

Required Practical Temperature Changes

GCSE Chemistry · Written to the shared content for AQA, Edexcel and OCR

Name _____ Class _____ Date _____

1. Worked example

Identify the independent variable, the dependent variable and two control variables. (4 marks)

Step 1 · Independent

Volume of sodium hydroxide solution added.

Step 2 · Dependent

Highest temperature reached (or temperature change).

Step 3 · Controls

Any two: volume and concentration of acid; concentration of alkali; starting temperature; type of cup; stirring.

Answer: IV: volume of NaOH; DV: temperature; controls: e.g. acid volume and concentration

Check: Controls are kept the same for a fair test.

2. Now try one with the steps

Explain why the reaction is carried out in a polystyrene cup with a lid. (2 marks)

Step 1 · Polystyrene

Step 2 · Lid

Answer:

3. Practice

Show your working. The marks tell you how much is expected.

1. State the independent variable in this investigation. [1]

2. State the dependent variable. [1]

3. Give two control variables. [2]

4. Explain why a polystyrene cup is used. [1]

5. State why the mixture is stirred before reading the temperature. [1]

6. The temperature rises from 21.0 °C to 29.6 °C. Calculate the temperature rise in °C. [1]

7. State what the highest temperature on the graph tells you. [1]

8. Explain why the temperature falls when more alkali is added after the peak. [2]

9. Three repeat temperature rises are 8.4 °C, 8.8 °C and 8.6 °C. Calculate the mean in °C. [1]

10. Explain why the experiment is repeated. [1]

11. Suggest one improvement to make the temperature readings more accurate. [1]

12. Suggest why lines of best fit are drawn through the rising and falling points and their intersection used, rather than just the highest reading. [2]

13. 30.0 cm³ of 1.00 mol/dm³ HCl is neutralised by 25.0 cm³ of NaOH. Calculate the concentration of the NaOH in mol/dm³. [3]

14. Give one hazard in this practical and a precaution to reduce the risk.

[2]

4. Before you hand it in

Recording the temperature straight after adding alkali

Stir and record the HIGHEST temperature reached after each addition.

Joining points dot to dot

Draw two straight lines of best fit and use where they cross.

"The temperature falls because the reaction becomes endothermic."

After neutralisation no more energy is released, and cooler alkali dilutes the mixture.