Letts and LONSDALE

KEY STAGE 1

Year 2 Term 1

Teaching and Learning

Science

Activity Book

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Letts & Lonsdale make every effort to ensure all paper used in our books is made from wood pulp obtained from sustainable & well managed forests.

Contents

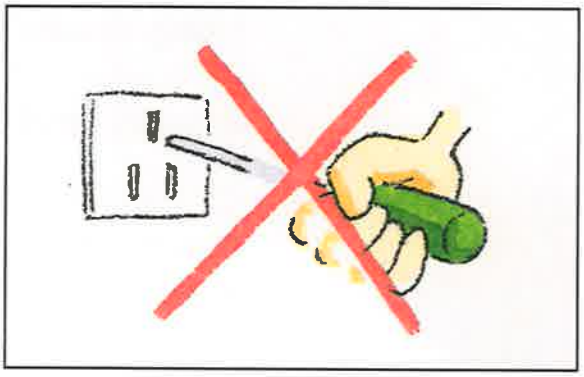
How to use this book

In this book you will first find out what works using electricity. Then you will learn about pushes and pulls that move things. Scientists call these forces. This book will also help you plan and carry out your own fair tests.

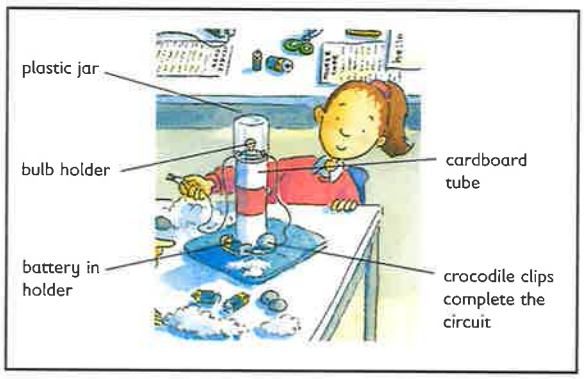
Look out for these.

predict **results**

You need to know what the science words mean. Look these up on pages 30 to 32.

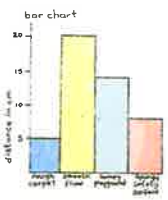


Symbols say things without words. This cross tells you that you should not do this.



Labels tell you the names of parts of a picture.

Surface	Distance in cm
rough carpet	5
smooth floor	19
bumpy playground	8
spongy safety surface	14



Tables and charts are a good way to show what you find out in your tests.

Using electricity

You will learn:

- that everyday appliances use electricity.
- that these include things that light up, heat up, make sounds and move.
- that some everyday appliances are joined to mains electricity by a plug.
- that some everyday appliances use batteries.
- to use batteries, wires and bulbs to make complete circuits.
- that an electrical device will not work if there is no battery or there is a break in the circuit.
- to draw and record your observations.
- to make predictions about circuits that will work.

Forces and movement

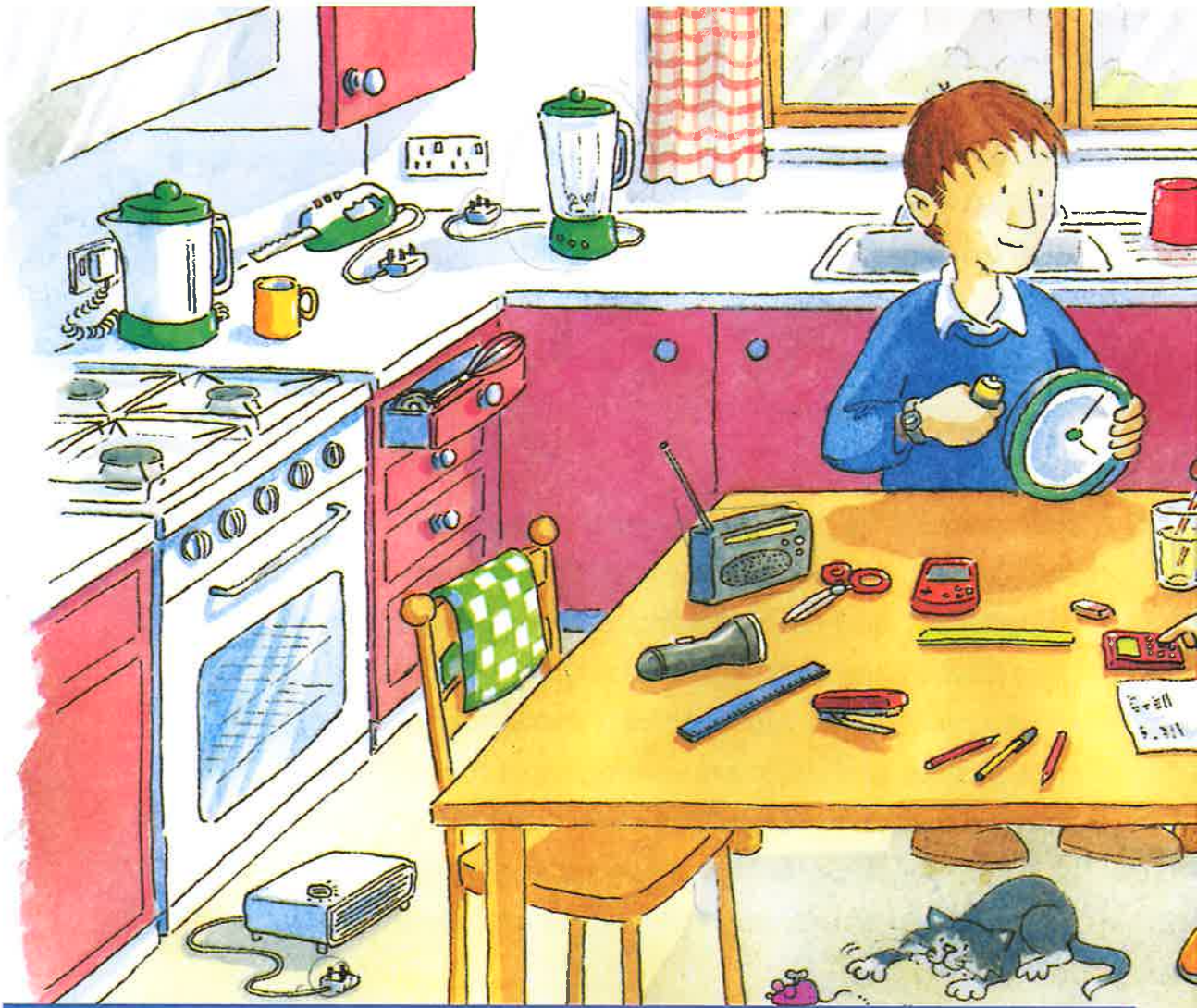
You will learn:

- that sometimes pushes and pulls change the shape of objects.
- that pushes and pulls can make things speed up.
- that pushes and pulls can make things slow down.
- that pushes and pulls can make things change direction.
- to explain how to make objects move faster and slower.
- that pushes and pulls are examples of forces.
- how to measure distance in straw lengths and centimetres.
- to make predictions about pushes and pulls.
- to record measurements in a table and draw a block graph from them.
- to compare results.
- to decide if a test was fair.

