

**Alavi**

**Primary**



**Learner's Book**

**4**

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## Introduction

The Primary Science book has been developed to match the Cambridge International Examinations Primary Science curriculum framework. It is a fun, flexible and easy to use course that gives both learners and teachers the support they need. In keeping with the aims of the curriculum itself, it encourages learners to actively engage with the content, and develop enquiry skills as well as subject knowledge.

The content pages contain many images and questions that you can use as a basis for class discussions. The emphasis in this stage is on linking what learners know about everyday life to scientific ideas.

Throughout the book, you will find ideas for practical activities which will help learners to develop their Scientific Enquiry skills as well as introduce them to the thrill of scientific discovery.





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CHAPTER

1

Solids, liquids and gases



## What learners will learn and reinforce

The activities in this chapter give learners practice in the following topics:

Topic	In this topic, learners will:
1.1. What is matter?	identify solids, liquids and gases.
1.2. Melting, freezing and boiling	discover that matter can change phase by melting, freezing and boiling.

## Word bank

1	matter	2	solid	3	liquid	4	gas	5	phase
6	particle	7	change shape	8	packed together	9	tightly	10	close together
11	easily	12	far apart	13	example	14	squash	15	melt
16	freeze	17	boil	18	heat	19	cool down	20	occur

## \* 1.1. What is matter?

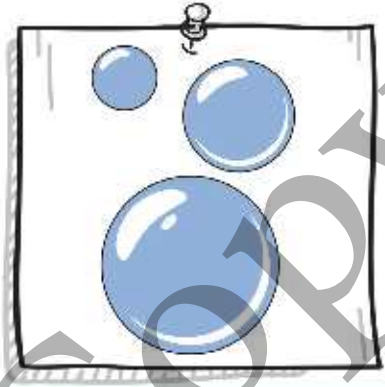
Matter is everything around us.



A brick is a **solid**.



Water is a **liquid**.



The air inside the bubble is a **gas**.

Matter exists in three different states. A state of matter is called a **phase**. These phases are known as solid, liquid or gas.

It is Suni's tenth birthday party.

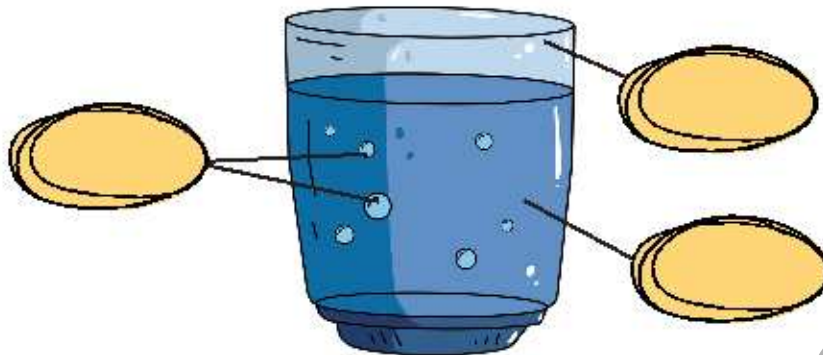
Identify two solids, two gases and one liquid on his birthday table.



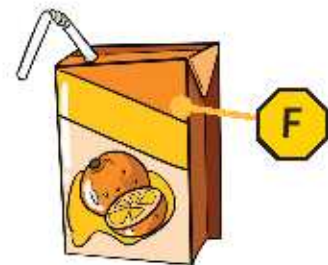
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Look at this picture of a glass of soda.

Write labels for solid, liquid and gas in the correct places on the picture.



Identify solids, liquids and gases in the pictures A-F. Write your answer in the space below each picture.



Look at these sentences about matter. Fill in the gaps using the words from the box.

wooden chair

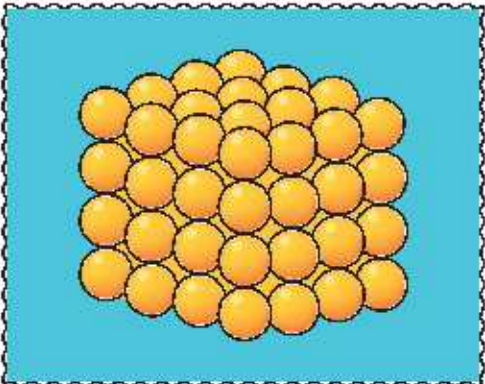
vinegar

phases

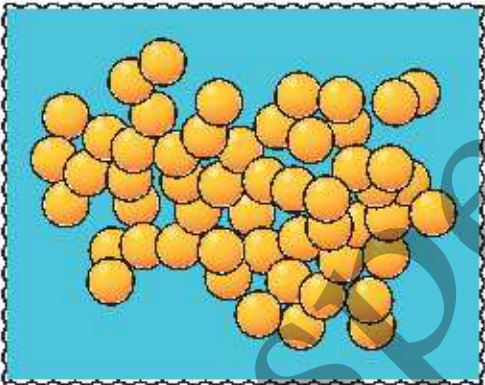
oxygen

particles

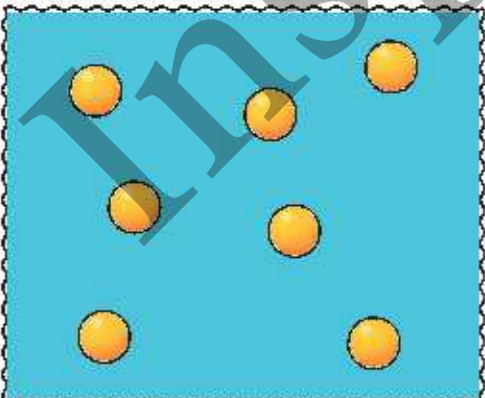
- Solid, liquid and gas are the three ..... of matter.
- All matter is made of tiny pieces called .....
- ..... is an example of a gas.
- ..... is an example of a solid.
- ..... is an example of a liquid.



Particles within a solid are packed together very tightly in fixed positions. This makes it difficult for the solid to change shape.



Particles within a liquid are close together but they can slide past each other and change places. Because of this, liquids can change shape easily.



Particles within a gas are spaced far apart. This is why gases can have any shape. They can also be squashed easily.

