each other to form one or more new substances.

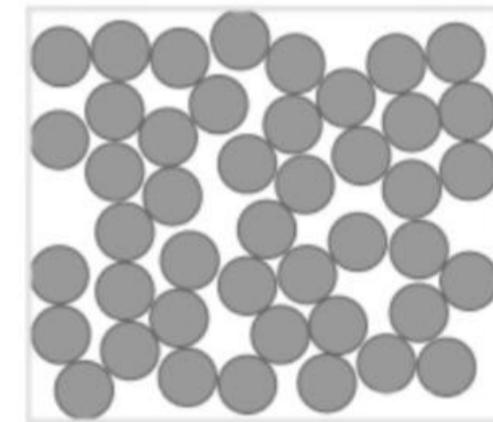
Fixed volume: Particles are packed very closely together.

Fixed shape: Particles only \_\_\_\_\_ about their positions.



Fixed volume: Particles are packed less closely together, but there is very little \_\_\_\_\_ between them.

No fixed shape: Particles move around each other.

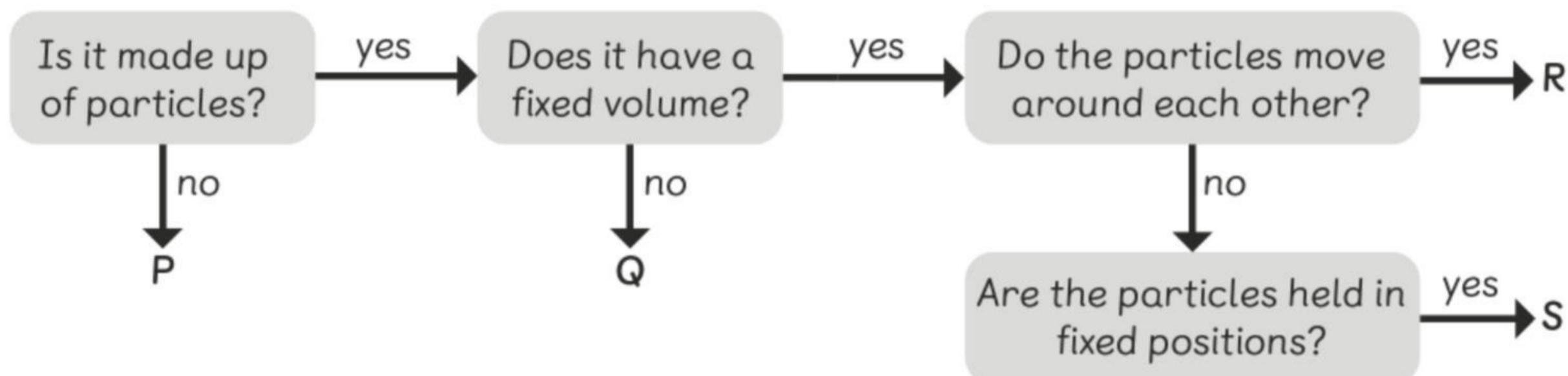


- During \_\_\_\_\_, the particles gain heat and break away from their fixed positions.
- During \_\_\_\_\_, the particles lose heat and settle into fixed positions.

Changes of state are \_\_\_\_\_ changes.

## Let's Review

- I Maria draws a flowchart.



In the table, write the letter P, Q, R or S to identify each substance.

Substance	Letter
Rock	
Oil	

- 2 Ben pours some apple juice into moulds. He places the moulds in the freezer.



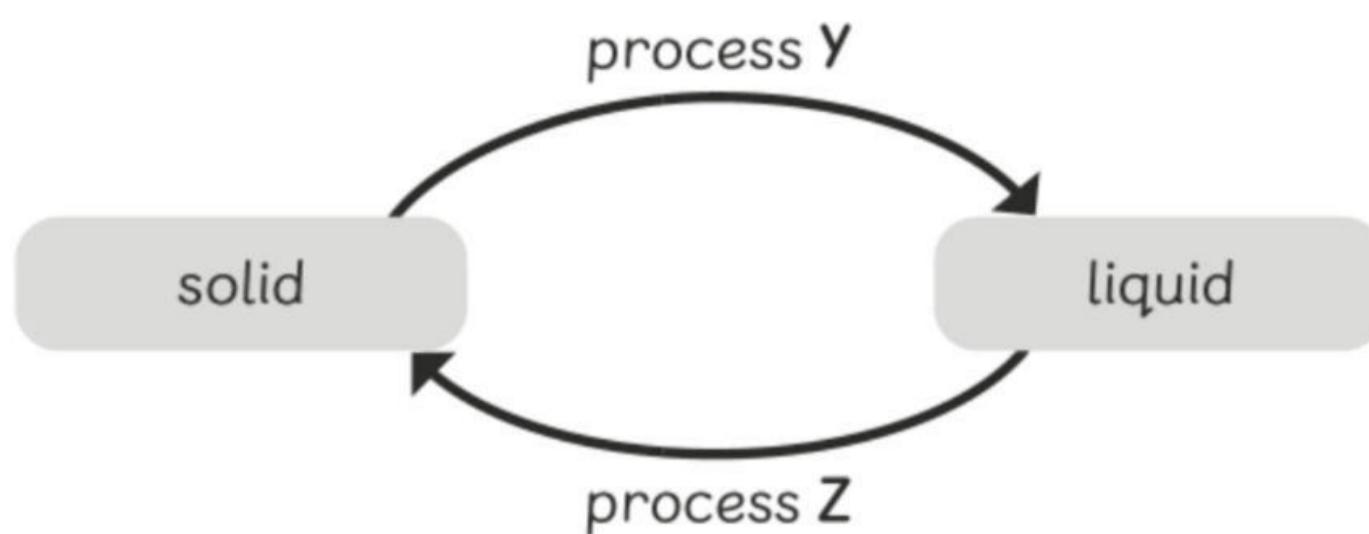
- a What state of matter is the apple juice in before it is placed in the freezer?

- b What will happen to the apple juice after a few hours in the freezer?

Complete the sentence.

The apple juice will \_\_\_\_\_.

- 3 The chart shows some changes of state of matter.



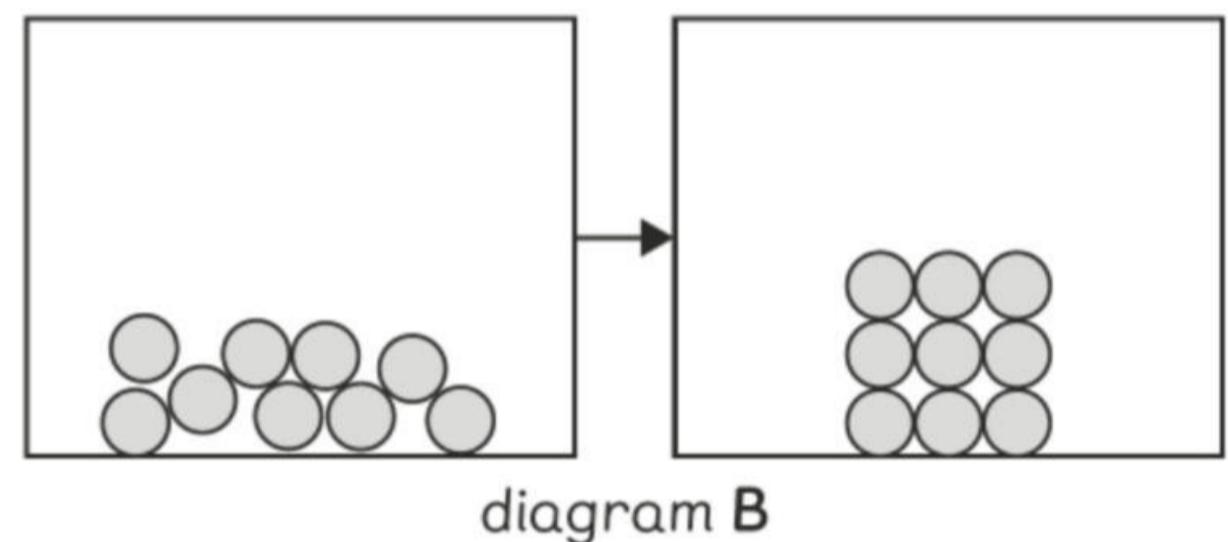
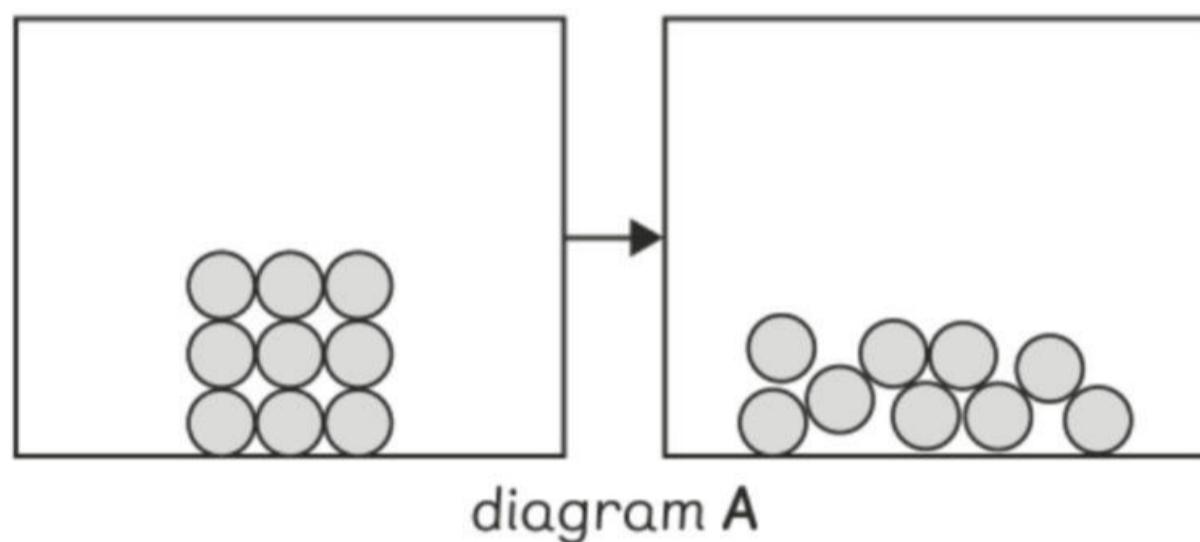
a Name process Y.

---

b Name process Z.

---

c The diagrams show the changes of state above.



Which diagram shows the change from a liquid into a solid?

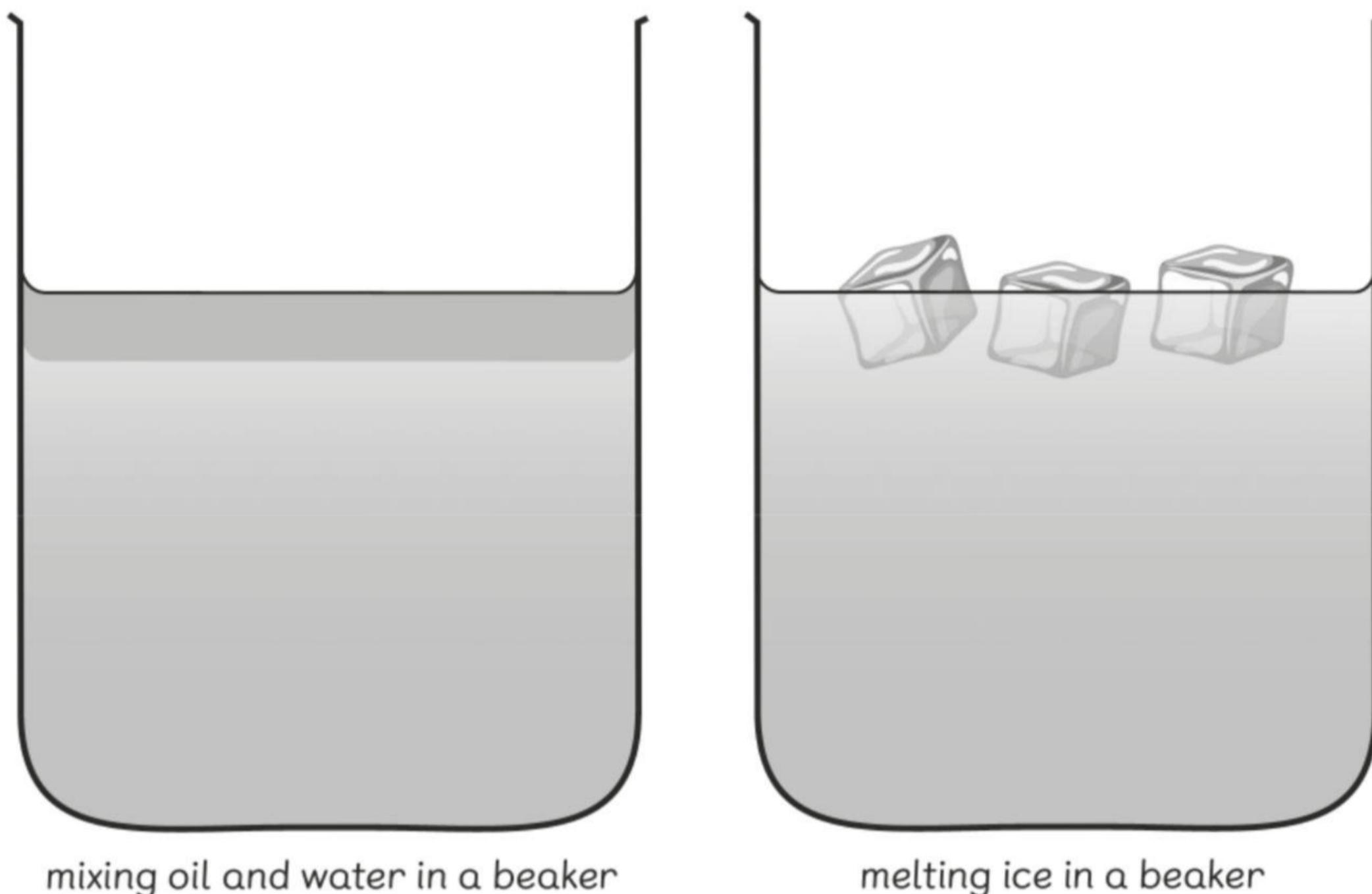
Circle the correct answer.

diagram A

diagram B

4 Chen and Ravi carry out an experiment.

The diagram shows what they observe.



Chen says that mixing oil and water is a physical change, but melting ice is a chemical change.

Ravi says that both are physical changes.

Who is correct? Explain your answer.

---

---

**Activity****6A****What Energy Can You Find?****Skill:**

Learn to sort and classify things through observations

Circle the energy found in each of the following.

a laptop showing a video 	a lit sparkler 	freshly cooked rice in a rice cooker 
heat light sound	heat light sound	heat light sound
a working oven 	a moving toy ambulance with siren 	a piano producing music 
heat light sound	heat light sound	heat light sound

## Activity

## 6B

# How Do Things Move?



### Skills:

Learn to predict the possible results of a scientific activity, analyse results to answer a scientific question, create tables and diagrams to show observations, identify and explain patterns in results, draw a diagram to show a scientific situation



### Materials:

Four Straws  
Ten marbles

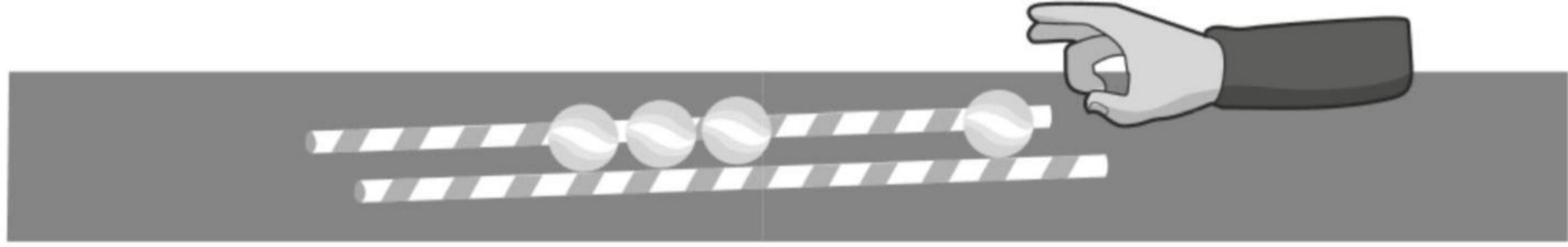
### Method

- 1 Place two straws side by side with a gap in the middle to create a path for the marbles.
- 2 Place a marble at the end of the path.
- 3 Place two marbles in the middle of the path. Make sure the marbles are touching each other.
- 4 Predict what would happen when the marble at the end is flicked.

