



Key Ideas

- Flowering plants all have roots, stem/trunk, leaves and flowers – each of these has a different job.
- Plants cannot live without: air, light, water, nutrients from soil and room to grow and the amount of each varies from plant to plant.

Important things to know/find out

- How water is transported within plants:
- Parts that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal.
- The **petals** on a **flower** are usually bright - this is to attract bees and other insects so that they can collect **pollen** and start **seed formation**. **Pollen** distribution from flower to flower is necessary to provide the male part of the **fertilisation** process.
- The **seeds** are then able to grow to make new plants. This is called **germination**.
- **Leaves** use **carbon dioxide** and sunlight to make food for the **plant**.
- The stem carries water and other **nutrients** from the roots to the rest of the **plant**. **Leaves** use this water to make food.
- The **stem** also helps to keep the **plant** upright so that the sunlight can reach it easier.
- The roots help to ‘anchor’ the **plant** in the soil. They also **absorb** water and **nutrients** from the soil for the **stem** to carry to the rest of the **plant**.
- What do plants need to grow?
 - Air, water
 - Sunlight
 - **nutrients** from the **soil**
 - room to grow
 - suitable **temperature**
- The amount of each of these may vary depending on the type of **plant**. For example, cacti need less water than other **plants**.
- Water is **absorbed** from the **soil** by the roots.
- It is then **transported** from the roots to the stem and then to the rest of the **plant**.
- The **flower’s** job is to create **seeds** so that new **plants** can grow.
- **Pollination** occurs when **pollen** from the **anther** is transferred to the **stigma** by bees and other insects.

- The **pollen** then travels down and meets the **ovule**. When this happens, **seeds** are formed - this is called **fertilisation**.
- **Seeds** are then **dispersed** so that **germination** can begin again.



Vocabulary

Stem/trunk, leaves, flowers, air, light, warmth, growth, transported, pollination, seed formation, seed dispersal, germination, fertilisation, ovule, anther and stigma.

Questions to consider

- What do the different parts of a flowering plant do?
- What conditions do plants need to live and grow?
- Describe the life cycle of flowering plants.
- Compare the effect of different factors in plant growth (e.g. the amount of water, the amount of light and the amount of fertiliser). Discuss what would make this a fair test.
- Place white carnations in dyed water to observe how plants transport water.
- Discover how seeds are formed by observing plant life cycles.
- Dissect fruits to observe their structure and use this to explain how seeds are dispersed.
- Dissect a flower and identify each of the different parts that help with fertilisation.
- What do plants need from the soil?
- Why do plants need light?
- Why do plants need water?
- How is water moved around plants?



Key Ideas

- Animals, including humans, need the right types and amount of nutrition.
- Animals cannot make their own food; they get nutrition from what they eat.
- Humans and some other animals have skeletons and muscles for support, protection and movement.

Vocabulary

Energy, starch, food groups, diet, balanced diet, healthy/unhealthy, carnivore, herbivore, omnivore, deficiency, vitamin, skeleton, vertebrate, invertebrate, skull, spine (backbone), ribs, x-ray, muscle, contract, relax.

Important things to know/find out

- Foods can be put into food groups.
- Different food groups help us grow, give us energy and keep us healthy.
- A balanced diet is eating the right types and right amounts of different foods.
- The right food is important for a healthy body.
- A balanced diet is a mixture of these seven food types: carbohydrates, fats, minerals, proteins, fibre, vitamins and water.
- Some animals eat only meat and others only plants humans can eat both.
- Carnivores eat only meat.
- Herbivores eat only plants.
- Omnivores eat a mixture.
- The main body parts associated with the skeleton and muscles.
- Different parts of the body have special functions.
- How do skeletons support and protect us?
- How do skeletons help us move?
- You have a skeleton inside your body.
- Some animals have skeletons, and some don't.
- Skeletons from different animals can be similar.
- Bones are hard and strong especially ones that carry a lot of weight.
- Bones give us our shape and protect soft parts like the heart and the skull.
- We can move because our muscles pull on our bones.
- Some muscles bend our joints and other muscles straightening them.



Questions to consider

- How do animals get nutrition?
- Why is it important to eat food from different food groups?
- What would happen to an animal if it didn't have a skeleton?
- How does the digestive system work?
- Why are teeth different?
- How does the angle that your elbow/knee is bent affect the circumference of your upper arm/thigh?
- Why do different types of vitamins keep us healthy and which foods can we find them in?
- Do males have larger skulls than females?



Key Ideas

- Rocks can be compared and grouped together by appearance and physical properties.
- Fossils are formed when things that have lived are trapped within rock.
- Soils are made from rocks and organic matter.



Vocabulary

Properties of rock (waterproof, hard, strong, smooth), particles, molten, igneous (granite and slate), sedimentary (limestone, sandstone and chalk), fossils, organic matter.

Questions to consider

- How can you compare different rocks?
- How are fossils formed?
- How are soils made?
- Who was Mary Anning and what did she discover?
- How does the addition of different amounts of sand to soil affect how quickly water drains through it?
- Is there a pattern to where we find volcanoes on planet Earth?
- How does the action of tumbling change rock over time?

Important things to know/find out

- There are many different types of rocks and different ones are useful for different jobs.
- Granite is hard and strong. The stone chips on roads are made of granite.
- Slate is waterproof and easy to split. Roof tiles are made of slate.
- Sandstone is strong and attractive and used for buildings.
- Marble is hard and smooth and looks good. It is used for statues.
- Look at different fossils and consider how they have formed.
- Fossils are formed when living things are trapped inside rock or ice.



