

Skills Progression of Science Year 5 - Cornerstones

EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Introduce: - Similarities and differences in relation to places, objects, materials and living things. - Discuss the features of their own immediate environment and how it might vary from others. - Make observations of animals and plants and explain why some things occur, and talk about changes. - Know the importance for good health of physical exercise, and a healthy diet, and talk about ways to keep healthy and safe.	Introduce: - Everyday materials - types and comparison - Seasonal changes - across 4 seasons - Animals inc humans - 5 animal groups (mammal etc) - Plants - basic structure (stem, leaf, root, flower)	Recap: - Animals inc humans - 5 groups - Everyday materials - types - Plants - basic structure - Seasonal changes	Recap: - Plants - seeds and bulbs grow healthy, what is needed - Animals inc humans - exercise and hygiene	Recap: - Animals including humans - skeleton types and muscles - Rocks and soils - types and formation	Recap: - Living things - grouping and classification; - Forces and Magnets - push and pull; magnetic poles; magnetic materials	Recap: - Animals inc humans - digestive system; life cycle - Light - shadow formation and changes - Electricity - simple series; switches
		Introduce: - Living things - alive/ not alive, suited to habitats - Plants - seeds and bulbs grow healthy, what is needed - Animals inc humans - exercise and hygiene - Materials - everyday uses suitability; bend, twist, stretch, squash	Introduce: - Rocks and soils - types and formation - Forces and Magnets - push and pull; magnetic poles; magnetic materials - Light and shadows - shadow formation and changes - Animals inc humans - skeleton and muscles - Plants - structure functions, flower structure	Introduce: - States of matter - changing state of solid, liquid, gas; water cycle - Electricity - simple series circuits; switches; conductors and insulators - Sound - vibrations; pitch; volume; distance - Living things - grouping and classification; changing environments - Animals inc humans - digestive system	Introduce: - Earth and space - orbit of Earth to sun; orbit of Moon; Earth's rotation - Materials - reversible and irreversible changes; dissolving; separation - Living things - life cycle and reproduction - Animals inc humans - changes in human development - Forces - gravity; resistance; mechanisms	Introduce: - Evolution and inheritance - adaptation; change over time; offspring - Light - straight lines; seeing things - Electricity - symbols; brightness/ volume changes - Living things - classification of plant/ animal kingdoms - Animals inc humans - circulatory system; diet, nutrients and exercise

Purposes for science:

It provides the foundations for understanding the world through the specific disciplines of biology, chemistry and physics. Science has changed our lives and is vital to the world's future prosperity. All children should be taught essential aspects of the knowledge, methods, processes and uses of science. Through building up a body of key foundational knowledge and concepts, children should be encouraged to recognise the power of rational explanation and develop a sense of excitement and curiosity about natural phenomena. They should be encouraged to understand how science can be used to explain what is occurring, predict how things will behave, and analyse causes.

We use Cornerstones as our planning base and science is taught within the topic if purposeful links can be made. If none are made, science is taught as a discrete subject.