What works using electricity?

Some things work using electricity. Some do not.

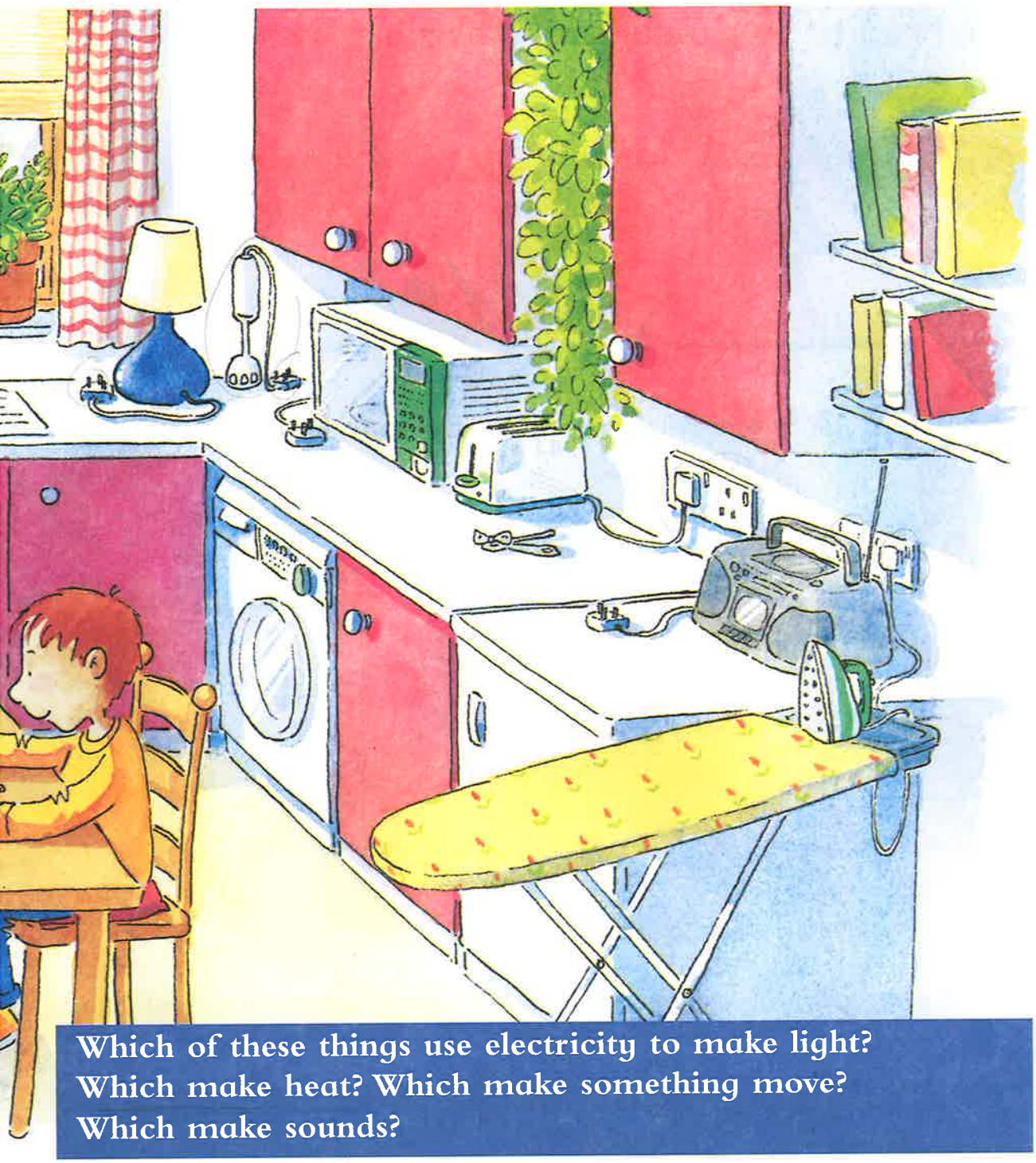
Some things work using mains electricity.
Some things work using electricity from batteries.



Which of these things use electricity? Which do not?
Which things use batteries? Which use mains electricity?

What works using electricity?

Electricity can make things light up, get hot, move or make sounds.



Which of these things use electricity to make light? Which make heat? Which make something move? Which make sounds?

battery mains electricity

Mains electricity can be dangerous.

You need to be careful with mains electricity.

Stay away from electricity outdoors.

Don't poke things in sockets.

Don't touch plugs with wet hands.

Talk about ways of using mains electricity safely.

Batteries are a safer source of electricity.
They come in different shapes and sizes.

It is safe to touch batteries, but you should never cut them open or put them in your mouth.

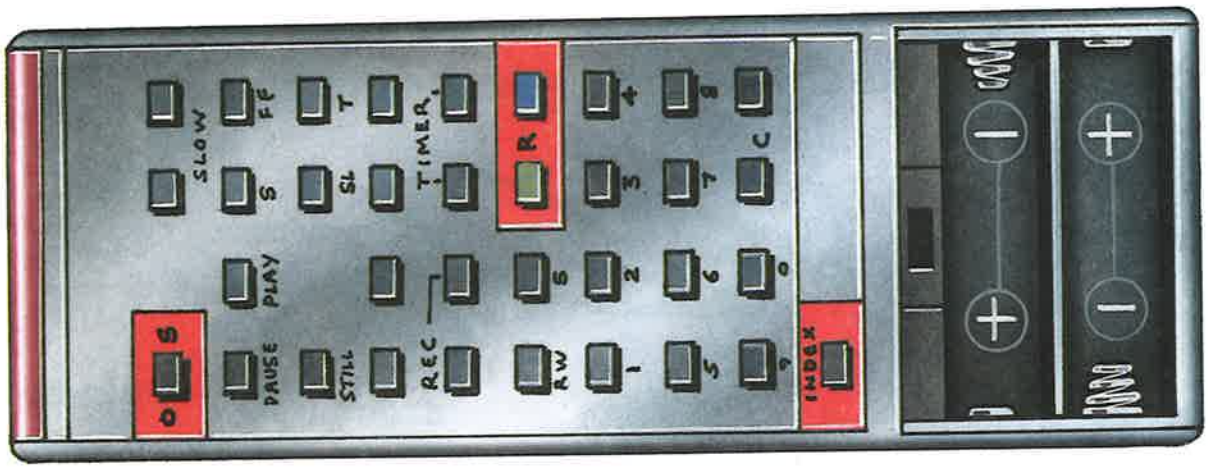
Make a collection of batteries with different shapes and sizes. Write down where they are used.

