



Year Five Science Progression Steps

Year 5	Developing	Expected Standard	Exceeding	Scientific Language
<p><u>Animals, including humans (Biology)</u></p> <p>Describe the changes as humans develop to old age</p>	<ul style="list-style-type: none"> • Pupil can describe the life cycle of a human in simple periods • Pupil is aware that human life expectancy is different to other animals • Pupil can describe some changes which happen to the body during adolescence • Pupil recognises that human gestation period is different to other animals. • Pupils can describe some of the physical changes that happen to humans as they get older. 	<ul style="list-style-type: none"> • Pupil can explain the life cycle of a human from conception to old age • Pupils compare the life expectancy of humans to other animals • Pupil can explain the changes which happen to the human body during adolescence • Pupil can name the main parts of the human reproductive system/body and explain how these change during adolescence. • Pupils compare the gestation periods of various mammals and compare the similarities and differences Pupil can explain that most mammals are viviparous like man (give birth to live young). • Pupils can describe the changes to the human body and limitations this brings as a human gets older e.g. skin, walking, hair 	<ul style="list-style-type: none"> • Pupils recognise the stages of development from a zygote to when a baby is ready to be born and until old age • Pupils identify any links between size of mammals and life expectancy and suggest reasons for any patterns • Pupils compare the life expectancy of humans to other animals focussing especially upon development of independence and age of mobility, sexual maturity etc • Pupils can make links between the patterns they notice in gestation periods and the physical attributes/abilities of a new born mammal comparing these to man. • Pupil can discuss some of the diseases/ailments associated with the elderly and other stages of the human life cycle with possible treatments. • Pupil has an awareness that in the past humans looked very different to they do today and links this to evolutionary change. 	<p>Key vocabulary:</p> <p>viviparous; fertilisation; egg cell; sperm cell; zygote; foetus; baby; infant; toddler; child; adolescent; teenager; young adult; mature adult; old age; elderly; gestation; life cycle; species; puberty; hormones; pituitary gland; testosterone; oestrogen; facial hair; body hair; broad shoulders; narrow waist; breasts; vagina; womb; placenta; uterus; ovary; fallopian tube; period; penis; testicles;</p>
<p><u>Earth and Space (Physics)</u></p> <p>Describe the movement of the Earth, and other planets, relative to the Sun in the solar system.</p> <p>Describe the movement of the Moon relative to the Earth.</p> <p>Describe the Sun, Earth and Moon as approximately spherical bodies.</p> <p>Use the idea of the Earth's rotation to explain day and night and the apparent movement of the sun across the sky.</p>	<ul style="list-style-type: none"> • Pupil can name some planets in the Solar system and explain simply how they are different to the Earth • Pupil recognises that gravity enables the Earth to orbit the Sun. <p>Pupil understands that the Moon appears to change shape over the period of 1 month</p> <ul style="list-style-type: none"> • Pupil can describe that the length of day/night is determined by the position of the Earth and Sun • Pupil recognise that the apparent movement of the Sun during the day affects the size and position of shadows. 	<ul style="list-style-type: none"> • Pupil can explain that the Earth and other planets orbit the Sun. • Pupil can explain that the Sun, Earth and Moon are spherical bodies. • Pupil can name, place and describe the differences between the planets in the Solar system • Pupil understands that gravitational forces ensure that the orbits of planets are consistent and time taken to orbit the sun is dependent on distance from the sun. • Pupil can explain that the Moon orbits the Earth noting the number of days, apparent shape and the lunar cycle. • Pupil can describe how the rotation of the Earth in relation to the Sun causes day and night. • Pupil can describe how the position of the Earth's orbit in relation to the Sun affects the amount of daylight and temperatures on the Earth giving us our seasons. 	