- 5 Flick the marble and observe what happens. Which marble(s) moved?

---

- 6 Next, place a marble at the end of the path and three marbles in the middle.



- 7 What happens when you flick the marble at the end?  
Which marble(s) moved?

---

- 8 Repeat the experiment with different numbers of marbles in the middle and the end. Record your observations in the table below.

Number of marbles at the end	Number of marbles in the middle	Number of marbles that moved

- 9 What patterns did you notice with the marbles?

---

- I0 Draw a diagram in the space below and label it to show how one marble transferred energy to another.

- II Fill in the blanks with the following words to make conclusions for this activity.

energy move rolling stops transferred

\_\_\_\_\_ is required to make things move. When the \_\_\_\_\_ marble hits the second marble, it \_\_\_\_\_ rolling. The energy from the rolling marble is \_\_\_\_\_ to the second marble and then to the third marble. Energy is finally transferred to the fourth marble to make it \_\_\_\_\_.

## Activity

## 6C

# Where Will the Heat Go?



### Skills:

Learn to measure in standard units and explain why they are better than non-standard units, learn to predict the possible results of a scientific activity, create tables to show observations, identify and explain patterns in results, identify the five main types of scientific enquiry

### Materials:

Small metal container  
Cup of warm water  
Medium-sized plastic container  
Cup of cold water  
Two thermometers  
Stopwatch



### Method

- Fill the small metal container with the warm water.



- Fill the small metal container with the warm water.
- Fill the plastic container with the cold water.
- Place a thermometer in each container.
- Read the temperatures of the warm water and the cold water.

- 5 Record the temperatures of the warm water and cold water in the table below at 0 minutes.

Time	Temperature of warm water (°C)	Temperature of cold water (°C)
0 min		
1 min		
2 min		
3 min		
4 min		
5 min		
6 min		
7 min		
8 min		
9 min		
10 min		
11 min		
12 min		
14 min		
15 min		

What type of scientific enquiry are you using for this activity?



- 6 Place the metal container with the warm water into the container with the cold water.
- 7 Start the stopwatch.
- 8 Predict the temperature of the warm water and the cold water after 15 minutes.  
Warm water: \_\_\_\_\_ °C  
Cold water: \_\_\_\_\_ °C
- 9 Measure and record the temperatures every minute for 15 minutes.
- 10 Do you notice any patterns in the change in temperature?  
What is the pattern?

## Word Whizz

Unscramble the words below and write the answers in the blanks. Use the clues to help you.

- 1 Energy is found in all \_\_\_\_\_.

t a e r m t

- 2 Energy cannot be made, lost or \_\_\_\_\_.

e t d e s o r y d

- 3 Energy is required for \_\_\_\_\_ to happen.

n t v m o e e m

- 4 The only type of energy we can see is \_\_\_\_\_.

h l i t g

- 5 \_\_\_\_\_ is transferred from a hotter object to a cooler object.

a h t e

- 6 Some energy is transferred to the surrounding environment as \_\_\_\_\_ when you use a vacuum cleaner.

o u s n d

- 7 When a lamp is switched on, the \_\_\_\_\_ of its surrounding environment increases. This is because some energy is transferred to the surrounding environment as heat.

e t r p r u m a e e t



# Let's Map It!

Fill in the blanks. Use the following words.

hotter      made      matter      move  
object      see      sound      surrounding



## Energy

make things

is needed to

transferred from one  
\_\_\_\_\_ to another

\_\_\_\_\_, lost, used  
up or destroyed

cannot be

can be

transferred to the  
\_\_\_\_\_ environment

is found in

all \_\_\_\_\_

light that we can  
\_\_\_\_\_

\_\_\_\_\_ that we can hear

heat that  
moves from a  
\_\_\_\_\_ object  
to a colder object



## Let's Review

I Identify the energy present in each of the following.

Draw a line from the object to the energy present.

object

energy



torch



sound



bell



heat



hot water bottle



light

2 The picture below shows a mug of hot milk.



Tick (✓) the correct answer.

Energy in the mug of hot milk can be \_\_\_\_\_.

- heard
- measured with a thermometer
- seen

3 The picture below shows a person playing baseball.



Circle the statements that are correct.

energy is destroyed when the bat hits the ball

energy is needed to make the bat swing

energy is transferred from the ball to the bat

some energy is transferred to the surrounding environment as sound  
when the bat hits the ball

# Properties of Light

## Activity

### 7A

## How Light Travels



**Skills:** Learn to predict the possible results of a scientific activity, explain that results are more reliable when the activity is done more than once, analyse results to answer a scientific question

#### Materials:

Three cardboard cards  
Hole puncher  
Plasticine  
Stick  
Black paper  
Torch



#### Method

- 1 Work in groups.
- 2 Place the three cards together.
- 3 Use a hole puncher to punch a hole in the middle of each card at the same place.
- 4 Place a small ball of plasticine at the bottom of each card to help it stand up as shown.
- 5 Insert the stick through all the holes and adjust to make sure the holes are in a straight line.
- 6 Hold a piece of black paper behind the last card.
- 7 Turn on the torch. Predict what you think will happen when you shine the torch through the holes.

8 Observe what happens when you shine the torch through the hole on the first card. Do you see the light on the black paper?

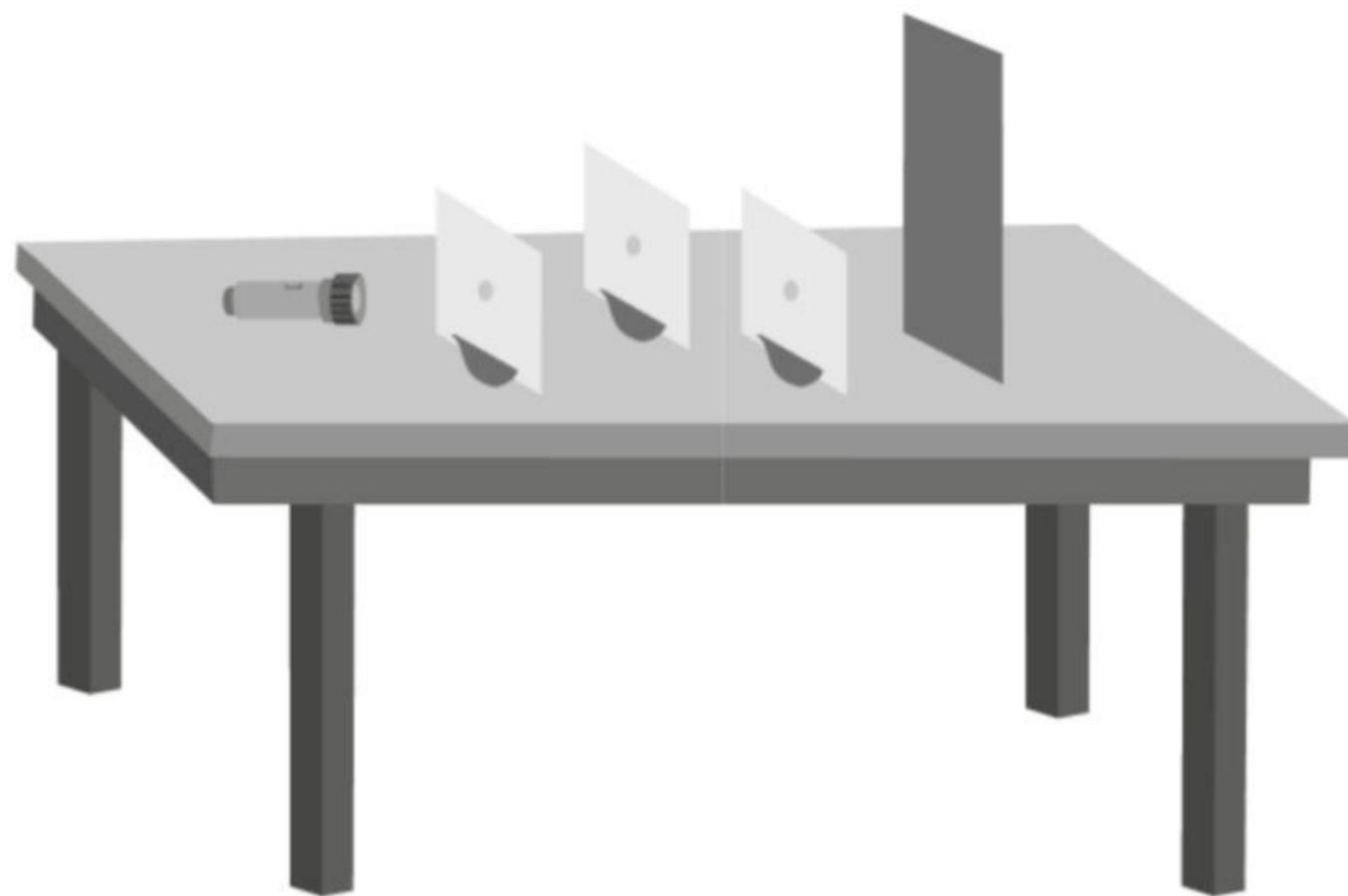
Take turns so that everyone gets a chance to try it out!

9 Was your prediction correct?

---

10 Move the middle card to the left slightly. Predict what you think will happen when you shine the torch this time.

---



II Shine the torch through the hole in the first card. Do you see the light on the black paper?

---

12 Was your prediction correct?

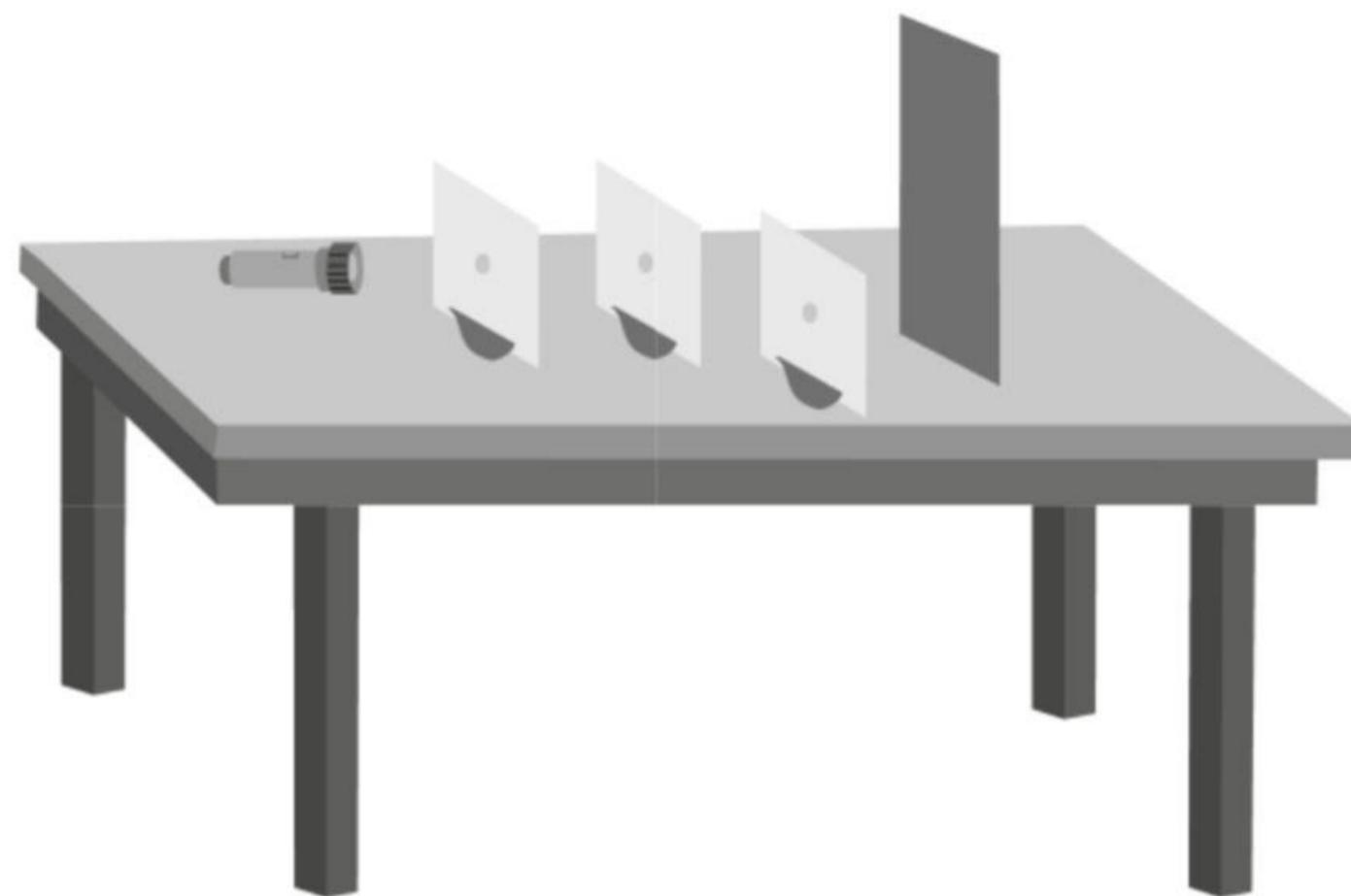
---

13 Explain what is happening to the light from the torch.

---

- 14 Arrange the cards in a straight line again and shine the torch through the holes. Do you see the light on the black paper again?
- 

- 15 Move the last card to the right slightly.



- 16 Shine the torch through the hole in the first card. Do you see the light on the black paper?
- 

- 17 Do you get the same results each time you repeated the investigation?
- 

How can you improve the investigation?



- I8 Fill in the blanks with the following words to make conclusions for this activity.

can      cannot      reliable      straight

Light \_\_\_\_\_ be seen when cardboards A, B and C are in a straight line. When the holes on the cardboards A, B and C are not in a straight line, light \_\_\_\_\_ be seen. Light travels in a \_\_\_\_\_ line.

Repeated observations give more \_\_\_\_\_ data.

## Activity

### 7B

# What Reflects Light Well?



#### Skills:

Create tables to show observations, learn to sort and classify things through tests and observations, produce a table to explain results



#### Materials:

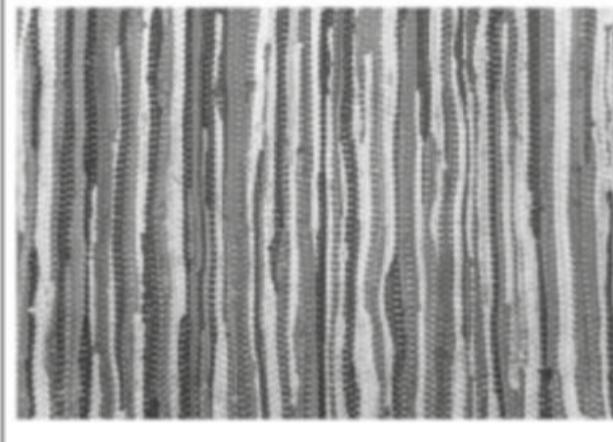
Scissors  
White card  
Torch  
Aluminium foil  
Plastic file  
Book

Metal spoon  
Compact disc (CD)  
Cloth rag  
Tissue paper  
Wooden spoon

#### Method

- 1 Use a pair of scissors to cut a hole in the centre of the white card.
- 2 Push the torch through the hole so that the card stays on the torch without you holding it.
- 3 Darken the room by shutting the door and windows and turning off the lights.
- 4 Shine the torch on each of the objects and observe how well each object reflects light.
- 5 Observe which objects reflect the light to the white card.

6 Tick (✓) the boxes with the objects that reflect light to the white card.

aluminium foil 	plastic file 	book 	metal spoon 
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
compact disc (CD) 	cloth rag 	tissue paper 	wooden spoon 
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

7 With a partner, collect other items around the classroom to test. Create a table to group these items as those that reflect light to the card and those that do not reflect light to the card. Present your findings to your class.

