

# CAMBRIDGE PRIMARY **Science**

## Skills Builder

# 2

**Jon Board and Alan Cross**



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UNIVERSITY PRESS

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# Introduction

This series of primary science activity books complements *Cambridge Primary Science* and promotes, through practice, learner confidence and depth of knowledge in the skills of scientific enquiry (SE) and key scientific vocabulary and concepts. These activity books will:

- enhance and extend learners' scientific knowledge and facts
- promote scientific enquiry skills and learning in order to think like a scientist
- advance each learner's knowledge and use of scientific vocabulary and concepts in their correct context.

The *Skills Builder* activity books consolidate core topics that learners have *already* covered in the classroom, providing those learners with that extra reinforcement of SE skills, vocabulary topic knowledge and understanding. They have been written with a focus on scientific literacy with ESL/EAL learners in mind.

## How to use the activity books

These activity books have been designed for use by individual learners, either in the classroom or at home. As teachers and as parents, you can decide how and when they are used by your learner to best improve their progress. The *Skills Builder* activity books target specific topics (lessons) from Grades 1–6 from all the units covered in *Cambridge Primary Science*. This targeted approach has been carefully designed to consolidate topics where help is most needed.

## How to use the units

### Unit introduction

Each unit starts with an introduction for you as the teacher or parent. It clearly sets out which topics are covered in the unit and the learning objectives of the activities in each section. This is where you can work with learners to select all, most or just one of the sections according to individual needs.

The introduction also provides advice and tips on how best to support the learner in the skills of scientific enquiry and in the practice of key scientific vocabulary.

At this grade, it is very likely the learners are still learning to read, so teacher/parent may need to explain these verbally.

## Sections

Each section matches a corresponding lesson in the main series. Sections contain write-in activities that are supported by:

- Key words – key vocabulary for the topic, also highlighted in bold in the sections
- Key facts – a short fact to support the activities where relevant
- Look and learn – where needed, activities are supported with scientific exemplars for extra support of how to treat a concept or scientific method
- Remember – tips for the learner to steer them in the right direction.

## How to approach the write-in activities

Teachers and parents are advised to provide students with a blank A5 notebook at the start of each grade for learners to use alongside these activity books. Most activities will provide enough space for the answers required. However, some learner responses – especially to enquiry-type questions – may require more space for notes. Keeping notes and plans models how scientists work and encourages learners to explore and record their thinking, leaving the activity books for the final, more focused answers.

## Think about it questions

Each unit also contains some questions for discussion at home with parents, or at school. Although learners will record the outcomes of their discussions in the activity book, these questions are intended to encourage the students to think more deeply.

## Self-assessment

Each section in the unit ends with a self-assessment opportunity for learners: empty circles with short learning statements. Teachers or parents can ask learners to complete the circles in a number of ways, depending on their age and preference, e.g. with faces, traffic light colours or numbers. The completed self-assessments provide teachers with a clearer understanding of how best to progress and support individual learners.

## Glossary of key words and concepts

At the end of each activity book there is a glossary of key scientific words and concepts arranged by unit. Learners are regularly reminded to practise saying these words out loud and in sentences to improve communication skills in scientific literacy.

# 1 Going outside

## What learners will practise and reinforce

The activities in this Skills Builder unit give learners further practice in the following topics in the Learner's Book and Activity Book:

Topic	In this topic, learners will:
1.1 Different places to live	collect evidence and present it in a Venn diagram
1.2 Can we care for our environment?	consider why we should look after the environment
1.3 Our weather	practise using weather vocabulary
1.4 Extreme weather	see Challenge, Section 1.4

## Help your learner

In this unit, learners will practise making comparisons (Sections 1.1, 1.2 and 1.3), identifying patterns (Section 1.1), using simple information sources (Sections 1.1 and 1.3) and making and recording observations (Sections 1.1 and 1.3). To help them:

- 1 In Section 1.2, encourage learners to use first-hand experience to talk about environments they have visited that were not well looked after. Ask them to say how the damage to the environment made them feel.
- 2 In Section 1.3, learners could make regular observations of the weather. They could make weather cards to display on a poster to show what the weather is doing each day.

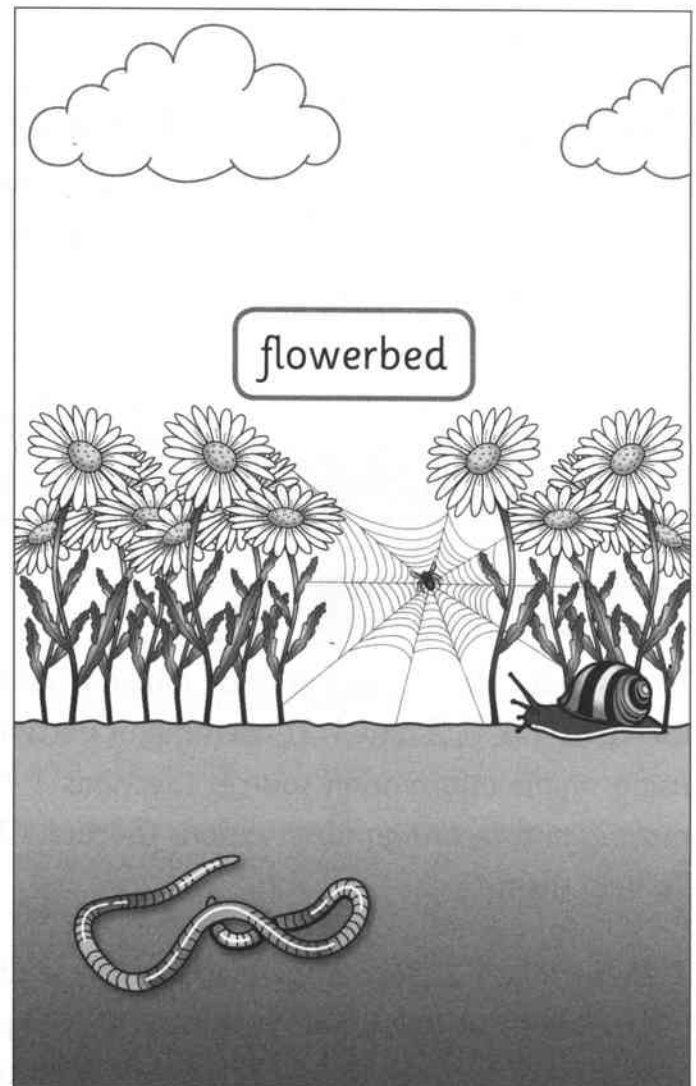
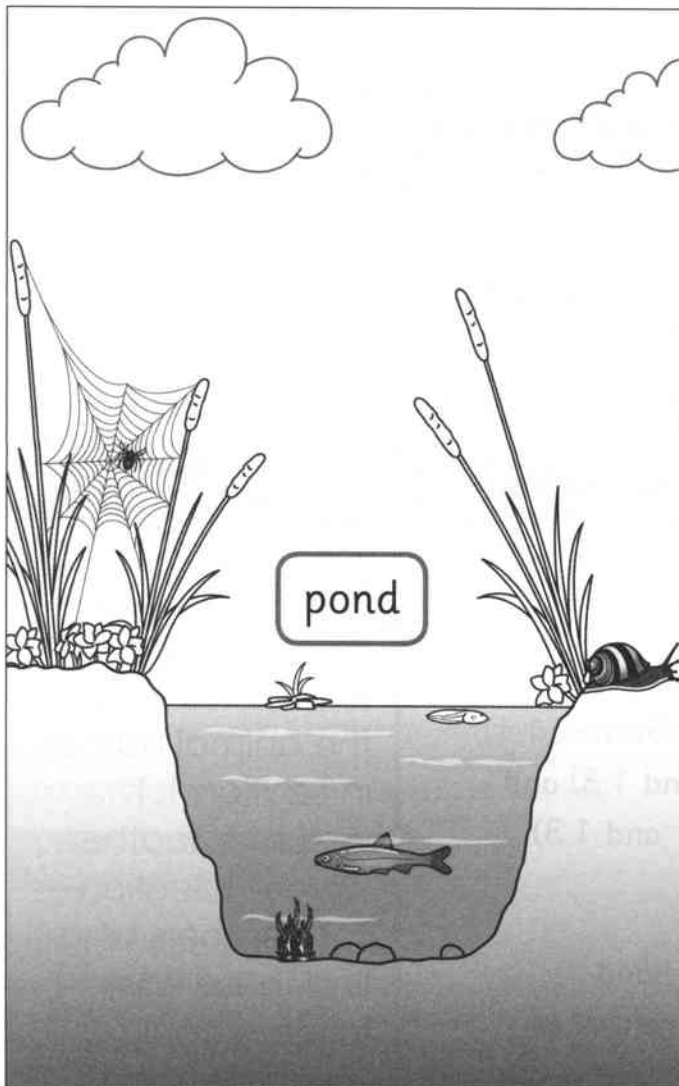
**!** Help learners to practise using the animal names in Section 1.1 and the weather words in Section 1.3. Learners who find these easy to learn could be challenged to learn more weather words and animal names.

