St. Mary's C.E. School
Aylesbury

Animals including humans – Year 5

This topic should be taught alongside PSHE with careful consideration of the school's Sex and Relationship Education Policy.

Key vocabulary	
puberty	The time when your body begins to develop and change as you become an adult.
sexual reproduction	The process where a living thing creates another organism like itself. In humans, a sperm cell from a male fertilises an egg from a female to produce a baby.
menstruation (period)	When a woman has a period, she loses a small amount of blood each month.
sperm	Single cells produced by male animals.
egg	A cell that is produced in the body of female animals.
foetus	An animal or human being in its later stages of development before it is born.
gestation	The length of time a mammal carries her offspring inside her body before giving birth.
life expectancy	The length of time that an animal is normally likely to live.

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

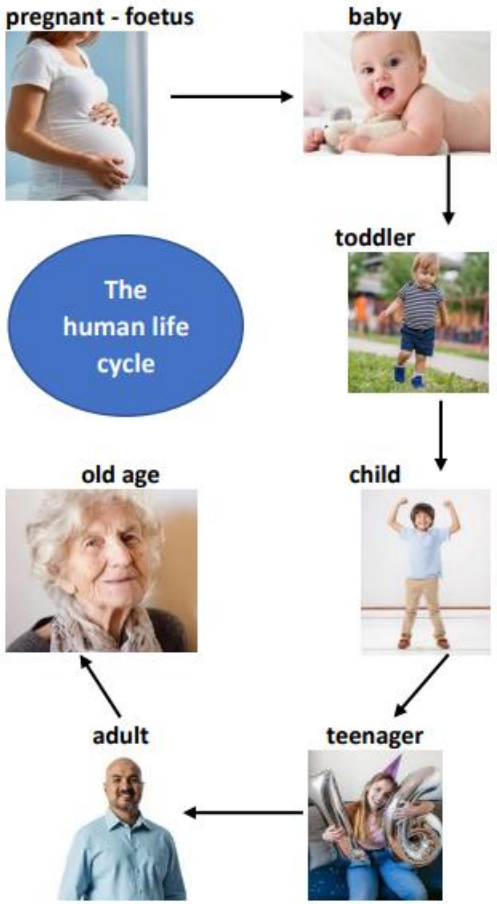
The gestation period of different animals. Larger animals usually have longer gestation than smaller animals.

Significant scientist	
Sarah Fowler 	Sarah Fowler (OBE) is a marine biologist. She is the principal scientist of the Save Our Seas Foundation. Her research has identified the global threat to sharks and she shares strategies of how we can protect them.

Puberty

- Usually begins between the ages of 8-14 and the process can take up to 4 years.
- During puberty the bodies of boys and girls begin to change physically.
- Boys and girls can experience some mood changes during puberty.

Changes for girls	- hair starts to grow on their bodies - breasts develop and hips widen - periods start
Changes for boys	- hair starts to grow on their bodies and faces - develop a deeper voice - testicles start to produce sperm



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

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Earth and space – Year 5

Key vocabulary	
Earth	The planet we live on. It is the third planet from the Sun.
Sun	The Sun is the star at the centre of our solar system. **It is not safe to look directly at the Sun, even when wearing dark glasses.**
Moon	The moon is the only natural satellite of the Earth.
planets	Large round objects, made of rock or gas, that move around the sun.
solar system	The sun and all the planets that orbit around it.
star	A huge ball of glowing gas in space.
rotate	When an object rotates it turns (spins) on its axis.
orbit	The curved path that an object follows going around a star or a planet.

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.**

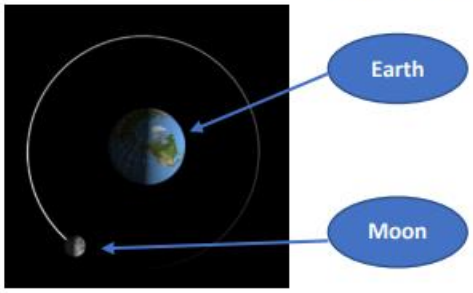
These all **orbit** (travel) around the sun.

