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UNIVERSITY PRESS

CAMBRIDGE Primary Science

Learner's Book 3

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Introduction

Welcome to Stage 3 of Cambridge Primary Science. We hope that you enjoy these exciting activities at Stage 3. At Stages 1 and 2 you learned a lot about the world and about how to be a scientist. This year you will learn even more!

An important part of Stage 3 is that you will learn how to do five different types of science investigations:

- research
- identifying and classifying
- fair testing
- pattern seeking.
- observing over time

These types of investigations will make you an even better scientist and will help you learn much more about the world.

At Stage 3 you are going to learn about:

- plants
- living things
- materials
- forces
- light
- the Earth in space.

You will learn new things and new words so it will help to talk about your science. Make sure you talk with your classmates as well as your teacher and other people.

You may find when learning science that some things feel easy but others are harder. You may sometimes get things wrong. Do not worry about this. As learners we don't get things right every time. But this can help us to learn. Some scientists have found that we may learn even more when we get a few things wrong. This is because it makes us think harder about what we are learning. So, remember, enjoy your science but be ready to talk about it and think hard!

Jon Board and Alan Cross



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How to use this book

In this book you will find lots of different features to help your learning.

What you will learn in the unit.

We are going to:

- learn about mixtures and how to separate them
- observe the properties of materials in mixtures

Questions to find out what you know already.

Getting started

These beans are all mixed together.

- Tell a friend how you would **separate** the beans into the different types. What could you use to help?
- Draw diagrams to show your ideas.

Important words and their meaning

conditions germination
seedling shoot wilt

A fun activity about the Science you are learning.

Activity 1.2.2

Make a model plant

You will need: paper, card, a straw, string, glue, sticky tape

Making a model will help you learn about plants. You can touch the model and observe its parts.

Use the materials to make a model plant with a flower, stem, leaves and roots. Label your model.



An investigation to carry out with a partner or in groups.

Think like a scientist 5.3.2

Questions about friction

You will need: a forcemeter, some masses, some water, some shoes or other objects to pull

Zara and Arun have a new question about friction. What type of scientific enquiry can they do to find out the answer: research, pattern seeking, observing changes over time, fair testing or identification and classification?

Questions to help you think about how you learn.

How did the practical work help you to learn today?

This is what you have learned in the unit.

Look what I can do!

- I can name two materials that dissolve in water and one that does not.
- I can ask a scientific question and plan the right type of scientific enquiry to find the answer.
- I can record my observations in tables and diagrams.
- I can explain how to stay safe in an investigation.

Questions that cover what you have learned in the unit. If you can answer these, you are ready to move on to the next unit.

Check your progress

Talk about these questions.

1 Complete these sentences. You can use these words.

not alive

can have young

cannot have young

alive

I know this eagle is _____ because it _____



I know this candle is _____ because it _____



At the end of each unit, there is a project for you to carry out, using what you have learned. You might make something or solve a problem.

Project: How do plants use water?

Make a zig-zag book explaining the journey of water through a flowering plant.

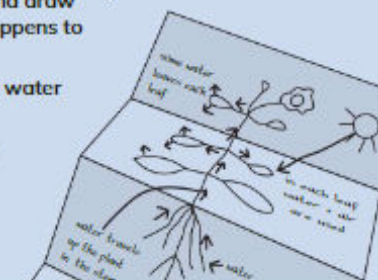
A zig-zag book is like a 'fold up' poster. You need to draw and write to explain how water:

- is in the soil,
- is absorbed by the roots,
- moves up the stems,
- is used in leaves and flowers.

Start by researching in books and on the internet. Then write and draw diagrams to explain what happens to water in a plant.

Use arrows to show how the water moves in the plant.

Open the book to watch the poster grow!



Working like a scientist

Different types of science enquiry

At Stage 3 and during the later stages of Cambridge Primary Science you will carry out five kinds of **science enquiry**. These allow you to think and work scientifically.

classifying
fair testing
identifying
pattern seeking
research
science enquiry

Research

In science you can answer your questions by finding information in books, on the internet and from videos.