## 1.1 Different places to live

different, environment,  
Venn diagram

### Sorting animals

**1** Look at the animals in these two different environments.



**2** Draw the animals in the right place in the Venn diagram.

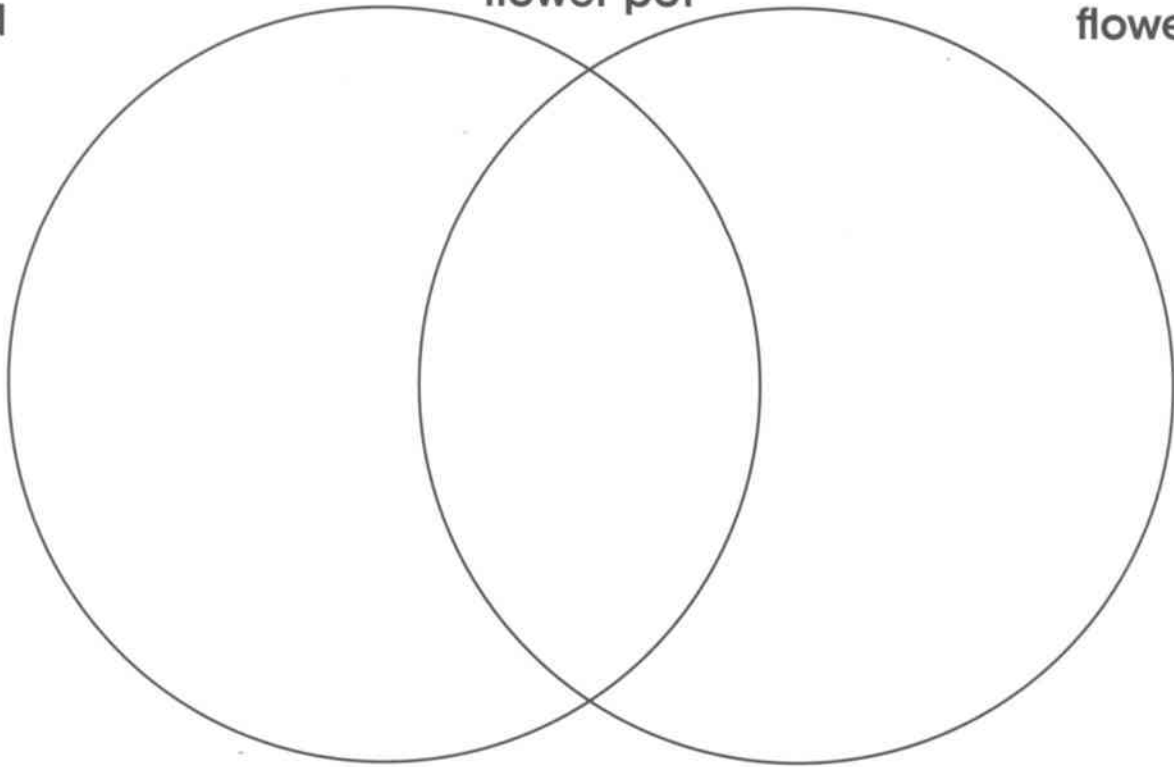
#### Remember:

Animals that live in both environments go in the middle of the Venn diagram.




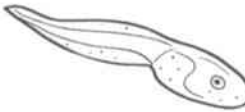

pond

pond and  
flower pot

flower pot



**3** Use the key below to help you label each animal.

				
snail	spider	worm	tadpole	fish

**4 Think about it!**

Why can't a fish live in a flower pot?

---

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**CHECK YOUR LEARNING**

- ☐ I can compare different environments.
- ☐ I can use a Venn diagram to sort things.



## 1.2 Can we care for our environment?

litter

### A better environment

Sometimes people do not look after the environment.

**1** Cross out the litter and the damage to this environment.



### **2** Think about it!

Why is litter bad for animals?



Now look at the environment. People are looking after it.

**3** Colour in the picture.



### CHECK YOUR LEARNING







☐ I know different ways to look after the environment.

### 1.3 Our weather

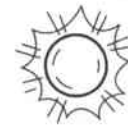
temperature, hot, warm, cold, sunny, rainy, cloudy, snowy, windy, stormy

**What is the weather like today?**

- 1** Look at the table below. What is the weather in each picture?
- 2** What is the temperature? Hot, warm or cold?

	Weather	Temperature
	snowy	cold
		
		
		
		
		

#### LOOK AND LEARN



sunny



rainy



cloudy



snowy



windy



stormy

#### CHECK YOUR LEARNING

☐ I can say what the weather is like.

# 2 Looking at rocks

## What learners will practise and reinforce

The activities in this Skills Builder unit give learners further practice in the following topics in the Learner's Book and Activity Book:

Topic	In this topic, learners will:
2.1 What are rocks?	observe rocks and sort them into groups
2.2 Uses of rocks	test the hardness of rocks and decide which is best for making steps
2.3 Soil	observe small differences in a soil sample
2.4 Other natural materials	learn about natural and man-made materials

## Help your learner

In this unit, learners will practise making observations to answer a science question (Sections 2.1, 2.2 and 2.3), making comparisons (Sections 2.1, 2.2 and 2.4) and keeping a test fair (Section 2.2). To help them:

- 1 To help learners understand the need for a fair test in Section 2.2, talk with them about how the test could be unfair for the rocks. Pretend to scratch one rock with great force and another very lightly. Ask learners to say what you are doing wrong.
- 2 For Section 2.3, learners could collect their own soil from a garden. Most learners will enjoy digging a small hole to see what they can find. Talk with them about what they expect to see before they start to dig.

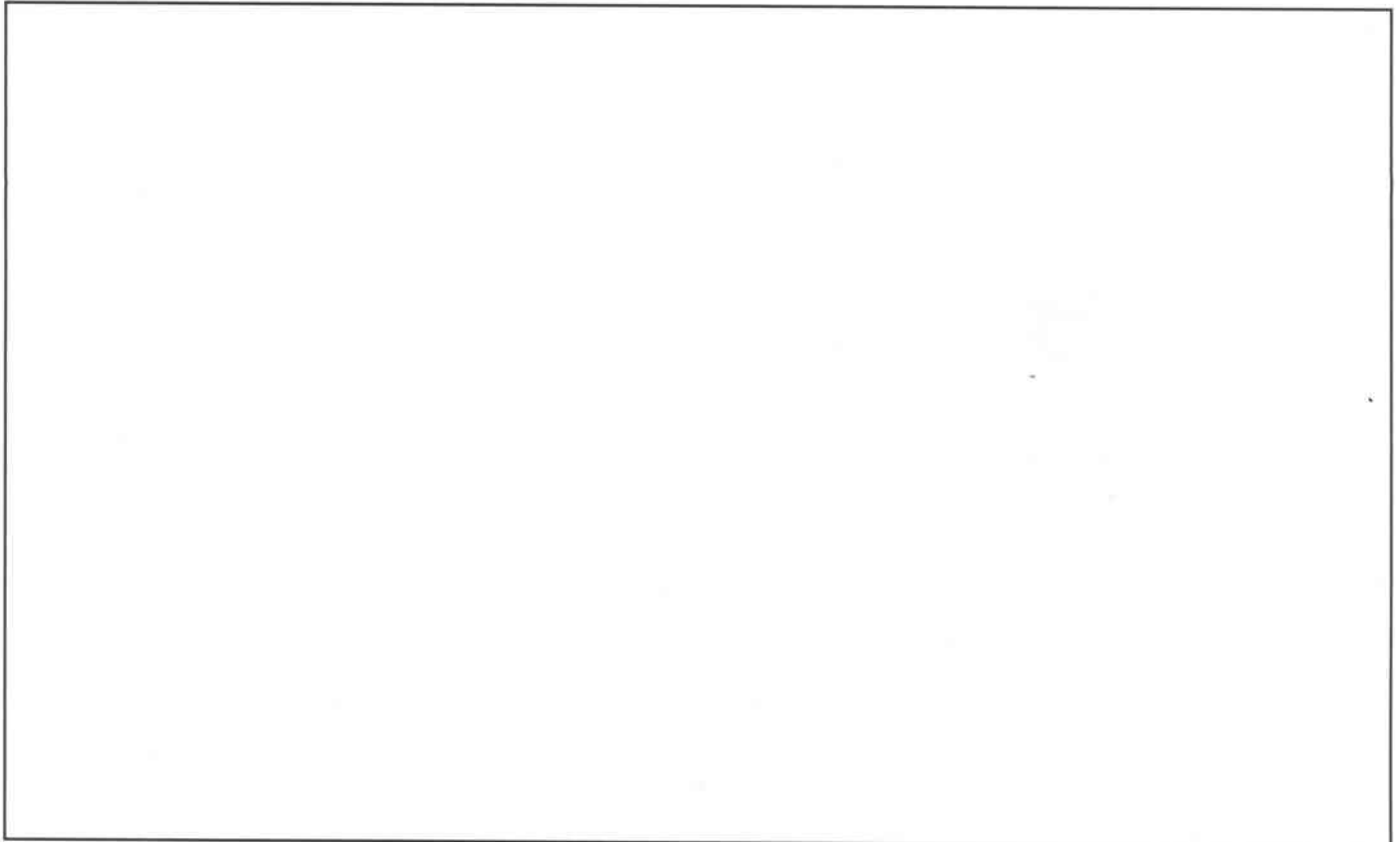
## TEACHING TIP

Encourage learners to start a collection of rocks they find themselves. Ask them which their favourite is. Some learners will enjoy turning their favourite rock into a 'pet rock' by gluing on eyes or other features drawn on paper.

## 2.1 What are rocks?

### Sorting rocks

- 1 Collect 8–10 small rocks from outside. Wash and dry them.
- 2 Look carefully at the colour and shape of the rocks.
- 3 Put the rocks into groups that look the same. Give each group a name.
- 4 Draw your rock groups in this box.



### CHECK YOUR LEARNING

- ☐ I can observe rocks carefully.
- ☐ I can sort rocks into groups.

## 2.2 Uses of rocks

hardest, fair, force, scratch

### Which rock is hardest?

*You will need three different rocks and a coin.*

Kai is testing rocks to find out which is the **hardest**.



- 1** You are going to do the same test. What will you do to make the test **fair**?

Use the same **force** for each rock.

Use a different force for each rock.

Use the same coin for each rock.

Use a different coin for each rock.

☐☐☐☐

- 2** Test your rocks and fill in the table. Use some of these words:

no scratch      very small scratch      small scratch  
large scratch      very large scratch

	Rock 1	Rock 2	Rock 3
Is there a <b>scratch</b> on the rock?	<hr/> <hr/>	<hr/> <hr/>	<hr/> <hr/>



## Think about it!

Steps need to be made from hard stone.

- 3 Which of your rocks would be the best for steps?

