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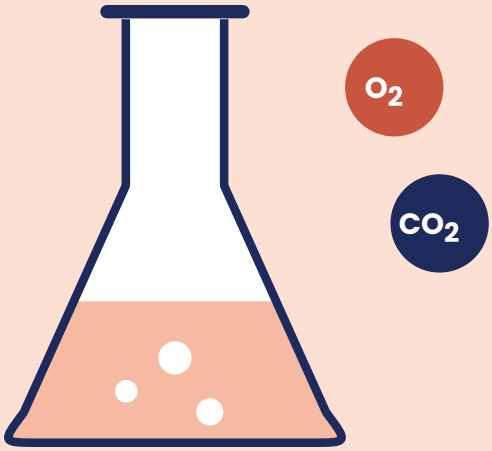
Year 8 • KS3 Chemistry

Chemical Reactions

Mark Scheme – Teacher Copy

Answers, marking points and guidance for the Chemical Reactions worksheet.



Changes | Word equations | Gas tests | Mass | Balancing | Energy

KEY IDEAS IN THIS WORKSHEET **YEAR 8**

Name: _____ Class: _____

Date set: _____ Date due: _____

What's inside

Section A	Physical and chemical changes	**15 marks**
Section B	Word equations and gas tests	**12 marks**
Section C	Conservation of mass and balancing equations	**15 marks**
Section D	Energy changes and burning	**13 marks**

Marking notes

- (1) = one mark for each marking point.
- / separates alternative answers.
- Allow error carried forward in calculations.
- Accept any correct, clearly expressed alternative.

Total marks

55

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Chemical Reactions Worksheet – Mark Scheme

Total: 55 marks. (1) = one mark. Accept any scientifically correct alternative wording.

Section A – Physical and chemical changes

Q	Answer	Mark	Guidance
1	physical; chemical; physical; chemical; chemical; physical; physical (a mixture, no new substance); chemical	8	1 mark each
2	any three: temperature change; colour change; gas given off (fizzing / bubbles); a solid forms (precipitate); light, flame or sound produced	3	1 mark each
3	in a chemical change new substances are made (1); in a physical change no new substance is made, only the state or arrangement changes (1)	2	
4(a)	a substance that is used up in / starts the reaction	1	
4(b)	a substance that is made in the reaction	1	
	Section A total	**15**	

Section B – Word equations and gas tests

Q	Answer	Mark	Guidance
5	(a) magnesium oxide; (b) iron sulfide; (c) water; (d) zinc chloride; (e) carbon dioxide; (f) hydrogen; (g) copper oxide	7	1 mark each
6	hydrogen: lit splint, squeaky pop; carbon dioxide: bubble through limewater, turns milky / cloudy; oxygen: glowing splint, relights	3	1 mark for each gas (test and result both correct)
7	a reaction where one substance breaks down into two or more simpler substances when heated (1); example: copper carbonate / calcium carbonate (1)	2	
	Section B total	**12**	

Section C – Conservation of mass and balancing equations

Q	Answer	Mark	Guidance
8	in a chemical reaction the total mass of the reactants equals the total mass of the products (no atoms are made or destroyed)	1	
9(a)	carbon dioxide gas escaped into the air	1	
9(b)	5.0 − 2.8 = 2.2 g	1	
9(c)	5.0 g, because no gas can escape and mass is conserved	1	
10	magnesium combines with oxygen from the air (1); to make magnesium oxide (1); mass of oxygen = 0.40 − 0.24 = 0.16 g (1)	3	
11(a)	$2H_2 + O_2 \rightarrow 2H_2O$	2	1 mark for each correct number (the 1 in front of O_2 need not be written)
11(b)	$2Mg + O_2 \rightarrow 2MgO$	2	1 mark for each correct number
11(c)	$2Na + Cl_2 \rightarrow 2NaCl$	2	1 mark for each correct number
11(d)	$CH_4 + 2O_2 \rightarrow CO_2 + 2H_2O$	2	1 mark for $2O_2$; 1 mark for $2H_2O$
	Section C total	**15**	

Section D – Energy changes and burning

Q	Answer	Mark	Guidance
12	exothermic: gives out energy to the surroundings, so the temperature rises (1); endothermic: takes in energy from the surroundings, so the temperature falls (1)	2	
13	exothermic; endothermic; exothermic; endothermic	4	1 mark each
14(a)	7 °C (a fall of 7 °C)	1	
14(b)	endothermic	1	
14(c)	instant cold packs for sports injuries	1	
15	heat, fuel and oxygen (2); the lid stops oxygen reaching the fire (1); so the fire goes out (1)	4	1 mark for any two of heat, fuel and oxygen; 2 marks for all three
	Section D total	**13**	

Worksheet total: 55