Year 8 Chemical Reactions Worksheet

Year 8 · KS3 Chemistry · Changes, word equations, conservation of mass and energy

Name: ..... **Class:** ..... **Date:** ..... **Score: / 55**

Section A: Physical and chemical changes [15 marks]

1 Decide whether each change is physical or chemical. Write Physical or Chemical. **[8]**

Change	Physical or chemical?
Ice melting	
Magnesium burning	
Sugar dissolving in water	
Iron rusting	
Cooking an egg	
Water boiling	
Mixing iron filings and sulfur powder	
Baking a cake	

2 Give three signs that a chemical reaction has taken place. **[3]**

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3 Explain why a chemical change is usually hard to reverse but a physical change is usually easy to reverse. **[2]**

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4 Write what is meant by (a) a reactant and (b) a product. **[2]**

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Section B: Word equations and gas tests [12 marks]

5 Complete each word equation.

(a) magnesium + oxygen ⟶ ..... **[1]**

(b) iron + sulfur ⟶ ..... **[1]**

(c) methane + oxygen ⟶ carbon dioxide + ... **[1]**

(d) zinc + hydrochloric acid ⟶ ..... + hydrogen **[1]**

(e) calcium carbonate ⟶ calcium oxide + ... **[1]**

(f) sodium + water ⟶ sodium hydroxide + ... **[1]**

(g) copper carbonate ⟶ ..... + carbon dioxide **[1]**

6 Complete the table to show the test and positive result for each gas. **[3]**

Gas	Test	Positive result
Hydrogen		
Carbon dioxide		
Oxygen		

7 What is thermal decomposition? Give one example of a substance that decomposes when heated. **[2]**

Section C: Conservation of mass and balancing equations [15 marks]

8 State the law of conservation of mass. **[1]**

9 5.0 g of calcium carbonate is heated in an open crucible. After heating, the mass of solid left is 2.8 g.

(a) Explain why the mass goes down. **[1]**

(b) Calculate the mass of carbon dioxide released. **[1]**

(c) What would the total mass be if the reaction was carried out in a sealed container? Explain. **[1]**

10 0.24 g of magnesium ribbon is burned in air. The white ash has a mass of 0.40 g. Explain why the mass increases and calculate the mass of oxygen that joined with the magnesium. **[3]**

11 Balance each equation by writing numbers in front of the formulas.

(a) $H_2 + O_2 \longrightarrow H_2O$ **[2]**

(b) $Mg + O_2 \longrightarrow MgO$ **[2]**

(c) $Na + Cl_2 \longrightarrow NaCl$ **[2]**

(d) $CH_4 + O_2 \longrightarrow CO_2 + H_2O$ **[2]**

Section D: Energy changes and burning [13 marks]

12 Explain the difference between an exothermic and an endothermic reaction. **[2]**

13 Write exothermic or endothermic for each process. **[4]**

Process	Exothermic or endothermic?
Burning a candle	
Photosynthesis	
Neutralising an acid with an alkali	
Thermal decomposition of calcium carbonate	

14 A student mixes citric acid and sodium hydrogencarbonate in a cup. The temperature falls from 21 °C to 14 °C.

(a) Calculate the temperature change. **[1]**

(b) Is this reaction exothermic or endothermic? **[1]**

(c) Suggest one use of a reaction like this. **[1]**

15 Name the three things needed for a fire, and explain why putting a lid on a burning pan stops the fire. **[4]**