



# Knowledge Organiser: Plants

Careers connected to plants:  
conservation scientist, floriculturist,  
organic farmer



## Lesson Sequence



**1. Compare the effects of different factors on plant growth**



**2. Describe the functions of different parts of a flowering plant and how they are used in photosynthesis**



**3. Investigate the way in which water is transported within plants**



**4. Explore the part that flowers play in the life cycle of flowering plants**

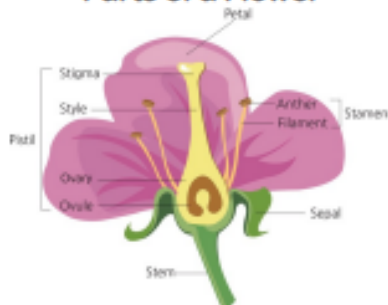


**5. Understand the pollination and the ways in which seeds are dispersed**

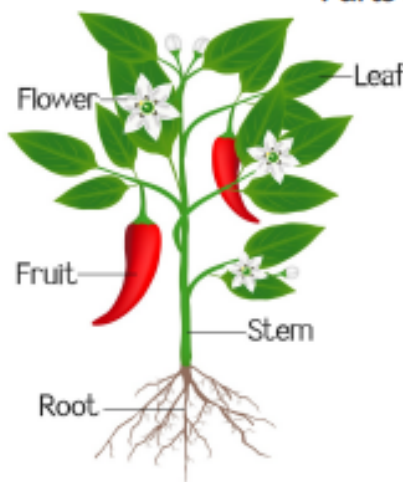


**6. Compare the effect of different factors on plant growth**

## Parts of a Flower



## Parts of a Plant

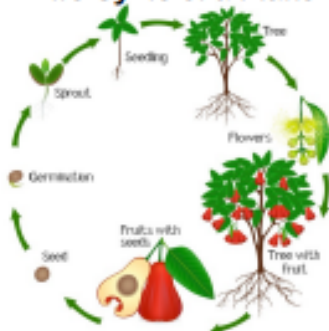


1. The roots of a plant absorb water from the soil.
2. The stem transport water to the leaves.
3. Water evaporates from the leaves.
4. This evaporation causes more water to be sucked up the stem.
5. The fruit is the part of a flowering plant that contains the seeds.

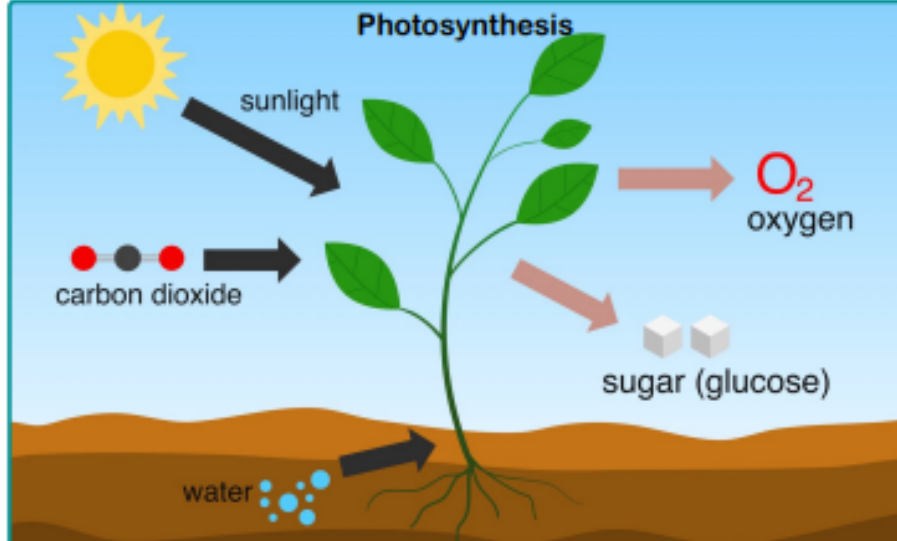
## Seed Dispersal



## Life Cycle of a Plant



## Photosynthesis





### Lesson Sequence



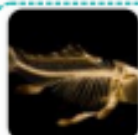
**1. Explore the 5 key food groups**



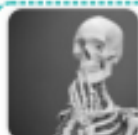
**2. Learn about the nutrition in the food we eat**