- Fossils help us know about plants and animals that lived a long time ago.
- Soil comes from rocks.
- Different rocks produce different soils
- Organic matter is material formed from dead animals and plants.
- Find out what happens when rocks are rubbed together.
- Are there any changes when rocks are put in water?

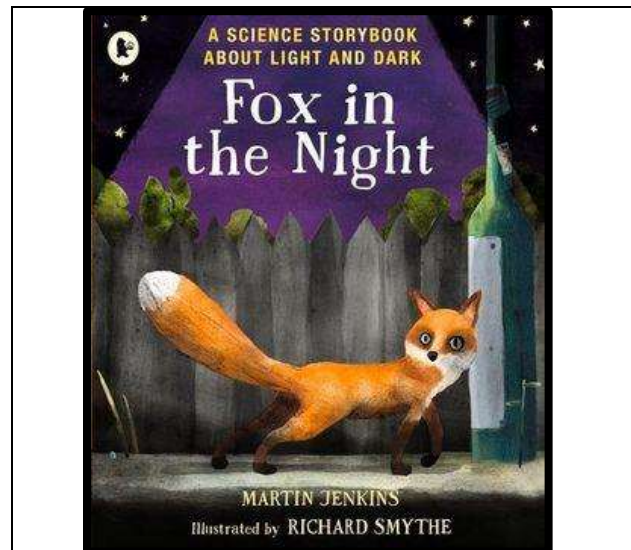


Key Ideas

- Light is needed to see things.
- Dark is the absence of light.
- Light is reflected from surfaces.
- Light from the sun can be dangerous.
- There are ways to protect your eyes from the sun.
- Shadows are formed when the light from a light source is blocked by an opaque object.
- The size of shadows change.

Important things to know/find out

- Light is reflected (bounces) off shiny surfaces very well.
- Light sources - give out light.
- Light travels very fast and if something is in its way you get a shadow.
- We see things when light from a source enters our eyes.
- Light bounces off objects into our eyes.
- When light reflects off shiny surfaces it changes direction depending on the angle of the light beam from its source.
- Shiny - a surface of an object which reflects a lot of light.
- Reflect - to change the direction of light using a shiny surface.
- Mirrors reflect light back at the same angle.
- Shadows are formed when light from a source is blocked.
- The darkness of a shadow depends on how much light is blocked.
- If a source of light moves, the shadow appears in a different place.
- Moving a light source further away from an object makes the shadow smaller.
- Light travels in straight lines..



Vocabulary

Reflect, shiny, opaque (does not allow light to pass through), transparent (allows all light through), translucent (allows some light through), materials, shadows, darkened area.

Questions to consider

- What do we need to see things?
- Why is it important to protect our eyes from the sun?
- How are shadows formed?
- Why do the shape and size of shadows change?
- Is the sun the same brightness all day?
- When is our classroom the darkest? (winter / summer)
- How does the sun make light?

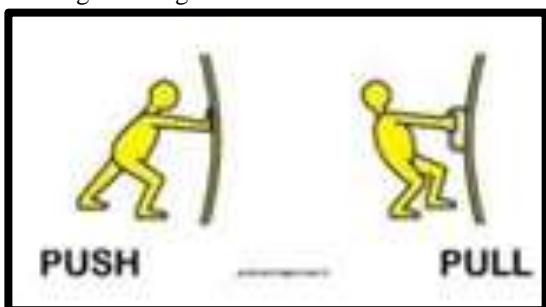


Key Ideas

- Consider how things move on different surfaces.
- Some forces need contact between 2 objects.
- Magnetic forces can act at a distance.
- Magnets attract or repel each other.
- Magnets attract some materials and not others.
- Magnets have 2 poles.
- Forces are invisible they can hold things still, make things accelerate, slow down and change direction.
- Forces are measured in Newtons (N).

Important things to know/find out

- Push or pull forces are required to change the shape or motion of an object, i.e. causing an object to start moving, speed up, slow down, stop moving or change direction.



- A Newton meter can be used to measure an object's weight in Newtons.
- Forces act in the direction that they are applied.
- They can be represented in diagrams as arrows that are proportional to the size of force and show the direction in which the force is acting.
- Forces cannot be seen but their effects can be.
- Forces acting on objects are directional and can change an object's shape.
- A force is required to start an object moving, increase or decrease its speed, stop it moving, or change its direction. In addition to straight-line motion, objects may be forced into rotatory or

circular motion.

- Things that are not moving are static or stationary.
- The size of a force affects speed of motion.
- Around every magnet is an area where its magnetism can be experienced.
- This is called the magnetic field.
- Each magnet has two ends: the north pole and south pole.
- Magnetic force is strongest at the poles.
- When two opposite poles (N-S) are placed near each other they will attract; when two like poles (N-N or S-S) are placed near each other they will repel.
- Only iron, steel and some other rare materials are attracted to magnets.

Vocabulary

Friction, Earth's gravity, push/pull, magnetism, up-thrust, forces, attract/repel, magnetic poles (north and south), strength, data, table, conclusion, fair test, prediction, magnetic/non-magnetic, materials, mass.

Questions to consider

- Can you name some different forces?
- Can you think of examples of these forces?
- Can you think of some magnetic and non-magnetic materials?
- How are magnets useful in everyday life?
- How does the mass of an object affect how much force is needed to make it move?
- Does the size and shape of a magnet effect how strong it is? Which materials are attracted to a magnet?
- Predict whether 2 magnets will attract or repel each other, depending on which way their poles are facing.