Batteries are marked with their voltage, a + sign and a – sign.

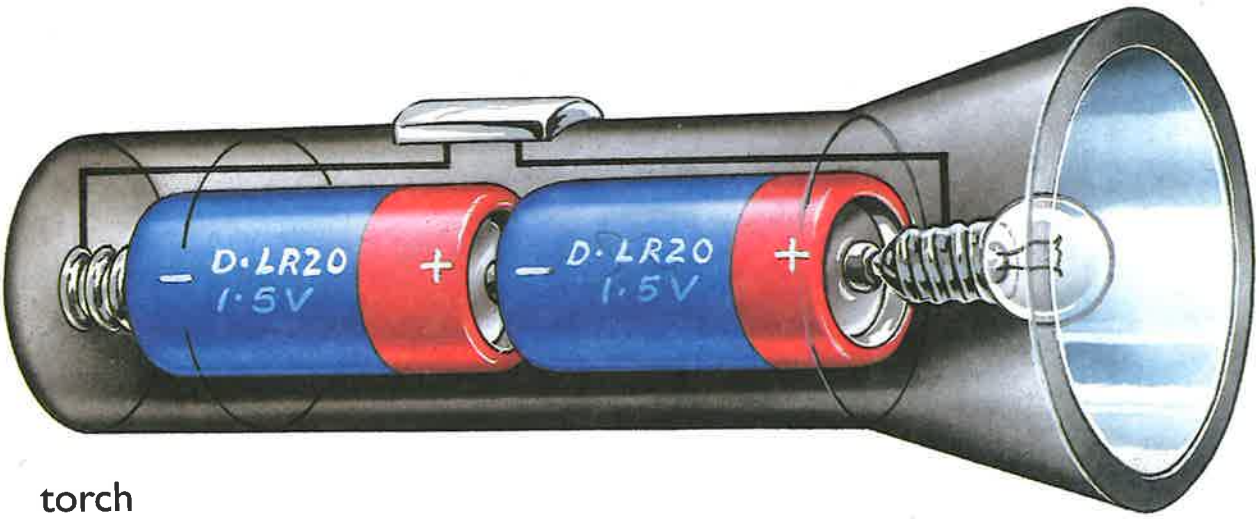
Batteries have to be put in the right way round to work properly.

Collect some things that use batteries. Make a display in your classroom. Say what kind of battery they use.

A diagram often shows you how to put the batteries in.



TV remote control



torch

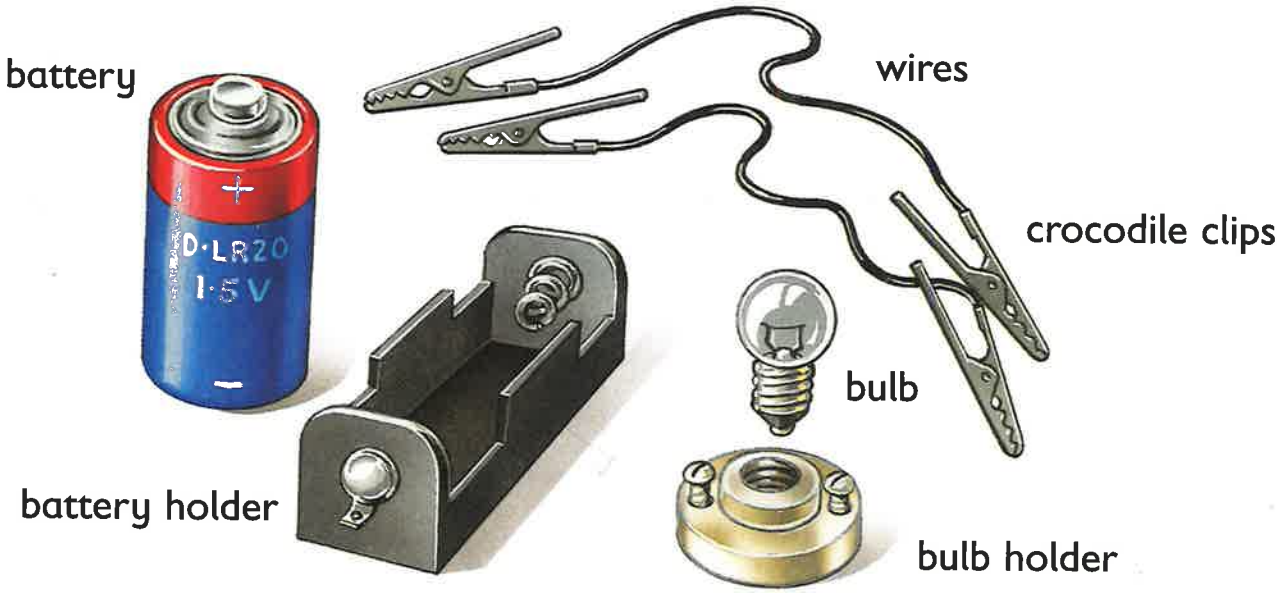
Look at a torch. Put the batteries in. What happens if you put them in the wrong way round?

battery **voltage**

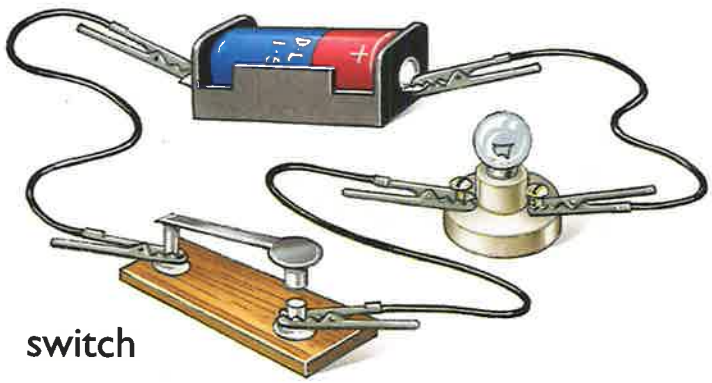
Making a circuit

An electric circuit uses the electricity from a battery to make things work.