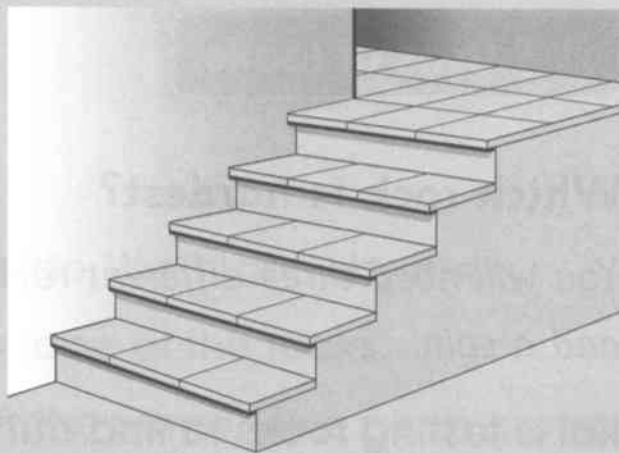
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- 4 Why?

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## CHECK YOUR LEARNING

- ☐ I can use a fair test to compare rocks.

## 2.3 Soil

soil, living, died, air

### What is soil?

You will need some **soil**, a magnifying glass and white paper.

- 1 Put the soil on the paper.
- 2 What can you find? Draw some of the things you find here.

Living things	Things that have died	Small rocks

### 3 Think about it!

Some animals live in soil. Do you think there is **air** in soil?

yes ☐ no ☐

 Wash your hands after touching soil.

### CHECK YOUR LEARNING

☐ I can look carefully to see small differences in soil.



## 2.4 Other natural materials

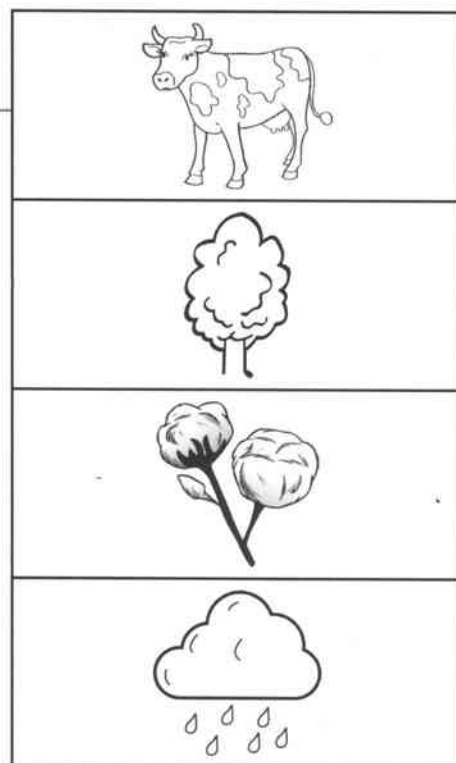
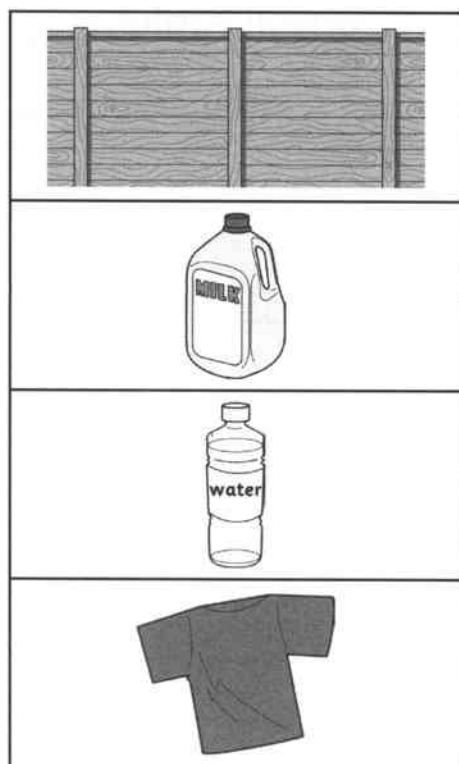
natural, man-made,  
cotton, wood, milk

Where do natural materials  
come from?

**1** Match these **natural**  
materials with where they  
come from.

### LOOK AND LEARN

Natural materials come from nature.  
They are not made by people.



**2** **Think about it!**

Paper is not a natural material. People make paper from wood.  
Write three other **man-made** materials here.

\_\_\_\_\_

### CHECK YOUR LEARNING

☐ I know that some materials are natural and some are man-made.

# 3 Changing materials

## What learners will practise and reinforce

The activities in this Skills Builder unit give learners further practice in the following topics in the Learner's Book and Activity Book:

Topic	In this topic, learners will:
3.1 Materials changing shape	see Challenge, Section 3.1
3.2 Bending and twisting	investigate materials that bend or twist
3.3 Fantastic elastic	sort materials by whether they are elastic or not
3.4 Heating and cooling	observe that solids melt to form liquids
3.5 Why is the sea salty?	explain what happened in an investigation


## Help your learner

In this unit, learners will practise making and recording observations (Section 3.2). They will also practise making predictions (Section 3.3) and comparisons (Section 3.4), and explaining what happened (Section 3.5). To help them:

- 1 Make up an action for the key words 'bend', 'twist', 'stretch' and 'squash'. Learners could then play a game such as 'Simon Says' to practise using the words and the actions.
- 2 Help learners to investigate other melting solids. Help them to safely melt butter or chocolate in a saucepan or in a microwave.

## TEACHING TIP

There are many opportunities to watch materials change when heated or cooled in the kitchen. If possible, help learners to do some simple cooking. Talk with them about the changes they see.

 Help learners to stay safe near cooking equipment.

## 3.2 Bending and twisting

bend, twist

### Materials that bend and twist

*You will need a sheet of paper, a metal paper clip, a cotton T-shirt, a metal coin and a plastic ruler.*

- 1 Try to **bend and twist** each object.
- 2 Fill in the table. One has been started for you.

Object	Material	Bend	Twist
sheet of paper	paper	✓	✓

#### KEY FACT

Look at your results. Most materials that can bend can also twist.

### 3 Think about it!

In what way would clothes made from metal change the way you move?

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#### CHECK YOUR LEARNING

- ☐ I can record my observations in a table.
- ☐ I know that some materials can bend or twist.

### 3.3 Fantastic elastic

elastic, stretch, squash





## Testing elastic materials

You will need a sponge, a sheet of paper, a rubber band, a paper clip and three other objects.

### LOOK AND LEARN

**Elastic** materials go back into shape after being bent, **stretched**, **squashed** or twisted.

### 1 Do you think these materials are elastic?

			
sponge	paper	rubber band	paper clip
elastic <input type="checkbox"/>	elastic <input type="checkbox"/>	elastic <input type="checkbox"/>	elastic <input type="checkbox"/>
not elastic <input type="checkbox"/>	not elastic <input type="checkbox"/>	not elastic <input type="checkbox"/>	not elastic <input type="checkbox"/>

### 2 Try to bend, stretch, squash or twist the objects. If they go back into shape, they are elastic. Were you right?

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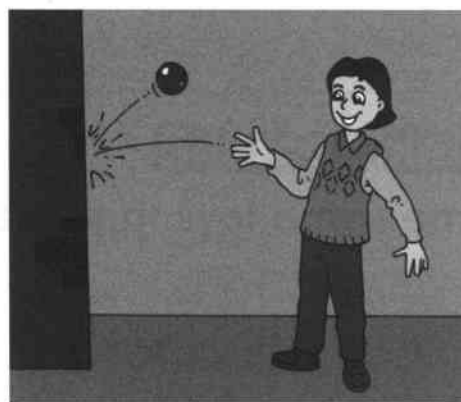
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### KEY FACT

Rubber is an elastic material. It makes this rubber ball bounce.



**3** Now find and test three other objects.

**4** Draw each object in the table. Write the material each is made from.

Elastic	Not elastic
 <p>rubber</p>	

**5 Think about it!**

Name some toys that use elastic materials.

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### **CHECK YOUR LEARNING**

☐ I can test materials to find out if they are elastic.

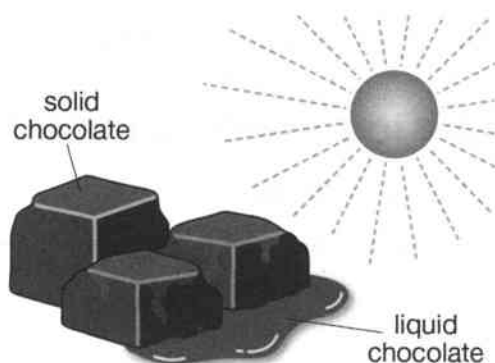
### 3.4 Heating and cooling

heat, solid, melt, liquid, ice

#### LOOK AND LEARN

We can use **heat** to make a **solid** material **melt** into a **liquid**.

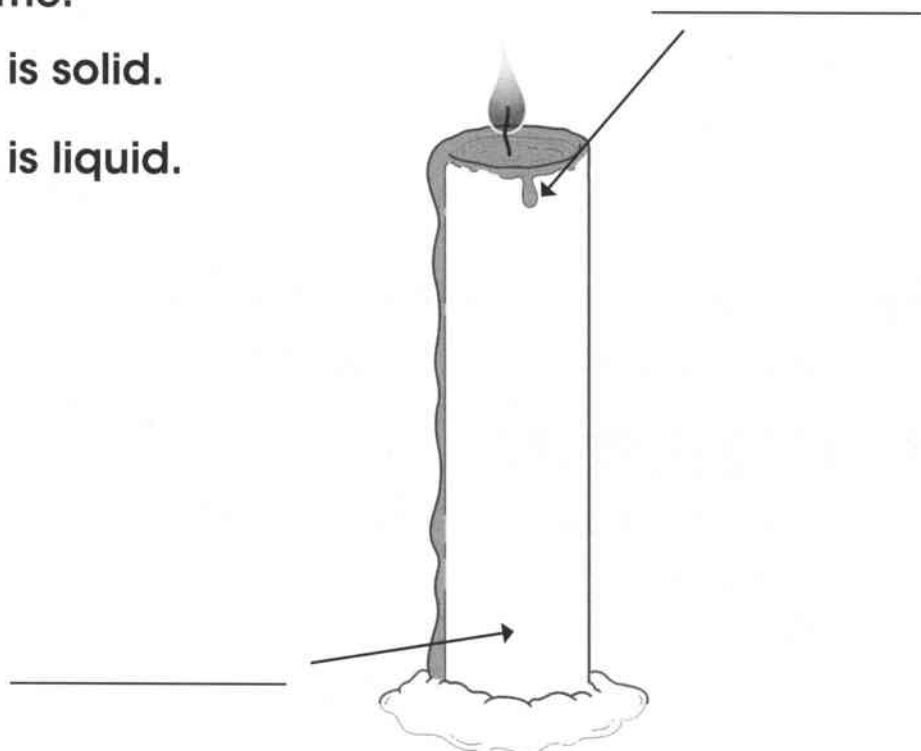
This chocolate is melting in the Sun.