## Word Whizz

Use the clues to solve the puzzle. Write your answers in the blanks. Then find and circle the words in the puzzle.

Q	R	M	E	L	F	N	C	V	L	I	G	H	T	Q
Q	P	U	E	X	Q	N	A	T	D	W	M	L	G	A
W	W	Q	J	K	F	G	M	T	J	O	L	O	I	F
O	B	M	M	S	A	V	A	T	A	O	E	G	Q	V
A	X	L	K	O	Q	S	Q	E	R	D	L	M	H	O
E	L	M	P	U	S	G	B	F	Y	A	E	N	C	C
Z	X	H	G	R	N	J	V	U	U	F	C	G	N	Y
M	I	P	X	C	R	E	F	L	E	C	T	E	D	R
F	B	S	L	E	O	L	Z	X	E	H	B	M	S	R
M	Z	W	H	O	N	U	U	T	D	C	R	J	I	A
H	C	B	S	I	B	O	U	N	C	E	S	C	M	Y
L	A	K	G	A	N	G	S	L	I	A	J	U	L	F
K	L	K	X	N	D	Y	G	K	R	O	S	K	A	X
G	L	F	B	N	B	W	Q	M	S	H	S	C	F	X
S	T	Y	S	T	R	A	I	G	H	T	Q	T	N	H



### Clues

- 1 A metal spoon can reflect light well because it has a \_\_\_\_\_ and smooth surface.
- 2 Light travels in a \_\_\_\_\_ line.
- 3 Without \_\_\_\_\_, the world would be dark and we would not be able to see.
- 4 We see a table when the light \_\_\_\_\_ by it enters our eyes.
- 5 The Sun is a light \_\_\_\_\_.
- 6 Light will continue to travel until it \_\_\_\_\_ off the surface of an object.
- 7 A \_\_\_\_\_ diagram shows how light travels from a light source to our eyes.

# Let's Map It!

Fill in the blanks. Use the following words.

direction dull eyes ray reflection  
see shiny sources straight

Without light, we would not be able to \_\_\_\_\_.

Objects that give off light are called light \_\_\_\_\_.

A \_\_\_\_\_ diagram shows how light travels from a light source to our eyes.

Light

Light travels in \_\_\_\_\_ lines.

\_\_\_\_\_ occurs when light reaches the surface of an object and bounces off it.

When light bounces off an object, it changes its \_\_\_\_\_.

We can see objects that are not sources of light when they reflect light into our \_\_\_\_\_.

Objects with smooth and \_\_\_\_\_ surfaces reflect light well.

Objects with rough and \_\_\_\_\_ surfaces do not reflect light very well.

## Let's Review

- 1 Sharon sees a bus on the way to school.

Draw light rays in the diagram to show how Sharon can see the bus.



bus



Sun



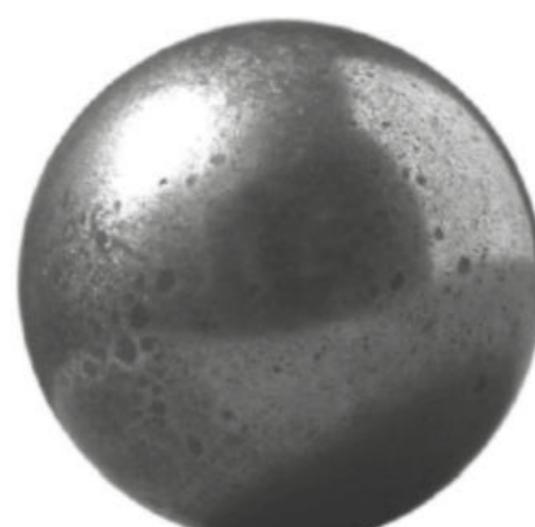
Sharon

- 2 Which objects are not light sources but can be seen because they reflect light into our eyes?

Circle the correct answers.



lantern



metal ball



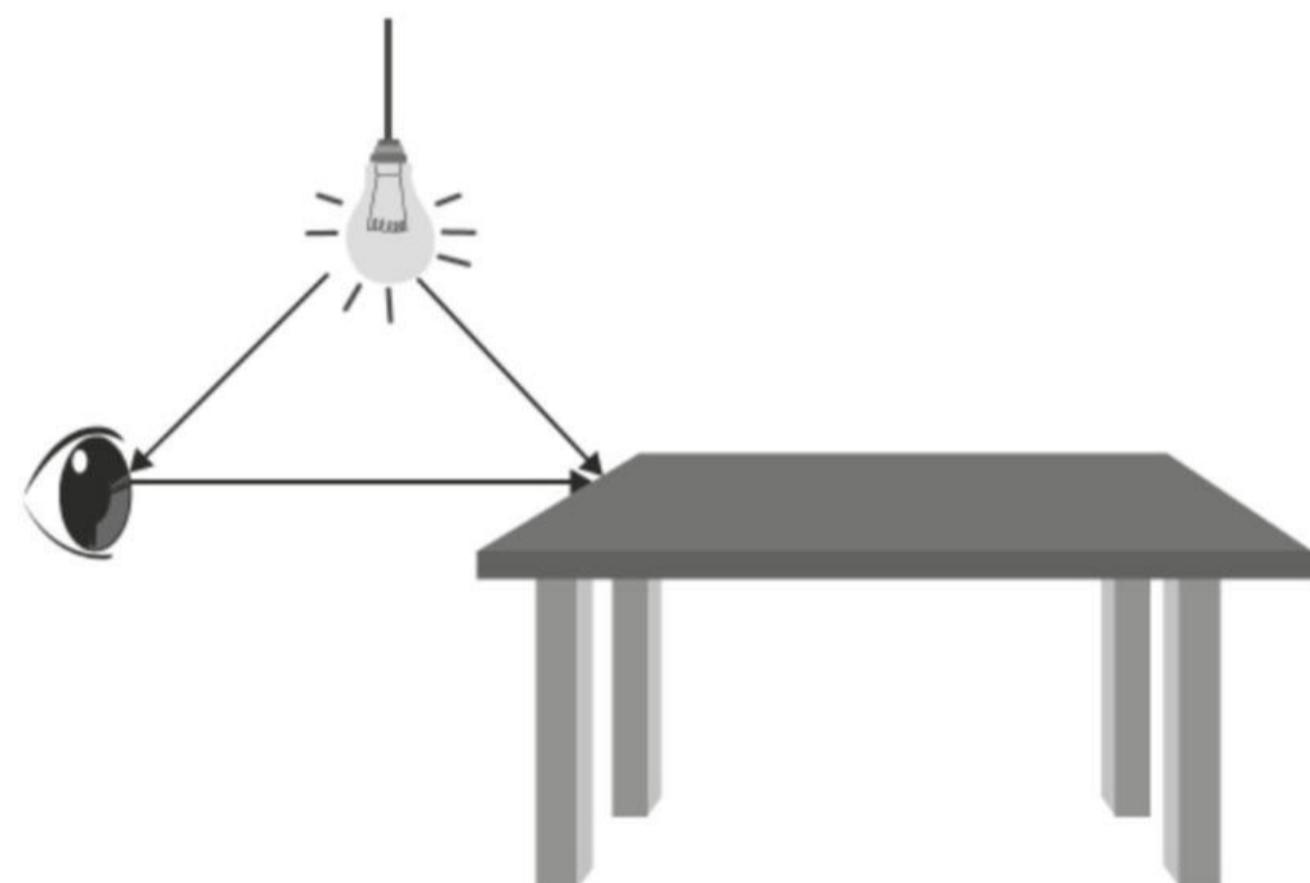
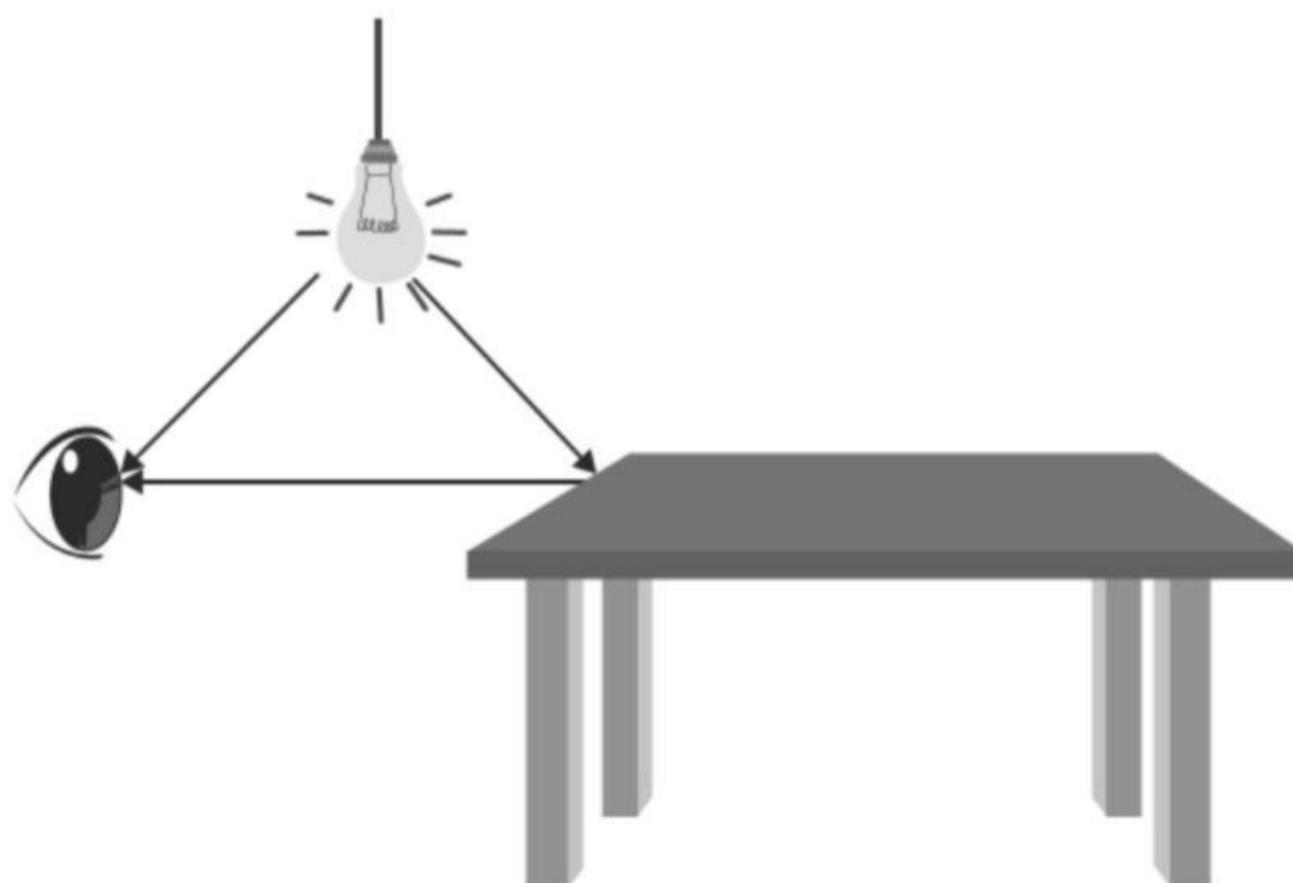
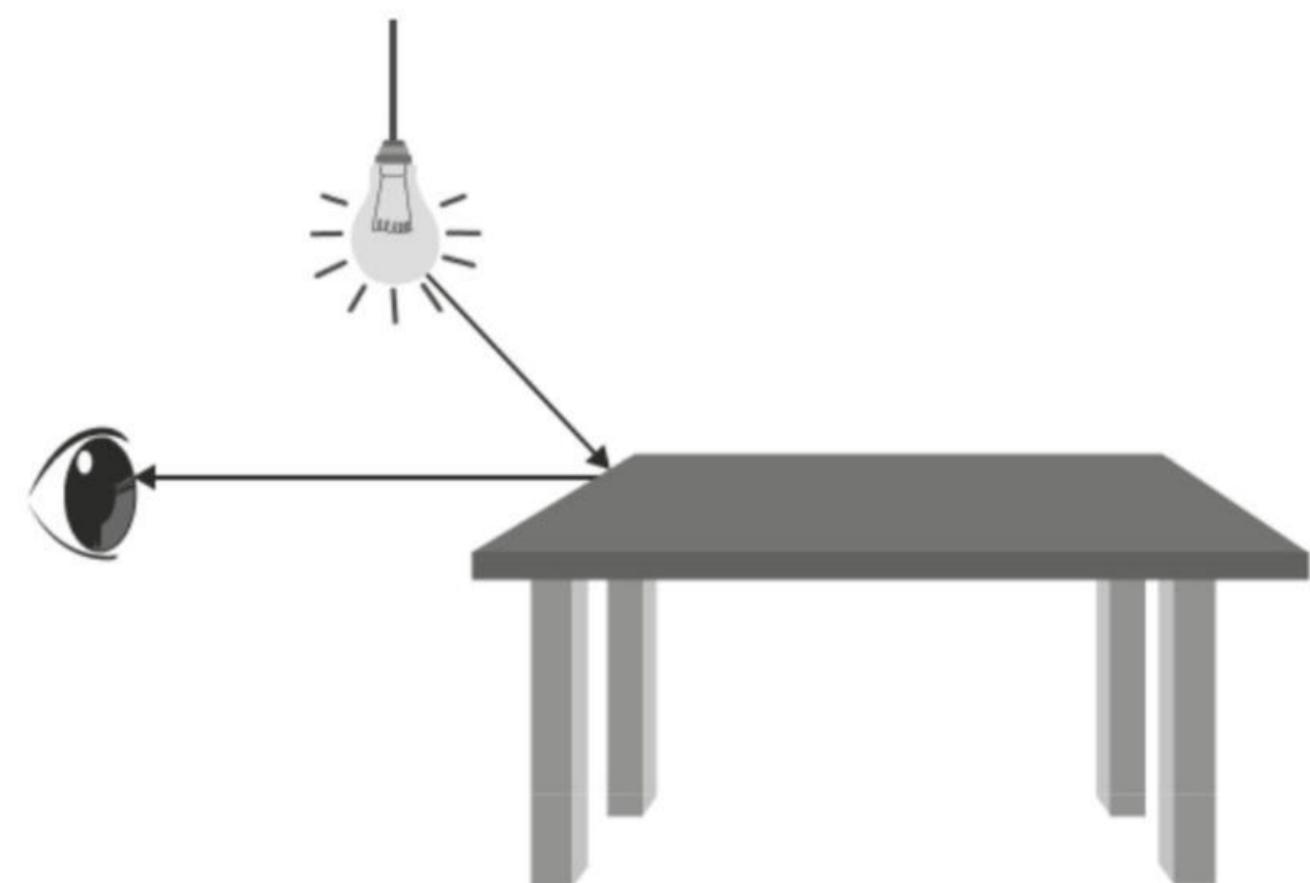
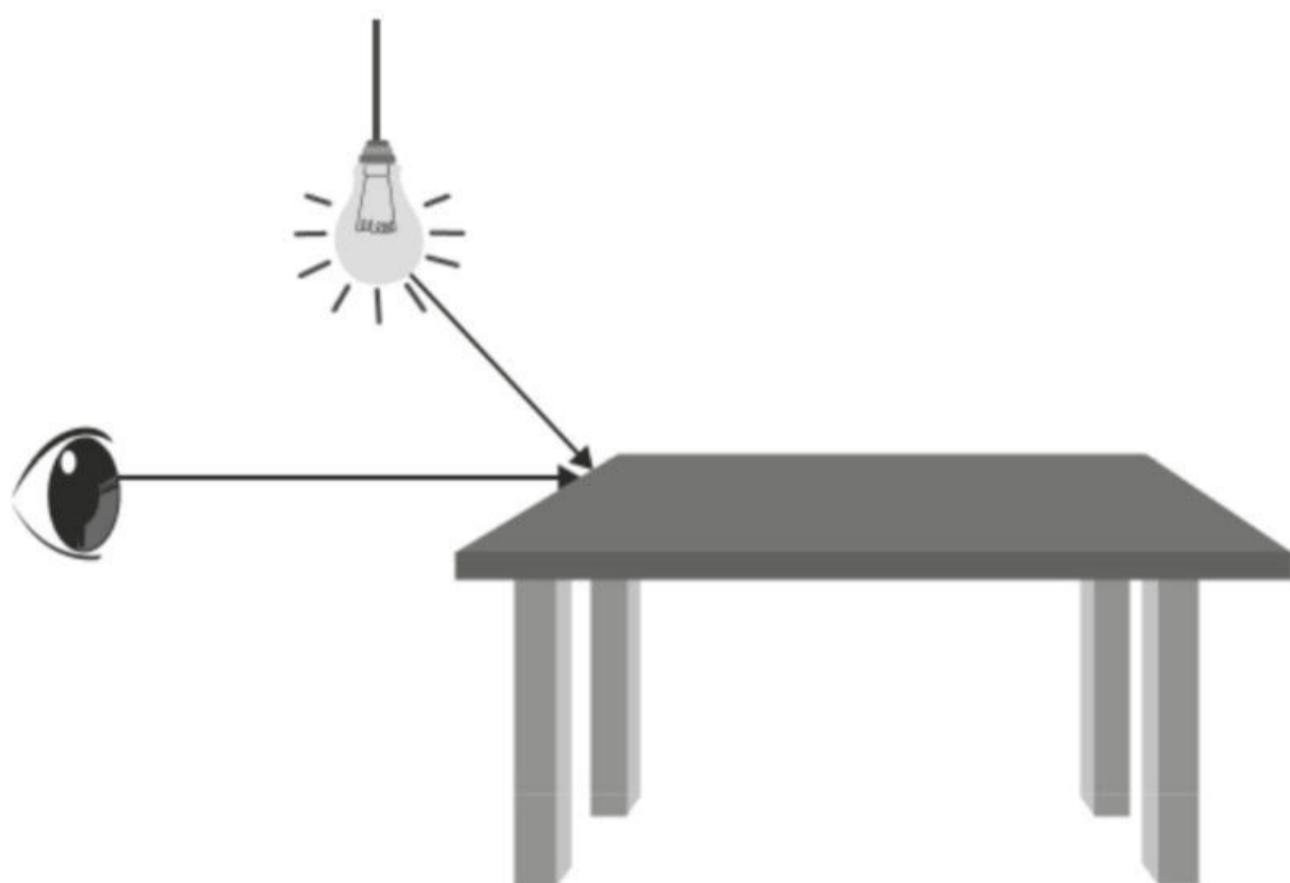
moon



orange

3 Which ray diagram shows how you can see the light bulb and the table?

Circle the correct answer.



