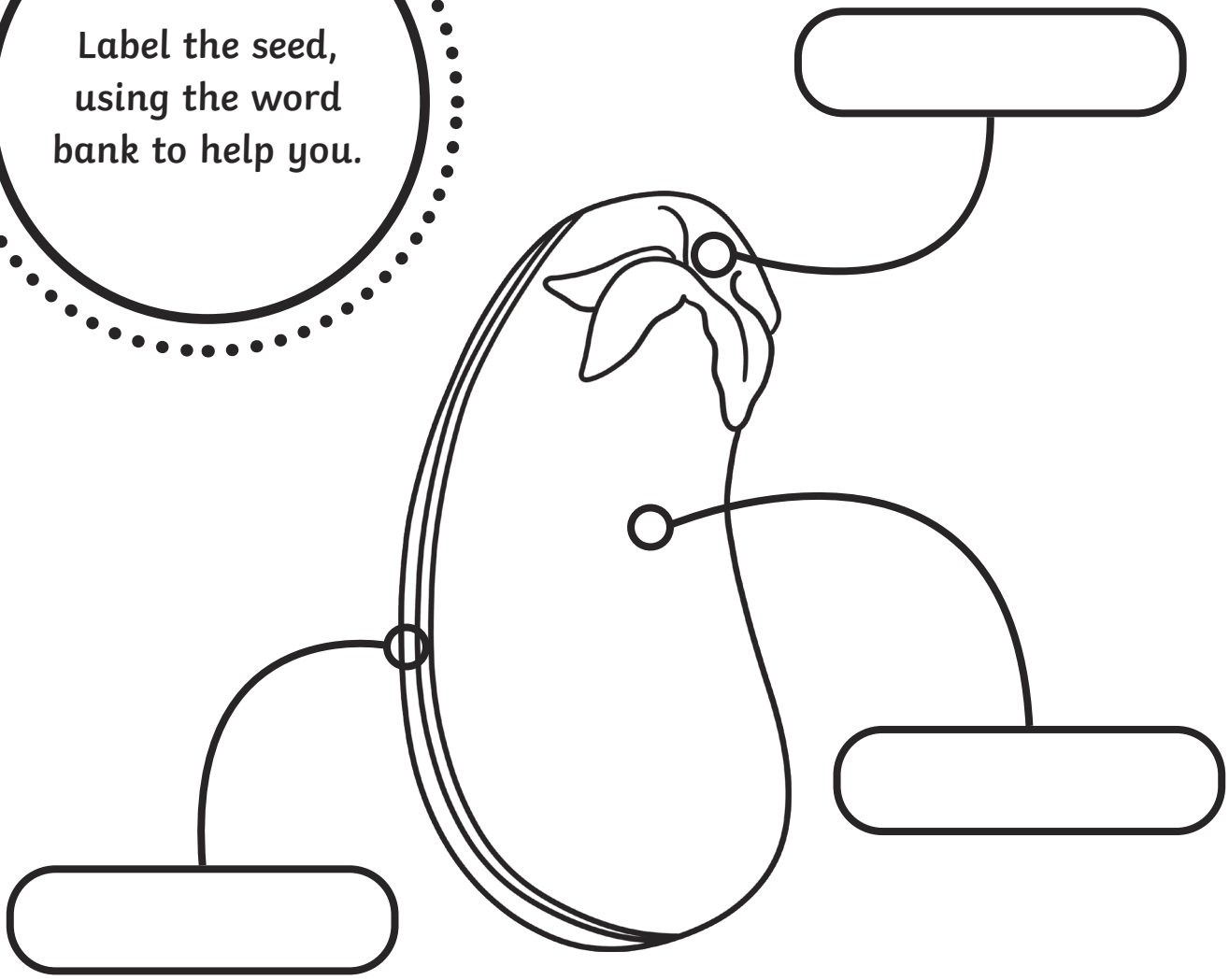
Inside a Seed

To look closely at the parts of a seed that will grow into a plant and explain how it will germinate.

Label the seed, using the word bank to help you.



Word Bank

seed coat | baby plant | food store

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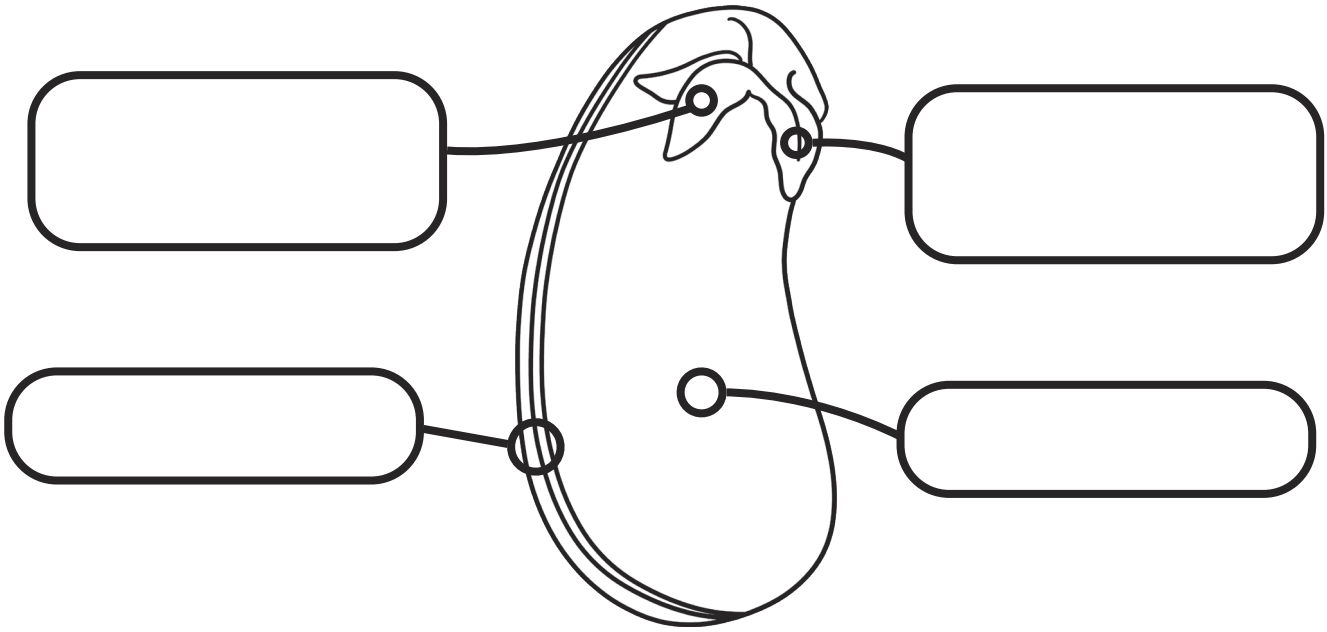

Can you explain what each part of the seed does?

The seed coat_____

_____

The food store_____

_____

The baby plant_____

_____

Word Bank

seed coat	will grow into stem and leaves	will grow into roots	food store

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To look closely at the parts of a seed that will grow into a plant and explain how it will germinate.

Draw a diagram of the inside of a seed and label it to show the different parts, using the word bank to help you.

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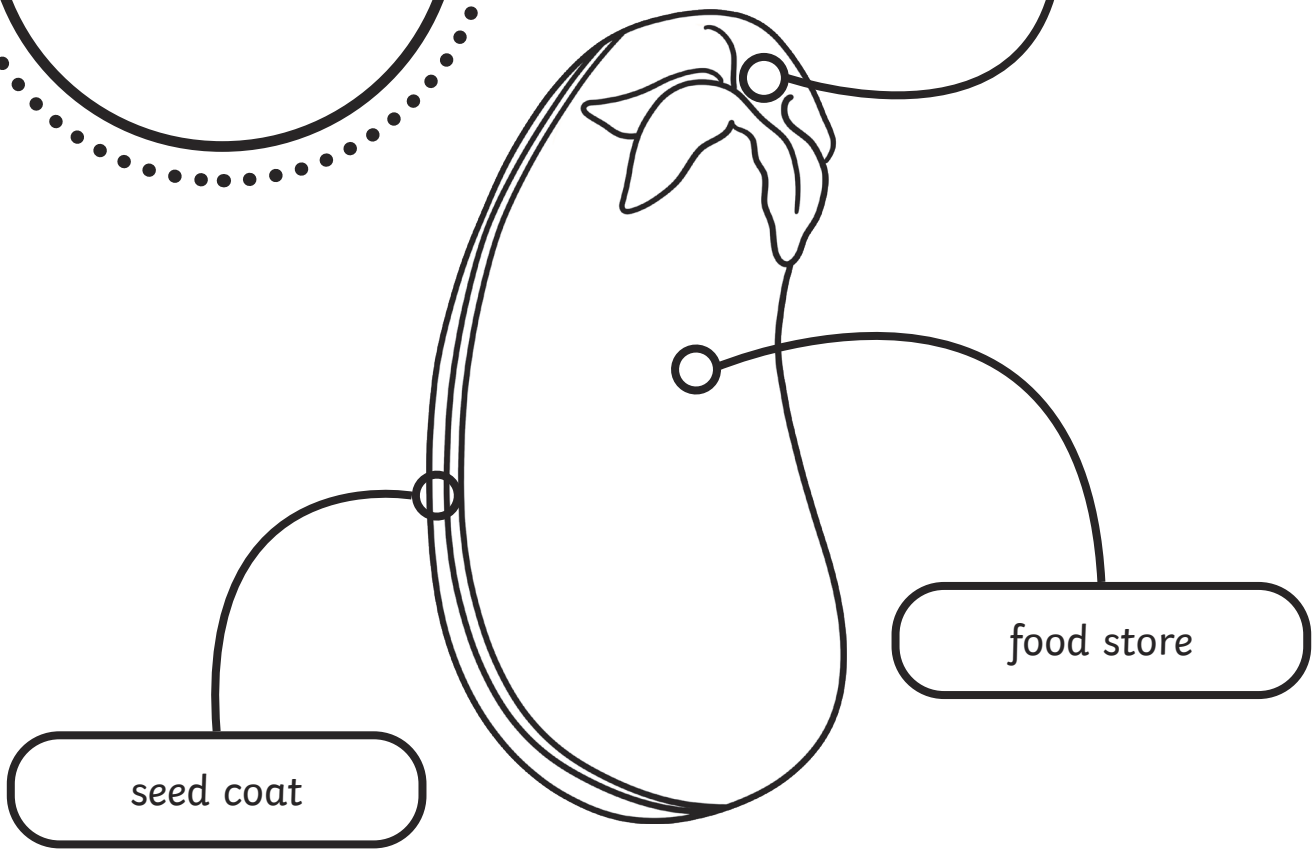

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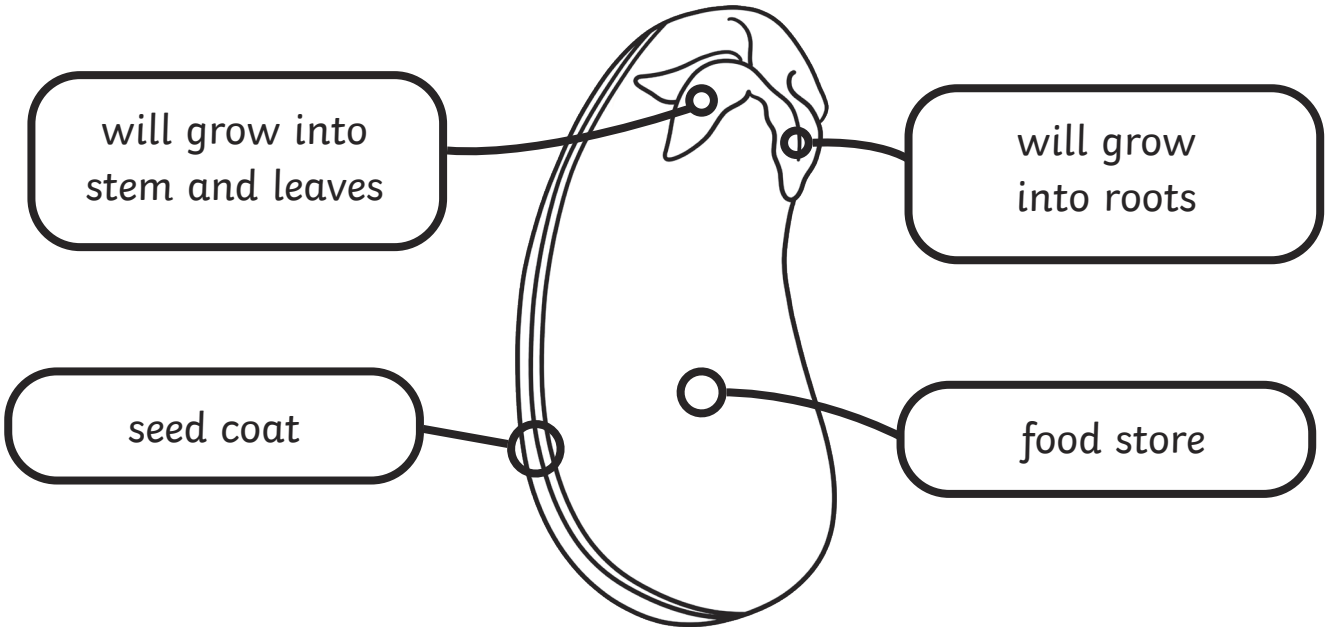

Can you explain what each part of the seed does?

The seed coat protects the seed from getting damaged.

The food store feeds the baby plant until it can make its own food.

The baby plant will grow into the roots and stem of the new plant.

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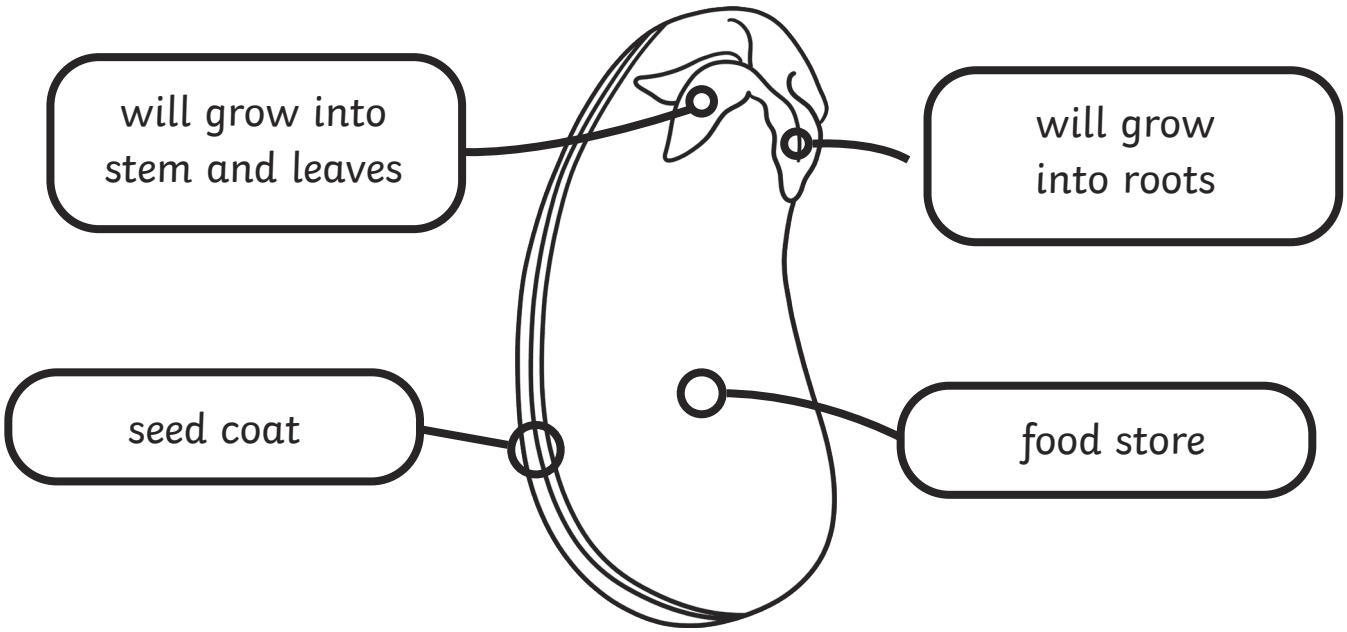

