

Biology

Plants

Relate knowledge of plants to studies of evolution and inheritance		
Year 5	Year 6	Greater Depth
<ul style="list-style-type: none"> - Describe how plants and animals may evolve through adaptation to their environment. 	<ul style="list-style-type: none"> - Compare and contrast the way different plants and animals have adapted to their environments. - Organise information graphically. 	<ul style="list-style-type: none"> - What is the relationship between plants adapting to their environments and the theory of human evolution?

Relate knowledge of plants to studies of all living things		
Year 5	Year 6	Greater Depth
<ul style="list-style-type: none"> - Describe the life processes common to all living things. 	<ul style="list-style-type: none"> - In which ways do the life processes of all living things vary? - Organise information, including data that supports the theory that the life processes of all living things vary. 	<ul style="list-style-type: none"> - Why do the leaves of deciduous trees change colour and fall off in autumn? How does this relate to any life processes of animals?

Animals and humans

Describe the changes as humans develop to old age.		
Year 5	Year 6	Greater Depth
<ul style="list-style-type: none"> - Describe the main changes in the human body from childhood to adulthood to old age. - What are the physical signs of human aging? 	<ul style="list-style-type: none"> - Compare and contrast the physical appearance of children and adults. - Graph changes in average heights of males and females at different ages. Summarise your findings. 	<ul style="list-style-type: none"> - Interpret data about normal blood pressure in children and adults and draw some conclusions. - Make generalisations about the relationship between age and changes in humans.

Identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood		
Year 5	Year 6	Greater Depth
<ul style="list-style-type: none"> - Draw and label diagrams of the human circulatory system. - Describe the functions of the heart, blood vessels and blood. 	<ul style="list-style-type: none"> - Contrast the different roles of veins and arteries in the human circulatory system. - Explain the different functions of the parts of the human heart. 	<ul style="list-style-type: none"> - Discover information about human blood pressure. - Relate information about blood pressure to diet and lifestyle.

Recognise the importance of diet, exercise, drugs and lifestyle on the way the human body functions.		
Year 5	Year 6	Greater Depth
<ul style="list-style-type: none"> - Read and answer questions about the importance of diet and exercise. 	<ul style="list-style-type: none"> - Graph the effect of exercise on pulse rate. - Explain your findings. 	<ul style="list-style-type: none"> - Discover how coronary arteries may become blocked and cause heart attacks. - Argue this statement: you are what you eat.

<ul style="list-style-type: none"> - Observe and record the effect of exercise on the heartbeat. - Describe a healthy, balanced diet. - Describe some of the possible effects of poor exercise, drug misuse, smoking and poor diet on the way the human body functions. 	<ul style="list-style-type: none"> - Explain the possible effects of too much sugar in the diet on how the human body functions. 	<ul style="list-style-type: none"> - Diet is 80 per cent of your fitness regime and exercise 20. Do you agree?
Describe the way in which nutrients and water are transported within animals, including humans.		
Year 5	Year 6	Greater Depth
<ul style="list-style-type: none"> - Name some nutrients that are important for humans. - Describe how nutrients are important for animals and humans. - Draw diagrams that show how arteries and veins are connected by capillaries. - Describe how water and nutrients pass from the arteries, through capillaries, to veins. 	<ul style="list-style-type: none"> - Explain the similarities and differences between arteries, veins and capillaries. - Explain why, in humans, capillaries are vital for the transportation of water and nutrients. - Explain why the transportation of water and nutrients in humans is important for joints, mucus membranes, blood, removing toxins. 	<ul style="list-style-type: none"> - Relate the transportation of water in humans and animals to your knowledge of plants.
Living things		
Describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird.		
Year 5	Year 6	Greater Depth
<ul style="list-style-type: none"> - Draw and describe the life cycle of a mammal. - Draw and describe the life cycle of an amphibian. - Draw and describe the life cycle of an insect. - Draw and describe the life cycle of a bird. 	<ul style="list-style-type: none"> - Explain the similarities and differences in the life cycles of a mammal, an amphibian, an insect and a bird. 	<ul style="list-style-type: none"> - True or false? All young offspring look like smaller versions of their adult parents. - Always, sometimes or never? Eggs are common to the life cycles of mammals, amphibians, insects and birds.
Describe the process of reproduction in some plants and animals.		
Year 5	Year 6	Greater Depth
<ul style="list-style-type: none"> - Draw and describe the process of reproduction in some plants. - Draw and describe the process of reproductions in some animals. 	<ul style="list-style-type: none"> - Explain the similarities and differences between the process of reproduction in plants and animals. 	<ul style="list-style-type: none"> - Relate the reproduction of plants to your knowledge of the life cycle of insects. - Relate the reproduction of some animals and plants to your knowledge of food chains.
Describe how living things are classified into broad groups according to common observable characteristics.		
Year 5	Year 6	Greater Depth
<ul style="list-style-type: none"> - Look at and copy classification keys for common insects. - Use classification keys to identify insects and animals. - Make classification keys. 	<ul style="list-style-type: none"> - Identify plants, mammals, amphibians, insects and birds from classifications keys. - Explain why observable features are used to classify things into broad groups. 	<ul style="list-style-type: none"> - Propose criteria for the creation of classification groups for mammals, amphibians, insects and birds. - Present information about and reasons for these groups.