## Activity

### 8A

## Make Your Own Paper Clip Switch



**Skills:** Do practical work safely, analyse results to answer a scientific question

### Materials:

Scissors

Cell holder

Small cardboard

1.5V lamp

Two paper fasteners

Lamp holder

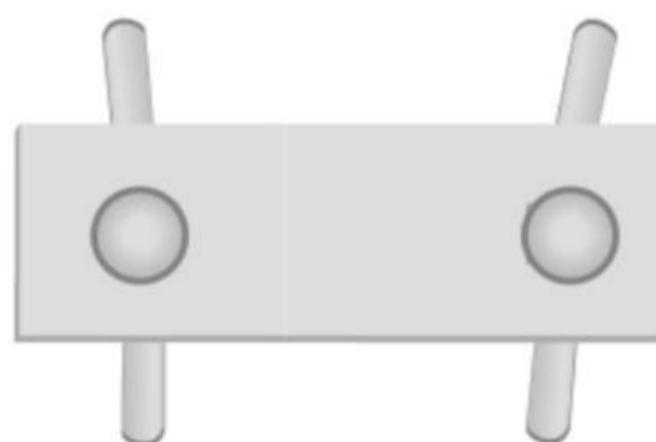
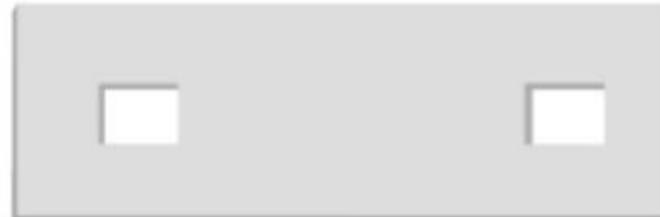
Paper clip

Three alligator clip wires

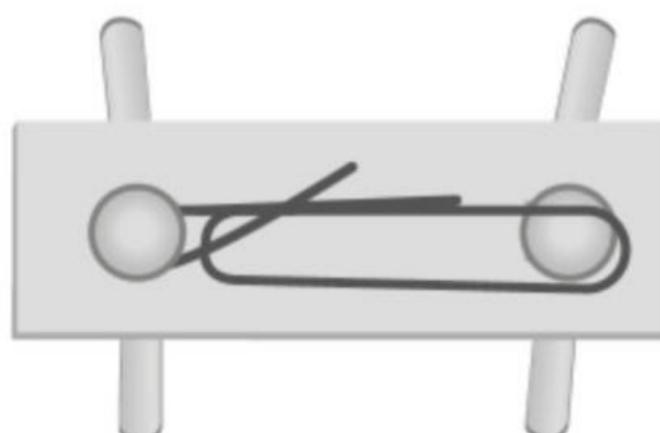
1.5V cell

### Method

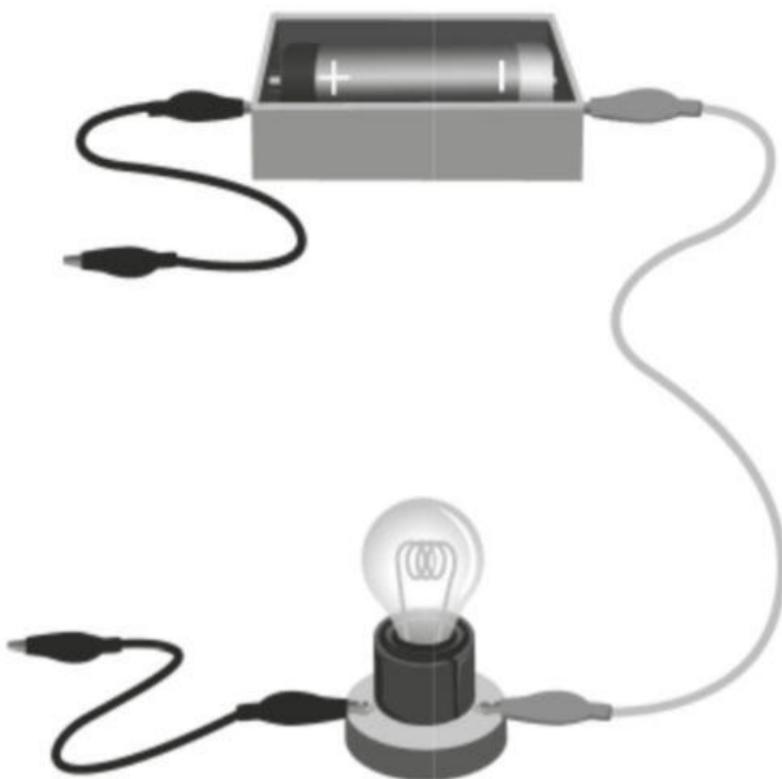
- 1 Use the scissors to cut the cardboard into a rectangle of size 3 cm by 1 cm. Be careful when using the scissors. Ask your teacher for help if you cannot cut the cardboard.
- 2 Make two holes in the cardboard for your paper fastener to go through.
- 3 Put a paper fastener in each hole as shown.



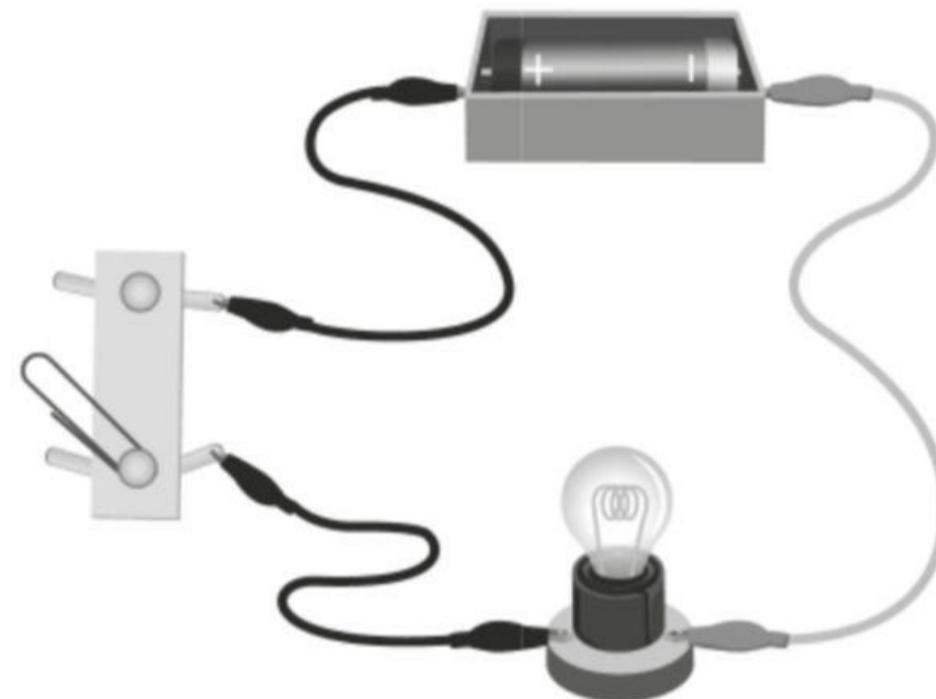
- 4 Open the paper clip slightly and place it around the fasteners.



- 5 Build the circuit using the cell, lamp and wires as shown.



- 6 Attach the alligator clips to the fasteners.



- 7 What happens when the paper clip touches only one fastener?
- 

- 8 Move the paper clip down to touch both fasteners. What happens now?
- 

- 9 Fill in the blanks with the following words to complete the conclusion.

break      circuit      switch

The paper clip acts as a \_\_\_\_\_. It controls the flow of electric current in a \_\_\_\_\_. A circuit will not work if there is a \_\_\_\_\_ in it.

## Activity

## 8B

# What Happens to the Lamp?



### Skills:

Check results to see if they support a prediction, learn what the variables are when doing a fair test

Complete the following activity to test how changing different components in a circuit affects the brightness of the lamp(s).

### Materials:

Eight 1.5V cells

Eight lamp holders

Eight cell holders

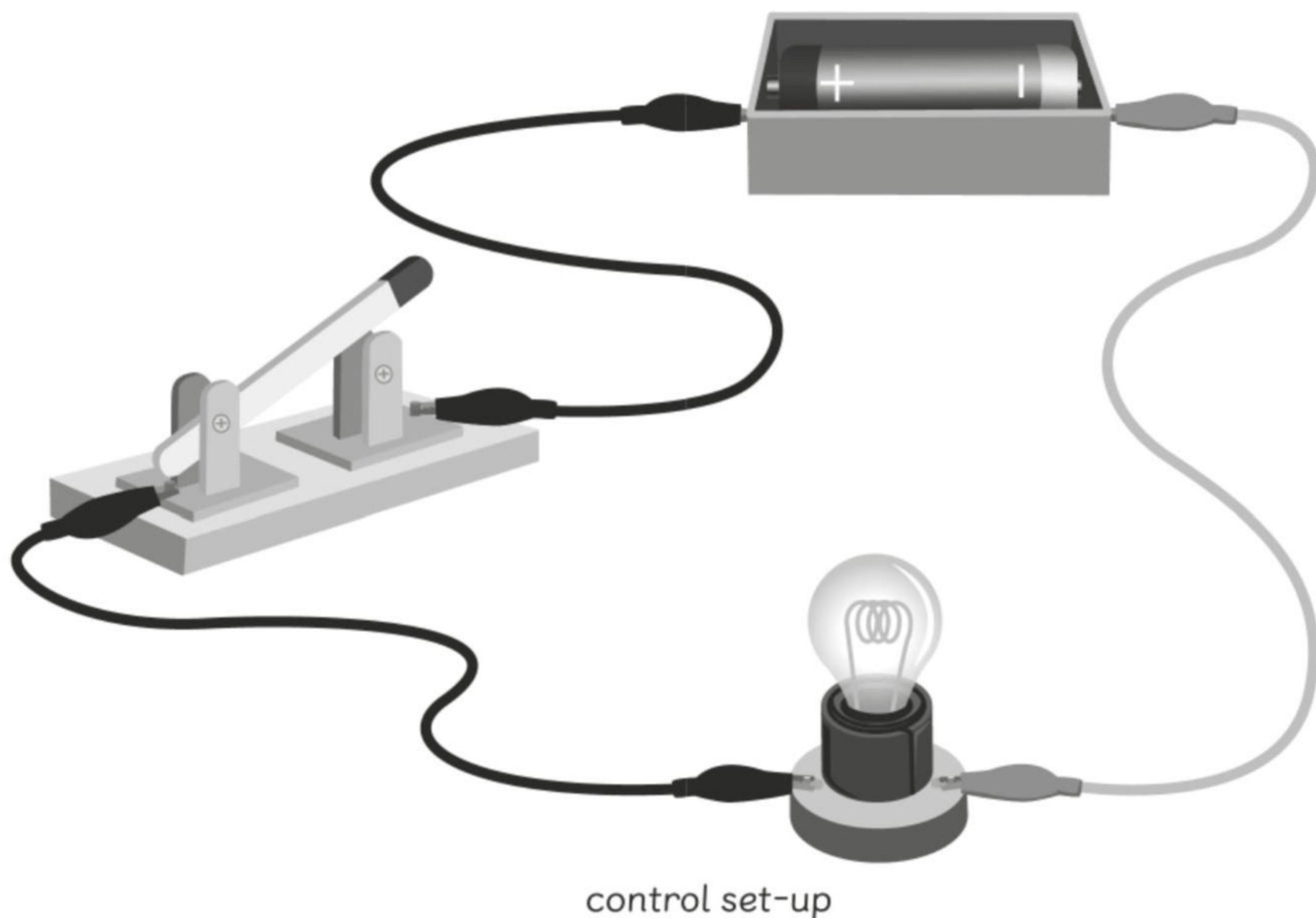
Five switches

Eight 1.5V lamps

21 insulated wires

### Method

- I Set up the control circuit with one cell and one lamp. Be careful when making the circuits. Do not touch the exposed wires with your bare hands.



- 2 Record your observations about the brightness of the lamp for the control circuit. Circle the correct answer to complete the sentence.

The lamp in the control circuit is **bright** / **dim**.

- 3 Look at the set-ups in the following tables.

- 4 Fill in the tables with your prediction for the brightness of the lamp(s) in each circuit.

- 5 Set up each of the circuits and observe the brightness of the lamp(s) in each circuit.

