



Theme	Year 5	Year 6	KS3
<p>Plants (In Yr 5 and 6 objectives relating to plants are included in Living things and their habitats)</p>	<p>Can describe the life process of reproduction in some plants. ie explain the difference between sexual and asexual reproduction and give examples of how plants reproduce in both ways.</p> <p>Vocabulary: Pollination, sexual reproduction, asexual reproduction, plantlets, cuttings, runners, bulbs,</p>	<p>Can describe how living things are classified into broad groups according to common characteristics and based on similarities and differences, including micro-organisms, plants and animals. Can give reasons for classifying plants and animals based on specific characteristics.</p> <p>Vocabulary: Flowering, non-flowering</p>	<p>Reproduction in plants, including flower structure, wind and insect pollination, fertilisation, seed and fruit formation and dispersal, including quantitative investigation of some dispersal mechanisms.</p>
<p>Animals including humans</p>	<p>Describe the changes as humans develop to old age.</p> <p>Describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird. (Y5 - Living things and their habitats) Describe the life process of reproduction in some animals. (Y5 - Living things and their habitats)</p> <p>Vocabulary: Puberty: the vocabulary to describe sexual characteristics, taught as part of PSHE, RSE education program. Life cycle, reproduce, sexual, sperm, egg, live young, fertilises</p>	<p>Identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood. Recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function. Describe the ways in which nutrients and water are transported within animals, including humans.</p> <p>Vocabulary: Heart, pulse, rate. Pumps, blood, blood vessels, transported, lungs, oxygen, carbon dioxide, nutrients, water, muscles, cycle, circulatory system, diet, exercise, drugs, and lifestyle.</p>	<p>Reproduction in humans (as an example of a mammal), including the structure and function of the male and female reproductive systems, menstrual cycle (without details of hormones), gametes, fertilisation, gestation and birth, to include the effect of maternal lifestyle on the foetus through the placenta.</p> <ul style="list-style-type: none"> • The consequences of imbalances in the diet, including obesity, starvation and deficiency diseases. • The effects of recreational drugs (including substance misuse) on behaviour, health and life processes. • The structure and functions of the gas exchange system in humans, including adaptations to function. • The mechanism of breathing to move air in and out of the lungs. • The impact of exercise, asthma and smoking on the human gas exchange system
<p>Living things and their habitats</p>	<p>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.</p> <p>Vocabulary: Life cycle, reproduce, sexual, sperm, fertilises, egg, live young, metamorphosis, asexual, plantlets, runners, bulbs, cuttings</p>	<p>Describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences, including microorganisms, plants and animals. Give reasons for classifying plants and animals based on specific characteristics.</p> <p>Vocabulary: Vertebrates, fish, amphibians, reptiles, birds, mammals, invertebrates, insects, spiders (arachnids), snails (molluscs) worms (annelids), flowering and non-flowering,</p>	<p>Reproduction in humans (as an example of a mammal), including the structure and function of the male and female reproductive systems, menstrual cycle (without details of hormones), gametes, fertilisation, gestation and birth, to include the effect of maternal lifestyle on the foetus through the placenta.</p> <ul style="list-style-type: none"> • Reproduction in plants, including flower structure, wind and insect pollination, fertilisation, seed and fruit formation and dispersal, including quantitative investigation of some dispersal mechanisms. • Differences between species.



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<p>Evolution and Inheritance- Y6</p>		<p>Recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago (Evolution and Inheritance)</p> <p>Recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents (Evolution and Inheritance)</p> <p>Identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution. (Evolution and Inheritance)</p> <p>Vocabulary: Offspring, sexual reproduction, vary, characteristics, suited, adapted, environment, inherited, species, fossil</p>	<p>Heredity as the process by which genetic information is transmitted from one generation to the next.</p> <ul style="list-style-type: none"> • A simple model of chromosomes, genes and DNA in heredity, including the part played by Watson, Crick, Wilkins and Franklin in the development of the DNA model. • The variation between species and between individuals of the same species means some organisms compete more successfully, which can drive natural selection. • Changes in the environment may leave individuals within a species, and some entire species, less well adapted to compete successfully and reproduce, which in turn may lead to extinction.
<p>Materials</p> <p>Y5 - Properties and changes of materials</p>	<p>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>Know that some materials will dissolve in liquid to form a solution and describe how to recover a substance from a solution.</p> <p>Use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating.</p> <p>Give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic.</p> <p>Demonstrate that dissolving, mixing and changes of state are reversible changes.</p> <p>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> <p>Vocabulary: Thermal/ electrical insulator/conductor, change of state, mixture, dissolve, solution, soluble, insoluble, filter, sieve, reversible/non-reversible change, burning, rusting, new material</p>	<p>N/A</p> <p>Y6 Except fossils link from Evolution and Inheritance "know that fossils provide information about living things that inhabited the Earth millions of years ago"</p>	<p>Chemical reactions as the rearrangement of atoms.</p> <ul style="list-style-type: none"> • Representing chemical reactions using formulae and using equations. • Combustion, thermal decomposition, oxidation and displacement reactions. • Defining acids and alkalis in terms of neutralisation reactions. • The pH scale for measuring acidity/alkalinity; and indicators. <p>The composition of the Earth.</p> <ul style="list-style-type: none"> • The structure of the Earth. • The rock cycle and the formation of igneous, sedimentary and metamorphic rock