## 1.2. Melting, freezing and boiling

Sabera's ice-cream started as a frozen solid. When the sun heated the ice-cream, it changed to a liquid. This change from solid to liquid is called **melting**.



We can show melting in this way:

solid  $\xrightarrow{\text{heat causes melting}}$  liquid



**Freezing** is the opposite of melting. Freezing is when something changes from a liquid to a solid.

Water exists in three different phases: ice (solid), water (liquid) and water vapour (gas), which we often call steam.

Copy and complete the sentence below. Fill in the phase changes the water went through when it cooled down.

steam (..... phase)  $\xrightarrow{\text{cool down}}$  (..... phase)

What happens to the water when you put it in the freezer?

Copy and complete the sentence below. Fill in the phase changes the water went through when it froze.

water (..... phase)  $\xrightarrow{\text{cool down}}$  (..... phase)

## What happens to ice when it is heated?

- 1) Put the ice cubes into the pot.
- 2) Heat the pot on the hot plate.
- 3) Predict what you think will happen to the ice.
- 4) What happens to the ice?




You will need:  
ice cubes, pot (pan or saucepan)  
and hot plate.

This is the phase change the ice goes through when you heat it:

solid phase (ice)  $\xrightarrow{\text{heat}}$  liquid phase (water)

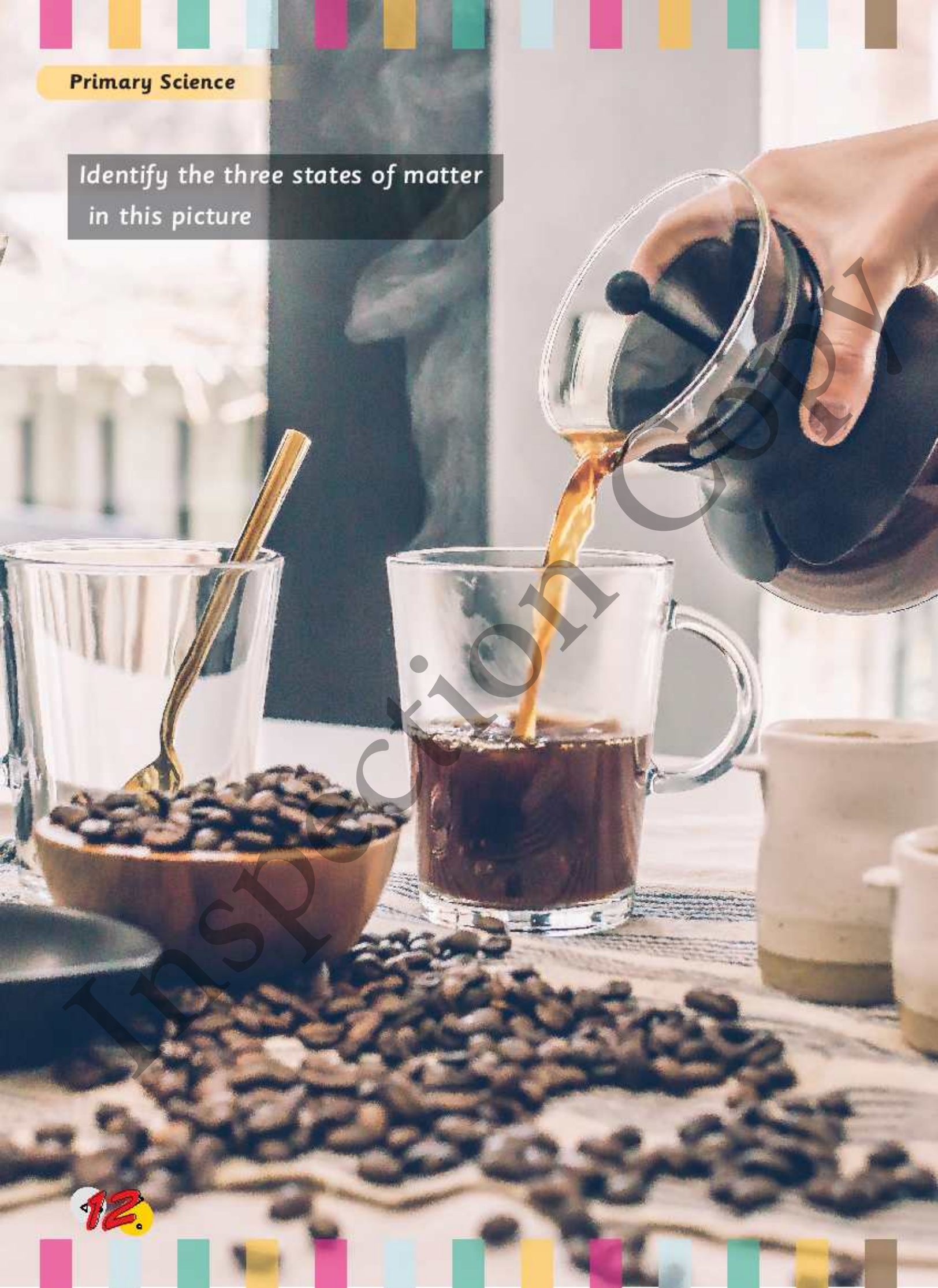
- 5) Now heat the water until it starts to **boil**.
- 6) Observe how the water changes.

Be careful of the hot plate,  
it can burn you.  
Steam can also burn you.

-  Melting occurs when a solid is heated and it changes into a liquid.
-  Boiling occurs when a liquid is heated and it changes into a gas.
-  Freezing occurs when a liquid is cooled and it changes into a solid.

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Identify the three states of matter  
in this picture



CHAPTER

2

Environment









An earthquake can kill animals and plants. It is an example of a **natural disaster**.



If an oil tanker sinks, the oil spills into the ocean. This can kill thousands of sea creatures and sea birds. This is called a **man-made disaster**.

We can all help to **protect** the environment.

## 2.2. Recycling can save the Earth

Sort these objects by drawing a line from each object to the correct bin.  
The first one has been done for you.



Identify ways to recycle rubbish.

Match the items in the rubbish bin with ways to recycle them.

- glass bottle
- apple core
- newspaper
- plastic box
- tin can
- plastic bag

- grow a plant in it
- reuse it for shopping
- take it to the bottle bank
- use it to store things in
- put it on the compost heap
- wrap things up in it



CHAPTER

3

Electricity





### \* 3.1. Electricity around us

**Electricity** is all around us.

We can use it to make light or sound.

