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Executive
Preview



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CAMBRIDGE Primary Science

MULTI-COMPONENT
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Second edition

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Dear teacher,

Welcome to the new edition of our *Cambridge Primary Science* series, supporting the Cambridge Primary Science curriculum framework (0097) from 2020.

This executive preview gives you a first look at our new resources and shows you how the key components – learner’s book, workbook and teacher’s resource – work together to support you and your learners.

In developing the series, we carried out extensive research with teachers around the world to make sure we understood your needs and challenges and how to best support you and your learners.

We’ve included units to support the new Earth and Space curriculum strands, along with activities to get your learners thinking and working scientifically, like planning investigations, gathering data and drawing conclusions.

You’ll find an active learning approach throughout the resources, along with opportunities for learners to develop 21st-century skills including communication and collaboration. Alongside this, each unit includes a ‘*Getting started*’ feature, clear lesson objectives and activities that offer peer and self-assessment – all supporting assessment for learning.

We understand that each learner has different needs, and that supporting this in the classroom can be challenging. Our learner’s books and workbooks provide differentiated activities, while the teacher’s resource offers guidance on how to bring differentiation into your lessons effectively. For example, we’ve included projects at the end of each unit that offer learners different ways to complete the activity, along with guidance in the teacher’s resource on how to support and assess learners’ work.

Scientific vocabulary can be challenging. To support learners we have included key topic terms for each unit, along with a glossary and further language support suggestions in the teacher’s resource.

I hope you enjoy discovering the new series and how it can support you.

Priyanka Comar
Commissioning Editor
Cambridge University Press

Working together for schools

Cambridge University Press & Cambridge Assessment International Education

We are part of the University of Cambridge. Our mission is to contribute to society by enabling teaching and learning at the highest international levels of excellence.

We are at the forefront of education for 5 to 19 year-olds around the world. We share your desire to make a transformative impact on learners worldwide and unlock their potential.

We believe that education is most powerful when curriculum, assessment, teaching and learning are aligned. We work together for excellence in these areas, supporting schools to help learners grow academically and thrive as the adults of tomorrow.



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Create better learning moments

The moment when your learners make new discoveries, develop new skills or overcome challenges is hugely rewarding. These moments are made possible when learners have the skills and confidence to explore further and teachers have the support and insights to help them make that leap.

We want to help you create more of these moments.

With Cambridge, you'll find a curriculum and resources that encourage learners to think critically, collaborate and be creative. A range of assessments give you powerful insights to help you plan your learners' next steps and support with effective teaching approaches, including a range of professional development resources.



Find out more at cambridge.org/education/primary_lower_secondary

New curriculum, new resources, new approach

The latest editions of our primary and lower secondary series have been fully updated to support the new curriculum frameworks for English, English as a second language, maths and science. As well as updating the content, we wanted to take the opportunity to develop and improve the resources.

We spoke to hundreds of teachers around the world, carried out lesson observations and undertook research with the Cambridge Panel to help us understand your needs and challenges.

Find out more about the Cambridge Panel on page 37.

These conversations helped shape our **new series**:



A clear and consistent approach and activities to support **differentiation** help you ensure that every child can learn and progress.

More guidance and features to support **assessment for learning**, so you know your learners' strengths and weaknesses and can tailor teaching and learning activities around them.

Increased support in our teachers' resources and professional development courses helps you bring the most **effective teaching approaches** into your classroom.

Effective language support means learners can express themselves confidently.

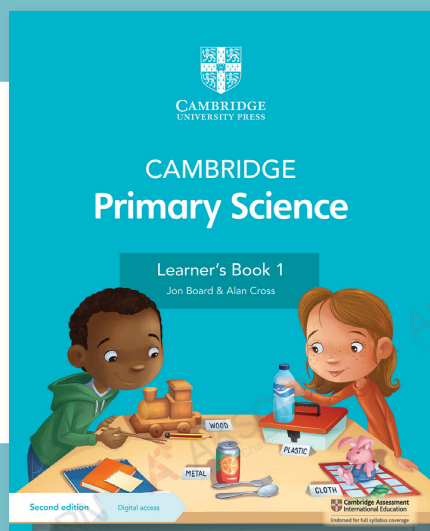
From our downloadable digital editions for remote learning, to the interactive tasks, video and audio featured in **Digital Classroom**, we support a range of teaching needs.



Finally, the new series have been developed with a **consistent approach**, so whether you pick up an English, maths or science resource, you'll find the same features, teaching approaches and layout.



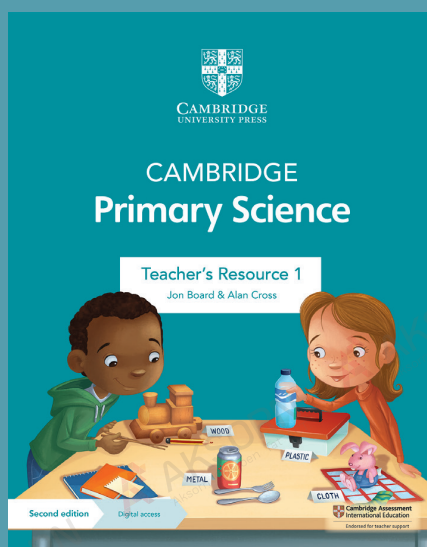
> How to use this series

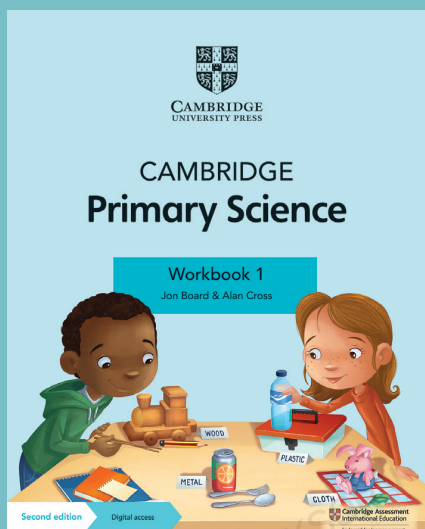


The Learner's Book is designed for learners to use in class with guidance from the teacher. It contains six units which offer complete coverage of the curriculum framework. A variety of investigations, activities, questions and images motivate students and help them to develop the necessary scientific skills. Each unit contains opportunities for formative assessment, differentiation and reflection so you can support your learners' needs and help them progress.

The Teacher's Resource is the foundation of this series and you'll find everything you need to deliver the course in here, including suggestions for differentiation, formative assessment and language support, teaching ideas, answers, unit and progress tests and extra worksheets. Each Teacher's Resource includes:

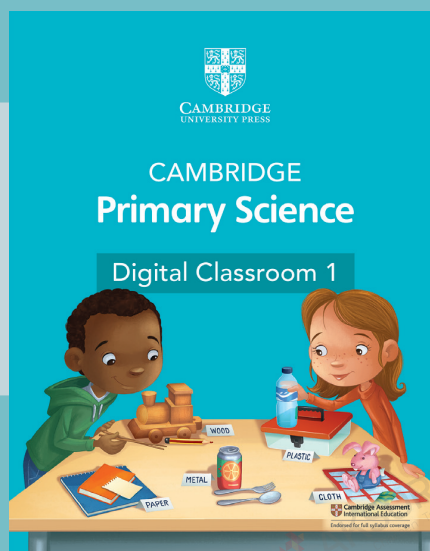
- A print book with detailed teaching notes for each topic
- A digital edition with all the material from the book in digital form plus editable planning documents, extra guidance, downloadable worksheets and more.





The skills-focused write-in Workbook provides further practice of all the topics in the Learner's Book and is ideal for use in class or as homework. A three-tier, scaffolded approach to skills development promotes visible progress and enables independent learning, ensuring that every learner is supported.

Digital Classroom includes digital versions of the Learner's Book and Workbook, complete with pop-up answers, designed for teachers to use at the front of class. Easily share the books with the whole class on your whiteboard, zoom in, highlight and annotate text, and get your learners talking with videos, images and interactive activities



A letter to parents, explaining the course, is also available.



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CAMBRIDGE Primary Science

Learner's Book 1

Jon Board & Alan Cross



Second edition

Cambridge Assessment
International Education

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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 topic →

We are going to:

- find living things and things that have never been alive
- draw some living things
- put things into groups.

Questions to find out what you know already. →

Getting started

- Name some living things.
- Look around your classroom. Point to some things that are not alive.

Important words to learn →

answer investigation
asks light
grow question

A fun activity about the Science you are learning. →

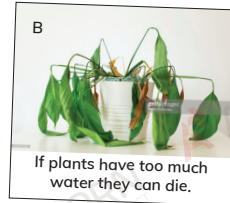
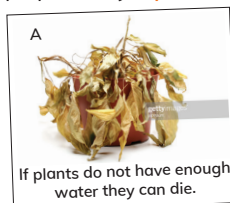
Activity

Healthy plants?

What could we do to help these plants grow?

What do you think will happen to these plants?

Tell other people what you **predict**.



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

Think like a scientist 1

How plants get water

You will need:
two plants, a plastic bag, string, watering can

Zara pours water onto the leaves of one plant. She waters the roots of the other plant. Predict what will happen. Now try this science investigation. Observe what happens. Draw the plants before and after the investigation.

Make sure you wash your hands after touching the plants.

Do plants get water through their leaves or roots?

Let's do a test!



Questions to help you think about how you learn.

How did the hands-on work help you to learn today?

This is what you have learned in the topic.

Look what I can do!

- ☐ I can explain why plants need water.
- ☐ I can record observations in tables.
- ☐ I can predict what will happen in a science investigation.
- ☐ I can say if what happened was what I predicted.

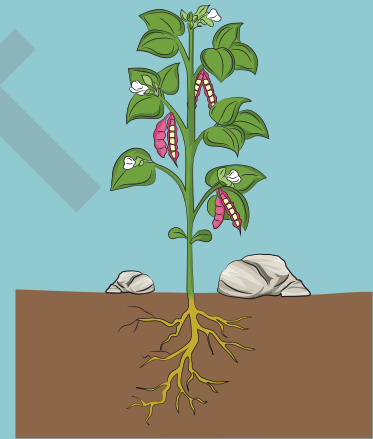
Check your progress

Talk about these questions.

1 Look at the picture.

What is alive?

What is not alive?



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.

Project

Gardens and gardeners

We all love to play in a garden.

In a garden we can learn about plants and how to care for them.



Part 1

Draw a garden for school, home or the park.

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



1

Living things

> 1.1 Animals and plants alive!

We are going to:

- find living things and things that have never been alive
- draw some living things
- put things into groups.

alive
animal
group
living

look
non-living
plant
water

Getting started

- Name some living things.
- Look around your classroom. Point to some things that are not alive.

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1.1 Animals and plants alive!

Use your eyes to **look** at the picture. What can you see?

Point to a **plant**. Most plants are green.

Plants make their own food.

Point to an **animal** in the picture.

Animals move around and eat other things.

Plants and animals are **alive**. They are **living** things.

All living things need food.

Water moves but it is not alive. Point to other things in the picture that are **non-living**.

Think like a scientist

What living things can we find?

You will need:

paper, a pencil, clipboard or thick card to rest on, a digital camera

Go outside to look for living things.

Be careful in case there are plants or animals that are prickly, sting or bite.

Try to find four living things.

Draw and photograph some living things.

What is the largest living thing you can find?

What is the smallest living thing you can find?



1 Living things

Activity

Living or non-living?

Zara is putting things into two **groups**.

Where should she put the toy?

What other things could she put in the groups?

Look at the non-living things.

Point to something that used to be alive.

Point to some things that have never been alive.

Make a group of living things and a group of non-living things.

Use things from your classroom.

How do you know which things are alive?



How am I doing?

Ask a friend to look at your groups.

Have you put things in the right group?

How does putting things into groups help you learn science?

Look what I can do!

- ☐ I can name four or more things that are living.
- ☐ I can name four or more things that have never been alive.
- ☐ I can draw some living things.
- ☐ I can put things into two groups.

> 1.2 Parts of a plant

We are going to:

- find out about the parts of plants
- name the parts of plants
- draw parts of a plant.

Getting started

You know that plants are living.

- What parts of plants have you seen?
- Tell a friend about some parts of plants.

Plants are all around us.

Some plants are tall and some are small.

All plants have **parts** that we can see.

Some plants have flowers which make **seeds**.

We are going to learn about these plants and their parts.

different
flower
leaf
magnifying
glass
model
name

observe
parts
root
seeds
similar
stem



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Activity 1

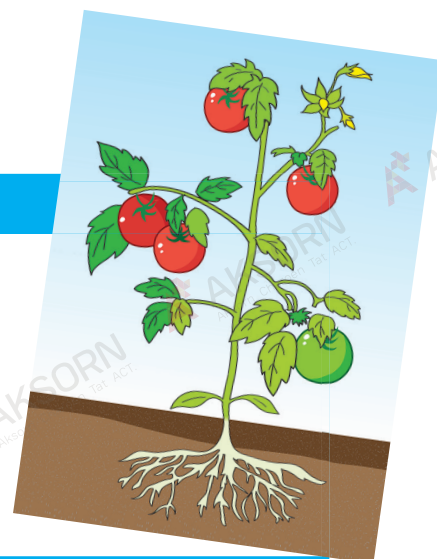
Finding plant parts

Plants have many parts.

Look carefully at the plant in the drawing.

What do you see or **observe**?

Point to a **leaf**, a **flower**, the **stem** and the **roots**.



Activity 2

Making a model plant

Loti can tell us what the parts do.

Make a **model** of a plant with these parts.

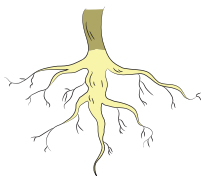
Say what each part is for.



The flower is the part where the seeds are made.



The leaf makes food for the plant.



The roots collect water. The roots hold the plant still.



The stem holds the leaves and flowers up.

Think like a scientist

Observing plant parts

You will need:

a plant, a **magnifying glass**, paper, a pencil

Observe a plant.

Look carefully at the plant parts.

Do not eat plants you find and wash your hands after touching any plants.

Name the plant parts.

Observe three **different** plants.

Look at the plant parts.

