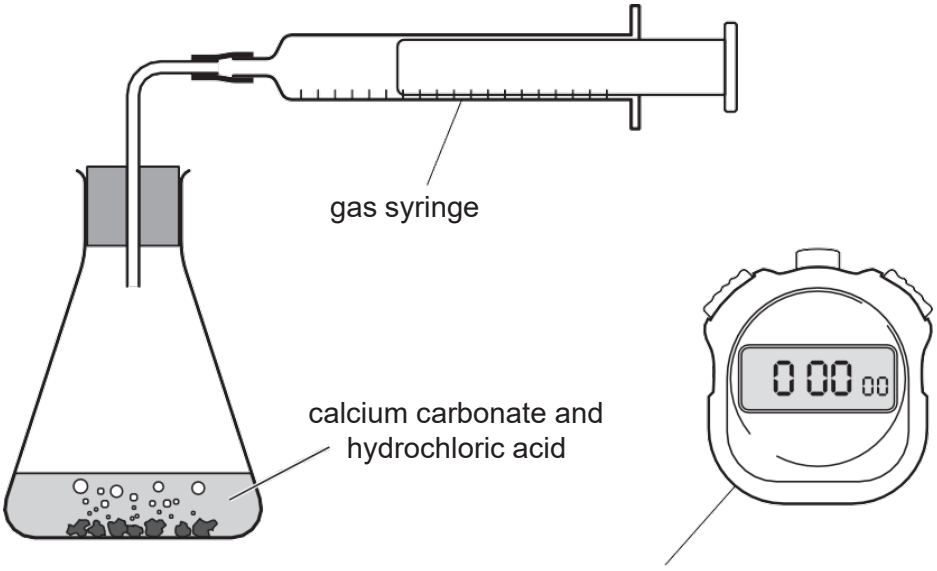
Oxford Cambridge and RSA

GCSE Chemistry B (Twenty First Century Science)

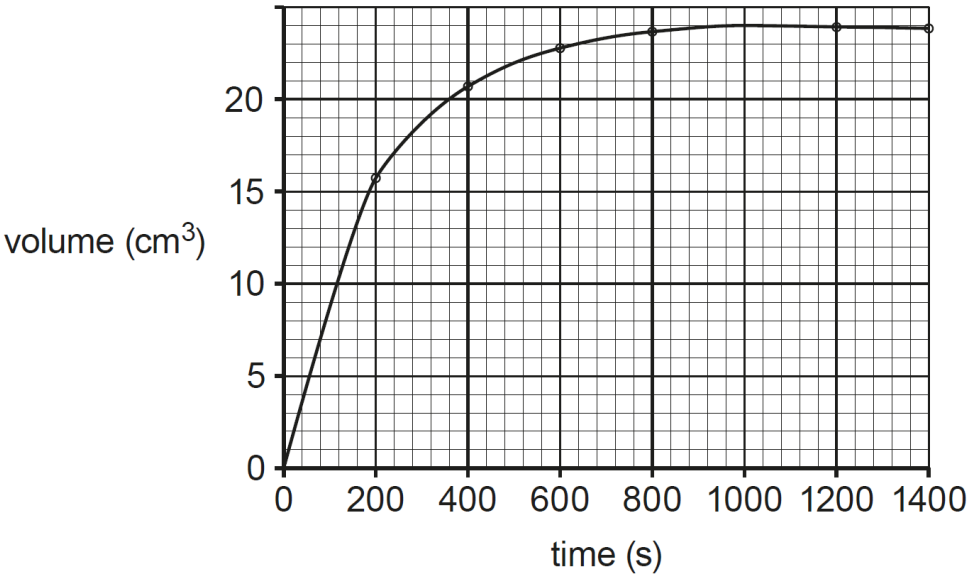
J258/03 Breadth in chemistry (Higher Tier)

Question Set 1

1 Calcium carbonate reacts with excess hydrochloric acid to make carbon dioxide.
Here is the apparatus Jack uses to investigate the reaction.



Jack records the volume of carbon dioxide made every 200 seconds.
Here is a graph of his results.



(a) Use the graph to calculate the rate of reaction over the first 100 s.

Rate = ... cm^3 / s **[2]**

(b) Amaya wants to repeat Jack's experiment.

She uses the same mass of calcium carbonate.

She uses the same volume and concentration of hydrochloric acid.

Which **two** other factors does she need to keep the same?

[2]

(c) Jack repeats his experiment with more concentrated hydrochloric acid.

He keeps **all** other factors the same. The rate of reaction is faster.

Explain why.

Write about particles in your answer.

[2]

(d) 0.10 g of calcium carbonate makes 24 cm^3 of carbon dioxide.

Jack uses 0.070 g of calcium carbonate.

What volume of carbon dioxide does he make?

Give your answer to **2** significant figures.

Volume = ... cm^3 **[3]**

Total Marks for Question Set 1 : 9