#### A melting candle

This wax candle is melting when it gets close to the flame.

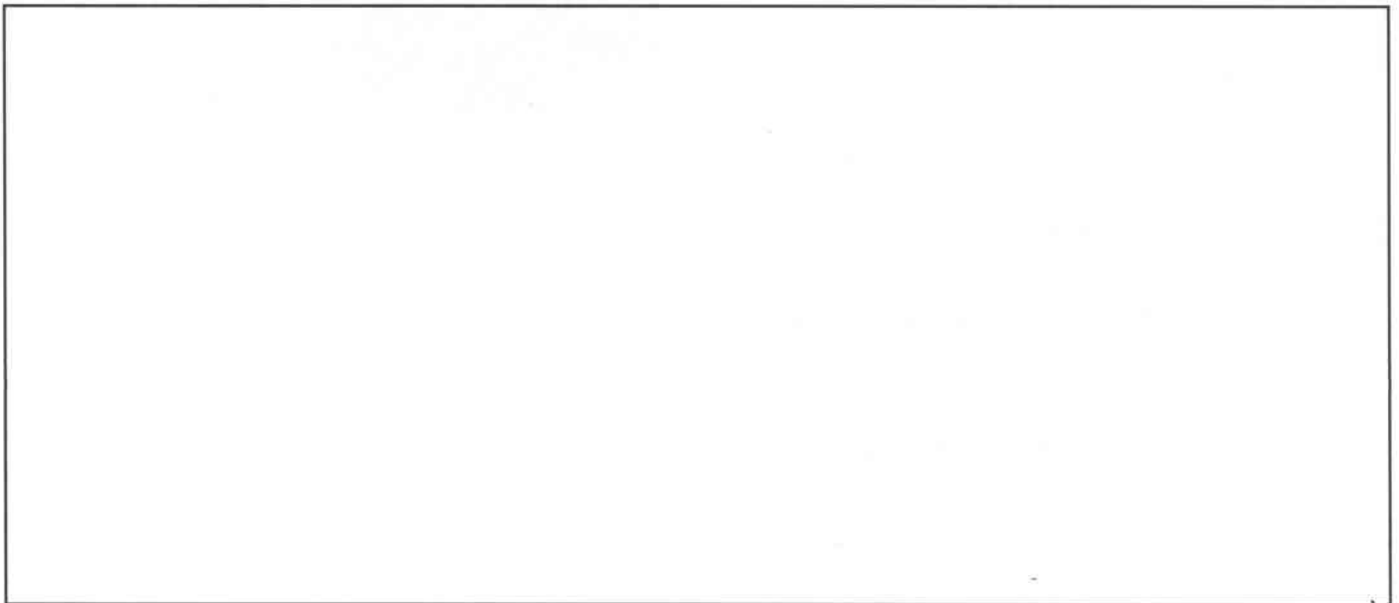
- 1 Label the wax that is solid.
- 2 Label the wax that is liquid.



## Melting ice

You will need an **ice** cube and a fridge or freezer.

- 1 Take an ice cube and watch it melt.
- 2 Draw the ice cube as it melts and afterwards. Label the solid and liquid parts.



- 3 How can you make the water turn back into solid ice?  
make it colder ☐ heat it ☐

### 4 Think about it!

What has happened to the rock inside this volcano?

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## CHECK YOUR LEARNING

- ☐ I can say what happens to a solid when it is heated.

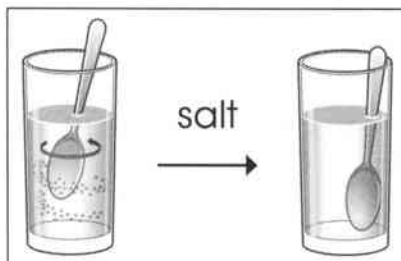


### 3.5 Why is the sea salty?

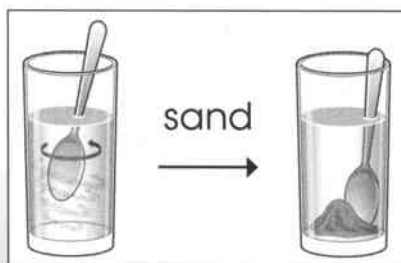
dissolve

#### LOOK AND LEARN

Some materials **dissolve**.



Some do not.



#### Dissolved or not?

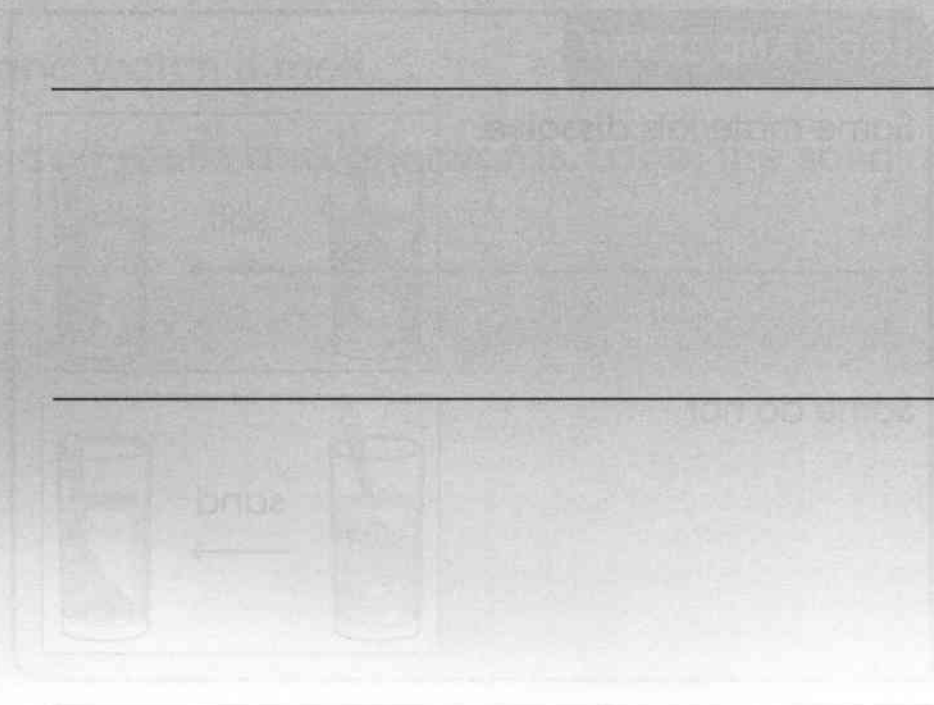
Tia has been trying to dissolve different materials in water.

**1** Write what has happened for each material.



The flour has not dissolved.





**2** Which material is dissolving slowly in the pictures?

\_\_\_\_\_

### **CHECK YOUR LEARNING**

- ☐ I can make observations and explain what happened.
- ☐ I know that some materials dissolve in water.

### **KEY FACT**

Some materials dissolve slowly. Some dissolve quickly.

# 4 Light and dark

## What learners will practise and reinforce

The activities in this Skills Builder unit give learners further practice in the following topics in the Learner's Book and Activity Book:

Topic	In this topic, learners will:
4.1 Light sources	recognise that there are many light sources, for example the Sun, and that they all make light
4.2 Darkness	understand that darkness is a lack of light and that without light we cannot see
4.3 Making shadows	see Challenge, Section 4.3
4.4 Shadow shapes	see that shadows look dark and can have a shape that is different to the object that makes them

## Help your learner

In this unit, learners will collect evidence by making observations when trying to answer a science question (Section 4.4) and use first-hand experience (Sections 4.2 and 4.4). To help them:

- 1 In Section 4.2, help learners to set up the 'Can I see in the tent?' activity. It is best if you can use quite opaque fabric and do this in a darkened room.

## TEACHING TIP

Light is very familiar to us as we experience it every day. It is important to use the science terms correctly. For example be very clear that the Sun is a light source, but the Moon is not.

## 4.1 Light sources

light, Sun, Moon, reflect

### Different light sources

Look at the picture and draw a circle around each light source.

#### LOOK AND LEARN

A light source is something that makes **light**, for example the **Sun**.



#### KEY FACT

The **Moon** is not a light source. The Moon **reflects** light from the Sun.

#### CHECK YOUR LEARNING

- ☐ I know that there are many light sources, including the Sun.
- ☐ I know that light sources make their own light.

## 4.2 Darkness

torch, dark

### Can I see in the tent?

You will need sheets or blankets, a **torch** and white, black and shiny objects.

- 1 Make a tent that is **dark** inside. Put some objects in the tent.
- 2 Which objects are easier to see in the dark?  
\_\_\_\_\_  
\_\_\_\_\_



- 3 Which objects are harder to see?  
\_\_\_\_\_
- 4 Use the torch. Are the objects easier to see? \_\_\_\_\_
- 5 **Think about it!**  
Is your bedroom completely dark at night? If you can see at all, then there must be some light. Where does the light come from?  
\_\_\_\_\_

### CHECK YOUR LEARNING

☐ I know that we cannot see without some light.

## 4.4 Shadow shapes

shadow

### Shadow show!



Look at the **shadow** shapes. What can you see?