Year 5				
	Objective (NC PoS)	Skill	Vocabulary	Key scientists
Term 1 Forces and mechanisms	- Explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object - Identify the effects of air resistance, water resistance and friction, that act between moving surfaces - Recognise that some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect. - Explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object. - Identify scientific evidence that has been used to support or refute ideas or arguments. - Identify the effects of air resistance, water resistance and friction, that act between moving surfaces. - Plan different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary. - Recognise that some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect. - Record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs. - Report and present findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations. - Take measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate. - Use test results to make predictions to set up further comparative and fair tests.	- Ask a wide range of relevant scientific questions that broaden their understanding of the world around them and identify how they can answer them. - Compare and describe, using a range of toys, models and natural objects, the effects of water resistance, air resistance and friction. - Describe and demonstrate how simple levers, gears and pulleys assist the movement of objects. - Explain that objects fall to Earth due to the force of gravity. - Gather and record data and results of increasing complexity, selecting from a range of methods (scientific diagrams, labels, classification keys, tables, graphs and models). - Plan and carry out a range of enquiries, including writing methods, identifying variables and making predictions based on prior knowledge and understanding. - Take increasingly accurate measurements in standard units, using a range of chosen equipment. - Use relevant scientific vocabulary to report on their findings, answer questions and justify their conclusions based on evidence collected, identify improvements, further questions and predictions. - Within a group, decide which observations to make, when and for how long, and make systematic and careful observations, using them to make comparisons, identify changes, classify and make links between cause and effect.	<u>Types of forces:</u> air resistance, water resistance, buoyancy, upthrust, Earth's gravitational pull, gravity, opposing forces, driving force. Mechanisms: levers, pulleys, gears/cogs. <u>Measurements:</u> weight, mass, kilograms (kg), Newtons (N), scales, speed, fast, slow. <u>Other:</u> streamlined, Earth. Previously introduced vocabulary: air, heat, moon.	Sir Isaac Newton (1642 – 1727) – Formulated the laws of motion – http://www.bbc.co.uk/history/historic_figures/newton_isaac.shtml Christopher Cockerell (1910– 1999) – Inventor of the hovercraft – http://www.design-technology.info/inventors/page11.htm Archimedes (c.287 – c.212 BC) – Greek inventor http://www.bbc.co.uk/history/historic_figures/archimedes.shtml
	Knowledge (specific knowledge) - Questions can help us find out about the world and can be answered using a range of scientific enquiries. - Friction, air resistance and water resistance are forces that oppose motion and slow down moving objects. Lubricants reduce the contact between two surfaces and therefore reduce frictional forces. Liquids, such as water and oil, are used as lubricants. Heat caused by friction can damage moving parts and stop machines from working. Friction can be reduced through streamlining or the use of lubricants and ball bearings between surfaces or using materials with different properties. The larger the surface area of an object the greater the resistance, air or water, it will have when it moves. This will slow it down. Designing objects to have a smaller surface area and streamlined shape decreases resistance, air or water, and allows them to move more quickly through the air. Friction, air resistance and water resistance are forces that oppose motion and slow down moving objects. - A lever is a simple machine that provides a mechanical advantage to make it easier to lift a heavy load. A lever consists of a lever arm, a fulcrum, a load and effort. As the distance between the fulcrum and the effort increases, the effort needed to lift a load decreases. A pulley is a simple machine that provides a mechanical advantage to make it easier to lift a heavy load. A pulley consists of one or more grooved wheels and a rope. As the number of wheels, and the number of pieces of rope supporting the pulleys, increases, the effort needed to lift an object decreases, but the distance the rope has to be pulled increases. - Gears are toothed, interlocking wheels that can be placed together to make a mechanism that provides a mechanical advantage. Linking different sized gears creates a mechanical advantage. Smaller gears rotate more quickly and are easier to turn but do not provide much force. Larger gears rotate more slowly and are harder to turn but provide more force. - Mechanisms, such as levers, pulleys and gears, give us a mechanical advantage. The bigger the mechanical advantage, the less force we need to apply. - Gravitational force, or gravity, is a non-contact, pulling force between objects that have mass. Gravitational force increases as the mass of an object increases. The mass of the Earth is very large so it exerts a gravitational force large enough for its effects to be seen. - Data can be recorded and displayed in different ways, including tables, bar and line charts, classification keys and labelled diagrams. - A force meter can be used to measure an object's mass in grams (g) or kilograms (kg) and its weight in newtons (N). Many people commonly mix up and misuse the words mass and weight. Mass is the amount of matter that an object or substance contains. Weight is a measure of gravitational force which is different on for example Earth and the Moon. - A conclusion is an explanation of what has been discovered using evidence collected. - Accurate observations can be made repeatedly or at regular intervals to identify changes over time.			

