

Science Knowledge Organiser- Year 5 Space

Significant scientists

Nicolaus Copernicus
(1473-1543)

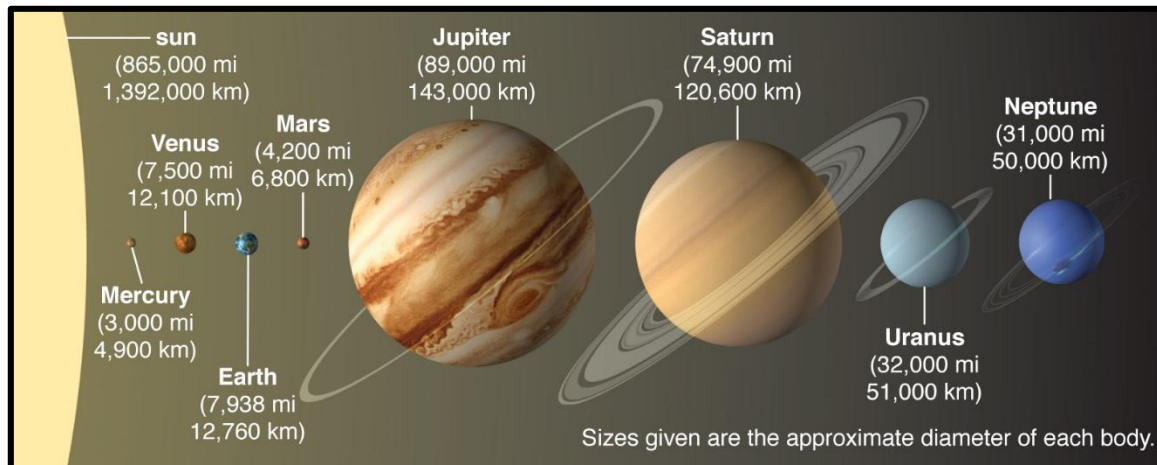


Nicolaus was a Polish astronomer and mathematician who formulated the heliocentric model of the solar system that placed the Sun rather than the Earth at the centre of the universe.

Maggie Aderin-Pocock
(born 1968)



Maggie is a British space scientist and science educator. She is working on the observation instruments for the Aeolus satellite, which will measure wind speeds to help the investigation of climate change.



The Sun is a star at the centre of our solar system.

There are 8 planets in our solar system: **Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus and Neptune.**

These all **orbit** (travel) around the sun.

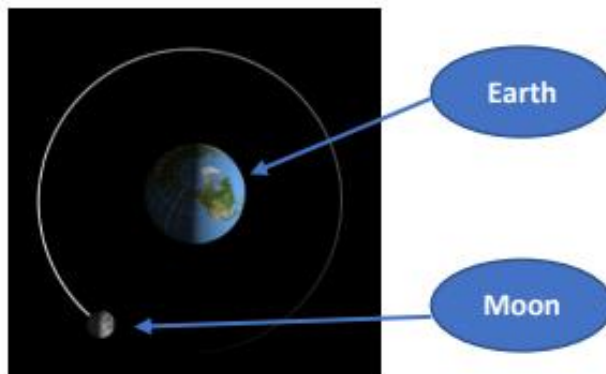
The Earth orbits the Sun.

It takes $365\frac{1}{4}$ days to complete its orbit around the Sun. This is a year.

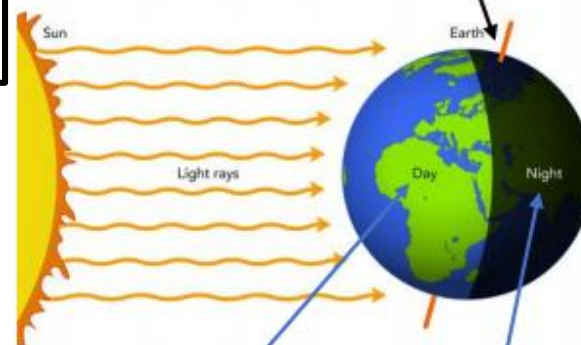


The moon orbits the Earth

It takes about 28 days to complete its orbit.



The Earth rotates (spins) on its axis once every 24 hours.



It is day for the half of the Earth facing the Sun.

It is night for the half of the Earth facing away from the Sun.

Science Knowledge Organiser- Year 5 Forces

Real-life examples of forces in action



A skydiver falls fast until they open their parachute.



Dolphins have a streamlined shape.



A non-slip mat uses friction.

Significant scientists

Traditional

Galileo Galilei
(1564-1642)



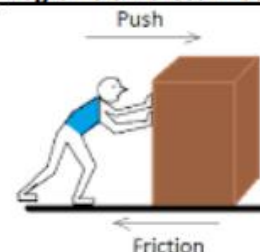
He was an Italian scientist. He discovered that if two objects of similar shape and size are dropped, they will fall at the same rate.

