CHEMISTRY KS4 DOUBLE AWARD Year 10 LP4

This half term: Skills, Knowledge and Understanding to be developed:

• **Skills (students WILL BE ABLE to by the end of the Learning Programme):** develop their ability to identify trends and patterns in data provided in tabulated and graph form; will be able to plot solubility curves; develop their practical skills through carrying out the precipitation method to see the effect of changing temperature on the rate of reaction.

• **Knowledge (students WILL KNOW by the end of the Learning Programme):** how the public water supply is treated; the advantages and disadvantages to the fluoridation of the water supply; how to plot solubility curves; the factors which affect the rate of a chemical reaction.

• **Understanding (students WILL DEMONSTRATE THEIR UNDERSTANDING by the end of the Learning Programme):** Students will interpret solubility curves. Students will demonstrate their understanding by answering a range of questions that focus around 'describe', 'explain', 'compare', 'analyse' and 'plan'.

Key Terms / Words: chlorination, filtration, sedimentation fluoridation, fluorosis, solubility curve, hard water, scum, lather, ion exchange, rate of reaction, collision theory, activation energy.

LP 4 – Week 1 & 2 Learning Outcomes:

1. Water composition and water treatment

- Students will be aware of the composition of water in 'natural' water supplies, including dissolved gases, ions, microorganisms and pollutants
- Students will understand the need for a sustainable water supply to include reducing our water consumption, reducing the environmental impacts of abstracting, distributing and treating water
- Students will explain how the public water supply is treated using sedimentation, filtration and chlorination

2. Fluoridation of the water supply.

- Students will know the arguments for and against the fluoridation in order to prevent tooth decay.

3.Separation of water and other solids/liquids.

- Students will know how sea water is desalinated to supply drinking water including the sustainability of the process.
- Students will know the terms associated with solutions.
- Students will know how to separate water and other miscible liquids by distillation.

4. Solubility and solubility curves.

- Students will know what is solubility and simple methods to determine solubility and produce solubility curves.

Success criteria:

Answer exam style questions relating to the treatment of the public water supply

Homework LP 4 1/3

Quiz on water on google classroom. Revise learning outcomes weeks 1-2 for APP1.

LP 4 – Week 3 & 4 Learning Outcomes:

Students will apply and demonstrate new knowledge and skills in APP1 assessment.

5. Solubility and solubility curves.

- Students will be able to interpret solubility curves.

6. Hard Water.

- Students will know the causes of hard water and how to distinguish between hard and soft waters by their action with soap.
- Students will know the difference between temporary and permanent hard water.

7. Hard water

- Students will carry out practical activities to place 4 samples of water in order of hardness.
- Students will know the processes used to soften water to include boiling, adding sodium carbonate and ion exchange.

8.Hard Water

- Students will know the advantages and disadvantages of different methods of water softening **and the explanation of how these methods work.**
- Students will know the health benefits of hard water and its negative effects, e.g. on boiler elements.

Assessment

APP1

Mark

Success criteria:

APP1

To be able to plot solubility curves and interpret them.

To be able to determine the order of hardness of different water samples.

To be able to explain how to soften different types of hard water and explain the advantages and disadvantages of each method.

Homework LP 4 2/3

Prepare a revision aid on water for the SA.

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LP 4 – Weeks 5 & 6 Learning Outcomes: **Students will apply and demonstrate new knowledge and skills in a summative assessment during week 5.** **9. Rates of reaction.** ○ Students will know what is meant by the term reaction rate and the factors which can affect the rate of a reaction. ○ Students will carry out practical methods used to determine the rate of reaction – gas collection and loss of mass to see the effect of particle size on the rate of reaction. ○ Students will carry out practical methods used to determine the rate of reaction – precipitation method to see the effect of temperature on the rate of reaction.	Assessment SA Mark Grade	**Success criteria:** **SA** Explain the effect particle size has on rate of reaction by answering examination questions on the topic. Carry out a practical to identify the effect of changing temperature on reaction rate	**Homework LP 4** **3/3** **Revise for SA**