Draw them.

Do they all look the same?

Are they **similar** or different?

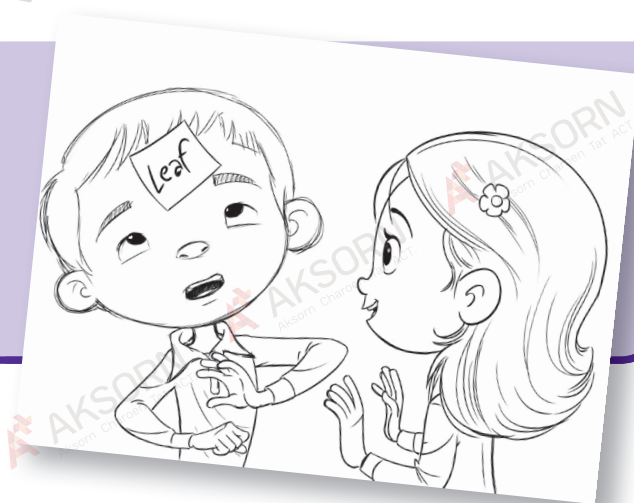


How am I doing?

Play 'What am I?' with a friend.

Use the words leaf, stem, flower, root.

Say what each is for.



1 Living things

Do you find it easy to observe living things?
How does observing help you learn?

Look what I can do!

- ☐ I can find out about plants.
- ☐ I can name parts of a plant.
- ☐ I can draw parts of a plant.



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> 1.3 Plants and light

We are going to:

- find out if plants need light
- do an investigation and say what we think will happen.

Getting started

- Where do you see plants?
- Do you have plants at home? Tell a friend where you keep plants at home.

answer
asks
grow

investigation
light
question

Here are some young plants.

When plants get bigger we say they **grow**.



Activity

What do plants need to grow?

What do you think plants need to grow?

Talk with a friend. What do they think plants need?

Do plants need food and water like people?

Write or draw what you think plants need.

1 Living things

Marcus **asks** a **question**: 'Why is this plant bent?'

Here is the **answer**: 'It is growing towards the **light**.'



Think like a scientist

What happens to a plant with no light?

You will need:
two plants, a box

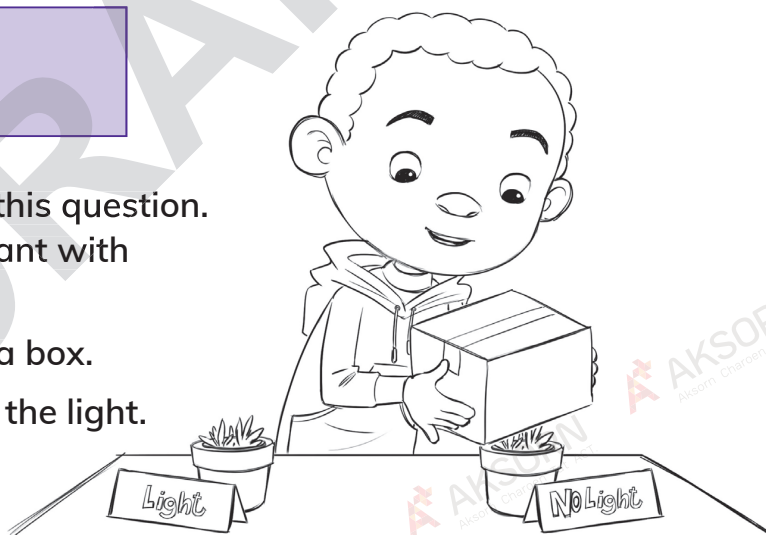
Marcus wants to answer this question.
'What will happen to a plant with no light?'

He covers one plant with a box.

He puts the other plant in the light.

Say or draw what you think will happen.

Try this **investigation** yourself to find out the answer.



How am I doing?

What places would be too dark for plants to grow?

Talk about your ideas or draw them.

1.3 Plants and light



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Tuomas Lehtinen

Look at this cave.

Why are no plants growing inside?

Plants use light to make food.

Plants can't grow in the cave because there is no light.

Look what I can do!

- ☐ I can say what will happen to a plant with no light.
- ☐ I can say what I think will happen in an investigation.

> 1.4 Plants need water

We are going to:

- learn about how plants need water
- record observations in tables
- predict what will happen in an investigation
- see if what happened was what we predicted.

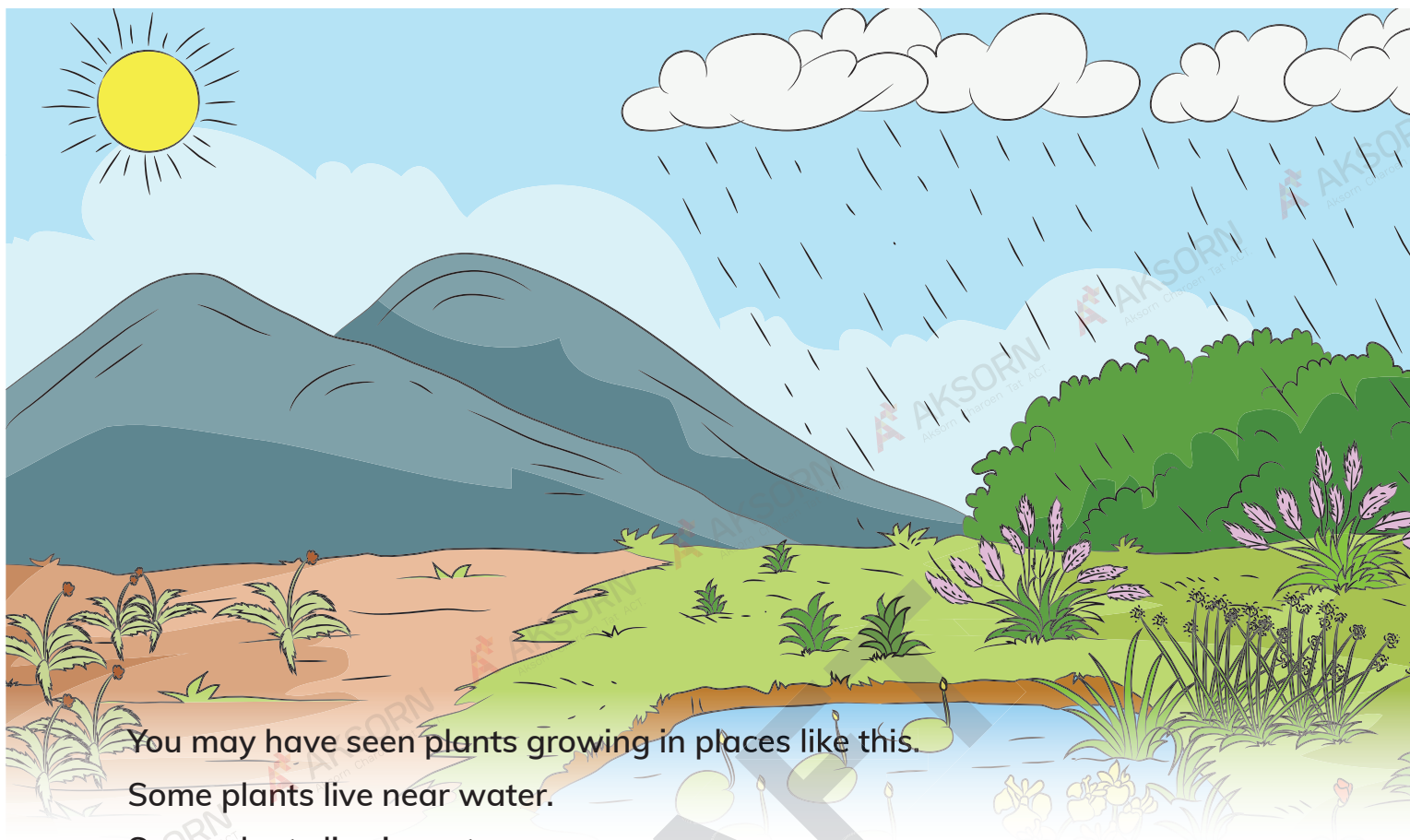
Getting started

- Draw two things you know about plants.
- Show a friend what you have drawn.

explain
predict record
table

What should the children do to keep this plant alive?





You may have seen plants growing in places like this.

Some plants live near water.

Some plants live in water.

Some plants live in dry places.

Where do plants get water from?

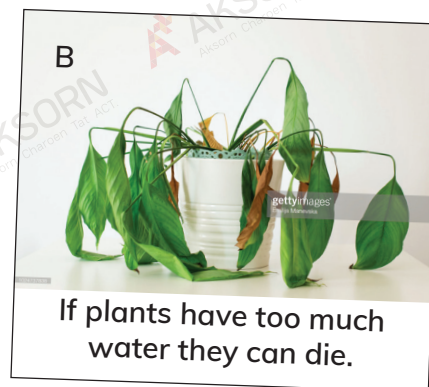
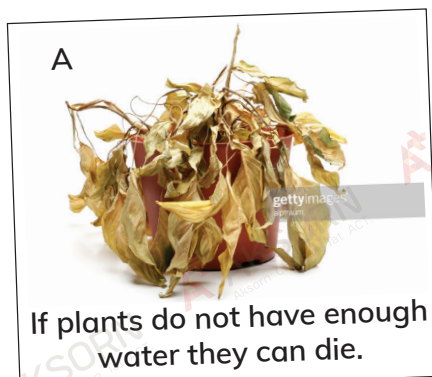
Activity

Healthy plants?

What could we do to help these plants grow?

What do you think will happen to these plants?

Tell other people what you **predict**.



1 Living things

Think like a scientist 1

How plants get water

You will need:

two plants, a plastic bag, string, watering can

Zara pours water onto the leaves of one plant.

She waters the roots of the other plant.

Predict what will happen.

Now try this science investigation.

Observe what happens.

Draw the plants before and after the investigation.

Make sure you wash your hands after touching the plants.

Do plants get water through their leaves or roots?

Let's do a test!



Think like a scientist 2

How much water do plants need?

You will need:

some plants, a watering can



Predict what will happen to the plants.

Now do the science investigation.

Observe the plants each day.

Continued

Record your results in a **table** like this.

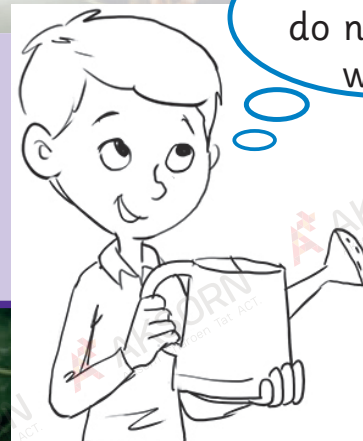
How much water do the plants need? My table of results.			
	Water every day	Water two times each week	Do not water
Day 1			
Day 2			
Day 3			
Day 4			
Day 5			

Draw the plants in the table.

How am I doing?

Read what Hatim says. What would you say to him?

Explain to Hatim why he is wrong.



How did the hands-on work help you to learn today?

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Look what I can do!

- ☐ I can explain why plants need water.
- ☐ I can record observations in tables.
- ☐ I can predict what will happen in a science investigation.
- ☐ I can say if what happened was what I predicted.

Project

Gardens and gardeners

We all love to play in a garden.

In a garden we can learn about plants and how to care for them.



Part 1

Draw a garden for school, home or the park.

Continued

Draw lots of different plants.

Who will look after the garden?

Draw the gardener.

What does the gardener do?

The gardener will give the plants lots of light and water.

Part 2

Make a tiny garden in a tray or box.

Use your science to help you plan and make a garden.

These are some things you may need.



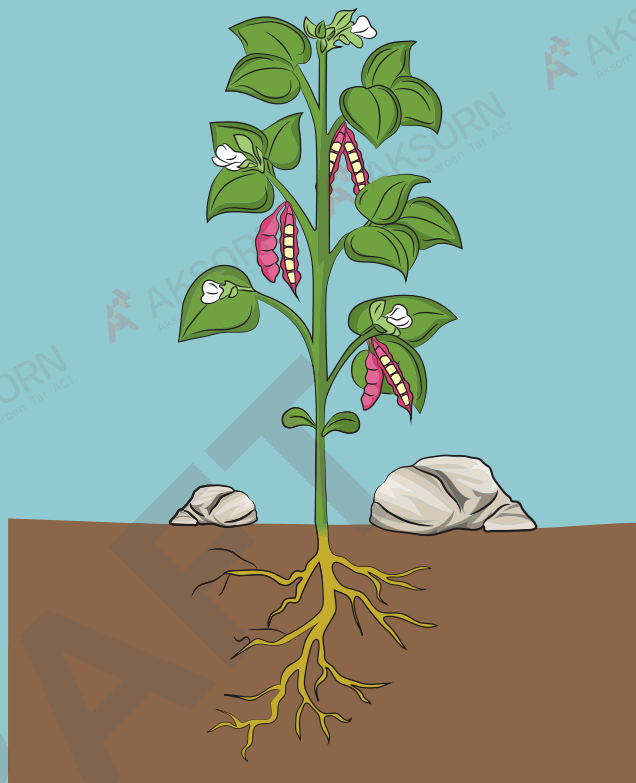
Check your progress

Talk about these questions.

1 Look at the picture.

What is alive?

What is not alive?



2 Name the parts of the plant in the picture.

Use these words.

roots

stem

leaf

flower



Continued

3 What do these plants need?



4 Help Amy.

What do the seeds need to grow?