Sir Isaac Newton
(1642-1726)



He was an English scientist and mathematician. He 'discovered' the concept of gravity when sitting under a tree and an apple fell to the ground near him.

Diagrams of forces in action



Types of force

Magnetism

Magnets attract or repel each other or other objects

Attract:



Repel:



North and South attract. But North and North or South and South will repel.

Air Resistance

- Air resistance slows down moving objects, because air slows you down as you move through it
- To travel faster through the air, things need to be streamlined.

Water Resistance

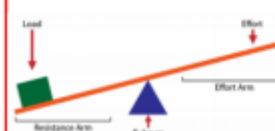
- Water resistance slows down moving objects, because water slows you down as you move through it
- To travel faster through the water, things need to be streamlined.

Friction

- Friction happens when two surfaces touch each other.
- Friction gives us grip.
- Friction produces heat.
- Rougher surfaces slow things down a lot.
- Smoother surfaces don't slow things down as much.

Levers

A way to lift heavy weights using the least amount of effort. The longer the easier it is to lift. The fulcrum is where the lever pivots in order to lift the load. The closer the fulcrum is to the load the easier it is to lift



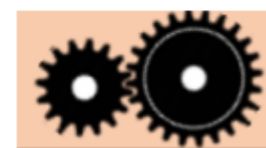
Pulleys

Used like levers to lift loads with less effort. Rope is passed through a pulley and then is returned back round to be pulled.



Gears

Used to transmit power from one part of a machine to another. Connected gears can increase speed, increase force. When joined, the direction of rotation of the driven gear is the opposite of the drive gear.



Science Knowledge Organiser- Year 5 Changes of Materials

Significant scientists

Spencer Silver (born 1941)

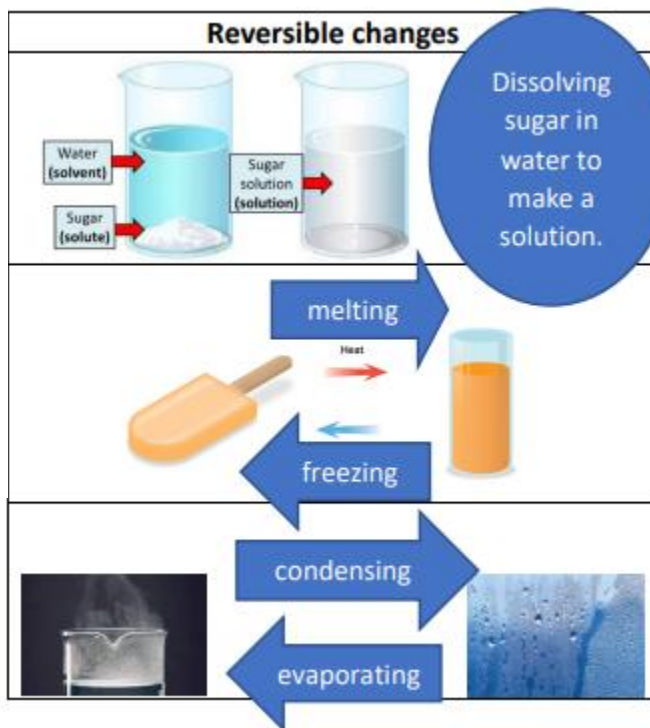


Spencer Silver is an American scientist who together with Arthur Fry was the inventor of Post-it notes in 1974. At the time, he was working to develop new classes of adhesives.

Joe Keddie

Joe Keddie is a professor of Soft Matter Physics at the University of Surrey. He is interested in the fundamental processes of soft matter, especially polymer thin films and nanoparticles.

Reversible changes



Non-reversible changes - these result in the formation of new materials

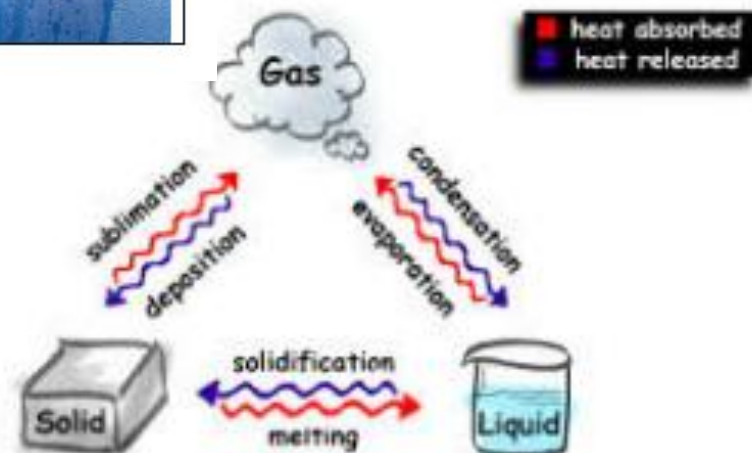
Burning



Mixing vinegar and bicarbonate of soda



Rusting



Science Knowledge Organiser- Year 5

Properties of Materials

Materials can be grouped together based on their properties. For example:

