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| **Session 2** | **INTRODUCTION TO DATA PROCESSING** |

**Skills developed in this session:**

* Preparation of solutions
* Use of instruments to measure volume, measuring cylinders, pippettes etc.
* Use of volumetric flask
* Use of Excel to design Tables and graphs
* Use of Excel for basic statistics

## Assessed criteria

**Criterion C: Processing and evaluating**

**Criterion E: AIE**

In all lab sessions you will be assessed for AIE: You will gain or lose points on this criteria based on your attitude in the laboratory, things like forgetting equipment, not listening to instructions will result in losing points: helping other students, cleaning up without being asked to, for example, will gain you points.

**General Question**

‘What effect does changing the concentration of reactants have on a reaction?’

**Background information:** Glucose is a reducing sugar which converts the purple colour of potassium permanganate to a colourless solution of manganese ions. Different concentrations of glucose will take different times to decolour a certain potassium permanganate solution.

**Materials**:

Glucose solution of 10%, 8%, 6%, 5%, 4% and 2%

50 mL beakers

1M Sulfuric acid (H2SO4)

Potassium permanganate solution 0.4 g/L (KMnO4)

Stop watch

**Method:**

1. Measure 10ml of the glucose solution with the concentration assigned by the teacher with a measuring cylinder and add it to a beaker.

2. Measure 5 mL of 1M sulfuric acid with another measuring cylinder, add it to the beaker and stir gently.

3. Add 1 mL of potassium permanganate to the beaker using a dropper, and stir again gently and immediately **time** how long it takes for the colour to disappear.

4. Write down the results.

5. Repeat this OR five times with the same concentration OR once with each of the five concentrations (confirm with your teacher.

6. Collect all data in a table, preferably in a shared document in Teams.

7. Calculate the average and the standard deviation for each solution. \*

8. Draw a graph with a line of best fit and error bars. \*

\* We will learn how to use excel to present and process data in our next class.

**Data process:**

Present the raw data and the processed data in a table.

Draw a graph with the line of best fit and error bars.

**Conclusion and evaluation:**

Come up with some conclusions from your results. Explain:

* Is there a trend in the data? If so, what is it?
* Explain this trend with scientific explanations (do research and add references)
* Evaluate the method and analyze the strengths and weaknesses of the experiment. (at least 3 strengths and three weaknesses
* Propose some improvements for the weaknesses.