<table>
<tr><th colspan="2">Year 5 – Separating Mixtures (Materials and changes of state)</th></tr>
<tr><td>Links made with other subjects</td><td></td></tr>
<tr><td>The BIG Question</td><td>Can we change materials? (Answer after types of change)</td></tr>
<tr><td>The BIG Outcome</td><td>Explanation answering the question (Answer after types of change)</td></tr>
<tr><td>Science objectives
(link to NC)</td><td>- 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.</td></tr>
<tr><td>Prior knowledge
What prior knowledge is needed for children to be successful in this unit?</td><td>Children already know:
EYFS – Understanding the world - Children know about similarities and differences in relation to places, objects, materials and living things. They talk about the features of their own immediate environment and how environments might vary from one another. They make observations of animals and plants and explain why some things occur and talk about changes.
Yr 1 - Comparing and Identifying materials
Yr 2 - Changing shape and uses of material
Yr 4 - Changes of State</td></tr>
<tr><td>Future learning
Consider the conceptual knowledge within a subject that pupils need for future learning not just the recall of facts but the importance of concepts</td><td>This unit gives prior knowledge to:
KS3 -Chemical reactions as the rearrangement of atoms.
• Representing chemical reactions using formulae and using equations.
• Combustion, thermal decomposition, oxidation and displacement reactions.
• Defining acids and alkalis in terms of neutralisation reactions.
• The pH scale for measuring acidity/alkalinity; and indicators.</td></tr>
<tr><td>Science strands</td><td><u>Related Enquiry Questions</u>
<table><tr><td>Classifying</td></tr><tr><td>Not relevant</td></tr><tr><td>Observing over time</td></tr><tr><td>Not relevant</td></tr><tr><td>Pattern Seeking</td></tr><tr><td>Not relevant</td></tr><tr><td>Comparative testing</td></tr><tr><td>-Test solids for solubility.
-Compare rates of solubility.</td></tr><tr><td>Researching</td></tr><tr><td>Not relevant</td></tr></table></td></tr>
<tr><td>Vocabulary/ Glossary</td><td>Thermal/electrical insulator/conductor, change of state, mixture, dissolve, solution, soluble, insoluble, filter, sieve, reversible/non-reversible change, burning, rusting, new material</td></tr>
<tr><td>Knowledge
(see italics for knowledge to remember)</td><td>The knowledge that children will learn and remember:

1. Mixtures can be separated by filtering, sieving and evaporation.
2. Some solids, such as salt, sugar and coffee, dissolve in water to form solutions and are known as soluble
3. Although the solid cannot be seen it is still present.
4. Some solids, such as pepper and sand, will not dissolve in water to form solutions and are known as insoluble
5. solid particles of different sizes can be separated by sieving.
6. solids which have dissolved can be recovered by evaporating the liquid from the solution</td></tr>
</table>

	7. *when solids do not dissolve or react with water (liquid), they can be separated by filtering*
SEND expectations	1. Mixtures can be separated by filtering, sieving and evaporation. 2. Some solids, such as salt, sugar and coffee, dissolve in water to form solutions and are known as soluble 3. solid particles of different sizes can be separated by sieving. 4. solids which have dissolved can be recovered by evaporating the liquid from the solution 5. when solids do not dissolve or react with water (liquid), they can be separated by filtering
Common misconceptions	Lots of misconceptions exist around reversible and irreversible changes, including around the permanence or impermanence of the change. There is confusion between physical/chemical changes and reversible and irreversible changes. They do not correlate simply. Chemical changes result in a new material being formed. These are mostly irreversible. Physical changes are often reversible but may be permanent. These do not result in new materials e.g. cutting a loaf of bread. It is still bread, but it is no longer a loaf. The shape, but not the material, has been changed. Some children may think: - thermal insulators keep cold in or out -thermal insulators warm things up - solids dissolved in liquids have vanished and so you cannot get them back - lit candles only melt, which is a reversible change.