

## Subject links:

Science, Citizenship

Age: 5-7

## Curriculum links:

Plants, UK wildlife, Environment, Conservation

## Ocean Literacy Principles:

5. The ocean supports a great diversity of life and ecosystems

## Learning Objectives:

- Identify and describe the basic structure of a flowering plant
- Describe how plants need water, light, nutrients and a suitable temperature to grow
- Observe how a plant grows from seeds
- Understand why plants are important for many reasons

## Resources provided:

- Seagrass Fact File
- Seagrass/seaweed illustrations
- Seagrass: a marine plant worksheet
- What do plants need to grow? worksheet
- What's so special about seagrass? video
- Curriculum links

## Extra resources required:

Seeds, soil, plant pots

# Super seagrass

## Sustainability Goals:



## Step 1

### Background

Seagrass is the only flowering plant in the ocean and is not to be confused with seaweeds, which are actually algae. Seagrass is found in calm, shallow, sunlit coastal waters around the world. Seagrass beds are an important habitat for many species as well as being an important natural carbon store. You can find more information in the [Seagrass Fact File](#).

## Step 2

### Set the Scene

#### 5 minutes

Ask students if they know what seagrass is and whether it's living or non-living. Explain how all plants are living things. Tell students that you're going to explore what makes a plant a plant, what plants need to survive, and which plants live in the ocean.

## Step 3

### Activities

#### Activity 1: 20 minutes – What is a plant?

Show the [seagrass illustration](#) on your whiteboard and use it to help describe the different parts of a plant and their functions. More information is provided in the [fact file](#). Students should then use the [marine plant worksheet](#) to match the labels to the correct parts of the plant.

## Step 3

### Activities (continued)

#### Activity 2: 5 minutes – Is seaweed a plant?

Once students have completed Activity 1, show the [seaweed illustration](#). Ask students if they think seaweed is a plant and why. Explain that seaweed is actually algae, which is a simpler organism than a plant. Use the [fact file](#) to explain the differences between seaweed and seagrass, focusing on holdfast, stipe, blades and spores.

#### Activity 3: 20 minutes – How do plants grow?

Discuss what a plant needs to grow (water, light, a suitable temperature, air and nutrients). Students should fill out the [What do plants need to grow? worksheet](#). Explain that you are going to use this knowledge to grow your own plants. Split the class into small groups of 3-4 and give each group a seed (we recommend sunflower, sweet William, lettuce, mint). As a group, students should decide how they are going to look after their plant, considering when to water, how much water to give, where it will live to get enough sunlight and be at the right temperature. Students could record how their plant grows over time to observe changes in the plant.

#### Activity 4: 5 minutes – Why is seagrass important?

Play the video, [What's so amazing about seagrass?](#) Ask students to recall why seagrass is important and create a brainstorm of ideas on your whiteboard. Play the video again and add more suggestions to the brainstorm. Add to this with information in the [fact file](#).

## Step 4

### Extend

#### 1 hour – Observe plants in your local environment

Head out to your school playground or local park to observe plants in the wild. Students could survey different types of plants or flower colour. They could measure the height of plants in shady or sunlit areas, or they could draw illustrations of plants in the field.

## Step 5

### Reflect

Draw a basic plant structure on your whiteboard and ask students to name the various parts. What do plants need to survive? Why are plants important?

## Step 6

### Follow up

Our [food chain](#) lesson will help students understand how plants at the base of the food chain transfer energy up the chain.