Give reasons for classifying plants and animals based on specific characteristics.		
Year 5	Year 6	Greater Depth
<ul style="list-style-type: none"> - Recognise and name the characteristics used in classification groups for plants and animals. - List reasons why these characteristics are used. 	<ul style="list-style-type: none"> - Explain some of the problems with not using specific characteristics when classifying living things. 	<ul style="list-style-type: none"> - Observable characteristics are not the only way to scientifically group plants and animals. Do you agree?
Evolution and inheritance		
Recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago.		
Year 5	Year 6	Greater Depth
<ul style="list-style-type: none"> - Name a variety of animal and plant fossils. - Describe the conditions in which the fossils once lived. - Note, name and describe plants and animals that inhabited the Earth millions of years ago. 	<ul style="list-style-type: none"> - Categorise fossils in a number of ways. - Compare and contrast different fossils. - Explain the process of the formation of fossils. 	<ul style="list-style-type: none"> - Investigate the conditions in which life on Earth survived millions of years ago. - Burning fossil fuels is widely thought by scientists to contribute to a rise in worldwide temperature. Investigate this and cite evidence that supports or questions this view.
Recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents.		
Year 5	Year 6	Greater Depth
<ul style="list-style-type: none"> - Observe and describe differences between living things and their offspring. - Observe and name offspring that are not identical to their parents and describe how they vary. 	<ul style="list-style-type: none"> - Categorise differences in living things and their offspring. - Explain, with examples, how offspring are not identical. 	<ul style="list-style-type: none"> - Is it possible that a litter of cocker spaniel puppies from two parents of the same colour may vary in colour?
Identify how animals and plants are adapted to suit their environment in different ways and how that adaptation may lead to evolution.		
Year 5	Year 6	Greater Depth
<ul style="list-style-type: none"> - Match a range of animals and plants to the environments in which they are found. - Describe how animals and plants are suited to the environments which they are found. - Illustrate how animals and plants adapt to environments in different ways. - Describe the theory of evolution. 	<ul style="list-style-type: none"> - Explain and give examples of the idea of adaptation. - Compare and contrast different types of adaptation. - Explain why adaptation may lead to evolution. 	<ul style="list-style-type: none"> - True or false? Plants and animals would not survive if they could not adapt. - Which do you think are the best examples of an animals and a plant that show adaptation? - Evolution is the only way a species can survive. Do you agree?

Chemistry

Materials

Compare and group together everyday materials based on evidence from comparative and fair tests, including their hardness, solubility, conductivity (electrical and thermal), and response to magnets.