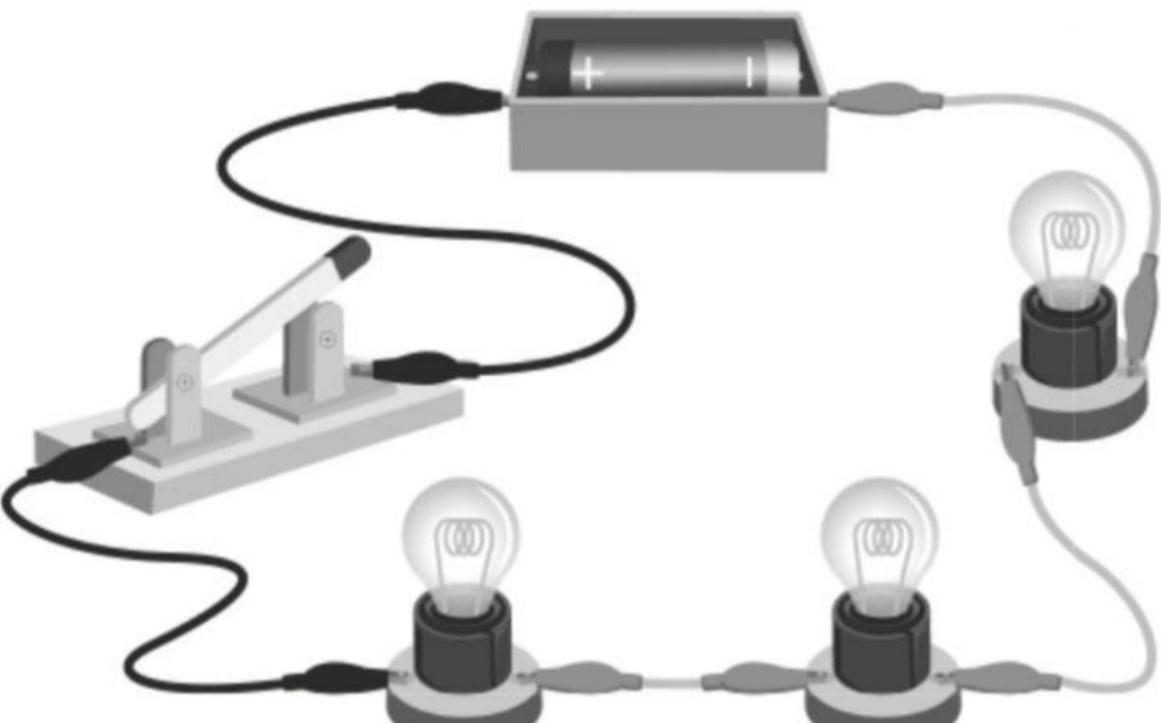
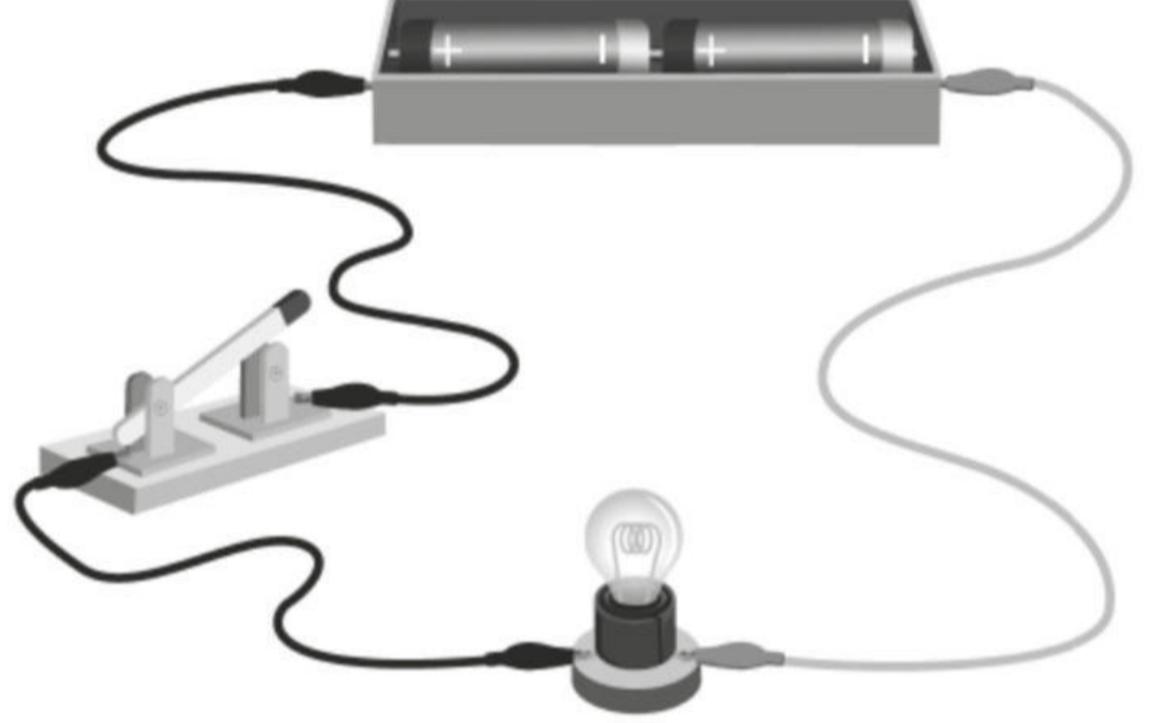
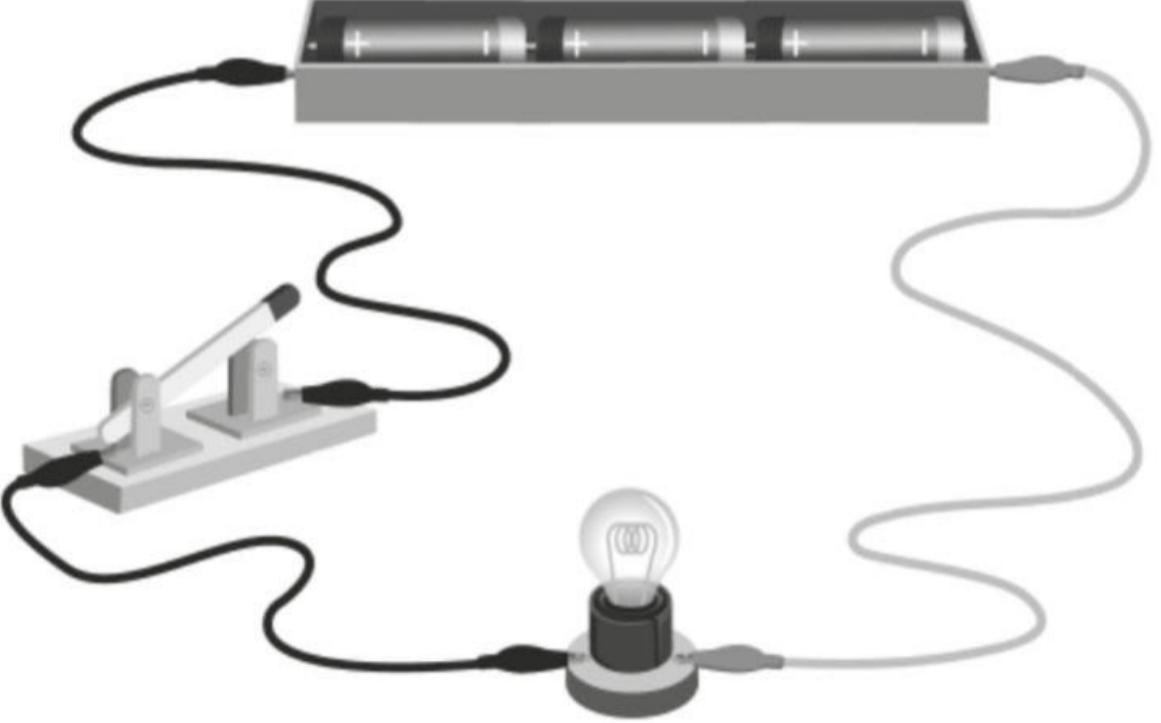
- 6 Identify and record the variable that is changed for each circuit compared to the control circuit.

- 7 Record the results in the tables.

You can only change one variable for each set-up to conduct a fair test. What variables must be kept the same for this experiment?



Circuit	Variable changed	Lamp brightness (bright / dim)	
		Prediction	Actual result
 A			

Circuit	Variable changed	Lamp brightness (bright / dim)	
		Prediction	Actual result
			
			
			

- 8 Samad uses one big lamp and one small lamp to build circuit A. He says that it is a fair test because the number of lamps used is still two. Explain if he is correct.
- 
- 

- 9 Is it easy to compare the brightness of the lamps? Find out what tools can be used to give standard measurements of light so that your experiment can be more accurate.
- 
-

## Activity

### 8C

## Make a Circuit Tester



#### Skills:

Create tables to show observations, learn to predict the possible results of a scientific activity, check results to see if they support a prediction, analyse results to answer a scientific question, learn to choose and use the right equipment



#### Materials:

1.5V cell  
Cell holder  
1.5V lamp  
Lamp holder  
Three alligator clip wires  
Cloth

Paper clip  
Ruler  
Aluminium foil  
Clothes peg  
Eraser  
Spoon

#### Method

- I Build the circuit tester using the cell, lamp and wires as shown. Ensure that the tester is working first by connecting the alligator clips to see that the lamp lights up.



- Fill in the table with the material each object is made of and your prediction if the lamp will or will not light up.
- Attach the alligator clip wires to the ends of each object.
- Record your observations and conclusions for each object in the table below.
- Find other objects and test if they are good electric conductors or insulators. Add your collected items to the table below. Be careful when choosing other materials. Use these appropriately. Remember that water is a good electrical conductor. Do not touch your circuits with wet hands or wet materials.

Object	Material	Prediction	Observation	Conclusion
		The lamp will / will not light up	The lamp lit up / did not light up	The object is an electrical conductor / insulator
paper clip				
ruler				
aluminium foil				
eraser				
clothes peg				
spoon				
cloth				

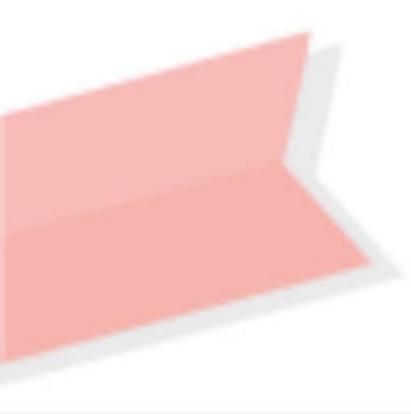
## Word Whizz

Fill in the blanks. Use the following words.

break      brighter      cell      closed      conductor  
insulators      plastic      switches

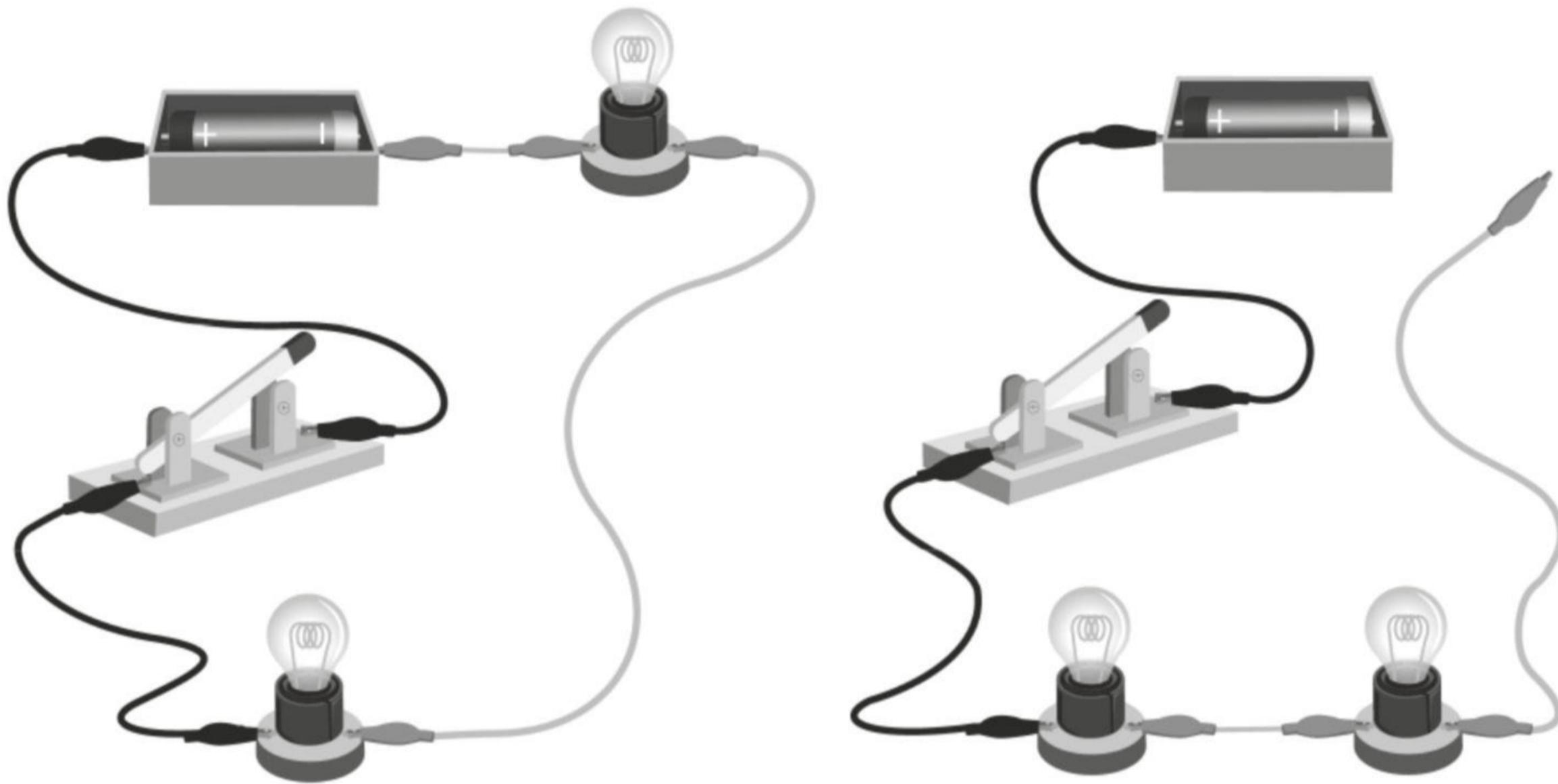
- 1 Electric current can flow through a \_\_\_\_\_ circuit.
- 2 A lamp will not light up if there is a \_\_\_\_\_ in the circuit.
- 3 Most electrical devices have \_\_\_\_\_ to turn the electricity on and off.
- 4 A lamp will be brighter if you add another \_\_\_\_\_ in the circuit.
- 5 A lamp in a circuit with shorter wires will be \_\_\_\_\_ than a lamp in a circuit with longer wires.
- 6 Copper is usually used to make wires because it is a good electric \_\_\_\_\_.
- 7 Good electric \_\_\_\_\_ do not allow electricity to pass through easily.
- 8 We use \_\_\_\_\_ to cover wires so we do not get electric shocks.





## Let's Review

- 1 Circle the circuit where the lamps will light up when the switch is closed.



- 2 Which of the following materials are good electrical conductors?

Tick (✓) the **three** correct answers.

- aluminium
- copper
- cotton
- plastic
- rubber
- zinc

- 3 What does an electrician need to wear to prevent electric shocks when doing repair work?

Circle the correct answer.



straw hat



rubber boots



gold bangle



sunglasses

- 4 Peili wants to find if the number of cells in a circuit will affect the brightness of the lamp.

Fill in the table below so that she can identify the variables to conduct a fair test.

<b>Change</b>	The _____ of cells
<b>Measure</b>	The _____ of the lamp
<b>Keep the same</b>	The _____ of lamps The length of _____

# The Solar System

## Activity

### 9A

## My Solar System

**Skills:**

Explain relationships, quantities or scale through models, do research to find the answer to a question, describe how evidence obtained through enquiry has changed scientific knowledge and understanding over time, identify people who use science around me and describe how they use it, explain why models do not fully represent a situation

**Materials:**

Styrofoam balls of various sizes

Paint of various colours

Paintbrush

Card paper

Small and large plastic cups, or any other round objects

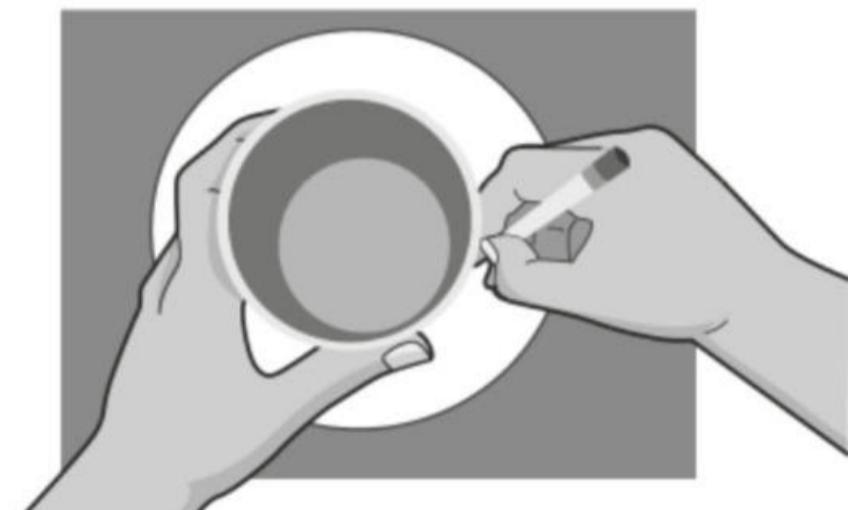
Scissors

Glue gun

Cardboard box

Marker

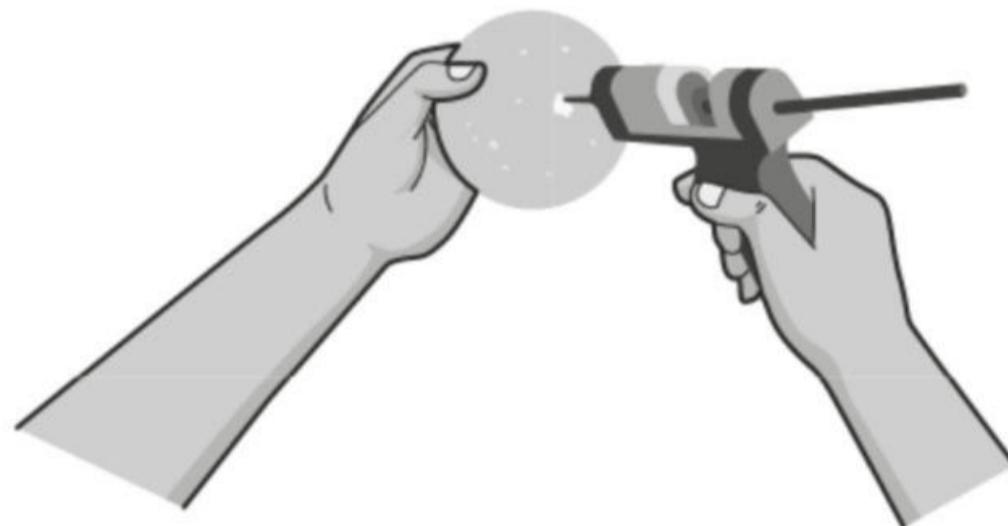
- 1 Use the Internet or books to find out the sizes of the planets and the Sun in comparison to one another. Choose nine styrofoam balls to represent them.
- 2 Paint the balls with different colours to represent the Sun and the planets.
- 3 Trace two circles on a piece of card paper to make the ring for Saturn. Use a small plastic cup and a larger plastic cup. The opening of the small cup should have the same size as the ball you used to make Saturn.