1. \_\_\_\_\_ a girl
2. \_\_\_\_\_
3. \_\_\_\_\_
4. \_\_\_\_\_
5. \_\_\_\_\_
6. \_\_\_\_\_
7. \_\_\_\_\_
8. \_\_\_\_\_




## Turn it, change it

*You will need a torch and some different objects.*

The same object can make different shadows.



- 1** Shine the torch onto an object to make its shadow.
- 2** Draw the shape of the shadow.
- 3** Now turn the object. Draw the new shape of the shadow.
- 4** Do the same for your other objects.

Object	Shadow	Shadow after turning
		

## CHECK YOUR LEARNING

- ☐ I know that shadows can look very different from the objects that make them.



# 5 Electricity

## What learners will practise and reinforce

The activities in this Skills Builder unit give learners further practice in the following topics in the Learner's Book and Activity Book:

Topic	In this topic, learners will:
5.1 Electricity around us	see that electricity is very useful learn that electricity comes from the mains or from cells
5.2 Staying safe	know how to keep safe around mains electricity
5.3 Making a circuit	recognise a working circuit know that a bulb uses electricity to make light
5.4 Using motors and buzzers	see Challenge, Section 5.4
5.5 Switches	see how switches can turn electricity on and off

## Help your learner

In this unit, learners will practise using first-hand experience (Sections 5.1, 5.3 and 5.5), predict what will happen before deciding what to do (Section 5.5), talk about risks and how to avoid danger (Section 5.2) and review and explain what happened (Section 5.3).

## TEACHING TIP

Note to teachers/parents: Safety when using electricity and identifying whether objects use mains electricity or cells are both additional to the framework at this grade stage.

**!** Learners should only ever handle low voltage cells and batteries (1.5v – 9v). They should learn about the serious danger of mains electricity and to avoid contact with mains plugs, sockets and switches, and any damaged mains wires or components. They should also learn about the danger of liquids and electricity.

## 5.1 Electricity around us

electricity, mains electricity,  
cell, battery

### LOOK AND LEARN

**Electricity** is very useful. It makes lots of things work.

Things that we plug in use **mains electricity**.

Small electrical things often use **cells**.  
(A cell is often called a **battery**.)



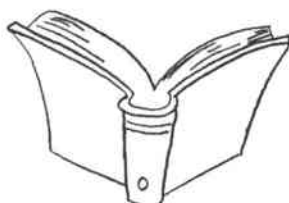
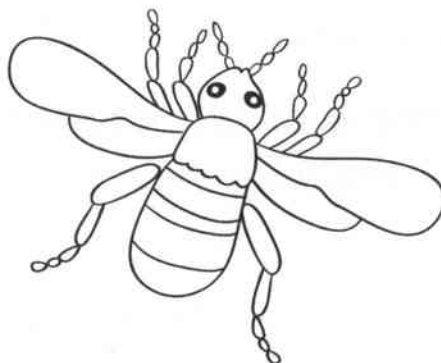
mains electricity







electricity  
from cells

### Does it use electricity?

**1** Colour in the objects that use electricity.



- 2** Which of these objects use mains electricity and which use a cell? Tick one box.

	mains electricity	cell		mains electricity	cell
	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>
TV remote			lamp		
	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>
calculator			washing machine		

## Electricity around me

*You will need a notepad and pen, or a camera.*

- 1** Walk around your home or school and photograph or note the things that use electricity.
- 2** Say if they use mains electricity or cells.

**!** Do not handle plugs and mains electricity; it is very dangerous.

### **3** Think about it!

There are people in some places who still live without electricity. What would you miss the most if you lived without electricity?

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## CHECK YOUR LEARNING

- ☐ I know that electricity is very useful.
- ☐ I know that electricity comes from mains electricity or from cells.

## 5.2 Staying safe

electric shock, wire, power cables

**Danger, danger!**

Look at the picture.

### Remember:

Mains electricity can give you a dangerous **electric shock**!

Keep safe by:

- keeping water away from electricity
- never using damaged **wire**
- never putting things other than a plug in a wall socket.



**1** Circle each of the dangerous things you can see in the picture.

**2** Talk to your friends about these dangers and ways to stay safe.

### CHECK YOUR LEARNING

- ☐ I know that mains electricity is very dangerous.
- ☐ I know how to keep safe around mains wires and sockets.

### KEY FACT

You will see **power cables** across your streets and homes. Children are killed every year playing too close to these. Never climb or play near them.

### 5.3 Making a circuit

bulb, circuit, connected,  
working circuit

#### My electric circuit

You will need a cell, wire and a **bulb**.

- 1 Look at the **circuit** around this page. Can you see the cell, the wire, the bulb?

There are no gaps. All the parts are **connected** and the bulb is lit. The bulb uses electricity to make light.

Use your finger to follow the arrows around the circuit. This is how the electricity moves.

- 2 Use the wire, cell and bulb to make your own circuit.
- 3 Did your circuit work? If so, explain why.

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#### CHECK YOUR LEARNING

- ☐ I can recognise a **working circuit**.
- ☐ I know that a bulb uses electricity to make light.

#### Remember:

A circuit will only work if the metal parts of the wire, cell and bulb are connected.



## 5.5 Switches

switch, predict

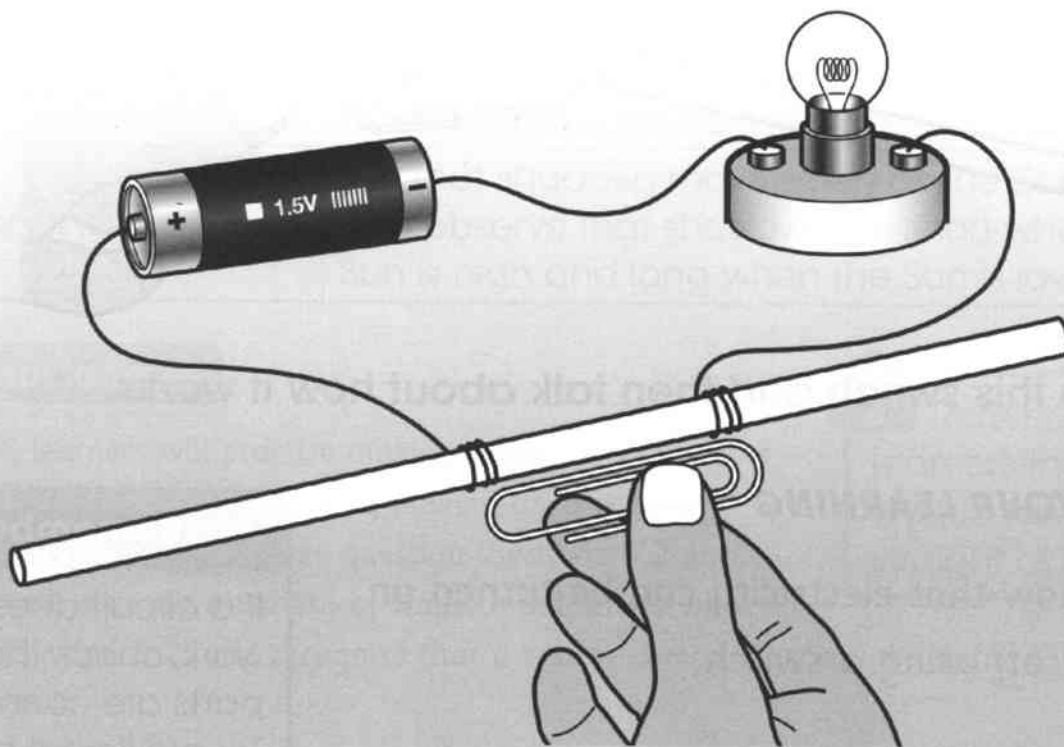
### Make a switch with a straw!

*You will need a cell, a bulb, wire, a plastic straw, a metal paper clip and a rubber band or sticky tape.*

#### LOOK AND LEARN

We can turn electricity on or off using a **switch**.

**This circuit has a gap. The bulb will not light up.**



**1** Predict what will happen if the metal clip touches both wires.

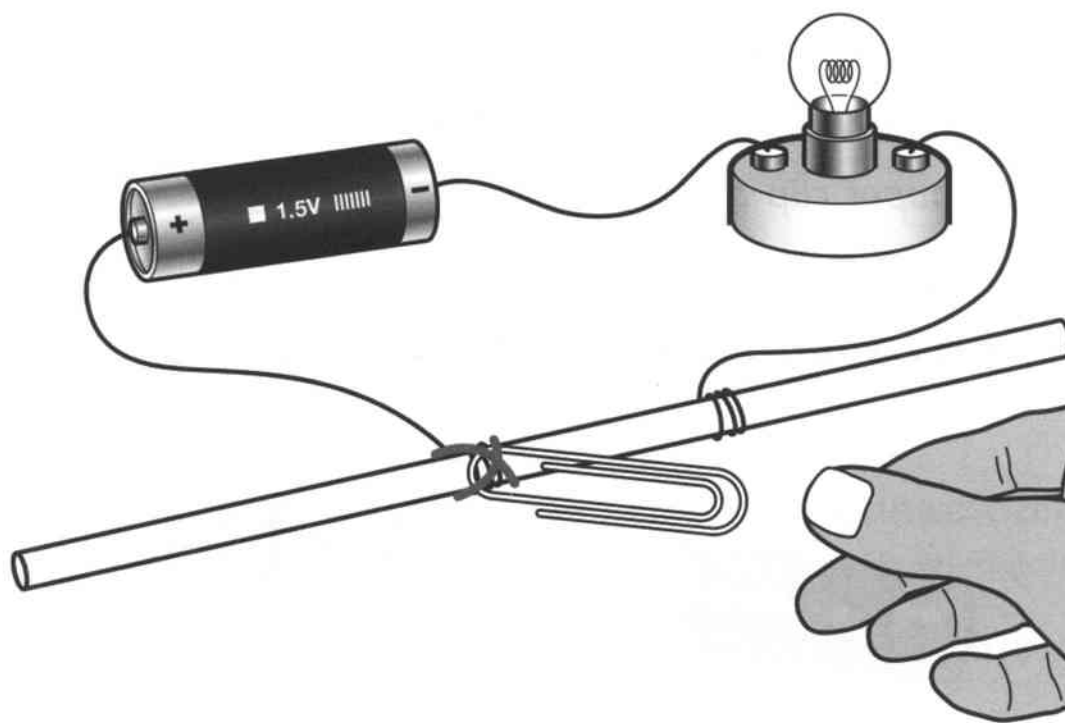
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**2** Now make this circuit and test the metal clip. Make sure all the metal parts are touching.