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Teacher's Resource 1

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> 1 Living things

Unit plan

Topic	Approximate number of learning hours	Outline of learning content	Resources
1.1 Animals and plants alive!	2+	<ul style="list-style-type: none"> Living and non-living Sorting things into groups – alive, never been alive 	<p>Learner's Book:</p> <p>Think like a scientist: What living things can we find?</p> <p>Activity: Living or non-living?</p> <p>Workbook: Topic 1.1</p> <p>Digital classroom:</p> <p>Video – Living and non-living things</p> <p>Activity – Living or non-living?</p> <p>Teacher's resource: Worksheet 1.1A, 1.1B, 1.1C</p>
1.2 Parts of a plant	2+	<ul style="list-style-type: none"> Parts of plants 	<p>Learner's Book:</p> <p>Activity 1: Finding plant parts</p> <p>Activity 2: Making a model plant</p> <p>Think like a scientist: Observing plant parts</p> <p>Workbook: Topic 1.2</p> <p>Digital classroom:</p> <p>Song – Down in the garden</p> <p>Slideshow – A world of plants</p> <p>Teacher's resource: Worksheet 1.2A, 1.2B, 1.2C</p>
1.3 Plants and light	2+	<ul style="list-style-type: none"> Investigating plants and light 	<p>Learner's Book:</p> <p>Activity: What do plants need to grow?</p> <p>Think like a scientist: What happens to a plant with no light?</p> <p>Workbook: Topic 1.3</p> <p>Digital classroom:</p> <p>Slideshow – What do plants need to grow?</p> <p>Activity – What do plants need?</p> <p>Video – Do plants need light to grow?</p>

Topic	Approximate number of learning hours	Outline of learning content	Resources
1.4 Plants need water	4+	<ul style="list-style-type: none"> Investigating plants and water 	Learner's Book: Activity: Happy plants? Think like a scientist 1: How plants get water Think like a scientist 2: How much water do plants need? Workbook: Topic 1.4 Digital classroom: Manipulative – Get the water and light right!

BACKGROUND KNOWLEDGE

Animals and plants alive!

Some things are alive, some things are dead and some things have never been alive. You work out which of these three groups something belongs to by thinking about the characteristics of life. There are seven of these. Living things demonstrate all seven characteristics. The characteristics of life are:

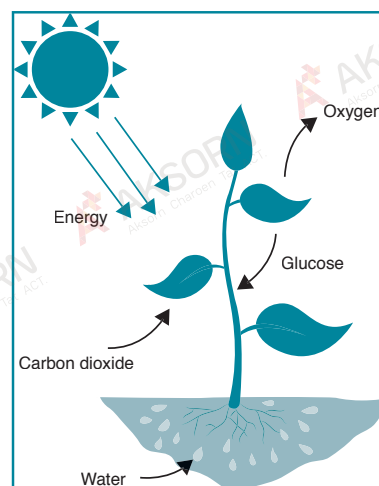
- movement
- respiration (using oxygen)
- sensitivity
- growth
- reproduction
- excretion (producing waste)
- nutrition (needing food and water).

Learners will find out about the seven characteristics of life at Stage 7. At Stage 1, learners should start to think about simple differences between things that are alive and things that are not. Some objects, such as rainbows and fire, may confuse learners because they show some of the characteristics of life such as moving or growing. However, they are not alive as they do not have all seven characteristics.

Be aware that some learners may not have experienced the death of a relative or a pet at this stage. However, some learners will have had this experience, perhaps recently. Treat this topic with care.

Flowering plants

The lifecycle of a flowering plant starts with a seed that grows a root, then a stem and leaves. The roots collect water from the soil and hold the plant in the ground. Leaves collect carbon dioxide from the air then combine it with water using light to make food for the plant. Without light, the plant cannot make food (glucose) and will eventually die. This food-making process is called photosynthesis. Oxygen is a waste product of photosynthesis and is released by the plant. Learners do not need to be taught about photosynthesis at this stage. They only need to recognize and name the parts of a plant.



CONTINUED

Germination is when a seed begins to grow. At this stage, the plant has no leaves and is usually underground in the dark. Therefore, the plant cannot make its own food to grow. The seed itself contains a store of food that the plant uses until it reaches the light and grows leaves. Learners do not need to be taught about germination at this stage.

The function of a flower is to allow the plant to reproduce. To produce seeds the flower first has to be pollinated. This means that the flower has to receive pollen from a different flower. For some flowers, the transfer of pollen is done by the wind, but many flowers use insects to do this job. To attract insects, these flowers make nectar and

are brightly coloured. Once pollinated, the flower grows into a fruit which contains seeds. Learners do not need to be taught the function of a flower or plant reproduction at this stage.

As this unit progresses, learners should observe a wide range of plants so they are aware that flowers, leaves and stems can vary in shape from plant to plant. For example, leaves can be circular, oval or sword shaped. The edge of the leaf can be smooth, lobed or serrated. The leaf surface can be smooth, rough or hairy. The leaf colour can be any shade of green, or even red or almost black. There is even more variety in flowers. All these differences show the wonderful variety in the plant world.

TEACHING SKILLS FOCUS

As a Stage 1 teacher, it is essential that you build the independence of learners whilst you introduce them to new experiences, new ideas and new vocabulary in science. Young learners and speakers of English as a second language may struggle with the vocabulary of science. However, with support through demonstration, repetition, examples and, importantly, the oral use of the words themselves, most learners will gain confidence.

Active learning**Use teacher questions to promote learners' thinking**

The very best approaches involve learners being involved in active learning. In active learning, the learners' brains are active as they think about things they do, and talk about these things with others. The questions you put to groups is a way of starting this process. Try these question openers:

- Tell me about ...?
- When would you ...?
- What are ...?
- How would ...?
- Why does ...?

Give learners choices

Sometimes you will have to tell learners what to do, but make sure that you give every opportunity to let learners discuss and make choices. For

example, tell them to look at the picture/ equipment and decide the first thing that they will do. Involving learners in this way will strengthen their engagement and learning.

Value mistakes

It is not a problem if learners make mistakes because mistakes provide invaluable opportunities for learning. Researchers believe that people learn most when they realise that they have got something wrong. Prompt learners with questions like these. What happened? What could you change to make it work?

Misconceptions

Always listen to the learners and be prepared to deal with possible misconceptions. For example, some learners may think that a flame is a living thing. A misconception is an idea the learners have which is not scientifically correct. Often, though, the misconception is part way to the right idea. Find out more about what the learners think by making requests and asking questions like these.

- Draw that for me.
- Show me one.
- Why do you say that?
- When have you seen that happen?

The learner's answer will then have a big effect on the direction of the lesson.

CONTINUED

You could challenge a misconception with another example. For example, 'You say all plants are green. What about this part of this plant?' (Point to a white part of a striped leaf.)

Some learners may see soil as little more than dirt. In this case, provide hand lenses and samples of different soils so they can see the detail and the different parts of soil.

You could move learners on in their thinking with more examples or practical activity. Here are some examples.

- Let's look for even more different leaf shapes.
- With this bigger set of seeds, let's make more groups.
- Observation of different root vegetables.

Always check the new vocabulary. For example, have the learners heard it correctly? What do learners understand by the word? Do they use it correctly?

Reflection

After the lesson/s, reflect on your teaching and the learners' learning. Did learners enjoy active approaches? Did they learn? How do you know that they were learning? Did all the learners respond in the same way? Were there any unexpected misconceptions? Were you able to assist learners' scientific understanding? Does this now give you more confidence as a teacher of science?

1.1 Animals and plants alive!

LEARNING PLAN

Learning objectives	Learning intentions	Success criteria
1Bp.01 Identify living things and things that have never been alive.	<ul style="list-style-type: none"> • To find living things and things that have never been alive. 	<ul style="list-style-type: none"> • Learners can name four or more things that are living.
1TWSc.01 Sort and group objects, materials and living things based on observations of the similarities and differences between them.	<ul style="list-style-type: none"> • To put things into groups. 	<ul style="list-style-type: none"> • Learners can name four or more things that have never been alive. • Learners can put things into two groups.
1TWSc.05 Collect and record observations and/or measurements by annotating images and completing simple tables.	<ul style="list-style-type: none"> • To draw some living things. 	<ul style="list-style-type: none"> • Learners can draw some living things.

LANGUAGE SUPPORT

Most learners will need support with the key words. You could display these words on the board, on posters in the classroom, or on smaller posters on the tables. It will be helpful if you display pictures that show the meaning of each

word where possible. You could use Language worksheets 1 and 2. These illustrate some of the Key words. Language worksheet 1 contains the science language required for this unit, Living things. Language worksheet 2 contains the

CONTINUED

scientific enquiry language that learners will meet in this unit and following units. Learners are asked to use the given words to complete a simple sentence.

The Language worksheets could be completed in class and used as a 'title page' for this unit in the books or folders where learners keep their science work. Learners could also use them at home to prepare for a spelling test on these words in class. Completed Language worksheets could be enlarged and displayed in the classroom as vocabulary posters.

look: to use your eyes to find things out.

alive: something that is living

plant: a living thing that can make its own food

animal: a living thing that eats other living things

living: living things grow, need food, make waste, use air and reproduce

water: a liquid substance that exists in seas, rivers and lakes which, when it is treated, we can drink

non-living: something that is not alive

group: to put things with other things that are similar in some way

Common misconceptions

Misconception	How to identify	How to overcome
Clouds, water and fire are alive because they can move and grow.	Ask learners whether they think water and clouds are alive using the Learner's Book picture. Include pictures of clouds, water and fire in the plenary activity living/non-living slideshow.	Explain that clouds and water do not need food and they are only moved by the wind. Explain that fire is not alive as it does not need water.
Water and the Sun are alive because plants need water and light to grow.	Ask learners to talk about which things are alive in the Learner's Book picture.	Explain that food allows humans to stay alive but not all food is alive. Hold up a biscuit and ask learners 'Is this biscuit alive?' Just because something helps a living thing to live does not mean that thing is also alive.
Plants are not alive because they do not move.	Ask learners to identify whether the plants are alive in the Learner's Book picture.	Explain that plants are alive. They need food and water to grow. Ask learners if they have plants at home and how they care for them.

Starter ideas

1 Getting started (10 mins)

Resources: A selection of classroom objects including at least one plant.

Description: To check whether learners understand the words 'alive' and 'living' ask 'Are you alive?' then 'What else is alive?' and 'What things are living?' Ask learners to talk in pairs to name living things. Ask 'How many living things can you name?'

Ask 'What things are not alive?' Ask learners to point to some living and non-living things in the classroom.

Identifying misconceptions: Some learners may identify non-living things that move such as clouds

or fire as living things. Ask other learners who disagree to say why they think these things are not alive even though they move.

In this discussion, learners may identify some of the seven characteristics of life in simple terms by saying living things need food, water and air or that living things grow. Some might say that living things can die, which is appropriate reasoning at this level.

2 Spot the living things (15 mins)

Resources: Opening picture from Learner's Book 1.1 Animals and plants alive!

Description: Ask learners to find as many living things in the picture as they can. Choose some

learners to name some, write the names of these on the board under the heading 'Alive' as they are identified. Now ask learners to point to some of the non-living things. Write the names of some of the non-living things on the board under the heading 'Not alive'. Challenge some learners by asking them to explain how they know that something is not alive.

Identifying misconceptions: Some learners may identify things needed for life such as water or the Sun (light) as 'living'. Ask these learners whether these things need food and whether they can grow or die. Tell them that all living things need food and water and can grow.

Main teaching ideas

1 Think like a scientist: What living things can we find? (30 mins)

Learning intentions: To find living things and things that have never been alive.

To draw some living things.

Resources: Learner's Book, outdoor area with plants and or animals, paper, pencils and clipboards or thick card to rest on when drawing. Digital cameras (optional). Alternative – colour photographs of outdoor habitats showing animals and plants.

Safety: Be careful in case there are plants or animals that are prickly, sting or bite.

Description: You could ask learners to collect some small animals in suitable clear containers with lids. These could be used in Activity 1 Living or non-living?

Look at the Think like a scientist feature in the Learner's Book and explain to learners that you are going to take them outside to look for living things. Learners will have to try to find and draw four different living things. Before going outside, warn learners about any plants or animals that could be dangerous.

While learners are working, assess some learners by saying 'Show me something that is alive/living' or 'Show me something that has never been alive'.

Choose a good example of a learner's drawing and show it to all learners. Ask learners to look at the details of the living things and use them in their drawings. This will encourage closer observation.

When you return to the classroom, show some more good examples of the learners' drawings and discuss the living things that learners found

and where they found them. Ask 'Who can tell me about something they found that was alive?' and 'What did you see that was not alive/non-living?'. Challenge learners by asking 'Who can tell me about a plant that they found?' and 'Who can tell me about an animal?'.

> Practical guidance: If learners are collecting some small animals, make sure that you talk about how to handle the animals gently and not hurt them when collecting. Also, make sure that there are small holes in the lids so that the animals can breathe.

An alternative to going outside would be to ask learners to search for living things in photographs or drawings of outdoor habitats.

> Differentiation ideas: Allow some learners to draw fewer than four living things, others may draw more.

Challenge some learners to look for the largest and smallest living things they can find.

Some learners could use digital photography to record the living things they find.

2 Activity: Living or non-living? (30 mins)

Learning intention: To find living things and things that have never been alive.

Resources: Learner's Book, Labels reading 'Living' and 'Non-living' for each group, one to three living things and two to four non-living things for each group, for example, small pot plants, insects or invertebrates in clear containers with lids, books, bottles of water, rulers, scissors, erasers, toys including toy animals, Digital Classroom activity – Living or non-living? (optional)

Description: Read the instructions in the Learner's Book to the learners and ask 'Where should Zara put the toy bear?' and 'Is the toy bear alive or not?' Give the groups about five minutes to work in groups to sort their objects in 'living' and 'non-living' groups.

> Practical guidance: Learners could collect some small animals from outside in suitable clear containers with lids. These could be done as part of 'Think like a scientist: What living things can we find?' above. Make sure that you talk about how to handle the animals gently and not hurt them when collecting. Also, make sure that there are small holes in the lids so that the animals can breathe.

› **Differentiation ideas:** Some learners may be confused by non-living things that move, such as water. These learners will need support to identify living and non-living things. Help them by using very familiar examples such as plants and animals that are common locally.

At the beginning of the activity, do not give toy animals to any group. You can give a toy animal to a group to challenge them once they have shown they can sort the simpler objects correctly. Toy animals (or plants) will test learners' reasoning. They could go in either the 'living' group if learners use them to represent a real living thing or in the 'non-living' group if learners argue that it is a toy and not a real living thing. Either answer can be considered correct, as long as learners can give relevant reasons for where they have put them. See above.