4 Use the scissors to cut out the ring. Fit the ring on Saturn.



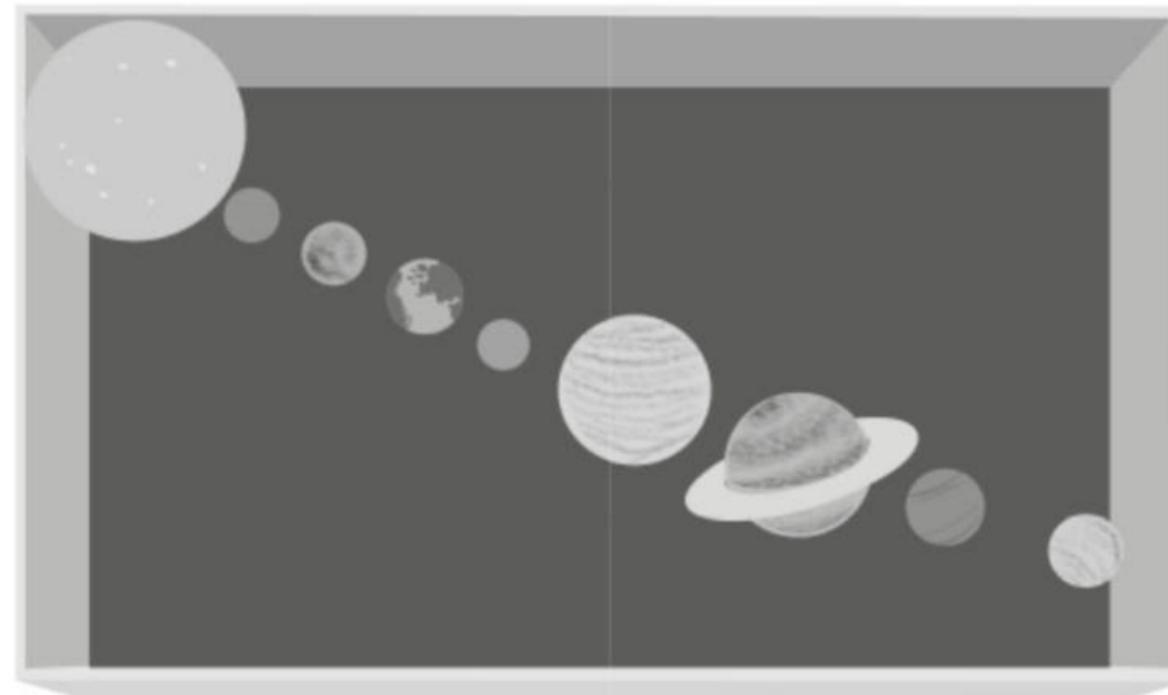
5 Heat up the glue gun. Apply the melted glue on the ball you used to make the Sun. The melted glue can be very hot to touch. Be careful when handling the glue gun. Ask an adult for help.



6 Stick the ball in the corner of a cardboard box.



7 Arrange the planets according to their distance from the Sun in the cardboard box. Use the melted glue to stick them in the box.



8 Label the planets by writing the name beside each planet.

- 9 With a partner, discuss why the model of the planetary system you have created is not fully representative of the actual planetary system. Write the reasons in the table below.

Actual planetary system	Model of planetary system

- 10 Since ancient times, five planets in the Solar System were known to humans – Mercury, Venus, Mars, Jupiter and Saturn. The remaining two were discovered much later.

Using the Internet or books, find out when the remaining two planets in the Solar System were discovered and who discovered them. Complete the table below.

	When was it discovered	Who discovered it
Uranus		
Neptune		

## Activity

## 9B

## Day and Night



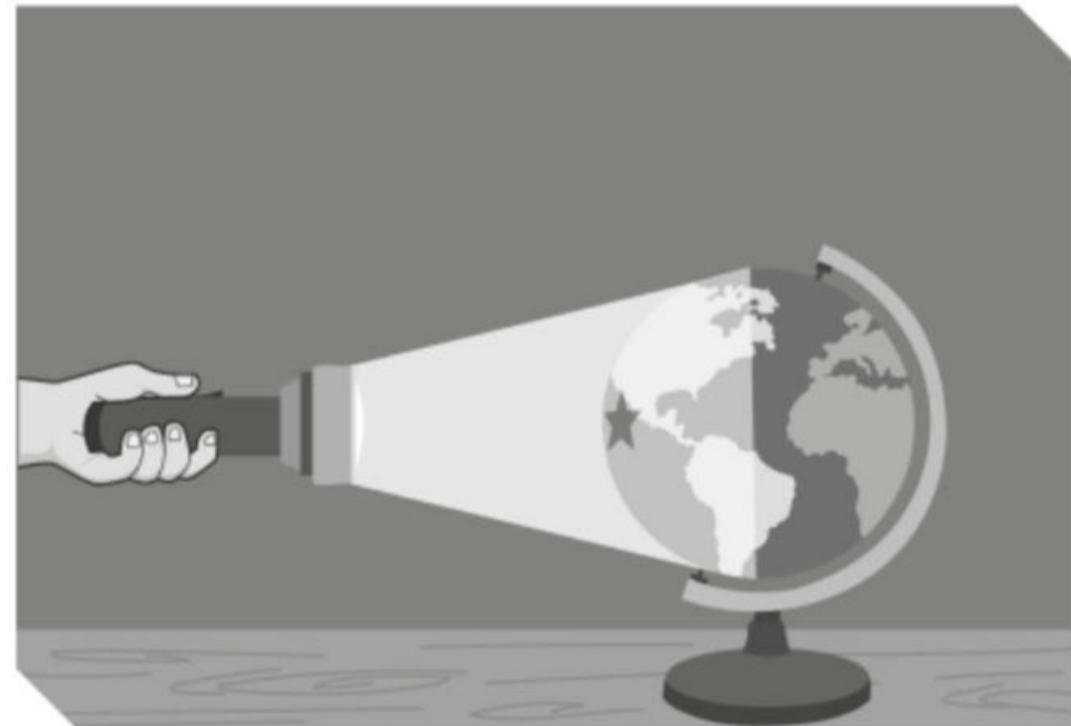
### Skill:

Explain relationships or scale through models

### Materials:

Globe      Sticker      Torch

- 1 Work in pairs.
- 2 Place a globe on a table. Paste a sticker on the globe.
- 3 Switch off the lights in the classroom.
- 4 Hold a torch some distance away from the globe. The globe represents Earth. The torch represents the Sun.
- 5 Shine the light on the globe where the sticker is.

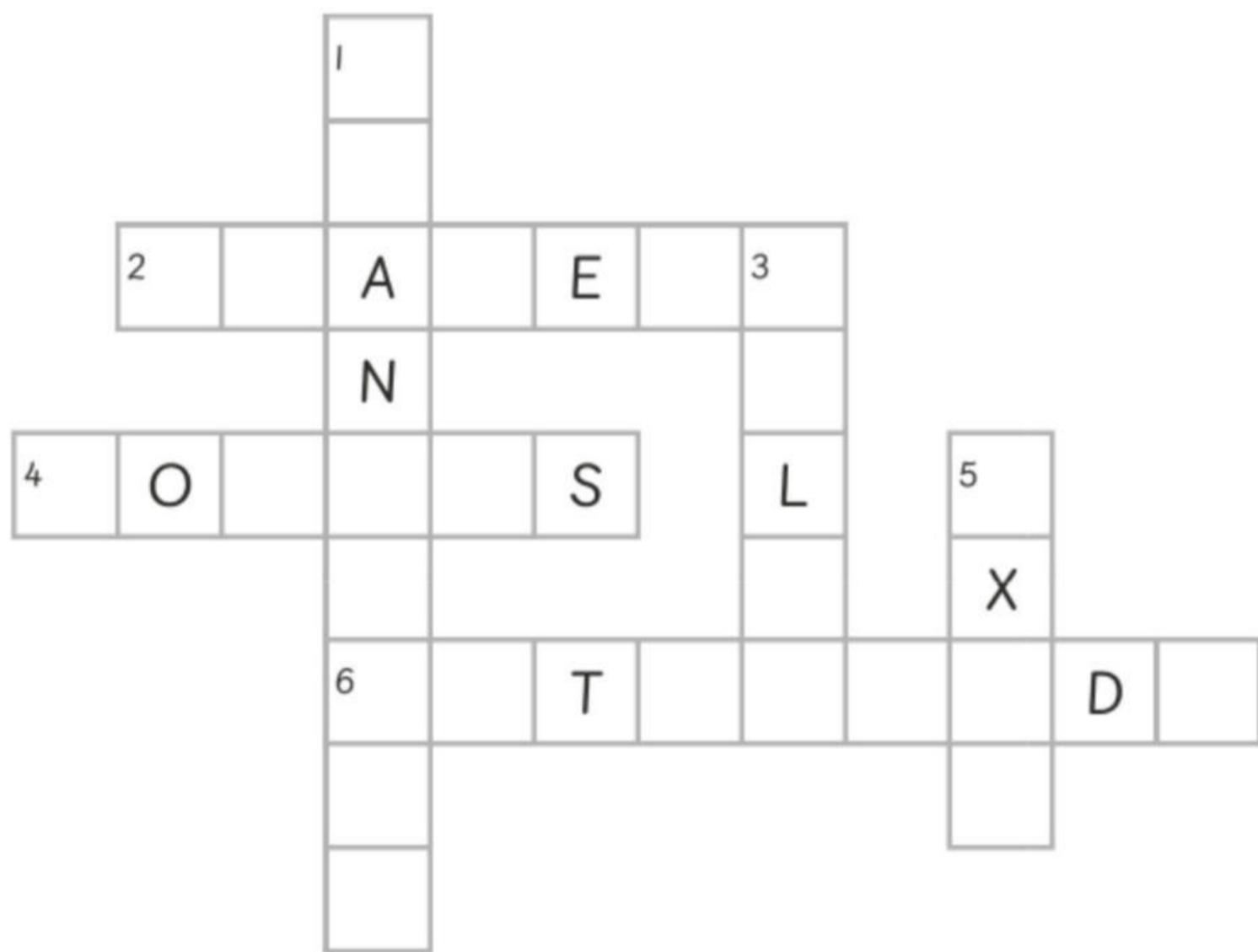


- 6 Is the side of the globe with the sticker bright or dark? Is this part of 'Earth' experiencing day or night?
- 
- 

- 7 Ask your partner to turn the globe slowly. Do this until the sticker is facing away from the torch.
  - 8 Is the side with the sticker bright or dark now? Is this part of 'Earth' experiencing day or night?
- 
-

## Word Whizz

Complete the crossword puzzle using the given clues.



### Across

- 2 Earth is one of the \_\_\_\_\_ in the Solar System.
- 4 \_\_\_\_\_ form long tails when they get closer to the Sun.
- 6 \_\_\_\_\_ are made mostly of rock.

### Down

- 1 There may be stars, planets, asteroids and comets in \_\_\_\_\_ systems.
- 3 In the \_\_\_\_\_ System, all the planets move around the Sun.
- 5 Earth spins on its \_\_\_\_\_, causing day and night.

# Let's Map It!

Fill in the blanks. Use the following words.

asteroids      axis      comets      day      length  
move      night      planets      position      Sun

The Solar System is made up of the \_\_\_\_\_ and objects that move around it.

The eight \_\_\_\_\_ are Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus and Neptune.

\_\_\_\_\_ are small, rocky objects.

\_\_\_\_\_ are lumps of ice, dust and rock.

Earth spins on its \_\_\_\_\_.

We have \_\_\_\_\_ and \_\_\_\_\_ on Earth.

The Sun appears to \_\_\_\_\_ across the sky during the day.

Shadows change in \_\_\_\_\_ and \_\_\_\_\_ during the day.

## Let's Review

- 1 Draw a line to match the description to the correct object in the Solar System.

description	object
all the planets move around it	• asteroids
there are eight of them in the Solar System	• comets
they are balls of ice, dust and rock	• planets
they are rocky objects found between Mars and Jupiter	• the Sun

- 2 The diagram shows a type of movement of Earth.



What is caused by this movement of Earth?

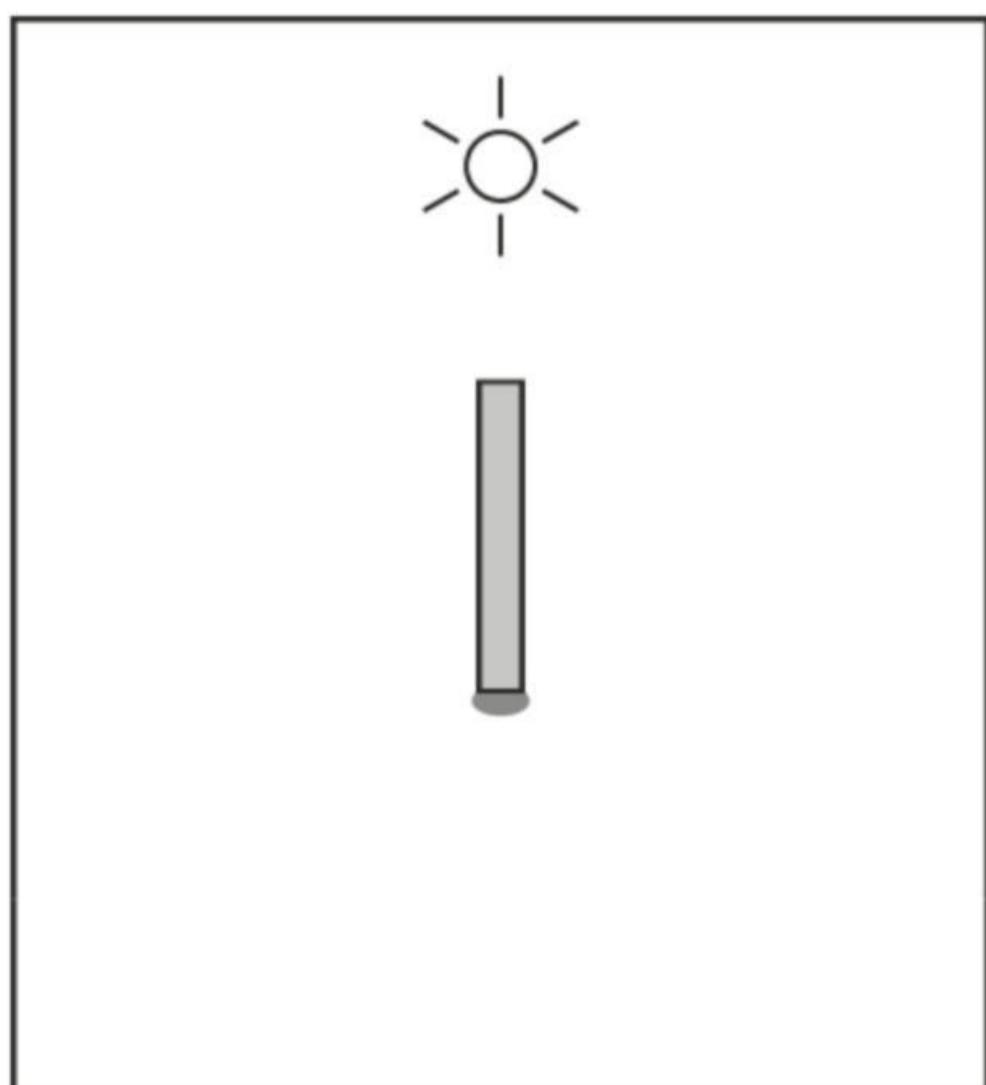
Tick (✓) the two correct answers.