Sofia is doing **research** on plants.



Fair testing

Fair testing allows you to see how changing just one thing affects something else. You change one thing then observe or measure what happens to the other thing. You must keep all the other things the same.

In my fair test I changed the plastic only.
I observed only how it blocked the light.
I kept everything else the same.

This is the best plastic
for sunglasses.

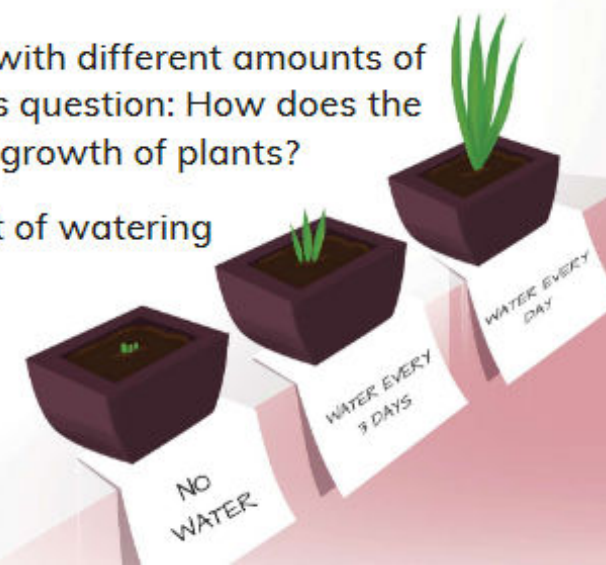


Observing over time

You can answer some science questions by observing over time.

By observing seeds grown with different amounts of water Sofia can answer this question: How does the amount of water affect the growth of plants?

Sofia is observing the effect of watering over time.

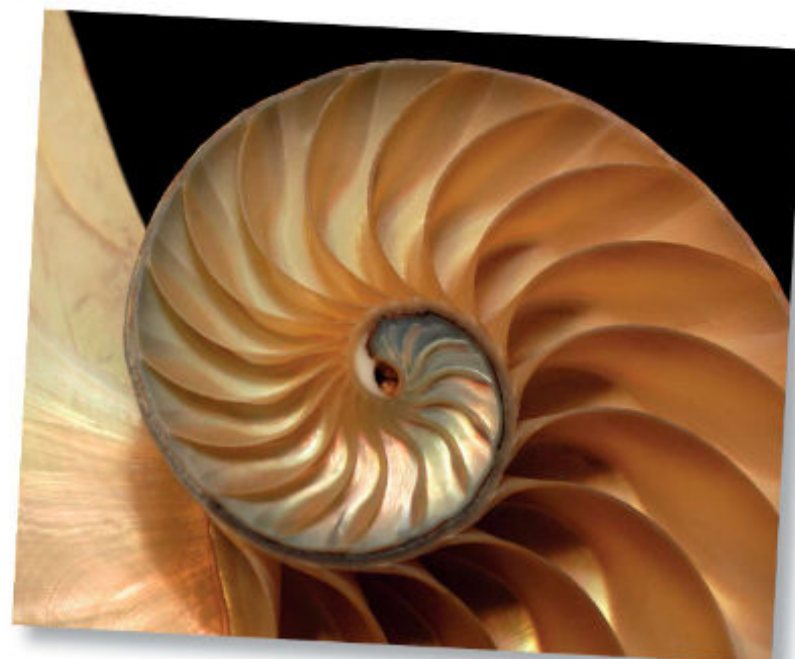


Pattern seeking

As scientists you will look for patterns as these can help you to find out more. We call this **pattern seeking**.