<ul style="list-style-type: none"> • Pupil can describe the position of the Earth and Sun in relation to the wider Solar system. • Pupil can describe the structure of the planets in the solar system comparing them with their understanding of the Sun, Earth & Moon's structure, shape etc. • Pupil can explain the environmental and gravitational pressures on planets and planetary bodies in relation to man visiting or colonising these areas • Pupil can discuss the effect of the Moon on the oceans and seas of the Earth • Pupil can compare and contrast the gravitational forces on the Earth and Moon with the effect these have on man and his activities. • Pupil can suggest reasons for the different lengths of a year on other planets and research any variation of day/night length. • Pupil can suggest reasons for the different lengths of a year on other planets and 	<p>Sun; Moon; Earth; orbit; planets; moon; celestial body; Mercury; Venus; Mars; Jupiter; Saturn; Uranus; Neptune; Pluto (as a dwarf planet); day; night; phases; gravity; gravitational pull; Solar System; Universe; comet; colonise; explore; astronaut; rocket; space station; lunar; lunar cycle; rotate; axis; revolve; sphere; spherical; geocentric; heliocentric; constellation; full moon; gibbous moon; half moon; crescent moon; new moon; waxing moon; waning moon</p>

		<ul style="list-style-type: none"> • Pupils can explain the apparent movement of the Sun during the day and its effect on shadow length. • 	<p>research any variation of day/night length. Pupil can describe that rotation of the Earth means that different time zones exist in our world</p> <ul style="list-style-type: none"> • Pupil can describe some efforts of man to colonise space and scientific implications e.g. astronauts visiting the moon; International Space station; rockets/probes sent to other planets in our Solar system and beyond; NASA • Pupil can discuss in simple terms some ideas for the formation of the Universe • e.g. Big Bang theory 	
<p><u>Forces (Physics)</u></p> <p>Explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object.</p> <p>Identify the effects of air resistance, water resistance and friction, that act between moving surfaces.</p> <p>Recognise that some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect</p>	<ul style="list-style-type: none"> • Pupil knows that an unsupported object will fall to the Earth and this is caused by gravity • Pupil understands that a force needs to be applied to an object to begin to move • Pupil understands that the rate of movement of an object can be affected by the surfaces and media with which the objects surface area has contact. • Pupil recognises that gears, pulleys and levers may be utilised to transfer force. 	<ul style="list-style-type: none"> • Pupil can explain the effect of gravity on objects falling towards the earth. • Pupil can describe the effect of gravity on the rate at which objects of different shape will fall to the Earth. • Pupil can explain that the movement of objects through air, water and across surfaces is resisted by these media. • Pupil can give ideas for how the effect of air & water resistance and friction can be minimised to enable objects to move more freely through the respective media. • Pupil can describe how levers, pulleys and gears work. • Pupil can explain how some mechanisms can use a small force to create a big effect 	<ul style="list-style-type: none"> • Pupil can explain the wider effect of the gravitational pull of all objects upon one another. • Pupil can describe and apply their knowledge of forces which oppose motion to useful contexts in the world around them. • Pupil can explain how aerodynamic design can increase the speed of movement of objects in, over, under a range of media. • Pupil has opportunity to experiment with different types and sizes of levers, pulleys and gears to identify patterns in the size of force they can create. 	<p>Gravity; gravitational force; friction; force; thrust; upthrust; air resistance; water resistance; push; pull; stationary; contact force; non-contact force; buoyancy; zero gravity; motion; unsupported force; supported force; levers; pulleys; gears; springs; fulcrum/pivot; hinge; motion; particle; surface area; Mass (g & kg); Balance;</p>
<p><u>Living things and their habitats (Biology)</u></p> <p>Describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird.</p> <p>Describe the life process of reproduction in some plants and animals.</p>	<ul style="list-style-type: none"> • Pupil can describe the life cycles of some animals from their local environment. • Pupil can name some of the parts of a flowering plant involved in sexual reproduction. • Pupil recognises that plants may not all reproduce sexually • Pupil can describe the changes they see over time in the reproduction and growth of some animals 	<ul style="list-style-type: none"> • Pupil can explain the life cycle of animals including mammals, insects, amphibian and birds. • Pupil is beginning to identify similarities and differences between the life cycles of studied animal groups • Pupil can label and describe the parts of a flowering plant involved in sexual reproduction. • Pupils can describe the process of sexual reproduction in plants • Pupil can explain the process of asexual reproduction in plants • Pupil can describe the process of reproduction in some animals. 	