We can use it to heat things up or cool things down.

We can use it to make things move.



Look at the picture. Which things use electricity?

### \* 3.2. Mains electricity and cell

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**.)



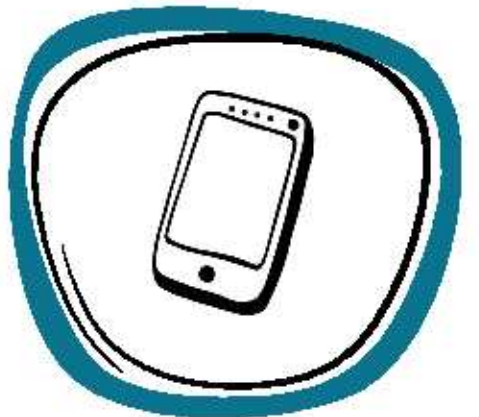
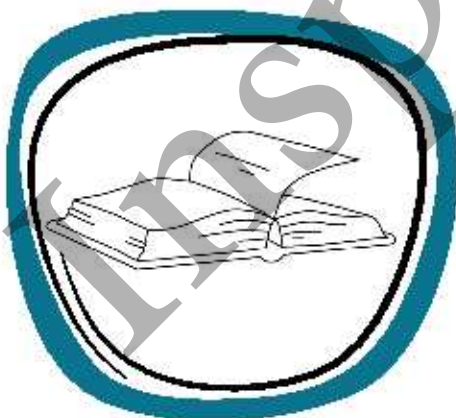
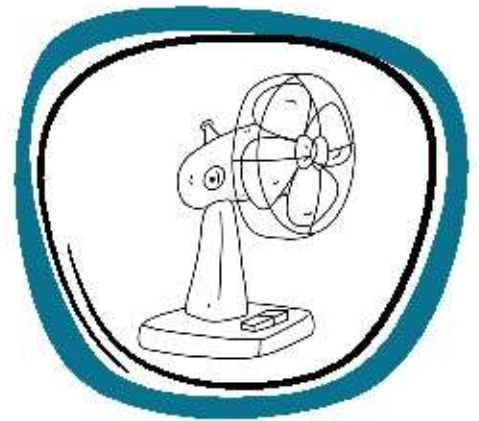
mains electricity



electricity from cells

Does it use electricity?

Colour in.



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



mains electricity  cell



mains electricity  cell



mains electricity  cell



mains electricity  cell

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

Walk around your home or school and photograph or note the things that use electricity.

Say if they use mains electricity or cells.

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

### \* 3.3. An electrical circuit

The electricity from cells is less powerful than mains electricity. Small cells are safe to use. Touching the metal parts will not give you an electric shock.



Each cell has a positive terminal (+) and a negative terminal (-).



A bulb or lamp.



A bulb holder.



Copper wire covered in plastic.

A cell pushes electricity around a **circuit**. It has a positive (+) side and a negative (-) side. The **bulb** lights up when electricity goes through it. The wire is used as a **connector**.



CHAPTER

4

Magnetism



## What learners will learn and reinforce

The activities in this chapter give learners practice in the following topics:

Topic	In this topic, learners will:
4.1. Magnets in everyday life	discover that some objects are attracted to a magnet and others are not.
4.2. Magnetic poles	understand how magnets attract or repel each other.
4.3. Magnetic materials	identify which materials are attracted to magnets.

## Word bank

1	magnet	2	horseshoe	3	wand	4	disc-shaped	5	ring
6	shape	7	size	8	bar	9	attract	10	magnetic
11	material	12	pole	13	north	14	south	15	keeper
16	push away	17	repel	18	pull towards	19	like	20	unlike
21	non-magnetic	22	metal						

## \* 4.1. Magnets in everyday life

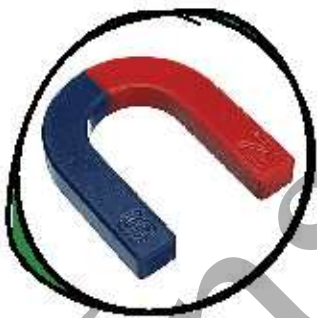
Pedro is helping his grandmother pick up pins. He is doing it the easy way \_ he is using a **bar magnet**.

A magnet attracts some materials to it. We call these materials **magnetic**.



### Types of magnet

Magnets come in many different shapes and sizes.



A **horseshoe magnet** is shaped like a horseshoe.



A **wand magnet** is shaped like a wand.



Some magnets are **disc-shaped**.

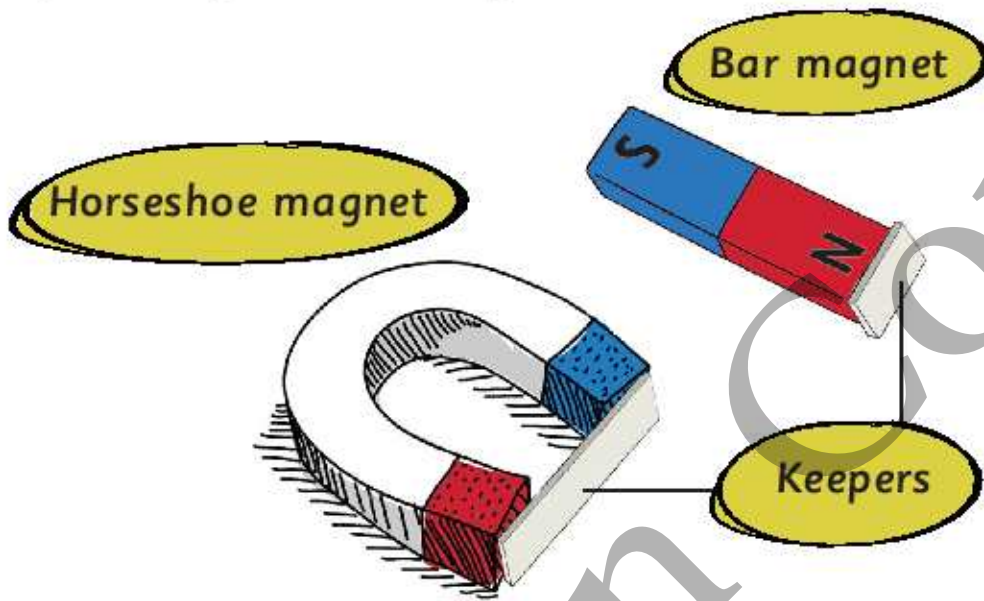


Some magnets are shaped like **rings**.

