Plants

How does each part of the plant fulfil its function?

Lesson 1

How does each part help a plant to survive?

Scientific enquiry types and skills



Scientific enquiry types

- Testing
- Researching
- Observing
- Pattern seeking
- **Identifying & classifying** ✓
- Problem solving

Working scientifically skills

- Asking questions
- Making predictions
- Setting up tests
- **Observing & measuring** ✓
- **Recording data** ✓
- Interpreting & communicating results
- Evaluating

How does each part of the plant fulfil its function?



Wangari Maathai

Lesson 1: How does each part help a plant to survive?

Lesson 2: How does water travel through a plant?

Lesson 3: What does a plant need to stay healthy?

Lesson 4: What's inside a flower?

Lesson 5: Why are flowers different shapes and colours?

Lesson 6: How are seeds dispersed?



Charles Darwin

Key vocabulary for this lesson



plant – a living thing that often has roots, stem and leaves



identify – to say what something is



observe – to look carefully at something

Identifying and classifying



Hi, I'm **Rupert**. I work in **horticulture** which means I work with plants. In my job, I **examine plants carefully** to check whether each part is healthy. To do that, I have to **identify** the parts accurately.

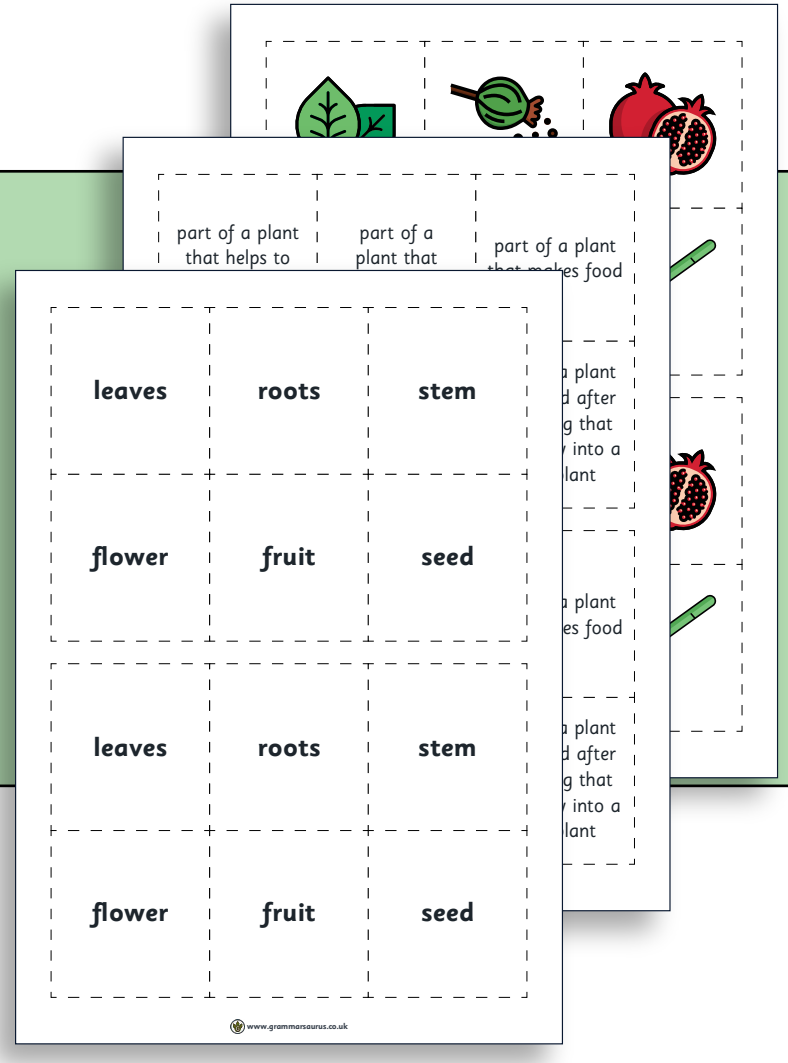
We can identify plant parts by looking closely at the **shape**, **size** and **colour**. We can also **record our observations** using clear, labelled diagrams so that other people can understand what we find out.

Activity 1



In this lesson we will be learning how each **part of a plant** helps it to survive. What can you remember about the parts of a plant from your lessons in year 1 and 2?

Look at the **word building cards** with your learning partner or table group. You need to find three cards that **match** to make a complete set. Match the **word**, **icon** and **definition** for all six words.



