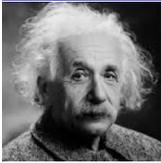


Units	Earth and Space	Animals Including Humans	Properties of Materials	Changes of Materials	Living Things and Their Habitats	Forces	Science Fair
-------	-----------------	--------------------------	-------------------------	----------------------	----------------------------------	--------	--------------

<b>National Curriculum:</b>	<ul style="list-style-type: none"> <li>Describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird.</li> <li>Describe the life process of reproduction in some plants and animals.</li> <li>Describe the changes as humans develop to old age.</li> <li>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.</li> <li>Know that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution.</li> <li>Use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating.</li> <li>Give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic.</li> <li>Demonstrate that dissolving, mixing and changes of state are reversible changes.</li> <li>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.</li> <li>Describe the movement of the Earth, and other planets, relative to the Sun in the solar system.</li> <li>Describe the movement of the Moon relative to the Earth.</li> <li>Describe the Sun, Earth and Moon as approximately spherical bodies</li> <li>Use the idea of the Earth's rotation to explain day and night and the apparent movement of the sun across the sky.</li> <li>Explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object</li> <li>Identify the effects of air resistance, water resistance and friction, that act between moving surfaces.</li> <li>Recognise that some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect.</li> </ul>
-----------------------------	---

<b>Working scientifically</b>
<b>Statutory requirements</b>
<p>During years 5 and 6, pupils should be taught to use the following practical scientific methods, processes and skills through the teaching of the programme of study content:</p> <ul style="list-style-type: none"> <li>planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary</li> <li>taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate</li> <li>recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs</li> <li>using test results to make predictions to set up further comparative and fair tests</li> <li>reporting and presenting 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</li> <li>identifying scientific evidence that has been used to support or refute ideas or arguments.</li> </ul>

<b>Unit Link</b>	<u><a href="#">Earth and Space</a></u> 	<u><a href="#">Animals Including Humans</a></u> 	<u><a href="#">Properties of Materials</a></u> 	<u><a href="#">Changes of Materials</a></u> 	<u><a href="#">Living Things and Their Habitats</a></u> 	<u><a href="#">Forces</a></u> 	<b>Science Fair Entry Enquiry Focus</b>
<b>Scientist</b>	<u><a href="#">Tim Peake</a></u> 	<u><a href="#">Alexander Fleming</a></u> 	<u><a href="#">Hugh Bradner</a></u> 	<u><a href="#">Albert Einstein</a></u> 	<u><a href="#">Gregor Mendel</a></u> 	<u><a href="#">Isaac Newton</a></u> 	
<b>Area Focus</b>	Physics	Biology	Chemistry	Chemistry	Biology	Physics	
<b>Enquiry Approach</b>	 Identifying, Grouping and Classifying   Research   Pattern Seeking   Observations Over Time	 Observations Over Time   Research   Pattern Seeking   Comparative/Fair Testing   Problem Solving	 Comparative/Fair Testing   Problem Solving   Pattern Seeking	 Observations Over Time   Problem Solving   Comparative/Fair Testing	 Pattern Seeking   Identifying, Grouping and Classifying   Observations Over Time   Research	 Comparative/Fair Testing   Problem Solving	
<b>Resources</b>	9 balls Measuring trundle Pictures of the planets Torch Globe	Split pins Tape measures	10 sample pieces of materials (wood, paper, card, plastic, string and wool. Rubber, metal, clay)	1 large clear bottle filled with pure water labelled "A" 1 large clear bottle filled with salt water labelled "B"	rooting powder pots a healthy plant (strawberry, tomato, basil or chilli) soil	ruler/tape measure weighing scales a variety of balls of similar sizes (e.g. tennis ball, softball, hockey ball) stopwatch	

Modelling clay  
Kebab skewers  
Compass  
Card paper  
Time zone data  
Pinwheel  
outlines  
Split pins  
Globe  
Golf balls

electrical  
equipment to  
make circuits  
(with a bulb) and  
magnets  
paper cups  
variety of  
materials to wrap  
up the cup: such  
as cling film, foil,  
paper, felt,  
cotton and sticky  
tape.  
Thermometers  
granite tile  
ceramic tile  
hardwood  
softwood  
plastic  
metal  
card  
coin  
a range of  
substances to  
test if they  
dissolve: such as  
sand, sugar  
salt  
flour  
wax candles  
coffee  
jam  
butter  
chalk  
jelly  
beakers  
sawdust  
gravel  
metal nuts  
marbles