## \* 4.2. Magnetic poles

Explain the way magnets work.

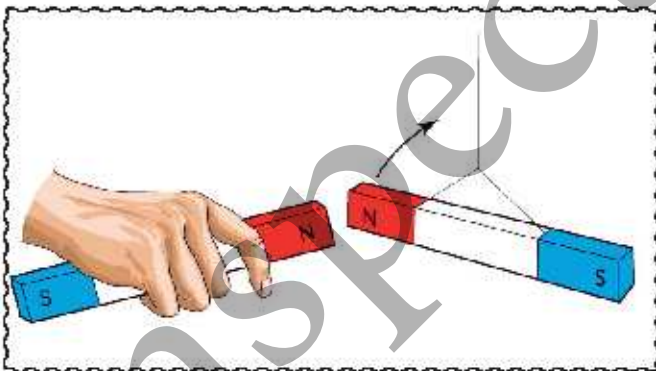
Look at the picture of the two magnets.



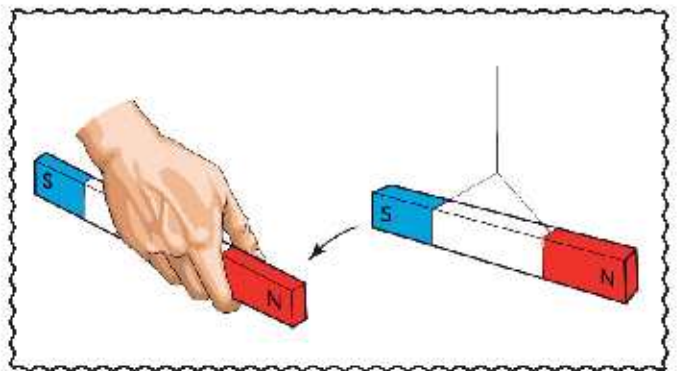
What do the letters N and S stand for on the bar magnet?

N is the .....

S is the .....



**Like poles** push away from each other. They **repel** each other.



**Unlike poles** pull towards each other. They **attract** each other.

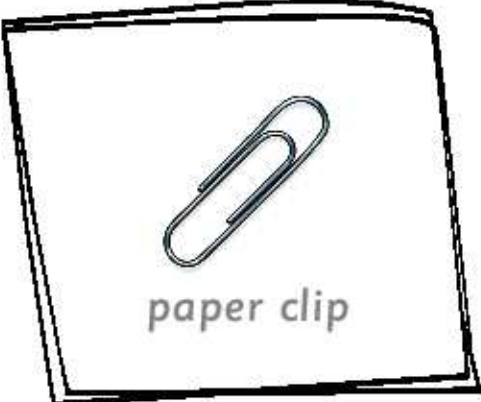
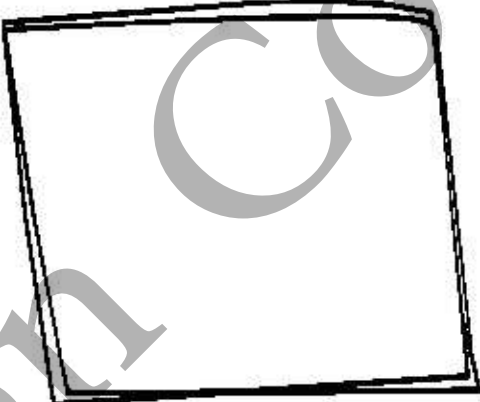
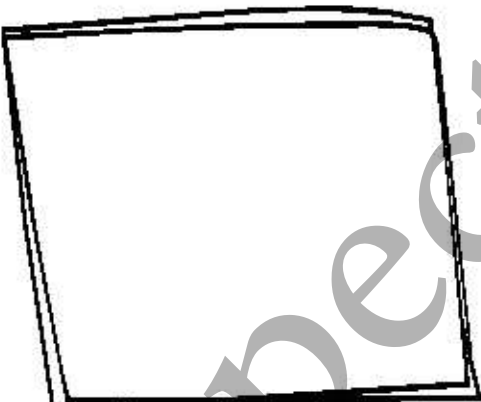
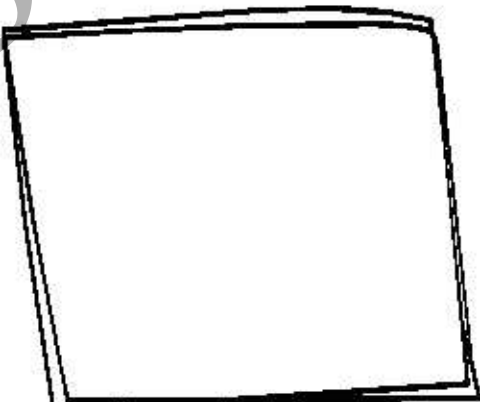
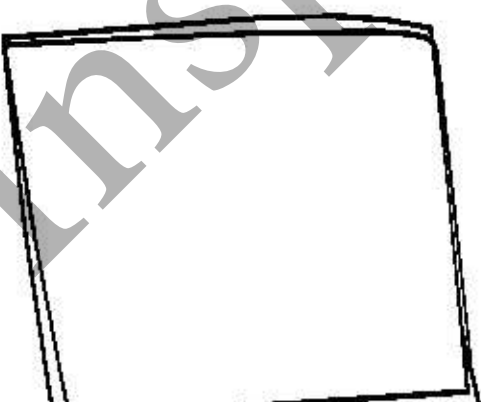
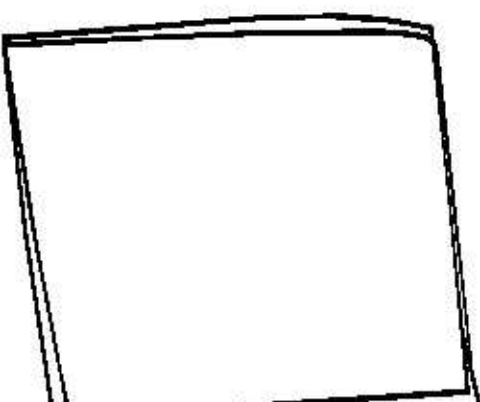
Underline the correct word in these sentences:

Like poles *attract* / *repel* each other.

