
















Year group: Y5 – Autumn 1		Subject Area: Science		Unit: Properties and change of materials		Subject Leader: K.Beetham	
Prior linked knowledge		National curriculum objectives				Future linked knowledge	
<p><u>Y4</u></p> <ul style="list-style-type: none"> • Compare and group materials together, according to whether they are solids, liquids or gases • Observe that some materials change state when they are heated or cooled, and measure or research the temperature at which this happens in degrees Celsius (°C) • Identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature. 		<ul style="list-style-type: none"> • 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 • Know that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution • Use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating • Give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic • Demonstrate that dissolving, mixing and changes of state are reversible changes • 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><u>KS3</u></p> <ul style="list-style-type: none"> • The properties of the different states of matter (solid, liquid and gas) in terms of the particle model, including gas pressure • Changes of state in terms of the particle model 	
Common misconceptions		Cross-curricular links				Possible hooks/enrichment activities	
<ul style="list-style-type: none"> • Thermal insulators warm things up. • When a solid is dissolved into a gas it disappears. • Sugar water cannot be recovered. • Dissolving and melting are the same thing. 						Coke and Mentos experiment on the school yard	
Lesson Sequence							
Identify, group and classify 	Observation overtime 	Comparative testing 	Observation overtime 	Problem solving 	Comparative testing 	Pattern seeking 	
<p>Lesson 1 <i>How can you sort and group the school objects?</i></p> <p>To group together everyday materials based on their properties (hardness, transparency,</p>	<p>Lesson 2 <i>Which material is best for insulating my cup of tea?</i></p> <p>To know the uses of everyday materials including metals, wood and plastic.</p>	<p>Lesson 3 <i>Which materials are soluble and which are insoluble? How can we recover the sugar?</i></p> <p>To know how to dissolve a material to form a solution. To know how to</p>	<p>Lesson 4 <i>Does stirring a mixture change how quickly a solute dissolves?</i></p> <p>To know how to dissolve a material to form a solution.</p>	<p>Lesson 5 <i>How can we separate mixtures?</i></p> <p>To know how mixtures may be separated using filtering, sieving and evaporating.</p>	<p>Lesson 6 <i>What are reversible and irreversible changes?</i></p> <p>To know what reversible and irreversible mean. To know that dissolving, mixing and</p>	<p>Lesson 7 <i>Does more vinegar make a bicarbonate of soda volcano travel higher?</i></p> <p>To know that formation of new materials are usually not reversible changes.</p>	

conductivity and response to magnets)		recover a substance from a solution.			changing state are reversible changes. To know that burning and the action of acid are usually not reversible changes.	To know that burning and the action of acid are usually not reversible changes.
Key skills						
Lesson 1 Report findings in oral and written forms	Lesson 2 Record data and results of increasing complexity using scientific diagrams and labels, bar graphs, line graphs and 2 way tables.	Lesson 3 Begin to use repeat readings and know why they are needed.	Lesson 4 Discuss ways to control variables with guidance.	Lesson 5 Plan different types of scientific enquiries to answer questions.	Lesson 6 Record findings using line graphs, bar charts, 2 way tables , diagrams and labels.	Lesson 7 Take accurate measurements using familiar scientific equipment with increasing independence, selecting appropriate equipment.
Key vocabulary						
Lesson 1 Hard Soft Brittle Transparent Translucent Conductivity Magnetic Suitable Properties	Lesson 2 Insulation Suitable Properties	Lesson 3 Dissolve Soluble Insoluble Solution Solvent Solute	Lesson 4 Vocabulary covered in lesson 3 in addition to: Particles	Lesson 5 Mixture Separate	Lesson 6 Reversible change Irreversible change Chemical reaction Burn Acid Filter Evaporation Particles New material	Lesson 7 Vocabulary covering in lesson 6 in addition to: Pattern
Resources						
Lesson 1 A range of objects with different properties Sorting hoops	Lesson 2 Hot water (to be demonstrated by teacher) Paper cup Plastic cup Ceramic cup Metal cup Thermometer	Lesson 3 Water Bath salts Sugar Flour Tea bags	Lesson 4 Sugar Hot water Spoon Thermometer	Lesson 5 Pasta Lentils Water Sand Paper clips Magnets Sieve Filter paper	Lesson 6 Paper (to burn) Lighter Bicarbonate of soda Vinegar Sugar water Sand water Coke Mentos tablets	Lesson 7 Card volcanoes Meter ruler Ipad – photos Bicarbonate of soda Vinegar Measuring jug