Year 5	Year 6	Greater Depth
<ul style="list-style-type: none"> - Observe and describe materials on the basis of their hardness, solubility, conductivity and their response to magnets. - Carry out comparative tests to group materials (follow instructions). - Carry out fair tests to group materials (follow instructions). 	<ul style="list-style-type: none"> - Adapt a comparative test to group materials. Predict the outcomes of your test. - Modify a fair test to group materials. Predict the outcomes of your test 	<ul style="list-style-type: none"> - Devise an experiment that proves or disproves a hypothesis you have created about the properties of materials

Understand how some materials will dissolve in liquid to form a solution and describe how to recover a substance from a solution.

Year 5	Year 6	Greater Depth
<ul style="list-style-type: none"> - Observe (through direct experience) and describe materials as soluble or non-soluble - Observe and describe the effect of evaporation of a solution on a substance (solute) that has dissolved in a liquid (solvent). 	<ul style="list-style-type: none"> - Apply your knowledge of solutions to explain how a substance has not disappeared when it forms a solution. - Modify a fair test to demonstrate your knowledge 	<ul style="list-style-type: none"> - Relate, citing evidence, your understanding of solutions to your understanding of the water cycle.

Use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating.

Year 5	Year 6	Greater Depth
<ul style="list-style-type: none"> - Observe and describe how items may be separated through filtering, sieving and evaporation. 	<ul style="list-style-type: none"> - Experiment with ways to separate pebbles and silt in a solution of salt. - Explain your methods and summarise your results. 	<ul style="list-style-type: none"> - Is there a way to recover water after recovering a substance from a solution after evaporation? (propose) Prove it.

Give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic.

Year 5	Year 6	Greater Depth
<ul style="list-style-type: none"> - Observe and describe materials on the basis of their hardness and conductivity. - Label materials, including insulators and conductors using a range of scientific vocabulary. 	<ul style="list-style-type: none"> - Apply your understanding of the properties of materials to explain why a range of everyday items have been made from a particular material. 	<ul style="list-style-type: none"> - What might happen if a bird sits on a live, uninsulated power line? (propose) - Explain the concepts you are using to give your answer.

<ul style="list-style-type: none"> - Carry out comparative tests to assess the suitability of everyday materials for a purpose (follow instructions) - Carry out fair tests to assess the suitability of everyday materials for a purpose (follow instructions) 		
<p>Demonstrate that dissolving, mixing and changes of state are reversible changes.</p>		
<p>Year 5</p>	<p>Year 6</p>	<p>Greater Depth</p>
<ul style="list-style-type: none"> - Observe and describe how mixing is reversible. - Observe and describe how dissolving a substance into a solution is reversible. - Observe and describe how changes of state are reversible 	<ul style="list-style-type: none"> - Demonstrate reversible changes by graphing the temperature of water as it changes state from a liquid to a solid and from a solid to a liquid, and identify patterns between temperature and state - Summarise your findings 	<ul style="list-style-type: none"> - Always, sometimes or never? changes to materials that are reversible require something else to change first before they can change? Cite evidence
<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, oxidisation and the action of acid on bicarbonate of soda.</p>		
<p>Year 5</p>	<p>Year 6</p>	<p>Greater Depth</p>
<ul style="list-style-type: none"> - Observe and describe how burning a material creates a new material and is not reversible. - Observe and describe how oxidisation of (e.g. of steel) creates a new material and is not reversible. - Observe and describe how adding an acid (e.g. to bicarbonate of soda) creates a new material and is not reversible. 	<ul style="list-style-type: none"> - Categorise changes as reversible or not reversible, and give examples - Experiment with making plaster of Paris moulds. Observe, record and explain what happens to the material as water is added to the powder. Summarise your findings. 	<ul style="list-style-type: none"> - True or false? Changes in temperature cause only reversible and not irreversible changes. Cite evidence

Physics

Forces

Explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object.

Year 5	Year 6	Greater Depth
<ul style="list-style-type: none"> - Observe and describe the effect of the force of gravity. 	<ul style="list-style-type: none"> - Interpret data about the rate that different materials fall towards Earth. Summarise your findings. 	<ul style="list-style-type: none"> - Which will reach Earth first if dropped from the same height: 1kg of feathers or 1kg of steel? (explain concepts)

Identify the effect of drag forces such as air resistance, water resistance and friction that act between moving surfaces.