# Seagrass Fact File



## What is seagrass?

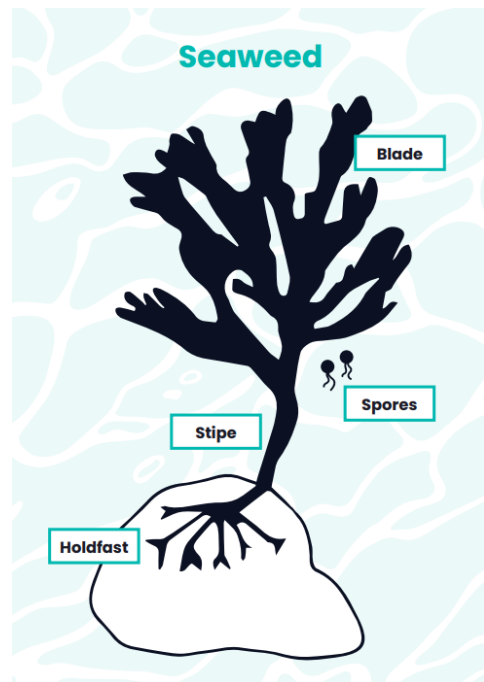
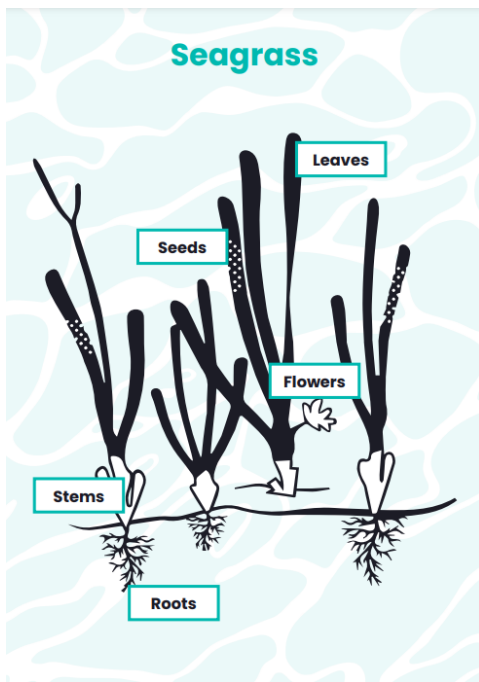
Seagrass is the only flowering plant in the ocean. It's found in calm, shallow, sunlit coastal waters around the world. When seagrass grows in large areas, the habitat it creates is a seagrass meadow or seagrass bed.



Sand eels in seagrass meadow, Cornwall



## What makes seagrass a plant?



Seagrass plants use their leaves to photosynthesise and therefore need to grow in sunny, shallow waters. The veins/stem of seagrass transport nutrients and water around the plant, and the roots absorb nutrients and stabilise the plant in the seabed.

Seagrass can reproduce in one of two ways: they have flowers and therefore pollinate and disperse seeds; and their root system (rhizomes) can spread out under the seabed and shoot up new seagrass plants.

# Seagrass Fact File



## Seaweed

Unlike seagrass, seaweeds aren't plants, but algae, which is a much simpler organism than a plant.

Large seaweeds like kelp use a **holdfast** to connect to hard substrates, rather than roots which connect to sediments. Seaweeds don't need to get nutrients from the soil – instead they get all their nutrients from the water through their **blades** (like leaves). Instead of moving nutrients around through a stem, most seaweeds have a stem-like structure called a **stipe** to hold the structure up and help the blades get closer to sunlight. Smaller seaweeds don't have a stipe or stem structure. Seaweeds reproduce from **spores** rather than seeds.



## Why are seagrass beds important?

- Seagrass provides, shelter, habitats and food for many creatures.

Globally, seagrass beds are known for their value as fish nurseries for many important species, including flatfish and cuttlefish. They're also home to many bivalves, worms and starfish. In the UK, two rare and wonderful creatures live solely in seagrass beds, the spiny seahorse and stalked jellyfish.

- Seagrass photosynthesises and produces oxygen as well as storing carbon dioxide, helping to reduce climate change.

- The root systems of seagrass beds help to stabilise sediment helping to reduce coastal erosion, and improve water quality by filtering land-based nutrients.



Spiny seahorse



Stalked jellyfish

# Seagrass Fact File



## Threats to seagrass

Seagrass beds face many threats, including:

- Coastal development, which can harm seagrass directly if building on seagrass beds, or indirectly through increased sedimentation, making it harder for seagrasses to photosynthesise.
- Sea level rise as well as rising sea temperatures due to climate change, which can alter marine conditions and impact seagrass.
- Chemical pollution from land or ocean sources, such as farming and boat fuels, which can affect the health of seagrass.
- Seagrass beds are found in coastal shallow waters which can often be used by boat users. Anchors and boat moorings directly damage fragile seagrass beds.



