

Science Year 5/6

Key Threshold Concepts	<u>Scientific attitudes</u>
<ul style="list-style-type: none"> • Science is about working objectively, modifying explanations to take account of new evidence and ideas 	<ul style="list-style-type: none"> • Understand the world scientifically by exploring, talking about, testing and developing ideas about everyday phenomena and the relationships functions and interactions between living things and familiar environments

Working Scientifically Key Skills		
Experimental skills and investigations	Analysis and Evaluation	Measurement
<ul style="list-style-type: none"> • I can ask relevant questions and use different types of scientific enquiries to answer them • I can plan different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary • I can set up simple practical enquiries, comparative and fair tests • I can make systematic and careful observations 	<ul style="list-style-type: none"> • I can gather, record, classify and present data of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs • I can report and present findings from enquiries, including conclusions, causal relationships and explanations of and a degree of trust in results, in oral and written forms such as displays and other presentations • I can use results to draw simple conclusions, make predictions for new values, suggest improvements and set up further comparative and fair tests • I can identify scientific evidence that has been used to support or refute ideas or arguments 	<ul style="list-style-type: none"> • I can take measurements with increasing accuracy, using a range of equipment, including thermometers and data loggers

Scientific Enquiry Skills				
Observation over time	Pattern Seeking	Identifying, classifying and grouping	Comparative and Fair Testing	Research
<ul style="list-style-type: none"> • I can recognise when observing changes over time will help to answer questions • I can decide how detailed observations need to be and what equipment to use to make measurements as accurate as possible • Draw valid conclusions from data about changes • Recognise the significance of things changing over time • Talk about and explain changes using scientific knowledge and understanding • Evaluate how well they observed over time 	<ul style="list-style-type: none"> • I can recognise when variables cannot be controlled and when pattern seeking will help to answer questions • I can decide how detailed the data needs to be and which equipment to use to make measurements as accurate as possible • I can record data appropriately and accurately • I can present data in scatter graphs and frequency charts • I can recognise patterns in results • I can recognise the effect of sample size on reliability • I can draw valid conclusions from data about patterns and recognise their limitations • I can recognise the significance of relationships between sets of data • I can talk about and explain cause and effect patterns using scientific knowledge and understanding 	<ul style="list-style-type: none"> • I can recognise when identifying and classifying will be helpful to answer questions • I can decide what equipment, tests and secondary sources of information to use to identify and classify things • I can use a series of tests to sort and classify materials • I can use secondary sources to identify, classify and evaluate things • I can make my own keys and branching data bases with 4 or more items and evaluate their effectiveness. • I can use more than one piece of scientific evidence to identify, classify and evaluate things • I can use equipment accurately to collect observations 	<ul style="list-style-type: none"> • I can recognise when variables need to be controlled and when a fair test is the best way to answer a question • I can plan a fair test selecting the most suitable variables to measure change and keep the same • I can decide what equipment to use to make measurements as accurate as possible • I can use equipment accurately to collect observations • I can record data appropriately and accurately • I can present data in line graphs • I can identify causal relationships • I can talk about and explain causal relationships using scientific knowledge and understanding • I can evaluate the effectiveness of fair testing, recognising variables that were difficult to control. 	<ul style="list-style-type: none"> • I can recognise when research using secondary sources will help to answer questions • I can decide what sources of information might answer questions • I can use relevant information and data from a range of secondary sources • I can recognise how data has been obtained • I can notice when information or data is biased or based on opinions rather than facts • I can present findings in suitable formats • I can draw valid conclusions from own research • I can talk about and explain research using scientific knowledge and understanding • I can evaluate how well research has answered the question

Vocabulary						
<ul style="list-style-type: none"> • comparative • scientific • accurate evidence 	<ul style="list-style-type: none"> • scatter graph • relationship • quantitative measurements 	<ul style="list-style-type: none"> • precise • Conclusion • Comparative 	<ul style="list-style-type: none"> • Enquiry • Reliable • Causal effect 	<ul style="list-style-type: none"> • variable • control • justify 	<ul style="list-style-type: none"> • argue • trust 	<ul style="list-style-type: none"> • scientific enquiry • secondary sources • research

Key Knowledge

Y5

Biology		Chemistry	Physics	
Living things and their habitats	Animals including Humans	Properties and Changes in Materials	Earth and Space	Forces
<ul style="list-style-type: none"> I know the differences in the life cycles of a mammal, an amphibian, an insect and a bird I know the life process of reproduction in some plants and animals I know the life process of sexual and asexual reproduction in plants I know the life process of sexual reproduction in animals. 	<ul style="list-style-type: none"> I know the changes as humans develop to old age I know the stages in the growth and development of humans. I know about the gestation periods of other animals compared to humans. 	<ul style="list-style-type: none"> I know the properties of everyday materials, including their hardness, solubility, transparency, conductivity (electrical and thermal), and response to magnets I know that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution I know how mixtures might be separated, including through filtering, sieving and evaporating using my knowledge of solids, liquids and gases. I know why there are particular uses of everyday materials, including metals, wood and plastic based on evidence from comparative and fair tests. I know that dissolving, mixing and changes of state are reversible changes I know 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. 	<ul style="list-style-type: none"> I know the sun is a star at the centre of our solar system and that it has eight planets: Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus and Neptune. I know that the movement of the Earth, and other planets, relative to the Sun in the solar system I know that the movement of the Moon is relative to the Earth I know that the Sun, Earth and Moon are approximately spherical bodies I know about the Earth's rotation in order to explain day and night and that apparent movement of the sun across the sky. 	<ul style="list-style-type: none"> I know that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object. I know the effects of air resistance, water resistance and friction, that act between moving surfaces I know that some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect.
Vocabulary				
plants, animals, vegetable, garden, flower border, Fertilisation, Seed dispersal, Seed formation, Pollen, Stamen, Stigma, Anther, Filament, Style, Sepal, Carpel, germination pollination, reproduction, plants- sexual, asexual animals- sexual Reproduction life cycles- mammal, amphibian, insect, bird lifecycles around the world rainforest, oceans, desert prehistoric similarities differences	reproduction, plants- sexual, asexual animals- sexual Reproduction Gestation Birth Menstrual cycle, Puberty, Eggs, live young, Egg Cell, Embryo, Ovary, Placenta, Penis, Testes, Vagina, Uterus David Attenborough and Jane Goodall.	solubility, transparency, conductive, response to magnets, dissolve, liquid, solution, solute, separate, separating solids, liquids, gases filtering, sieving, evaporating, reversible changes, mixing, evaporation, filtering, sieving, melting, irreversible, conductivity, insulation, chemical, opaque, translucent, rusting, residue, condensing Spencer Silver, who invented the glue for sticky notes or Ruth Benerito, who invented wrinkle-free cotton.	Earth, planets, Sun, solar system, Moon, celestial body sphere/ spherical rotate/ rotation, spin, axis, night and day, Mercury, Venus, Mars, Jupiter, Saturn, Uranus, Neptune, Pluto 'dwarf' planet, orbit, revolve, geocentric model, heliocentric model, shadow clocks, sundials, astronomical clocks Asteroids, Comets, Galaxy, Meteors, Light years	fall, gravity, force, air resistance, water resistance, friction, moving surfaces, mechanisms, levers, pulleys, gears, magnetic force, Galileo Galilei and Isaac Newton