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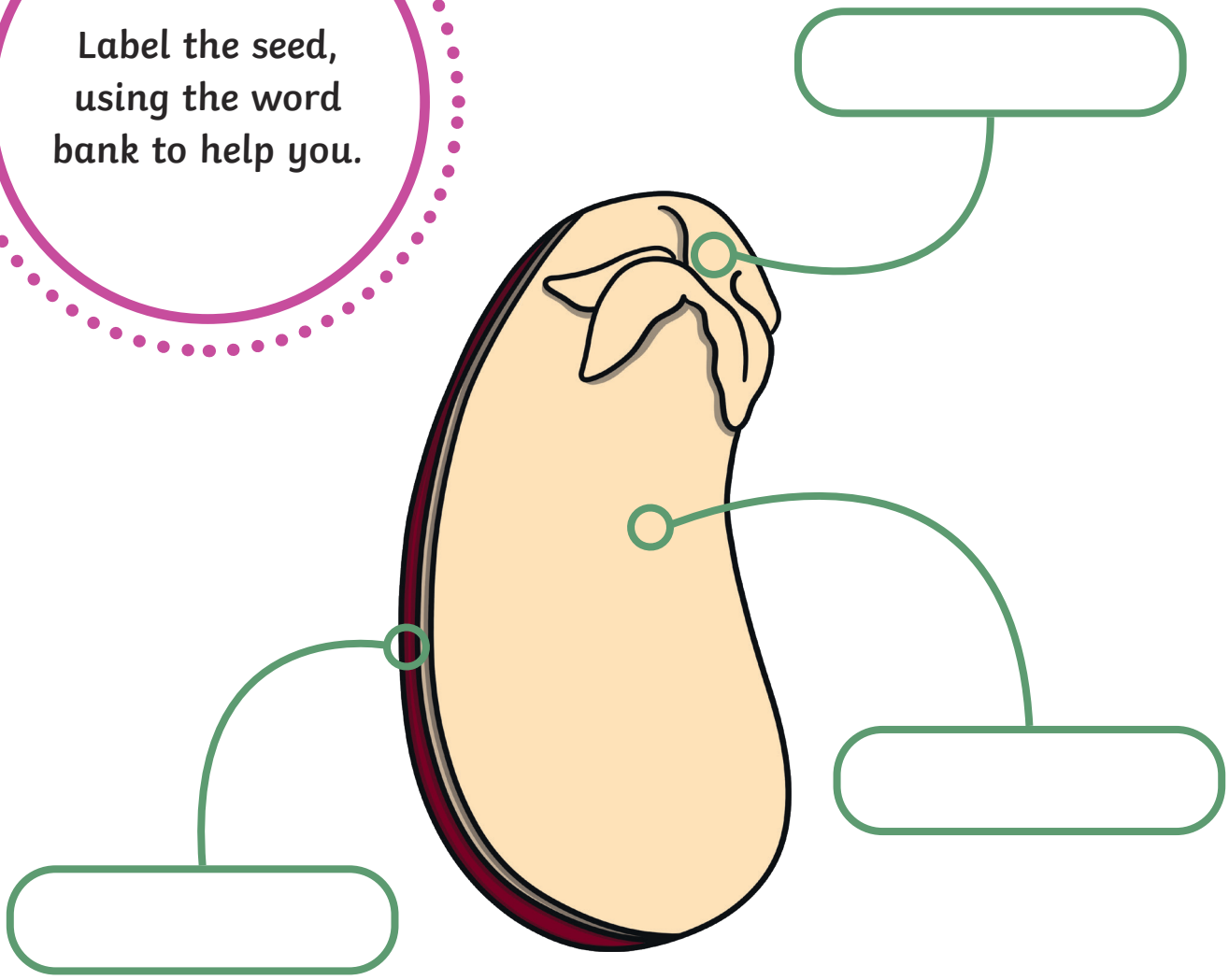

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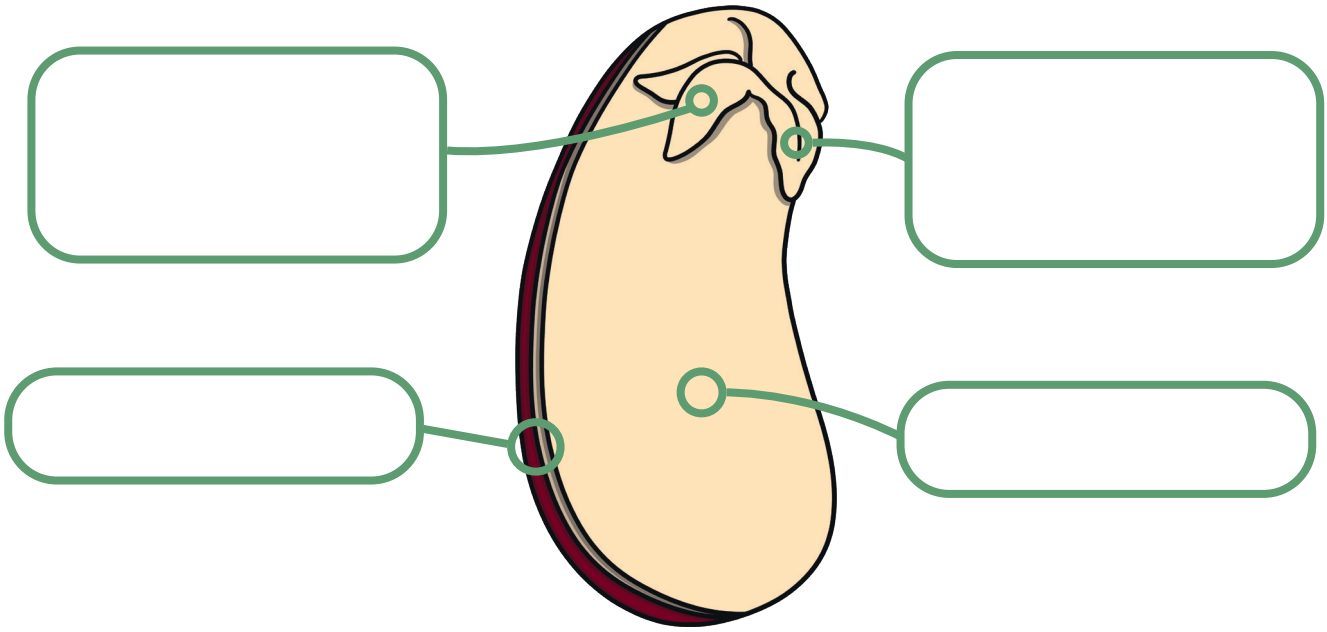

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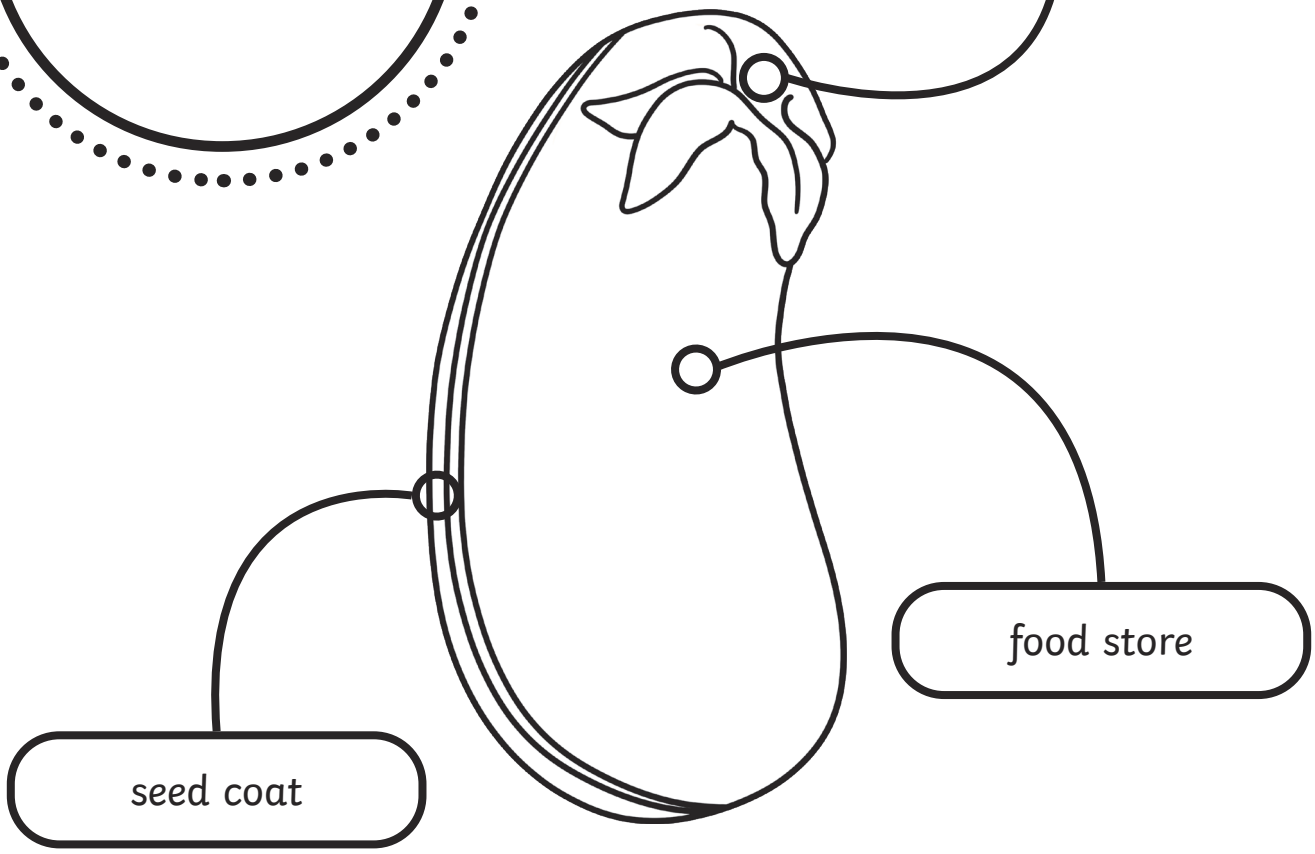

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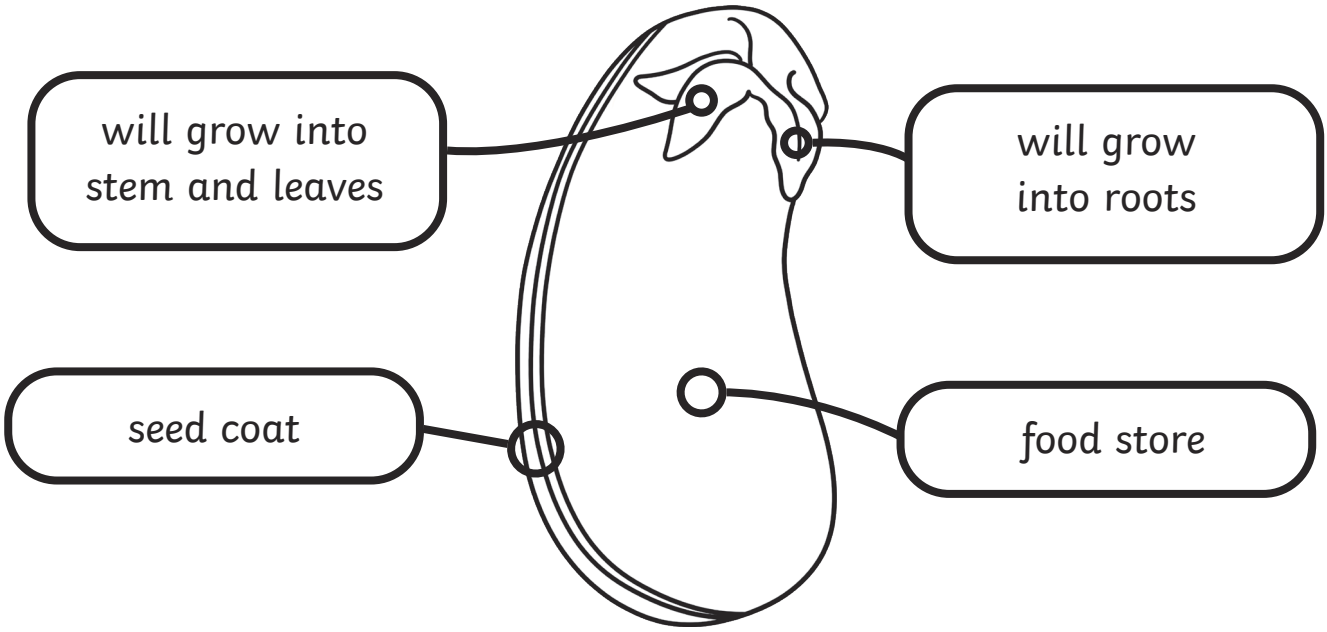

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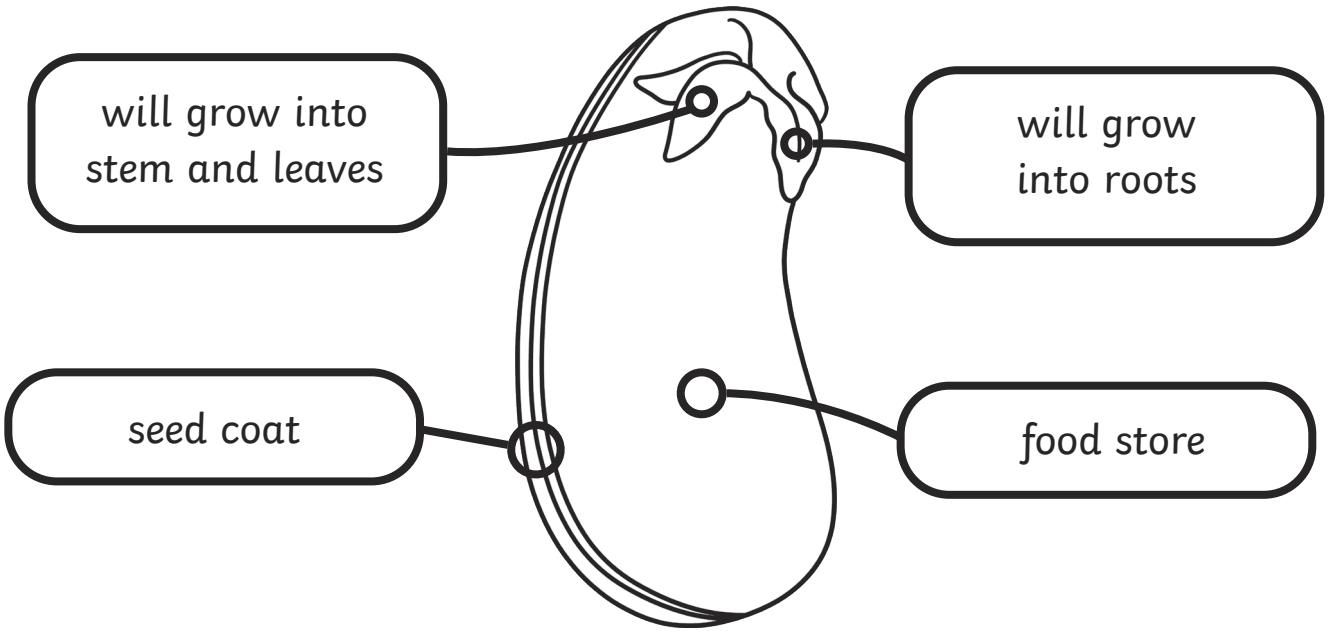