## How can we help protect seagrass?

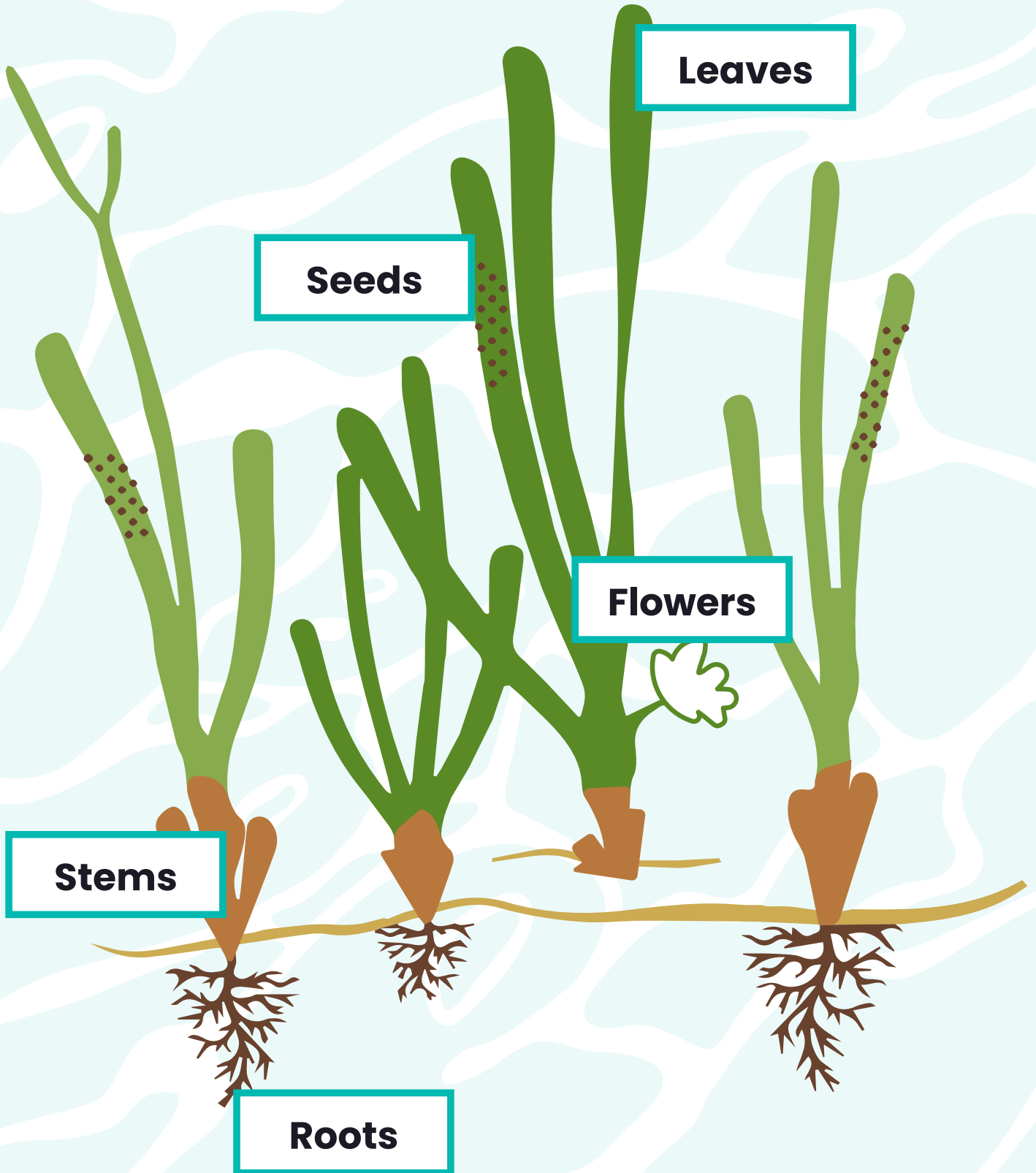
There are many ways we can help protect seagrass. By making simple changes in our lives to reduce our carbon footprints, we can all help to protect the ocean and its wildlife from climate change.



We're partners on the **EU LIFE Recreation ReMEDIES** project, working with boat users to increase education and awareness about seagrass and installing Advanced Mooring Systems (AMS) which don't damage the seabed. As part of the project, we're also working with the Ocean Conservation Trust to plant seagrass beds to restore damaged areas.