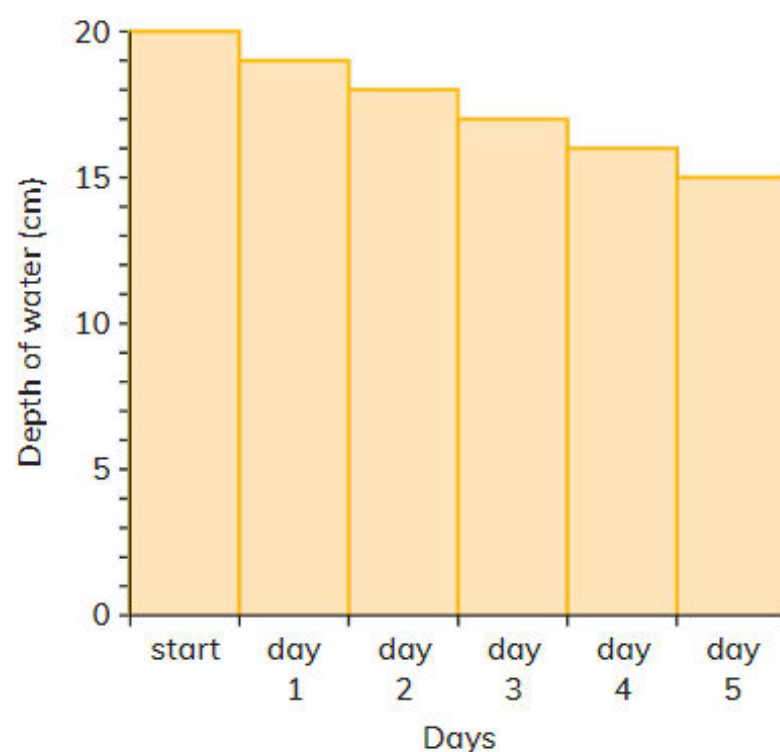
Can you see a pattern in this shell?

We also look for patterns in our results. Patterns in results can be very useful. They help us to predict what may happen in the future.



In this bar chart we see the water level in a glass of water which holds plant stems. We can see the level going down from day one to day five.

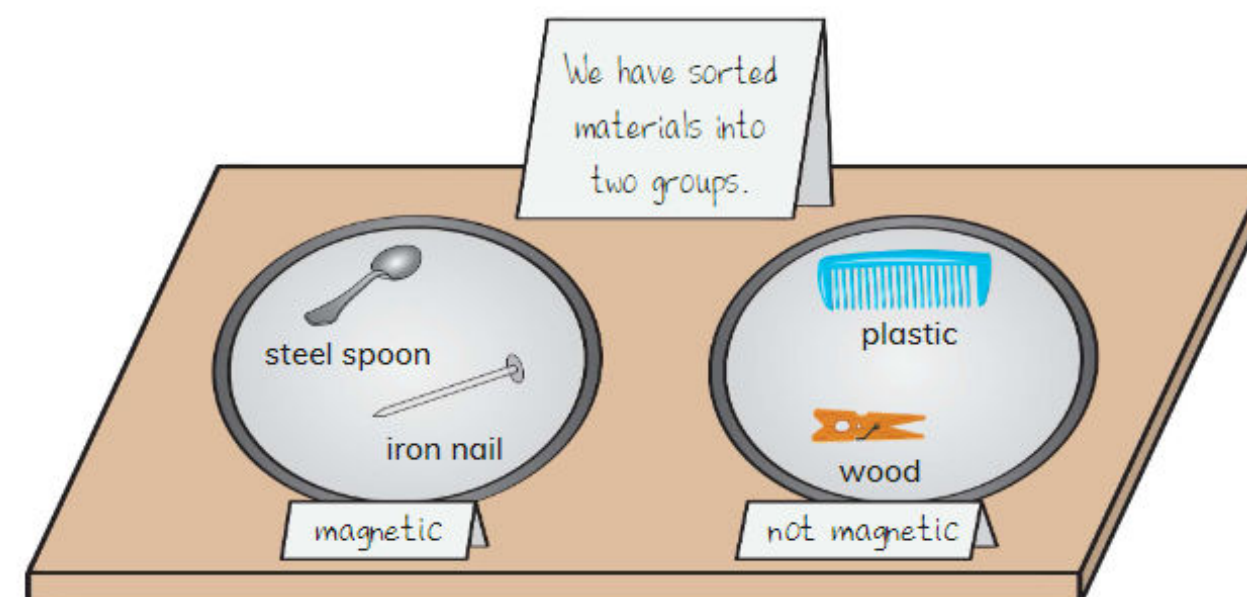
What might the level be on day 6?