Year 5	Year 6	Greater Depth
<ul style="list-style-type: none"> - Observe and describe the effect of air resistance. - Observe and describe the effect of water resistance. - Observe and describe the effect of friction. - Describe these forces as drag forces. 	<ul style="list-style-type: none"> - Apply your knowledge of friction to positive applications. Explain your ideas. 	<ul style="list-style-type: none"> - Relate the size of a drag force to the size of the object it is acting on.

Describe, in terms of drag forces, why moving objects that are not driven tend to slow down.

Year 5	Year 6	Greater Depth
<ul style="list-style-type: none"> - Observe and describe how objects tend to slow down because of drag forces 	<ul style="list-style-type: none"> - Apply your knowledge of drag forces to some positive applications 	<ul style="list-style-type: none"> - Always, sometimes or never? The slowing effect of drag forces can be overcome if an object is driven.(explain concept, make generalisations)

Understand that force and motion can be transferred through mechanical devices such as gears, pulleys, levers and springs.

Year 5	Year 6	Greater Depth
<ul style="list-style-type: none"> - Observe and describe how forces and motion can be transferred through gears, pulleys, levers and springs. - Label the forces and draw the directions in which they transfer. 	<ul style="list-style-type: none"> - Apply your knowledge of forces and movement to make a working mechanism. 	<ul style="list-style-type: none"> - Can a rotary motion be changed into a linear (up and down) motion? (prove or disprove)

Understand that some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect.

Year 5	Year 6	Greater Depth
<ul style="list-style-type: none"> - Observe and describe the effect of changing gears on a bicycle. - Observe and describe the effect of using a lever to try to move a heavy object (e.g. to lift the teacher) - Observe and describe the effect of using a pulley, or geared pulleys to lift heavy objects. 	<ul style="list-style-type: none"> - Apply your knowledge of gears, pulleys and levers to demonstrate and explain how a small force can have a greater effect. 	<ul style="list-style-type: none"> - Using a pulley allows a small force to have a greater effect but increases the amount of pulls one has to make. Make generalisations about the relationship between forces and effect

Light		
Understand that light appears to travel in straight lines		
Year 5	Year 6	Greater Depth
<ul style="list-style-type: none"> - Draw and label diagrams to show how light travels. 	<ul style="list-style-type: none"> - Experiment with ways that demonstrate how light travels. - Predict where light will appear after hitting a reflective surface. 	<ul style="list-style-type: none"> - Investigate whether light can ever 'bend' around corners* and present information on this. - Does blocking light prove that it travels? (reason, investigate)
Use the idea that light travels in straight lines to explain that objects are seen because they give out or reflect light into the eyes.		
Year 5	Year 6	Greater Depth
<ul style="list-style-type: none"> - Draw and label diagrams that show how objects are seen. - Observe and describe how light diverges from a source. 	<ul style="list-style-type: none"> - Experiment with making or using a periscope to demonstrate how objects may be seen. Explain what is happening to the light. 	<ul style="list-style-type: none"> - True or false? Light is invisible.
Use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them, and to predict the size of shadows when the position of the light source changes.		
Year 5	Year 6	Greater Depth
<ul style="list-style-type: none"> - Draw and label diagrams that show how shadows are formed and that the size of the shadow may be predicted when the position of the source of light changes. - Describe how divergent light from a source affects the size of shadows. 	<ul style="list-style-type: none"> - Explain why shadows are 'longer' in the winter and 'shorter' in the summer. 	<ul style="list-style-type: none"> - Is it possible that a shadow can be formed that is smaller than the object that created it? (reason)
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.		
Year 5	Year 6	Greater Depth
<ul style="list-style-type: none"> - Draw and label diagrams to explain how we see 	<ul style="list-style-type: none"> - Explain and demonstrate why we cannot always see all of the Moon. 	<ul style="list-style-type: none"> - Investigate and present information on how objects, such as a stick, appear to bend when placed in water.
Sound		
Find patterns between the pitch of a sound and features of the object that produced it.		
Year 5	Year 6	Greater Depth
<ul style="list-style-type: none"> - Observe and describe the differences in the pitch of a sound and the object that produced it. 	<ul style="list-style-type: none"> - Experiment with, explain and demonstrate the pattern between pitch of sound and the features of the object that produced it. 	<ul style="list-style-type: none"> - Relate your understanding of pitch to musical instruments.
Find patterns between the volume of a sound and the strength of the vibrations that produced it.		