Identifying the parts of a plant

Identifying & classifying

Observing & measuring



You will need a plant to **observe** in your table groups. Take it carefully out of the pot or the soil so you **don't damage the roots**. Start by looking at your plant carefully from bottom to top. You should recognise the different parts: the **roots**, **stem** and **leaves**. Look for **shapes**, **colours** and **patterns**.



Observing

Now use your tools to help you see in **more detail**. A magnifying lens, a tablet camera or a digital microscope can reveal patterns you can't see with your eyes alone. These tools help scientists make accurate observations by **observing** the plants in more detail before they record what they see.



magnifying lens

tablet camera







USB digital microscope

Activity 2 - roots

Recording data

Observing & measuring



Record your observations on your **activity 2 worksheet**, starting with the **roots**.

What colour are they?
Look closely at how they start **thicker** near the top and become **thinner** as they branch out.

Draw the roots exactly as you see them on your worksheet. You don't need to draw the whole plant… just the **bits that are interesting!**

Activity 2 - observation notes

☐ root ☐ stem ☐ leaves

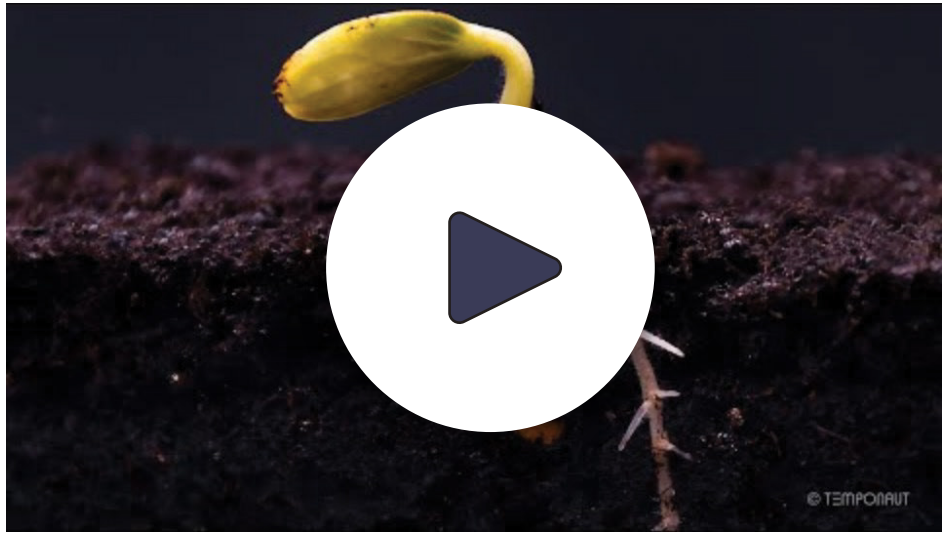
Tick which part of the plant you are looking closely at. Draw what you can see below. Think about the shape, colour and any markings. Add labels.

Focus on **one part** in more detail. Draw it 'zoomed in' and describe what you can see.

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Let's watch

Roots are long and branching because they need to **spread out** through the soil. The **thin**, **thread-like roots** mean the plant can **take in more water** from the soil. Roots grow around stones and through gaps in the soil to **anchor the plant** firmly in place. Let's watch as the roots start to grow from these seeds.



https://www.youtube.com/watch?v=Y6vgAnMhGxs

Function: The roots take in water and minerals from the soil and anchor the plant in place.

Roots

Roots do not all look the same. Their shape **changes** depending on where the plant lives and how it gets water.

Some plants have roots that spread out very wide **near the surface**. This helps them collect as much water as possible when it rains. Large trees often have **very deep roots** that anchor them firmly and help them reach water far underground. Some plants even grow **air roots**. These roots hang in the air and absorb moisture from the environment.







Activity 2 - stem

Recording data

Observing & measuring



Now look closely at the **stem**. Look at the outside. **Is it smooth, ridged or patterned?**

Cut across the stem so you can see inside. Look at the middle – **is it hollow like a straw?**

Draw the stem carefully on your **activity 2 worksheet**. Use the magnifying lens or camera to look closely at the details.

Activity 2 - observation notes

☐ root ☐ stem ☐ leaves

Tick which part of the plant you are looking closely at. Draw what you can see below. Think about the shape, colour and any markings. Add labels.