We can use these things to make a light circuit.



We can also use a switch to turn the bulb on and off.



Draw a light circuit and label the parts.
Explain your drawing. How does the circuit work?

Making a circuit

We can use these things to make a buzzer circuit.

Electricity flows from the battery in one direction only.

Buzzers only work if the electricity is flowing in the right direction.

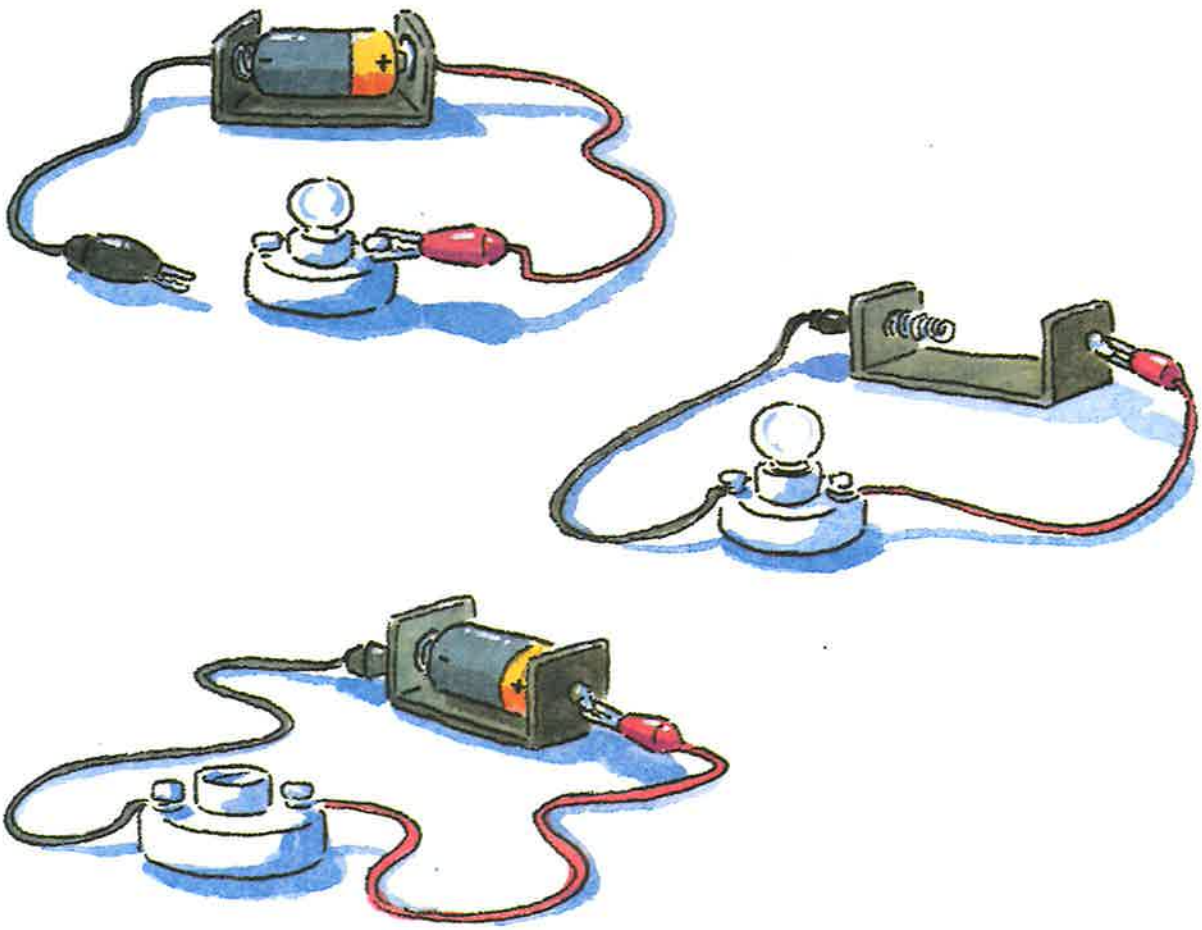
Try to find out what happens if you put the battery in the other way round.

Draw a buzzer circuit and label the parts. Explain your drawing. How can you stop the buzzer working?

bulb **buzzer** **circuit** **switch** **wires**

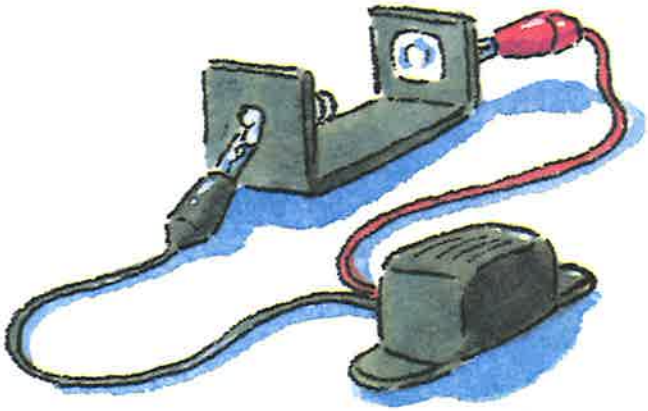
If there is no battery or the circuit is broken the electricity will not flow.

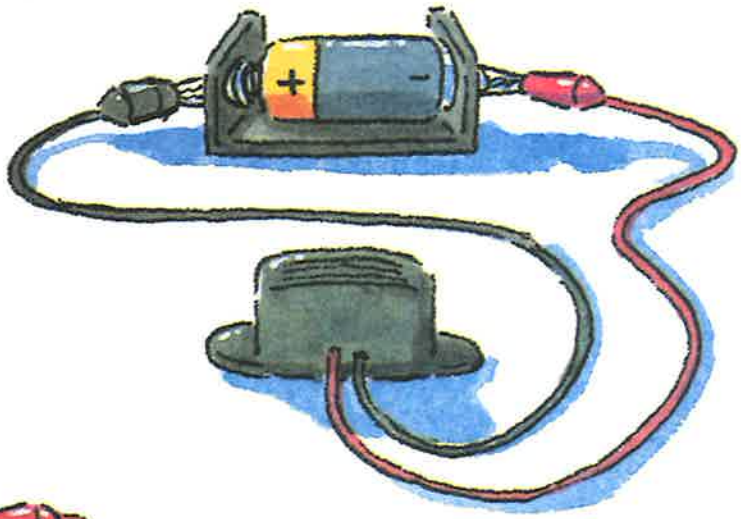
These circuits do not work.
The electricity cannot flow all the way round them.
The bulbs do not light up.