# Seagrass



# Seaweed

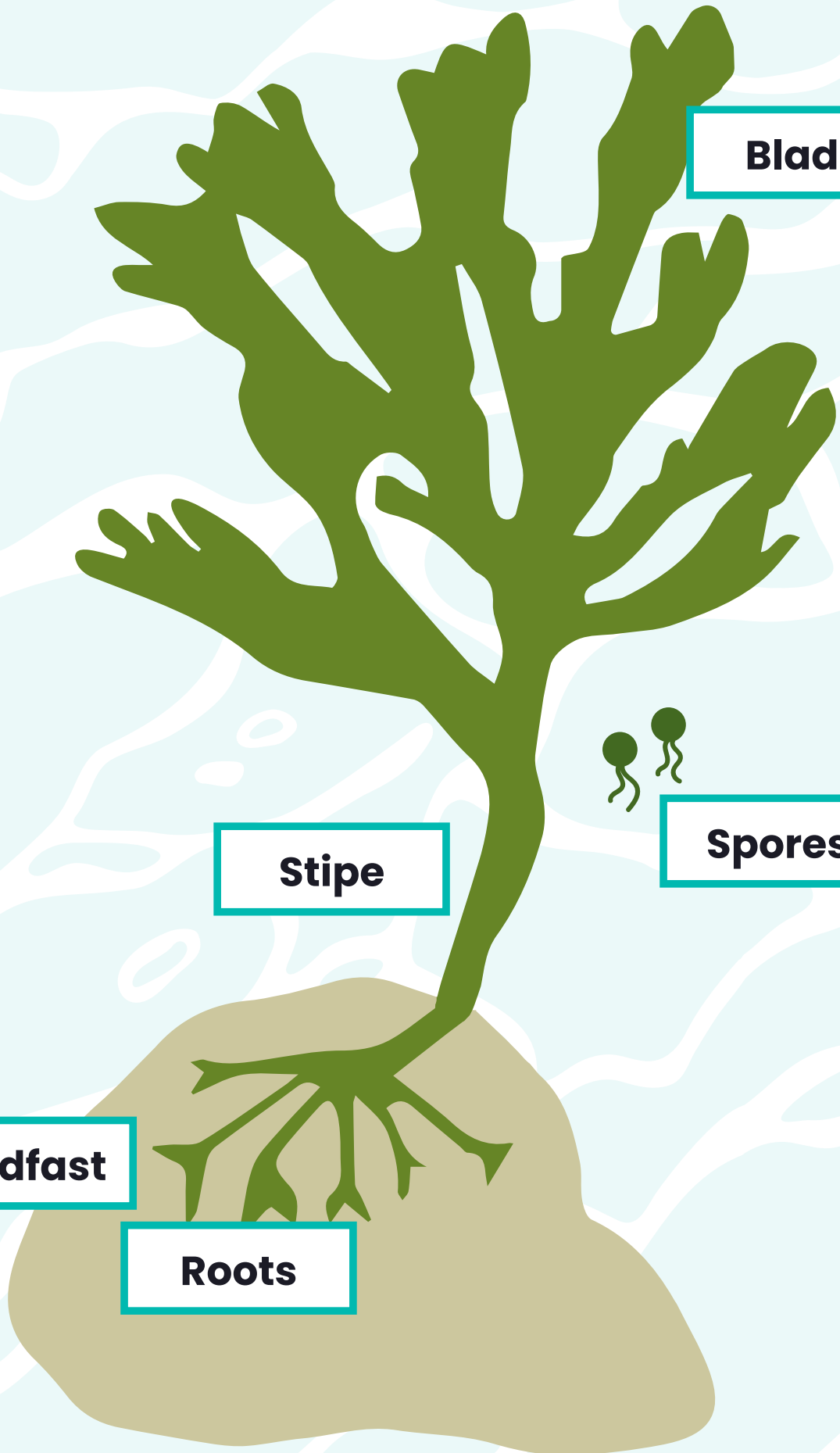
**Blade**

**Stipe**

**Spores**

**Holdfast**

**Roots**



# Seagrass - a marine plant

Name: \_\_\_\_\_

Leaves

Stems

Flowers

Seeds

Roots

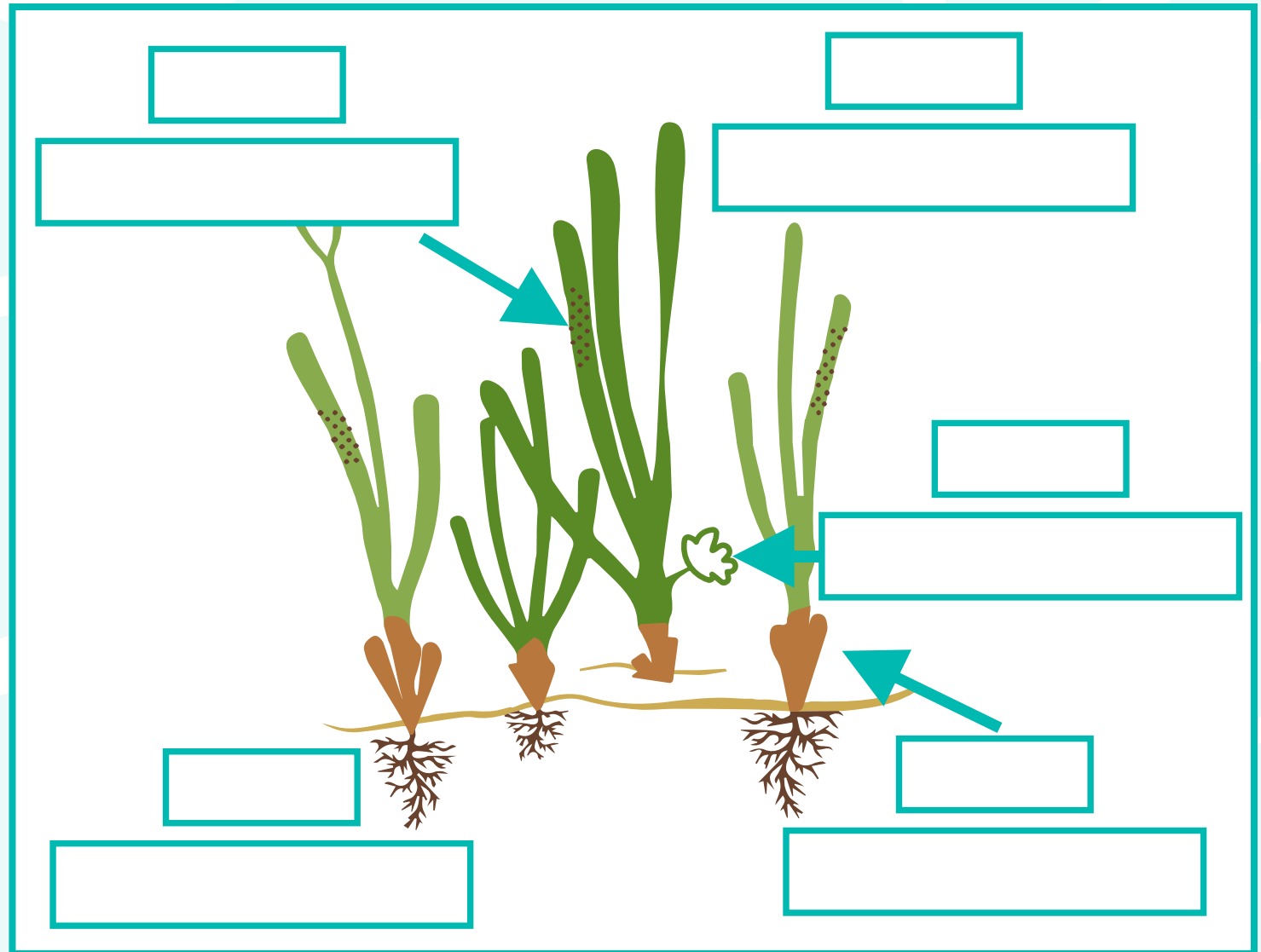
Absorbs nutrients and water.

Contains pollen to help plants reproduce.

Will be released and turn into new plants.

Transports nutrients and water to the rest of the plant

Uses sunlight to make food.





# What do plants need to grow?

Name: \_\_\_\_\_

\_\_\_\_\_



Soil



Light



Temperature



Air



Water

Plants need \_\_\_\_\_ from the sun to give them energy to help them grow.

Plants use \_\_\_\_\_ to grow their roots in and to get water and nutrients from.

Plants need \_\_\_\_\_ so they don't dry out.

Plants need \_\_\_\_\_ to breathe

Plants need the right \_\_\_\_\_ to grow. Too hot and they will dry out, too cold and they will freeze.

## Curriculum links

### England

#### Science

- Identify and name a variety of common wild and garden plants, including deciduous and evergreen trees.
- Identify and describe the basic structure of a variety of common flowering plants, including trees.
- Find out and describe how plants need water, light and a suitable temperature to grow and stay healthy.

### Wales

#### Science & technology

- I can recognise that plants and animals are living things which grow.
- I can explore relationships between living things, their habitats and their life cycles.

### Scotland (Early level)

#### Early level Sciences

- I have observed living things in the environment over time and am becoming aware of how they depend on each other.
- Describes characteristics of living things and how they depend on each other, for example, animals which depend on plants for food.
- I have helped to grow plants and can name their basic parts. I can talk about how they grow and what I need to do to look after them.
- Explores, observes and discusses basic needs of plants and what they need to grow including water, heat, sunlight and soil.
- Demonstrates understanding of how plants grow from seeds.

### Scotland (First level)

#### First Level Sciences

- I have observed living things in the environment over time and am becoming aware of how they depend on each other.
- I can explore examples of food chains and show an appreciation of how animals and plants depend on each other for food.
- Demonstrates awareness of how energy from the sun can be taken in by plants to provide the major source of food for all living things.
- I can distinguish between living and non-living things. I can sort living things into groups and explain my decisions.
- Sorts living things into plant, animal and other groups using a variety of features.
- I can help to design experiments to find out what plants need in order to grow and develop. I can observe and record my findings and from what I have learned I can grow healthy plants in school.