Identifying and classifying

When you work as a scientist it is important to **identify** different things such as: materials, plants, animals, and parts of the body.

One way that scientists learn about these things is to put them into groups, and this is called **classifying**. Here we can see that materials have been sorted into two groups. These groups are magnetic materials and materials that are not magnetic.



Questions

- 1 Have you done any of these things in the past?
- 2 Which type of science enquiry would you most like to do? Why?
- 3 Which type of science enquiry do you think is the most important for scientists?

1 Plants are living things

> 1.1 Alive or not alive?

We are going to:

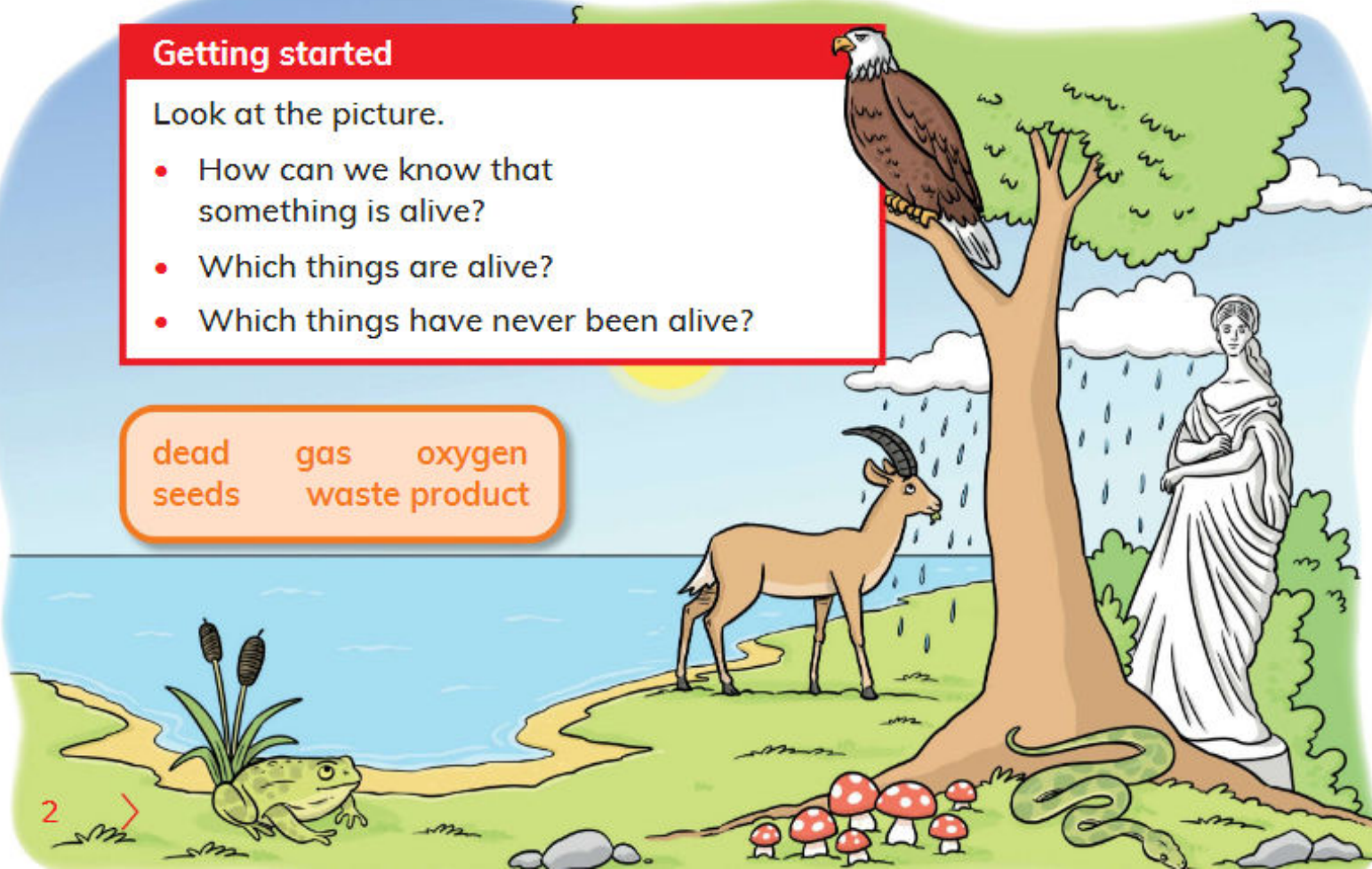
- find differences between things that are living, were once alive and that have never lived
- use seven rules to see if something is alive or not
- learn about scientific enquiry
- learn how to classify things
- collect and record observations.