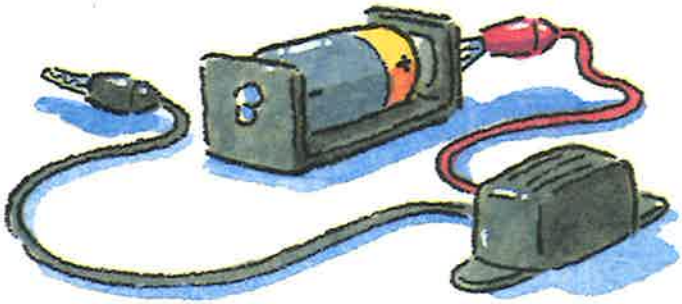


Make the circuits shown in the pictures.
How can you make the bulbs light up?

These buzzer circuits also do not work.







Make the circuits shown in the pictures.
How can you make the buzzers sound?

bulb **buzzer** **circuit**

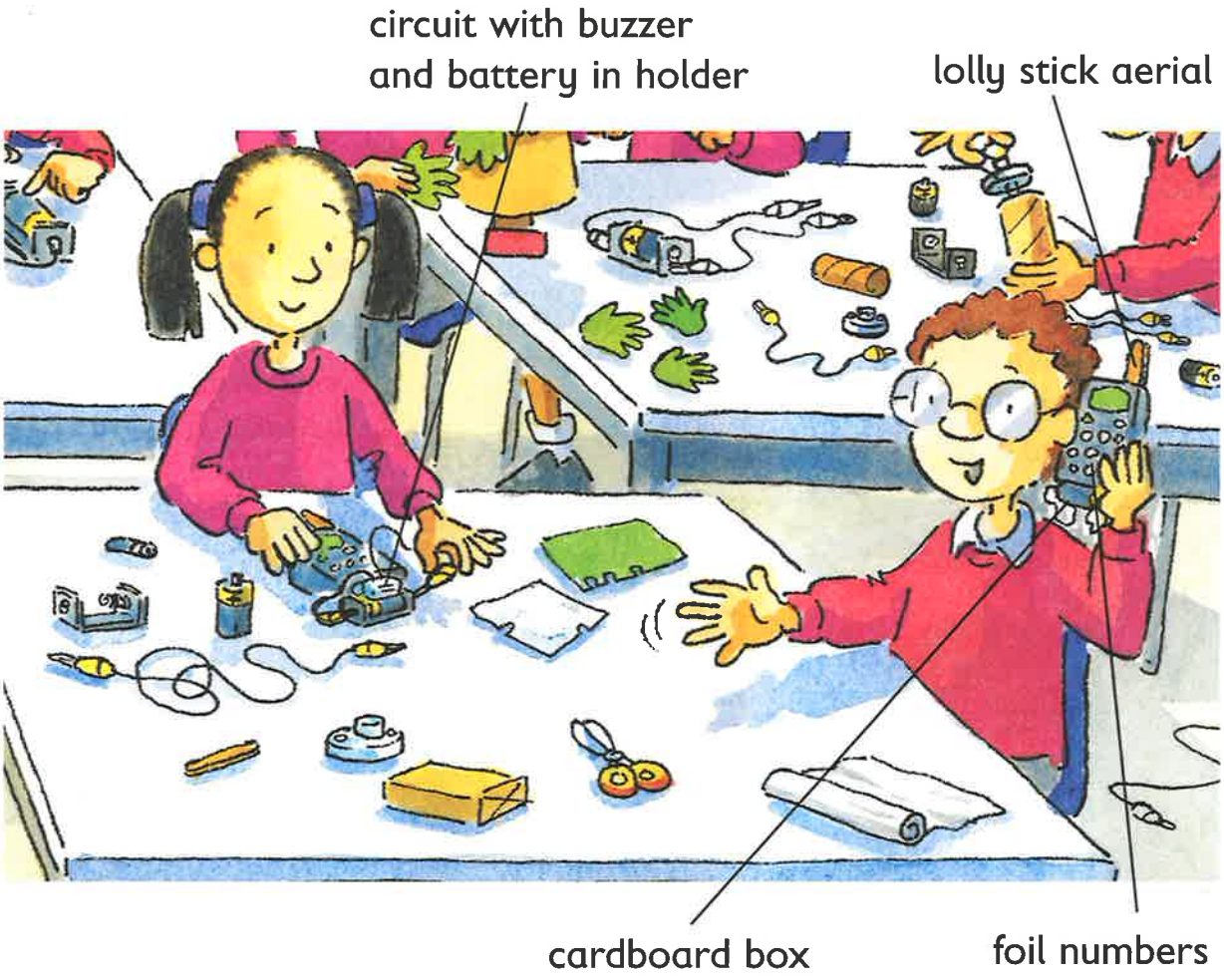
You can use electrical circuits to make useful things.

Mrs Spark's class have made a model lighthouse.
It has a light that goes on and off.

The light goes off when you take the clip off one end of the battery holder.
It goes on when you put the clip back.

What other useful things could you make with a bulb or buzzer circuit?

Gordon and Viv have used a buzzer circuit to make a model mobile phone.



When they touch the wire onto the other end of the battery holder the phone rings.

Make a doorbell using a buzzer circuit. Explain how to use it.

