**Year 5 Science Curriculum – Summer 1**

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| **Theme: Separating mixtures and changing materials** |
| **Curriculum objectives** | **Vocabulary** | **Links across the curriculum** |
| To use knowledge of solids, liquids, and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating.To know that some materials dissolve in liquid to form a solution, [and describe how to recover a substance from a solution].To demonstrate that dissolving, mixing and changes of state are reversible changes. To 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. | **Combine** | To mix two or more materials together. | **Flow Chart** | A diagram that represents a process. | Maths* Recoding information in tables
* Analysing numbers

ICT* Presenting findings

English* Oracy
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| **Grade (of sieve)** | The size of hole in a sieve | **Inflate**  | Fill (a balloon or other expandable structure) with air or gas. |
| **Particle** | A small piece of solid material. | **Proportion** | A part, share or number considered in comparative relation to a whole |
| **Puncture** | Make a hole in a material | **Recommendation** | A suggestion or proposal as to the best course of action |
| **Room temperature** | A standardised convention for the temperature of a room, 20 degrees Celsius | **Sieve** | a piece of equipment with holes of different sizes used to separate solid materials with different size particles |
| **Tier 3 vocabulary** | [SNAP23\_Y5\_M5\_materials\_ms.docx (live.com)](https://view.officeapps.live.com/op/view.aspx?src=https%3A%2F%2Fstatic.collins.rhapsode.com%2FSnap_Science%2FTeaching_Science%2FYear_5%2FSNAP23_Y5_M5_materials_ms.docx&wdOrigin=BROWSELINK) |  |  |
| **Prior knowledge:** *What specifically have pupils learned that is relevant to this unit that they are building upon?* | **Future knowledge:** *What specifically will pupils learn in the future that is relevant to this unit?* |
| Children have previously learnt:* to compare and group materials according to whether they are solids, liquids, or gases (Year 4 Chemistry – States of matter)
* to recognise how temperature changes may cause materials to change state (Year 4 Chemistry – States of matter)
* about the processes of evaporation and condensation in the water cycle (Year 4 Chemistry –States of matter)
* about pollution (Year 4- Living things and their habitats
* to compare and group everyday materials on the basis of their properties and give reasons for the particular uses of materials (Year 5 Chemistry – Properties and uses of materials)
 | This prepares children for later learning:* about chemical reactions of different types.
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| **Lesson Sequence** | **Key Knowledge** | **Key Skills** |
| How can we separate mixtures? | * materials can be mixed in different ways.
* Mixtures can be separated.
* Make their own sieves to separate a mixture of dry solids.
* Communicate the process they have used using a flowchart or diagram.
* Solids with different size particles will require a sieve or sieves with different sized holes.
 | Working scientifically:* reporting and presenting 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
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| What happens when we mix liquids and solids? | * Some solids dissolve in liquid water while others do not.
* Test a variety of materials to establish whether they dissolve.
* Record the results of their test in a table.
* Solids which dissolve break down in water to form a solution.
* Describe how they know that a solid has dissolved.
 | Working scientifically:- 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.Scientific enquiry type:* identifying and classifying
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| What makes a difference to how fast salt or sugar dissolves? | * How the rate at which solids dissolve in liquid water can be changed.
* Plan and carry out a comparative test to explore variables that might affect the rate at which solids dissolve.
* How a dissolved solid can be retrieved from a solution using the process of water becomes saturated and no more solid will dissolve
 | Working scientifically:* planning different types of scientific enquiries to answer questions, including recognising, and controlling variables where necessary
* reporting and presenting 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

Scientific enquiry type:* comparative testing
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| How can we clean up contaminated water | * Use their knowledge of separating mixtures to solve a real-world problem.
* Test a variety of materials as filters to clean up contaminated water.
* Water that appears to be ‘clean’ may still be undrinkable.
 | Working scientifically: * reporting and presenting 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

Scientific enquiry type: * research using secondary sources of information
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| What makes a change non-reversible? | * Some changes of state are physical and reversible, while others are chemical and non-reversible.
* Test different combinations of materials that change chemically to produce carbon dioxide gas.
* Control variables to ensure they can trust their results.
* Record evidence to help them decide which is the best mixture of materials.
 | Working scientifically:* planning different types of scientific enquiries to answer questions, including recognising, and controlling variables, where necessary

Scientific enquiry type: * comparative testing
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| How much gas can be produced by a non-reversible change? | * Non-reversible changes result in the formation of new materials, in this case carbon dioxide gas.
* Test different combinations of materials to make ‘rocket fuel’.
* Present their findings in a newspaper headline.
 | Working scientifically: * 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

Scientific enquiry type: * fair testing
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| **Themes and links** |
| **Themes (types of enquiry)** | **Where these are covered:** | **Links across the science curriculum** |
| **Observation over time** | * Lesson 2
* Lesson 4
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| **EYFS**  |  |
| **1**  | Animals (vertebrates) |
| **2**  | Changing materials |
| **3**  | Movement and nutrition for the human body |
| **4**  | Digestion and food chain |
| **5**  |  |
| **6** | Electricity – changing circuits |

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| **Research** | * Lesson 2
* Lesson 1
* Lesson 3
* Lesson 6
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| **Pattern seeking** | * Lesson 5
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| **Comparative and fair testing** | * Lesson 4
* Lesson 5
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| **Identifying, classifying and grouping** | * Lesson 2
* Lesson 3
* Lesson 4
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