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, Earth and Moon are approximately spherical bodies.

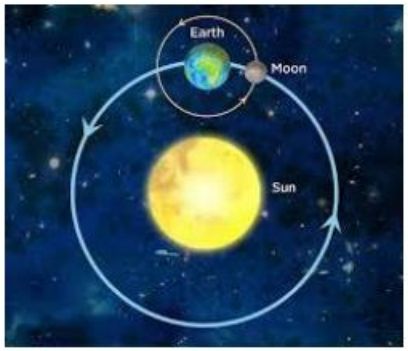
The moon orbits the Earth

It takes about 28 days to complete its orbit.

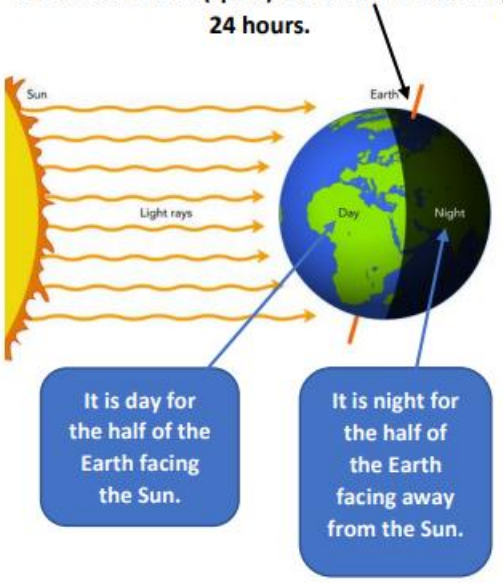


The Earth orbits the Sun.

It takes 365¼ days to complete its orbit around the Sun. This is a year.



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



Forces – Year 5

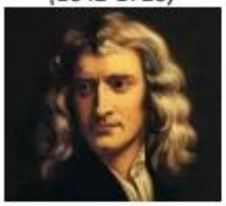
Key vocabulary	
force	A force is a push or a pull. Forces make objects start moving, stop moving, speed up, slow down or change direction.
gravity	A force which pulls things down towards the centre of the Earth.
forcemeter	Piece of equipment used to measure the size of a force.
Newton (N)	The unit for measuring force.
air resistance	The force that slows down objects that move through air.
water resistance	A force that slows down objects moving through water.
friction	When one surface moves against another, the rubbing force that tries to stop them is called friction. It gives us grip.
mechanisms	A device that allows a small force to be increased to a larger force.
simple machines	Levers, pulleys and gears are all types of simple machines.

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.

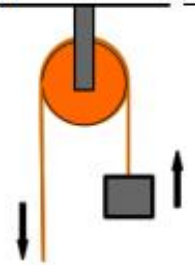
Significant scientists	
Traditional	
Galileo Galilei *(1564-1642)* 	He was an Italian scientist. He discovered that if two objects of similar shape and size are dropped, they will fall at the same rate.
Sir Isaac Newton *(1642-1726)* 	He was an English scientist and mathematician. He 'discovered' the concept of gravity when sitting under a tree and an apple fell to the ground near him.
Contemporary	
Emma England - Aeronautical engineer Emma works as part of a team designing the wings of aircrafts.	

Seeds fall to the ground because of gravity.

Simple machines

These are used to make tasks easier. This means you need to use less force.

A **lever** tilts on a pivot which is nearer to the end of the pivot with a heavy load.



Pulleys have a rope or cable which goes over a wheel. This is pulled to lift, lower or move heavy objects.

Gears are toothed wheels which lock together and turn each other to form simple machines.