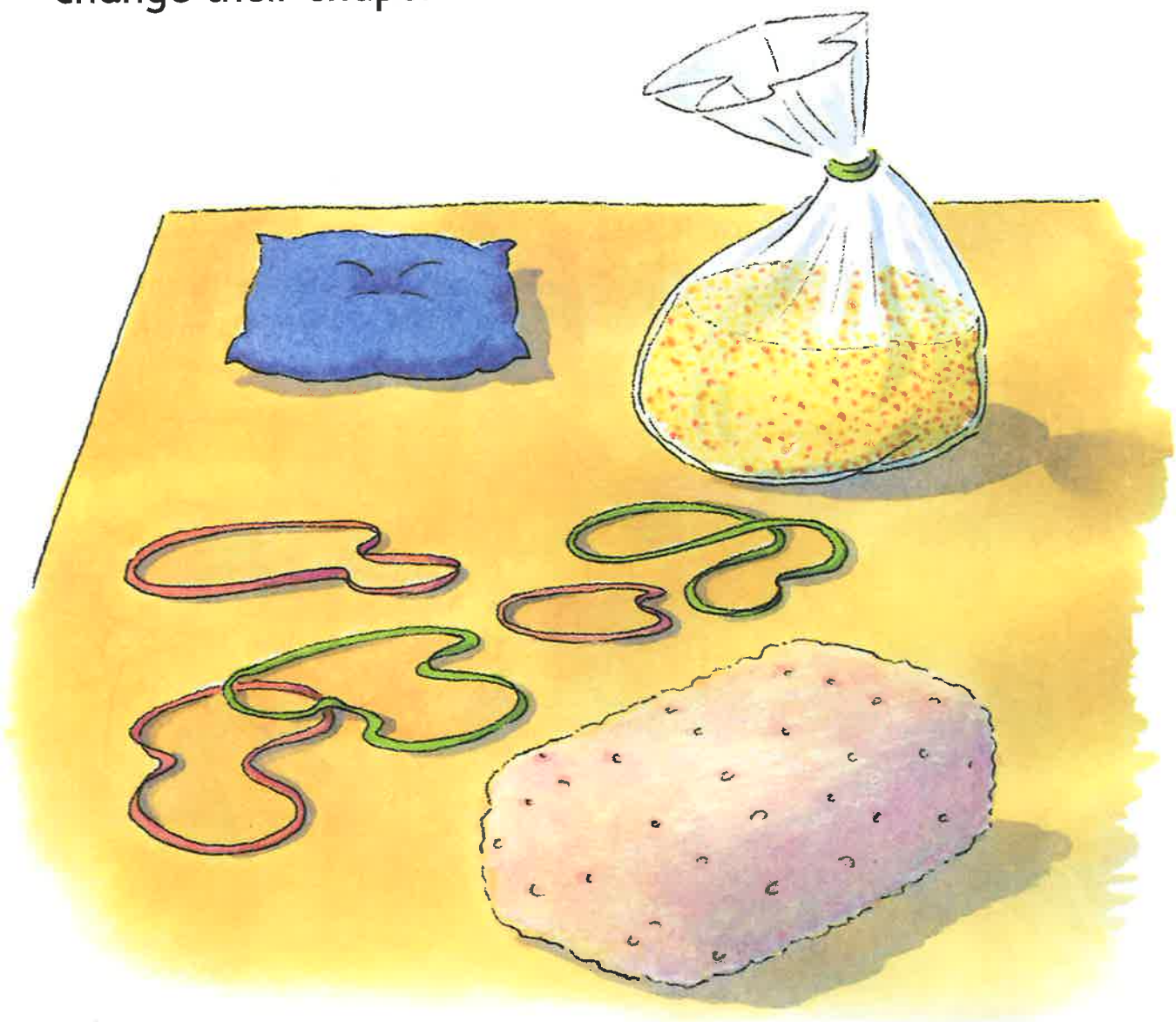
circuit

Pushes and pulls are forces. Materials can change shape when we push and pull them.

Try this with playdough.

Make some different shapes with playdough. Talk about what you did each time. Did you use a push or a pull?

Collect some of these things and try to change their shape.



Use these words to talk about what you did:
push, pull, flatten, squash, stretch, twist, roll.

force pull push stretch twist

Making things move

Pushes and pulls make things move. They can make things move fast, move slowly or go in another direction.

Try to make a ball move fast. Try to make it move slowly. Try to make it go in a different direction.

The children are playing games with soft balls. They are making the balls stop or change direction.

This makes the ball stop.

Chris will make the ball change direction so that Tom can catch it.

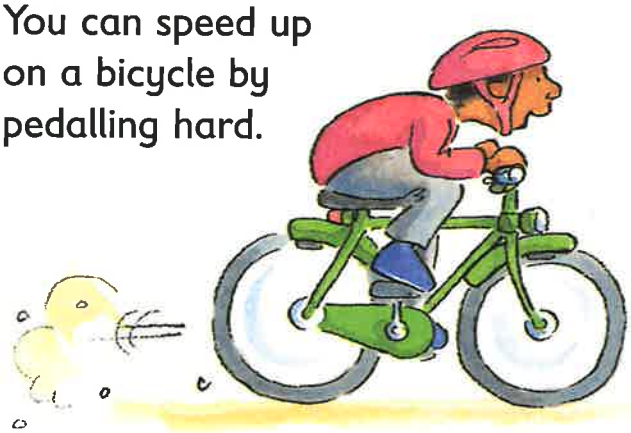
Can you make the ball go faster in the same direction? Describe what you did.

pull **push**

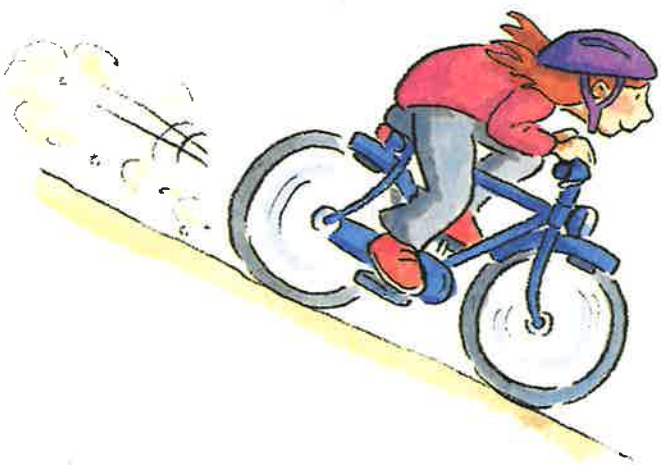
Faster and slower

If you push something harder it will go faster. If you don't push as hard it will slow down.

You can speed up on a bicycle by pedalling hard.