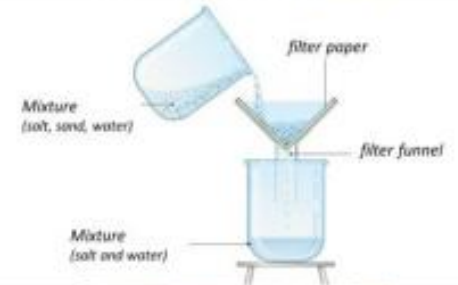
- hardness
- solubility
- transparency
- thermal conductivity
- electrical conductivity
- response to magnets

Separating materials

Sieving
separates
the stones
and twigs
from the soil.



Filtering
separates
the sand
from the
mixture.



Evaporating
separates
the dissolved
salt from the
water.



Science Knowledge Organiser- Year 5 Living Things and Their Habitats

Significant scientists

David Attenborough
(born 1926)



Sir David is an English broadcaster and naturalist. He has made many famous wildlife programmes. He was knighted in 1985.

Lucy Evelyn Cheesman
(1881-1969)



Lucy Cheesman was a British entomologist (someone who studies insects) and traveller. She collected over 70,000 specimens of insects, plants and other animals.



A seed that has **germinated**,

Germination is the beginning of the process of growth.



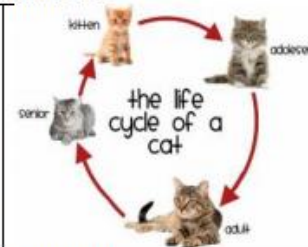
Pollination is when pollen is transferred from one flower to another.

Fertilisation is the joining of a male and female sex cell.

Life cycles of animals

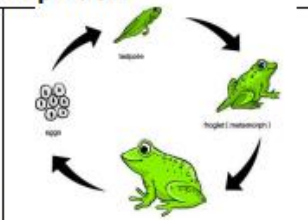
Mammal

- female gives birth to young
- Live young are born
- young looks like adult
- female provides milk for young



Amphibian

- eggs laid in water
- young go through different form before looking like adult
- no parental care



Insect

- egg laid and then hatch
- some grow to adult but most go through metamorphosis to adult



Bird

- eggs laid in a nest
- young hatches from an egg
- grow to adult
- parental care after hatching



Life cycle- A life cycle is the different stages of life for a living thing.

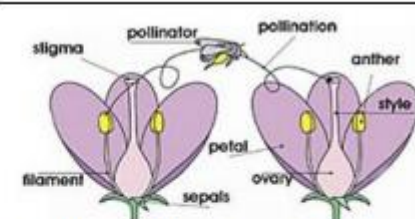
Reproduction- The production of offspring by a sexual or asexual process.

Asexual reproduction- The kind of reproduction in which it is not necessary to have two parents to produce offspring.

Sexual reproduction- The production of new living organisms by combining genetic information from two individuals of different types (sexes)

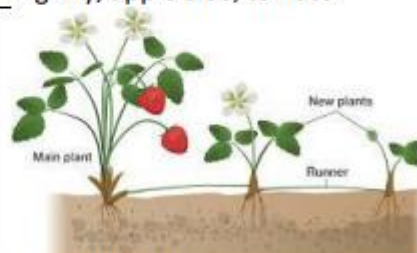
Plants reproduce both sexually and asexually

Sexual reproduction occurs through pollination usually involving wind or insects.



E.g. lily, apple tree, tomato

Asexual reproduction involves only one parent using bulbs, tubers, runners and cuttings.



E.g. spider plant, potato, strawberry

Science Knowledge Organiser- Year 5 Animals

including Humans

Humans go through a variety of changes as we grow and develop from birth through to old age.

pregnant - foetus



baby



toddler



child



teenager



adult



old age



The human life cycle

Height
You get taller.

Face
You may get pimples.

Privates
Your penis and testicles get bigger.

Puberty:
What Happens?

Voice
Your voice deepens.

Sweat
Your armpits sweat.

Hair
Hair grows on your face, arms, legs, chest, armpits, and between your legs.

Face
You may get pimples.

Sweat
Your armpits sweat.

Menstruation
Your period begins.

Puberty:
What Happens?

Height
You get taller.

Breasts
Your breasts grow.

Hair
Hair grows in your armpits, on your legs, and between your legs.

The gestation period of different animals. Larger animals usually have longer gestation than smaller animals.

Mammal	Gestation period in days
Cat	63
Chimpanzee	240
Lion	108
Human	266
Rabbit	31
Squirrel	44
African elephant	650
Whale	360
Horse	336
Polar bear	241
Giraffe	435
Mouse	21
Rhinoceros	480
Hamster	16
Dog	61
Camel	400