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Light	<p>N/A</p>	<p>Y6 Recognise that light appears to travel in straight lines. Use the idea that light travels in straight lines to explain that objects are seen because they give out or reflect light into the eye. Explain that we see things because light travels from light sources to our eyes or from light sources to objects and then to our eyes. Use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them. Vocabulary: As for Y3 plus straight lines, light rays</p>	<p>The similarities and differences between light waves and waves in matter. • Light waves travelling through a vacuum; speed of light. • The transmission of light through materials: absorption, diffuse scattering and specular reflection at a surface. • Use of ray model to explain imaging in mirrors, the pinhole camera, the refraction of light and action of convex lens in focusing (qualitative); the human eye. • Light transferring energy from source to absorber leading to chemical and electrical effects; photo-sensitive material in the retina and in cameras. • Colours and the different frequencies of light, white light and prisms (qualitative only); differential colour effects in absorption and diffuse reflection.</p>
Forces	<p>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. Vocabulary: Force, gravity, Earth, resistance, water resistance, friction, mechanisms, simple machines, levers, pulleys, gears</p>	<p>N/A</p>	<p>Magnetic fields by plotting with compass, representation by field lines. • Earth's magnetism, compass and navigation. • Forces as pushes or pulls, arising from the interaction between two objects. • Using force arrows in diagrams, adding forces in one dimension, balanced and unbalanced forces. • Moment as the turning effect of a force. • Forces: associated with deforming objects; stretching and squashing - springs; with rubbing and friction between surfaces, with pushing things out of the way; resistance to motion of air and water. • Forces measured in Newtons, measurements of stretch or compression as force is changed.</p>



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Electricity	N/A	<p>Y6 Associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit.</p> <p>Compare and give reasons for variations in how components function, including the brightness of bulbs, the loudness of buzzers and the on/off position of switches.</p> <p>Use recognised symbols when representing a simple circuit in a diagram.</p> <p>Vocabulary: circuit, complete circuit, circuit diagram, circuit symbol, cell, batter, bulb, buzzer, motor, switch, voltage</p>	<p>Electric current, measured in amperes, in circuits, series and parallel circuits, currents add where branches meet and current as flow of charge.</p> <ul style="list-style-type: none"> • Potential difference, measured in volts, battery and bulb ratings; resistance, measured in ohms, as the ratio of potential difference (p.d.) to current. • Differences in resistance between conducting and insulating components (quantitative). • Static electricity.
Earth and Space	<p>Y5 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.</p> <p>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.</p> <p>Vocabulary: Earth, sun, moon, planets (Mercury, Jupiter, Saturn, Venus, Mars, Uranus, Neptune) spherical, solar system, rotates, star, orbit,</p>	N/A	<p>Gravity force, weight = mass x gravitational field strength (g), on Earth $g=10$ N/kg, different on other planets and stars; gravity forces between Earth and Moon, and between Earth and Sun (qualitative only).</p> <ul style="list-style-type: none"> • Our Sun as a star, other stars in our galaxy, other galaxies. • The seasons and the Earth's tilt, day length at different times of year, in different hemispheres. • The light year as a unit of astronomical distance.
Sound (Formally covered in Y4)	Ensure this is revised during general Science quiz questions and in music curriculum, referring to pitch, volume, etc.	Ensure this is revised during general Science quiz questions and in music curriculum referring to pitch. volume etc.	<p>Waves on water as undulations which travel through water with transverse motion; these waves can be reflected and add or cancel - superposition.</p> <ul style="list-style-type: none"> • Frequencies of sound waves, measured in Hertz (Hz); echoes, reflection and absorption of sound. • Sound needs a medium to travel, the speed of sound in air, in water, in solids.



			<ul style="list-style-type: none">• Sound produced by vibrations of objects, in loudspeakers, detected by their effects on microphone diaphragm and the ear drum; sound waves are longitudinal.• Auditory range of humans and animals.• Pressure waves transferring energy; use for cleaning and physiotherapy by ultra-sound.• Waves transferring information for conversion to electrical signals by microphone.
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