(30g of table salt in  
150 ml of water)  
Teaspoons  
small containers  
labels  
oven  
some chocolate  
that has been  
melted into a  
different shape  
small toys frozen in  
some ice  
sugar dissolved in  
water in a bottle  
rice and sugar  
mixed together in  
a jar.  
Berroca/Alka-  
Seltzer  
vinegar  
bicarbonate of  
soda  
candle  
matches  
soap  
milk  
small bottles  
small iron nails  
test tubes  
salt  
oil  
paint/Vaseline  
rubber gloves cola  
lemon juice plastic  
spoons pipettes

mammal type  
sorting cards  
split pins  
eggs  
toothpicks

feather  
tennis balls  
small plastic  
toys/weights  
a variety of  
materials to test  
(e.g. different types  
of papers, plastic  
bags and bin bags)  
hole punch  
string  
calculators  
A small object  
(such as a marble  
or penny)  
large clear  
container filled with  
water  
mini whiteboard  
modelling clay  
a variety of  
containers (such as  
large bottles with  
the tops cut off or  
large measuring  
cylinders) weighing  
scales  
A variety of  
surfaces (different  
carpets or carpet  
tiles, a variety of  
wooden floors,  
tarmac/playground  
surface)  
Trainers  
Newton meters  
weights  
a load to lift per  
child (e.g.  
weights/1 pint milk  
bottle/bag of sand)  
materials to create

						<p>a lever (e.g. string, cotton reels, dowel, wheels and cardboard)</p> <p>Strong cardboard lolly sticks</p> <p>paper straws</p> <p>Sellotape</p> <p>thin dowel/cocktail sticks</p> <p>plasticine</p> <p>sticky tape</p> <p>compass</p>	
<p><b>Key Concepts</b></p>	<p>Changing the movement of an object requires a net force (push or pull) to be acting on it.</p> <p>The movement of Earth affects the seasons and times of day</p>	<p>Humans move through different stages of growth and development</p> <p>Living things have characteristics and requirements for life, growth and health</p>	<p>There is a relationship between structure and function</p> <p>Living and non-living things can be grouped in a variety of ways</p> <p>All matter on earth exists in one of three states: solid, liquid, gas and the state of matter can change</p> <p>Energy makes things happen and can be seen by its effects; it can be transferred (but is not used up)</p>	<p>There is a relationship between structure and function</p> <p>Living and non-living things can be grouped in a variety of ways</p> <p>All matter on earth exists in one of three states: solid, liquid, gas and the state of matter can change</p> <p>Energy makes things happen and can be seen by its effects; it can be transferred (but is not used up)</p>	<p>Humans move through different stages of growth and development</p> <p>Living things have characteristics and requirements for life, growth and health</p>	<p>Changing the movement of an object requires a net force (push or pull) to be acting on it</p> <p>The movement of Earth affects the seasons and times of day</p>	

**Knowledge**

**Lesson 1: Explore the solar system and its planets**

I can describe the Sun, Earth and Moon as approximately spherical bodies.

**Lesson 2: Understand the heliocentric model of the solar system**

I can describe the movement of the Earth and other planets relative to the Sun in the solar system.

**Lesson 3: Explain the Earth's movement in space.**

I can use the idea of the Earth's rotation to explain day and night and the apparent movement of the Sun across the sky.

**Lesson 4: Explain the Earth's rotation and night and day**

I can compare the time of day at different places on the Earth.

**Lesson 5: Explain the movement of the Moon**

I can describe the movement of the Moon relative to the Earth.

**Lesson 1: Identify the key stages of a mammal's life cycle**

I can compare the humans life cycle with another mammal.

**Lesson 2: Explore the gestation periods of mammals**

I can recognise the gestation period for different mammals.

**Lesson 3: Learn about foetal development**

I can describe the changes to a foetus in human development.

**Lesson 4: Investigate the hand span of differently aged children**

I can describe the changes to a child in human development.

**Lesson 5: Describe the changes humans may experience during old age**

I can describe the changes to a human in old age.

**Lesson 1: Explore properties of materials**

I can compare and group together everyday materials on the basis of their properties, including transparency, conductivity (electrical and thermal) and magnetic.

**Lesson 2: Explore thermal conductors and thermal insulators**

I can compare and group together everyday materials based on evidence from comparative and fair tests, including their conductivity of heat.

**Lesson 3: Explore the hardness of materials**

I can compare and group together everyday materials on the basis of their properties, including their hardness.

**Lesson 4: Discover materials that are soluble in water**

I know that some materials will dissolve in liquid to form a solution.

**Lesson 5: Explore how mixtures can be separated by filtering, sieving, evaporating or magnets**

I can use knowledge of solids, liquids and gases to decide how mixtures might be

**Lesson 1: Use evaporation to recover the solute from a solution**

I can describe how to recover a substance from a solution.

**Lesson 2: Recognise and describe reversible changes**

I can demonstrate that dissolving, mixing and changes of state are reversible changes.

**Lesson 3: Observe chemical reactions and describe how we know new materials are made**

I can 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.

**Lesson 4: Investigate rusting reactions**

I can explain that some changes result in the formation of new materials, and that this kind of change is not usually reversible.

**Lesson 5: Investigate burning reactions**

I can 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

**Lesson 1: Understand the life processes of a plant**

I can describe the life process of reproduction in some plants.

**Lesson 2: Understand the life cycles of mammals**

I can describe the differences in the life cycles of a mammal.