Some learners may have a clear understanding of which things are alive or have never been alive. You can challenge these learners by asking them to consider toy animals and plants, pictures of animals or plants, or by introducing objects that might be thought of as dying, for example, cut flowers or a freshly picked leaf. Seeds can also provide a challenge because these are living but appear to be non-living until they are in the right conditions.

› **Assessment:** When all groups have finished, ask half the groups to go and look at how the other groups have sorted their objects. Choose some of these learners to say whether they agree with how they have been sorted. Discuss any disagreements with the whole class and ask 'Where should this go and why?'. Then swap the groups over so that all learners get a chance to assess their peers.

If you have given out some toy animals, ask learners to explain which group they put them in and why. Some learners might explain that they put a toy animal in the 'living' group because an animal is alive. Others might say that they put it in the 'non-living' group because it is a toy and toys are not alive. Both of these answers can be considered correct at this stage if learners can give the reasons.

› **Digital Classroom:** If you have access to the Digital Classroom component, use the activity to practise identifying whether objects are living or non-living. The i button will explain how to use the activity.

3 Workbook 1.1 Animal and plants alive! (10 to 30 mins)

Learning intention: To find living things and things that have never been alive.

Resources: Workbook 1.

Description: Learners complete Workbook activity 1.1 Animals and plants alive! The Focus section asks learners to colour in only the living things in a picture of a pet shop. Make sure learners understand that they should only colour in the living things before they start. The Practice section asks learners to sort living and non-living things into the correct group. The Challenge section asks learners to choose the correct words in simple sentences to show their understanding of living and non-living things. In these sections, look out for learners who describe the Sun or water as living. To explain these misconceptions, work with these learners during the plenary activities. Explain that water and light may be needed for living things to survive but they are not living things themselves.

› **Differentiation ideas:** Some learners will be able to progress through the exercises more quickly than others. Be ready to support those who need help with writing.

4 Worksheet 1.1 Colour in the living things (10 to 30 mins)

Learning intention: To find living things and things that have never been alive.

Resources: Worksheet 1.1A, 1.1B, 1.1C.

Description: Worksheet 1.1A could be used for learners who need more support. It asks learners to colour in only the living things in a picture of a farm. Worksheet 1.1B could be used by most learners. It is the same activity as Worksheet 1.1A, but also asks learners to match some of the living things with their names.

Worksheet 1.1C could be used to challenge some learners. Again, it asks learners to colour in the living things in the picture, but they then have to name a wider selection of living things and write a simple sentence.

› **Differentiation ideas:** Different learners could be given different worksheets (see guidance above). Alternatively, learners could be allowed to self-select the worksheet they would like to use.

Plenary ideas

1 Living/Non-living paired discussion (10 mins)

Description: Ask learners to work with a partner to name at least four living and four non-living things. Choose learners to tell the class the things they have named.

› **Assessment:** Display and explain the success criteria 'I can name four or more things that are living' and 'I can name four or more things that are non-living'. Ask learners to self-assess by putting up their hands if they think they can do these two things. Ask 'Who can name some living/non-living things?' and 'Who can name four living/non-living things?' and 'Who can name more than four living/non-living things?' Assess some learners who put up their hands by asking them to name the living or non-living things.

Finish by asking learners to think about how many different types of living things there could be in the world.

› **Reflection:** Ask learners to say how they chose their four living things. Ask 'Did you think of a place and then the things that live in that place?'. If learners did not do this, ask them to repeat the activity using this technique. Ask them to say whether it was easier or harder to choose living things using this technique.

2 Living/non-living slideshow (10 mins)

Resources: Digital Classroom video – Living and non-living things (optional), or photographs of living and non-living things.

Description: Show learners a series of photographs, each showing either a living or non-living thing. Ask learners to move their shoulders up and down (to show movement) if the thing is alive and to keep very still if the thing is not alive.

› **Digital Classroom:** If you have access to the Digital Classroom component, use the video to check if the learners know how to identify whether something is living or non-living. The i button will explain how to use the video.

› **Assessment:** Include some photographs of things that are no longer alive, such as dead leaves or an animal skeleton. Choose learners who correctly identify these as 'non-living' to explain how they know.

Ask learners to think about how long living things live for. Ask whether learners know of any animals or plants that live as long as humans. As a rough guide, the larger a living thing is the longer it lives. So elephants and whales tend to live longer than ants or fish, trees tend to live longer than smaller flowering plants.

› **Reflection:** Ask learners to say how they know if something is living, non-living or no longer alive.

CROSS-CURRICULAR LINKS

This topic links to environmental studies because the learners are looking at the range of living things in the world. This should help learners to appreciate the beauty and wonder of the natural world and to realise that it is something that should be cared for.

Main teaching idea 1 activity links with observational drawing in art and with understanding habitats in geography. This activity links to maths and provides an opportunity for learners to practice counting. They could count the number of living things found or the number of leaves or flowers on a plant.

Main teaching idea 2 links with sorting and grouping in maths. Ask learners to say how many things are in each group. Ask 'Which group is larger?' and 'Which group is smaller?'

Homework ideas

Ask learners to draw four of their favourite living things. These pictures could be used for a wall display for this unit. Challenge learners to write the names of the living things on their pictures.

1.2 Parts of a plant

LEARNING PLAN

Learning objectives	Learning intentions	Success criteria
1Bs.01 Recognise and name the major parts of familiar flowering plants (limited to roots, leaves, stems and flowers).	<ul style="list-style-type: none"> To find out about the parts of plants. To name the parts of plants. 	<ul style="list-style-type: none"> Learners can recognise and name the roots, leaf, stem and flower of a plant.
1TWSc.05 Collect and record observations and/or measurements by annotating images and completing simple tables.	<ul style="list-style-type: none"> To draw parts of a plant. 	<ul style="list-style-type: none"> Learners can observe plant parts and make drawings to record their observations.

LANGUAGE SUPPORT

Support your learners' language development by featuring vocabulary in wall posters. These could include labelled diagrams, lists of terms, a glossary, and sentences using the vocabulary in context. You should carefully model terms. You could introduce a word in this way. Say 'Watch my lips as I say the word "flower", watch my mouth, lips and teeth. I will say it again while you watch and then repeat it back to me together'. You could ask the learners questions and then give answers to support understanding of vocabulary, such as these. What is a flower? Look here is a flower. (Hold up a flower or a picture of a flower. Note that, in this context, a flower is the head of the plant with petals, and not the entire plant, as the term is sometimes used colloquially.)

Your modelling of language in science is very important, but it is important to encourage the learners to say the words themselves, so provide lots of opportunities to talk about the tasks and activities and praise those who you hear using

these new words. It is important that learners use new words. By doing this, learners will become more familiar with the new words and confident to use these words in sentences.

part: a piece of a bigger thing

seeds: what a plant grows from

observe: using our senses to find out what is around us

leaf: part of a plant which makes food

flower: part of a plant which makes fruit and seeds

stem: leaves and flowers grow from the plant stem

root: the part of a plant that grows down into the soil

model: a way we show how something works by making a small copy of something or a drawn example

name: the word we use for something

different: something that is not the same

similar: being the same in some way

Common misconceptions

Misconception	How to identify	How to overcome
Applying the word 'plant' to flowering plants or shrubs and using different words to describe smaller or larger plants for example 'tree' or 'grass'.	Ask learners to observe an increasing range of plants and check that they describe them as plants.	Explain and show that the term plant includes all the mostly green living things that make their own food.
The roots suck up plant food.	Listen to learners talking about the function of the roots.	Explain that the food is made in the leaves (no need to mention photosynthesis at this stage).
Referring to a plant as a flower, not recognising that the flower is just a part of a plant.	In discussion with learners, listen to the language they use when talking about plants.	Point out examples of plants which do not presently happen to have flowers. The correct word is plant.

Starter ideas

1 Talking about plants (5–10 mins)

Resources: a potted plant, Learner's Book, picture of potted plant

Description: Ask learners to tell you what a plant is. In this way you can find out what their existing knowledge is at the start of this unit. Show learners a real potted plant and the picture in the Learner's Book, which is a labelled diagram of the parts of a plant. Ask learners to tell you where they have seen plants like this locally. Have learners noticed the plant parts? Ask learners to talk about other plants they have seen. What is the biggest/smallest plant learners know?

Identifying misconceptions: Some learners will call the whole plant a flower as this is common usage of the word flower.

2 Dress up as a plant! (10–15 mins)

Resources: brown, green or grey paper roll, green card or paper, brightly coloured paper or card sheets, sticky tape paper labels for leaf, flower, stem and root

Description: Explain that you are going to decorate a learner to be a plant and ask for a volunteer. Get learners to help as much as possible and accept as many of their ideas as possible. The following ideas should help you to get started. Use a strip of paper to make a headband, draw a flower on it or make and stick on a paper flower. Wrap paper loosely from feet to neck to signify the stem, repeat on the arms as branches; stick leaves on the arms

and around the shoulders and on the headband and flowers also on the arms and headband. Twist brown or grey paper attached to the feet as roots. Add the labels and ask learners to talk about the parts of this 'plant'.

Main teaching ideas

1 Activity 1: Finding plant parts (10–15 mins)

Learning intention: To find out about the parts of plants.

Resources: Learner's Book, a picture of a plant and ideally a potted plant (with pot which can be removed to show the roots). Digital Classroom song – Down in the garden (optional).

Description: Introduce the activity with a potted plant or poster and refer to Finding plant parts activity 1 in the Learner's Book.

› **Digital Classroom:** If you have access to the Digital Classroom component, use the song to show learners how plants grow and to show them the different plant parts. The i button will explain how to use the animation. You might need to explain the lyrics 'In autumn, fruit and leaves will fall' if learners aren't familiar with this season and the changes that happen in nature during autumn.

Ask the learners to identify the flower, stem, leaf and root. Looking at the illustration in the Learner's Book, ask learners to count the flowers, leaves and root. Precise answers are not important here: make

sure that the learners have seen several examples of each part.

If you have time, ask them to observe the potted plant and or poster and think about similarities and differences. Do the plants have these plant parts? Are they different in size, shape, colour?

You could ask this question about each example. Can we see just one stem? (There may be more than one stem, or the stem may split.)

Safety: Remind learners that while we do eat some plant parts, for example, spinach leaves, tomatoes, many plant parts are poisonous. Learners should not eat plants they find and should wash their hands after touching any plants.

> Differentiation ideas: Listen to learners' responses and be prepared to reinforce learning, perhaps by showing more examples, for example, of particular plant parts.

Begin with basic questions about the plant parts. For example, Can you see ...? What shape/colour is ...? How many ...? Increase the challenge with more open-ended questions. For example, Why does a plant have roots/flowers/leaves? Does a baby plant have all these parts?

You will provide support with posters, pictures and real life examples. Written labels will assist learners, along with your very clear pronunciation of the terms. Increase the challenge with a wider range of examples, for example, plants of different form and shape, very young plants, etc.

2 Activity 2: Making a model plant (20 mins)

Learning intention: To name the parts of plants.

Resources: Learner's Book, if possible a potted plant, Worksheets 1.2A, 1.2B, 1.2C, a poster or whiteboard drawing of a plant, scissors, glue.

Description: Look at the pictures in the Learner's Book for Activity 2. Using a poster or a real plant, ask a learner to point to a root, stem, a leaf and a flower. Point out that these parts look different of different plants. Review with learners the functions of the root, stem, leaf and flower. Where possible, ask the learners to do the explaining.

Ask learners to assemble a paper plant using parts cut from Worksheet 1.2A. Learners who need support with this activity could also use Worksheet 1.2B, which gives labelling and guidance on where to stick

the parts. Some learners could be challenged to also use Worksheet 1.2C, which requires them to complete simple sentences about the function of the parts and then add these as labels to their plant.

In pairs, ask learners to talk about their plant, its parts and what they do.

> Differentiation ideas: You may decide to have learners working in pairs. This gives learners an opportunity to learn from one another and to use their developing science vocabulary in a real activity. This will aid both confidence and familiarity with new words. However, at times you could ask learners to work alone as it might better suit some learners. It will also allow you to see what they are able to do and say.

Some learners may need help cutting out the parts.

Most learners will benefit from seeing the plant part functions written on a poster or board.

3 Think like a scientist: Observing plant parts (30 mins)

Learning intentions: To find out about the parts of plants.

To draw parts of a plant.

Resources: Learner's Book, a selection of plants, magnifying glasses (if possible).

Safety: Before this activity check that no learner is allergic to plants, for example, pollen. Tell learners that they must not eat any plants they find and must wash their hands after touching any plants.

Description: Look at the Think like a scientist text in the Learner's Book with the learners and explain that they are going to observe three different plants, draw them and name their parts.

If possible, it would be a good learning experience for learners to visit a safe outdoor area to make observations of real plants. An alternative would be to bring potted plants, young seedlings, or vegetables with roots and leaves still attached, into class. This would also allow valuable observation.

Ask learners to observe a number of plants, looking carefully at leaves, stems and flowers.

If any plants lack flowers or roots, ask the learners these questions. Why can't we see flowers on this plant today? Can you say why we cannot see the roots on this plant?

Ask learners to work with a partner and find two plants which have flowers and roots but which are different. Ask them to say how the plants are similar. Ask them to say how the plants are different.

Ask the learners to draw the two plants so that they have a record of what they see as well as the similar and different things.

Finally ask learners to look at their drawing and talk again about a similarity and a difference they observed.

› **Practical guidance:** Learners may not have used magnifying glasses. Teach them how to use them, for example, keep their head and plant part still while moving the glass towards and away from the eye to focus.

Warn learners not to eat anything they find, or touch plants and then their face or mouth, and that they will wash their hands after this activity.

Young learners often find difference easier to talk about than similarities, so insist on talking about similarities as well as differences.

Remind the learners to keep looking at the plant they are drawing. Many learners of this age will draw a typical plant from memory without looking at the plant you provide.

› **Differentiation ideas:** Some learners may need prompting when looking for differences between plants. Other may find similarities harder to spot so support learners by asking questions such as ‘Do both plants have roots?’.

Challenge more confident learners by expecting them to observe many details and to identify more similarities and differences. Can learners use maths language to describe shapes? Can they see or feel the texture of plant parts?