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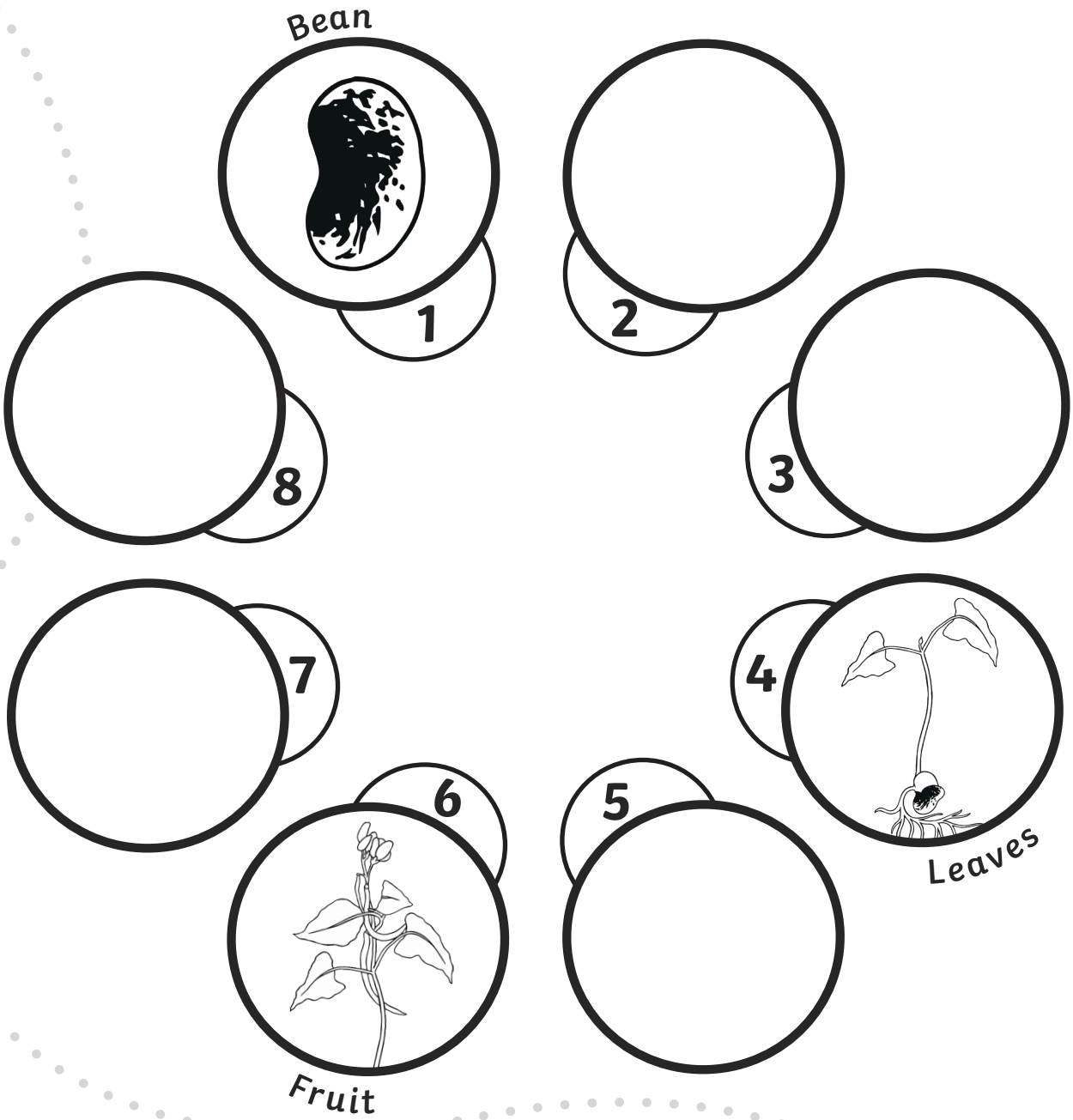
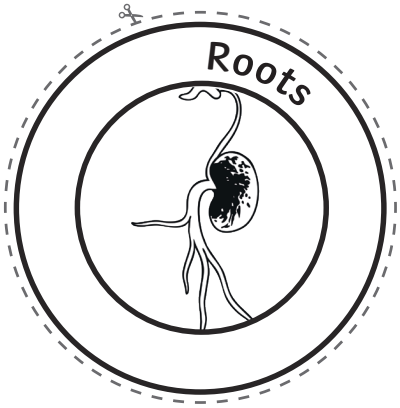
Life Cycle of a Bean Plant

To describe the life cycle of a plant.

Cut out the pictures to complete the bean plant life cycle.





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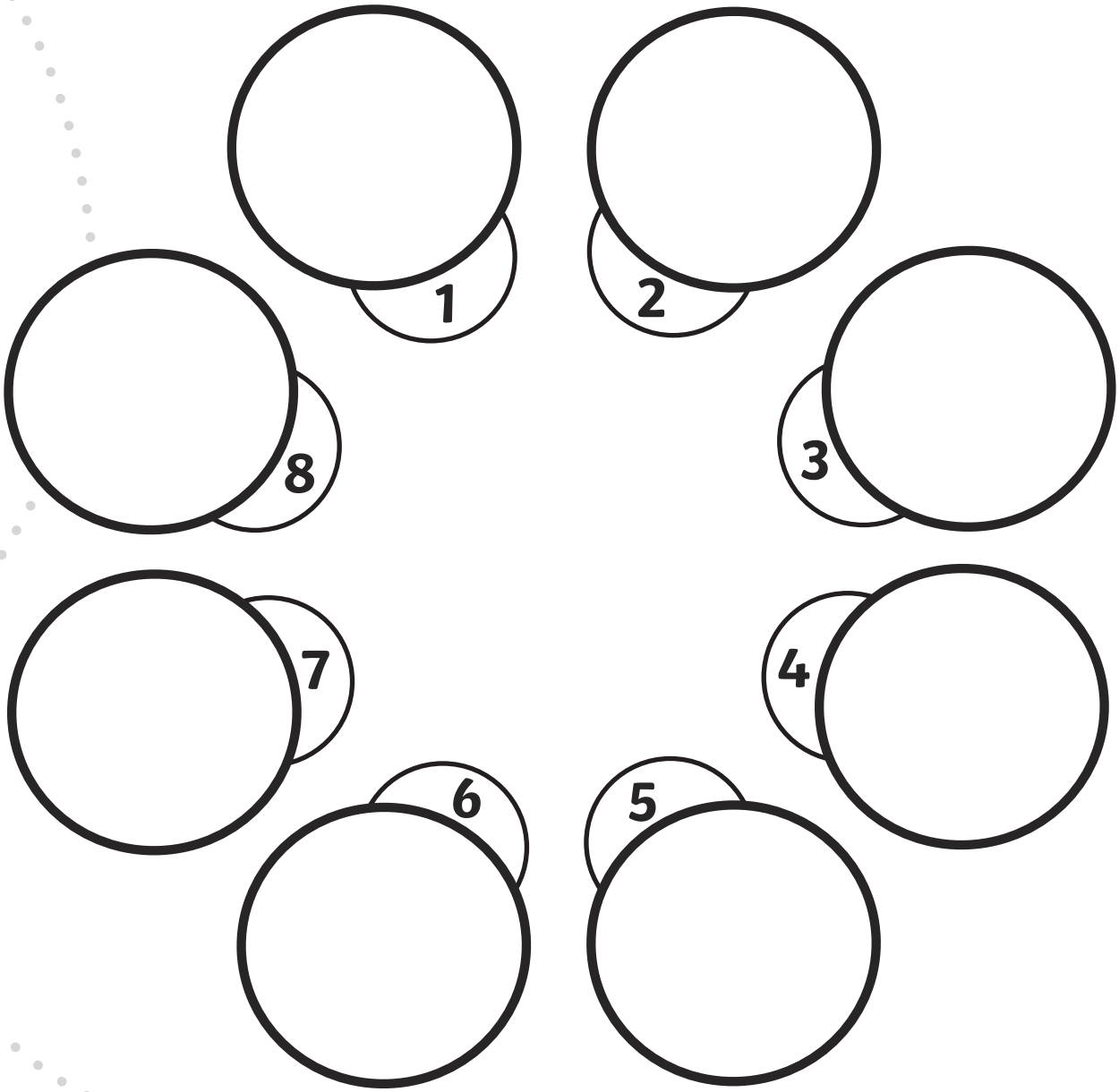

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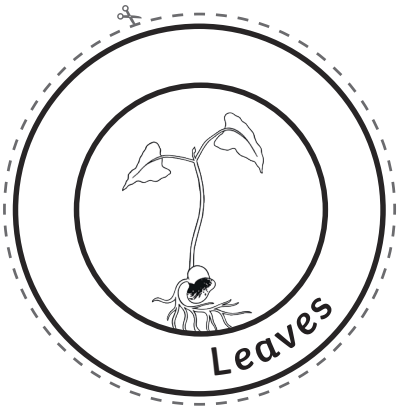

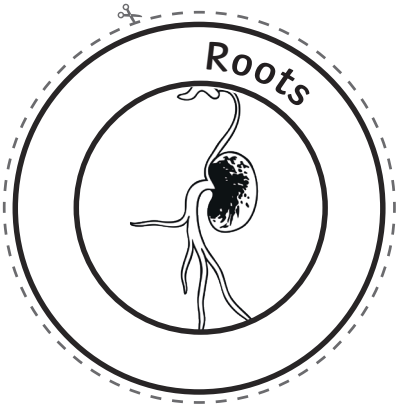

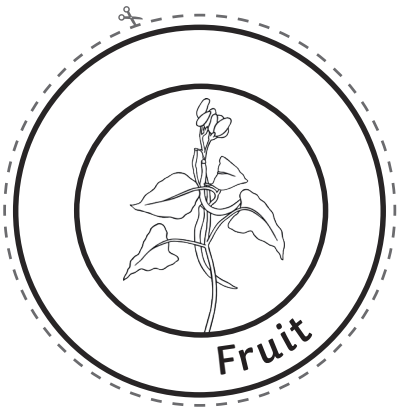

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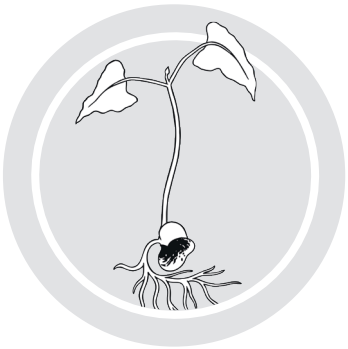

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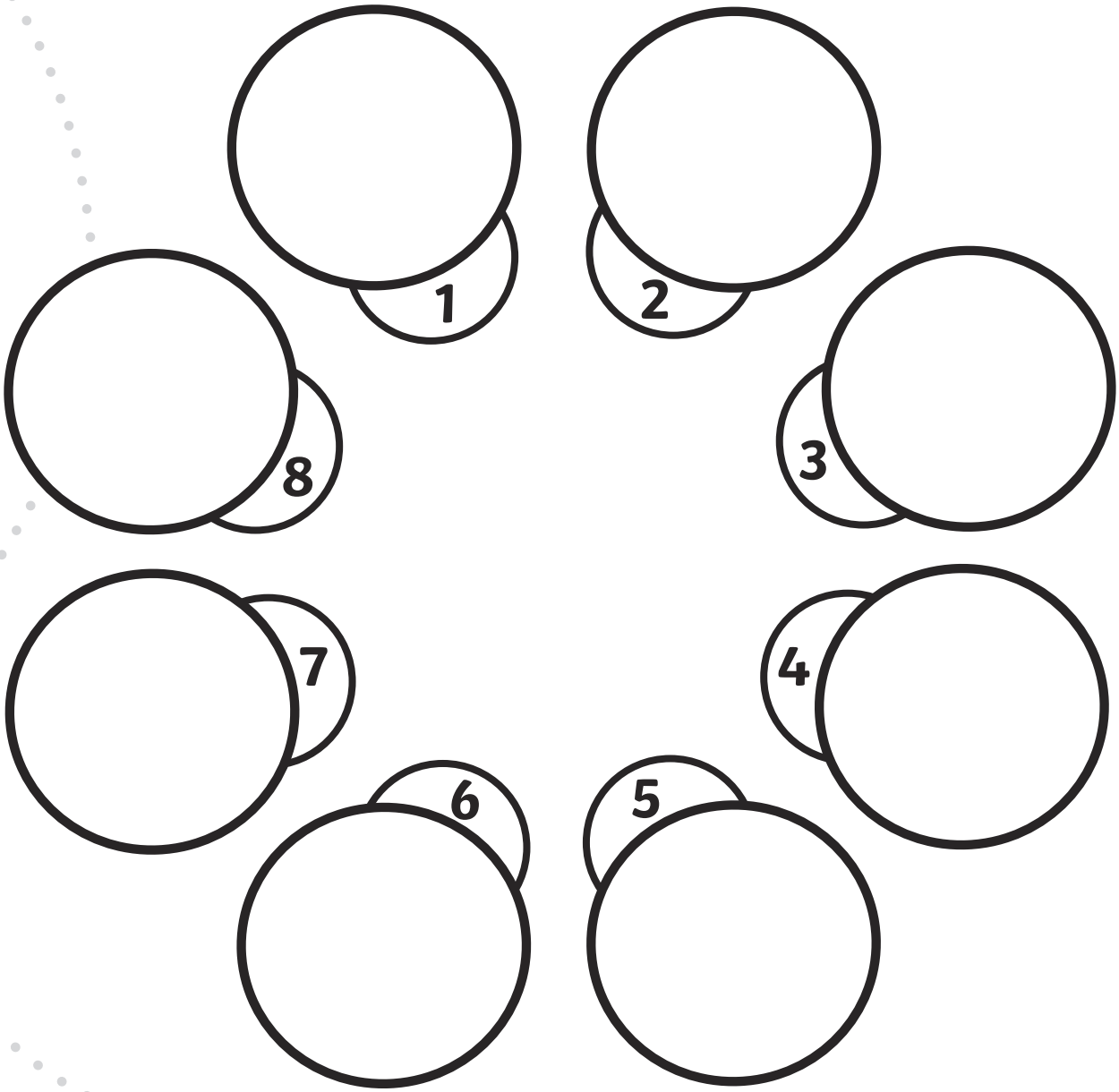

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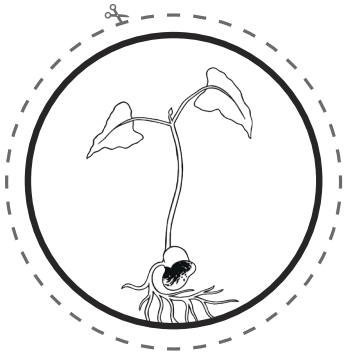

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Look at these plants. Which stage of its life cycle do you think each is at currently? Explain how you know, using these sentence starters to help you.

