

# National CoFE Junior School - Knowledge Organiser

|                       |                                     |               |                 |
|-----------------------|-------------------------------------|---------------|-----------------|
| <b>Science Focus:</b> | Properties and changes of materials | <b>Year 5</b> | <b>Autumn 1</b> |
|-----------------------|-------------------------------------|---------------|-----------------|

| What? (Key Knowledge)  |  |
|--|--|
| Comparing and Grouping Materials   |  |
| Materials can be grouped by their properties (is it hard or soft?) or by more than one of their properties (is it hard and magnetic?). |  |
| Properties of materials we can compare   |  |
| Hard   | <ul style="list-style-type: none"> <li>Difficult to scratch, like the head of a hammer.</li> </ul>   |
| Soft   | <ul style="list-style-type: none"> <li>Easy to shape, like fabric.</li> </ul>  |
| Soluble  | <ul style="list-style-type: none"> <li>Can be dissolved, like coffee granules.</li> </ul>  |
| Insoluble  | <ul style="list-style-type: none"> <li>Cannot be dissolved, like pebbles.</li> </ul>   |
| Transparent  | <ul style="list-style-type: none"> <li>See through, like glass.</li> </ul>   |
| Opaque   | <ul style="list-style-type: none"> <li>Not see through, like a wooden door.</li> </ul>   |
| Electrical conductor   | <ul style="list-style-type: none"> <li>Lets electricity pass through easily, like copper wire.</li> </ul>  |
| Electrical insulator   | <ul style="list-style-type: none"> <li>Do not let electricity flow through easily, like plastic or rubber.</li> </ul>                                  |
| Thermal conductor  | <ul style="list-style-type: none"> <li>Lets heat pass through easily, like a metal kettle.</li> </ul>  |
| Thermal insulator  | <ul style="list-style-type: none"> <li>Does not let heat pass through easily, like a wood pan handle.</li> </ul>                                       |
| Magnetic   | <ul style="list-style-type: none"> <li>Is attracted to a magnet, like a steel spoon.</li> </ul> <p><b>Note: Not all metals attract to magnets.</b></p> |
| Not magnetic   | <ul style="list-style-type: none"> <li>Is not attracted to a magnet, like a wooden spoon.</li> </ul>   |

| Mixtures and Solutions |  |
|------------------------|--|
| A mixture              | <ul style="list-style-type: none"> <li>Where substances are mixed together, but dissolving hasn't taken place. For example, mixing, cucumber slices, egg slices and tomato slices to make a salad.</li> </ul>      |
| A solution             | <ul style="list-style-type: none"> <li>Some substances dissolve in a liquid. When this happens the liquid is called a solution. For example, when gravy granules dissolve in water, this is a solution.</li> </ul> |

| Separating a mixture                                  |   |
|---|---|
| We can separate a mixture by sieving and/or filtering | <ul style="list-style-type: none"> <li>Sieving - sorting out the big bits from the small bits, e.g. stones from soil.</li> <li>Filtering - separating solid bits from a liquid, e.g. sand from sand and water.</li> </ul> |

| Separating a solution                     |  |
|---|--|
| We can separate a solution by evaporation | <ul style="list-style-type: none"> <li>Because the soluble substance is too mixed into the water, it can't be removed by sieving or filtering.</li> <li>Evaporation - A liquid <b>evaporates</b> into a gas when it is heated. This removes the liquid and leaves the substance behind.</li> </ul> |

| Reversible Changes           |  |
|------------------------------|--|
| What is a reversible change? | <ul style="list-style-type: none"> <li>A change that doesn't last forever. For example, water can turn to ice when frozen, but can be turned back to water by heating it.</li> </ul> |

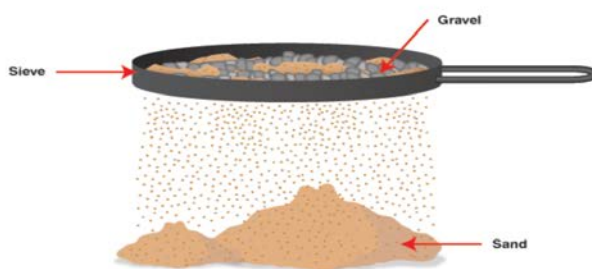
| Irreversible Changes            |  |
|---------------------------------|--|
| What is an irreversible change? | <ul style="list-style-type: none"> <li>Lasts forever</li> <li>Usually caused by heat.</li> <li>E.g. Eggs, flour, butter and sugar heated to make a cake. The original ingredients can't be recovered.</li> </ul> |

| What? (Key Vocabulary) |   |
|------------------------|---|
| Spelling               | Definition/Sentence   |
| dissolved              | To become incorporated into a liquid so as to form a solution.  |
| Separating             | The action of moving things apart.                              |
| Evaporation            | When a liquid turns to a gas due to an increase in temperature. |
| Properties             | A specific quality of something.                                |

## Diagrams and Symbols

### Sieving

A mixture made of solid particles of different sizes, for example sand and gravel, can be separated by sieving.



### Filtering

A mixture of water and an insoluble substance like sand can be separated by filtering.

The mixture of sand and water is poured into the filter funnel, which is lined with filter paper. The water can pass through the paper to collect in the beaker. The sand particles cannot pass through the filter paper and collect in the filter funnel.



### Evaporating

By dissolving salt in water we make a solution. The salt dissolves (seems to disappear) into the water. We can separate the salt from the water by boiling a solution. The water will evaporate until it is all gone. The salt will be left behind.



## Prior Knowledge

- Identify and compare the suitability of a variety of materials.
- Observe some materials change state when heated, cooled, bent or squashed.
- Compare and group materials (solid, liquid, gas)
- Understand condensation and evaporation.