**Lesson 3: Compare the life cycles of insects and amphibians**

I can describe the differences in the life cycles of an amphibian and an insect.

**Lesson 4: Understand the life cycle of birds and reptiles**

I can describe the differences in the life cycles of a bird.

**Lesson 5: Know about the life and work of Jane Goodall and David Attenborough**

I can identify important facts on key members of the scientific community.

**Lesson 1: Explore gravity and the life and work of Isaac Newton**

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

**Lesson 2: Examine the connection between air resistance and parachutes**

I can identify the effects of air resistance.

**Lesson 3: Explore factors which affect water resistance**

I can identify the effects of water resistance.

**Lesson 4: Investigate the effects of friction on different surfaces**

I can identify the effects of friction that act between moving surfaces.

**Lesson 5: Investigate mechanisms – levers and pulleys**

I can recognise that some mechanisms including levers and pulleys allow a smaller force to have a greater effect.

**Lesson 6: Investigate mechanisms – gears**

I can recognise that some mechanisms including gears allow a smaller force to have a greater effect.

			separated, including through filtering, sieving and evaporating.	burning) – shown in lesson 3			
<b>Skills</b>	<p><b>Lesson 1:</b>  Interpreting and Communicating Results</p> <p><b>Lesson 2:</b>  Interpreting and Communicating Results</p> <p><b>Lesson 3:</b>  Observing and Measuring</p> <p><b>Lesson 4:</b>  Making Predictions.</p> <p><b>Lesson 5:</b>  Recording data, results and findings</p>	<p><b>Lesson 1:</b>  Recording data, results and findings</p> <p><b>Lesson 2:</b>  Interpreting and Communicating Results</p> <p><b>Lesson 3:</b>  Recording data, results and findings</p> <p><b>Lesson 4:</b>  Observing and Measuring</p> <p><b>Lesson 5:</b>  Interpreting and Communicating Results</p>	<p><b>Lesson 1:</b>  Making Predictions</p> <p><b>Lesson 2:</b>  Observing and Measuring</p> <p><b>Lesson 3:</b>  Observing and Measuring</p> <p><b>Lesson 4:</b>  Setting up tests</p> <p><b>Lesson 5:</b>  Evaluating</p>	<p><b>Lesson 1:</b>  Setting up tests</p> <p><b>Lesson 2:</b>  Interpreting and Communicating Results</p> <p><b>Lesson 3:</b>  Interpreting and Communicating Results</p> <p><b>Lesson 4:</b>  Setting up tests</p> <p><b>Lesson 5:</b>  Interpreting and Communicating Results</p>	<p><b>Lesson 1:</b>  Making Predictions.</p> <p><b>Lesson 2:</b>  Interpreting and Communicating Results</p> <p><b>Lesson 3:</b>  Recording data, results and findings</p> <p><b>Lesson 4:</b>  Observing and Measuring</p> <p><b>Lesson 5:</b>  Interpreting and Communicating Results</p>	<p><b>Lesson 1:</b>  Making Predictions.</p> <p><b>Lesson 2:</b>  Setting up tests</p> <p><b>Lesson 3:</b>  Interpreting and Communicating Results</p> <p><b>Lesson 4:</b>  Setting up tests</p> <p><b>Lesson 5:</b>  Evaluating</p> <p><b>Lesson 6:</b>  Observing and Measuring</p>	
<b>Vocabulary</b>	orbit spherical Solar System gas giant planets terrestrial planet	reproduce adolescent dependent puberty foetus gestation	magnetic versatile conductive durable transparent thermal	solute solution evaporate pure substance solvent	fertilisation reproduction asexual reproduction genes tuber	astronomy weight mass Sir Isaac Newton gravity Galileo Galilei	

	<p>heliocentric astronomy dwarf planet geocentric hemisphere poles axis shadow sundial dial time zone phase moon waning waxing eclipse</p>	<p>pregnant breeding duration trimester embryo umbilical cord womb midwife growth spurt childhood motor skills milk teeth memory lifestyle</p>	<p>molecules insulator degrees Celsius (°C) conduction iron stone steel force hardness insoluble dissolve solute soluble solvent solution pure substance sieving mixture filtering evaporation</p>	<p>reversible physical change melting mixture irreversible compare chemical change effervescence product control variable corrosion fair test rusting variable combustion fuel oxygen smother extinguish bicarbonate of soda acid reaction carbon dioxide predict</p>	<p>monotreme mammal pouch marsupial placental amphibian metamorphosis larva caterpillar pupa hatch egg fledgling egg tooth embryo natural sciences primatologist endangered documentary naturalist</p>	<p>air resistance parachute opposing streamlined sink upthrust water resistance buoyant friction resistance Newton meter lubricant load pulley lever pivot gear mesh mechanism rack and pinion bevel fulcrum</p>	
<b>Career Links</b>	Astrophysicist	Midwife	Lab technician	Hairdresser	Catchment officer	Aerodynamics engineer	