

Curriculum Intent – Knowledge Builder

Science - Chemistry

Subject Intent Statement:

Science has changed our lives and is vital to the world's future prosperity. Our aim is to encourage pupils to recognise the power of scientific explanation and develop a sense of excitement and curiosity about natural phenomena. We seek to inspire in pupils' a curiosity and fascination about the world around them to ensure that all pupils: develop scientific knowledge and conceptual understanding through the specific disciplines of biology, chemistry and physics; develop understanding of the nature, processes and methods of science through science enquiries that help them to answer scientific questions about the world around them; are equipped with the scientific knowledge required to understand the uses and implications of science, today and for the future. We aim to develop knowledge and skills that are transferable to other curriculum areas and which can and are used to promote their spiritual, moral, social and cultural development.

Year 3	Year 4	Year 5	Year 6
Key Knowledge:			
Rocks Pupils will know different rocks and their properties Pupils will compare and group together different kinds of rocks on the basis of their appearance and simple physical properties. Pupils will be able to describe in simple terms how fossils are formed when things that have lived are trapped within rock Pupils will recognise that soils are made from rocks and organic matter. Pupils know how to use big questions as the basis for investigation. Such as: Why do volcanoes happen? Is sand a rock?	States of matter Pupils will compare and group materials together, according to whether they are solids, liquids or gases. Pupils will 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) Pupils will identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature. Pupils know how to use big questions as the basis for investigation. Such as: What makes a solid a solid? What are hurricanes and why do they happen? How does the mass of a block of ice affect how long it takes to melt? Is there a pattern in how long it takes different sized ice lollies to melt?	Properties of materials (Term 1) Know some common properties of everyday materials and how to identify them. Be able to give examples of signs of reversible and irreversible changes.	Changes of materials (Term 1) - 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. -demonstrate that dissolving, mixing and changes of state are reversible changes. -Revise irreversible changes.
Key Skills:	Key Skills:	Key Skills:	Key Skills:

Working scientifically - asking relevant questions start to use different types of scientific enquiries to answer them - with help set up simple practical enquiries, - making systematic and careful observations and, begin to take accurate measurements using standard units, using a range of equipment, - gathering data to help in answering questions - recording findings using developing scientific language, drawings, labelled diagrams, keys, bar charts, and tables - reporting on findings from enquiries, including oral and written explanations begin to form simple conclusions - using results to draw simple conclusions begin to make predictions - identifying differences, similarities or changes - using straightforward scientific evidence to answer questions Rock Pupils might work scientifically by: observing rocks, including those used in buildings and gravestones, and exploring how and why they might have changed over time; using a hand lens or microscope to help them to identify and classify rocks according to whether they have grains or crystals, and whether they have fossils in them. Pupils might research and discuss the different kinds of living things whose fossils are found in	Working scientifically - asking relevant questions and using different types of scientific enquiries to answer them - independently and within small groups set up simple practical enquiries, comparative and fair tests - making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers - gathering, recording, classifying and presenting data in a variety of ways to help in answering questions - recording findings using confident command of scientific language, drawings, labelled diagrams, keys, bar charts, and tables - reporting on findings from enquiries, including oral and written explanations - using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions - identifying differences, similarities or changes related to simple scientific ideas and processes - using straightforward scientific evidence to answer questions or to support their findings States of matter Pupils might work scientifically by: grouping and classifying a variety of different materials; exploring the effect of temperature on substances such as chocolate, butter, cream (for example, to make food such as chocolate crispy	Working Scientifically Planning different types of scientific enquiries to answer questions. Taking measurements, using a range of scientific equipment. Recording data and results. Using test results to make predictions. Reporting and presenting findings from enquiries, including conclusions, in oral form and in writing Identifying scientific evidence that has been used to support ideas. Properties of materials Working scientifically to - compare and group together everyday materials based on evidence from comparative and fair tests, including their hardness, solubility, transparency, conductivity (electrical and thermal), and response to magnets, Give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic Investigate / research some changes that 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.	Working Scientifically: - 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, tables, bar and line graphs - using test results to make predictions to set up further comparative and fair tests - 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 - identifying scientific evidence that has been used to support or refute ideas or arguments. Changes of materials (Term 1) planning different types of scientific enquiries to separate mixtures and test the solubility of substances, including recognising and controlling variables where necessary
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sedimentary rock and explore how fossils are formed. Pupils could explore different soils and identify similarities and differences between them and investigate what happens when rocks are rubbed together or what changes occur when they are in water. They can raise and answer questions about the way soils are formed. Pupils may research who Mary Anning is and what she discovered.	cakes and ice-cream for a party). They could research the temperature at which materials change state, for example, when iron melts or when oxygen condenses into a liquid. They might observe and record evaporation over a period of time, for example, a puddle in the playground or washing on a line, and investigate the effect of temperature on washing drying or snowmen melting.		
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Key Vocabulary:		Key Vocabulary:	Key Vocabulary:
Rocks Names of types of rocks and soils Fossil	States of Matter Liquid, solid, gas, oxygen, condensation, evaporation, temperature, melt, freeze,	Properties of materials Attract, Burning, Chemical change, Conductor, Dissolve, Flexible, Insoluble, Insulator, Irreversible change, Magnetic, Mixture, North pole, Particles, Repel, Reversible change, Rigid, Soluble, Solubility, Solution, South pole.	Changes of materials (Term 1) Condensation, Dissolve, Evaporation, Freezing, Gap, Gas, Impurities, Insoluble, Liquid, Melting, Mixture, Nitrogen, Oxygen, Particles, Reversible change, Separate, Solid, Soluble, Solute, Solvent, Solution, Solubility, State, Stirring, Temperature, Thermometer, Water Cycle, Water Vapour