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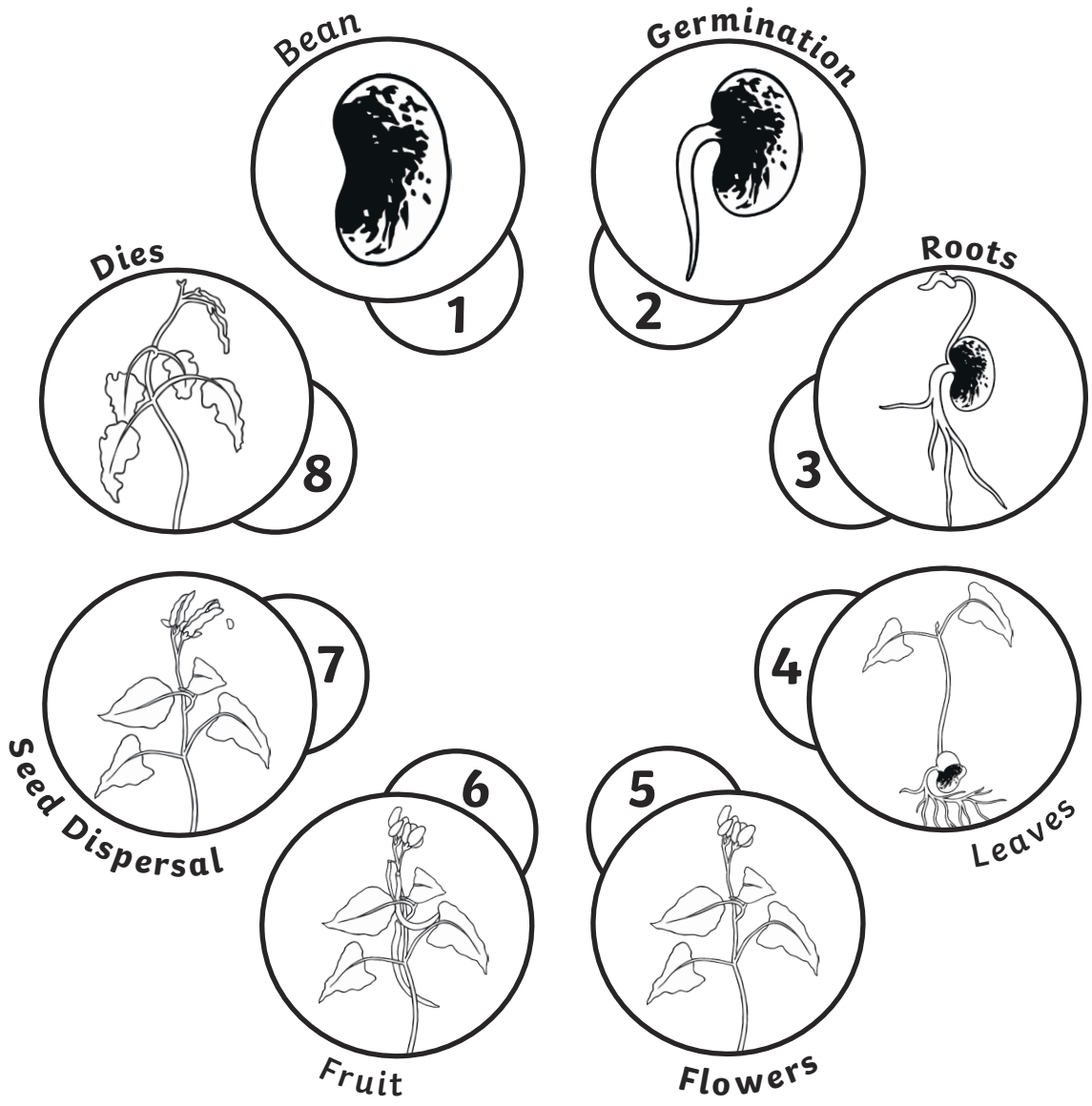

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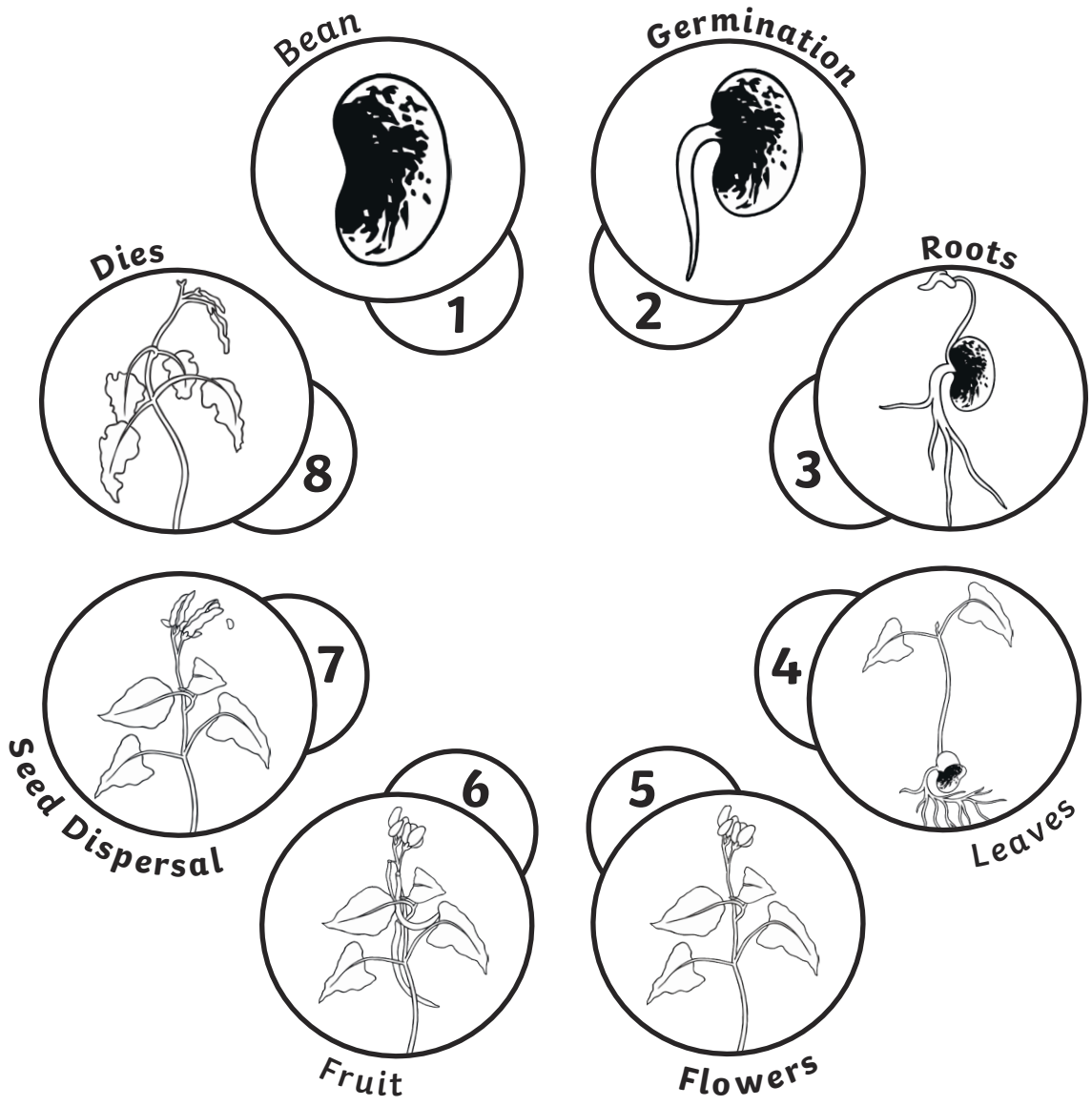

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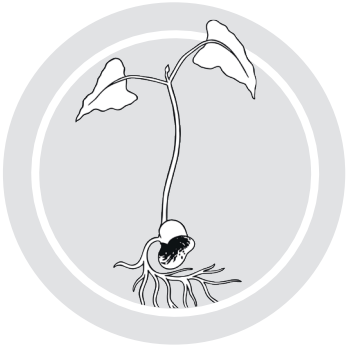
Example answers

When the conditions are right and the seed has water, it bursts open and the roots and shoot begin to grow.



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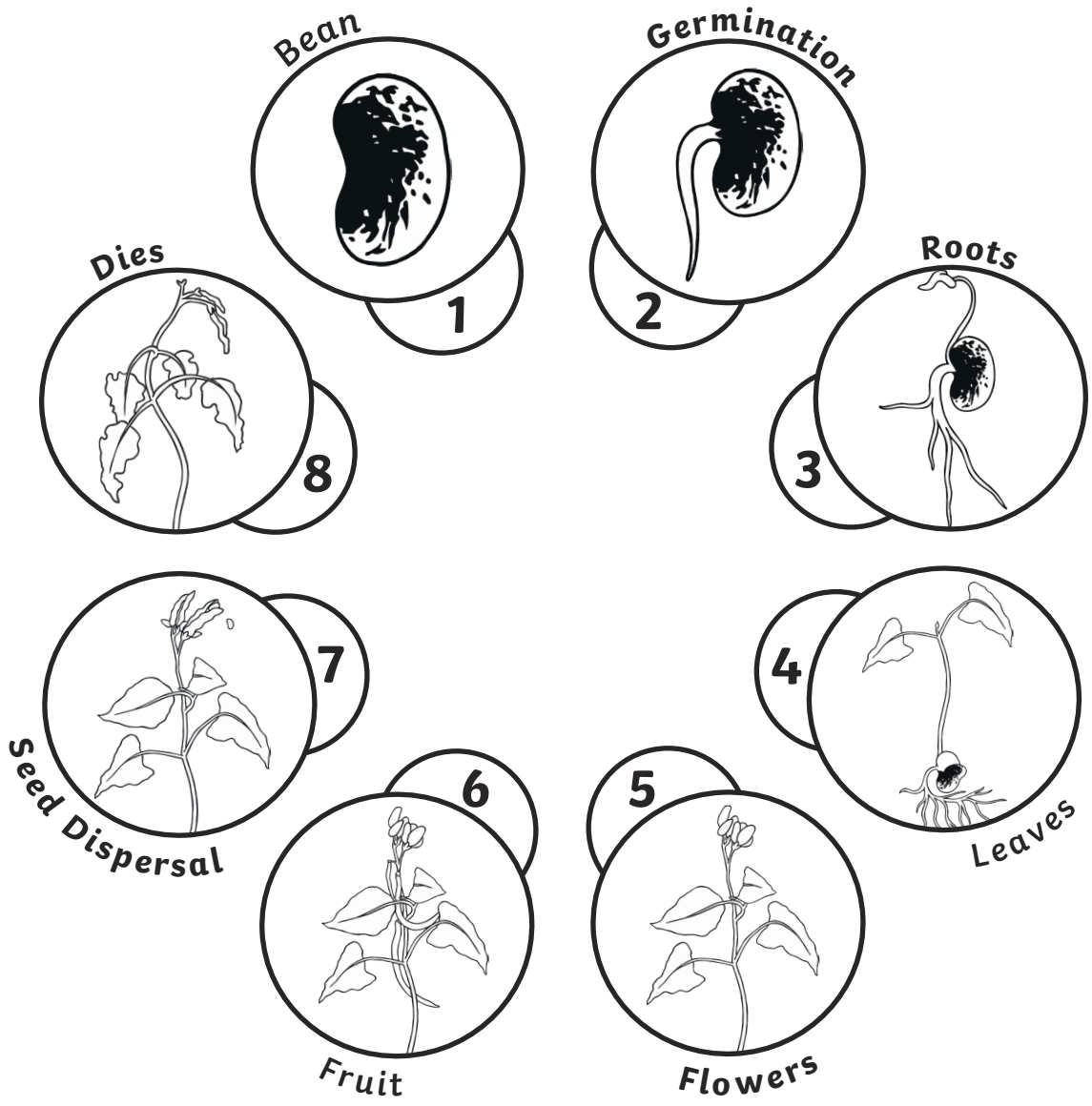

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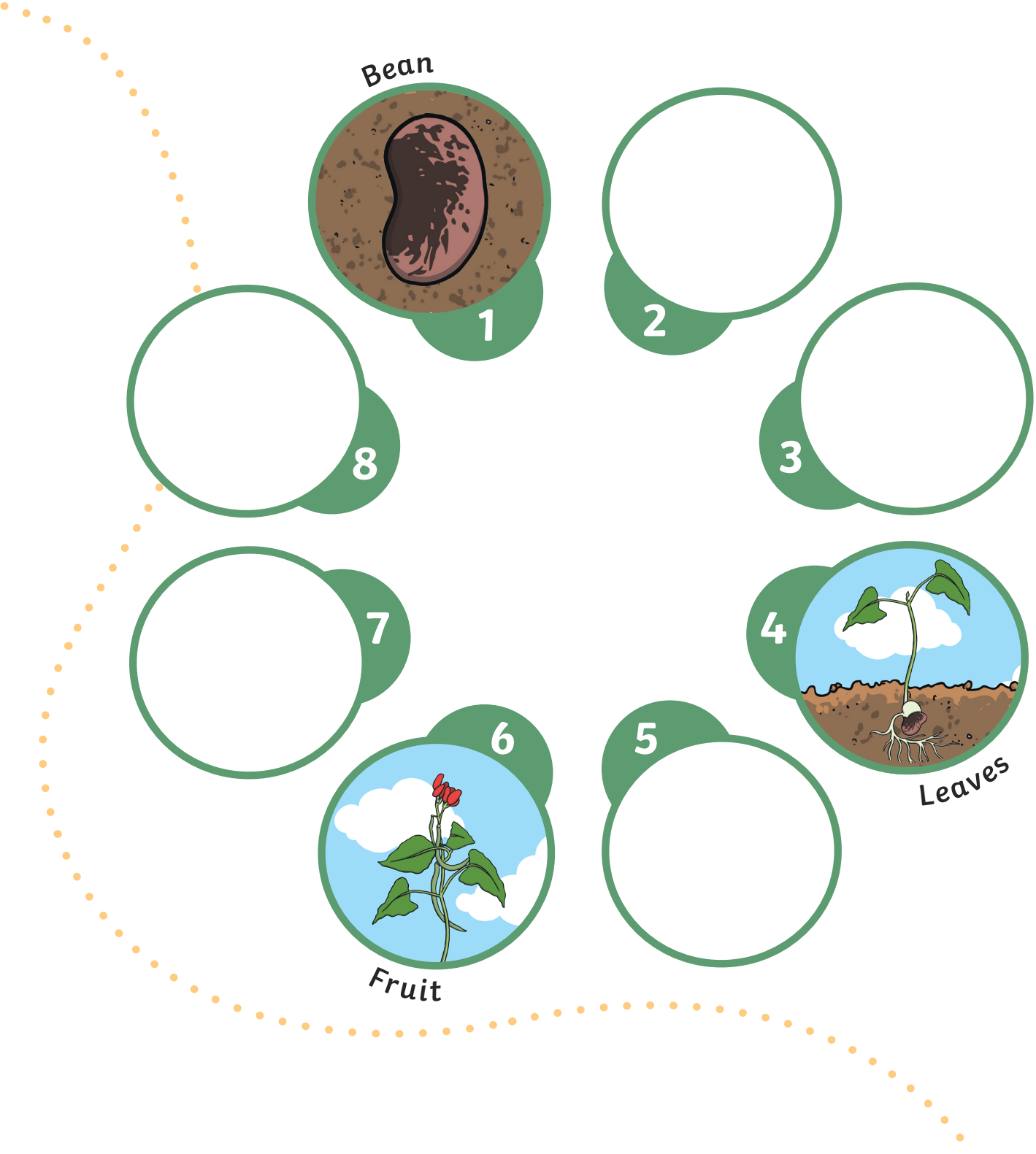