**3. Learn about the different types of skeletons**



**4. Learn about the human skeleton**

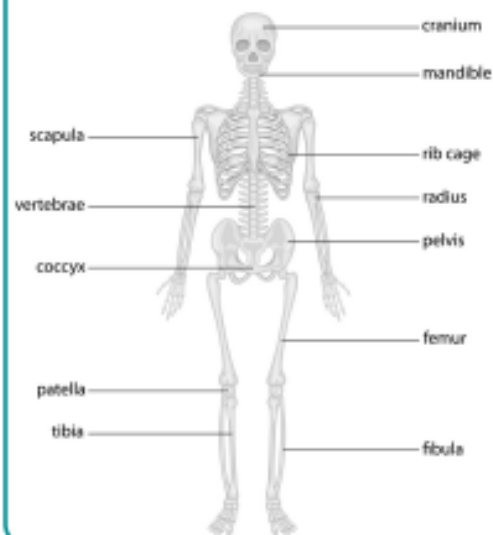


**5. Learn about animals and their skeletons**



**6. Explore the role of muscles**

### Human Skeleton



### 5 Food Groups



PROTEIN FOOD



CARBOHYDRATE



MINERAL



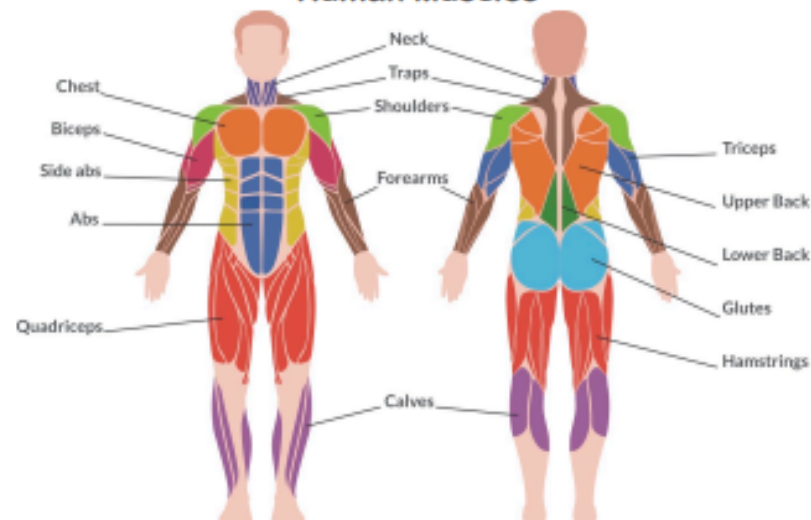
FATTY ACID



VITAMIN



### Human Muscles



### Animal Skeletons





### Lesson Sequence



**1. Explore the formation and properties of igneous rocks**



**2. Explore the formation and properties of sedimentary and metamorphic rocks**



**3. Weathering and the suitability of rocks for different purposes**



**4. Explore how water contributes to the weathering of rocks**



**5. Understand how fossils are formed**



**6. Explore different types of soil**

### What is soil made from?

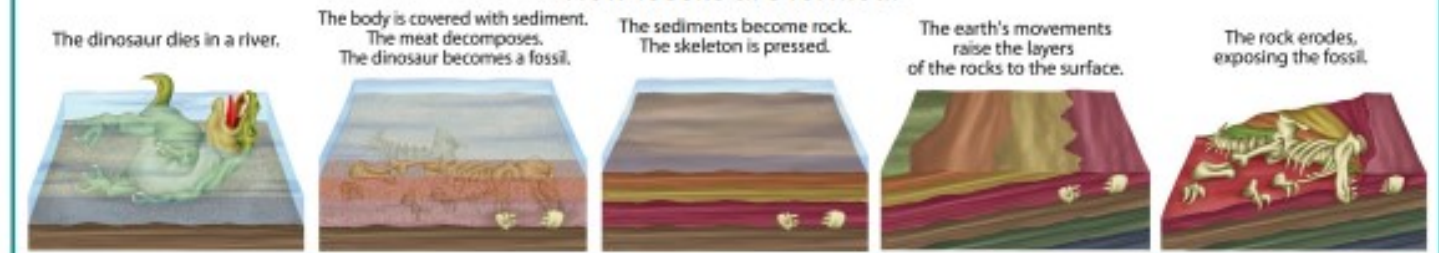


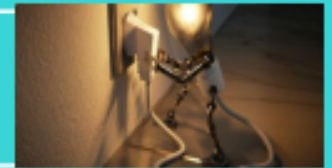
**AIR** – Oxygen, carbon dioxide, nitrogen  
**ORGANIC MATTER** – Living and dead plants and animals.  
**WATER** – Air and water fill the gaps between particles of soil.  
**MINERALS** – Broken down rock.

chalk	flint	marble	limestone	sandstone	granite

Igneous Rock	Metamorphic Rock	Sedimentary Rock
Far underground the temperature is so hot, rock melts into a liquid (molten rock). When the liquid is underground, it is called magma and it can cool to form igneous rock.	Metamorphic rocks are formed under the surface of the earth from the change (metamorphosis) that occurs under the intense heat and pressure (squeezing).	These rocks form under the sea. Rocks are broken into small pieces by wind and water (erosion). They settle as mud, sand, minerals and even remains of living things. Over time layers build up and the pressure turns this sediment into rock.