### \* 4.3. Magnetic materials

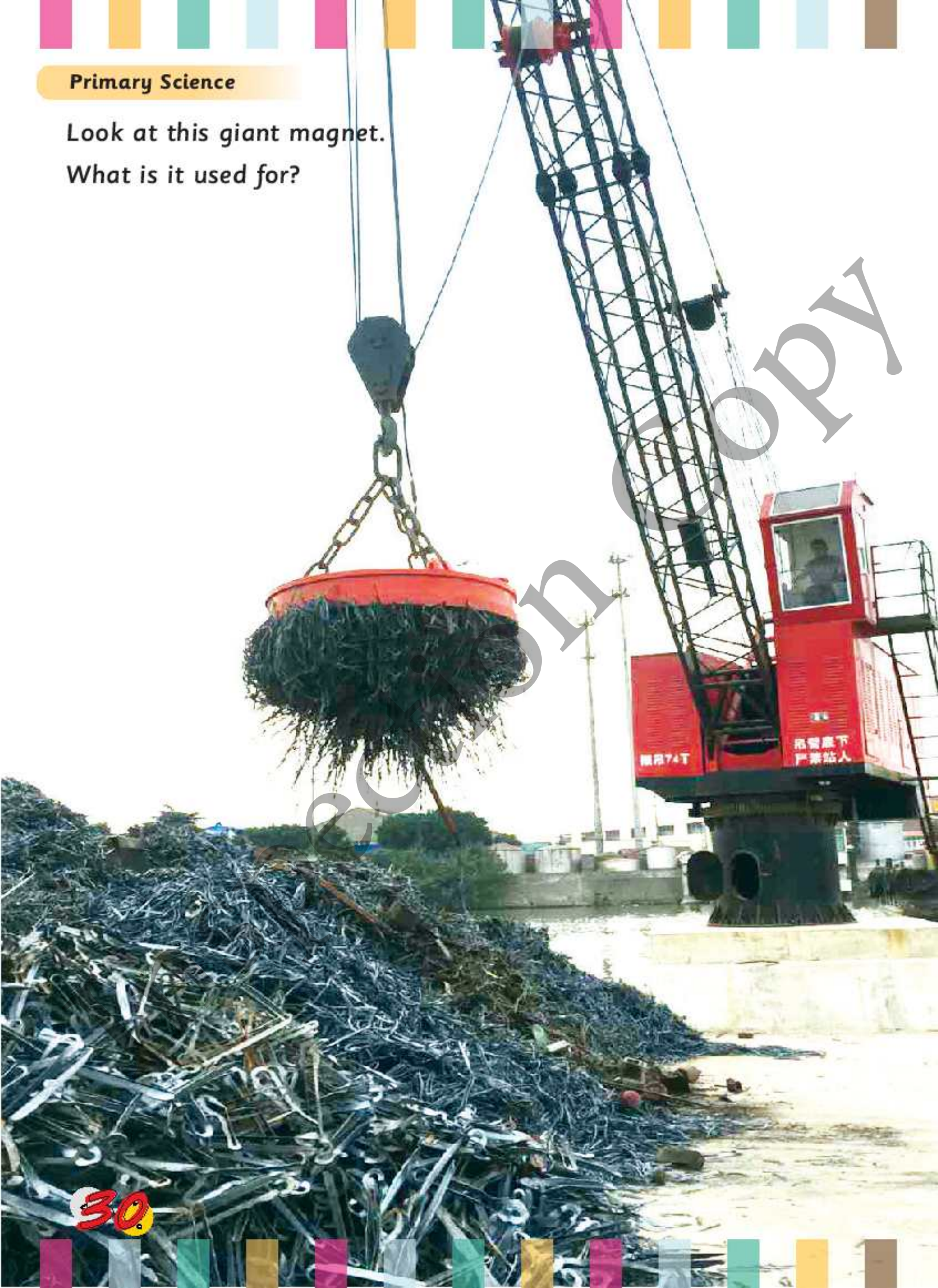
#### Testing metal

- ◆ Find three different coins and three other objects made from metal.
- ◆ Use a magnet to find out if the metals are magnetic or non-magnetic.
- ◆ Draw and label the objects in the results table.

Magnetic	Non-magnetic
 <p data-bbox="341 985 548 1041">paper clip</p>	
	
	

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Look at this giant magnet.  
What is it used for?



CHAPTER  
5

Humans and animals



Inspection Copy

## What learners will learn and reinforce

The activities in this chapter give learners practice in the following topics:

Topic	In this topic, learners will:
5.1. Skeletons	identify animals with a skeleton and name parts of the human skeleton.
5.2. The human skeleton	know that there are different types of bones in the human skeleton.
5.3. Skeleton and movement	show how muscles contract and relax to make us move.
5.4. How medicines work	understand that medicines work by killing germs and identify safe ways to take medicine.

## Word bank

1	skeleton	2	bone	3	inside	4	body	5	frame
6	support	7	regular	8	irregular	9	long	10	short
11	thigh	12	flat	13	skull	14	spine	15	jaw
16	elbow	17	collar bone	18	thumb bone	19	finger bone	20	hip bone
21	toe bone	22	ankle	23	shin bone	24	knee bone	25	wrist
26	vertebra	27	rib	28	shoulder bone	29	ear bone	30	chest
31	vertebrae	31	back	32	muscle	33	bend	34	relax
36	contract	37	attach	38	opposite	39	drop	40	lift
41	pair	42	medicine	43	symptom	44	cure	45	prescribe
46	flu	47	illness	48	germ	49	fever	50	cough
51	sore throat	52	insect bite	53	itch	54	scratch	55	take a pill
56	ointment	57	rub	58	temperature				

## \* 5.1. Skeleton

Sometimes skeletons look scary. Skeletons are not scary. People, and many animals, have a skeleton inside their bodies.

A skeleton is a hard, strong **frame** that supports our bodies from the inside.



Our skeletons are made of many different bones. These bones are different sizes and shapes.