Objects form shadows.

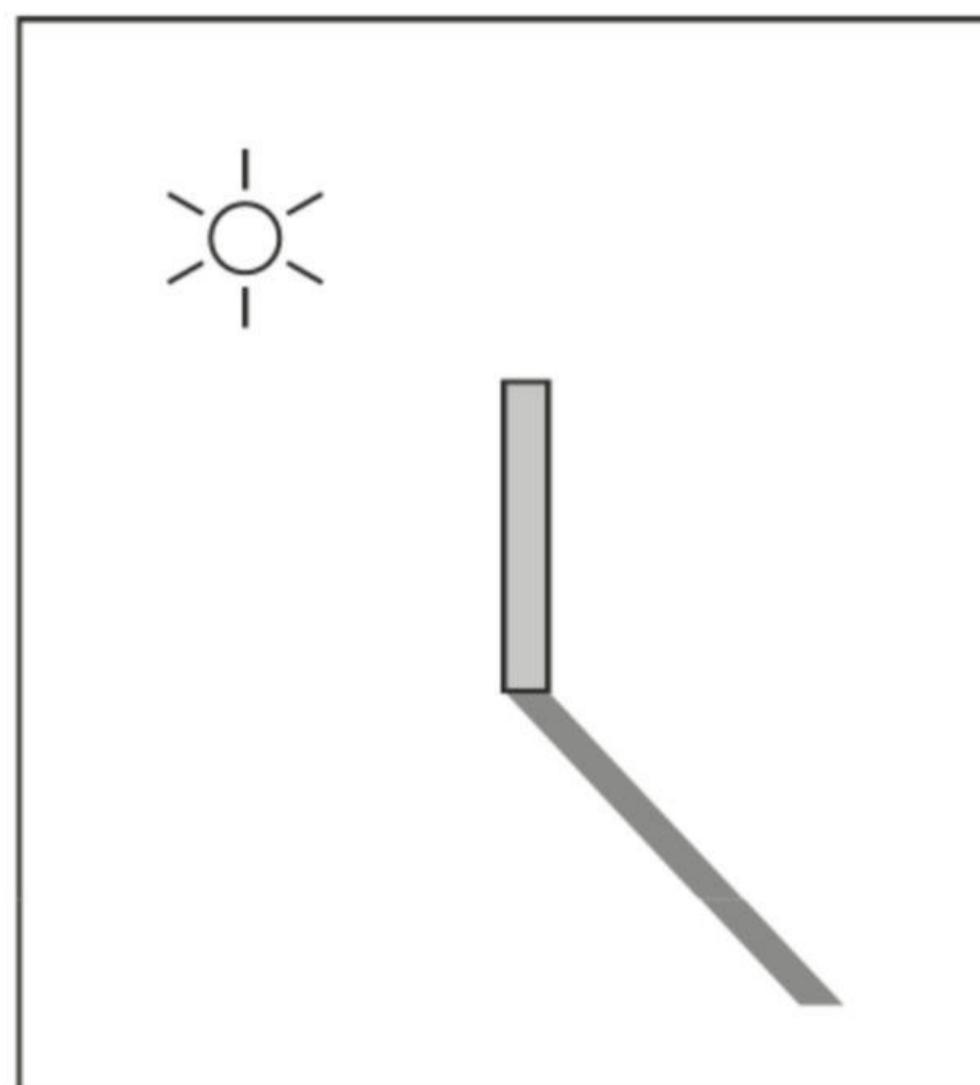
Our shadow under the Sun is the shortest at noon.

Some parts of Earth have day.

- 3 Ahmed observes the shadow of a pole under the Sun at different times of the day.



12 noon



3 o'clock in the afternoon

- a Why does the shadow change in position? Circle the correct answer.

**the pole is moving to a different position each time**

**the Sun is moving all the time**

**the Sun is shining from a different direction each time**

- b Why does the Sun seem to move across the sky during the day?

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## Activity

### 10A

## Layers of the Earth

**Skill:**

Explain scale through models

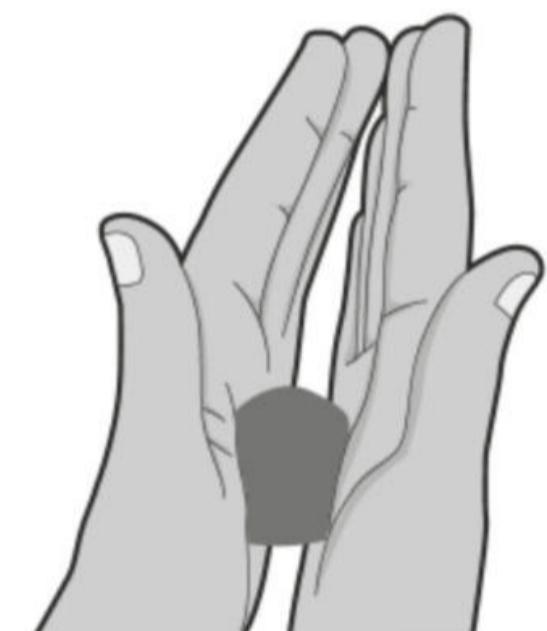
In this activity, you will be using play dough of different colours to create a model to show the different layers of the Earth.

**Materials:**

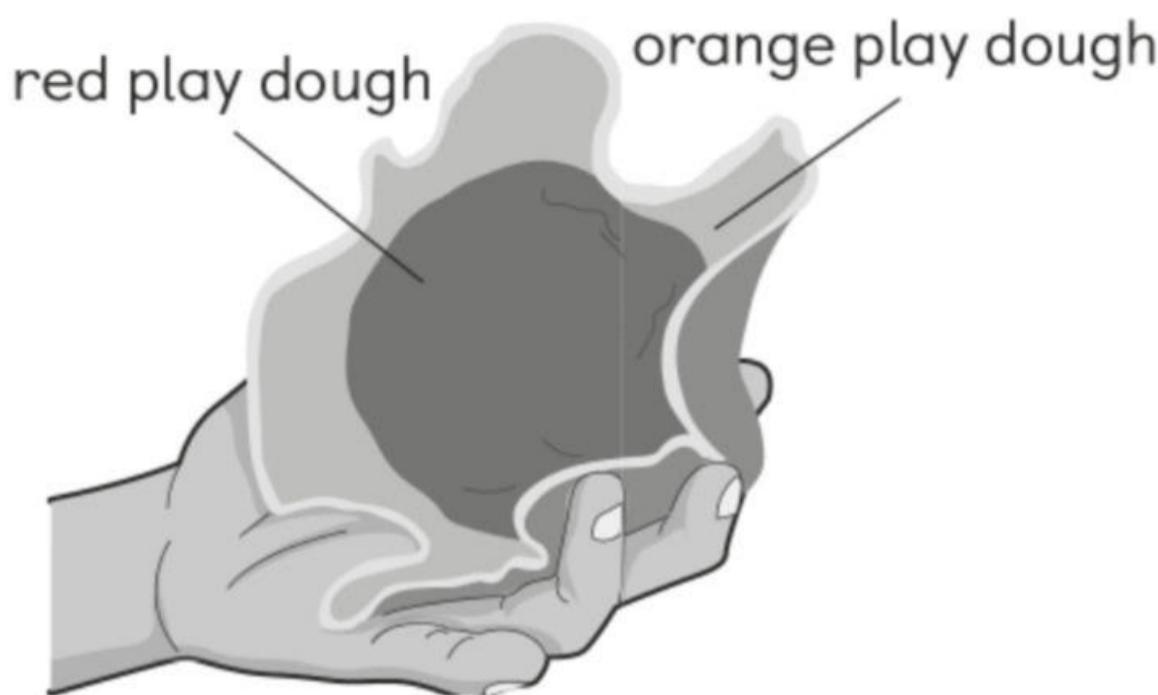
Play dough (red, orange, yellow, brown, blue and green)  
Rolling pin  
Globe  
Scissors  
Fishing line or dental floss

**Method**

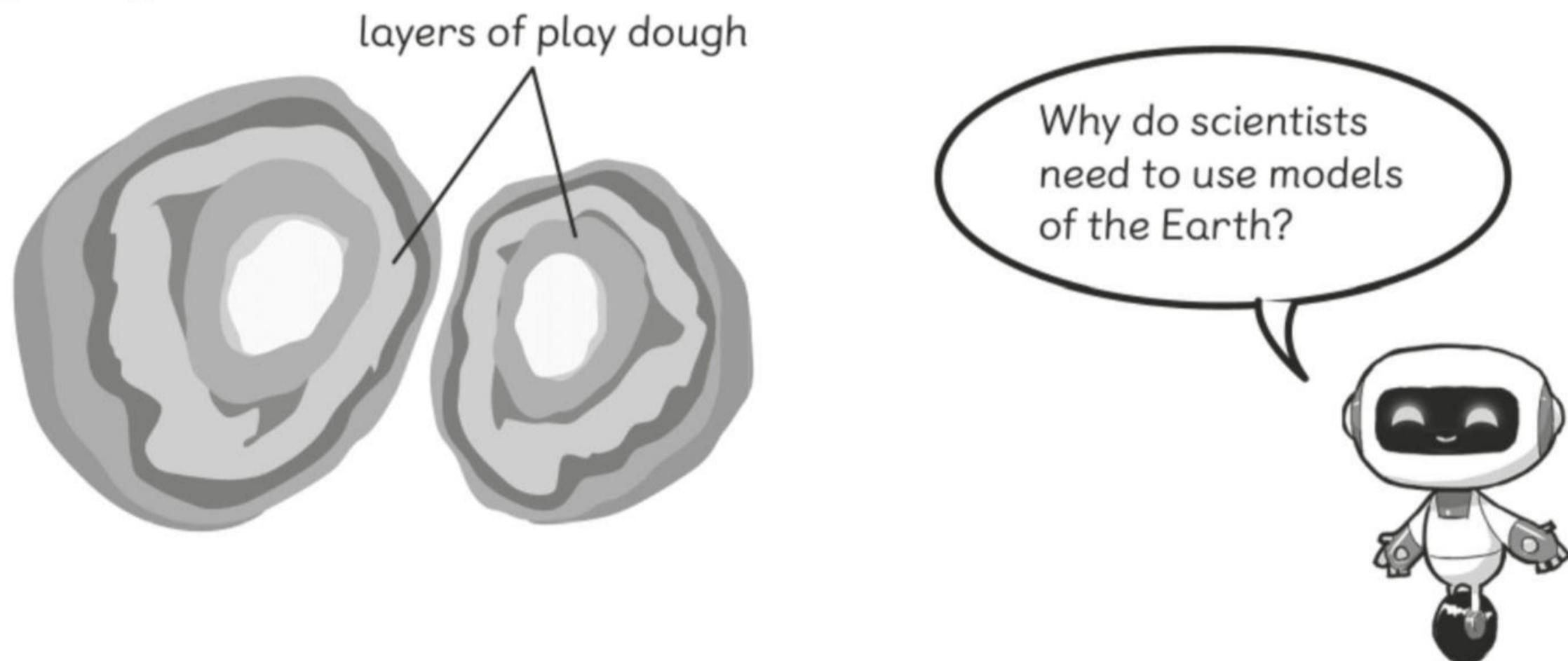
- 1 Roll the red play dough into a small ball.  
This represents the inner core of the Earth.
- 2 Roll a ball of orange play dough that is slightly bigger than the red ball. Use a rolling pin to flatten it.



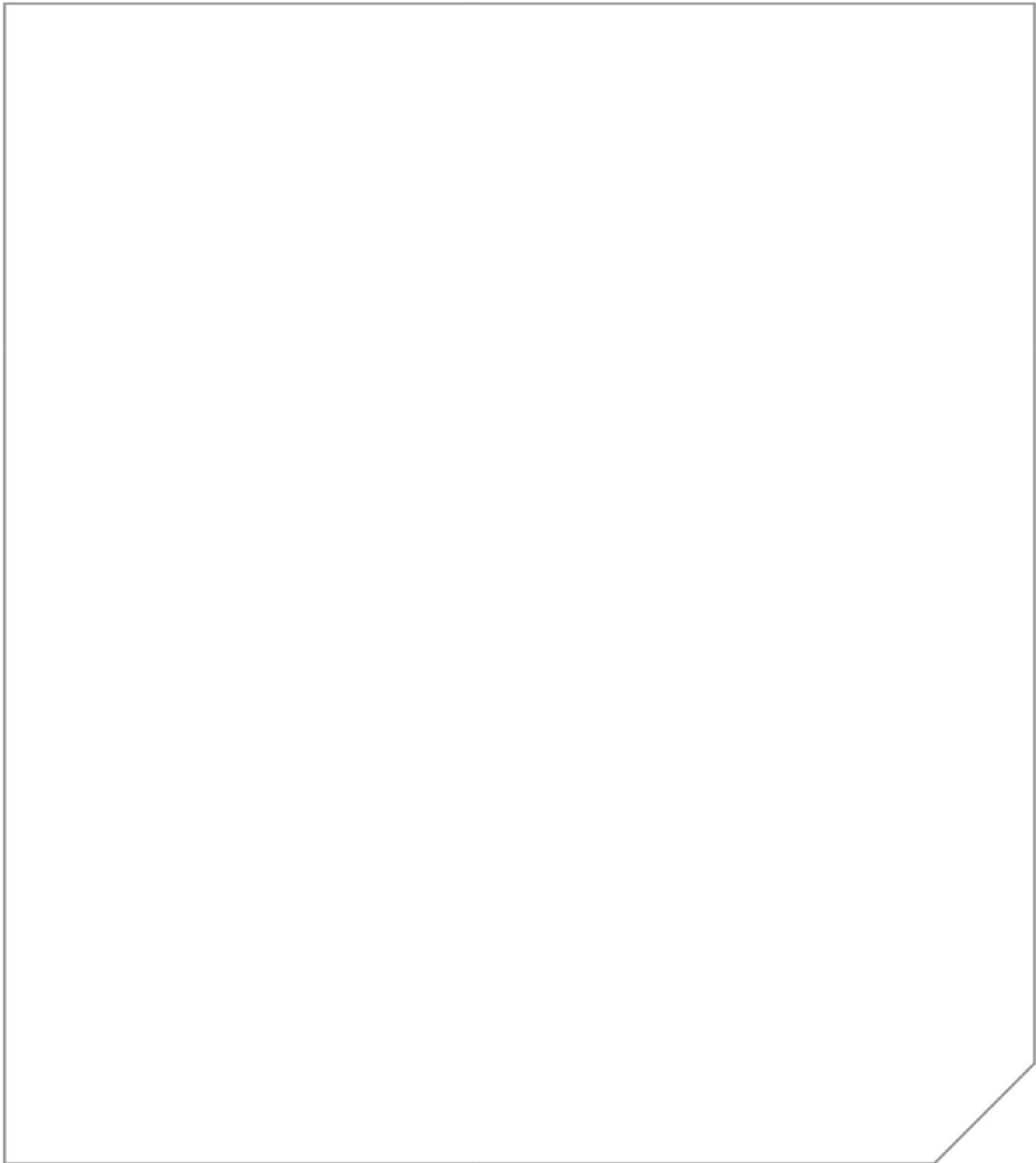
3 Wrap the flattened dough around the red ball to fully cover it.