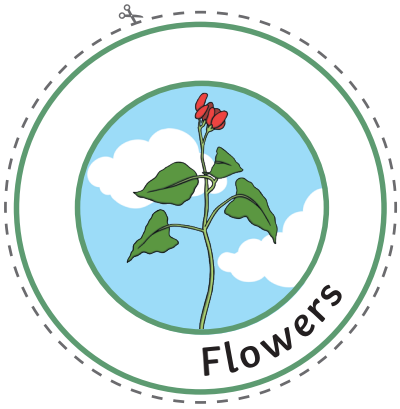

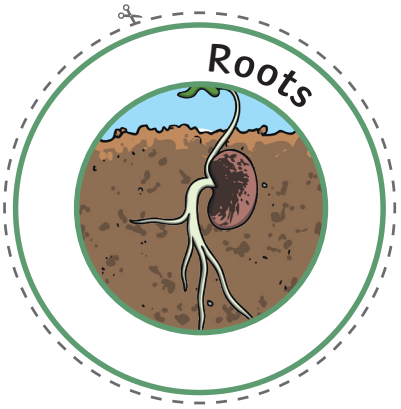

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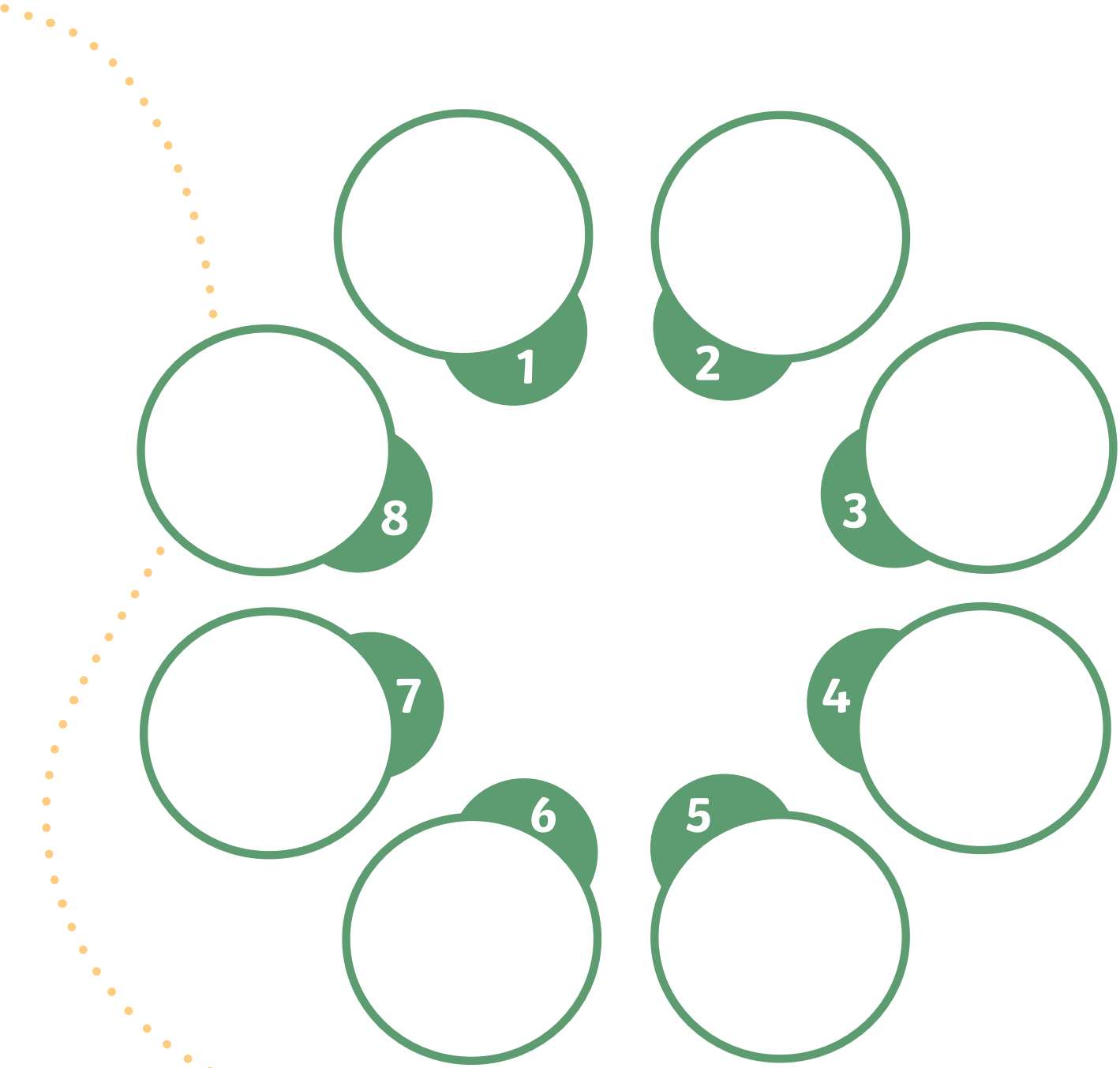

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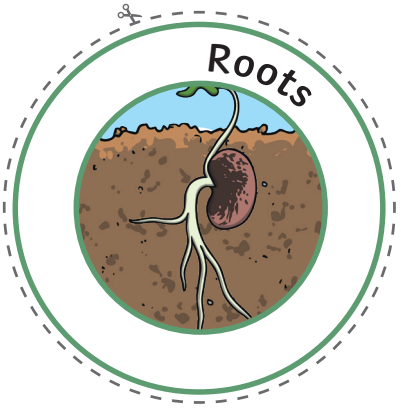

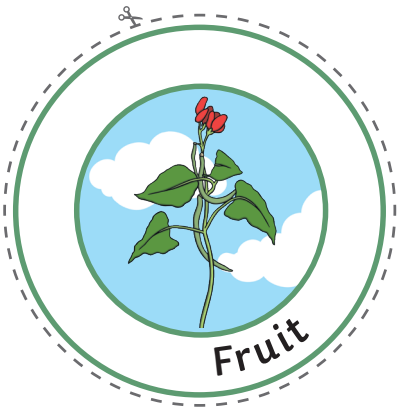

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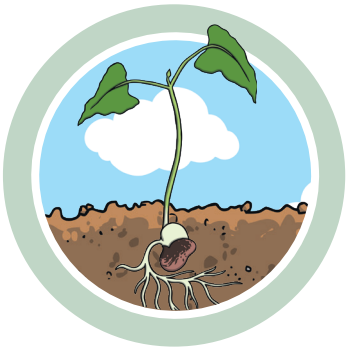

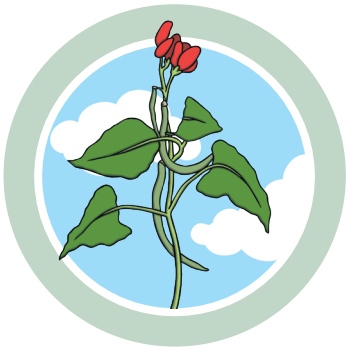

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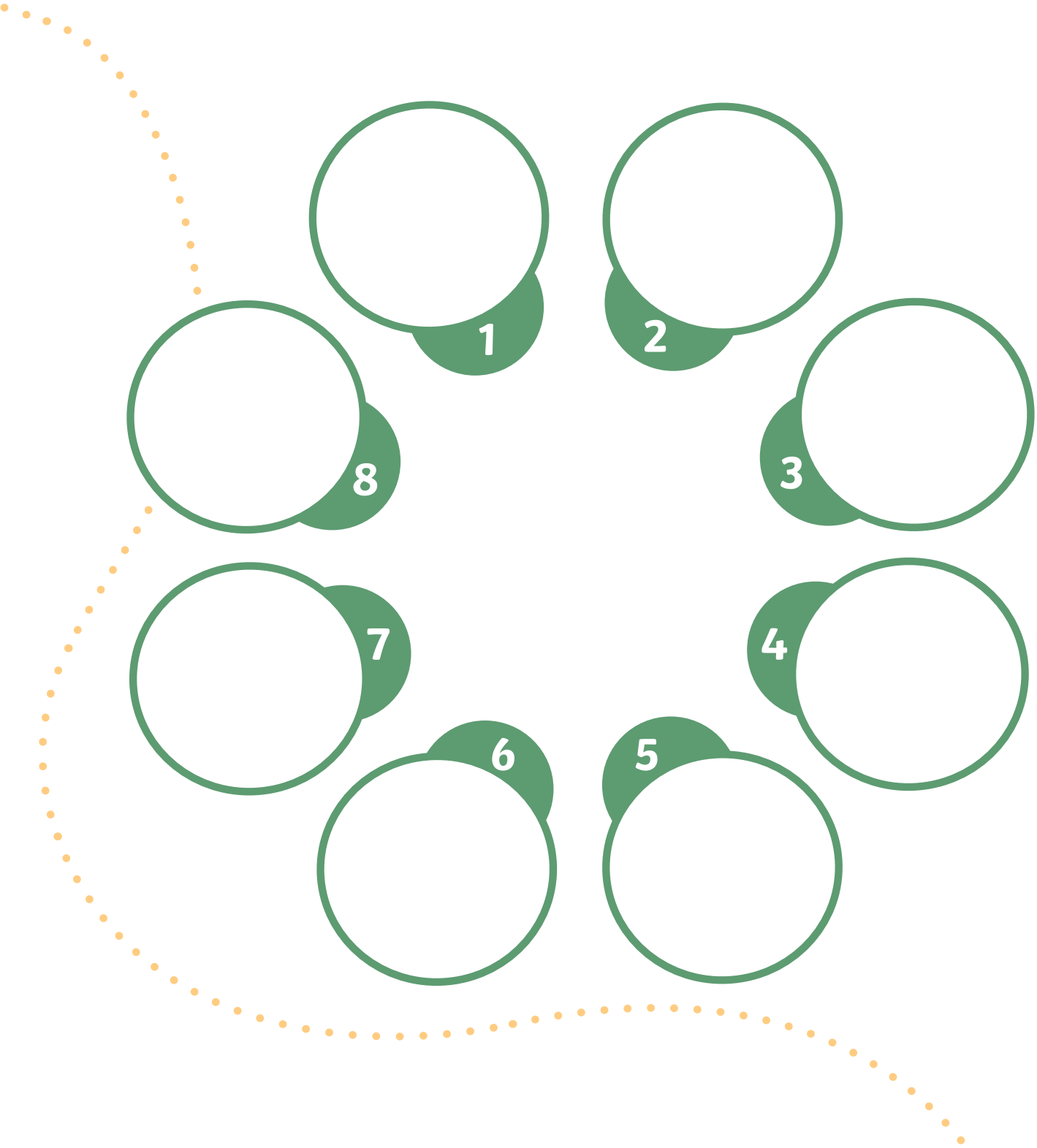

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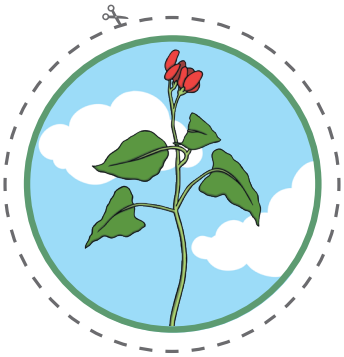
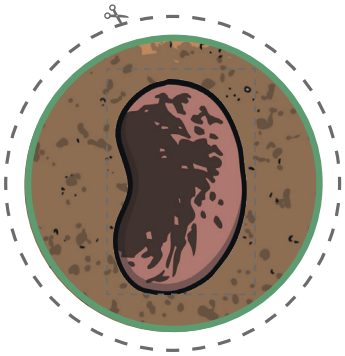

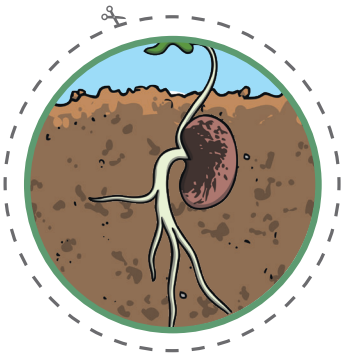
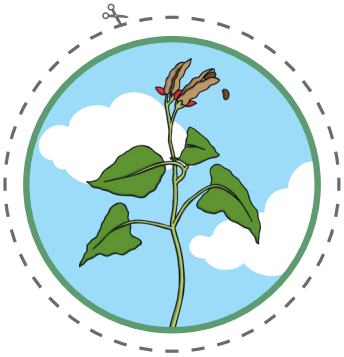
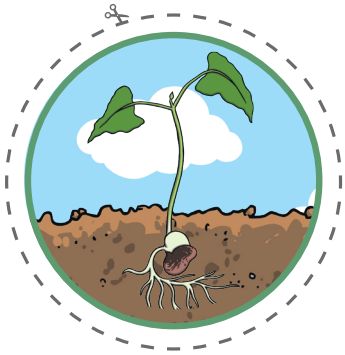

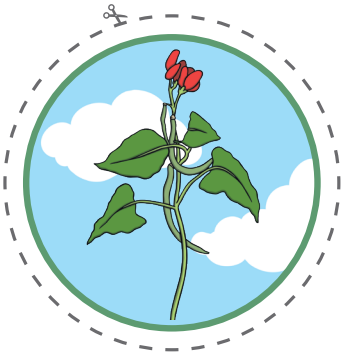

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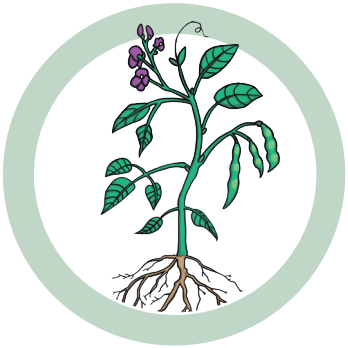

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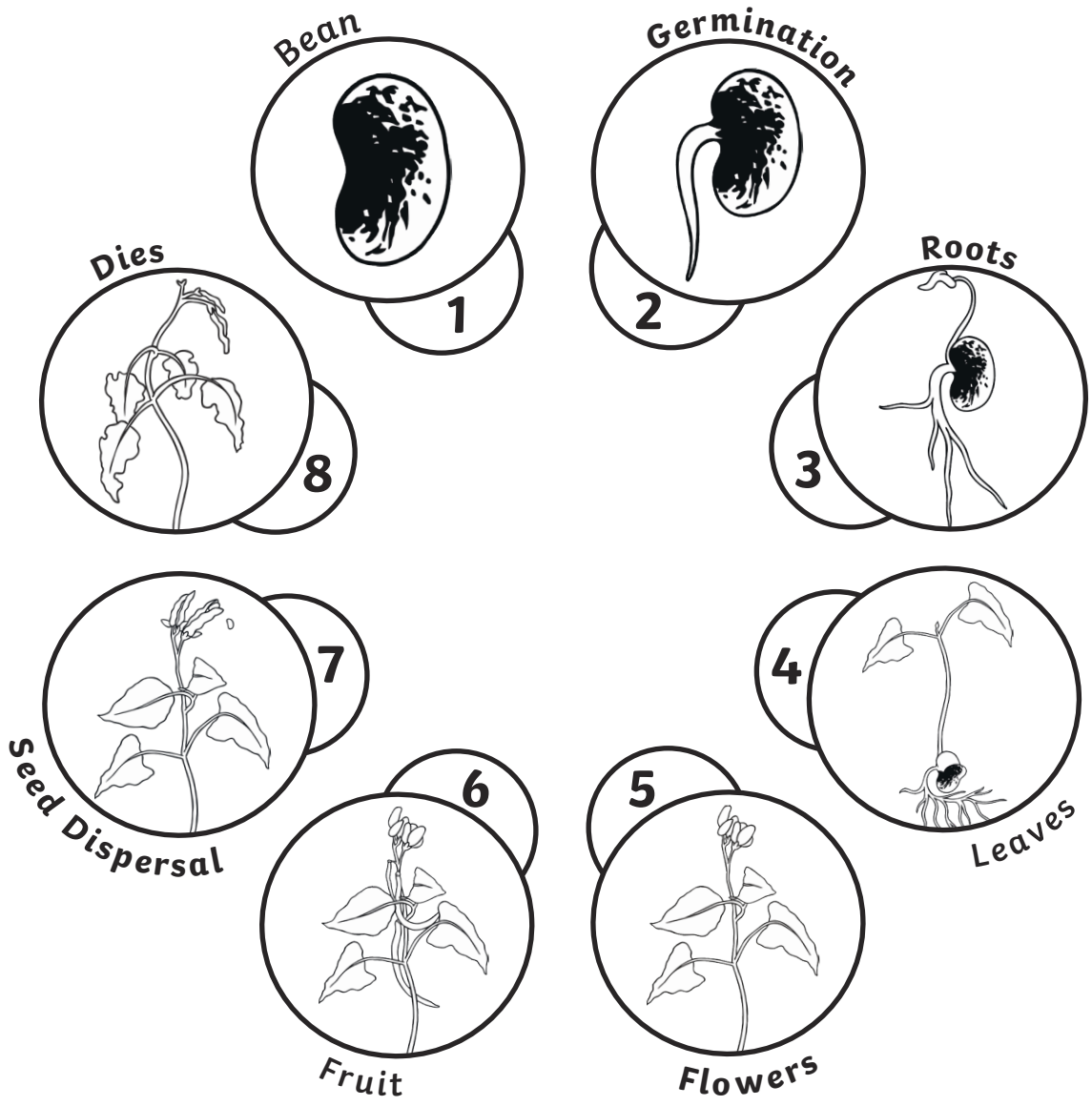