### What are skeletons made of?

Skeletons are made of **bone**. Bones are very hard and strong.

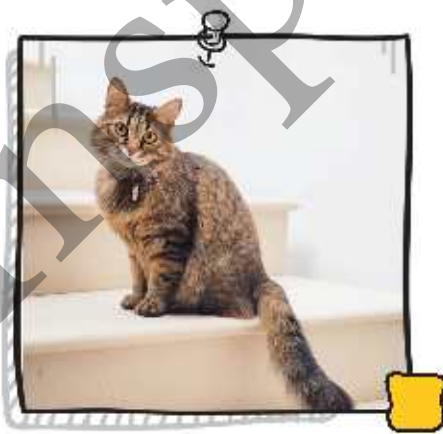
You can feel the bones of your skeleton through your skin.

The main functions of the skeleton are growth, movement, support and protection.

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Skeleton or no skeleton?

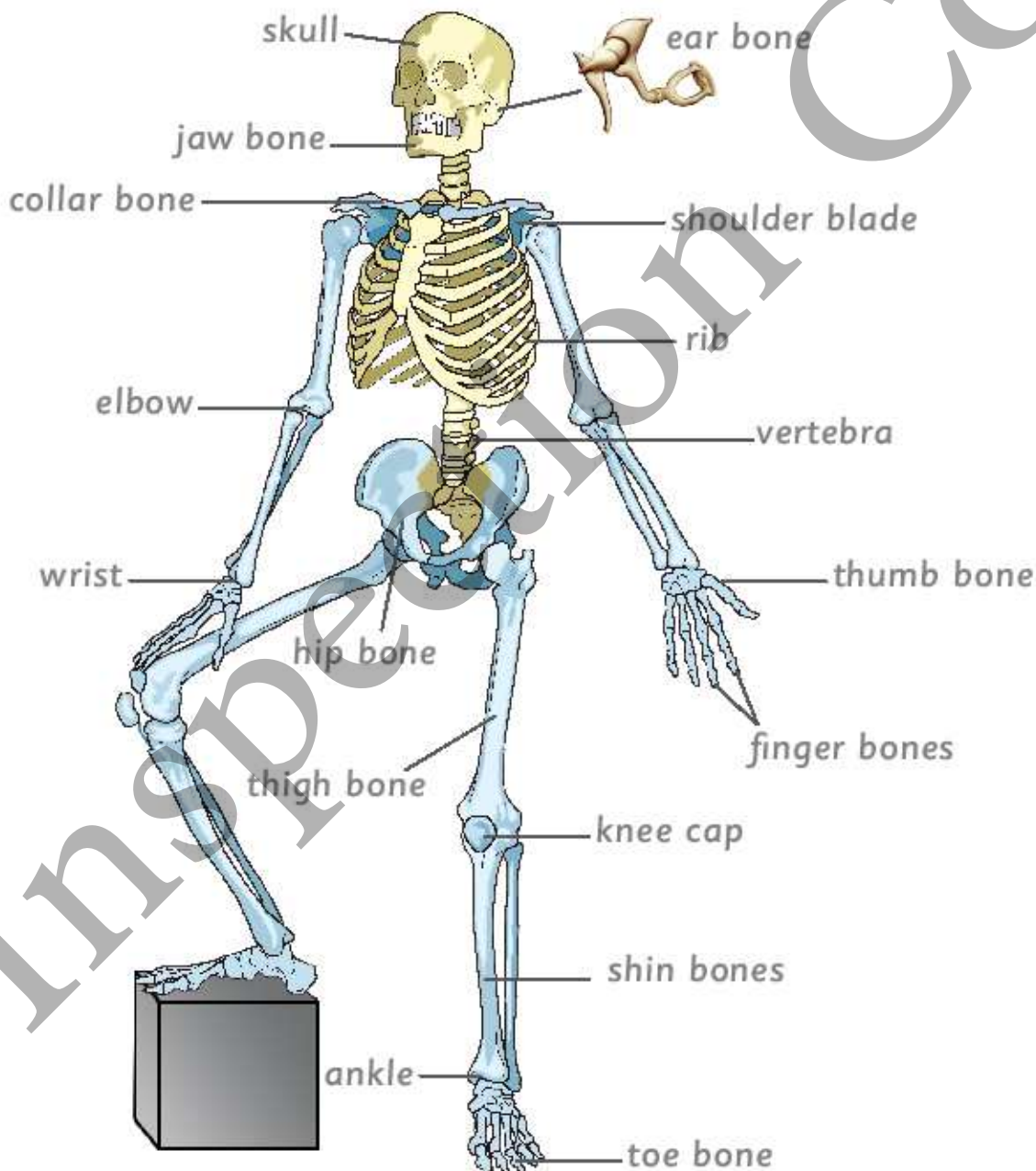
Look at the pictures. Put a tick (✓) in the box next to the animals that have a skeleton. Put a cross (×) in the box next to the animals that do not have a skeleton.



## \* 5.2. The human skeleton

We have 206 bones in our skeletons. There are different kinds of bones in the skeleton:

-  Long bones, like the bones in our legs and arms. The thigh bone is the long bone in your leg.
-  Short bones, like those in our fingers.
-  Flat bones, like those that make up our skull.
-  **Irregular** bones, like the bones in our spine.



## Finding your bones

Feel your head. How many **skull** bones can you feel?

Hold your hands on the sides of your chest. Can you find your ribs?  
How many ribs can you feel?

Now feel your back. The bumps you can feel are the bones of your **spine**. These bones are called **vertebrae**. One bone is called a **vertebra**.

Stand up and put your hands on your hips. Can you feel your hip bones?

◆ What are the bones in your head called?

◆ What are the bones in your chest called?

◆ What is the row of bones in your back called?

◆ What is a single bone in your back called?