4 What am I? (10 mins)

Learning intention: To play a game to reinforce knowledge of plant parts.

Resources: sticky notes, pens; Digital Classroom slideshow – A world of plants (optional)

Description: In pairs, player one writes the word stem, root, leaf or flower on a sticky note. Player two must not see this word. The sticky note is then placed on player two’s forehead. Player two now has to ask questions to which the answer is ‘yes’ or ‘no’, for example, am I colourful? Do I grow down into

the soil? Player one answers the questions with ‘yes’ or ‘no’. After some questions player two guesses the word on the not.

› **Digital Classroom:** If you have access to the Digital Classroom component, use the slideshow to show the learners the wide range of plants, from tiny plants to huge trees. The i button will explain how to use the slideshow.

› **Differentiation ideas:** Some learners will need support to formulate suitable questions to ask.

› **Reflection:** Ask the learners why they think that as young scientists they need to be able to observe using their eyes and their brain.

Ask learners to make comparisons of plant parts in terms of size (perhaps recording with a strip of paper cut to length) and extend this to use of non-standard measures, for example, bricks. Making comparisons can easily become mathematical, by thinking about shape, orientation and size of plant parts. For example, can we find any straight lines on a plant?

5 Workbook 1.2: Parts of a plant (10–30 mins)

Learning intention: To reinforce knowledge of plant parts.

Resources: Workbook 1.2, a selection of plants

Description: This section of the Workbook focuses on plant parts. The Focus section asks learners to draw lines from labels to the parts of a plant. They are asked to look at a selection of plants and the different shapes of the leaves and flowers. In the Practice section learners are asked to do a similar activity, but this time there are two plants to label. The Challenge section asks learners to put pictures of a growing plant in order.

› **Differentiation ideas:** Learners who find this more challenging will need support to access the last section of the Workbook.

Plenary ideas

1 Let’s Invent a Plant! (10 mins)

Resources: paper, pencils and crayons

Description: Ask learners to draw a design for a new plant with roots, stem, leaves and very colourful flowers. Ask learners to label the plant parts. Support lower achieving learners by providing flash

cards of the vocabulary in this topic, for example, leaf, leaves, plant, flower, roots. Limit the number of examples of plants you share with these learners. Initially ensure plants used are very familiar.

Challenge higher achieving learners with a range of different plants (real or pictures) which display the obvious features required – flower, stem, leaf, root.

➤ **Assessment:** Determine from these invented plants that learners can identify the root, stem, leaf and flower. Observe the learners and talk to them so that you are confident that each learner in a pair knows these plant parts.

➤ **Reflection:** Ask learners to think and talk about plants which they know have safe edible leaves. How can they tell that a plant part is safe to eat? For example, a trusted family member guides them; they recognise a very familiar plant part, for example, a tomato.

2 My favourite plant (10 mins)

Resources: a puppet

Description: Ask the learners to tell a puppet about their favourite plant. Knowing the name of the plant at this stage is not important, just ask them to talk about its flower, leaf, stem and whether it has roots.

➤ **Assessment:** Ask the audience of other learners to say whether they think this learner knows the leaf, stem, roots and flower as parts of a plant. They can raise one arm for no and two arms for yes.

➤ **Reflection:** Ask learners to think of times when people buy plant parts to eat or as gifts. For example, sweet potato, carrot, pepper, tomato, rose flower, orchid flower.

CROSS-CURRICULAR LINKS

This topic has a number of cross-curricular opportunities, especially with mathematics, literacy and skills for life such as communication and critical thinking. For example, when you ask learners to reflect on their learning (see ideas

above), can they think of examples of how they learn? These could be times when they found something hard to understand or puzzling. What was it that helped them? Was it doing something? Was it seeing something? Was it talking to others?

Encourage learners to compare and talk about the size of plants and plant parts using comparative and superlative language, for example, big, bigger, biggest. Learners might compare the relative sizes of plants and plant parts. Learners also have to formulate an explanation. These sentence stems will assist learners:

- A plant has a stem because ...
- The plants has roots which ...
- The plant has leaves, they make ...
- Plants have flowers so that ...

There are links to art when learners make leaf rubbings or brush paint on to leaves with which they then print.

If you use a song, then you are linking to music. Learners can suggest words the known tune, for example, to the tune of 'happy birthday' they might sing:

Plants have so many parts,
Plants have so many parts,
Roots, stems and flowers all over,
And leaves making food.

This topic links strongly to environmental education because learners will begin to appreciate the lives of plants and the value of plants.

Homework ideas

Ask learners to draw plants they have at home. Ask them to label the roots, the leaf, the stem and a flower.

1.3 Plants and light

LEARNING PLAN

Learning objectives	Learning intentions	Success criteria
1Bp.03 Know that plants need light and water to survive.	<ul style="list-style-type: none"> To find out if plants need light. 	<ul style="list-style-type: none"> Learners can say what will happen to a plant with no light.
1TWSp.02 Make predictions about what they think will happen.	<ul style="list-style-type: none"> To do an investigation and say what we think will happen. 	<ul style="list-style-type: none"> Learners can say what they think will happen in an investigation.
1TWSc.02 Use given equipment appropriately.	<ul style="list-style-type: none"> To take care when we touch plants. 	<ul style="list-style-type: none"> Learners can take care when they touch plants.
1TWSc.03 Take measurements in non-standard units.	<ul style="list-style-type: none"> To count bricks to find out how tall plants are. 	<ul style="list-style-type: none"> Learners can count bricks to find out how tall plants are.

LANGUAGE SUPPORT

This topic provides an opportunity to use comparative words such as 'smaller', 'bigger' and 'taller'. Show the learners how to use these words and encourage them to use them orally. When comparing plants, give learners examples of simple sentences and ask learners to repeat these, for example, 'The plant in the dark grew taller.'

grow: get bigger or change as you get older

ask: use a question to find out

question: you ask a question to find something out

answer: what you try to find out when you ask a question

light: a bright glow from a light source that helps us to see

investigation: testing something to find the answer to a question

Common misconceptions

Misconception	How to identify	How to overcome
Plants must have light from the Sun to grow.	Ask learners to talk about or draw the things they think a plants needs to grow.	Show learners photographs of plants growing well indoors in artificial light.
Some plants, for example tomatoes, need food.	Ask learners to talk about or draw the things they think a plants needs to grow.	Explain that products called 'tomato food' or 'plant food' are sold but plants can grow without these as they make their own food in their leaves. 'Plant food' can help to keep a plant healthy.

Starter ideas

1 Where do plants grow? (15 mins)

Resources: Some plants in pots and/or photographs of plants growing in different environments, including indoor environments with lighting, greenhouses and people's homes. Include one photo of unhealthy plants that lack water or light. Digital Classroom slideshow – What do plants need to grow? (optional)

Description: Show learners the plants in pots or the photographs of plants growing in different environments. Ask them to tell the class what they can see. Recap the learning from Topic 1.2 by asking learners to identify stems, leaves and flowers if possible. Then ask these questions. 'Are these plants healthy?', 'Do the plants look healthy?' 'Have the plants got what they need to grow?'. Now ask this question. 'What do plants need to grow?'. Ask learners to talk with a partner. Can they think of some things a plant needs to grow? Ask learners whether they agree or disagree. If learners say that plants need the Sun, ask them if they have ever seen plants growing indoors. Ask 'Do you think a plant could grow with indoor light?'.

You could challenge some learners by asking them to explain their reasons. Learners might give reasons from their own experience such as 'I know plants need water because we had a plant indoors and didn't water it and it died.'.

> **Digital Classroom:** If you have access to the Digital Classroom component, use the slideshow to show plants growing in different conditions. The i button will explain how to use the slideshow.

Identifying misconceptions: Some learners may say that plants need light from the Sun but plants can grow well with artificial light. Show the class a photo of plants growing indoors under artificial lights. Ask 'Do these plants have what they need to grow?'. Some learners may say that plants need soil. Plants do use nutrients from the soil to keep healthy, but they do not get food from the soil. Food is made in the leaves by photosynthesis. Explain to learners that plants do need things from the soil, but not food. Food is made in the leaves.

2 What do humans need to live? (15 mins)

Resources: A bag containing a lunchbox representing food, a water bottle representing water,

a blanket representing warmth or sleep, a flashlight representing light, a book representing learning or entertainment, a toy animal, toy car or a doll representing entertainment.

Description: Show learners the bag and explain that inside there are some things that people need to live and some things that they do not need. Choose a learner to come up and choose an item from the bag. Ask this learner or other learners to say whether people need the item to stay alive. You could ask 'Would people die if they didn't have this?'. When all the objects have been taken from the bag, put them where the learners can see them and ask 'Do plants need any of these things?'. Choose learners to hold up items they think plants might need. Challenge some learners to explain why they think plants would need this item.

Humans need food, water and warmth (and air or oxygen) to survive.

Plants need light and water to survive (they make their own food from water and air using photosynthesis).

Identifying misconceptions: Some learners may think that plants get the food they need from the soil. If learners say that plants need food to live ask 'Have you ever seen a plant eating?'. Explain that plants do need food, but they can make it themselves in their leaves from water and air.

Some learners may say that there are plants that eat insects. This is true, but these carnivorous plants use nutrients from their prey to keep them healthy. They usually grow in places where the soil does not have many nutrients. Carnivorous plants still make their own food in their leaves.

Main teaching ideas

1 Activity: What do plants need to grow? (20 mins)

Learning intention: To find out if plants need light.

Resources: Learner's Book, pictures on the board of water, the Sun, some food, books, toys, an empty plant pot and some clothes, Digital Classroom activity – What do plants need to grow? (optional)

Description: Read the Activity: What do plants need to grow? in the Learners' Book to learners. Show learners the pictures on the board of water, the

Sun, some food, books, toys, an empty plant pot and some clothes. Explain that you want learners to draw pictures of the things that they think plants need to grow and label them if possible. Get them started by asking ‘Do plants need food and water, just like people do?’. Discuss learners’ answers and ask others to say whether they agree or disagree with the answers given. At this point, do not correct any wrong answers such as ‘a plant needs a pot to grow’, allow learners to talk about their own ideas and explain that you will tell them the correct answers later in the activity.

Ask learners to draw the things they think plants need to grow. When learners have finished, ask them to look at some other learners’ work. Choose several learners to say what they think the correct answers are and then tell them if they are correct. Choose learners to give reasons for their answers as before.

You could extend this activity by asking learners to draw pictures of themselves as gardeners looking after plants. Ask learners to talk about where they would put the plants and how they would look after them

› **Differentiation ideas:** Challenge some learners by asking them to think about other things that are not shown on the board. Ask ‘Is there anything else that a plant might need to grow?’. These learners may suggest that plants need soil to grow. Explain that they are correct that most plants grow in soil, but explain that the soil helps them to be healthy and that it is possible to grow a plant without soil. You could demonstrate this by planting some seeds in cotton wool and giving them water. If bean or pea seeds are used, they should germinate within a few days and grow fairly well without soil.

Support learners by having pot plants in the classroom and allowing them to give the plants water when needed. Talk with learners about where to keep the plants and how to look after them.

› **Digital Classroom:** If you have access to the Digital Classroom component, use the activity to check learners’ understanding of what plants need to grow. The i button will explain how to use the activity.

2 Think like a scientist: What happens to a plant with no light? (20 mins to set up, 20 mins to review results after a week)

Learning intentions: To find out if plants need light.

To do an investigation and say what we think will happen.

To take care when we touch plants.

To count bricks to find out how tall plants are.

Resources: Learner’s Book, two very similar young plants in pots, a cardboard box to cover one of the plants, labels reading ‘Light’ and ‘No light’, small plastic bricks. A large sheet of paper, paper for learners to draw pictures of the plants at the start and the end, Digital classroom video – Do plants need light to grow? (optional)

Description: The effects of having no light should be clear after one week but leaving the investigation for two weeks may be necessary in some cases.

Show learners the pictures of Marcus setting up the investigation in the Learner’s Book. Ask learners ‘What is Marcus trying to find out?’ and ‘What is his question?’. Explain what Marcus is doing if necessary then tell learners ‘You are going to do your own investigation to find out the answer’. Show learners the two plants and ask ‘Can you see that they are the same?’. Explain that you are going to keep one plant in the light but put the box over the other so it is in the dark. Put the plants next to the labels but, before covering one plant with the box, choose learners to measure the height of the two plants using plastic bricks. Write down the heights of the plants on the large sheet of paper. Keep this paper on display throughout the investigation. Now ask all learners to draw what the two plants look like at the start.

Explain that you will give water to both plants and look at them again after a week. Ask some learners to say what they think will happen to the plant in the light then ask some to say what they think will happen to the plant in the dark. Now ask learners to draw what they think the two plants will look like after a week.

After a week, look at the two plants again. Ask learners ‘How are the plants different?’ and ‘How are the plants similar?’. Ask ‘Which plant looks healthy?’ and ‘What makes the plant that was in the dark look unhealthy?’.

Ask learners to draw what both plants look like at the end.

The plant in the dark will grow tall because it is growing upwards to try to find some light. It will not grow many leaves and the stem and leaves will be very pale and look unhealthy. It will eventually die without light because it cannot make the food it needs. The plant in the light will grow a bit taller

than it was at the start of the investigation but more leaves will grow and it will look green and healthy.

› **Differentiation ideas:** For investigations that take several days, learners can be supported by taking photographs of the plants at different stages and adding these to a display as a record of the investigation.

Some learners may find it hard to draw a plant. Support these learners by demonstrating how to draw a simple plant on the board just using a line for the stem and showing them how to draw simple leaves.

Challenge some learners to give reasons for their predictions. Ask 'Why do you think the plant will do that?'. Learners who suggest that the plant in the dark will die because it needs light already have an understanding that plants need light to grow. These learners are correct. You should encourage them to notice the detail of how the plant responds to the darkness by growing taller and becoming pale before it dies. Other learners might predict that the plants in the light will grow well because '...plants are usually kept in light places'. This shows some awareness that plants may need light but does not show an understanding of what would happen without light.

Challenge learners by extending this investigation to include a plant that has a just a small amount of light. Cover the plant with a box with a small hole cut in the top. Ask these learners to say what they think will happen to this plant and then check their prediction after a week as described above.

