

SCIENCE IN ACTION



Science

Key stage 1 and 2

LEARNING OUTCOMES

- 'Working scientifically' through observation, identification, questioning, practical experience and recording data
- 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.
- Observe and describe how seeds and bulbs grow into mature plants.
- Find out and describe how plants need water, light and a suitable temperature to grow and stay healthy.

The activities in this pack require additional equipment, we recommend getting these together before you get started:

Activity 1 - Nature Hunt

You will need:

- A walk outside (take an older brother/ sister or your parent/ carer)
- A bucket or something to collect things in
- The Scavenger Hunt sheets or a phone/tablet to take with you so you can view the images on the sheets

Activity 2 - Plant Investigation

You will need:

- A flower, ideally including as much of the stem as possible
- Sticky tape, or pencils
- The Plant Investigation sheet

NOTE: activity 2 is ideal for upper KS2 (year 5 & 6) as it includes more complex language and topics, but no reason why younger children can't give it a go at a more basic level.

Activity 3 - Growing Plants

You will need:

- Easy to grow seeds (cress or mustard are ideal)
- Cotton wool or kitchen towel, or soil/ compost if you've got some
- A few small containers; clean jars, margarine tubs, Tupperware containers or takeaway dishes are perfect!
- Clingfilm
- The Plant Growing Investigation sheet

ACTIVITY 1 - NATURE HUNT

How many of these different plants and trees can you find? Pick a leaf, small branch or flower from each one you find. When you get home, stick each one in the space next to the correct picture, or you could use a separate piece of paper and label each one.

If the plant is in someone's garden- don't pick it, but draw it in the space instead.

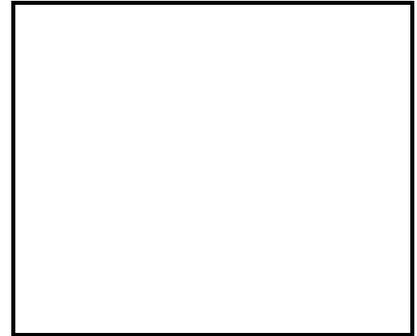
DAFFODILS



Daffodils are the national flower of Wales where you will find our Summit Centre!

Daffodils are very poisonous don't eat them!

What season do you see daffodils?



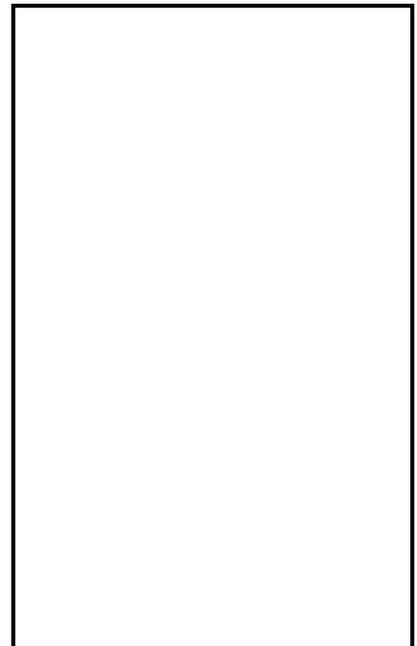
OAK TREE



Oak trees can grow up to 40 metres tall! Our centre in Scotland, Whithaugh Park and our Northampton centre, Frontier have both got buildings named after the Oak Tree. Oak trees produce acorns, which squirrels, badgers and deer love to eat.

Oak trees are **deciduous**, this means they lose their leaves over winter.

Have you ever noticed Oak trees changing colour in Autumn? What colour do they change to?



SNOWDROP

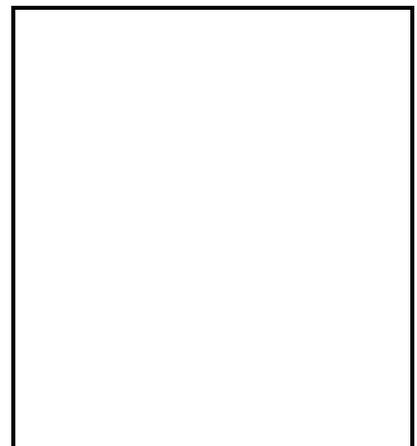


Snowdrops are one of the first flowers to appear in the new year.

There are over 2,500 different types of Snowdrop!

Snowdrops are normally between 7cm and 30cm tall.

How tall is the snowdrop you found?



SPRUCE TREE



Spruce trees can live up to 1000 years old! Our centre in Scotland, Whithaugh Park, has accommodation named after these lovely trees.

Spruce trees have leaves that are like needles.

Spruce trees are green all year round. This is a **coniferous** tree.

What might a Spruce tree be used for at home? (clue: you might decorate it!)

HOLLY



Lots of birds eat holly berries to survive through the winter and early spring.

The birds' poo contains the holly berry seeds that they have eaten, this then helps new plants to grow!

Holly leaves are often very spikey to protect them from being eaten by animals.

You might notice the leaves nearer the top aren't so spikey. Why do you think this is?

CROCUS



Not many flowers can survive frost and snow in the garden, but crocuses can. Their petals and leaves have an **insulation** layer that feels like wax.

*These plants have good **insulation**. What **insulation** do humans wear to keep warm?*

SILVER BIRCH



In April and May, Silver Birches have **catkins** hanging down from thin branches. These are tiny flowers, but they don't have petals. Our Centre in Kent, Caroty Wood is home to a great number of Silver Birch trees.