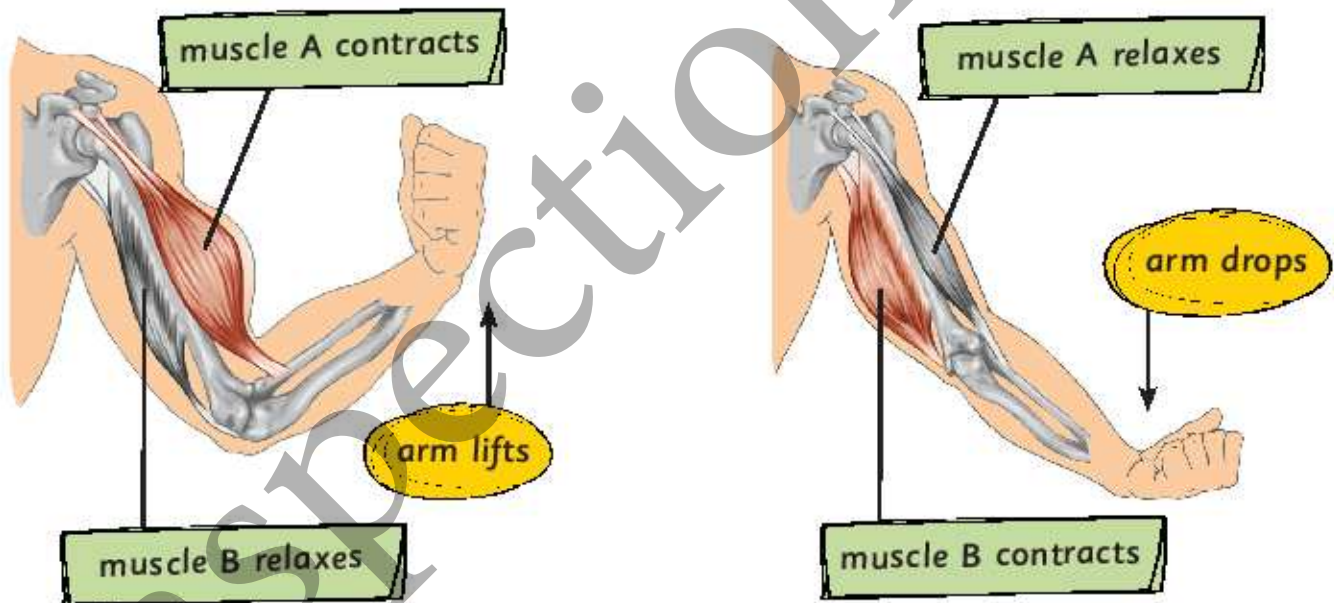
### \* 5.3. Skeletons and movement

#### Muscles make us move

Bones are strong and hard, they cannot bend but your body can move in many ways.

All animals with skeletons have **muscles** attached to the bones. Muscles are the parts of the body that allow us to move in many different ways. Muscles are found under the skin. They cover the skeleton and give your body the shape that you have.

Muscles always work in pairs. One muscle contracts and pulls on the bone it is joined to. This makes the bone move. The opposite muscle relaxes.





### Explain the way that muscles work

Complete the sentences to explain the way the muscles in your arm work. Use each of the words in the box once.

pairs

contracts

relaxes

shorter

longer

When I lift a weight, the muscle at the front of my arm ..... and gets ..... . The muscle at the back of my arm ..... and gets ..... . This shows that muscles work in .....

Muscles allow us to move.  
Muscles are joined to bones.  
Muscles work by pulling on bones.

## \* 5.4. How medicines work

### Symptoms and cures

How do you know when you have the flu?

When we are ill, we have signs of the illness called **symptoms**.

Different illnesses have different symptoms.

Look at the picture below to see some of the symptoms of flu. One of these symptoms is a fever. Medicines help to take away the symptoms of the illness.

Often we become ill because **germs** enter our body. Medicines can help to kill the **germs** and make the illness go away. When medicines make an illness go away, we say that the medicines **cure** us.