Focus on **one part** in more detail. Draw it 'zoomed in' and describe what you can see.

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Stems

The **stem** is strong and upright so it can hold the **leaves** and **flowers** up towards the light. Inside the stem are **tiny tubes** that carry water from the roots to the rest of the plant. Some stems feel **smooth**, while others have **ridges** that help **protect them from bending or snapping**.

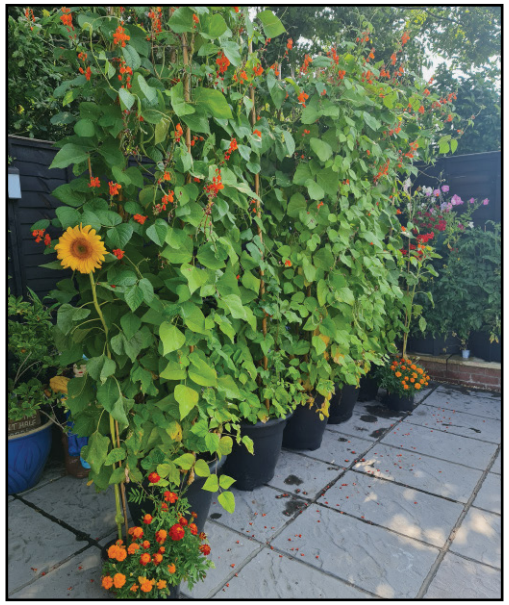


Function: The stem supports the plant and transports water to the leaves and flowers.

Stems

Stems can be very different depending on what the plant needs. A sunflower has a **strong stem** that helps it grow tall. In long grass, dandelion stems **grow tall** to lift the flower above the leaves. In short grass, the stems **stay short** and close to the ground. Some plants have stems that **climb** or **twist**, helping them reach sunlight by **growing up other plants**.







Activity 2 - leaves

Recording data

Observing & measuring



Now, look closely at the **leaves**. Consider these questions:

- **What colour are they?**
- **Do you notice any lines or ridges on the leaves?**
- **Are the top and bottom of the leaf the same?**
- **What do they feel like?**
- **Are there any tiny hairs on the surface of the leaf?**

Draw the leaf on your **activity 2 worksheet** and **label** any of the details that you noticed.

Activity 2 - observation notes

☐ root ☐ stem ☐ leaves

Tick which part of the plant you are looking closely at. Draw what you can see below. Think about the shape, colour and any markings. Add labels.

Focus on **one part** in more detail. Draw it 'zoomed in' and describe what you can see.

Leaves

Leaves come in many different **shapes**, **sizes** and **colours**! They are often flat and wide so they can catch as much sunlight as possible. Their shape helps them spread out and avoid shading each other. The green colour helps the leaf **absorb the light** it needs to **make food for the plant**. The veins on the leaf form a strong network that **carries water** into the leaf and food out of the leaf. The surface of a leaf may be **smooth**, **shiny** or **slightly hairy** to **protect it** and to help control **water loss**.



Function: Leaves make food for the plant using sunlight, water and air.

Leaves

Leaves vary in shape, size and surface to help plants **survive** in different environments. Grass leaves are **long** and **narrow**, which helps them bend in the wind and **avoid damage**. Some plants have **huge leaves** that collect large amounts of **sunlight** in **shady**, **damp places**. Others have **small**, **silvery leaves**. Their pale colour and tiny hairs help **reflect sunlight** and **reduce water** loss in **hot**, **dry conditions**.