Year group: Y5 – Autumn 2		Subject Area: Science			Unit: Forces		Subject Leader: K.Beetham	
Prior linked knowledge			National curriculum objectives			Future linked knowledge		
<u>Y3</u> <ul style="list-style-type: none"> • Compare how things move on different surfaces • Notice that some forces need contact between two objects, but magnetic forces can act at a distance • Observe how magnets attract or repel each other and attract some materials and not others • Compare and group together a variety of everyday materials on the basis of whether they are attracted to a magnet, and identify some magnetic materials • Describe magnets as having two poles • Predict whether two magnets will attract or repel each other, depending on which poles are facing. 			<ul style="list-style-type: none"> • 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. 			<u>KS3</u> <ul style="list-style-type: none"> • Opposing forces and equilibrium: weight held by stretched spring or supported on a compressed surface • Forces being needed to cause objects to stop or start moving, or to change their speed or direction of motion (qualitative only) • Change depending on direction of force and its size. 		
Common misconceptions		Cross-curricular links				Possible hooks/enrichment activities		
Force means someone makes you do something A stationary objects has no force		DT - mechanical systems using gears or pulleys						
Lesson Sequence								
Research 	Pattern seeking 	Problem solve 	Comparative testing 	Comparative testing 	Observation overtime 	Identify, group & classify 	Problem solve 	
Lesson 1 <i>How do I not fall off Earth?</i> To know that objects fall towards Earth because of gravity. To know who Isaac Newton is.	Lesson 2 <i>Does the weight of an object impact its gravitational pull?</i> To measure the effect of gravity on objects.	Lesson 3 <i>How can I make the buggy move?</i> To know that forces move an object.	Lesson 4 <i>Which surface is best for moonwalking?</i> To know the effects of friction.	Lesson 5 <i>Does size impact the effectiveness of a parachute?</i> To know the effects of air resistance.	Lesson 6 <i>Can I outrun a swimmer?</i> To know the effects of water resistance.	Lesson 7 <i>What is a mechanism?</i> To know what pulleys leavers and gears are.	Lesson 8 <i>Does a pulley help lift a heavy load?</i> To know that mechanisms can allow a smaller force to have a greater effect.	
Key skills								
Lesson 1 Identify scientific evidence that has	Lesson 2 Take measurements,	Lesson3 To investigate through trial and	Lesson 4 Plan scientific enquiries to	Lesson 5 Record data and results of	Lesson 6 Plan scientific enquiries to	Lesson 7 Compare, identify and classify.	Lesson 8 Report and present findings	

been used to support or refute ideas or arguments.	using a range of scientific equipment.	error by setting up simple practical enquiries.	answer questions, including recognising and controlling variables where necessary	increasing complexity using tables.	answer questions, including recognising and controlling variables where necessary		from enquiries orally.
Key vocabulary							
Lesson 1 Gravity Newtons Force	Lesson 2 Vocab from lesson 1 in addition to: Grams	Lesson 3 Vocab from lesson 1 in addition to: Push Pull	Lesson 4 Vocab from lesson 1&3 in addition to: Friction Resistance Surface Opposite force	Lesson 5 Vocab from lesson 1&3 in addition to: Air resistance Surface area Opposite force	Lesson 6 Vocab from lesson 1&3 in addition to: Up thrust Water resistance Opposite force Density	Lesson 7 & 8 Mechanisms Pulleys Leavers Gears Load Pivot Rotation	
Resources							
Lesson 1 Classroom objects. Force meter.	Lesson 2 Force meter. Classroom objects. Scales.	Lesson 3 Wheels x4 Cardboard box Straws x4 Balloon	Lesson 4 Force meter. Child's shoe. Different surfaces.	Lesson 5 Big cardboard Paper helicopter Cupcake cases small Cupcake cases medium Cupcake cases large Stopwatch	Lesson 6 Four pennies Three liquids (water, oil, glue). Four bottles Stopwatch.	Lesson 7	Lesson 8 Bobbin Pencil String/yarn Pot/cup/yogurt container







Year group: Y5 – Spring 1	Subject Area: Science	Unit: Living things in their habitats	Subject Leader: K.Beetham
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Prior linked knowledge	National curriculum objectives	Future linked knowledge
<u>Y4</u> <ul style="list-style-type: none"> Recognise that living things can be grouped in a variety of ways Explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment Recognise that environments can change and that this can sometimes pose dangers to living things. 	<ul style="list-style-type: none"> 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 	<u>Y6</u> <ul style="list-style-type: none"> 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.
Common misconceptions	Cross-curricular links	Possible hooks/enrichment activities
All plants have flowers Only birds lay eggs		Tadpoles in class for life cycle Parents to bring in any baby animals to share