Term 2 Earth and space	- Describe the movement of the Earth, and other planets, relative to the Sun in the solar system - Describe the movement of the Moon relative to the Earth Describe the Sun, Earth and Moon as approximately spherical bodies - Use the idea of the Earth's rotation to explain day and night and the apparent movement of the sun across the sky. - Describe the movement of the Earth, and other planets, relative to the Sun in the solar system. - Describe the movement of the Moon relative to the Earth. - Describe the Sun, Earth and Moon as approximately spherical bodies. - Identify scientific evidence that has been used to support or refute ideas or arguments. - Plan different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary. - Record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs. - Report and present findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations. - Take measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate. - Use test results to make predictions to set up further comparative and fair tests. - Use the idea of the Earth's rotation to explain day and night and the apparent movement of the sun across the sky	Ask a wide range of relevant scientific questions that broaden their understanding of the world around them and identify how they can answer them. Describe or model the movement of the Moon relative to Earth. Describe or model the movement of the planets in our Solar System, including Earth, relative to the Sun. Describe the Sun, Earth and Moon as approximately spherical bodies and use this knowledge to understand the phases of the Moon and eclipses. Use relevant scientific vocabulary to report on their findings, answer questions and justify their conclusions based on evidence collected, identify improvements, further questions and predictions. Use the idea of Earth's rotation to explain day and night, and the Sun's apparent movement across the sky.	Solar system: star, planet. Names of planets: Mercury, Venus, Earth, Mars, Jupiter, Saturn, Neptune, Uranus. Shape: spherical bodies, sphere. Movement: rotate, axis, orbit, satellite. Theories: geocentric model, heliocentric model, astronomer. Day length: sunrise, sunset, midday, time zone. Previously introduced vocabulary: Sun, moon, shadow, day, night, heat, light, reflect.	Aristarchus (310 – 230 B.C.). First to figure out that the Earth travels around the Sun. Nicolas Copernicus (1473 – 1543). Had the idea that Earth revolves on its axis and the Earth and other planets orbit around the Sun Galileo Galilei (1564 – 1642). Discovered four of Jupiter's moons. In 1609 was the first person to make a study of the skies with a telescope. Edwin Hubble (1889–1953). In 1924 Hubble showed that nebulae (fuzzy light patches in the sky) were distant galaxies. In 1929 he found the speed of galaxy moves away from the Earth depends on its distance from the Earth. If a galaxy is four times as far away as another, it is moving four times as fast. This is Hubble's law. William Huggins. Showed that stars are made up of the same elements that exist on Earth. Cecilia Payne-Gaposchkin (1900–79). In the 1920's she proved that stars are made mostly of hydrogen. Arthur Eddington (1882– 1944). He was the first to work out what the inside of a star was like. Professor Brian Cox (1968 –) Contemporary physicist, presents many BBC programmes) Heidi Hammel (1960 –) Astronomer NASA - Children can also find out more about those people currently working at NASA http://solarsystem.nasa.gov/people/
	Knowledge (specific knowledge) - Questions can help us find out about the world and can be answered using a range of scientific enquiries. - The Moon is Earth's only natural satellite. The Moon is about 385,000km from the Earth. The Moon is not a natural light source. We can only see it because it reflects the Sun's light. The Moon orbits the Earth once every 27.3 days and also rotates on its axis once every 27.3 days. - A solar eclipse happens a few times a year when the Moon passes directly between the Earth and the Sun, blocking our view of the Sun and casting a shadow on the Earth. - A lunar eclipse happens a few times a year when the Earth is in line between the Moon and the Sun, casting a shadow on the Moon. - The Solar System is made up of the Sun and everything that orbits around it. The Sun is a huge, hot ball of gas and is the only source of heat and light in the Solar System. The Sun's force of gravity, created by its huge mass, keeps the planets in orbit. - The eight planets in our Solar System are Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus and Neptune. - The tilt of the Earth's axis as it orbits the Sun changes the length of daytime and night time and creates different seasons. When the Northern or Southern Hemisphere tilts away from the Sun, it is winter. It gets less direct sunlight, the weather is colder, the daytime is shorter and the night time is longer. When the Northern or Southern Hemisphere tilts towards the Sun, it is summer. It gets plenty of direct sunlight, the weather is warmer, the daytime is longer and the night time is shorter. When it is winter in the Northern Hemisphere it summer in the Southern Hemisphere. - Water and oxygen are important to all life on Earth. - Earth orbits around the Sun. The length of time it takes for Earth to complete a full orbit is 365.25 days, one year. The Earth completes one rotation on its axis in 24 hours, one day. During the day, the Sun appears to move through the sky. The Sun is not moving the Earth is rotating. Earth rotates to the east or, if viewed from above the North Pole, it rotates anti-clockwise, which means the Sun rises in the east and sets in the west. As Earth rotates, different parts of it face the Sun, which brings what we call daytime. The part facing away is in shadow, which is night time. - All planets are spherical because their mass is so large that they have their own force of gravity. This force of gravity pulls all of a planet's material towards its centre, which compresses it into the most compact shape – a sphere. - A conclusion is an explanation of what has been discovered using evidence collected. - Sundials block sunlight to cast a shadow. As the Earth rotates, the angle of the sunlight upon the sundial changes, and the shadow changes length and direction			