Silver Birch trees are great for making fires! The bark is thin and lights easily, and the little branches are perfect for adding on next!

Why do you think they are called 'Silver Birch'?

BLACKBERRY BUSH (OR BRAMBLE BUSH)



Blackberries are edible and are normally ripe in August and September.

Blackberry plants are very prickly, watch your fingers!

Where did you find your blackberry bush?

Well done!

How many did you find? _____

What was your favourite plant that you found? _____

The words in orange might be new words, here's what they mean:

Poisonous – not good to eat, it will make you ill.

Deciduous – trees that lose their leaves over winter.

Coniferous – trees that keep their leaves over winter, they are often called 'evergreen' trees.

Insulation – a layer between hot and cold objects that reduces how much heat escapes from the warmer object.

Catkin – a thin bunch of tiny flowers that hang down from tree branches, they don't have any petals though.

ACTIVITY 2 PLANT INVESTIGATION

Plants have lots of different parts, each part has its own special job to do. Can you find each of these parts on your flower? You may need to take your flower apart to see some of the smaller parts. Either stick the part in the correct box, or you could draw it.

Anther and Filament

The anther is at the top of the thin stalk and produces **pollen** (dust-like specs that helps to make a new seed)
The filament is the thin stalk that makes sure the anther is near the top of the flower. This is so that when **pollinators** visit the flower, it is easy for the pollen to stick to them.

Petals

Coloured leaves that attract **pollinators** (insects, birds or animals that help spread the **pollen** between plants)

Sepal

Protects the flower before it opens.

Leaf

Leaves take a gas (Carbon Dioxide) from the air and use it to produce energy for the plant. This energy helps the plant grow.

Roots

The roots are underground in the soil, and take food and water from the soil up to the stem. The roots also help to make the plant stable, so it doesn't fall over in the wind.

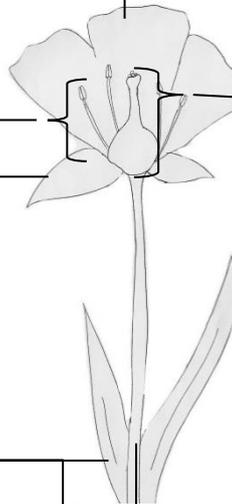
Pistal

The pistal is made up of 3 parts:

- The **stigma** is at the top and catches **pollen**.
- **The style** is the stalk in the middle and is the passageway for the **pollen** to get to the **ovary**.
- The **ovary** makes **ovules** (half-ready seeds) and adds the **pollen** to them to make new seeds that could be planted. In plants that produce fruit, the ovary is the part of the flower that becomes the fruit!

Stem

Supports the flower and transports water and food from the roots.



ACTIVITY 3 - GROWING PLANTS

1. Planting your seeds

Follow the instructions below carefully to get your seeds all set up and ready to grow!

1. Place your soil/compost/cotton wool/paper towel into your dish, pot or jar and add a little water so that it is damp.
2. Sprinkle your seeds on top and press them gently in.
3. Stretch some Clingfilm tightly over the top of the container, this stops the water escaping. You might notice that after a while the water forms little droplets on the underside of the Clingfilm. This is because the water has evaporated (turned from liquid into a gas) and then when it hits the Clingfilm roof it turns into condensation (turns back from a gas into a liquid). You'll need to take the Clingfilm off when the leaves get close to touching it.

4. Plant Diary

Check on your plant every day. Keep a diary of what you can observe each day. You could use words or pictures.

- What is happening to the seeds?
- How tall is your plant? You could use a ruler to measure how tall it is.
- Can you see any condensation?
- Is the ground still damp? Add more water if it's not.

5. Plant Experiments (KS2)

Aim: to find the perfect growing conditions for your plant. What effect do different environmental factors have on your plant?

By changing different parts of the plants environment- you can work out what is best for the plant to grow. To make your experiments fair, you will need to keep everything exactly the same, except for the one thing that you are testing. This is called a fair test. Record your investigation on the Plant investigation sheet on the next page or simply copy the sheet onto a piece of paper.

1. Start by asking one question "do my plants grow better in the dark or in the light?", "do they grow better in the warm or cold?", "do they grow better with dry, damp or soggy ground?" Or think of your own question that you want to investigate. Add your 'question to the "what I am investigating" section on the experiment sheet.
2. Plant one set of seeds for each part of your question- for example one set that's going to live in the dark, and another set that will be in the light. Make sure that everything else stays exactly the same between the two sets.
3. Make a prediction of what you think will happen, this is a guess that is based on what you already know. Add your prediction to the investigation sheet.
4. Keep a diary again, this time comparing your two different samples each day. Add your findings to the results table.
5. After a week, compare the two different plants. What are the results? Was your prediction right? Why do you think the results were like this? Write a conclusion explaining what you found out.

You could do different experiments, each time changing one thing (known as a variable), until you've found the perfect combination of growing conditions for your seeds.

PLANT GROWING INVESTIGATION SHEET

What I am investigating: _____

My Prediction: _____

Variables (things I am changing):

1: _____

2: _____

My Results:

	Variable 1 plants	Variable 2 plants
Day 1		
Day 2		
Day 3		
Day 4		
Day 5		

Conclusion (what you found out): _____

EXTRA CHALLENGE - PLANT RACE (KS2)

Now that you're an expert grower, challenge someone else to a race, maybe a brother, sister, parent, carer or friend.

Who can grow the tallest seeds? To make sure it's fair, both plant your seeds at exactly the same time and before you start, agree when you'll measure them.

Good luck!