› **Digital Classroom:** If you have access to the Digital Classroom component, use the video to reinforce learning about plants needing light to grow. The i button will explain how to use the video.

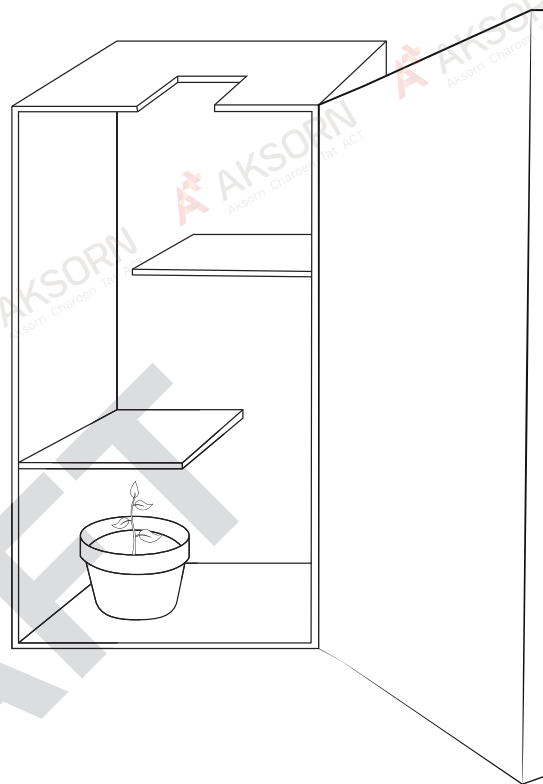
3 Plant maze (20 mins to set up, 20 mins to review results after a week)

Learning intentions: To find out if plants need light.

To do an investigation and say what we think will happen.

Resources: One young plant, a plant maze: a large cardboard box with a small hole at one end for light, pieces of card are attached inside the box to block the light and make a maze (see diagram). You will need to make the plant maze before starting this

activity. You could seek help from the art/design department for help if necessary.



Description: Open the plant maze to show learners the inside. Explain that, when it is closed light can only get in through the small hole at the top so it is very dark at the bottom. Place the young plant at the bottom of the maze and ask learners to say what they think will happen.

Give the plant water. After a week, open the plant maze and show learners what has happened. Ask learners 'Is this what you thought would happen?' and 'How is the plant different?'.

The plant in the maze will grow tall because it is growing towards the light. It will grow through the maze towards the hole at the top. It will not grow many leaves and the stem and leaves lower down will be very pale and look unhealthy.

› **Differentiation ideas:** Challenge learners to give reasons for their predictions. Most could do this orally but some others could record their reasoning by writing a simple sentence.

4 Workbook 1.3: Plants and light (10 to 30 mins)

Learning intentions: To find out if plants need light.

Resources: Workbook 1

Description: Learners use Workbook activity 1.3 Plants and light to label plants grown in light and dark places, to compare the plants by labelling differences between them and completing sentences.

Learners can use the Focus activity to identify whether some pictured plants have been growing in the light or the dark. The Practice section asks them to compare the features of plants that have been grown in the light and plants that have been grown in the dark. In the Challenge section they complete sentences about plants that have grown in the light or the dark, and select correct statements about a plant with no leaves.

➤ **Differentiation ideas:** Learners who find this more challenging will need support to access the last section of the Workbook.

Plenary ideas

1 What grows in a dark cave? (10 mins)

Resources: Photograph of a dark cave in the Learner's Book.

Description: Ask learners to look closely at the photograph of the cave in the Learner's Book. Ask 'Can you see any plants growing in the cave?'. Ask learners to explain why there are no plants growing in the cave. Explain, if necessary, that there is not enough light in the cave for plants to grow and that plants need light to grow. You could extend this by saying that plants use light to make food in their leaves. Without light they can't make food so they can't survive.

➤ **Assessment:** Ask learners to say why they think no plants are growing in the cave. Learners who say that it is too dark in the cave for plants to grow have a clear understanding that plants need light to grow. Some learners may give reasons that include humans looking after plants such as 'There is no one to look after plants growing in a cave,' or 'No one has planted plants in the cave'. Ask these learners to think about wild places such

as forests and jungles. Explain that people do not plant or look after the plants in these places and ask 'How is the cave different to these places?'. Explain, if necessary, that there is plenty of light in jungles and forests, but not enough light in the cave for plants to grow.

Ask learners to talk about other dark places they have seen where there are few or no plants. Learners might suggest under bridges or under some large trees.

2 Science questions (10 mins)

Resources: Picture of Marcus setting up the investigation about plants and light in Think like a scientist activity in the Learner's Book

Description: Show learners the pictures of Marcus setting up the investigation in the Learner's Book. Ask learners these questions. 'What was Marcus's question?' 'How did he find out the answer?'. Explain to learners that you can find the answers to many science questions by doing different science tests. Ask learners to think about plants and to say whether they can think of any other science questions about plants. Support learners by writing question stems on the board. For example, 'What will happen to a plant without ...?' and 'What will happen to a plant with ...?'.

➤ **Reflection:** Ask learners these questions. 'Was it easy to find out the answer using a science test?' 'Was it easy to see the differences between the two plants?' 'Did you like finding out by doing a test? Why?'

CROSS-CURRICULAR LINKS

When discussing places in the world where plants grow without humans looking after them, you are linking to Geography.

Homework ideas

Ask learners to draw a picture of a plant they have at home or of a plant they can find outside. Challenge some learners to label the parts of the plant. Some may be able to find out what type of plant it is.

1.4 Plants need water

LEARNING PLAN

Learning objectives	Learning intentions	Success criteria
1Bp.03 Know that plants need light and water to survive.	<ul style="list-style-type: none"> To learn about how plants need water. 	<ul style="list-style-type: none"> Learners know about how plants need water.
1TWSp.02 Make predictions about what they think will happen.	<ul style="list-style-type: none"> To predict what will happen in an investigation. 	<ul style="list-style-type: none"> Learners can predict what will happen in a science investigation.
1TWSc.05 Collect and record observations and/or measurements by annotating images and completing simple tables.	<ul style="list-style-type: none"> To record observations in tables. 	<ul style="list-style-type: none"> Learners can record observations in tables.
1TWSa.01 Describe what happened during an enquiry and if it matched predictions.	<ul style="list-style-type: none"> To see if what happened was what we predicted. 	<ul style="list-style-type: none"> Learners can say if what happened was what they predicted.

LANGUAGE SUPPORT

Support the development of language by demonstrating how to use the science vocabulary, particularly in sentences. Take care that the learners hear new terms to form these correctly. Test this by asking the class to repeat a word to you like 'similarity'. Use this technique. Give the learners these instructions. Say it back to me like a mouse, whisper like this, mouse. Now say it back to me like

a lion, like this, **similarity!** and so on, in a spooky voice, like a frog, etc.

predict: when we say what we think will happen

record: when we draw or write a note of something we have observed

table: a grid where we record things

explain: when we give a reason for something

practical: a 'hands on' activity

Common misconceptions

Misconception	How to identify	How to overcome
That each plant needs a lot of water every day.	Talk to learners about the amount of water plants need, perhaps whilst watering a plant.	Refer to plants outside which do not get rainfall each day. Show that soil in a plant pot can stay moist for several days.
That water enters the plant through the leaves.	Ask learners to tell you how the water gets into the plant.	Remind learners about the roots and that one of the jobs of the roots is to get water from the soil.

Starter ideas

1 Water for plants (5–10 mins)

Resources: Learner's Book picture of plants growing in different places.

Description: Ask the learners about what they can observe on the picture. Can they say why there are few plants in the dry looking area? Ask them to talk in pairs about where the water for these plants comes from.

Identifying misconceptions: Learners may think that no plants can live in a dry area. Show them pictures of plants that are adapted to live in very dry conditions. You do not need to go into detail about how these adaptations work at this stage.

2 Planting seeds (15 mins)

Resources: Two flower pots, compost, water, large seeds, for example, sunflower, beans, labels.

Description: Ask learners to assist you planting seeds by taking two pots and adding compost. Get learners to talk about what they are doing. Explain that you'll ask them to put seeds in both but only water one pot. Ask learners to complete this and then label the pots, water one and make predictions about what will happen in the coming days.

Safety: Always wash hands after handling either compost or seeds.

Ask the learners to look at the next picture of plants growing in different places.

Ask if they have seen plants locally living locally. Where?

Ask five learners to make a drama. One child is a plant in a dry place, another one is in a cooler place that gets rain. The three others are rain clouds who visit the cooler place, they hold hands high and wriggle fingers to 'rain' on the plant. This plant is happy and grows strongly. Only one 'cloud' visits the dry area with a little rain, this plant looks a little sad and only grows slowly.

> Differentiation ideas: Listen to the responses and contributions of different learners, and identify learners who are quiet, lack confidence or make errors and need more support, and ones who use language accurately, make suggestions, ask questions, and so need more challenge.

Begin and support with questions about what they observe. Here are some examples. 'What do you observe?' 'What has happened?' Move onto to questions to elicit explanations. Here are some examples. 'Why is that?' 'What has affected this plant?' Move to questions about the future like these. 'What should we do?' 'If we do this, what will happen?'

Main teaching ideas

1 All plants need water (10 mins)

Learning intention: To learn about how plants need water.

Resources: Learner's Book, if possible, a wilted plant.

Description: This is a class discussion activity. Try to ensure that all learners contribute to the discussion. Try to find out if learners understand what has happened to the wilted plant, and why it has happened. Use questions like these. 'What has happened to this plant?' 'What do you observe about the plant?'

Ask the learners to look at the picture of the wilted plant in the Learner's Book and a real one if you have it. Can they describe what they observe and explain what has happened to the plant? Ask them to read what the children are saying on the page. Do they agree? Can they explain?

2 Activity: Healthy plants? (10–15 mins)

Learning intentions: To learn about how plants need water.

Resources: Learner's Book, a potted plant, a plastic bottle of fresh water.

Description: Ask learners to look at the healthy plant you have brought to the class and picture B (the over-watered plant) in the Learner's Book. Ask learners to talk with a friend about the difference and what may be wrong with the plant in picture B.

Explain that the sick plant has had too much water. Ask learners to describe what it looks like and predict what will happen if it still has too much water.

Agree that plants need 'the right amount' of water and that as carers of plants we should test the soil to check it is moist and only water as a plant gets dry.

Safety: After touching soil, learners should wash their hands because there is a danger of germs being spread to their eyes and mouths and to other people.

› **Differentiation ideas:** The first step is to ask learners what they observe and describe it to you. Challenge them by asking them to predict what might happen in the future with or without water. Can they explain why things could be different in the future?

Some learners may need support with language, so it will be important to demonstrate how to use words and have them on display in a written form. Always be ready and willing to give support with, for example, step-by-step guidance, but monitor the learners and gradually step back and allow the learners to do more and take more responsibility. Praise this when it happens, even if things go wrong.

More confident learners should be challenged with questions and the opportunity to make decisions. They should predict and explain. If they pose a question, ask them to tell you how they could find out the answer.

3 Think like a scientist 1: How plants get water (30 mins)

Learning intentions: To predict what will happen in an investigation.

To see if what happened was what was predicted.

Resources: Learner's Book, Two similar potted plants – ideally their compost should be drying out, a plastic bag and string, a small watering can or jug, fresh water.

Description: Read the Think like a scientist 1 text in the Learner's Book and explain what the learners are going to do. Give learners the opportunity to assist with two similar potted plants. Begin the activity by saying these things to the learners.

'I think plants get water through their leaves. You need to prove me right or wrong.'

'Tell me how we can test these plants to see if I am right or wrong.'

Lead the learners to suggest a test, such as: tie the plastic bag around one plant pot.

Water the roots on one plant and the leaves only of the other.

Observe what happens. Normally you would see the plant without the plastic bag looking healthy but the one with no water to the roots beginning to wilt after several hours.

Ask the learners to draw what they are doing and draw what they will think will happen.

Safety: Learners must wash their hands after touching the plants.

› **Differentiation ideas:** Some learners may need careful guidance. For example, you may need to break down the activity into small steps for each of which you lead and guide. Encourage others to make decisions and work more independently.

You could ask some learners to make two drawings to record what they did and then a prediction. You could challenge others to draw one or two steps in the process.

4 Think like a scientist 2: How much water do plants need? (30 mins)

Learning intentions: To learn about how plants need water.

To record observations in tables.

Resources: Learner's Book, nine plant pots, water, watering can or jug, nine seeds, poster paper, table of results in poster format, Digital Classroom manipulative – Get the water and light right! (optional).

Description: Look at the Think like a scientist 2 activity in the Learner's Book and explain that the learners are going to investigate watering plants. Clarify the question you wish to answer, which is how much water do plants need? Explain that scientists always start with a question before they can plan a test or experiment. Note the question on a poster and put the poster on the classroom wall. Lead the learners to realise that we will plant and try to grow three sets of three seeds (you can plant more if you wish). Three seeds will have water every day (agree an amount – say a small cupful each), three will get the same amount but just twice a week (for example, today and in two days), the others will get no water. Check that the learners understand the question, what the test is and what the learners will learn. Ask the learners to make a prediction about what will happen. Make sure this is noted on the poster.

Finally challenge the learners by asking about the place you will keep the seeds. Will all the seeds be

kept together? Will they be growing in one place, for example on a shelf or windowsill? Would it be interesting to compare seeds growing in different places? Can any learners explain how this simple comparison will work? Some learners may be able to appreciate that the plants must be treated the same in every other way to make a fair comparison, that is so it is fair (no need to emphasise fair testing at Stage 1).

Draw the learners' attention to the table of results (you might rearrange this by adding the days of the week). Ask the learners what they draw in each box on the various days. Lead the learners to realise that they need to produce a drawing of the seed/plant.

Safety: Learners should always wash hands with soap and water after handling compost and seeds (seeds usually have chemicals on them to aid storage).

› **Practical guidance:** You should avoid placing the pots on a sunny windowsill which may be too hot.

You might also decide to check the plants at the same time each day. The plants which have water will grow, the ones without water will wilt and begin to die. Over time, the plants with water everyday may begin to yellow and look unwell as they may have too much water.

