

0 8

Some students investigated the thermal decomposition of metal carbonates.

The word equation for the reaction is:



The students made the following hypothesis:

‘When heated the same mass of any metal carbonate produces the same mass of carbon dioxide.’

The students heated a test tube containing copper carbonate.

Table 4 shows their results.

Table 4

Time the test tube containing copper carbonate was heated in mins	0	2	4	6
Mass of test tube and contents in g	17.7	17.1	17.0	17.0



Plan a method the students could use to test their hypothesis.

You should show how the students use their results to test the hypothesis.

You do **not** need to write about safety precautions.

[6 marks]

6

END OF QUESTIONS



Question	Answers	Mark	AO/ Spec. Ref
08	Level 3: The method would lead to the production of a valid outcome. The key steps are identified and logically sequenced.	5–6	AO3
	Level 2: The method would not necessarily lead to a valid outcome. Most steps are identified, but the method is not fully logically sequenced.	3–4	5.3.1.3 5.4.2.2
	Level 1: The method would not lead to a valid outcome. Some relevant steps are identified, but links are not made clear.	1–2	
	No relevant content	0	
	<p>Indicative content:</p> <ul style="list-style-type: none"> • weigh test tube • add metal carbonate • weigh test tube and metal carbonate • heat • allow to cool • weigh test tube and metal oxide • repeat (heat, cool and weigh) until no change in mass • determine mass of metal carbonate used • determine mass of carbon dioxide produced • repeat with different metal carbonate(s) <p>an alternative method can be based on any mass of metal carbonates and at end divide by this mass to find mass carbon dioxide per gram metal carbonate</p> <p>level 3 change in mass is determined for at least one other carbonate</p>		
Total			6