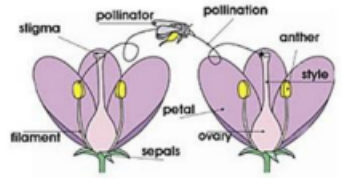
Living things and their habitats – Year 5

Key vocabulary	
life cycle	This shows how things are born, how they grow and how they reproduce.
reproduction	As part of their life cycle plants and animals reproduce. There is sexual and asexual reproduction.
sexual reproduction	Both the male and female are needed. Most animals reproduce sexually.
asexual reproduction	Only one parent is needed. This occurs mostly in plants and bacteria.
fertilise	In animals: When the male sperm reaches the female egg. In plants: When the male pollen reaches the female ovule.
metamorphosis	A major change from one form to another in the life cycle of some animals when they change from young to an adult.
runner	A long stem of a plant that grows along the ground in order to put down roots in a new place.
bulb	A round root of some plants from which the plant grows.
cutting	A piece, such as a roof, stem or leaf cut from a plant and used to grow another plant of the same type.
tuber	A swollen underground stem or root of a plant from which new plants can grow.

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.

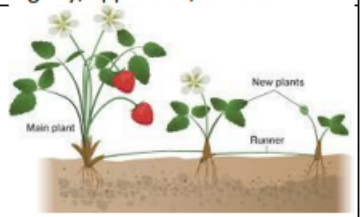
Plants reproduce both sexually and asexually

Sexual reproduction occurs through pollination usually involving wind or insects.



E.g. lily, apple tree, tomato

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

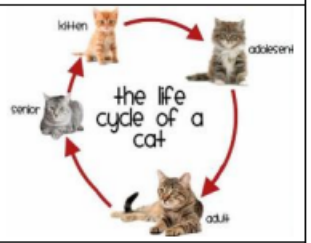


E.g. spider plant, potato, strawberry

Life cycles of animals

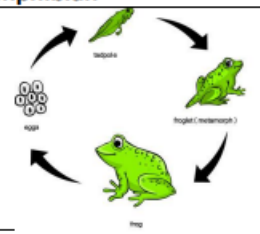
Mammal

- 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

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Properties and changes of materials – Year 5

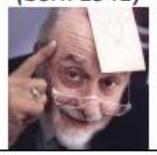
Key vocabulary	
thermal insulator	Does not allow heat to pass through it easily.
thermal conductor	Allows heat to pass through it easily.
electrical insulator	Does not allow electricity to pass through it.
electrical conductor	Allows electricity to pass through it.
dissolve	A solid that completely mixes in with a liquid and cannot be seen.
solution	A mixture of a liquid with a dissolved solid or gas.
soluble	Solids and gases that dissolve in liquids.
insoluble	Solids that do not dissolve in a liquid.
sieve	Separates solids of different sizes.
filter	Separates an insoluble solid that is mixed in a liquid.
evaporation	Separates a soluble solid and a liquid.
reversible change	Changes that can be switched back and are not permanent. E.g. dissolving, melting, freezing
non-reversible change	Changes that can not be reversed back to their original state. E.g. burning, rusting

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

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

Significant scientists

Spencer Silver *(born 1941)*

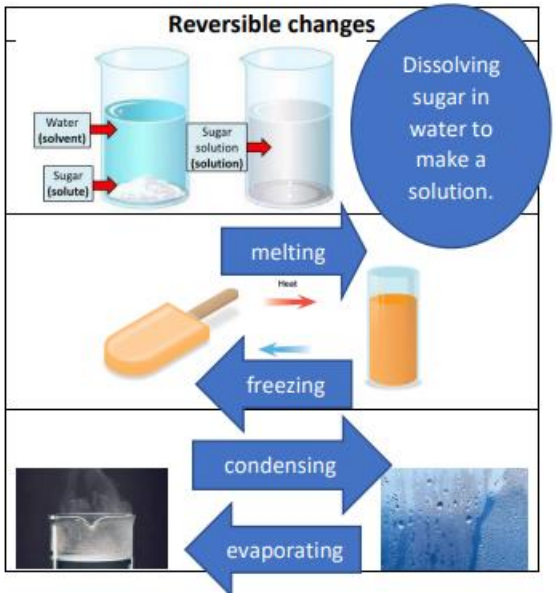


Spencer Silver is an American scientist who together with Arthur Fry was the inventor of Post-it notes in 1974. At the time, he was working to develop new classes of adhesives.

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



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.

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

Burning

Mixing vinegar and bicarbonate of soda

Rusting

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