### How fossils are formed.





### Lesson Sequence



1. Identify the difference between light sources and non-light sources



2. Explore the light that comes from the sun and how to stay safe



3. Explore materials which are reflective



4. Discover how shadows are formed



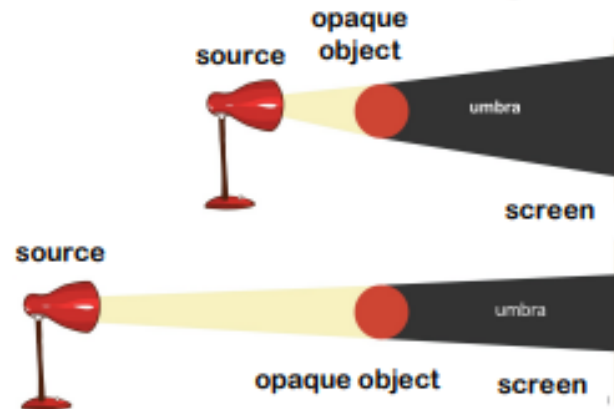
5. Investigate how shadows change throughout the day



6. Investigate how you can change the size of a shadow

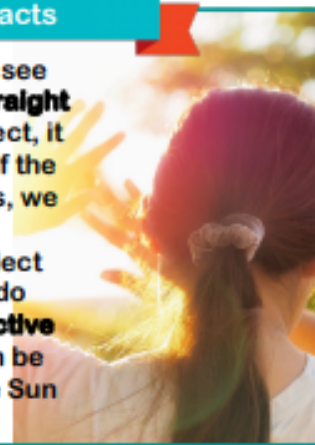
### Size of a shadow changes

A shadow is caused when light is blocked by an opaque object. A shadow is larger when an object is closer to the light source. This is because it blocks more of the light.



### Key Facts

We need light to be able to see things. Light travels in a **straight line**. When light hits an object, it is reflected (**bounces off**). If the reflected light hits our eyes, we can see the object. Some surfaces and materials reflect light well. Other materials do not reflect light well. **Reflective surfaces** and materials can be very useful. Remember the Sun can be dangerous.



### Mirrors and reflection

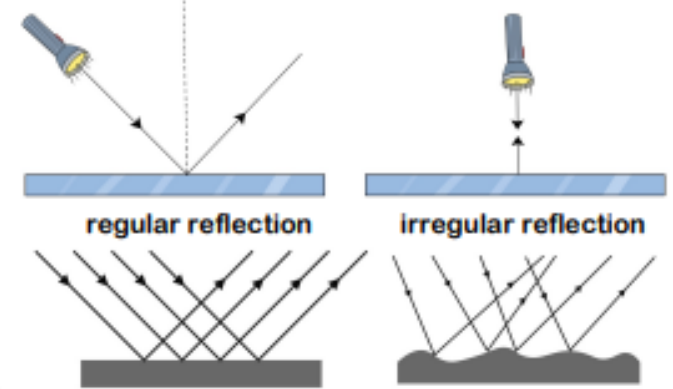
Mirrors reflect light very well, so they create a clear image. An image in a mirror appears to be reversed. For example, if you look in a mirror and raise your right hand, the mirror image appears to raise its left hand.



### Light is reflected from surfaces

Light from the torch hits the object.

The light is reflected from the object.