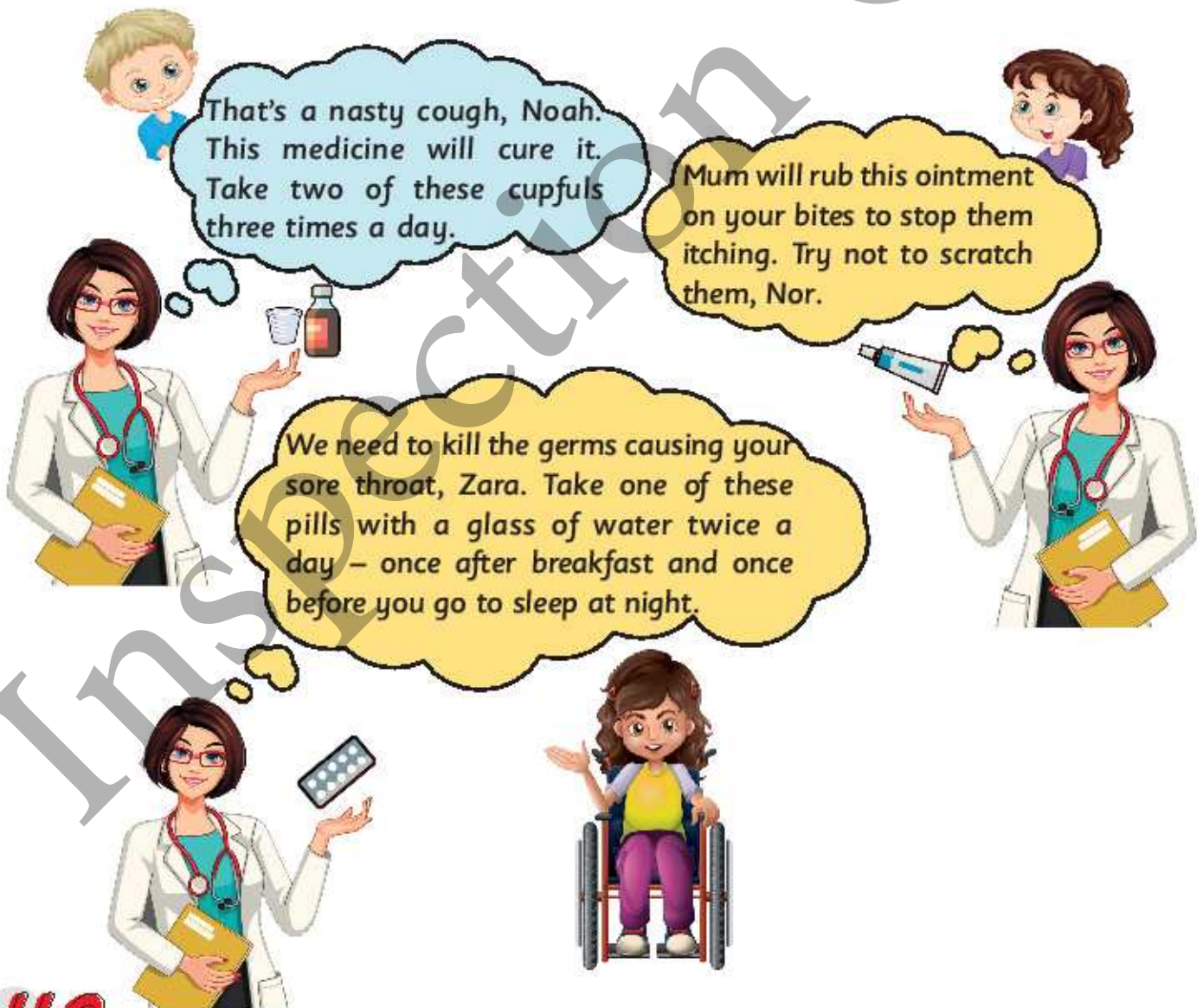


Medicines make us better but we have to take them safely. You should only take medicines if they are given to you by a doctor, a nurse or an adult who looks after you. Sometimes a doctor will prescribe medicines.

## You should see a doctor.

Noah, Zara and Nor are at the clinic with their mother, Mrs. Suppiah. The children have different symptoms. Noah has a bad cough. Zara has a sore throat. Little Nor has insect bites on her arms and legs which itch. She wants to scratch them all the time.

The children see Dr. Tan. She examines each child. Then she prescribes a different medicine for each child.



Answer these questions.

1) Draw lines linking each child with their symptoms.




Noah  
Zara  
Nor

sore throat  
itchy skin  
cough

2) Draw lines linking each symptom with the medicine that Dr. Tan gives the child.

sore throat  
itchy skin  
cough

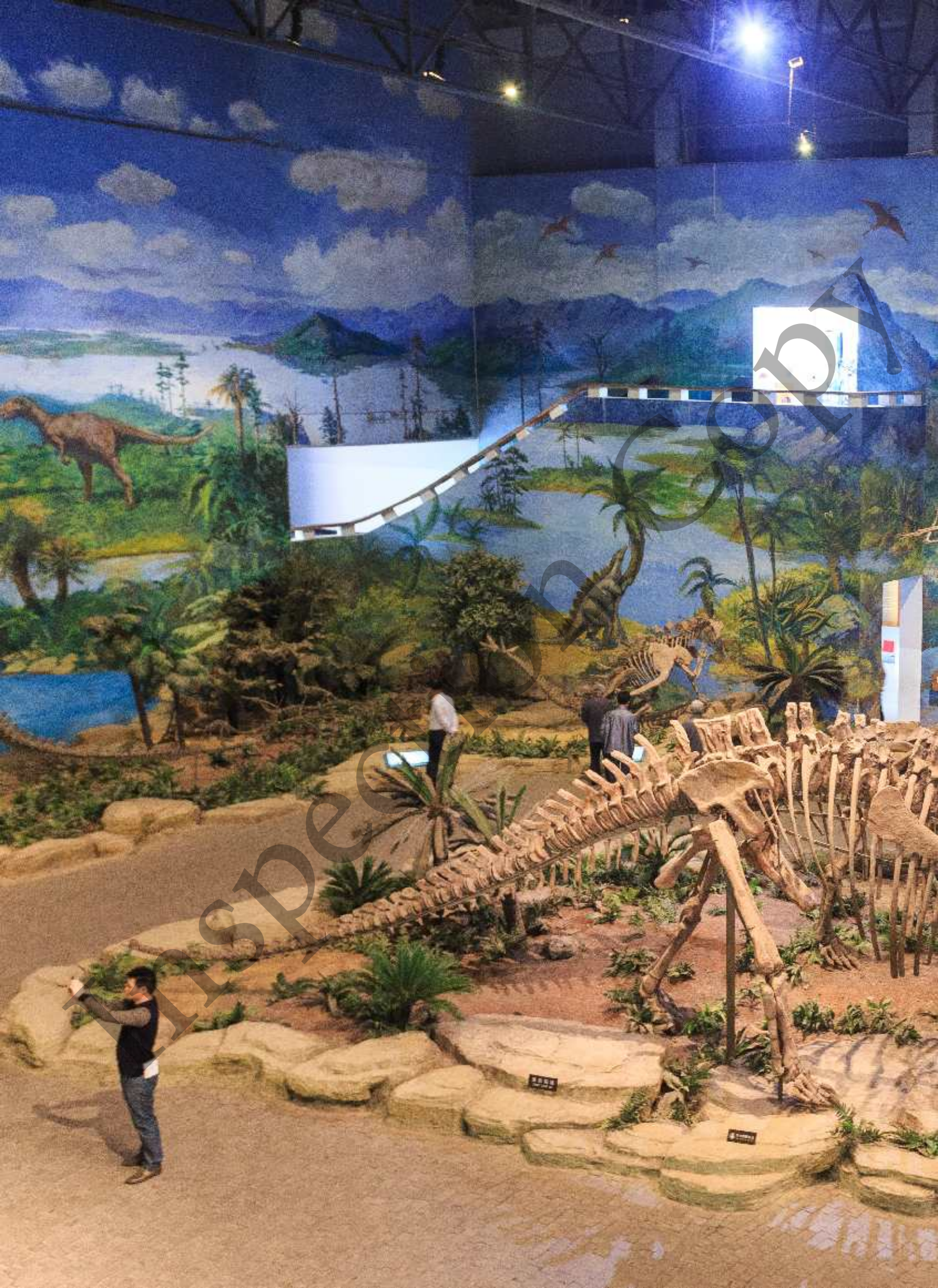
ointment  
cough medicine  
pills

-  Symptoms are the signs of illness.
-  Medicines can cure illnesses and make them go away.
-  We must follow the instructions to take medicines safely.

Match each word to its meaning. The first one has been done for you.

symptoms  
fever  
cure  
germs  
prescribe

very small living things that make us sick  
when a doctor says what medicine a sick person must have  
signs of an illness  
a very high body temperature  
some things that makes an illness go away







# Note



Inspection Copy