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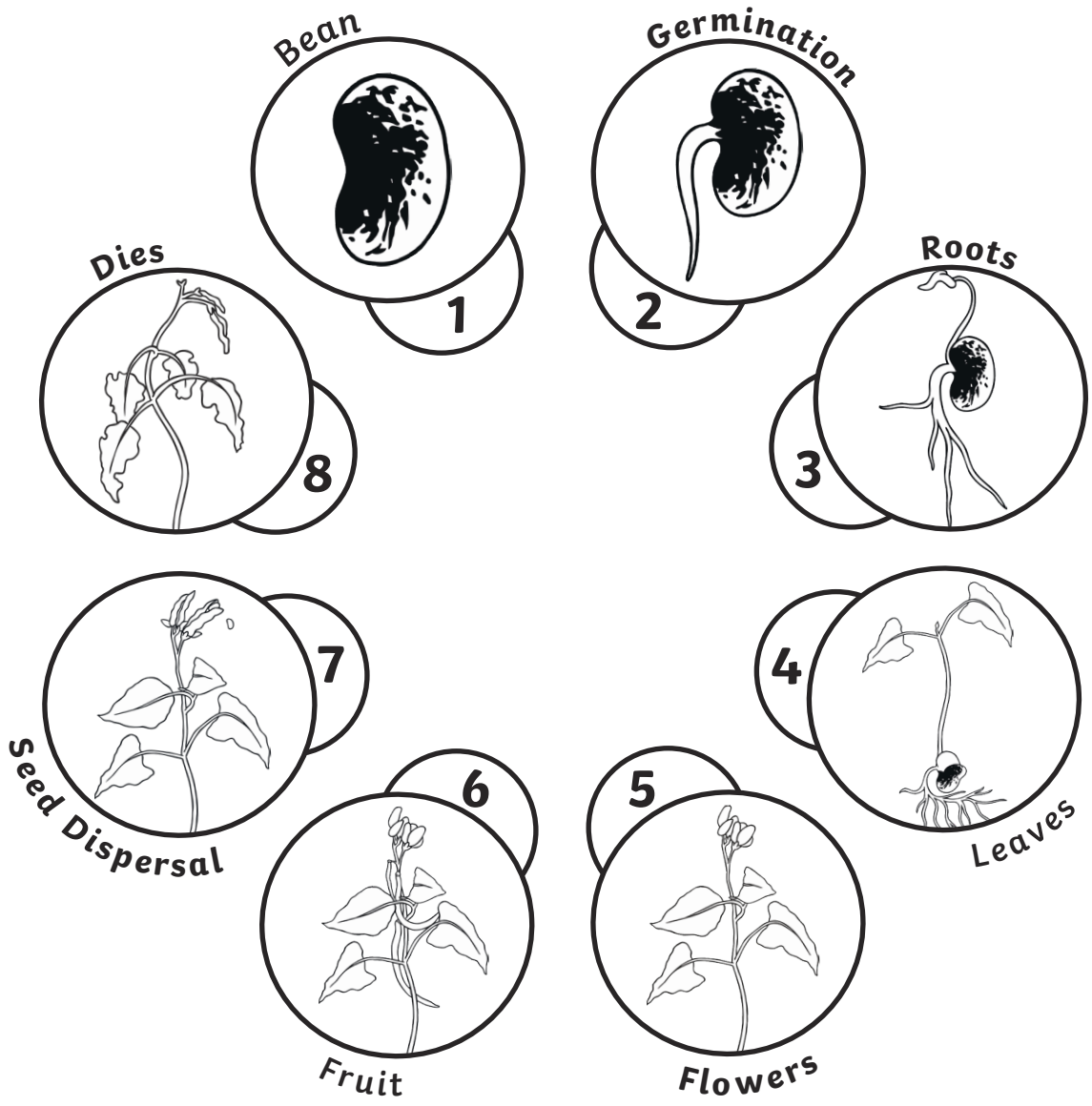

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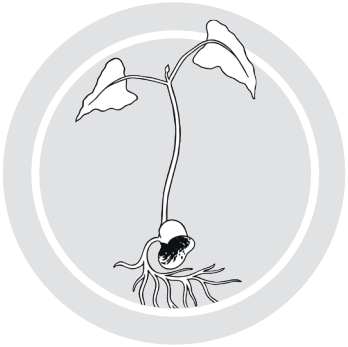

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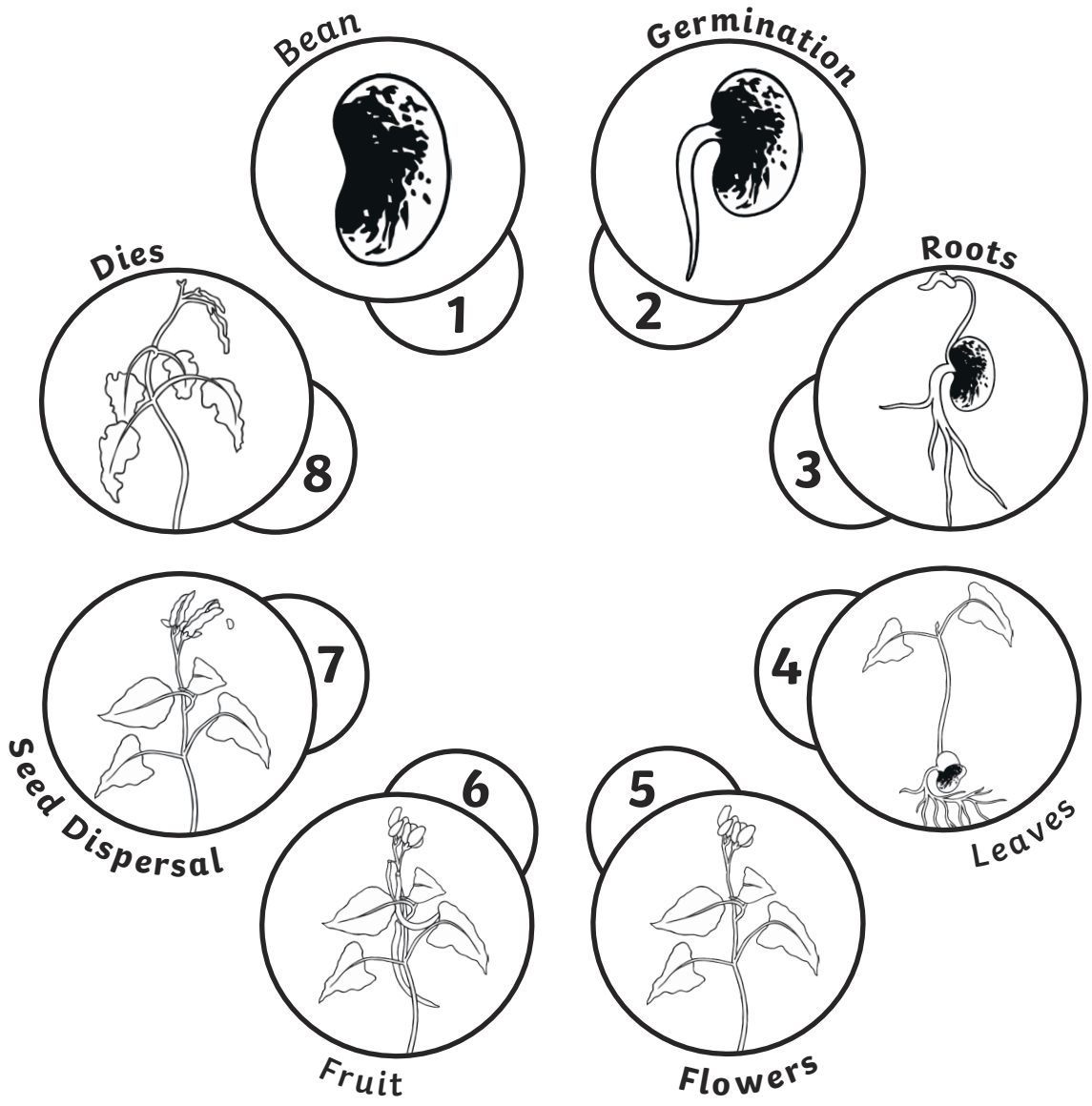

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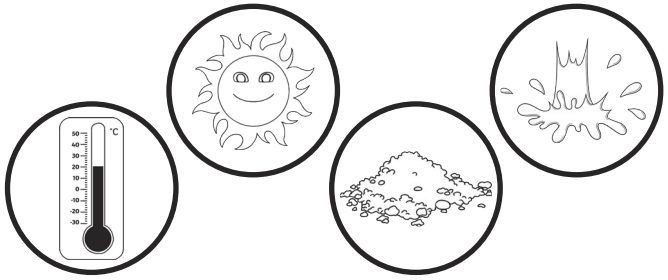
What Does a Plant Need to Stay Healthy?

To design and set up a test to find out what plants need to stay healthy.

What We Did

We are testing what a plant needs to grow and stay healthy. We have planted seeds in 5 different pots. Draw a picture showing what each pot will have and write what will be missing for each one.

Pot 1 has soil, water, light and the right temperature.



Pot 2 will **not** have_____

_____

Pot 3 will **not** have_____

_____

Pot 4 will **not** have_____

_____

Pot 5 will **not** have_____

_____

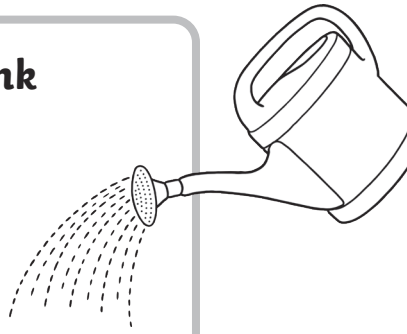
Word Bank

water

soil

light

the right temperature



What We Think Will Happen

Write what you think will happen to each plant. You can use the word bank to help you.

Pot 1	Pot 2	Pot 3
Pot 4	Pot 5	

Word Bank

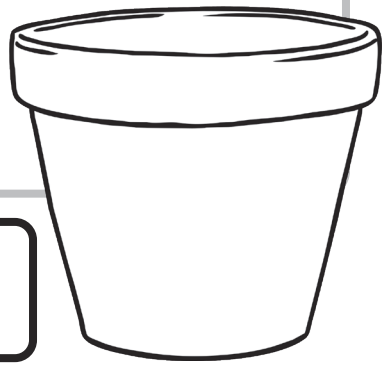
not healthy healthy big

small yellow green

brown

wilted

strong



Challenge! Do you think there will be anything about our test that will be tricky to do? Write a sentence on your whiteboard to explain.

What Does a Plant Need to Stay Healthy?

To design and set up a test to find out what plants need to stay healthy.

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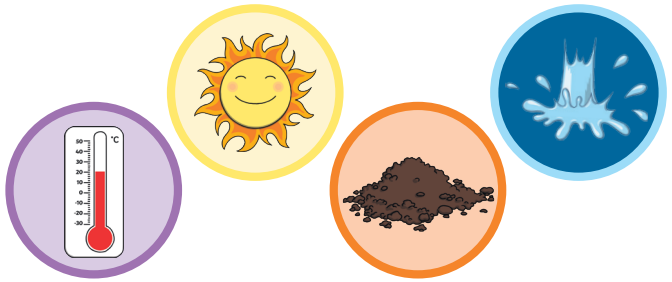

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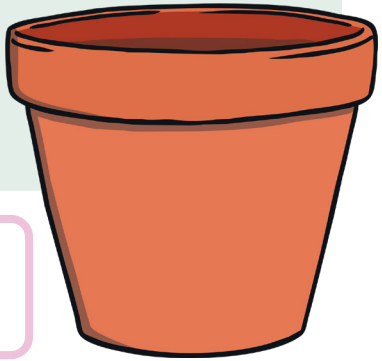

Challenge! Do you think there will be anything about our test that will be tricky to do? Write a sentence on your whiteboard to explain.

Class Plant Diary

We have planted a _____ on _____ .

name of plant | date

We are going to observe and measure how the plant grows and either draw or photograph it each week.

Starting week:

Week 1:

The plant is _____ tall.

Week 2:

The plant is _____ tall.

Week 3:

The plant is _____ tall.

Week 4:

The plant is _____ tall.

Week 5:

The plant is _____ tall.

Week 6:

The plant is _____ tall.

Week 7:

The plant is _____ tall.

Week: _____

The plant is _____ tall.

Week: _____

The plant is _____ tall.

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Week: _____

The plant is _____ tall.

Week: _____

The plant is _____ tall.

LIFE CYCLE OF A BEAN PLANT

1 **Bean**

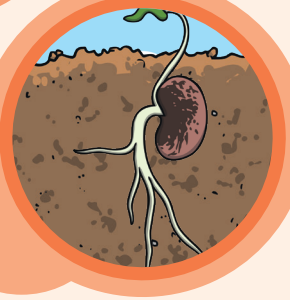
The seed is in the ground, waiting for the right **conditions** to grow.

2 **Germination**

When the **conditions** are right, the seed soaks up water and swells. The seed bursts open as it **germinates**.

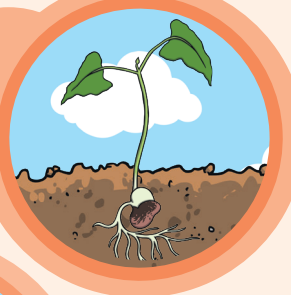
3 **Roots**

The roots start to grow down into the soil. They help to keep the plant in the ground and also take in water and **nutrients**. A tiny shoot grows up from the seed.



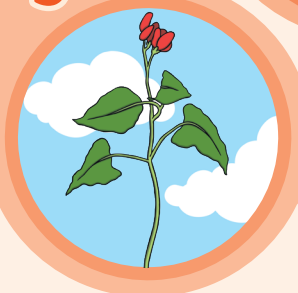
4 **Leaves**

Once the shoot is big enough, leaves grow. The plant can make its own food when it has leaves.



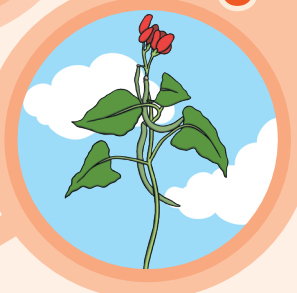
5 **Flowers**

Flowers attract bees and insects. They help the plants to make fruit.



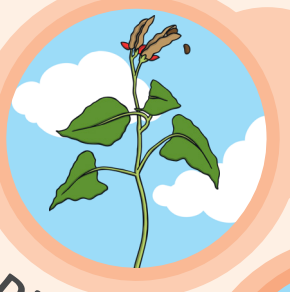
6 **Fruit**

Fruit contains the plant's seeds.



7 **Seed Dispersal**

Seed dispersal is when the seed moves away from its plant. Seeds can be moved by the wind or by animals eating the fruit and dropping the seed in their poo!



8 **Dies**

After the seeds have been dispersed, some plants (such as the bean plant) die. Many others don't.

OTHER PLANT LIFE CYCLES

Different types of plants can have slightly different life cycles. This is a daffodil's life cycle.

1 Bulb

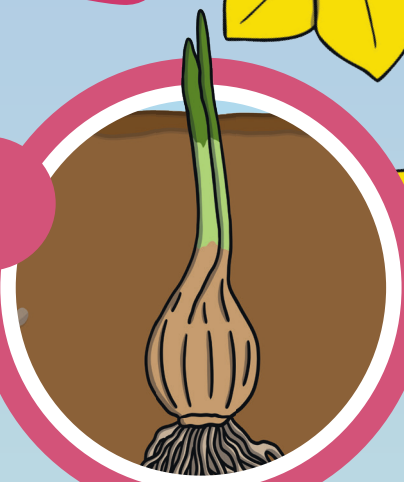
We often grow daffodils from bulbs in gardens.

2 Roots

The daffodil starts to grow its roots.

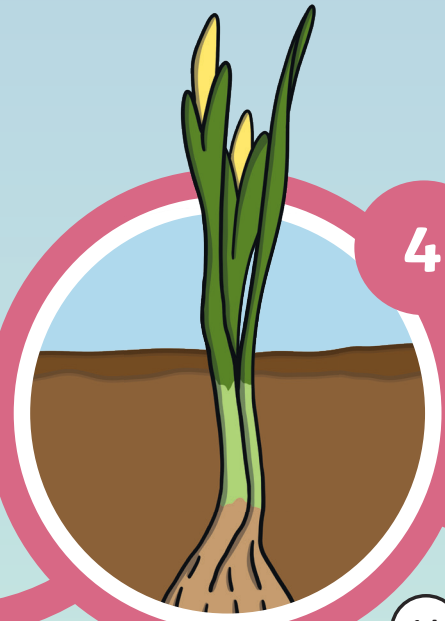
3 Shoot

A shoot appears.