- 3** Look at the picture to see how to make a switch. By moving the metal clip, you can turn the switch on or off.



- 4** Make this switch and then talk about how it works.

### **CHECK YOUR LEARNING**

- ☐ I know that electricity can be turned on and off using a switch.

#### **Remember:**

If a circuit does not work, check that all parts are connected. Try a different bulb and cell.



## What learners will practise and reinforce

The activities in this Skills Builder unit give learners further practice in the following topics in the Learner's Book and Activity Book:

Topic	In this topic, learners will:
6.1 Day and night	explore how we get day and night because the Earth spins
6.2 Does the Sun move?	understand that it looks like the Sun is moving because the Earth spins
6.3 Changing shadows	see that shadows move solely as the Earth spins and observe that shadows are short when the Sun is high and long when the Sun is low

## Help your learner

In this unit, learners will practise making predictions (Sections 6.1–6.3) and collecting evidence by making observations when trying to answer a science question (Sections 6.2 and 6.3). They will also use a variety of ways to tell others what happened (Section 6.2) and recognise that a test or comparison may be unfair (Section 6.3). To help them:

**!** Remind learners they should never look straight at the Sun.

- 1 Encourage learners to select and assemble equipment themselves. Ask them to explain why they need each piece of equipment.

## TEACHING TIP

Help learners to see that they live on a spinning planet, which means that very distant things in the sky appear to move when this effect is really caused by the spinning of the Earth. Learners may find this challenging and slip back to incorrect ideas.

## 6.1 Day and night

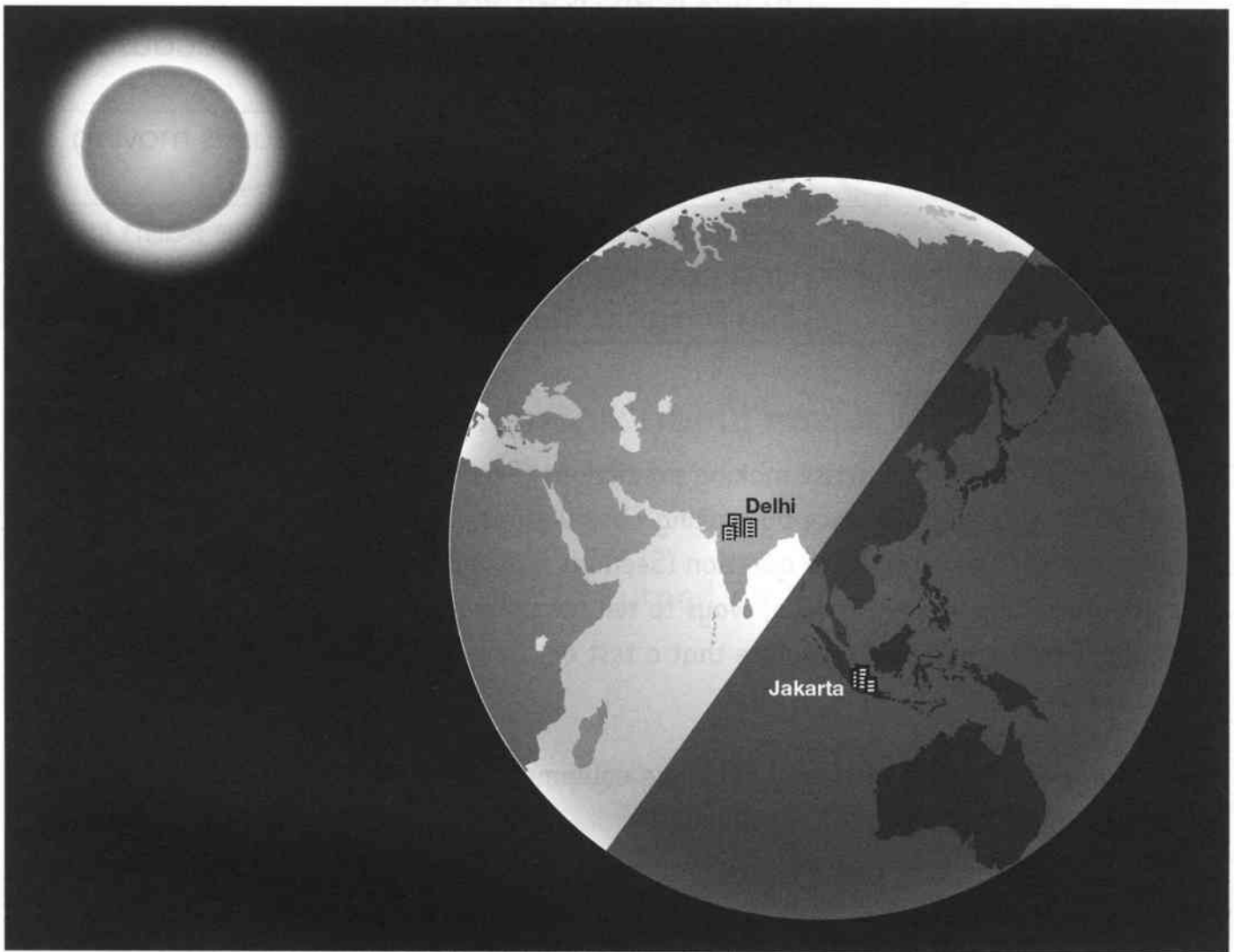
spin, day, night

### City in the day or night?

Look at this picture of the Earth. Can you see the cities Delhi and Jakarta?

#### LOOK AND LEARN

The Earth is like a **spinning** ball. Light from the Sun means that when one side of the Earth is in the light, the other side is dark. This makes **day** and **night**.



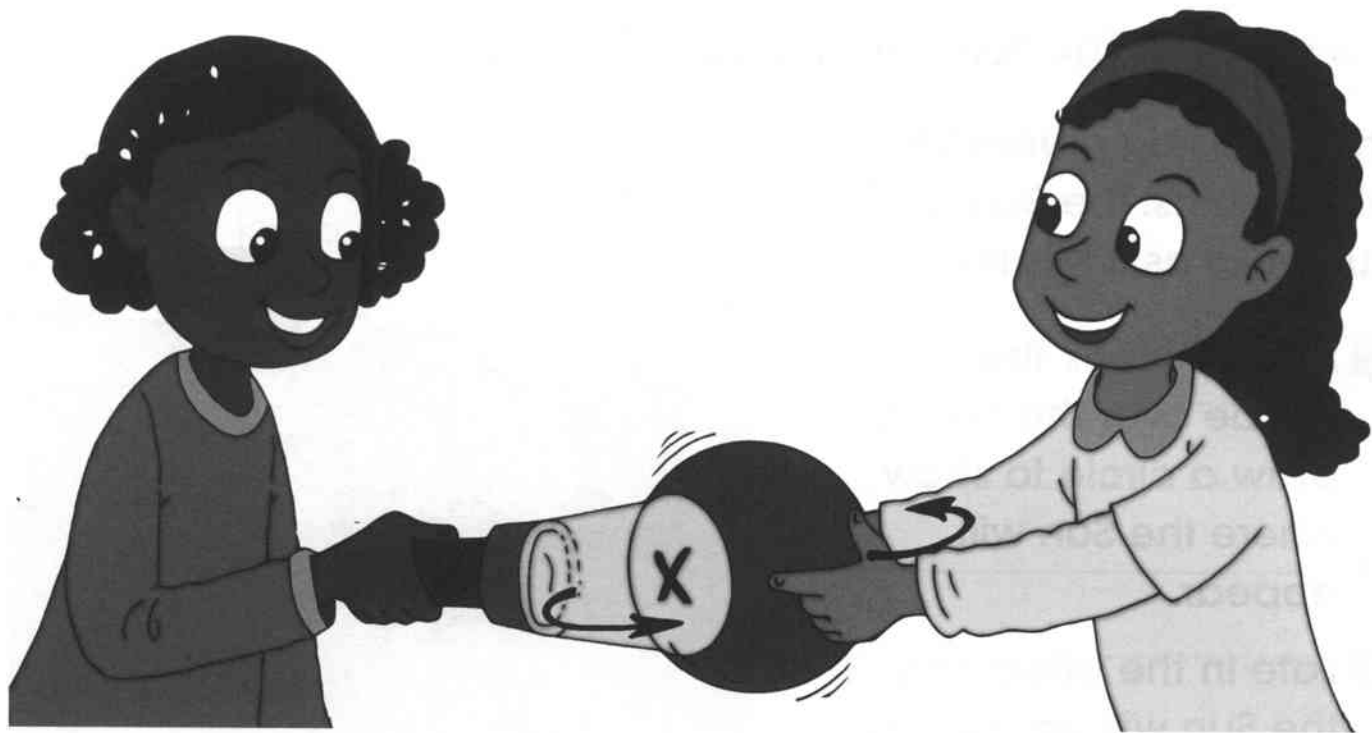
1 Which city is in daylight? \_\_\_\_\_

2 Which city is in the dark? \_\_\_\_\_

The Earth is like a spinning ball

The girls have made a model to show day and night.

The ball is planet Earth and the torch is the Sun.



- 1 Is it day or night at the X? \_\_\_\_\_
- 2 What will happen to the X as the girls slowly turn the ball in the direction of the arrow?

### 3 Think about it!

If the Earth did not spin, what would happen to day and night if you lived on the dark side?

### CHECK YOUR LEARNING

- ☐ I know that we get day and night because the Earth spins.