Term 3 and 4

Human reproduction and ageing

- Describe the changes as humans develop to old age
- Describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird
- Describe the life process of reproduction in some plants and animals.

- Identify scientific evidence that has been used to support or refute ideas or arguments.
- Plan different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary.
- Record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs.
- Report and present findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations.
- Take measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate.
- Use test results to make predictions to set up further comparative and fair tests.
- Develop scientific knowledge and conceptual understanding through the specific disciplines of biology, chemistry and physics.

- Ask a wide range of relevant scientific questions that broaden their understanding of the world around them and identify how they can answer them.
- Compare the life cycles of animals, including a mammal, an amphibian, an insect and a bird.
- Describe the changes as humans develop from birth to old age.
- Describe the life process of reproduction in some plants and animals.
- Describe the process of human reproduction.
- Explain why personal hygiene is important during puberty.
- Gather and record data and results of increasing complexity, selecting from a range of methods (scientific diagrams, labels, classification keys, tables, graphs and models).
- Plan and carry out a range of enquiries, including writing methods, identifying variables and making predictions based on prior knowledge and understanding.
- Take increasingly accurate measurements in standard units, using a range of chosen equipment.
- Use relevant scientific vocabulary to report on their findings, answer questions and justify their conclusions based on evidence collected, identify improvements, further questions and predictions.
- Within a group, decide which observations to make, when and for how long, and make systematic and careful observations, using them to make comparisons, identify changes, classify and make links between cause and effect.

- Reproduction: asexual reproduction, sexual reproduction, gestation, metamorphosis, gametes, tuber, runners/side branches, plantlet, cuttings, embryo, adolescent, penis, sperm, vagina, egg, pregnancy, cells, clone**
- Changes and life cycle:** embryo, foetus, uterus, prenatal, adolescence, puberty, menstruation, adulthood, menopause, life expectancy, old age, hormones, sweat.
- Changing body parts:** e.g. breasts, penis, larynx, ovaries, genitalia, pubic hair.

Professor Robert Winston (1940 -) – contemporary scientist

Kansas State University is currently investigating how to shut down the reproductive ability and desire in pest insects - <http://www.sciencedaily.com/releases/2013/08/130826182917.htm>

Berry J. Brosi, an assistant professor at Emory University in Atlanta, and Heather M. Briggs, a graduate student at the University of California, Santa Cruz found that a loss of bees affects a plant's ability to reproduce. http://www.nytimes.com/2013/07/23/science/loss-of-bees-can-affect-plants-ability-to-reproduce-study-finds.html?_r=0

Previously introduced vocabulary: **life cycle, pollination, offspring, fertilise, fertilisation, sepal, filament, anther, stamen, pollen, petal, stigma, style, ovary, carpel, ovule, stem, bulb, roots, mammal, adult, baby, sperm, cells, live young.**

Knowledge (specific knowledge)

- Questions can help us find out about the world and can be answered using a range of scientific enquiries.

As humans age, many of the body's systems gradually decline, leading to the changes seen in older people. These changes include the loss of eyesight and hearing, greying hair, wrinkled skin, weakened bones, joints and muscles, heart problems, memory loss, and brain function problems.

- A life cycle is the series of changes in the life of a living thing and includes these basic stages: birth, growth, reproduction and death. Mammals' life cycles include the stages: embryo, juvenile, adolescent and adult. Amphibians' life cycles include the stages: egg, larva (tadpole), adolescent and adult. Some insects' (butterflies, beetles and bees) life cycles include the stages: egg, larva, pupa and adult. Birds' life cycles include the stages: egg, baby, adolescent and adult.

Vocabulary used to describe stages of a life cycle include foetus, infant, juvenile, adolescent and adult. Vocabulary used to describe processes in a life cycle include birth, growth, puberty and reproduction.