Year 5	Year 6	Greater Depth
- Observe and describe differences in the volume of a sound and the strength of the vibrations that produced it.	- Experiment with, explain and demonstrate the pattern between the volume of a sound and the strength of the vibrations that produced it.	- Relate your understanding of volume to a range of orchestral instruments. (How does, for example, a trombone player alter the strength of the vibrations he or she creates?)
Recognise that sounds get fainter as the distance from the sound source increases.		
Year 5	Year 6	Greater Depth
- Observe and describe differences in sounds that are close to and far away from their sources.	- Experiment with, explain and demonstrate the pattern between the volume of a sound and the distance from its source.	- Why might a thunderclap sound loud to some and faint to others? (suggest, reason)
Electricity		
Associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit.		
Year 5	Year 6	Greater Depth
- Observe and describe the effect of changing the number and voltage of cells used in a series circuit.	- Experiment with, explain and demonstrate the pattern between the voltage of cells and the brightness of a bulb.	- Suggest why a bulb or buzzer may stop working when the voltage is increased.
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.		
Year 5	Year 6	Greater Depth
- Observe and describe the effect of placing extra bulbs (or buzzers) into a circuit and how this can be overcome by increasing the number and voltage of cells.	- Predict the outcome of placing various components into an electrical circuit. - Explain the patterns.	- Investigate the concept of resistance and prove or disprove that components, including wire, are resistors. - Is it possible to make your own resistor? (suggest, prove)
Use recognised symbols when representing a simple circuit in a diagram.		
Year 5	Year 6	Greater Depth
- Label and learn the recognised symbols for representing components in a circuit diagram.	- Make circuits then represent them in circuit diagrams, applying component symbols appropriately	- How do the images of recognised symbols relate to their function?
Earth and Space		
Describe the movement of the Earth relative to the Sun in the solar system.		
Year 5	Year 6	Greater Depth
- Describe the movement of the Earth relative to the Sun - Label and describe our solar system.	- Explain why the Earth's movement gives rise to the seasons.	- Relate your knowledge of the Earth's movement relative to the Sun to time zones. Assess the significance of this to our daily lives.

<ul style="list-style-type: none"> - Answer questions about the scientists who first observed the Earth's movement around the Sun. - Describe how the movement of the Earth gives rise to seasonal changes. 	<ul style="list-style-type: none"> - Explain why the effect of the Earth's movement on seasons is more acute further away from the equator. 	
Describe the Sun, Earth and Moon as approximately spherical bodies.		
Year 5	Year 6	Greater Depth
<ul style="list-style-type: none"> - Observe pictures and videos of the Sun, Earth and Moon and describe them using mathematical vocabulary. 	<ul style="list-style-type: none"> - Explain, using your knowledge of gravity, why the Sun, Earth and Moon are almost spherical. 	<ul style="list-style-type: none"> - Investigate reasons why planets and moons are not completely spherical. Explore terms such as 'equatorial bulge' and suggest an experiment that would prove this phenomenon. -
- Use the idea of the Earth's rotation to explain day and night and the apparent movement of the Sun across the sky.		
Year 5	Year 6	Greater Depth
<ul style="list-style-type: none"> - Draw, label and describe how the Earth's rotation gives rise to day and night. 	<ul style="list-style-type: none"> - Explain and demonstrate how and why a sundial, used to tell the time, works 	<ul style="list-style-type: none"> - At night, sundials do not work. Suggest or investigate other ways you could tell the approximate time using views of the night sky