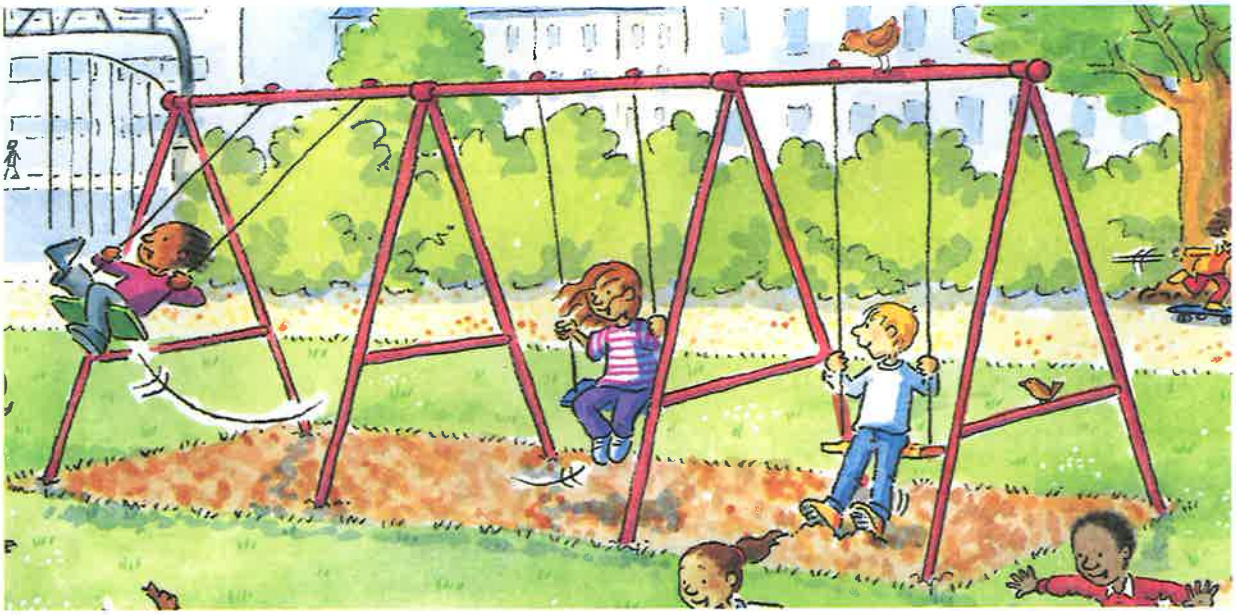
When you stop pedalling the bicycle slows down.



If you want to stop quickly you use the brakes.

Look at the brakes on a bicycle. How do they slow the wheel down?

Faster and slower



The children on the swings lean backwards and forwards to go faster.
To stop quickly they have to touch the ground.

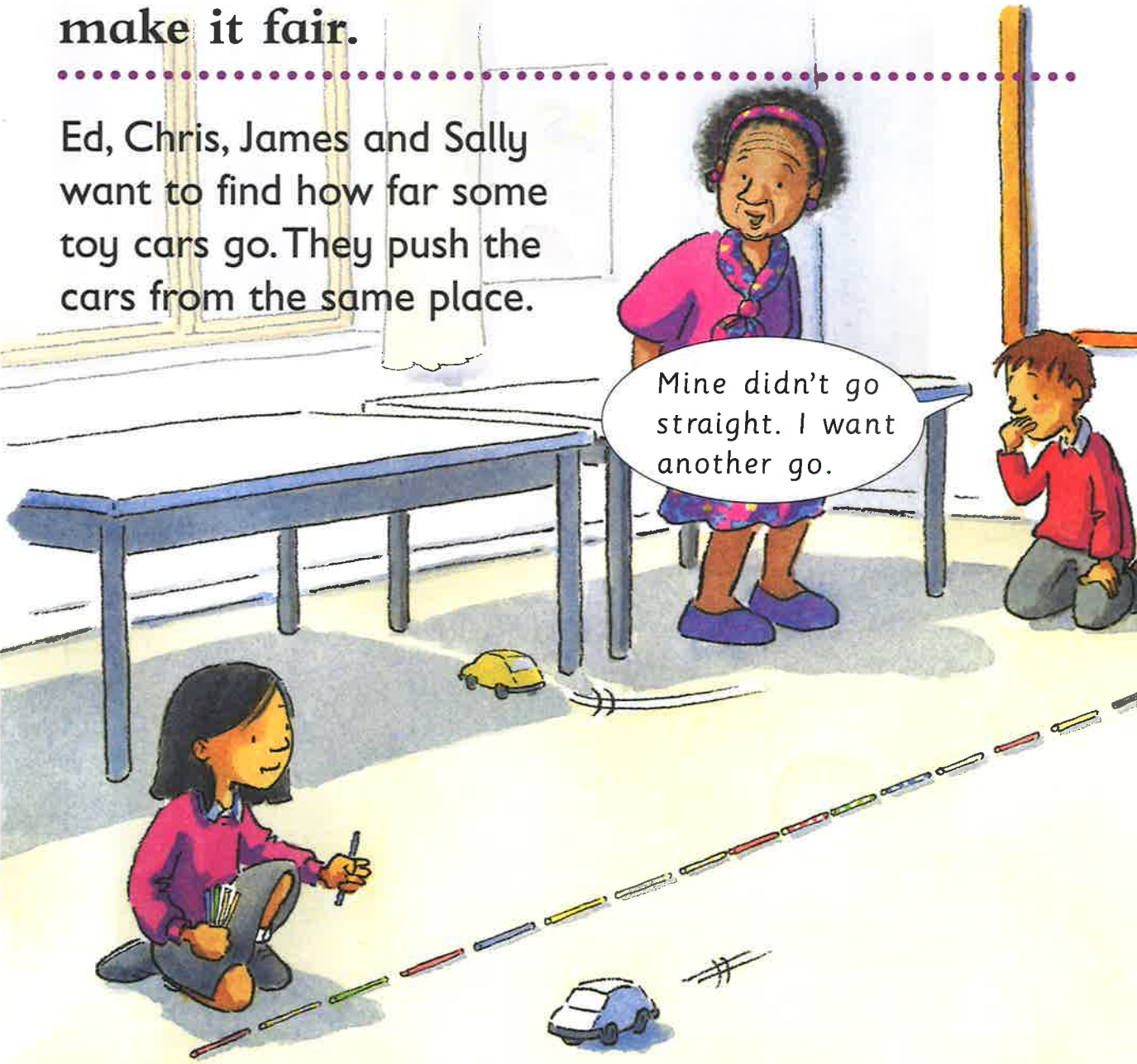
Pushing the roundabout harder makes it turn faster.

How could you make the roundabout slow down?

push **speed**

When we do a test we need to make it fair.

Ed, Chris, James and Sally want to find how far some toy cars go. They push the cars from the same place.



Talk about what the children did and what happened.

Measuring and comparing distances

Jamila measures how far each one goes.

Do you think it was a fair test? Could the test be made fairer? How?