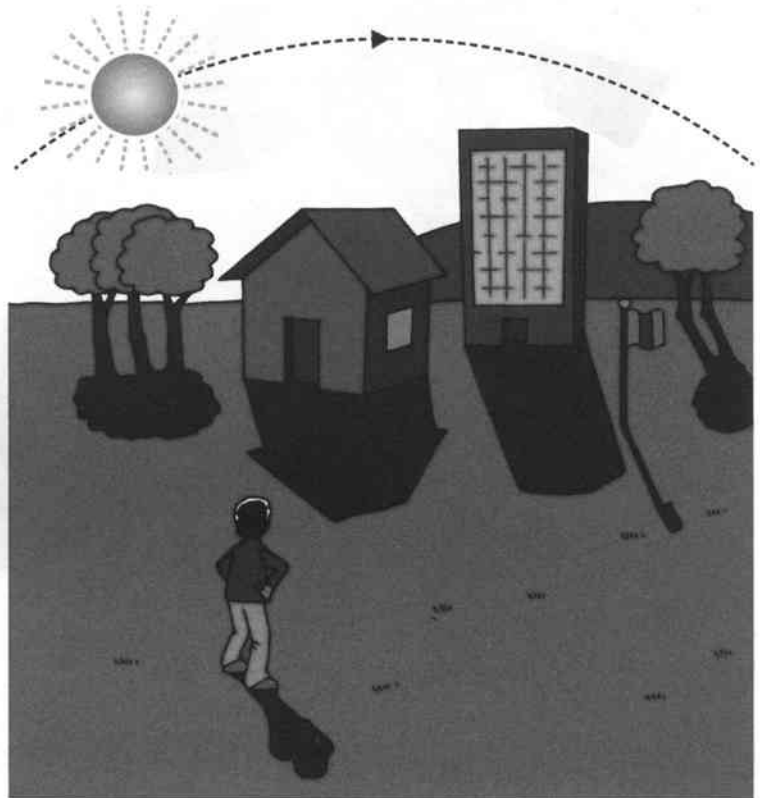
## 6.2 Does the Sun move?

### It looks like the Sun is moving

It is morning. The Sun gets higher in the sky.

The boy is on planet Earth, which spins. The Sun is still, but looks as if it is moving.

- 1 At 12 o'clock the Sun will be over the house. Draw a circle to show where the Sun will appear.
- 2 Late in the afternoon, the Sun will be over the flag. Draw a circle to show where the Sun will appear.



- 3 Choose the right words to finish this sentence.

The Sun looks like it moves because

the Earth is still.      the Earth spins.  
the Sun is moving.

**!** Never look straight at the Sun. It can damage your eyes.

## Confused Khushi

Khushi is confused.

- 1 Finish this letter and draw a picture to help Khushi.



I see the Sun go across the sky every day. It must move.

Dear Khushi,

The Sun looks like it moves but

---

---

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## 2 Think about it!

If the Sun was right above you, would you have a shadow? \_\_\_\_\_

## CHECK YOUR LEARNING

- ☐ I know that the Earth spins and it looks like the Sun is moving.

## 6.3 Changing shadows

unfair

### Shadow hand

*You will need a bucket of soil or sand, and a pole.*

The children have made a shadow stick. They have drawn the shadow each hour this morning.

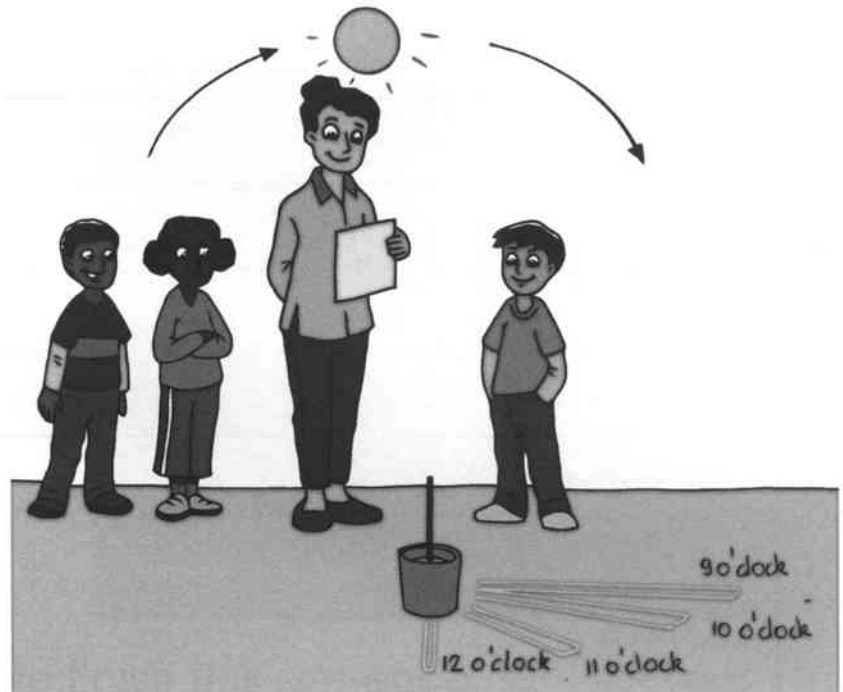
- 1** Predict and draw in the shadows for
  - a 1 o'clock
  - b 2 o'clock
  - c 3 o'clock.

- 2** Write the time by each shadow.

- 3** Make your own shadow stick and repeat this activity outside.

### LOOK AND LEARN

Shadows are short when the Sun is high in the sky. Shadows are long when the Sun is low in the sky.



### CHECK YOUR LEARNING

- ☐ I know that shadows move slowly as the Earth spins.
- ☐ I know that shadows are short when the Sun is high and long when the Sun is low.

### Remember:

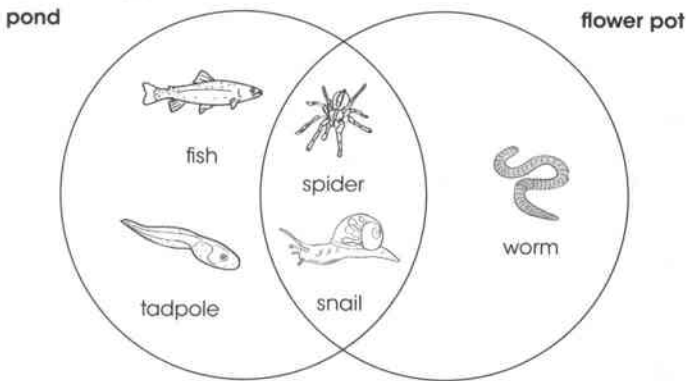
Keep your shadow stick in the same place or your test will be **unfair**.

## 1 Going outside

1.1

### Sorting animals

**2** and **3**



**4** Think about it!

A fish cannot live in a flower pot because it needs (to live in) water (to breathe).

1.2

### A better environment

**1**









**2** Think about it!

Litter is bad for animals because it can hurt them if they eat it or it can cut them if it is sharp.

1.3

### What is the weather?

**1** and **2**

	Weather	Temperature
	snow	cold
	rain	cold
	wind	warm
	cloudy	warm
	storm	cold
	sunny	hot

## 2 Looking at rocks

2.1

### Sorting rocks

**1** to **4** The learner will collect their rocks, sort them based on their appearance and draw them in the table.



## 2.2

### Which rock is hardest?

- 1 Use the same force for each rock. ☒  
Use the same coin for each rock. ☒
- 2 Answers will depend on the rocks used.
- 3 **Think about it!**  
The best rock to use for making steps will be the rock that is the hardest. So it will have the smallest or no scratch.
- 4 It is the hardest rock so the steps will not get scratched or wear out.

## 2.3

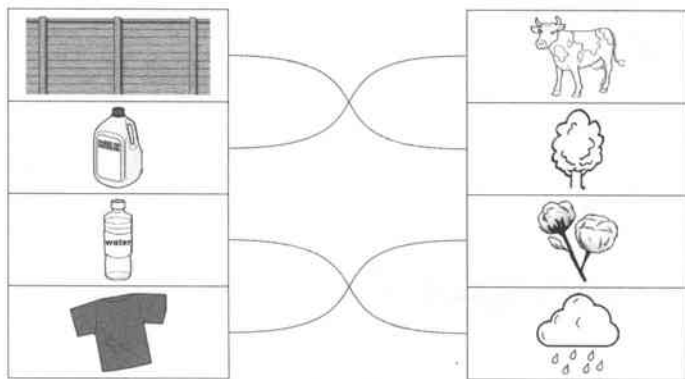
### What is soil?

- 2 Answers will depend on what is found in the soil.
- 3 **Think about it!**  
yes ☒ There is air in soil. Animals need air to breathe.

## 2.4

### Where do natural materials come from?

1



### 2 **Think about it!**

Any three man-made materials. For example: glass, plastic, card, nylon, polyester, brick, concrete, fizzy drinks, chocolate, fibreglass, carbon fibre. Learners might suggest some metals (iron, steel, brass, tin, aluminium, zinc, lead, bronze and titanium are all man-made materials; gold, silver, platinum and copper can be found naturally).

## 3 Changing materials

### 3.2

#### Materials that bend and twist

1 and 2

Object	Material	Bend	Twist
sheet of paper	paper	✓	✓
paper clip	metal	✓	✓
T shirt	cotton	✓	✓
coin	metal	X	X
ruler	plastic	✓	✓

### 3 **Think about it!**

It would be hard to bend and twist. (You might walk like a robot!)

### 3.3

#### Testing elastic materials

- 1 Answers depend on learner's predictions.
- 2 to 4 Sponge and rubber are elastic. Paper is not elastic.  
Metal is elastic until it is bent or twisted too far then it is not elastic. If learners have used a small force to bend or twist it, the correct answer is 'elastic'. If they have used a larger force, the correct answer is 'not elastic'.