Getting started

Look at the picture.

- How can we know that something is alive?
- Which things are alive?
- Which things have never been alive?

dead seeds gas oxygen
waste product



Plants grow

This young plant has just started growing. It needs water and sunlight. The young plant can feel light and it grows towards the light.

The young plant is alive.

The plant makes the **gas** called **oxygen**.

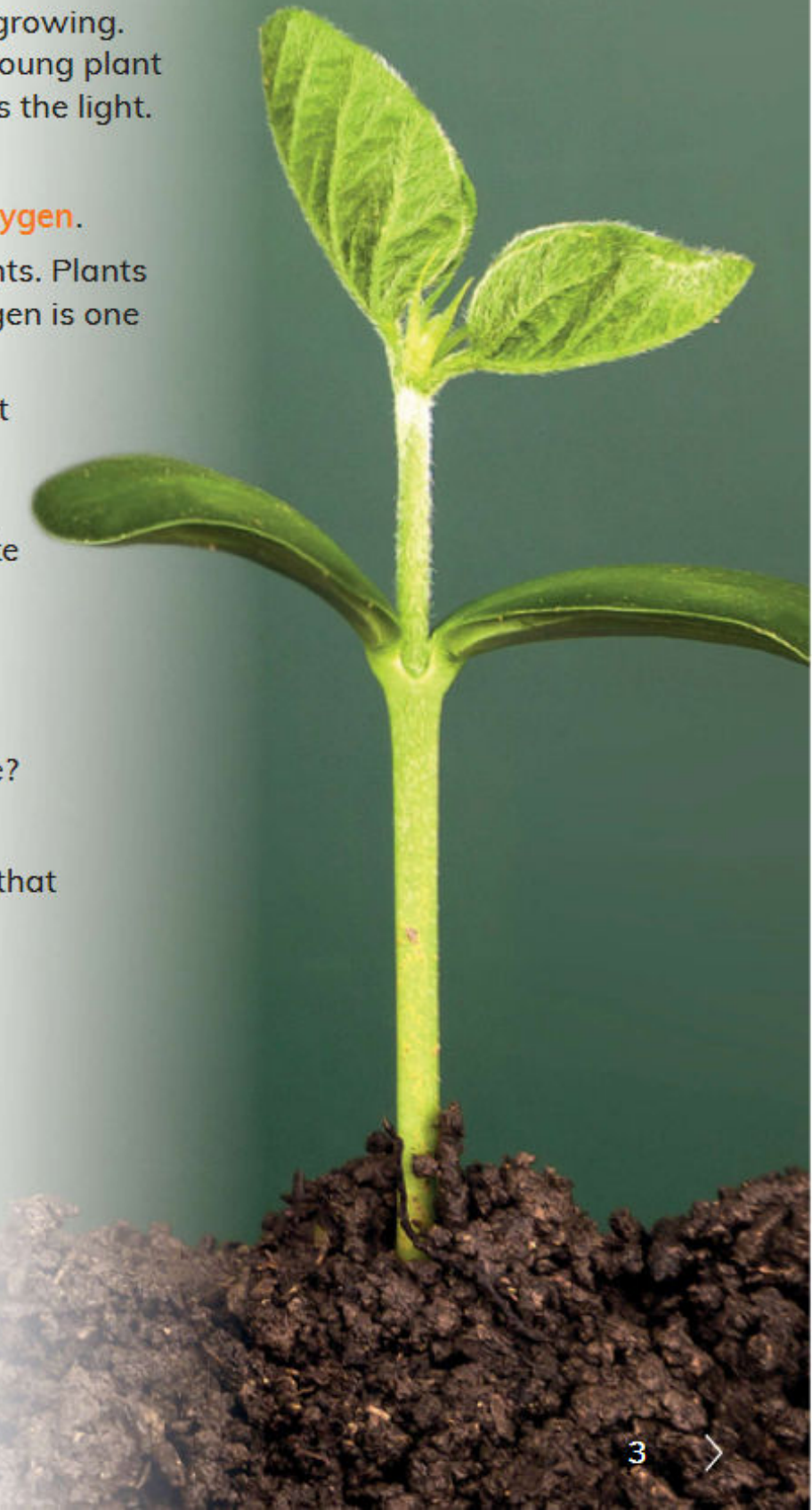
Oxygen is a **waste product** of plants. Plants get rid of oxygen into the air. Oxygen is one of the gases in the air.

