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| **Materials and their Properties** | **Working Scientifically** | | |
| * Can they compare and group together everyday materials on the basis of their properties, including hardness, solubility, transparency, conductivity (electrical and thermal), and response to magnets? * Can they explain how some materials dissolve in liquid to form a solution? * Can they describe how to recover a substance from a solution? * Can they use their knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving, evaporating? * Can they give reasons, based on evidence for comparative and fair tests for the particular uses of everyday materials, including metals wood and plastic? * Can they describe changes using scientific words? (evaporation, condensation) * Can they demonstrate that dissolving, mixing and changes of state are reversible changes? * Can they explain that some changes result in the formation of new materials, and that this kid of change is not usually reversible, including changes associated with burning and the action of acid on bicarbonate of soda? * Can they use the terms ‘reversible’ and ‘irreversible’? | **Planning** | **Obtaining and presenting evidence** | **Considering evidence and evaluating** |
| * Can they explore different ways to test an idea, choose the best way, and give reasons? * Can they vary one factor whilst keeping the others the same in an experiment? Can they explain why they do this? * Can they plan and carry out an investigation by controlling variables fairly and accurately? * Can they make a prediction with reasons? * Can they use information to help make a prediction? * Can they use test results to make further predictions and set up further comparative tests? * Can they explain, in simple terms, a scientific idea and what evidence supports it? * Can they present a report of their findings through writing, display and presentation? | * Can they explain why they have chosen specific equipment? * Can they record their results in different ways? (incl bar charts, tables and line graphs) | * Can they link what they have found out to other science? * Can they suggest how to improve their work and say why they think this? * Can they report findings from investigations through written explanations and conclusions? * Can they report and present 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? |
| **Challenge** | | | |
| * Can they describe methods for separating mixtures? (filtration, distillation) * Can they work out which materials are most effective for keeping us warm or for keeping something cold? * Can they use their knowledge of materials to suggest ways to classify? (solids, liquids, gases) * Cant hey explore changes that are difficult to reverse, e.g. burning, rusting and reactions such as vinegar with bicarbonate of soda? * Can they explore the work of chemists who created new materials, e.g. Spencer Silver (glue on sticky notes) or Ruth Benerito (wrinkle free cotton)? | * Can they choose the best way to answer a question? * Can they make a prediction which links with other scientific knowledge? * Can they identify the key factors when planning a fair test? | * Can they plan in advance which equipment they will need and use it well? * Can they collect information in different ways? * Can they record their observations systematically? | * Can they draw conclusions from their work? * Can they link their conclusions to other scientific knowledge? * Can they explain how they could improve their way of working? |