Lesson Sequence

Theory	Identify, group and classify 	Identify, group and classify 	Pattern seeking 	Research 	Research 	Identify, group and classify 	Research 
Lesson 1 <i>What is reproduction?</i> To know the sexual and asexual reproductions in animals and plants.	Lesson 2 <i>How do strawberries and potatoes grow?</i> To know what asexual and sexual reproduction of plants means. To know and observe the life process of reproduction in some plants.	Lesson 3 <i>How do algae and daffodils reproduce?</i> To compare the life process of reproduction in some plants.	Lesson 4 <i>Do bigger mammals have a longer gestational period?</i> To know the sexual reproduction life process of animals.	Lesson 5 <i>What are the life cycles of a cat and a butterfly?</i> To know the life cycle of a mammal. To know the life cycle of an insect.	Lesson 6 <i>What are the life cycles of a robin and a frog?</i> To know the life cycle of a bird. To know the life cycle of an amphibian.	Lesson 7 <i>What are the differences and similarities between an insect and an amphibian?</i> To know the differences and make comparisons between the life cycles of different animal types.	Lesson 8 <i>Who is David Attenborough?</i> To know the work of a significant naturalist.

Skills taught:							
Lesson 1 <i>Theory</i>	Lesson 2 Plan different types of scientific enquiries to answer questions.	Lesson 3 Plan different types of scientific enquiries to answer questions.	Lesson 4 Record data and results of increasing complexity using scientific diagrams and labels, bar graphs , line graphs and 2 way tables.	Lesson 5 Record data and results of increasing complexity using scientific diagrams and labels, bar graphs, line graphs and 2 way tables.	Lesson 6 Record data and results of increasing complexity using scientific diagrams and labels, bar graphs, line graphs and 2 way tables.	Lesson 7 Report and present findings from enquiries, using conclusions and beginning to discuss causal relationships.	Lesson 8 Report findings in oral and written forms
Key vocabulary							
Lesson 1 Reproduction Sexual Asexual Plants Animals Cells (gametes) Male cells Female cells Identical Pollen Ovary Pollination Grow	Lesson 2 Vocabulary from lesson 1.	Lesson 3 Vocabulary from lesson 1 in addition to: Countryside Desert Ocean Habitat	Lesson 4 Reproduction Life process Mammal Pattern Gestational period Pregnancy	Lesson 5 Life cycle Mate Mammal Cat Kitten Insect Butterfly Eggs Caterpillar Chrysalis (pupa) Metamorphosis	Lesson 6 Life cycle Mate Bird Amphibian Egg Hatchling Fledging Adult bird Frog spawn Tadpole Froglet Frog Metamorphosis	Lesson 7 Vocabulary covered in lesson 5 and 6 in addition to: Metamorphosis	Lesson 8 Naturalist Important Significant individual Contribution
Resources							
Lesson 1	Lesson 2 Strawberry Potato Soil Plant pot	Lesson 3 iPad/computer	Lesson 4 iPad/computer	Lesson 5 Pasta types for butterfly life cycle (fusilli, shell and bowtie) Images of cats at different stages	Lesson 6 Life cycle template to fill and annotate.	Lesson 7 Venn diagrams	Lesson 8 BBC documentary

Year group: Y5 – Spring 2 and Summer 1		Subject Area: Science		Unit: Earth and Space		Subject Leader: K.Beetham	
Prior linked knowledge		National curriculum objectives			Future linked knowledge		
<u>KS1 and Y3</u> <ul style="list-style-type: none"> • Understand changes in weather patterns and seasons. • Compare how things move on different surfaces. • Notice that some forces need contact between two objects, but magnetic forces can act at a distance. • Describe magnets as having two poles. • Predict whether two magnets with attract or repel each other, depending on which poles are facing 		<ul style="list-style-type: none"> • 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 • 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. 			<u>KS3</u> <ul style="list-style-type: none"> • 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) • 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 		
Common misconceptions		Cross-curricular links			Possible hooks/enrichment activities		
The Sun is a planet The Sun rotates around the Earth The Sun moves across the sky The Earth is flat		Art – Peter Thorpe rockets			Planet songs Video clips on BBC bitesize		
Research 	Research 	Pattern seeking 	Research 	Problem solve 	Observation overtime 		
Lesson 1 <i>What are the names of the planets in the Solar System?</i> To know the name of the planets, including Earth	Lesson 2 <i>How long does it take the Earth to orbit the Sun?</i> To describe the movement of Earth, and other planets, relative to the Sun in the solar system	Lesson 3 <i>Does the temperature of each planet relate to their distance from the sun?</i> To describe the movement of Earth, and other planets, relative to the Sun in the solar system	Lesson 4 <i>What are the phases of the moon?</i> To know that the Moon is relative to the Earth.	Lesson 5 <i>Can you make a model of the Sun, Moon and Earth that represents their distance from each other?</i> To know that the Sun, Earth and Moon are spherical bodies.	Lesson 6 <i>Where is the sun throughout the school day?</i> To know that day and night occurs due to the Earth's rotation.		

