

Worksheet 7.1

CO₂-producing reactions

NAME:

CLASS:

INTRODUCTION

Carbon dioxide, a major contributor to the enhanced greenhouse effect, can be produced by many different biological and industrial reactions. This worksheet considers a number of these carbon dioxide-producing reactions.

No.	Question	Answer
1	Carbon dioxide sublimates at -78°C . What does the term 'sublimates' mean?	
2	Why does carbon dioxide have an acid taste?	
3	The biological production of CO ₂ is mainly due to aerobic respiration. a Write a balanced equation for aerobic respiration. b Where in living things does this reaction occur?	
4	A certain animal uses 500 g of glucose in respiration per day. What mass of carbon dioxide does the animal produce per week?	
5	Write balanced chemical equations for these carbon dioxide-producing reactions. a Solid calcium carbonate is heated, producing calcium oxide and carbon dioxide. b Methane gas and steam react to form hydrogen and carbon dioxide.	

6	<p>Carbon dioxide can be produced by the reaction of dilute nitric acid and solid lithium carbonate.</p> <p>a Write a balanced chemical equation for this reaction.</p> <p>b What volume of 0.304 mol L⁻¹ HNO₃ would be required to fully react 20.0 g of lithium carbonate?</p>	
7	<p>Methane burns in oxygen according to the following equation:</p> $\text{CH}_4(\text{g}) + 2\text{O}_2(\text{g}) \rightarrow \text{CO}_2(\text{g}) + 2\text{H}_2\text{O}(\text{g})$ <p>a What mass of methane would need to react with excess oxygen in order to produce 5.0 kg of carbon dioxide?</p> <p>b What type of reaction is this?</p>	
8	<p>A camping stove uses butane as its fuel.</p> <p>a Write a balanced equation for the reaction of butane with oxygen.</p> <p>b If this stove uses 0.0050 g of butane per second, what mass of oxygen is required to keep the stove burning for two hours?</p>	
9	<p>Baking soda, used in cooking, is a mixture of tartaric acid (a monoprotic acid) and bicarbonate of soda (NaHCO₃). Write an ionic equation to show how adding some baking soda to a cake mix causes the cake to rise.</p>	
10	<p>When alcoholic beverages are brewed, carbon dioxide is produced by the action of yeasts on carbohydrates.</p> <p>a Write a balanced equation for the breakdown of glucose by yeast, which produces ethanol and CO₂ in aqueous solution.</p>	

Worksheet 7.1 CO ₂ -producing reactions	
---	--

	b What is the name given to this reaction?	
--	---	--