<ul style="list-style-type: none"> • Pupil can explain some of the difficulties which may result in animal/plant lifecycles and reproduction becoming less successful and lead to a reduction in population size • Pupil can explain the similarities and differences in the reproduction of animals from each animal group. • Pupil can explain the process of plant reproduction and identify the differences between sexual and asexual forms. • Pupil can contrast the sharing of genetic information in asexual and sexual plant reproduction. • Pupil can accurately describe the process of reproduction in a flowering plant and compare this to reproduction in at least 1 of the main non-human animal groups. 	<p>Key vocabulary: (see also KS1 and Lower KS2)</p> <p>reproduce; grow; reproduction; life cycle; mammal; amphibian; insect; bird; fish; reptile; male; female; metamorphosis; germination; fertilisation; pollination; genetic information; gene; genetic information; fruit; seed; embryo; stigma; anther; style; ovary; ovule; carpel; nucleus; pollen; pollen grain; pollen tube; sperm; sexual reproduction; asexual reproduction; egg; birth; growth; adulthood; male; female; off-spring; pupa; chrysalis; pupa; imago; adult; seeds; bulb; tuber; stem; root cutting;</p>

Year 5	• Developing	• Expected Standard	• Exceeding	Scientific Language
<p data-bbox="121 100 498 176"><u>Properties and changes of materials</u></p> <p data-bbox="77 222 528 432">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.</p> <p data-bbox="77 478 516 617">Know that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution.</p> <p data-bbox="77 663 498 835">Use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating.</p> <p data-bbox="77 882 468 1054">Give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic.</p> <p data-bbox="77 1100 516 1197">Demonstrate that dissolving, mixing and changes of state are reversible changes.</p> <p data-bbox="77 1243 528 1486">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.</p>	<ul data-bbox="587 100 1151 646" style="list-style-type: none"> • Pupil can group a wide range of materials by their common properties and suggest some similarities and differences. • Pupil understands that some materials can dissolve in liquids and recognise they can be recovered from the subsequent solution. • Pupil can suggest some simple methods to separate materials in mixtures. • Pupil can identify some materials used in everyday objects and suggest why they were suitable. • Pupil is beginning to understand that some changes are reversible and others irreversible. • 	<ul data-bbox="1216 100 1757 1197" style="list-style-type: none"> • Pupil can group most everyday materials on the basis of their properties explaining their similarities and differences. • Pupil can identify materials which are soluble in liquids and describe the process as dissolving. • Pupil can explain how materials dissolved in a solution can be recovered. • Pupil can suggest and use a range of methods to separate materials from mixtures based on their knowledge of the properties of these materials. • Pupil can describe different uses for common everyday materials based on their properties. • Pupil can explain the differences between reversible and irreversible changes, giving examples of both. • Pupil understands (and give examples) that some irreversible changes can result in the formation of new materials. • Pupil can describe some materials which have been manufactured by irreversible (chemical) change and explain how the properties of the new materials make them useful to man. • Pupil can explain why some materials are not suitable for particular uses based on their knowledge of the properties of materials. 	<ul data-bbox="1846 100 2398 756" style="list-style-type: none"> • Pupil can group materials by their solubility • Pupil can describe a range of materials which can be used as solvents to create solutions. • Pupil can use their knowledge of how to separate materials from a range of mixtures to explain the most efficient method of separation and link to possible commercial uses e.g. waste recycling plant • Pupil can explain the by- products which can be produced during some reversible/irreversible changes and how these can be managed (e.g. heat, gases) safely and/or used for other purposes. • Pupils can give clear examples of how materials can be mixed, combining their properties to make everyday objects which have improved functionality compared to using one material alone. 	<p data-bbox="2451 100 2873 714">Key vocabulary: (See also KS1 & Lower KS2 materials vocabulary) freezing; melting; boiling; burning; solid; liquid; gas; properties; solution; solute; solvent; mixture; filter; sieve; evaporation; decanting; sieving; condensation; saturated; temperature; Celsius; state; reaction; chemical; reversible; irreversible; conductivity; brittle; thermal; flexible; waterproof; synthetic; absorbent; rigid; natural; hard; permeable; impermeable; hardness; conductor ; insulator; transparent; magnetic; non-magnetic</p>