A mammal is a vertebrate, which means it has a backbone. The five key mammalian characteristics of mammals are that they produce milk to feed their young, are warm blooded, give birth to live young, have fur or hair and breathe air with lungs. The processes in mammalian life cycles are birth, growth, puberty and reproduction. The stages in mammalian life cycles are embryo, juvenile, adolescent and adult. The length of time for each stage and process varies between different mammals.

- Humans go through characteristic stages as they develop towards old age. These stages include baby, infant, toddler, child, adolescent, young adult, adult and senior citizen. Puberty is the transition between childhood and adulthood.

Gestation is the length of time the young of a mammal develops inside the female's body before birth. The human gestation period is around 40 weeks. During this time, the organs, limbs and senses develop, and the foetus grows until it is ready to be born.

- Reproduction is the process of producing offspring and is essential for the continued survival of a species. There are two types of reproduction: sexual and asexual. Sexual reproduction involves two parents (one female and one male) and produces offspring that are different from the parents. Asexual reproduction involves one parent and produces offspring that is identical to the parent.

- Humans reproduce sexually, which involves two parents (one female and one male) and produces offspring that are different from the parents.

During human sexual reproduction, a female egg is fertilised by a male sperm.

- Good personal hygiene (washing, wearing clean clothes and brushing teeth) can prevent disease or illness. Puberty is the period during which adolescents reach sexual maturity and become capable of reproduction. It causes physical and emotional changes.

A scatter graph is used when we have two sets of data, called variables, and we want to see a relationship between them. If there is a relationship between the variables, it is called a correlation. If there is no relationship between the variables, it is called no correlation. In general, mammals with a smaller mass have a shorter gestation period, and mammals with a larger mass have a longer gestation period. Humans are mammals and have a mammalian life cycle.

- A method is a set of clear instructions for how to carry out a scientific investigation. A prediction is a statement about what might happen in an investigation based on some prior knowledge or understanding.

Juveniles go through rapid growth, change and development over time. They become taller, talk and walk, learn new skills, such as reading and writing, and change from wholly dependent babies to more independent school children.

- Specialised equipment is used to take measurements in standard units. Examples include data loggers plus sensors, such as light (lux), sound (dB) and temperature (°C); timers (seconds, minutes and hours); thermometers (°C), and measuring tapes (millimetres, centimetres, metres).

- The results are information, such as measurements or observations, that have been collected during an investigation. A conclusion is an explanation of what has been discovered using evidence collected.

Human growth charts are line graphs that show the predicted growth of juveniles and adolescents up to 18.

An observation involves looking closely at objects, materials and living things. Accurate observations can be made repeatedly or at regular intervals to identify changes over time.

