Learning Journey – 7G Separating Mixtures

What have I done previously in my learning journey?	
Previously….	In year 5 you learnt: • How to 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. • That some materials will dissolve in liquid to form a solution and describe how to recover a substance from a solution.
In this topic…	We will learn about separation techniques and the affects on them, how to conduct an experiment to compare solubility, what filtration is and how we use it, distillation, evaporation, chromatography as a separating technique, as well scientific skills such as planning a practical, considering variables in our planning and evaluating methods.

We will develop our learning by studying the following each lesson:	RAG	Skills in Science checklist
7G.01 Mixtures • State that a mixture is two or more atoms that are not chemically combined. • Use particle models to represent mixtures. • Explain why separation techniques are suitable, in terms of the properties of constituent substances.		☐ Scientific Method ☐ Practical ☐ Number skills ☐ Application ☐ Communication
7G.02 Solutions • State a solution contains dissolved particles • Identify a solvent, solute, and solution in a given scenario • Use the particle model to explain dissolving • Draw particle diagrams to represent solutions and pure substances		☐ Scientific Method ☐ Practical ☐ Number skills ☐ Application ☐ Communication
7G.03 Solubility Practical • Describe how temperature affects solubility • Explain why temperature affects the amount of solute dissolved in a solution • Plan an investigation to compare solubility with temperature, considering variables		☐ Scientific Method ☐ Practical ☐ Number skills ☐ Application ☐ Communication
7G.04 Solubility Practical • Investigate how the temperature affects solubility • Explain why some oceans in the world contain more salt than others		☐ Scientific Method ☐ Practical ☐ Number skills ☐ Application ☐ Communication
7G.05 Filtration • Draw a labelled diagram of the apparatus needed to filter a solution • Explain how filtration works • Explain whether or not filtering can be used in given situations		☐ Scientific Method ☐ Practical ☐ Number skills ☐ Application ☐ Communication
7G.06 Evaporation and Distillation • State some mixtures can be separated by evaporation • Explain how distillation works • Discuss whether evaporation or distillation would be suitable for separating different mixtures		☐ Scientific Method ☐ Practical ☐ Number skills ☐ Application ☐ Communication
7G.07 Chromatography • Describe how to separate mixtures by chromatography • Analyse chromatograms to identify substances in a mixture • Explain how chromatography can be used in different scenarios		☐ Scientific Method ☐ Practical ☐ Number skills ☐ Application ☐ Communication
7G.08 Separating Seawater • Describe the best way to separate seawater. • Separate components of a mixture efficiently. • Evaluate your method of separation.		☐ Scientific Method ☐ Practical ☐ Number skills ☐ Application ☐ Communication

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7G.09 Separating Seawater Results • Separate the components of a mixture using appropriate techniques • Evaluate the efficiency of the techniques used by calculating the amount of salt, sand and water obtained.		☐ Scientific Method ☐ Practical ☐ Number skills ☐ Application ☐ Communication

Key Vocab	Solute: A substance that will dissolve in a liquid. Solvent: The liquid that a solute substances dissolves in. Solution: The product of a solute dissolving into a solvent. Saturated: When a solute cannot dissolve anymore, and you can see it at the bottom of a beaker Dissolve: When a solute (soluble substance) is added to a solvent (liquid that does the dissolving) to form a solution. Particles: the smallest unit of matter that all substances are made from. Soluble: If a substance can dissolve into a solvent, it is soluble. Insoluble: If a substance cannot dissolve into a solvent, it is insoluble.
Future Learning	At KS4 separating mixtures is taught as part of chemistry and you will learn more about chemical analysis including separation techniques for mixtures of substances: filtration, crystallisation, chromatography, simple and fractional distillation
In careers	Separation processes are essential to the chemical, petroleum refining, and materials processing industries. The word "separation," however, refers to different processes and functions for different industries. Separation processes comprise a large portion of the activity in the chemical and petrochemical industries.