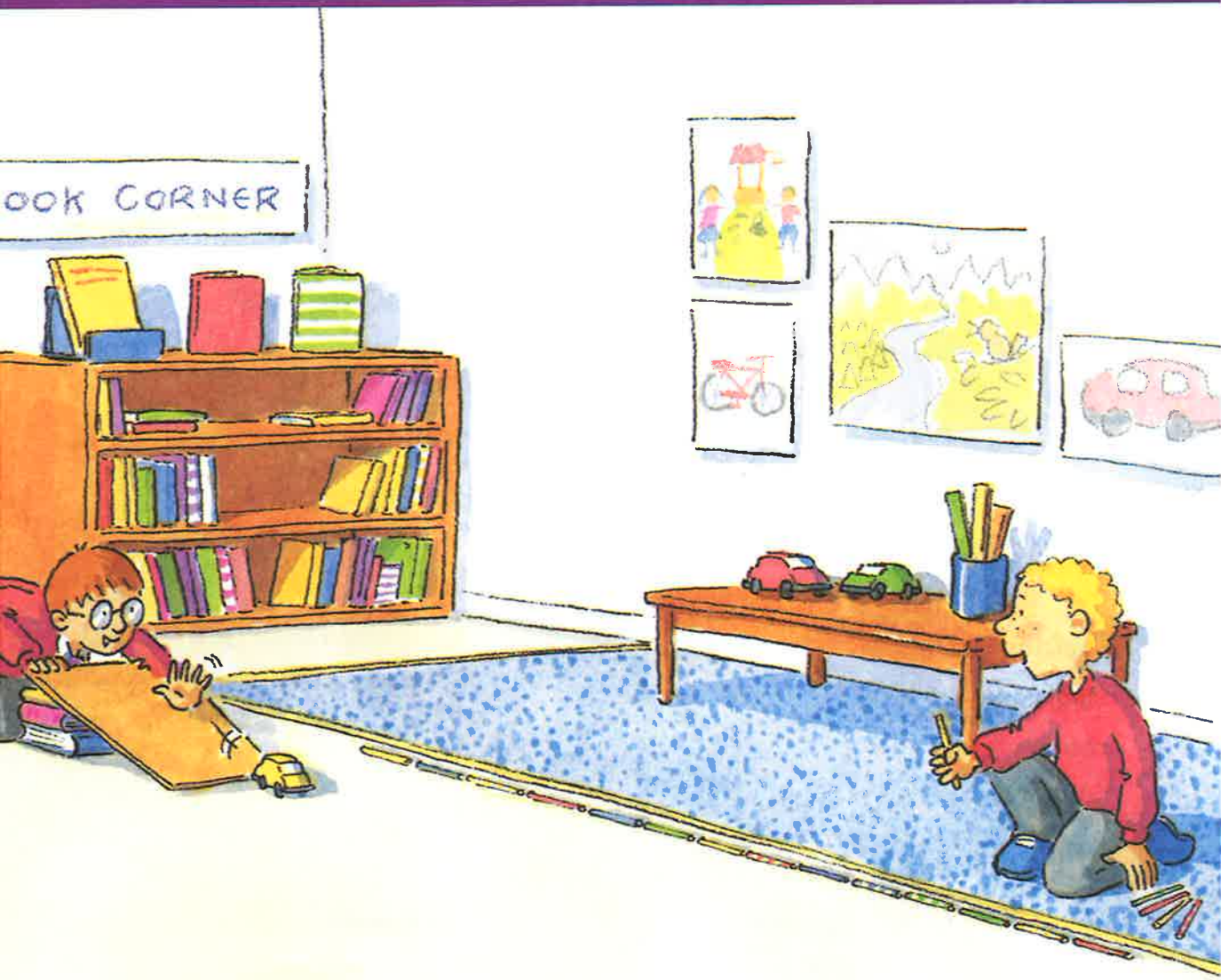
fair test **push**

Rolling down

We can use the results from a test to predict what might happen in another test.

Gordon, Clare, Tim and Sam want to find how far some toy cars go when they roll down ramps.

Talk about what happened in the test?



Sam predicts from the results of his test that if his ramp is higher, his car will go even further.

Do you think Sam is right?
Try it out for yourself.

predict **results**

Testing surfaces

We can use tables and charts to help us make sense of what happened in our tests.

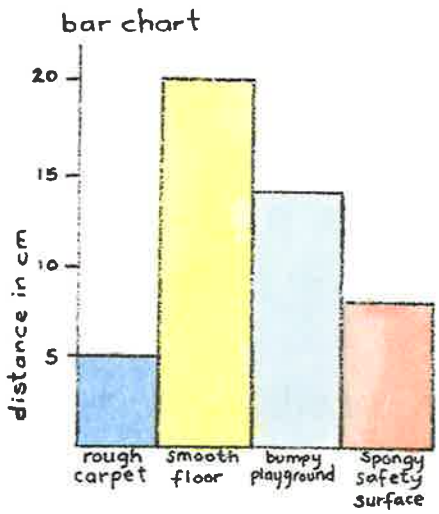
Mrs Spark's class wanted to find how far a car went on different surfaces.

They tested each surface three times and wrote down the longest distance. They measured the distance in centimetres.

Surface	Distance in cm
rough carpet	5
smooth floor	19
bumpy playground	8
spongy safety surface	14

They recorded their results in a table.

They drew a bar chart to show their results too.



What do the results show?
Which surface did the car go furthest on?

Clare thinks that the smoother the surface,
the further the car will go.
Do you agree with her?

How can Clare find out if she is right? Draw a picture and write some sentences to explain what she should do.

distance **rough** **smooth** **results**

Useful science words

battery	A battery provides the power to make electricity flow in a circuit.
bulb	A bulb lights up when electricity flows through it.
buzzer	A buzzer makes a buzzing sound when electricity flows through it.
circuit	A circuit is a battery joined to a bulb or buzzer (or other electrical item) with wires. If the circuit is joined up correctly, the bulb or buzzer will work.
distance	How far something moves.
fair test	A test where most things are kept the same and only one thing is changed.
force	A pull, push, stretch or twist.
mains electricity	Electricity that is supplied directly to the home. It must be used carefully because it is very dangerous.
predict	Using what you already know to think about what will happen in a test.
pull	A force which makes an object move towards you.

push	A force which makes an object move away from you.
results	These are what you find out when you do a test.
rough	An uneven surface.
smooth	The opposite of an uneven surface.
speed	How fast an object is travelling.
stretch	To make something longer by pulling it in two directions.
switch	A switch is used to turn a circuit on and off.
twist	To change the shape of an object by using two pushes.
voltage	The voltage shows how powerful the electricity is. It is marked on the battery.
wires	Metal wires join things in a circuit so the electricity can flow round.