The oxygen in air is very important because it is a gas which all animals need to live.

When the plant is older it will make **seeds**. New plants will grow from the seeds.

Questions

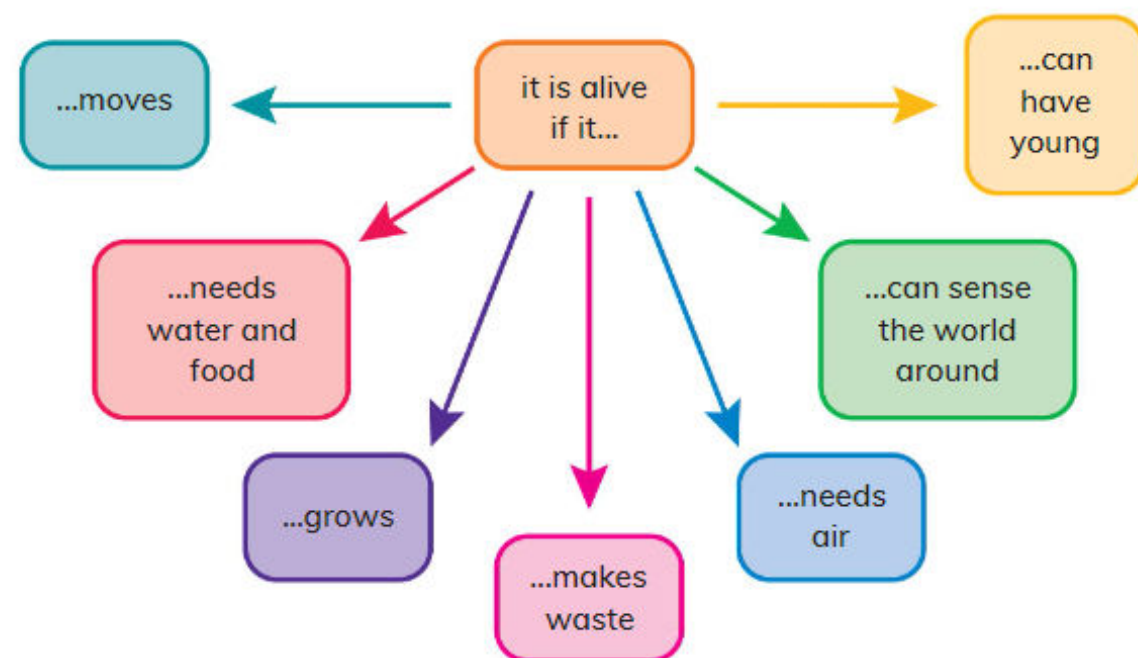
- 1 Are all plants and animals alive?
- 2 Is every part of a plant alive?
- 3 How could we care for a plant that is growing in the classroom?