Term 5 and 6

Properties and changes in materials

- Compare and group together everyday materials on the basis of their properties, including their hardness, solubility, transparency, conductivity (electrical and thermal), and response to magnets - Know that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution - Use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating - Give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic - Demonstrate that dissolving, mixing and changes of state are reversible changes - Explain that some changes result in the formation of new materials, and that this kind of change is not usually reversible, including changes associated with burning and the action of acid on bicarbonate of soda - Identify scientific evidence that has been used to support or refute ideas or arguments. - Plan different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary. - Record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs. - Report and present findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations. - Take measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate. - Use test results to make predictions to set up further comparative and fair tests. - Develop scientific knowledge and conceptual understanding through the disciplines of biology, chemistry and physics.	- Ask a wide range of relevant scientific questions that broaden their understanding of the world around them and identify how they can answer them - Compare and group everyday materials by their properties, including hardness, solubility, transparency, conductivity (electrical and thermal) and magnetism. - Describe, using evidence from comparative or fair tests, why a material has been chosen for a specific use, including metals, wood and glass. - Explain the precautions needed for working safely when heating, burning, cooling and mixing materials. - Explain, following observation, that some substances (solutes) will dissolve in liquid (solvents) to form a solution and the solute can be recovered by evaporating off the solvent. - Gather and record data and results of increasing complexity, selecting from a range of methods (scientific diagrams, labels, classification keys, tables, graphs and models). - Identify, demonstrate and compare reversible and irreversible changes. - Plan and carry out a range of enquiries, including writing methods, identifying variables and making predictions based on prior knowledge and understanding. - A method is a set of clear instructions for how to carry out a scientific investigation. A prediction is a statement about what might happen in an investigation based on some prior knowledge or understanding. - Separate mixtures by filtering, sieving and evaporating. - Take increasingly accurate measurements in standard units, using a range of chosen equipment. - Use relevant scientific vocabulary to report on their findings, answer questions and justify their conclusions based on evidence collected, identify improvements, further questions and predictions. - Within a group, decide which observations to make, when and for how long, and make systematic and careful observations, using them to make comparisons, identify changes, classify and make links between cause and effect.	<u>Properties of materials:</u> thermal conductor/insulator, magnetism, electrical resistance, transparency. <u>Mixtures and solutions:</u> dissolving, substance, soluble, insoluble. <u>Changes of materials:</u> reversible change, physical change, irreversible change, chemical change, burning, new material, product. <u>Separating:</u> sieving, filtering, magnetic attraction. Previously introduced vocabulary: electrical conductor/insulator, bulb, translucent.	Antoine Lavoisier (1743 - 1794) Dmitri Mendeleev (1834 - 1907) Sir Humphry Davy (1778 - 1829) Marie Curie (1967-1934) Royal Society of Chemistry - 'The 175 Faces of Chemistry' provides information on contemporary chemists and chemists of the past - http://www.rsc.org/diversity/175-faces/all-faces
Knowledge (specific knowledge) - Questions can help us find out about the world and can be answered using a range of scientific enquiries. - Materials can be grouped according to their basic physical properties. Properties include hardness, solubility, transparency, conductivity (electrical and thermal) and magnetism. Thermal conductors conduct heat. Solid metals are good thermal conductors because their particles are closely packed and they have strong, lattice metallic bonds. Solids, such as plastic, wood and glass do not have these bonds so they do not conduct heat. They are thermal insulators. Liquids and gases are poor conductors of heat because their particles are further apart. - A material's properties dictate what it can be used for. For example, cooking pans are made from metal, which is a good thermal conductor, allowing heat to quickly transfer from the hob to the contents of the pan. Very hot and very cold materials can burn skin. Heating materials should be done safely. Some materials (solutes) will dissolve in liquid (solvents) to form a solution. The solute can be recovered by evaporating off the solvent by heating. Solubility is a measure of a material's ability to dissolve in a solvent. A material is soluble if it can dissolve in a solvent to form a solution. A material is insoluble if it cannot be dissolved in a solvent to form a solution. Dissolving is when a solute becomes incorporated into a solvent and can no longer be seen. - Data can be recorded and displayed in different ways, including tables, bar and line charts, classification keys and labelled diagrams. Different materials have different properties. Materials' properties makes them suitable for specific purposes. - Reversible changes include heating, cooling, melting, dissolving and evaporating. Irreversible changes include burning, rusting, decaying and chemical reactions. Irreversible changes are usually accompanied by one or more of these signs: a gas is produced; light is produced; a smell is produced or the smell changes; the colour changes; sound is produced, or the temperature changes. - Some mixtures can be separated by filtering, sieving and evaporating. Sieving can be used to separate large solids from liquids and some solids from other solids. Filtering can be used to separate small solids from liquids. Evaporating can be used to separate dissolved solids from liquids A mixture is a combination of two or more substances that aren't chemically joined and can be separated back into their individual substances. Heterogeneous mixtures consist of distinctly different substances and are easy to separate. Substances in homogeneous mixtures are evenly distributed and you cannot see the different parts. Homogeneous mixtures are difficult to separate. Filters separate solid particles from liquids or gases. Filters can be made from thin materials that contain tiny holes or layers of solid materials. - Specialised equipment is used to take measurements in standard units. Examples include data loggers plus sensors, such as light (lux), sound (dB) and temperature (°C); timers (seconds, minutes and hours); thermometers (°C), and measuring tapes (millimetres, centimetres, metres). Line graphs show a relationship between two variables and usually show changes over time. - An observation involves looking closely at objects, materials and living things. Accurate observations can be made repeatedly or at regular intervals to identify changes over time.			