› **Differentiation ideas:** Some learners may need considerable step-by-step guidance. This may be most of the class if the learners are unfamiliar with practical testing. Begin by giving a lot of support and guidance, but then start to give the learners more independence to avoid over-reliance on you. Some may cope with more independence. For example, let these learners decide on the number of seeds and pots. As you give the learners independence, be willing to let the learners pursue their ideas.

More confident learners should be able to justify choices. Others can be asked why they think something is a good idea. When you ask learners to predict, you can challenge by asking the learners to tell you why they make this prediction.

› **Digital Classroom:** If you have access to the Digital Classroom component, use the manipulative to reinforce how much light and water plants need. The i button will explain how to use the manipulative

5 Workbook 1.4: Plants need water (10–30 mins)

Learning intentions: To reinforce the fact that plants need the correct amount of water to survive.

Resources: Workbook 1

Description: In the Focus section, learners are asked to draw a plant that is not given water for a week and then draw what the plant looks like after it has been given water. The Practice section asks learners to think about what happens to a plant over time when it is given some water on some days but not on others. They have to draw pictures to show their ideas. Finally, in the Challenge section, the learners are given pictures of a plant on different days and different watering conditions. They are asked to say what happens when the plant is not watered and also colour in bricks to show the height of a plant.

› **Differentiation ideas:** Some learners will need support to complete the two later sections in the Workbook. Others may need support with colouring in the correct number of bricks in the Challenge section.

Plenary ideas

1 My best place to grow would be... (10 mins)

Description: Ask learners to pretend they are a plant and that they have to ask for the very best place to grow. Give the learners time to talk with a partner about what they will say. You could prompt the learners with key words and ideas, for example, dark, soil, water, warm sunlight, by a pond, with other plants, etc.

Ask several learners to stand up and share their requests. Start the learners off by saying 'So little plant, where do you want to live?'.

› **Assessment:** Listen to the words the learners use. Are they using the new science words? Are they using them correctly? You could demonstrate a bad example. For example, 'I am a plant and I want to grow in a cave'. And ask the learners to be teacher and correct you.

› **Reflection:** Ask learners if they feel that talking with other people has helped their learning in this science.

2 Growing plants at home (10 mins)

Description: Talk to the learners about safe activities with plants which the learners can do at home. Make the point that the learners should tell a grown up what they are doing, ask for help from a grown up, not eat plants the learners find and always wash their hands afterwards.

Ask for suggestions which might include:

- planting a mini garden in a plant pot or tray
- planting seeds
- varying the watering of a plant to observe the effects
- growing plants in different places to observe the effects
- keep a plants diary by drawing pictures each day
- drawing pictures of different plants
- taking rubbings of tree bark or leaves.

➤ **Assessment:** Can learners talk about plants and how plants need water?

➤ **Reflection:** Ask learners to talk about the things they learn when they do science themselves.

CROSS-CURRICULAR LINKS

Main teaching idea 1 can be linked to mathematics, by talking about the amount of water we might give. For example, using non-standard measures like a cup full, a bottle full.

Main teaching idea 2 can be linked to mathematics when you discuss different amounts of water. For example, a teaspoon, an egg cup, a cup, a jugful. It can also be linked to mathematics when you talk about change over time, for example, today, two days, a week.

There are strong links in Main teaching activity 3 to literacy, with learners practicing and making

use of new vocabulary. There are many stories which include the growth of plants including *Jack and the Beanstalk*. The Chinese Bamboo Tree has seeds that lie in the soil for one, two and even three years, but no shoot appears! Then in the fourth year it can grow 20 metres in six weeks! Comparing growth over time, involves estimation, use of non-standard methods and days of the week.

Main teaching idea 4 links strongly to mathematics because learners are dealing with a question, recording in a table and seeking to prove a prediction. This activity also links to environmental education as learners are learning about the need of plants for water.

This whole topic links strongly to English with development of the vocabulary plants and carrying out a simple test. Learners have to talk and listen as they cooperate. There are links to mathematics, with ordering, proving or not their predictions, predicting and measuring, and as described above.

Homework ideas

Ask learners to find a plant at home or near to home that they can observe safely. Can the learners look after its watering for a week or keep a diary of the water it gets in a week using pictures?

PROJECT: GARDENS AND GARDENERS

1SIC.03 Know that everyone uses science and identify people who use science professionally.

This project encourages learners to make a mini garden in a plastic, metal or card tray. It covers the Science in Context objectives about science being used in the world and people who use science. This project could be done in school or as homework.

Initially learners are asked to observe the picture of the garden and then to think about the gardener. You might point out that some people work as gardeners, some will have a lot of knowledge of

plants and gardening. Gardeners know that plants need light and water. Emphasise that gardeners can be men and women. If the school has a gardener, the learners might have seen this person working and may be able to tell you about what they have seen. You might be able to arrange for a gardener to visit class or for the learners to visit the gardener at work.

You could reveal that you do, or have, looked after a garden and that we can all be gardeners. You might show the learners some gardening tools.



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Workbook 1

Jon Board & Alan Cross



Second edition

Cambridge Assessment
International Education

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Living things

> 1.1 Animals and plants alive!

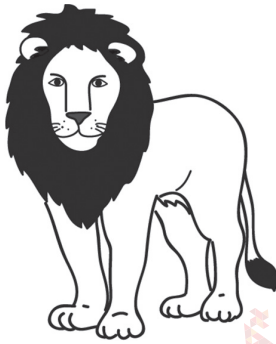
Focus

- 1 Colour in only the things that are alive.



Practice

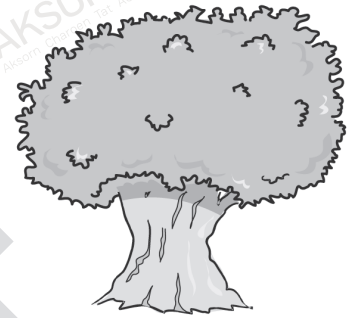
2 Draw lines from these things to the right group.



lion



butterfly



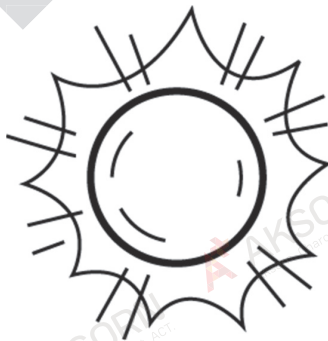
tree

Non-living

Living



water



Sun



chair

Challenge

- 3 Cross out (~~cross-out~~) the wrong word in the sentences below.

Example: A ball is ~~alive~~ / not alive.

A fish is alive / not alive.

A cat is alive / not alive.

A rock is alive / not alive.

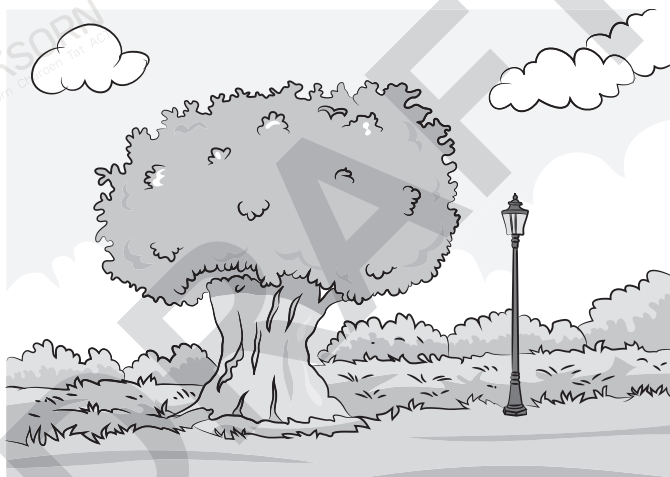
Water does not need move / food.

A cat can move / food.

Water is alive / not alive.

- 4 Write a sentence about this living thing.

Use some of these words.



The

tree

is

big.

leaves

are

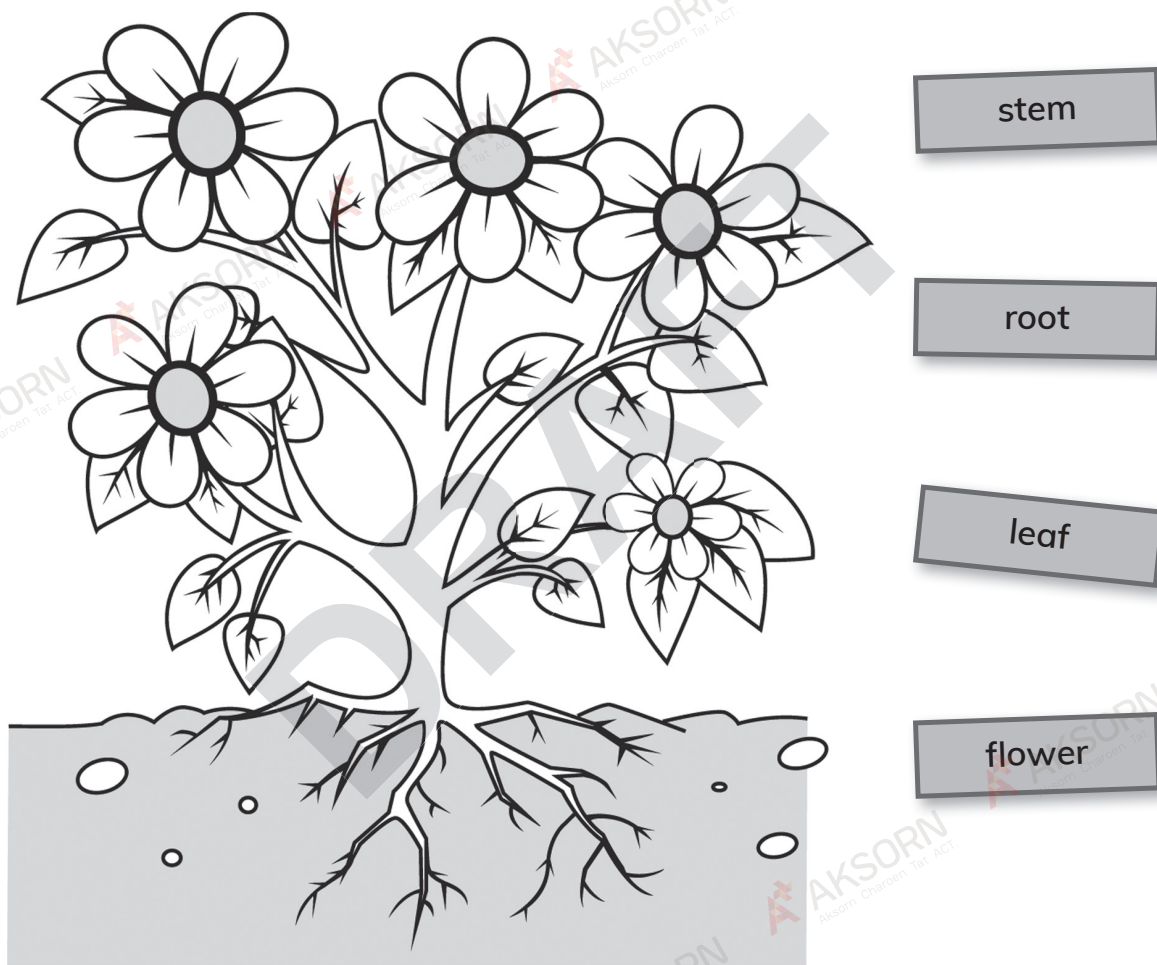
small.

tall.

1.2 Parts of a plant

Focus

- 1 Draw lines from these words to label this picture of a plant.



Look at lots of plants. Look at the different shaped leaves and flowers.

1 Living things

Practice

- 2 Draw lines from the words to each picture to label the roots, stem, leaf and flower.



stem

roots

leaf

flower



Challenge

3 When a plant starts to grow it grows a root and a stem.

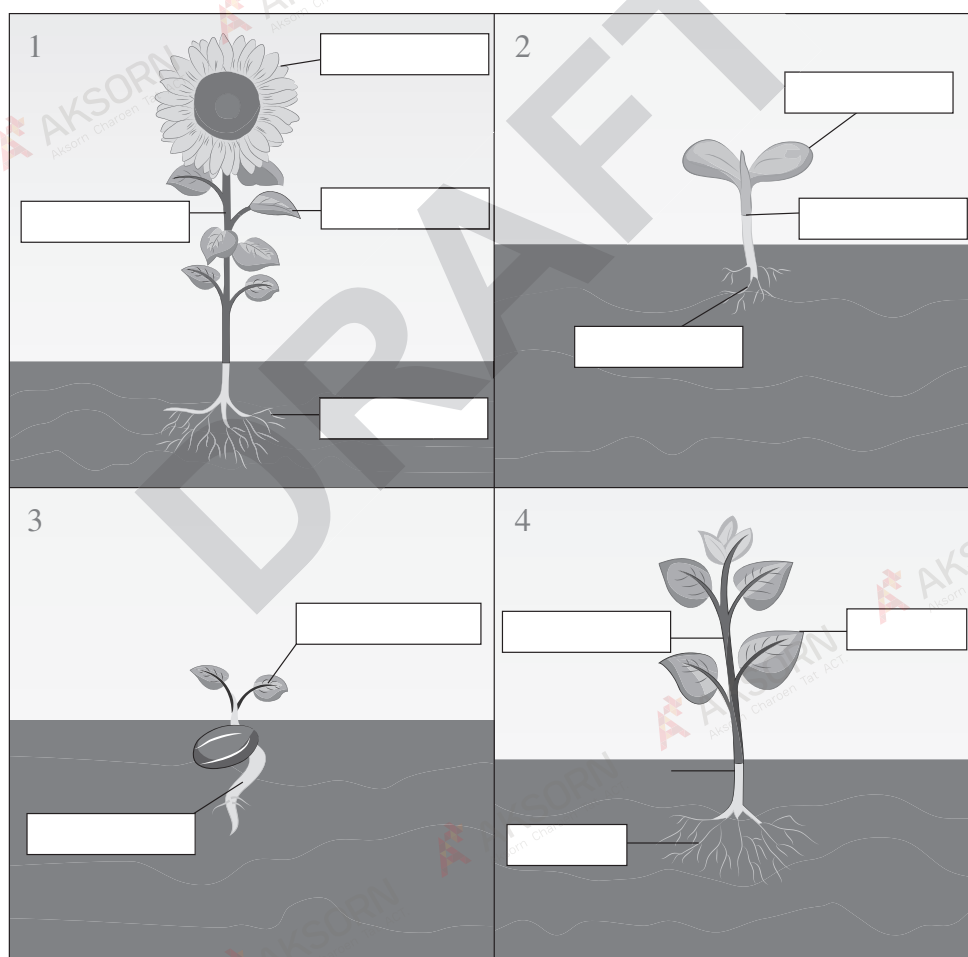
The leaves grow on the stem.