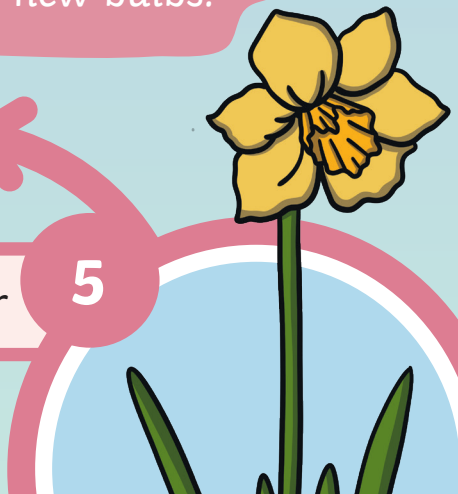
4 Stem and Leaves

The stem and leaves grow. A **bud** also grows.



5 Flower

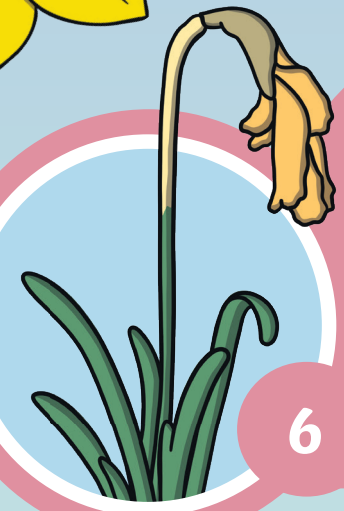
The **bud** opens out into a flower.



6 Wilts

The daffodil plant **wilts**.

The bulb is still alive and another flower can grow next year. The bulb can make new bulbs.



This is an oak tree's life cycle.

1 Seed

Even a huge oak tree begins as a tiny seed. Oak trees produce fruit called acorns which contain the seeds to grow new oak trees.

2 Seedling

The acorn **germinates** and a **seedling** starts to grow.

3 Sapling

The **seedling** grows bigger and becomes a sapling (a young tree).

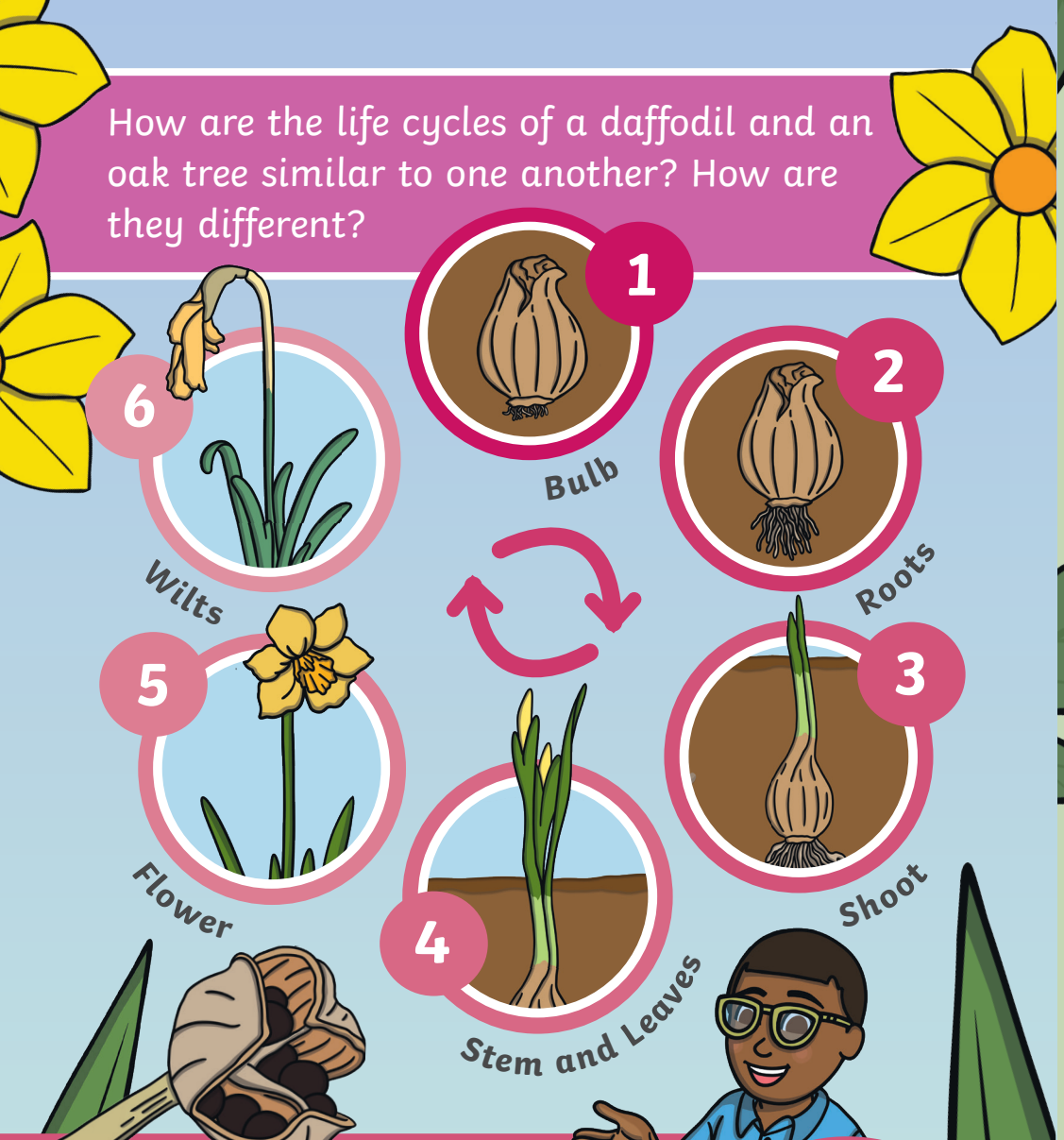
4 Oak Tree

The sapling continues to grow and eventually becomes a fully-grown oak tree. The oak tree produces flowers and then acorns (the fruit).

5 Seed Dispersal

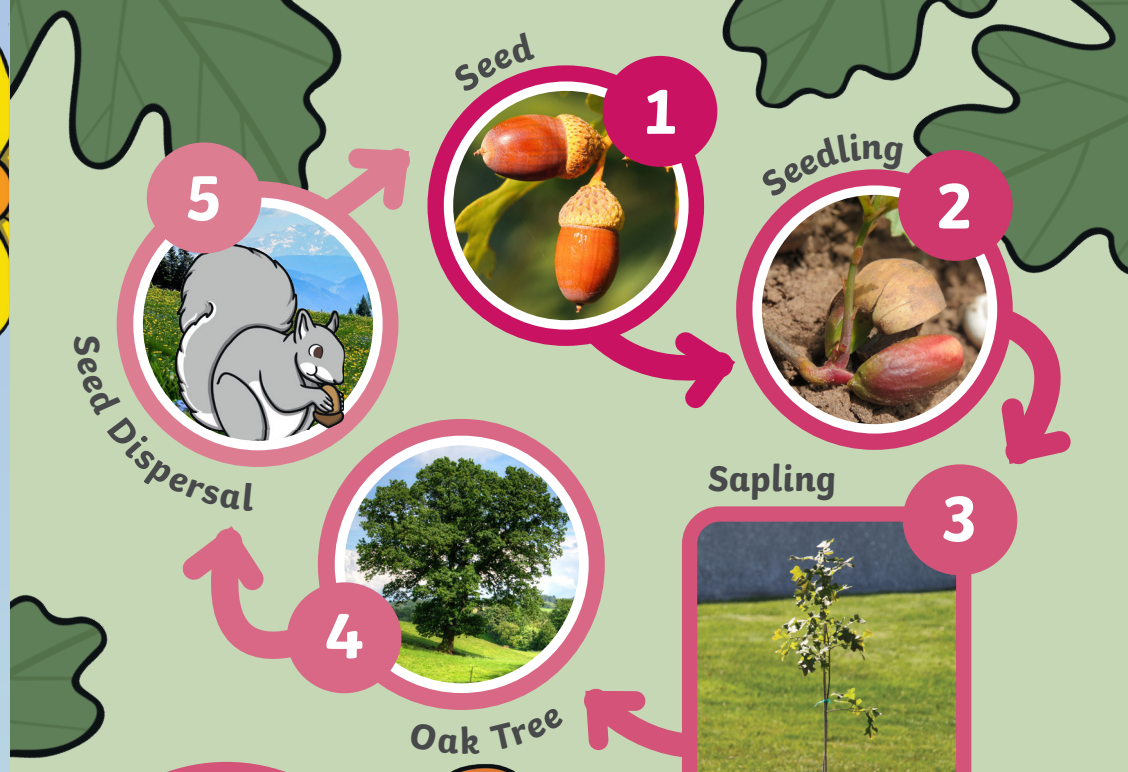
Animals, such as squirrels, help to disperse the acorns.

How are the life cycles of a daffodil and an oak tree similar to one another? How are they different?



Did You Know?

As well as making new bulbs from their bulb, daffodils can also make seeds and grow from them.

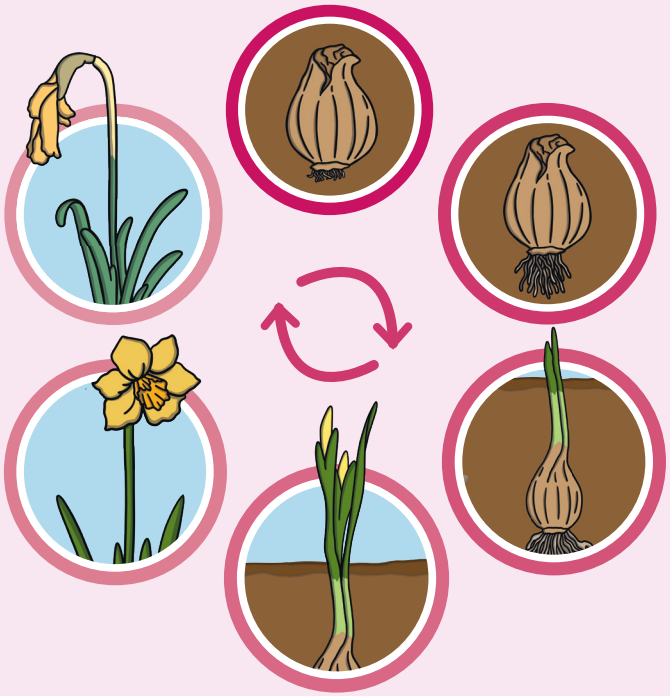


Did You Know?

Oak trees can live for hundreds of years. When a very old oak tree dies, it **decomposes** and becomes a tree stump. Insects help the stump to **decompose** by eating the wood. As the tree **decomposes**, it adds **nutrients** to the soil which helps other trees to grow well.

Plants Reasoning Cards

3



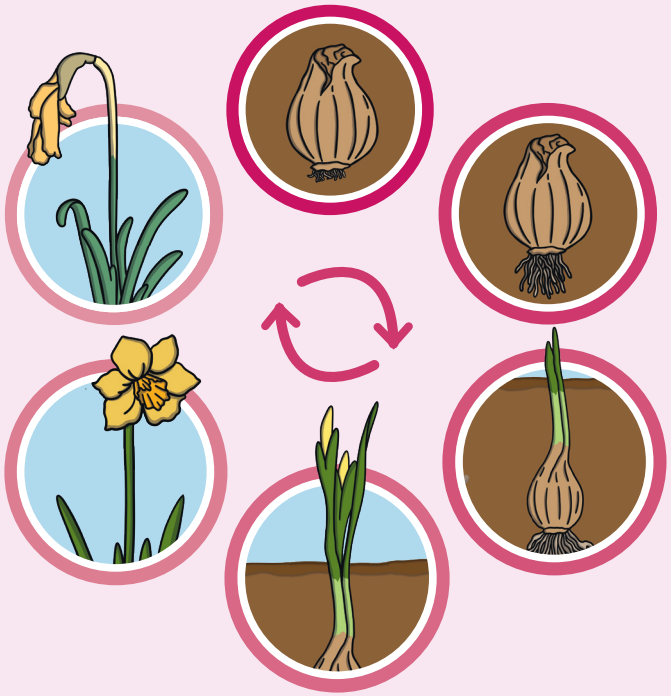
Explain what is happening at each stage in this plant's life cycle.

This life cycle includes a bulb which sprouts through the ground. What is it called when a seed first begins to grow?

Explain how seeds can be **dispersed**.

Plants Reasoning Cards

3



Explain what is happening at each stage in this plant's life cycle.

This life cycle includes a bulb which sprouts through the ground. What is it called when a seed first begins to grow?

Explain how seeds can be **dispersed**.

Reasoning Card 3

Explain what is happening at each stage in this plant's life cycle.

Children name or explain the stages of the life cycle including seed, germination, stem/leaves/flowers/fruit, seed dispersal.

This life cycle includes a bulb which sprouts through the ground. What is it called when a seed first begins to grow?

Germination.

Explain how seeds can be **dispersed**.

Seeds can be dispersed by the wind, water or animals.

Plants Reasoning Cards

1

Aisha has some seeds and she wants to find out what plants need to grow strong and healthy.

Can you explain how Aisha could use her seeds to test what plants need?

Do you think that Aisha should use both types of seeds in her test, or only one type? Explain why.

What do you think Aisha will find out from her test and why?

Plants Reasoning Cards

1

Aisha has some seeds and she wants to find out what plants need to grow strong and healthy.

Can you explain how Aisha could use her seeds to test what plants need?

Do you think that Aisha should use both types of seeds in her test, or only one type? Explain why.

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Reasoning Card 1

Can you explain how Aisha could use her seeds to test what plants need?

Aisha could plant some seeds in the dark, some without water, some without soil and some with soil, water and light. She could then see which plant grows best.

Do you think that Aisha should use both types of seeds in her test, or only one type? Explain why.

Aisha should only use one type of seed, because different seeds need different amounts of water or warmth and grow more quickly or slowly.

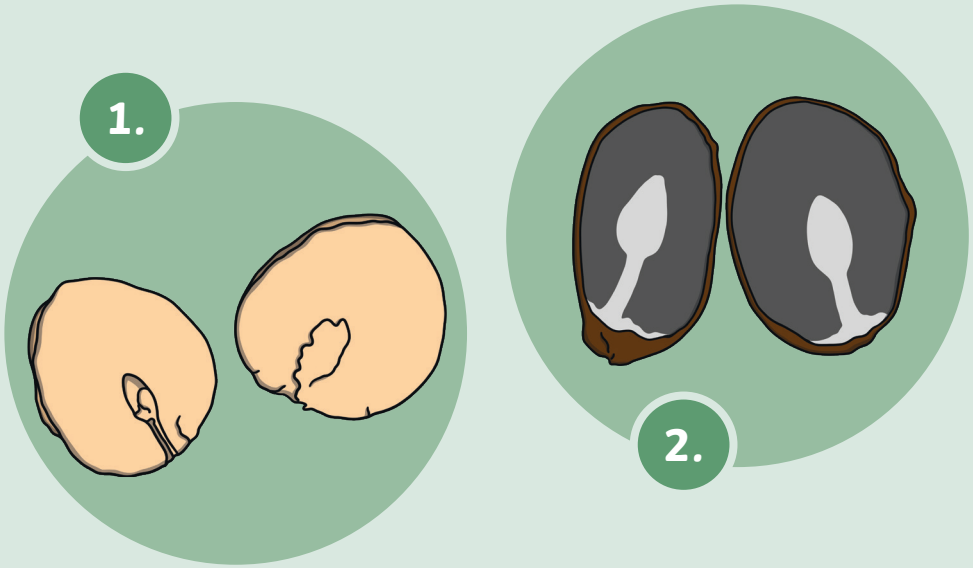
What do you think Aisha will find out from her test and why?

I think she will find out that seeds need water, light and the right temperature to grow into strong and healthy plants because that is what I think all plants need to grow well.

Plants Reasoning Cards

2

Look inside these two different types of seeds, which have been cut open.



Can you explain what is inside a seed?

Explain how a seed will begin to grow into a plant.

Compare the seeds. How are they similar? How are they different?