Activity 3

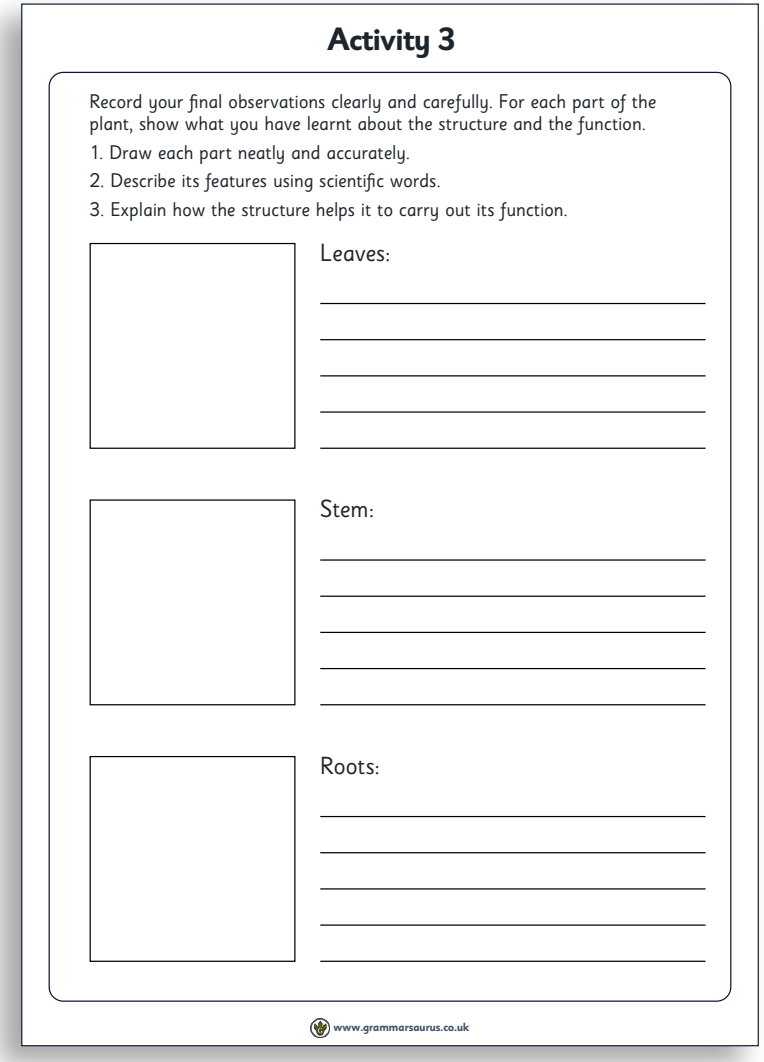
Recording data

Observing & measuring

Now record your final **observations** clearly and carefully on your **activity 3 worksheet**.

For each part of the plant, show what you have learnt about the **structure** and the **function**.

1. **Draw each part** neatly and accurately.
2. **Describe** its features using **scientific words**.
3. **Explain** how the structure helps it to carry out its **function**.



Activity 3

Record your final observations clearly and carefully. For each part of the plant, show what you have learnt about the structure and the function.

1. Draw each part neatly and accurately.
2. Describe its features using scientific words.
3. Explain how the structure helps it to carry out its function.

Leaves:

Stem:

Roots:

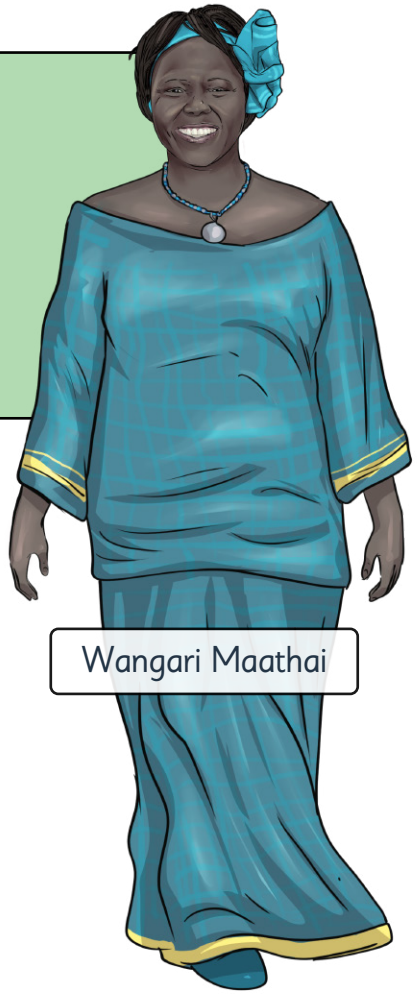
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Challenge

Discuss the following question with your **learning partner**.



What might happen if a part of the plant didn't function properly?



Be ready to **share your feedback** with the class before the **answers** are revealed.

Use these sentence starters to help you:

"If the roots stopped working…"

"If the stem didn't work…"

"If the leaves stopped working…"

Challenge

answers



What might happen if a part of the plant didn't function properly?

If the roots stopped working, the plant wouldn't get the water it needed so might wilt and die.

If the stem didn't work, the leaves wouldn't get the water that they needed.

If the leaves stopped working, the plant wouldn't make any food so it would get weaker.