Later, the plant makes flowers.

These four pictures show the plant growing but they are in the wrong order.

Put the plants in the right order using the numbers in the pictures.

Write the numbers here: _____



Label the root, stem, leaf, flower in each picture.

1 Living things

4 Put a cross (×) next to the wrong sentences below:

a There is only a flower on picture 1 because:

- ☐ the flowers have fallen off in the other pictures
- ☐ flowers are the last thing to grow

b There is root, stem and leaf in each picture because:

- ☐ you can't draw a picture without them
- ☐ the roots grow first, then the stem and leaves grow.

> 1.3 Plants and light

Focus

- 1 One of these plants is growing in the dark. The other is growing in the light. Write the word 'Dark' or 'Light' under each picture. Colour in the plants.



1 Living things

Practice

2 Write the words in the right box.

small leaves

big leaves

tall stem

Plants with light

Plants in the dark

short stem

green leaves

yellow leaves

Challenge

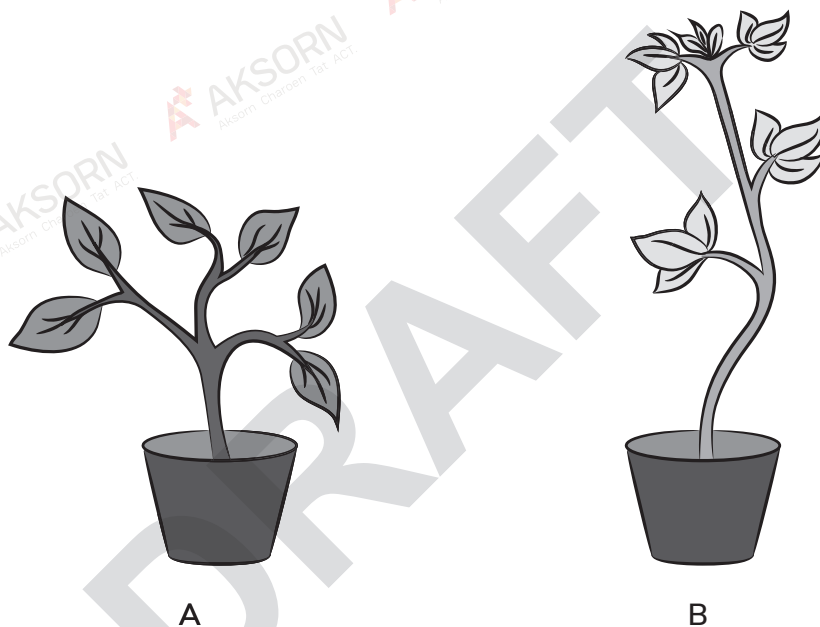
3 Cross out the wrong words in these sentences.

Plant A was grown in the **light** / **dark**.

Plant B has **small** / **big** leaves.

Plant B has a **tall** / **small** stem.

Plant B was grown in the **light** / **dark**.



4 Write what you think will happen to a plant with no leaves.

	stem				tall.
The	plant	will	grow		small.
	leaves		not grow		again.

› 1.4 Plants need water

Focus

- 1 Look at this plant.

This plant has no water.

The plant isn't given water for a week.

What will the plant look like next week without water?

Draw a picture of the plant without water.



A large rectangular box for drawing the plant without water. A large, light gray 'DRAFT' watermark is diagonally across the box.

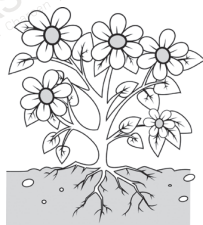
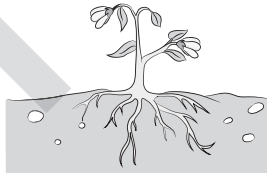

The plant is given water. What would it look like?

Draw the plant after it has had water.

A large rectangular box for drawing the plant after it has had water. A large, light gray 'DRAFT' watermark is diagonally across the box.

Practice

2 Draw the three missing pictures for days 3, 5 and 6.

Day	Rain?	
1	rain	
2	No rain	
3	No rain	
4	rain	
5	No rain	
6	No rain	

Challenge

3 Look at these six pictures. They show a plant as it grows.

When we stop watering the plant wilts.

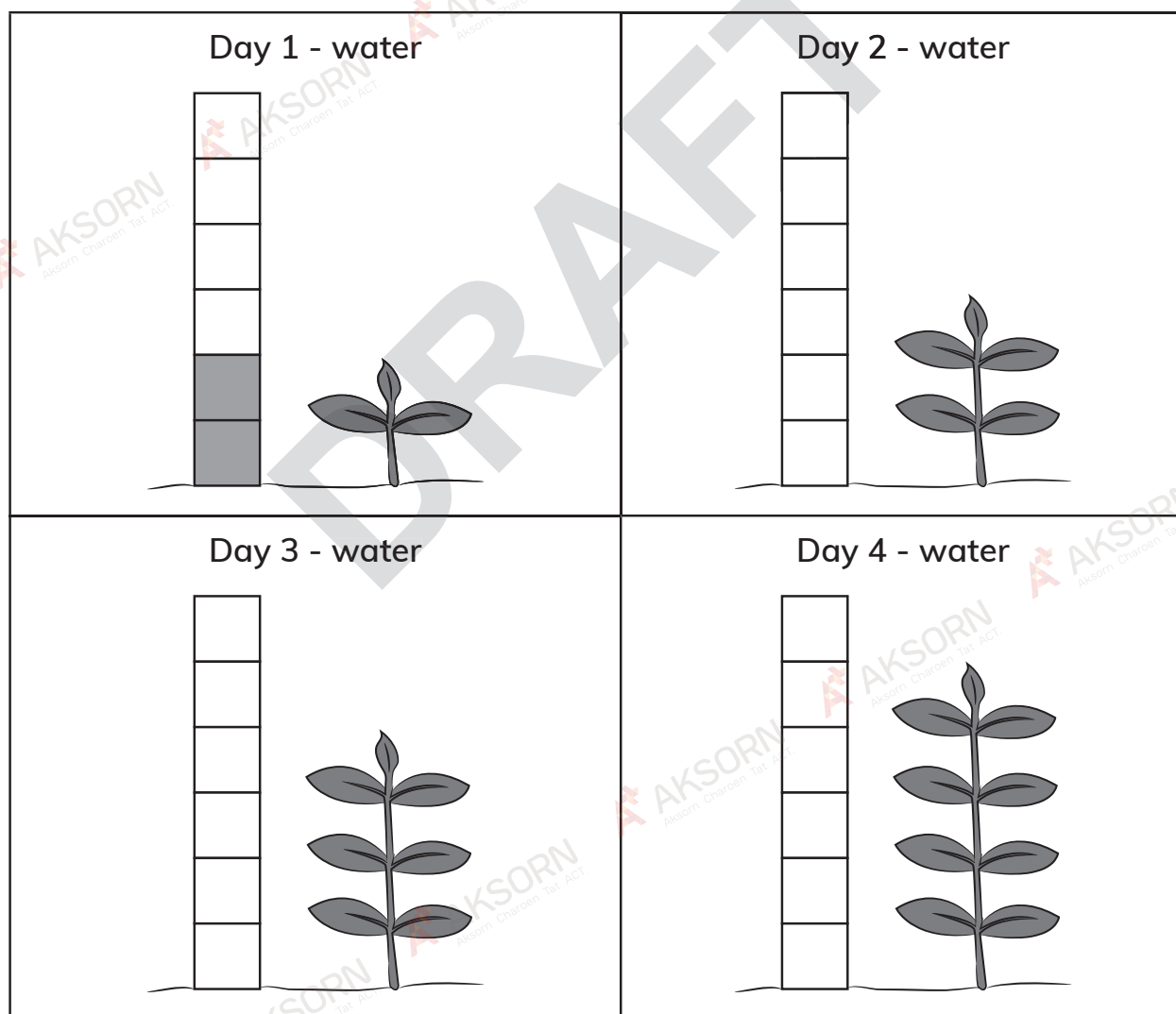
The bricks next to the plant show how high it has grown.

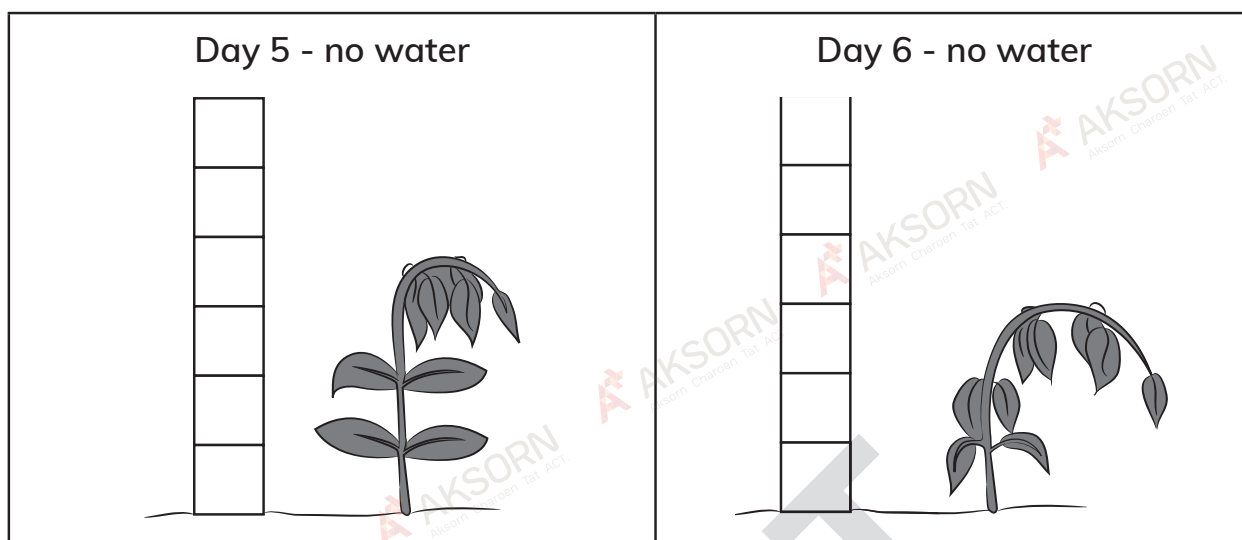
On days 5 and 6 we stop watering.

What happens when we stop watering?

When we stop watering, the plant _____.

Colour in the bricks on days 2–6 to show the height of the plants.





What happens to the height of the plant on day 5 and day 6?

On day five the height of the plant was _____ bricks.

On day six the height of the plant was _____ bricks.

Why does this happen?

The plant _____ because it had no _____

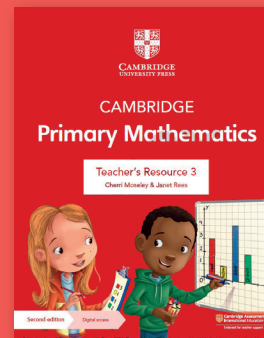
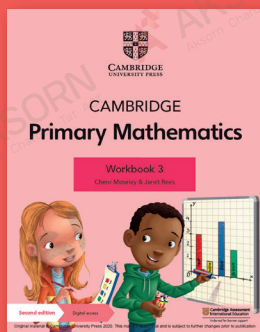
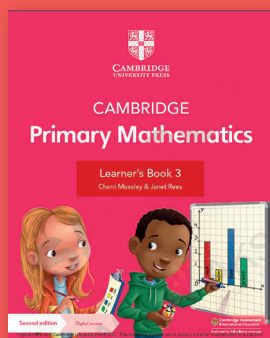
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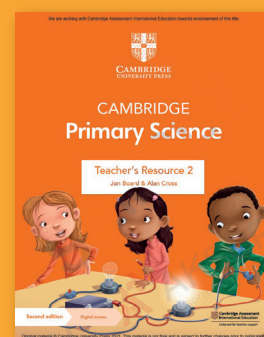
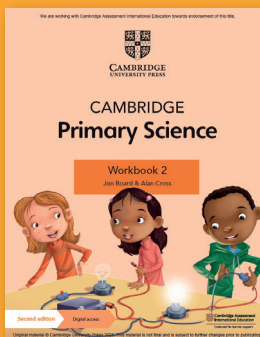
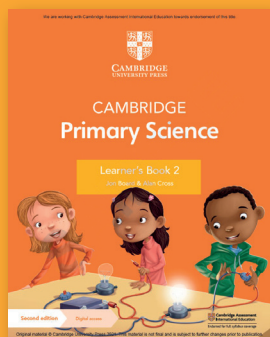


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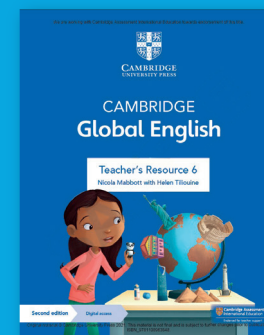
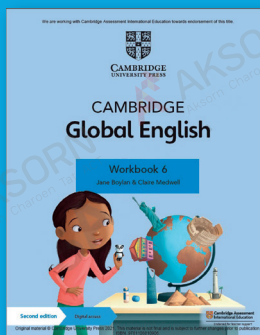
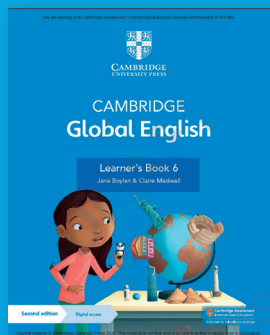
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