Skills taught					
Lesson 1	Lesson 2 Identify scientific evidence that has been used to support or refute ideas or arguments.	Lesson 3 Plan different types of scientific enquiries to answer questions.	Lesson 4 Report findings in oral and written forms	Lesson 5 Set up simple practical enquiries, comparative and fair tests.	Lesson 6 Set up simple practical enquiries, comparative and fair tests.
Key vocabulary					
Lesson 1 Solar system Planet Name of planets Sun Star Moon	Lesson 2 Vocabulary taught in lesson 1 in addition to: Orbit Heliocentric Leap year	Lesson 3 Vocabulary taught in lesson 1 and 2 in addition to: Temperature Distance	Lesson 4 Vocabulary taught in lesson 1 -3 in addition to: Phases of the moon New moon Waxing crescent First quarter Waxing gibbous Full moon Waning gibbous Last quarter Waning crescent Lunar	Lesson 5 Vocabulary taught in lesson 1 -4 in addition to: Spherical	Lesson 6 Vocabulary taught in lesson 1 -5 in addition to: Day and night Earth Rotation
Resources					
Lesson 1 iPad/computer/books	Lesson 2 iPad/computer/books	Lesson 3 iPad/computer/books	Lesson 4 iPad/computer/books Oreo	Lesson 5 Spherical fruit e.g. orange, melon etc	Lesson 6 Chalk

Year group: Y5 – Summer 2		Subject Area: Science		Unit: Animals inc humans		Subject Leader: K.Beetham	
Prior linked knowledge		National curriculum objectives				Future linked knowledge	
Y4 <ul style="list-style-type: none"> Describe the simple functions of the basic parts of the digestive system in humans Identify the different types of teeth in humans and their simple functions Construct and interpret a variety of food chains, identifying producers, predators and prey. 		<ul style="list-style-type: none"> Describe the changes as humans develop to old age. 				Y6 <ul style="list-style-type: none"> 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. 	
Common misconceptions		Cross-curricular links				Possible hooks/enrichment activities	
All humans live to 100		RSE – puberty				Any parents with new babies in their family bring the baby into school at the end of the day so children can have a good observation.	
Lesson Sequence							
Pattern seeking 		Identify, classify & group 		Research 		Identify, classify & group 	
Lesson 21 <i>How big does a foetus grow?</i> To know the changes to a human foetus.		Lesson 2 What can toddlers do that babies can't? To know the changes between babies to children.		Lesson 3 <i>Why will I get sweaty and spotty during puberty?</i> To know the changes that occur during puberty.		Lesson 4 <i>What are the differences and similarities between girls and boys during puberty?</i> To know what happens during puberty.	
Lesson 5 <i>What are the differences between adult and old age?</i> To know the changes that occur from an adult to old age.		Lesson 6 <i>What are the age stages of life?</i> To know the human life cycle.		Comparative testing 			
Key skills taught							
Lesson 1 Recording data and results of increasing complexity using scatter graphs		Lesson 2 Identifying scientific evidence that has been used to support or refute ideas or arguments.		Lesson 3 Identifying scientific evidence that has been used to support or refute ideas or arguments.		Lesson 4 Reporting and presenting findings from enquiries in verbal form.	
Lesson 5 Planning different types of scientific enquiries to answer questions		Lesson 6 Reporting and presenting findings from enquiries, including conclusions, causal relationships in written form in form of a presentation.					

Key vocabulary					
Lesson 1 Development Growth Size	Lesson 2 Toddler Baby Development Walking Talking Communicate Cry Toilet Eating Milk	Lesson 3 Puberty Development Changes Hormones Skin Spots Sweat glands Sweat	Lesson 4 Vocabulary from lesson 4 in addition to: Mood Periods Sperm Ejaculation Breast	Lesson 5 Elderly Old age 65+ Wrinkles Grey hair Bone density Memory	Lesson 6 Life cycle Humans Foetus Baby Toddler Child Teenager Adult Old age
Resources					
Lesson 2 Different sized fruit linked to gestational size. Measuring tape.	Lesson 2 Images of babies and toddlers Baby items such as bottle, cot, nappy etc borrowed from EYFS.	Lesson 3 iPads/computer/textbooks	Lesson 4 Sorting hoops Statements/images	Lesson 5 Images of old age Images of adults	Lesson 6 Images/statements of the stages of age.