Year 5 Curriculum Map

Year 5 – Forces				
Lesson Intention	**National Curriculum Reference**	**Scientific Enquiry**	**Rocket Words**	**Resources**
Explore gravity and the life and work of Isaac Newton	Explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object	Identifying scientific evidence that has been used to support or refute ideas or arguments	Sir Isaac Newton gravity astronomy weight mass	*1m ruler/tape measure, weighing scales, variety of balls (tennis ball, soft ball, marble, hockey ball etc), pencil, 2 sheets of paper, stopwatch*
Examine the connection between air resistance and parachutes	Identify the effects of air resistance, water resistance and friction, that act between moving surfaces	Taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate	Galileo Galilei air resistance opposing streamlined parachute	*feather, tennis ball, small plastic toys/weights, stopwatches, variety of materials to test (different types of papers, plastic bags, bin bags, variety of materials), rulers, hole punch, string, calculators*
Explore factors which affect an object's ability to resist water	Identify the effects of air resistance, water resistance and friction, that act between moving surfaces	Reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and a degree of trust in results, in oral and written forms such as displays and other presentations	water resistance streamlined upthrust buoyant sink	*small object (such as a marble, or penny), large clear container filled with water, mini whiteboard, modelling clay, water, variety of containers (such as large bottles with the tops cut off, or large measuring cylinders), weighing scales*
Investigate the effects of friction on different surfaces	Identify the effects of air resistance, water resistance and friction, that act between moving surfaces	Planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary	friction resistance lubricant Newton meter Newton	*a variety of surfaces (different carpets or carpet tiles, variety of wooden floors, tarmac/playground surface), trainer, Newton meter, ruler, weight* *Alternatively, children could cover a plank of wood with different surfaces (such as sandpaper, a towel, tinfoil, lino, carpet, corrugated cardboard, bubble wrap etc.), squared paper*
Investigate mechanisms - levers and pulleys	Recognise that some mechanisms including levers, pulleys and gears allow a smaller force to have a greater effect	Reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and a degree of trust in results, in oral and written forms such as displays and other presentations	lever load pivot fulcrum pulley	*mini whiteboards, ball, a load to lift per child (weights/1 pint milk bottle/bag of sand etc.), materials to create a pulley - string, cotton reels, dowel, wheels, cardboard*
Investigate mechanisms - gears	Recognise that some mechanisms including levers, pulleys and gears allow a smaller force to have a greater effect	Planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary	mechanism gear mesh rack and pinion bevel gear	*strong cardboard, lolly sticks, paper straws, sticky tape, thin dowel/cocktail sticks, plasticine, sticky tape, glue, compass, scissors*

Year 5 Curriculum Map

Year 5 – Properties of materials				
Lesson Intention	**National Curriculum Reference**	**Scientific Enquiry**	**Rocket Words**	**Resources**
Exploring properties of materials	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	Planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary	conductive magnetic durable transparent versatile	*10 sample pieces of material - wood, paper, card, plastic, string, wool, rubber, different metals, clay, pen and pencils, electrical equipment to make circuits (with a bulb), magnets, torch*
Explore thermal conductors and thermal insulators	Compare and group together everyday materials based on evidence from comparative and fair tests, including their conductivity of heat Give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic	Taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate Recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs	thermal conduction molecules degrees Celsius (℃) insulator	*paper cups, a variety of materials to wrap up the cup, for instance, cling film, foil, paper, felt, cotton, sticky tape, thermometer, warm water, stopwatch*
Explore the hardness of materials	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	Reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and a degree of trust in results, in oral and written forms such as displays and other presentations	hardness force iron steel stone	*granite tile, ceramic tile, hardwood, softwood, slate, different stones, plastic, metal, card, coin and nail*
Discover materials that become soluble in water	Know that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution	Planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary	dissolve solute insoluble soluble solvent	*a range of substances to test if they dissolve, for instance, sand, sugar, salt, flour, wax candles, coffee, jam, butter, chalk, jelly, pepper, measuring spoon, beakers/cup, water*
Investigate the solubility of materials	Know that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution	Using test results to make predictions to set up further comparative and fair tests	solute solvent solution substance saturation	*a variety of solutes (salt, sugar, jelly, coffee), beakers, water*
Explore how mixtures could be separated by filtering, sieving, evaporating or magnets	Use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating	Planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary	pure substance mixture filtering sieving evaporation	*sand, sawdust, gravel, metal nuts, marbles, flour, beakers or containers, filter paper, sieve, colander, magnets*

