Oxford Cambridge and RSA

GCSE Chemistry A (Gateway Science)

J248/02 C4-C6 and C7 Foundation (Foundation Tier)

Question Set 15

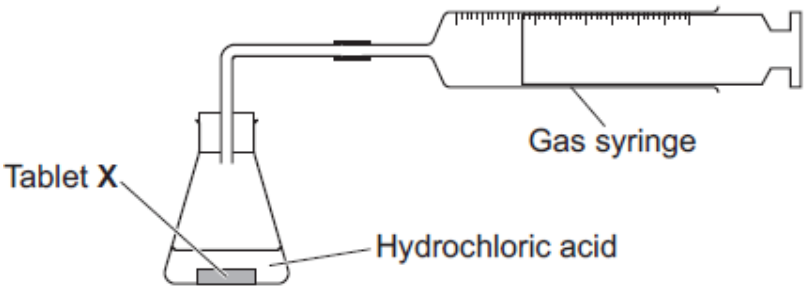
1 Antacid tablets are used to treat indigestion.

A student investigates two different antacid tablets, **X** and **Y**. Both tablets, **X** and **Y**, contain calcium carbonate, $CaCO_3$.

Calcium carbonate reacts with hydrochloric acid. Calcium chloride, $CaCl_2$, water and carbon dioxide are made.

(a) Write a **balanced symbol** equation for this reaction. **[2]**

(b) The diagram shows the apparatus the student uses.



The student reacts tablet **X** with 100 cm^3 of hydrochloric acid. The hydrochloric acid is in excess.

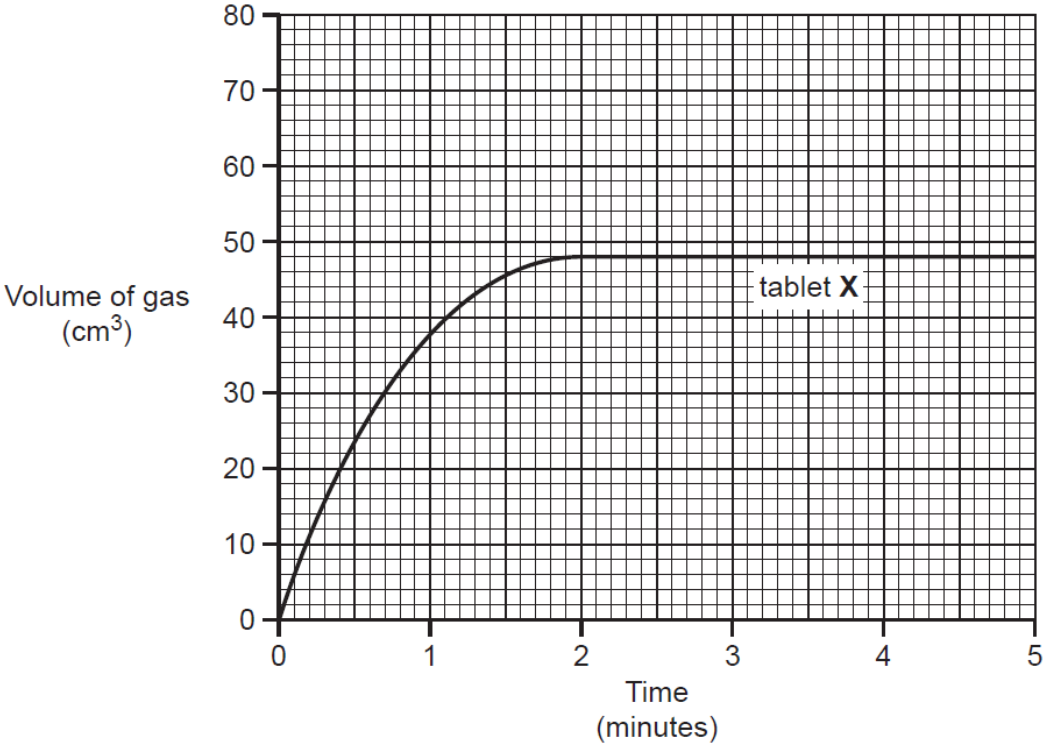
He measures the volume of gas made every minute during the first five minutes.

He does a second experiment using tablet **Y** and a fresh 100 cm^3 sample of the same hydrochloric acid.

The table shows his results.

Time (minutes)	Volume of gas (cm^3)	
	Tablet X	Tablet Y
0	0	0
1	38	32
2	48	54
3	48	67
4	48	72
5	48	72

(i) The graph shows the results for tablet **X**.



What is the volume of gas made by the end of the experiment?

Answer = ... cm^3 **[1]**

(ii) Plot the results for tablet **Y** on the grid. Draw a line of best fit. **[2]**

(iii) Tablet **X** contains less calcium carbonate than tablet **Y**.

How do the results show this? **[1]**

(c) The rate of reaction between calcium carbonate and hydrochloric acid can be increased by:

- Using a more concentrated solution of hydrochloric acid
- Increasing the temperature of the acid.

Explain how each of these methods increase the rate of the reaction.

Use ideas about collisions between particles. **[4]**

Total Marks for Question Set 15: 10

OCR
Oxford Cambridge and RSA

Copyright Information

OCR is committed to seeking permission to reproduce all third-party content that it uses in its assessment materials. OCR has attempted to identify and contact all copyright holders whose work is used in this paper. To avoid the issue of disclosure of answer-related information to candidates, all copyright acknowledgements are reproduced in the OCR Copyright Acknowledgements Booklet. This is produced for each series of examinations and is freely available to download from our public website (www.ocr.org.uk) after the live examination series.

If OCR has unwittingly failed to correctly acknowledge or clear any third-party content in this assessment material, OCR will be happy to correct its mistake at the earliest possible opportunity.

For queries or further information please contact The OCR Copyright Team, The Triangle Building, Shaftesbury Road, Cambridge CB2 8EA.

OCR is part of the Cambridge Assessment Group; Cambridge Assessment is the brand name of University of Cambridge Local Examinations Syndicate (UCLES), which is itself a department of the University of Cambridge