| **Science Year 5 Medium Term Planning – Advent 1: Properties and changes of materials.** |
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| **National Curriculum*** 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
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| **Prior vocabulary knowledge**transparent, transparency, translucent thermal magnetism |
|  | Lesson 1 | Lesson 2 | Lesson 3 | Lesson 4 | Lesson 5 | Lesson 6 |
| **Learning intention** | What properties do materials have? How do we use them? | What is a solution and what is a mixture? | How can we separate materials from a mixture? | How can we separate materials from a solution? Investigation:Enrichment | What changes are reversible? | What changes are irreversible?Enrichment |
| **Working Scientifically** | Planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary. | Planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary. | Recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs. | Recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs. | Identifying scientific evidence that has been used to support or refine ideas or arguments. | 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. |
| **Recall and retrieval** | CQ: 1-5 | CQ: 1-10 | CQ:11-16 | CQ 17-20 | CQ:17-20States of matter (Y4) | CQ: 1-20  |
| **Sequence of knowledge throughout the lesson** | **Key knowledge**Sort materials and match the material to their purpose:conductorinsulatorsolubilitytransparencymagnetism | **Key knowledge**Investigating physical changes:solid + solidsolid + liquidliquid + liquidTo know what a solution, solute, solvent and carrier are.Investigate changes to variables.Demonstrate: knowledge through answering the question:What happens if you put too much salt in the water? | **Key knowledge**To know ways of separating larger solids using a variety of equipment:sievefilter papermagnets.Record results. | **Key knowledge**To know how to separate materials from a mixture.Devising, carryout and record an investigation into separating materials using previous knowledge (L3)Know which method of separating materials is most effective in different situations.Know what soluble and insoluble means and examples of each. | **Key knowledge**To know different physical changes:dissolvingmeltingfreezingevaporatingInvestigate different materials, record results and identify if the changes are reversible or irreversible. | **Key knowledge**To know what chemical change is and that it is irreversible.Heat a range of materials:Predict, test and record. |
| **Scaffolding** | Supported for more simple material sorting. | Stem sentences. | Supported investigation using prompts. | More simple materials used in investigation. | Simple irreversible/reversible tests and guided investigations. | Stem sentences. |
| **Challenge** | Greater variety of materials to sort. | Independent explanation using scientific vocabulary. | Explain why different methods work for different materials. | Wider variety of resources to sort. | Write an explanation of changes using scientific vocabulary. | Write an explanation of changes using scientific vocabulary. |
| **Tier 2 vocabulary** | properties | particlescombine | particlesseparate | particlesseparate | separate | recovercomparative |
| **Tier 3 vocabulary** |  | physical changes  | Reactionmolecules  | atom molecules reversible | atom molecules reversible | changes irreversiblechemical  |