Year 5 Curriculum Map

Year 5 – Changes of materials

Lesson Intention	National Curriculum Reference	Scientific Enquiry	Rocket Words	Resources
Use evaporation to recover the solute from a solution	Describe how to recover a substance from a solution	Reporting and presenting findings from enquiries, including conclusions	pure substance solute solvent solution evaporate	*1 large clear bottle filled with pure water labelled "A", 1 large clear bottle filled with salt water labelled "B" (30g of table salt in 150 ml of water), teaspoons, small containers such as foil cake cases to place liquid in, labels, access to an oven (200◦C for 20 minutes will evaporate 3 teaspoons of water and leave salt) or warm place.*
Recognise and describe reversible changes	Demonstrate that dissolving, mixing and changes of state are reversible changes	Reporting and presenting findings from enquiries, including conclusions, in oral and written forms	reversible mixture physical change melting evaporate	*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. Optional- to reverse changes: heat source and mould to re- melt chocolate and ice and evaporate water, sieve.*
Observe chemical reactions and describe how we know new materials are made	Explain that some changes result in the formation of new materials, and that this kind of change is not usually reversible	Reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and a degree of trust in results, in oral and written forms such as displays and other presentations	irreversible chemical change compare effervescence product	*Water, fizzing tablet (such as berroca or alka seltzer), vinegar, bicarbonate of soda, candle, matches, red cabbage indicator*, soapy water, water, milk, small bottles for liquids, small containers (small aluminium pie cases work well)*
Investigate rusting reactions	Explain that some changes result in the formation of new materials, and that this kind of change is not usually reversible	Planning different types of scientific enquiry to answer questions, including recognising and controlling variables where necessary	fair test variable control variable corrosion rusting	*Small iron nails, test tubes or other small containers, water, salty water, other liquids (lemon juice, cola etc) oil, paint or petroleum jelly*
Investigate burning reactions	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.	Identifying scientific evidence that has been used to support or refute ideas or arguments	combustion fuel oxygen extinguish smother	*Tea light, matches, beaker, vinegar, bicarbonate of soda*
Investigate chemical reactions - acids and bicarbonate of soda	Explain that some changes result in the formation of new materials, and that this kind of change is not usually reversible, including changes associated the action of acid on bicarbonate of soda	Using test results to make predictions to set up further comparative and fair tests	reaction predict acid bicarbonate of soda carbon dioxide	*Bicarbonate of soda, container with lid such as plastic egg or film canister, small containers to test substances in (test tubes or small foil containers), liquids (water, vinegar, cola, lemon juice), plastic spoons, pipettes*

Year 5 Curriculum Map

Year 5 – Animals, including humans				
Lesson Intention	**National Curriculum Reference**	**Scientific Enquiry**	**Rocket Words**	**Resources**
Identify the key stages of a mammal's life cycle	Describe the changes as humans develop to old age	Recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs	foetus dependent adolescent puberty reproduce	*Scissors, handout (on thin card), pen and pencils, split pins*
Explore the gestation periods of mammals	Describe the changes as humans develop to old age	Reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and a degree of trust in results, in oral and written forms such as displays and other presentations	gestation pregnant duration extreme breeding	*Sticky notes, scissors, pens/pencils, computers/tablets for research*
Learn about foetal development	Describe the changes as humans develop to old age	Recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs	womb umbilical chord embryo trimester midwife	*Pencil, graph paper, ruler, coloured pencils*
Investigate the hand span of different aged children	Describe the changes as humans develop to old age	Taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate	growth spurt childhood motor skills milk teeth constant	*Ruler, tape measure, pens/pencils, paper*
Learn about the changes experienced during puberty	Describe the changes as humans develop to old age	Reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and a degree of trust in results, in oral and written forms such as displays and other presentations	adolescence puberty hormones mood swing develop	*Large paper/wallpaper, sticky tape, pens/pencils*
Describe the changes humans may experience during adulthood and old age	Describe the changes as humans develop to old age	Identifying scientific evidence that has been used to support or refute ideas or arguments	lifestyle keratin elasticity cataracts neurodegenerative	*Pens, pencils, computers/tablets*