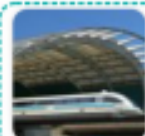
### Lesson Sequence



1. Explore contact and non-contact forces



2. Compare how things move on different surfaces



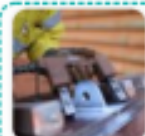
3. Explore different types of magnets



4. Explore the properties of magnets and everyday objects that are magnetic

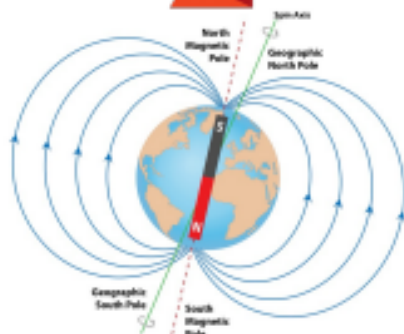


5. Understand that magnetic forces can act at a distance



6. Explore the everyday uses of magnets

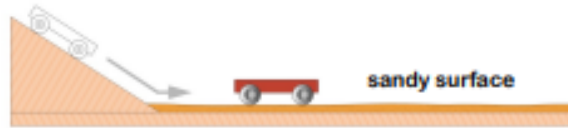
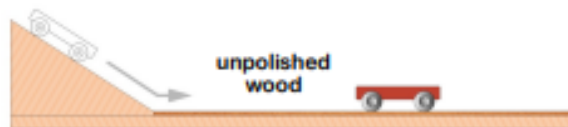
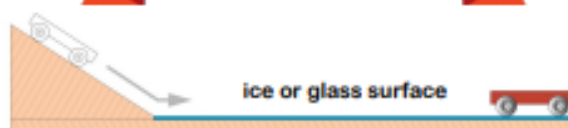
### How do magnetic poles work?



The ends of a magnet are called poles. One end is called the north pole and the other end is called the south pole. Opposite poles attract, similar poles repel. If you place two magnets so the south pole of one faces the north pole of the other, the magnets will move towards each other. This is called attraction. If you place the magnets so that two of the same poles face each other, the magnets will move away from each other. They are repelling each other.

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### Friction



### Forces

- Forces act in opposite directions to each other.
- When an object moves across a surface, **friction** acts as an opposite force. Friction is a force that holds back the **motion** of an object.
- Some surfaces create more friction than others which means that objects move across them slower.
- On a ramp, the force that causes the object to move downwards is gravity.
- Objects move differently depending on the **surface** of the object itself and the surface of the **ramp**.

### non-magnetic



### magnetic

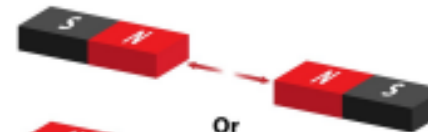


### Magnetic Forces

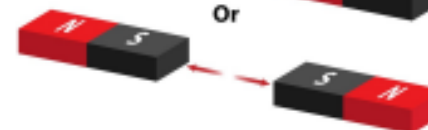
#### Attraction



#### Repulsion



Or





### Lesson Sequence



**1. How can a solar oven be made more effective: posing questions and writing predictions**



**2. How can a solar oven be made more effective: recording and presenting results**



**3. Cleaning coins: writing a method and carrying out a practical test**



**4. Cleaning coins: writing a method**

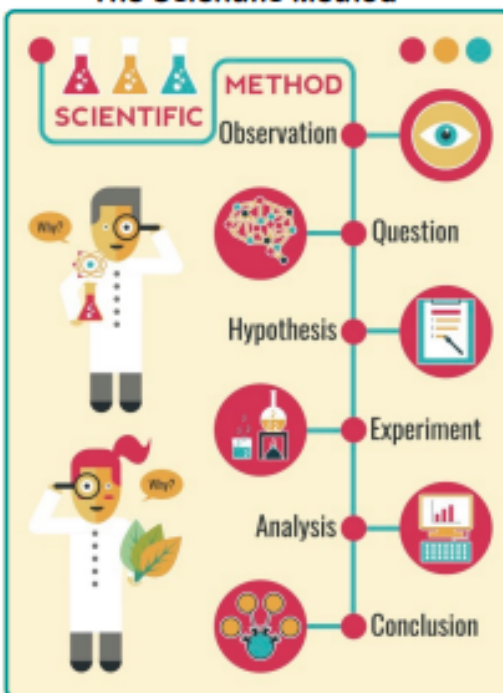


**5. Making a cake: fair testing, controls and variables**



**6. Making a coin: scientific enquiry**

### The Scientific Method



**fair test** – where one variable is changed, and all other elements are kept the same

**variable** - something that is changed

**control experiment** - an experiment that is used to compare other experiments where there are variables

### The Scientific Method

**Comparative / fair testing**  
Changing one variable to see the effect on another, whilst keeping all others the same.

**Research**  
Using secondary sources of information to answer scientific questions.

**Observation over time**  
Observing changes that occur over a period of time ranging from minutes to months.

**Pattern-seeking**  
Identifying patterns and looking for relationships in enquiries where variables are difficult to control

**Identifying, grouping and classifying**  
Identifying observations to name, sort and organise items.

**Problem-solving**  
Applying prior scientific knowledge to find answers to problems

### The pH Scale