Plants Reasoning Cards

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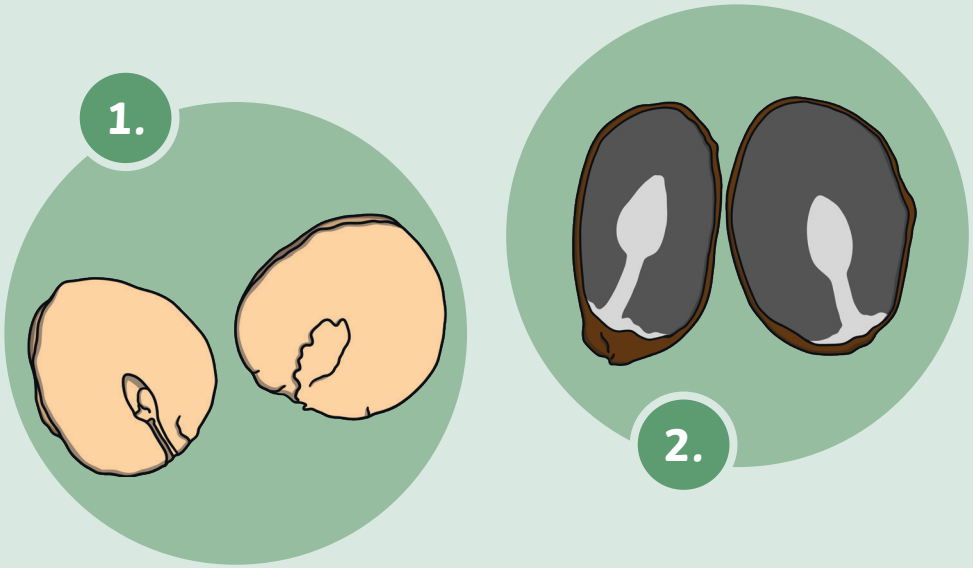


Can you explain what is inside a seed?

Explain how a seed will begin to grow into a plant.

Compare the seeds. How are they similar? How are they different?

Reasoning Card 2

Can you explain what is inside a seed?

A seed has the baby plant inside and also a store of food to help it to grow.

Explain how a seed will begin to grow into a plant.

When the seed has water, it bursts open and the baby plant begins to grow into a shoot. This is called germination.

Compare the seeds. How are they similar? How are they different?

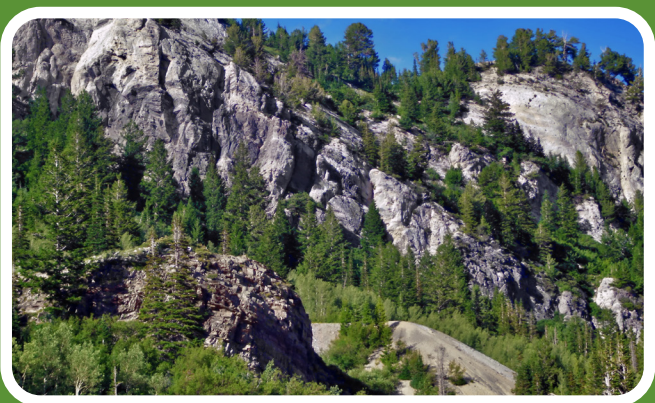
The seeds have the same type of parts inside them, but they are different sizes, shapes and colours.

PLANTS

Have you ever stopped and looked at how many plants there are in the world around you?

Even in places you might think there aren't any plants, some can still grow.

In fact, plants grow in nearly every **habitat** on Earth!



In this book, we will learn more about how plants grow, what they need to grow well and where in the world different plants grow best.

LIVING THINGS

Did you know that you and a plant are similar in lots of ways? Let's learn about the things that all living things have in common.

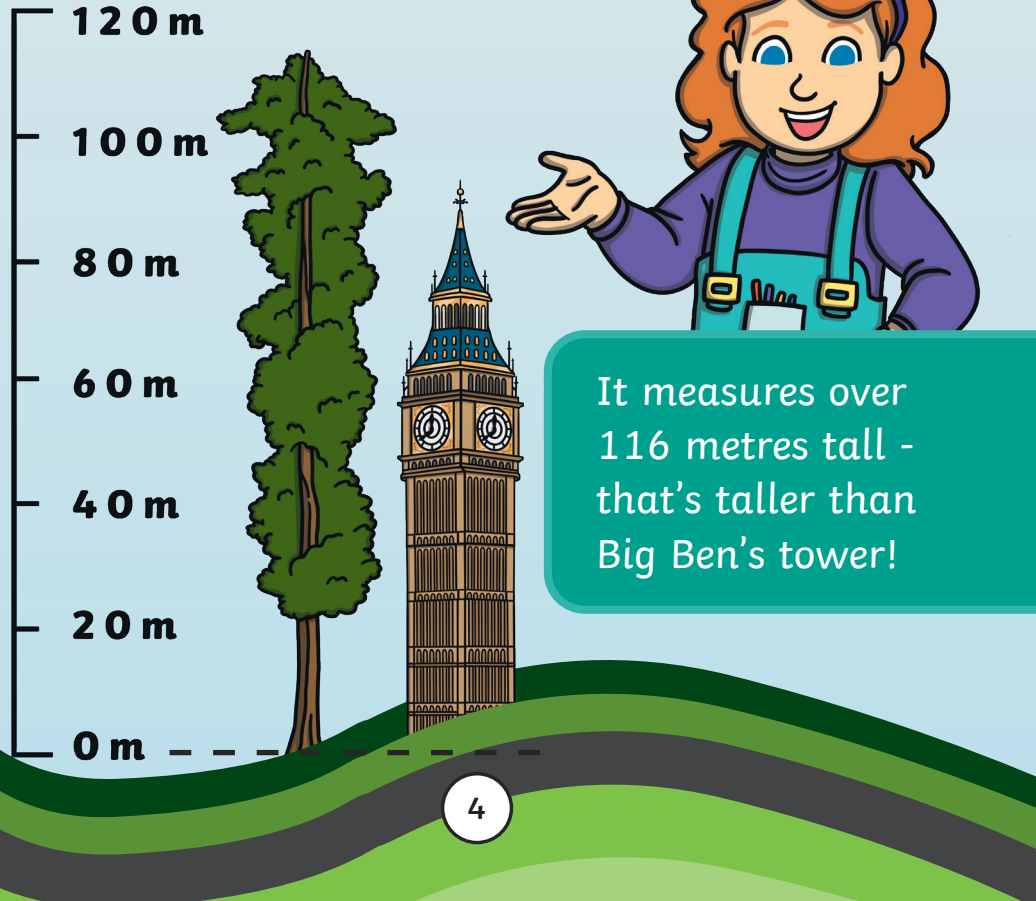
Growth

All living things grow. Think how much you have grown since you were a baby! Plants grow too. They can grow new leaves, grow taller and some can grow flowers and fruit. Some grow to be very small and some grow to be huge!

Did You Know?

The tallest plant in the world is a coast redwood tree in Redwood National Park in California, USA.

Scientists measured it by climbing to the top of it and dropping a very long tape measure to the ground.



It measures over 116 metres tall - that's taller than Big Ben's tower!

Movement

What? Plants move?

Yes, they do! Sunflowers move their flowers so that they face the sun.

Sunflower

A Venus flytrap closes its trap when a fly lands in it.

Venus flytrap

Mimosa Pudica

When the touch-me-not plant (its proper name is *Mimosa pudica*) is touched, its leaves curl and droop.

Nutrition

Nutrition is what all living things need to grow and stay healthy.

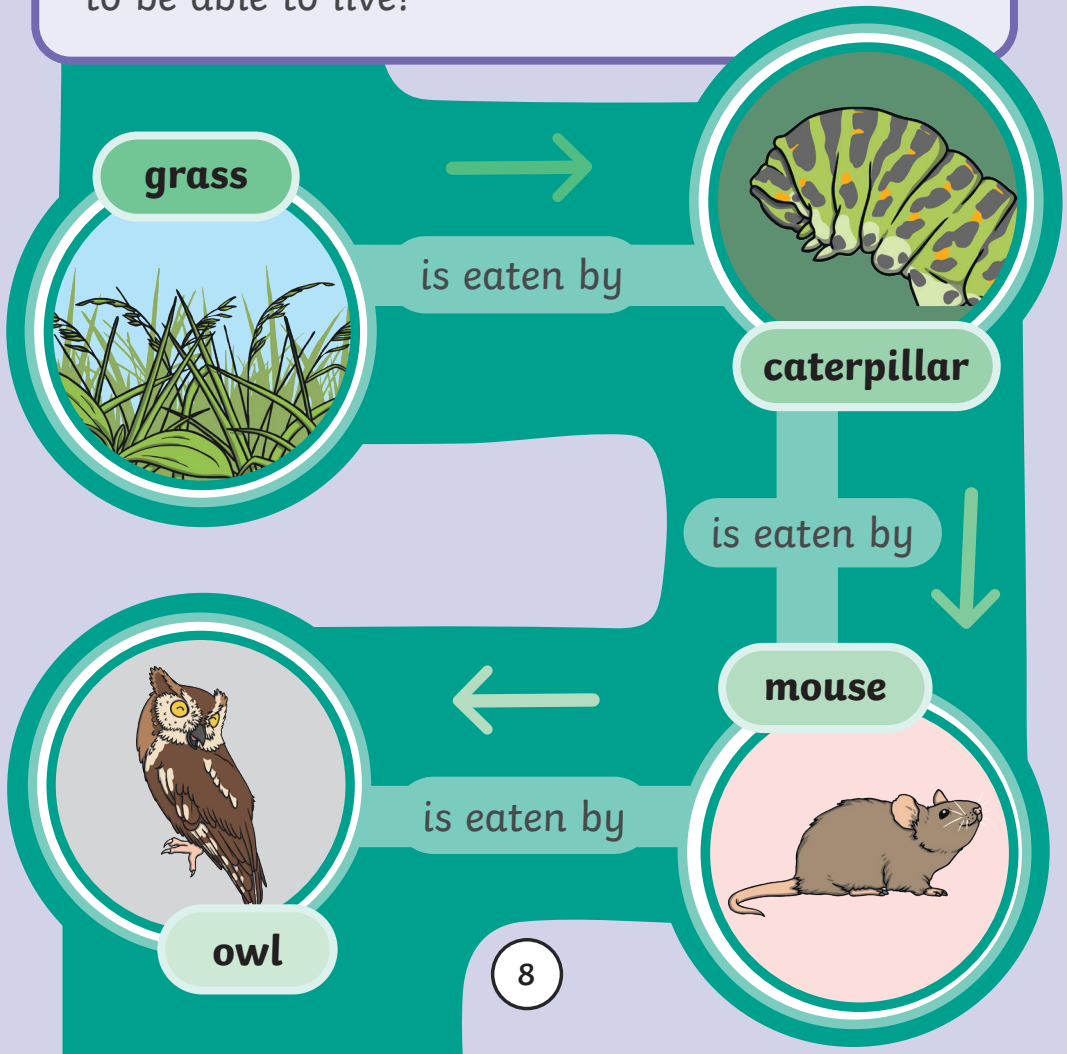
Animals (including humans) get their **nutrition** from eating food.

Plants don't need to eat food like we do because they make their own food. Their leaves catch sunlight to help to do this.

Plants can also get some **nutrients** from soil.

Many living things depend on plants to survive.

A food chain shows us how animals get the **nutrition** they need. Many food chains start with a green plant, which shows us that even carnivores (meat-eating animals) need plants to be able to live!



Waste Removal

Your body makes **waste** after it has used your food and drink to help you to grow and stay strong. How does your body remove the **waste** it doesn't need?

We call **waste** removal 'excretion'.

Plants need to remove their **waste** too! But plants don't eat food, so they don't **produce** the same type of **waste** that we do.

gases removed

Instead, plants remove **gases** they don't need. They do this from their leaves.

Reproduction

Reproduce means to make more of something. Humans and other animals can **reproduce** by having babies.

Plants **reproduce** too. Seeds, bulbs and runners are used by different plants to help them to **reproduce.**

daffodil bulbs

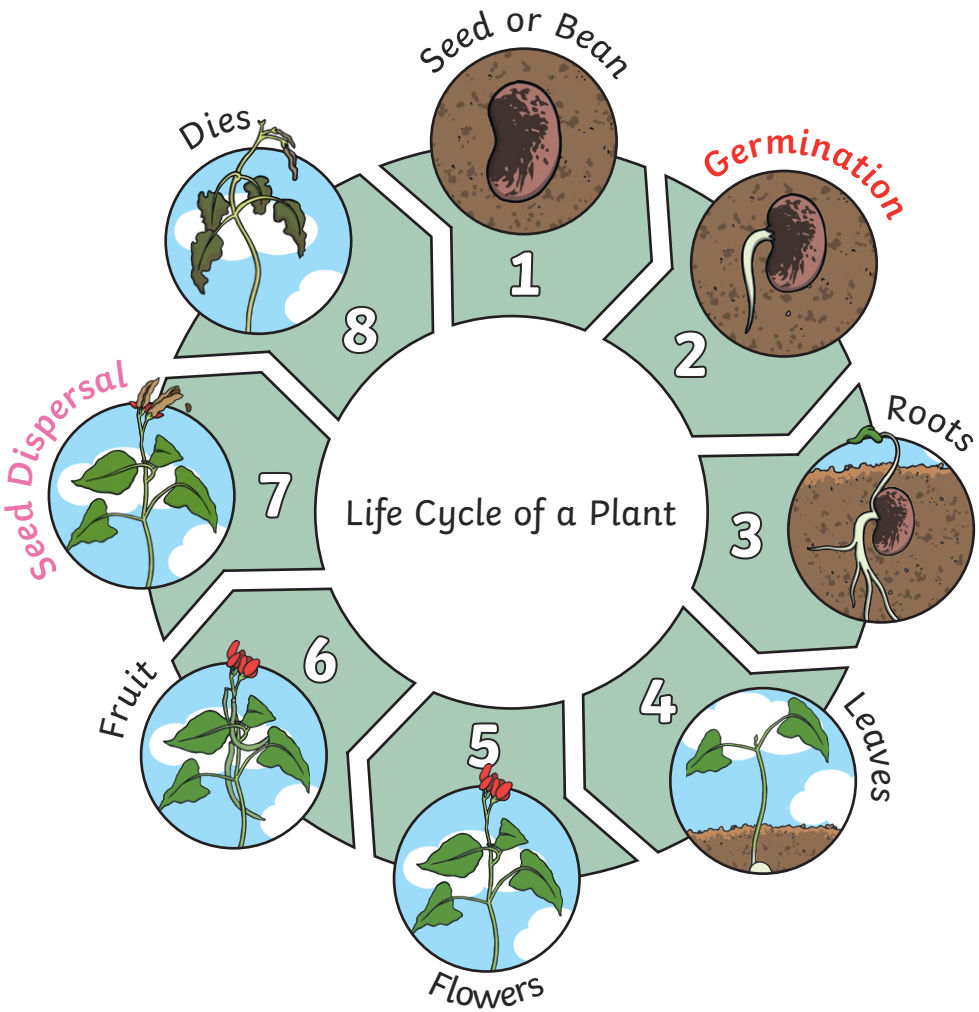
dandelion seeds

strawberry runners

Key Vocabulary

germination	When the conditions are right, the seed soaks up **water** and swells, and the tiny new plant bursts out of its shell. This is called **germination**.
shoot	A **shoot** grows upwards from the seed or plant to find **sunlight**.
seed dispersal	**Seed dispersal** is when the seeds moveaway from the parent plant. They can drop to the ground in the plant's fruit or be moved by the wind or animals.

Key Knowledge



Key Vocabulary

What do plants need to grow well?	
sunlight	All plants need light from the sun to grow well. Some plants need lots of **sunlight**. Some plants only need a little **sunlight**.
water	All plants need **water** to grow. Without **water**, seeds and bulbs will not **germinate**.
temperature	**Temperature** is how warm or cold something or somewhere is. Some plants like cooler **temperatures** and some like warmer **temperatures**.
nutrition	Food or nourishment. Plants make their own food in their leaves using **sunlight**.

Key Knowledge