Seven rules: alive or not alive?

Each day you see animals and plants that are alive. You also see materials like wood and straw that were once part of a living thing. Other materials, like sand, have never been alive.

Try using these seven rules to see if something is alive. Living things do all seven!



Think like a scientist 1

Alive or not?

You will need: a plant, a bare branch, a plastic plant, a block of wood, a piece of rock

With a friend talk about these things. Describe each one. What is it made of? Where did it come from?

Is it alive or not alive? Use the seven rules to help you.

Continued

Record what you think in a table.

This was a science enquiry because you were identifying and classifying things.

Object	What is it made of?	Is it alive or not alive?
A rock	rock	not alive

How am I doing?

Show other people your table. Do they agree with you?

Think like a scientist 2

Alive, once alive or never alive?

You will need: access to the school grounds, pencil

Look around the classroom and in the school grounds. Copy and complete this table to record things that:

- are alive now
- have never been alive.
- were once alive

The seven rules will help you.

Object	Once was alive	Alive	Not alive	Because...
two plants in the school library		✓		... they grow, need water, air and food, make waste and can sense the world

This activity was a science enquiry because you were identifying and classifying things.



When do leaves die?

Sometimes it is hard to say if something is alive or not.

Are these leaves alive?

The plant is alive so all the leaves on the plant are alive.

Some leaves have fallen off. They are not part of a living thing.

Some dead leaves on the ground are yellow and dry.

Even the green leaves on the ground are now dead because they are not part of a living thing.

Think like a scientist 3

Are these things alive?

You will need: a branch, a block of wood, photos of chicken, meat and fish, seeds, a freshly picked fruit, a fossil

Wash your hands after handling the materials.

Scientists identify and classify things.

Scientists do this to see patterns and ask questions.

Look at these photos and the things listed above.

Are they alive? Are they **dead**?

Were they never alive?



Think about each thing.

Does it or did it:

- grow?
- move?
- need water and food?
- make waste?
- have young?
- sense the world around?

Continued

Group the things in one of these three groups.

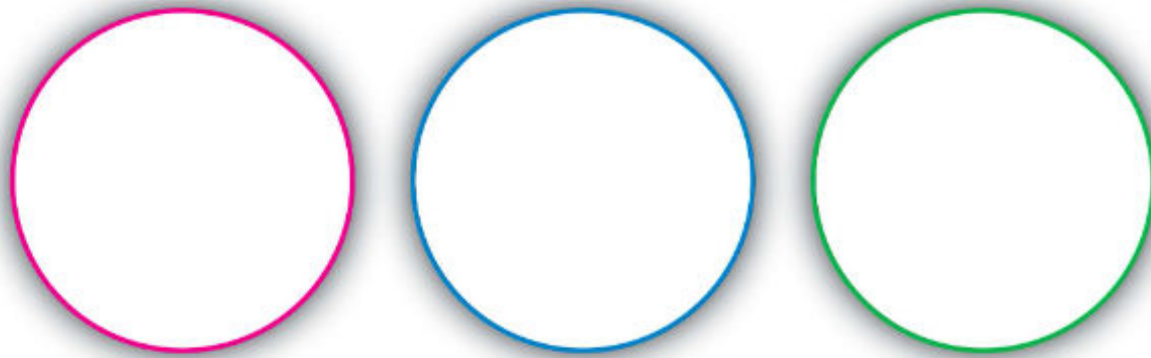
Copy three circles like these and label them.

Draw each thing and write its name in the right circle.

once living
but not now

living

never
alive



This activity was a science enquiry because you were identifying and classifying things.

Activity

Making posters

Make two posters using the headings shown on the right. Use drawings and words in your posters.

Things that are alive...

We know they are
alive because...

Things that are not
alive...

We know they are
not alive because...

Look what I can do!

- ☐ I can find differences between things that are living, things that were once alive and things that have never lived.
- ☐ I can use seven rules to see if something is alive or not.
- ☐ I know about the types of scientific enquiry.
- ☐ I can classify things.
- ☐ I can collect and record observations.