- 4 Repeat steps 1 and 2 for the next two layers, using yellow play dough followed by brown.
- 5 Roll out the blue play dough and wrap it around the layered ball of play dough.
- 6 Roll out the green play dough. Cut out the shapes of the continents and place them over the blue layer. Continents are the main land masses on the Earth. Use a globe to help you place the continents at the correct places.
- 7 Use a fishing line or a piece of dental floss to slice the ball of layered play dough into half. You should be able to see the different layers of play dough.



- 8 Draw a coloured diagram of your model of the Earth's layers or paste a photograph of your model in the space below. Label the different layers. Which layer or part of the Earth does each colour represent?



red \_\_\_\_\_

orange \_\_\_\_\_

yellow \_\_\_\_\_

brown \_\_\_\_\_

blue \_\_\_\_\_

green \_\_\_\_\_

## Activity 10B The Volcano Model



### Skills:

Explain scale through models, draw a diagram to show a situation, explain why models do not fully represent a situation



### Materials:

Newspaper  
Moist sand  
Tray  
Beaker  
Tablespoon

Baking soda  
Cup  
White vinegar  
Red food colouring

### Method

- 1 Spread the newspapers on the table or on the floor as the experiment will be messy.
- 2 Place the moist sand on the tray. Mould the sand into the shape of a volcano.
- 3 Create a hole in the middle of the mould. Place the beaker inside the hole. The top of the beaker should end where the top of the mould is.
- 4 Put three tablespoons of baking soda into the beaker.

- 5 Mix half a cup of vinegar with one to two drops of red food colouring.
- 6 Gently pour the mixture of vinegar and red food colouring into the beaker of baking soda.
- 7 What you have just observed is a mini volcano eruption! Draw a labelled diagram of the volcano in the space below to record your observations.

If your experiment doesn't work, don't give up. Be positive and keep trying!



- 8 Explain how your model does not fully represent how a volcanic eruption happens in the real world.

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## Activity 10C It's an Earthquake!



### Skills:

Explain relationships or scale through models, explain why models do not fully represent a situation, create tables and diagrams to show observations, discuss the positive effects of science and technology on the environment where I live

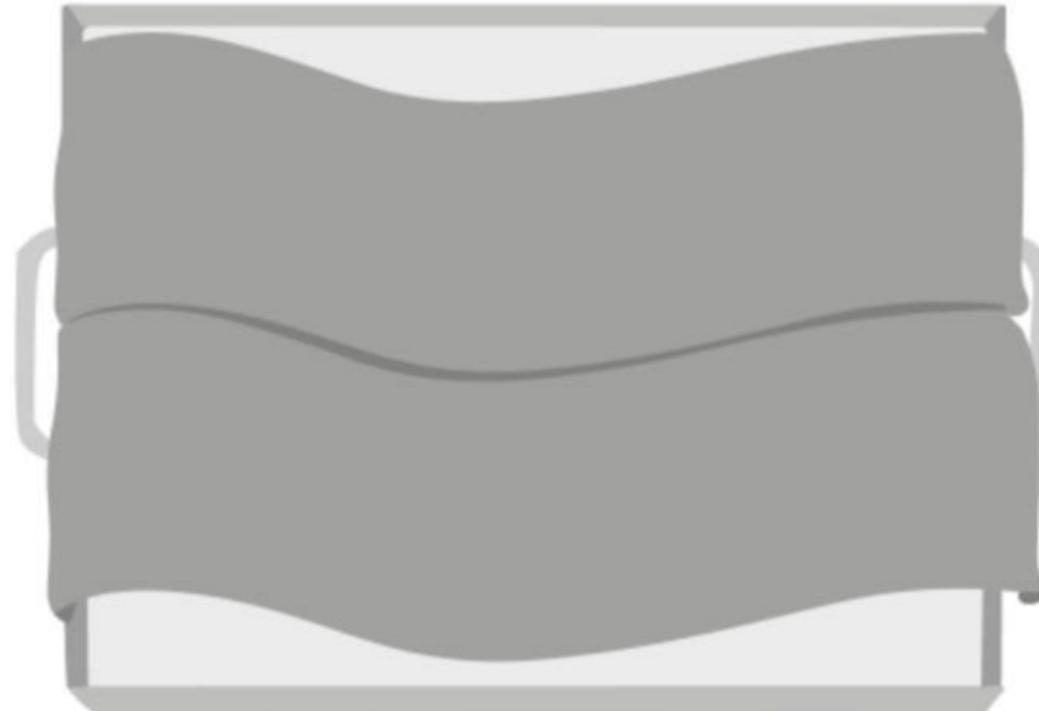
### Materials:

Two strips of cloth	Soil
Tray	Building blocks

### Method

1 Work in pairs.

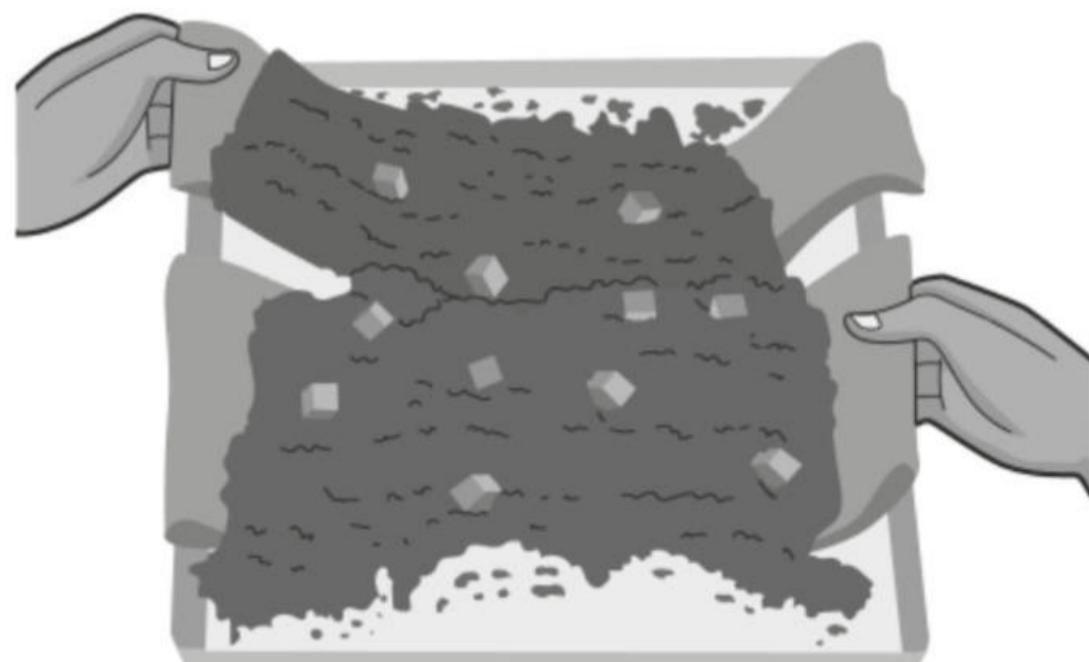
2 Place the two strips of cloth along the length of the tray, one on each side. Ensure that the cloth is hanging over the sides of the tray. The strips of cloth need to be touching each other, with almost no gap between them. They represent the tectonic plates.

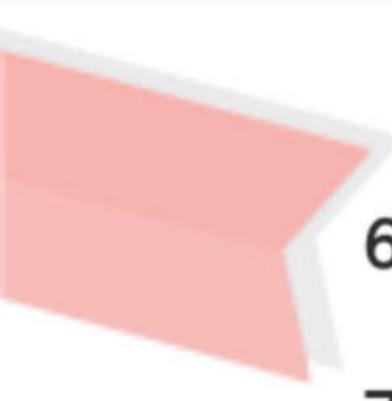


3 Place about 2-cm deep soil on top of the strips.

4 Create your own town by placing the building blocks on the soil.

5 Get your partner to hold onto one side of a strip while you hold onto the other side of the other strip. Slide the strips in opposite directions to each other. Observe what happens to the building blocks.



- 
- 6 Repeat the previous step, this time using a greater force.
  - 7 Compare your observation of the building blocks in the first and second attempts.
  - 8 Record your observations below.

	What happened?	Why do you think this happened?
Attempt 1		
Attempt 2		

- 9 The model you have created does not fully represent the effects of an earthquake in the real world.

Write down two effects of an earthquake on the people living in that area.

---

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- 10 In pairs, discuss how science and technology can help to lessen the two effects you have written in step 9.

## Word Whizz

Unscramble the words below and write the answers in the blanks. Use the clues to help you.

- 1 The outer layer of the Earth is called the \_\_\_\_\_.

t c u r s

- 2 An \_\_\_\_\_ occurs when the tectonic plates move.

q a a k e h t r e u

- 3 Hot liquid rock found that comes out of a volcano is known as \_\_\_\_\_.

a v a l

- 4 The layer between the core and the crust is called the \_\_\_\_\_.

n t a l e m

- 5 Melted volcanic rock is known as \_\_\_\_\_.

a m g a m

- 6 The deepest layer of the Earth is called the \_\_\_\_\_ core.

n n i r e

- 7 A \_\_\_\_\_ is a mountain with an opening for magma to escape.

o o l v a n c

- 8 The Earth's crust is made up of pieces called tectonic \_\_\_\_\_.

s e t p l a

# Let's Map It!

Fill in the blanks. Use the following words.

ash cloud    crust    damage    earthquake  
eruption    inner core    mantle    outer core  
tectonic plates    vent    volcano

is made up of four layers

The \_\_\_\_\_ is the outermost and thinnest layer.

The \_\_\_\_\_ is the layer between the crust and the core.

The \_\_\_\_\_ is made of melted metals like iron and nickel.

The \_\_\_\_\_ is the deepest layer of the Earth's structure.

The Earth

activities that can take place on the Earth

An \_\_\_\_\_ is the sudden movement of the Earth's surface, caused when the \_\_\_\_\_

on the Earth's crust start to move.

It can cause \_\_\_\_\_ to buildings and homes.

A \_\_\_\_\_ is an opening on the surface of the Earth.

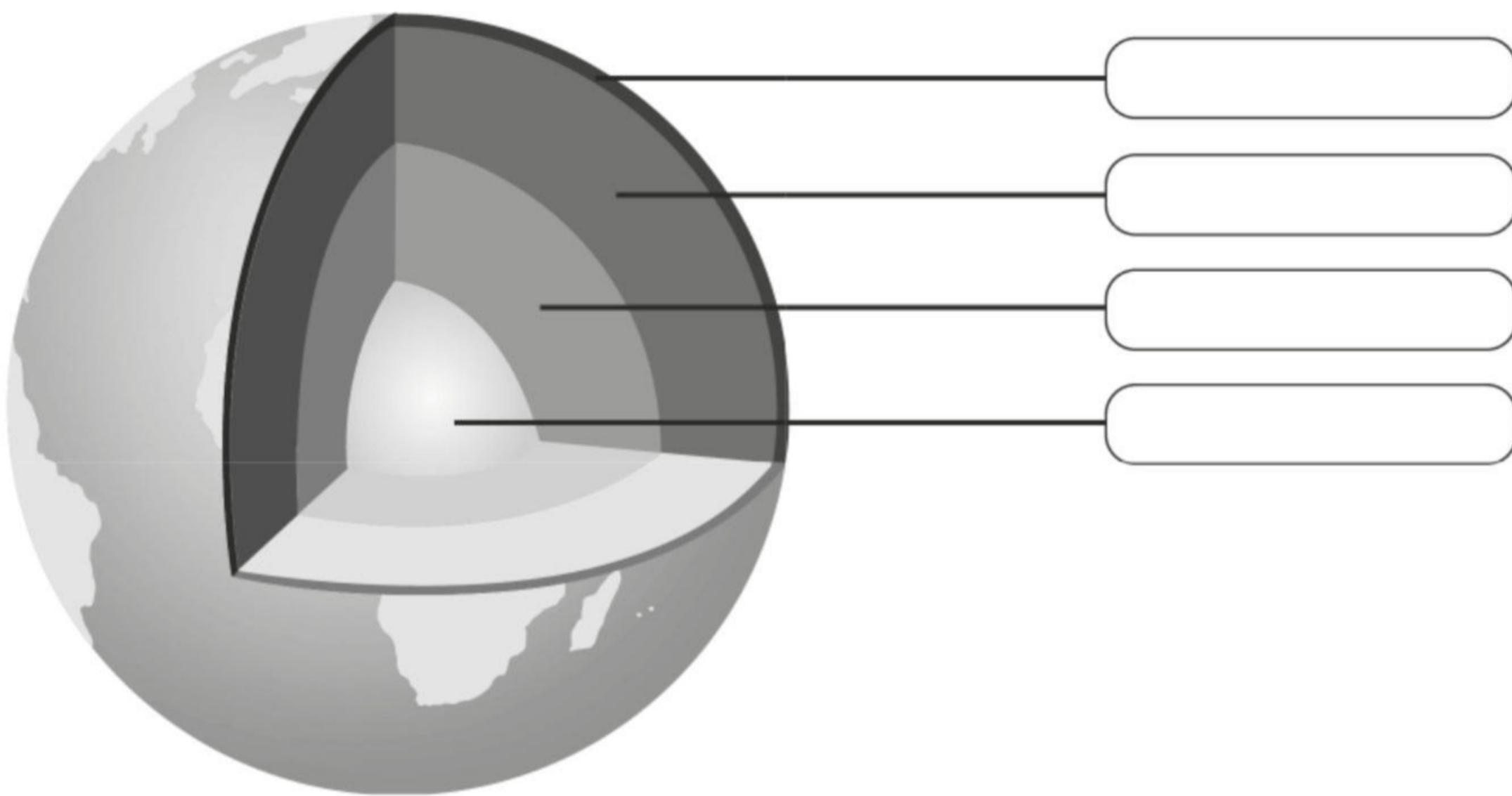
During an \_\_\_\_\_, magma shoots out of the volcano through a \_\_\_\_\_.

An \_\_\_\_\_ is formed when dissolved gases in magma escape into the atmosphere.

## Let's Review

1 The diagram below shows the layers of the Earth.

a Label the layers.



b Which layer of the Earth has the highest temperature?

---

2 Magma leaves the volcano through a \_\_\_\_\_.

Tick (✓) the correct answer.

core

magma chamber

rock

vent

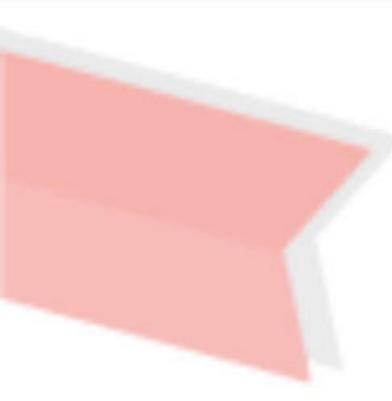
3 Match each word to the correct definition.

word	definition
earthquake	• a mountain with an opening through which lava flows
volcano	• the outer layer of the Earth
crust	• a sudden violent movement of the Earth's surface
magma	• hot liquid rock found just below the Earth's surface

# Acknowledgements

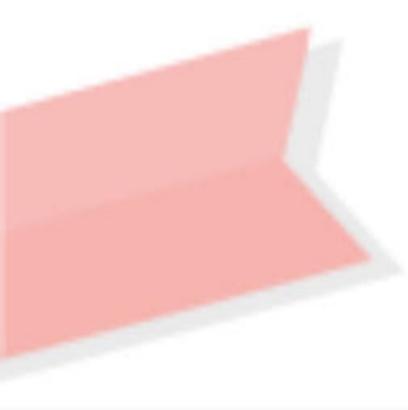
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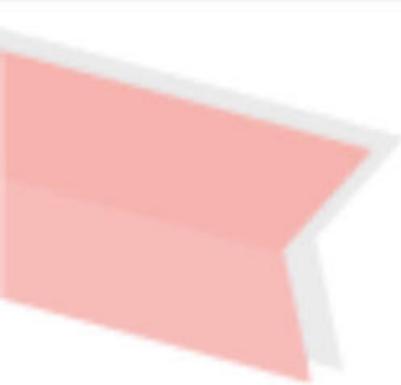


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