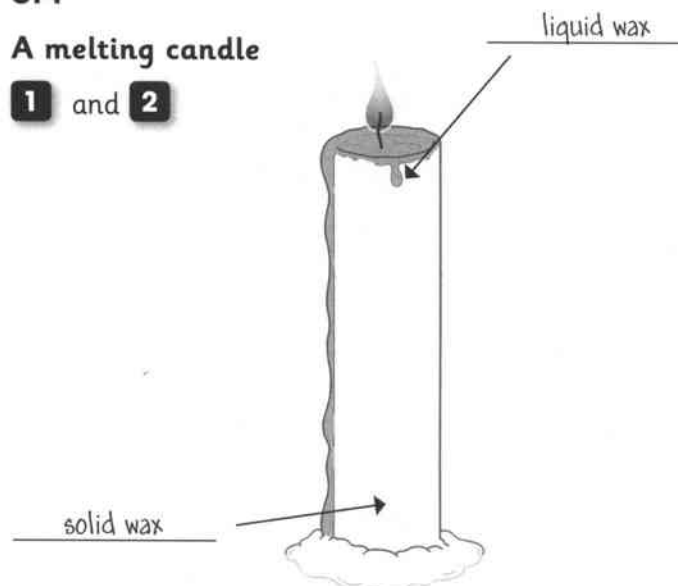
### 5 **Think about it!**

Bouncy balls, trampolines, cuddly toy animals and Jack-in-a-boxes all use elastic materials.

### 3.4

#### A melting candle

1 and 2





## Melting ice

- 3** make it colder ☒

**4 Think about it!**

The rock has melted (to make lava).

### 3.5

#### Dissolved or not

- 1** Sugar: The sugar has dissolved.  
Salt: The salt has dissolved.  
Sand: The sand has not dissolved.  
Sweets: The sweet has not dissolved. OR The sweet is dissolving slowly.

- 2** Sweets

## 4 Light and dark

### 4.1

#### Different light sources

**1**



**5 Think about it!**

The learner might talk about a little light coming under a door, through the curtains or around the side of the curtains. Any reasonable explanation should be accepted.

### 4.4

#### Shadow show!

- 1** 1. a girl, 2. a balloon, 3. a bicycle, 4. a plant/flower, 5. a frog, 6. a rabbit, 7. a butterfly, 8. a bird.

#### Turn it, change it

- 1** to **4** The learner should have recording drawings in the table of the shadow of each object and then the shadow after turning the object.

### 4.2

#### Can I see in the tent?

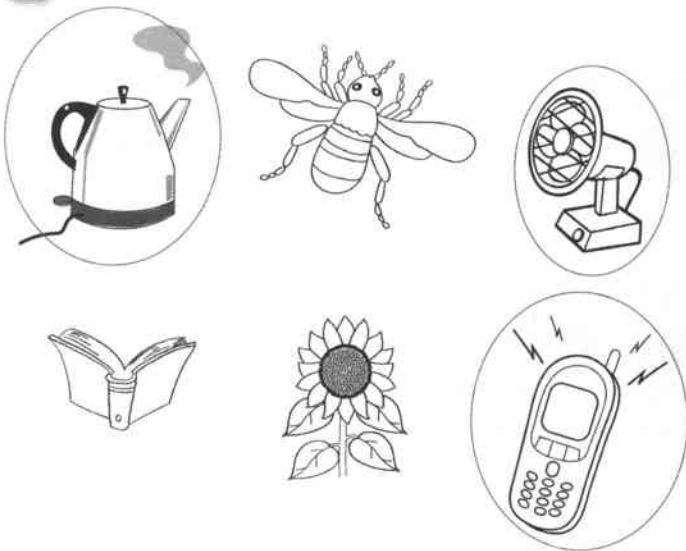
- 2** The learner should report if any objects were easier to see. White or shiny objects should be easier to see in the dark.
- 3** The black objects should be harder to see.
- 4** After they use the torch, the learner should comment on whether this helped them.

## 5 Electricity





### 5.1

Does it use electricity?

1



2 Which of these objects use mains electricity and which use a cell? Tick one box.

	mains electricity	cell		mains electricity	cell
 TV remote	<input type="checkbox"/>	<input checked="" type="checkbox"/>	 lamp	<input checked="" type="checkbox"/>	<input type="checkbox"/>
 calculator	<input type="checkbox"/>	<input checked="" type="checkbox"/>	 washing machine	<input checked="" type="checkbox"/>	<input type="checkbox"/>

### Electricity around me

1 and 2 The learner will have identified different electrical items and said if they use mains electricity or cells.

3 **Think about it!**

The learner will talk about an electrical machine they would miss if they had no electricity.

### 5.2

Danger, danger!

1



2 The learner should talk about avoiding the dangers around mains electricity, water and electricity, trailing leads and damaged wires.

### 5.3

#### My electric circuit

1 The learner should follow the circuit on the page and be able to point out the cell, wire and bulb.

2 and 3 The learner should make a circuit. If their circuit worked, they should talk about the circuit being fully connected and about electricity moving around the circuit.

## 5.5

### Make a switch with a straw!

- 1** and **2** The learner should make a prediction followed by a test. The metal clip should make the connection and the circuit should work.
- 4** The learner should talk about the switch being on or off, connected or not.

## 6 The Earth and the Sun

### 6.1

#### City in the day or night?

- 1** Delhi
- 2** Jakarta

#### The Earth is like a spinning ball

- 1** day
- 2** The X will move to the dark side, so to night-time.
- 3** **Think about it!**  
It would be never-ending night.

### 6.2

#### It looks like the Sun is moving

- 1** The circle will be high above the house – the highest point in the Sun's path.
- 2** The circle is drawn over the flag but lower in the sky now.
- 3** The Sun appears to move because the Earth spins.

#### Confused Khushi

- 1** A letter is written to Khushi explaining that the Sun does not move, that the Earth is spinning and that this makes the Sun appear to move across the sky. The learner may add a drawing to help explain.

### **2** Think about it!

Yes, you would have a shadow but it would not look like your body – it would just be a very short shadow around your feet.

### 6.3

#### Shadow hand

- 1** Lines should be drawn to the left of the 12 o'clock shadow. 1 o'clock slightly to the left and slightly longer, the others more to the left and a little longer.
- 2** The times should read 1 o'clock to 3 o'clock from right to left.
- 3** The learner should carry out the task and record what they find.



# Glossary

## 1 Going outside

**cloudy**

weather when  
there are clouds in  
the sky

**cold**

a temperature which  
is low

**different**

not the same

**environment**

a place where animals and plants live

**hot**

a temperature which is high

**litter**

unwanted materials that people have dropped

**rainy**

weather when water falls in drops from clouds

**snowy**

weather when ice falls in soft, white flakes

**stormy**

weather with strong wind, a lot of clouds and  
rain, and sometimes thunder and lightning

**sunny**

bright weather that happens when the Sun is  
shining

**temperature**

how hot or cold something is

**Venn diagram**

a way of sorting things using overlapping circles

**warm**

a temperature between cold and hot

**windy**

weather when the air moves around

## Remember:

Practise saying these  
words aloud. Try to use  
them when talking  
about the topic.

## 2 Looking at rocks

**air**

the gas all around us that animals need to  
breathe

**cotton**


a soft, white, fluffy, natural material that comes  
from the cotton plant

**died**

used to be alive but is not now

<b>fair (test)</b>	a test where you only change one thing and keep the other things the same
<b>force</b>	a push or a pull
<b>hard/er/est</b>	strong and not easily dented
<b>living</b>	alive
<b>man-made</b>	made by people – not found in nature
<b>milk</b>	a natural white liquid that comes from cows and other animals
<b>natural</b>	comes from nature (from the ground or from plants or animals) – not man-made
<b>scratch</b>	a dent or mark in a surface
<b>soil</b>	the natural material on the surface of the Earth in which plants grow
<b>wood</b>	a natural material that comes from trees

### 3 Changing materials

<b>bend</b>	to change the shape of an object so that it becomes curved or folded	
<b>dissolve</b>	when a solid becomes part of a liquid, for example salt dissolves in water	
<b>elastic</b>	an elastic material can stretch but then goes back to the shape it started as	
<b>heat</b>	to make hotter	
<b>ice</b>	water that has become solid	
<b>liquid</b>	a material that can flow or be poured – water is a liquid, for example	
<b>melt</b>	to change from a solid to a liquid	
<b>solid</b>	a material that keeps its shape and does not flow	

**squash**

change the shape of an object by pushing or crushing it – making it shorter



**stretch**

change the shape of an object by pulling – making it longer or wider



**twist**

change the shape of an object by holding one end and turning the other



#### 4 Light and dark

**dark**  
**light**

when there is very little light or no light  
bright glow from a light source that allows us to see things

**Moon**

the large object that goes round the Earth and we see in the sky at night

**reflect**

if something reflects light, the light shines back from that object

**shadow**

an area of darkness we see when an object blocks light

**Sun**

the nearest star to Earth – it gives us light and heat

**torch**

a small object you hold in your hand which uses a cell (battery) to make light

## 5 Electricity

**battery**

a store of electricity,  
also called a cell

**bulb**

a glass ball or tube  
that lights up when

**cell**

electricity passes through it

**circuit**

a store of electricity, also called a battery

**connected**

a complete path that electricity can flow around  
joined together

**electric shock**

when electricity goes into your body – a big  
shock can hurt or kill you

**electricity**

we use it to make things like lights, computers  
and televisions work

**mains electricity**

powerful electricity we use in buildings

**power cables**

big wires that carry a lot of electricity across a  
country; they are very dangerous

**predict**

to say what you think will happen

**switch**

something that can break the flow of electricity  
in a circuit

**wire**

a piece of metal that electricity flows through –  
we use it to connect things in a circuit

**working circuit**

a loop that electricity can flow around

### Remember:

Practise saying these  
words aloud. Try to use  
them when talking  
about the topic.

## 6 The Earth and the Sun

<b>day</b>	the time when a place on Earth is facing the Sun – the hours of daylight
<b>night</b>	the time when a place on Earth is facing away from the Sun – the hours of darkness
<b>spin</b>	to turn round and round about a point
<b>unfair (test)</b>	a test where you change more than one thing