

GCSE Combined Science: Trilogy

Worksheet: Test for carbon dioxide

TIME 25 min	TOTAL 25 marks	CALCULATOR Allowed	DIFFICULTY Easy, Medium
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Topics: Test for carbon dioxide

NAME	CLASS	DATE
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- Use black ink or black ball-point pen. Pencil should only be used for drawing.
- Answer all questions in the spaces provided.
- In all calculations, show clearly how you work out your answer.
- The marks for questions are shown in brackets.

0	1
---	---

0	1	.	1
---	---	---	---

 Name the solution used to test for carbon dioxide.

.....

.....

.....

.....

[1 mark]

0	1	.	2
---	---	---	---

 Describe how the gas should be added to the solution.

.....

.....

[1 mark]

0	1	.	3
---	---	---	---

 Give the result if the gas is carbon dioxide.

.....

.....

[1 mark]

0 2

A student heats a solid carbonate in a boiling tube. The gas given off passes along a delivery tube into a test tube of limewater.

0 2 . 1

Describe what the student would see if the gas is carbon dioxide.

.....
.....
[1 mark]

0 2 . 2

Give **one** safety precaution the student should take when using limewater.

.....
.....
[1 mark]

0 2 . 3

Explain why the student should lift the delivery tube out of the limewater before stopping heating.

.....
.....
[1 mark]

0 3

0 3 . 1

Complete the word equation.
carbon + oxygen →

.....
.....
.....
.....
[1 mark]

0 3 . 2

Describe the test for carbon dioxide, and give the result.

.....

.....

.....

.....

[2 marks]

0 4

0 4 . 1

Which observation is the positive test result for carbon dioxide?

Tick (✓) **one** box.

Limewater turns milky

☐

A lit splint gives a pop

☐

A glowing splint relights

☐

Damp litmus paper is bleached

☐

[1 mark]

0 5

A student burned a candle under a funnel. A pump drew the gases from the funnel through a tube cooled in ice and then through limewater.

A colourless liquid collected in the cooled tube. The limewater turned milky.

0 5 . 1

What does the result with the limewater show?

.....

.....

[1 mark]

0 5 . 2

Explain what the result with the limewater shows about the elements in candle wax.

.....

.....

.....

.....

[2 marks]

0 5 . 3

The student also drew air through the apparatus for the same time without the candle burning. The limewater stayed clear. Suggest why the student did this.

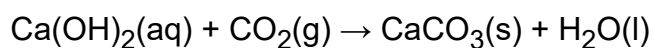
.....

.....

[1 mark]

0 6

Limewater is calcium hydroxide solution. This equation shows the reaction of carbon dioxide with limewater.



0 6 . 1

Use the equation to explain why limewater turns milky when carbon dioxide is bubbled through it.

.....

.....

.....

.....

[2 marks]

0 6 . 2

A student bubbled exhaled breath through one tube of limewater and bubbled the same volume of air from the room through another tube of limewater. Suggest why the limewater turned milky more quickly with the exhaled breath.

.....

.....

[1 mark]

0 7

A student bubbles three unknown gases, G, H and J, through limewater. Table 1 shows the results.

Table 1

Gas	Result
G	limewater stays colourless
H	limewater turns milky
J	limewater turns milky

0 7 . 1

Name the compound dissolved in limewater.

.....

.....

.....

[1 mark]

0 7 . 2

Which gas, G, H or J, cannot be carbon dioxide? Give a reason for your answer.

.....

.....

.....

.....

[2 marks]

0 7 . 3

The student's teacher explains that sulfur dioxide also turns limewater milky. The student concludes that both H and J are carbon dioxide. Explain why this conclusion is not necessarily correct.

[1 mark]

0 8

A student wants to show that a white solid is a carbonate by testing the gas it produces with dilute acid.

0 8 . 1

Describe how the student should carry out this test, including how the gas should be tested and the result for a positive test.

[3 marks]

0 8 . 2

Suggest why the delivery tube must fit tightly into the first test tube.

[1 mark]

END OF QUESTIONS

Original practice questions written to match the specification. Not produced by, affiliated with or endorsed by AQA.

Mark scheme

GCSE Combined Science: Trilogy · Worksheet: Test for carbon dioxide · 25 marks

Question 1 (3 marks)

01.1 [1 mark]

Answer: limewater

- limewater / calcium hydroxide solution (1)
-

01.2 [1 mark]

- bubble the gas through the solution / shake the gas with the solution (1)
-

01.3 [1 mark]

- (the solution) turns milky / cloudy (1)

Notes: Allow 'a white precipitate forms'. Ignore 'then goes clear'. Do not accept 'turns white' alone.

Question 2 (3 marks)

02.1 [1 mark]

- the limewater turns milky / cloudy (1)
-

02.2 [1 mark]

- wear eye protection (limewater is an irritant) (1)
-

02.3 [1 mark]

- as the boiling tube cools, the gas inside contracts, so cold limewater could be sucked back into the hot tube (suck-back), which could crack it (1)
-
-

Question 3 (3 marks)

03.1 [1 mark]

Answer: carbon dioxide

- carbon dioxide (1)
-

03.2 [2 marks]

- bubble the gas through (or shake it with) limewater (1)
 - the limewater turns milky / cloudy (1)
-

Question 4 (1 mark)

04.1 [1 mark]

Correct: Limewater turns milky

Question 5 (4 marks)

05.1 [1 mark]

- carbon dioxide was produced (when the candle burned) (1)
-

05.2 [2 marks]

- carbon dioxide contains carbon (1)
 - so the candle wax contains carbon (the oxygen could come from the air) (1)
-

05.3 [1 mark]

- to show that the carbon dioxide came from the burning candle and not from the air / as a control (1)
-

Question 6 (3 marks)

06.1 [2 marks]

- calcium carbonate is formed (1)
 - calcium carbonate is insoluble / is a solid / forms a precipitate (shown by the state symbol (s)) (1)
-

06.2 [1 mark]

- exhaled breath contains a higher concentration / percentage of carbon dioxide (than air) (1)
-

Question 7 (4 marks)

07.1 [1 mark]

Answer: calcium hydroxide

- calcium hydroxide (1)

07.2 [2 marks]

Answer: G

- G (1)
- G did not turn the limewater milky / the limewater stayed colourless (1)

07.3 [1 mark]

- H and / or J could be sulfur dioxide, because the limewater test gives the same result for both gases (1)

Question 8 (4 marks)

08.1 [3 marks]

- add dilute (hydrochloric) acid to the solid in a test tube fitted with a delivery tube leading to a second tube of limewater (1)
- bubble the gas produced through the limewater (1)
- the limewater turns milky / cloudy if the gas is carbon dioxide (1)

08.2 [1 mark]

- so that no gas escapes before it reaches the limewater, so all the gas produced is tested (1)
-