Science – Year 5

Autumn 2	Properties of Materials					
Prior learning	Properties of Materials: Year 1 – identify materials and describe properties; Year 2 – identify and compare suitability of materials					
Lesson objective	Exploring properties of materials	Explore thermal conductors and thermal insulators	Explore the hardness of materials	Discover materials that become soluble in water	Investigate the solubility of materials	Explore how mixtures could be separated by filtering, sieving, evaporating or magnets
Key vocabulary	conductive magnetic durable transparent versatile	thermal conduction molecules degrees Celsius (°C) insulator	hardness force iron steel stone	dissolve solute insoluble soluble solvent	solute solvent solution substance saturation	pure substance mixture filtering sieving evaporation
Creative context						
Substantive knowledge	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	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	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	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

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Disciplinary knowledge	Planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary	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	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	Planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary	Using test results to make predictions to set up further comparative and fair tests	Planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary
Recorded learning	Investigate the properties of 10 different materials. Predict and then investigate whether the materials are electrical conductors, transparent, strong thermal conductors or magnetic. Record their results in a table.	Carry out an investigation to help coffee warmer for longer. Select different materials to wrap their cup in, fill their cups with warm water and record the temperature of the water. Record their results in a table and then plot on a line graph .	Investigate 5 different materials which can be scratched by 4 different objects of increasing hardness. Use their results to place the materials in order of hardness.	Investigation which tests if a substance is soluble or insoluble. Record their results in a table.	Design and create an investigation to test the solubility of substances. Record results and write conclusion.	Consider 5 different mixtures/solutions and discuss the best way to separate each; for example, picking out by hand, sieving, filtering or using a magnet. Children to attempt to separate the mixtures using their chosen method and record if this was a successful method

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						or if they had to try something different.
Future learning						