***W4 - Combining Different States of Matter***

**Aim:** The aim this experiment is to combine different forms of matter and observe the results, using the appropriate scientific terminology.

**Hypothesis:**

1. Once I have combined the solid (Salt) and liquid (Water) the …

**Materials:** Each group of three will need the following.

* 2 test tubes
* 1 test tube stand (Can share with another group)
* 80g of Salt
* Spatula
* 1 petri dish
* Scales for measuring weight (Can share with other groups)

**Method for Part 1: Combining Salt and Water**

1. Fill both test tubes up to the same level with water, approximately 5 cm.
2. Weigh out approximately 40 grams of salt onto a petri dish using scales and a spatula.
3. Place your two test tubes into the rack.
4. Starting with the first test tube, one person gradually adds the salt whilst the other continually vibrates the tube. The third person watches for the salt to disappear. Continue until the salt no longer disappears.
5. Weigh how much salt you have left, and minus that from the starting amount to find out how much salt you used. Record your answer.
6. Go back the scales and weigh out the amount of salt recorded in Step 5, plus an extra 10g.
7. Add this salt to test tube 2 in same way (one person adds it gradually, the other shakes the tube, the third observes), but add more than you did in the first test tube. Once again record how much you added.

**Results:**

1. Record your observations, step by step, exactly what happened for both experiments.
2. Record how much salt you used in test tube 1.
3. Record how much salt you added to test tube 2.

**Discussion:**

1. What is the correct term for what was happening to the salt when it was added to the water?
2. When you add the salt to the water, water molecules break the bonds of the salt and combine with them. How does this explain what happened in test tube 1?
3. When you add the salt to the water, water molecules break the bonds of the salt and combine with them. How does this explain what happened in test tube 2?
4. Is the combination of salt and water in this experiment a solution or a mixture?
5. Can you think of a way that you could separate the water and salt again? Outline how you would do this in steps below. Use the terms researched at the start of this lesson.

**Conclusion and Reflection:**

Write two to three sentences about what you thought of this experiment, and what you learned from it.

Did anything go wrong?

What would you change if you were to do it again?

**Writing a practical investigation report**

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| **Organisation** | **Title:** What is the title of your report?  **Aim:** What question/s are you trying to find out about?  **Materials (What you need):**  What equipment and materials did you need? What skills did you require? |
| **Planning** | **Planning:** What was it that you intended to control?  What was it that you intend to measure? |
| **Performing** | **Results (What you did):**  Describe what you actually did. Include all the details you can remember.  What were the observations & readings you took?  What did you actually do to ensure the observations & readings were accurate? |
| **Communicating** | **Results and observations:** Make a clear record of the readings of all your measurements. |
| **Understanding** | **Conclusion:** What conclusions can you draw from you results?  Can you explain the results you got? |
| **Feedback** | **Reflection:**  If you were to do this investigation again, how would you change your investigations? |