Year 5 Curriculum Map

Year 5 – Earth and space				
Lesson Intention	**National Curriculum Reference**	**Scientific Enquiry Covered**	**Rocket Words Covered**	**Resources Needed**
Explore the solar system and its planets	Describe the Sun, Earth and Moon as approximately spherical bodies	Identifying scientific evidence that has been used to support or refute ideas or arguments Taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate	terrestrial planet gas giant planets Solar System spherical orbit	*Class presentation, 9 balls (one for the Sun) and a measuring trundle*
Understand the heliocentric model of the solar system	Describe the movement of the Earth and other planets relative to the Sun in the solar system	Identifying scientific evidence that has been used to support or refute ideas or arguments	astronomy heliocentric geocentric dwarf planet orbit	*Class presentation, pictures of each planet (from last lesson), newspaper, 9 balloons/balls, oill, PVA glue, a bowl, water, paint, paintbrushes and string*
Explain the Earth's movement in space	Use the idea of the Earth's rotation to explain day and night and the apparent movement of the Sun across the sky	Reporting and presenting findings from enquiries - including conclusions, causal relationships and explanations of and a degree of trust in results - in oral and written forms such as displays and other presentations	axis poles season hemisphere orbit	*Class presentation, a torch, a globe, playdoh and kebab skewers or cocktail sticks*
Explain the Earth's rotation and night and day	Use the idea of the Earth's rotation to explain day and night and the apparent movement of the Sun across the sky	Using test results to make predictions to set up further comparative and fair tests	sundial time zone gnomon dial shadow	*Class presentation, card, scissors, a compass, glue, long wooden kebab skewers and time zone data*
Explain the movement of the Moon	Describe the movement of the Moon relative to the Earth	Identifying scientific evidence that has been used to support or refute ideas or arguments	moon phase waxing waning eclipse	*Class presentation, pinwheel outlines, scissors, split pins, a globe, golf balls and a torch*
Design a planet using knowledge gained	Describe the Sun, Earth and Moon as approximately spherical bodies	Reporting and presenting findings from enquiries	rocky planet gas planet moon orbit solar system	*Class presentation, felt tips, coloured pencils, paint or digital media*

Year 5 Curriculum Map

Year 5 - Living things and their habitats				
Lesson Intention	**National Curriculum Reference**	**Scientific**	**Rocket Words**	**Resources**
Understand the life process of a plant	Describe the life process of reproduction in some plants and animals	Planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary	reproduction asexual fertilisation tuber genes	*Class presentation, rooting powder, pots, a healthy plant (strawberry, tomato, basil or chilli) and soil*
Understand the life cycles of mammals	Describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird	Reporting and presenting findings from enquiries - including conclusions, causal relationships and explanations of and a degree of trust in results - in oral and written forms such as displays and other presentations	pouch mammary glands placental mammal monotreme mammal marsupial	*Class presentation and mammal types sorting cards*
Compare the life cycles of insects and amphibians	Describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird	Reporting and presenting findings from enquiries - including conclusions, causal relationships and explanations of and a degree of trust in results - in oral and written forms such as displays and other presentations	metamorphosis caterpillar amphibian larva pupa	*Class presentation and split pins*
Understand the life cycle of birds and reptiles	Describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird	Reporting and presenting findings from enquiries - including conclusions, causal relationships and explanations of and a degree of trust in results - in oral and written forms such as displays and other presentations	egg fledgling egg tooth hatch embryo	*Class presentation, eggs and toothpicks*
Know about the life and work of Jane Goodall and David Attenborough	Describe the life process of reproduction in some plants and animals	Reporting and presenting findings from enquiries - including conclusions, causal relationships and explanations of and a degree of trust in results - in oral and written forms such as displays and other presentations	documentary naturalist primatologist endangered natural sciences	*Class presentation and research devices (laptops/ipads)*
Research and present the life cycle of a creature	Describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird	Identifying scientific evidence that has been used to support or refute ideas or arguments	living organism reproduction life cycle vertebrate warm-blooded	*Class presentation and research devices (laptops/ipads)*