

Word and Symbol Equations

KS3 Chemistry · Follows the national curriculum

Name _____ Class _____ Date _____

1. Worked example

Write a word equation: zinc reacts with sulfuric acid to make zinc sulfate and hydrogen.

Step 1 · Reactants on the left, joined by +
zinc + sulfuric acid

Step 2 · Arrow, then products
→ zinc sulfate + hydrogen

Answer: zinc + sulfuric acid → zinc sulfate + hydrogen

Check: Every substance named once; arrow, not equals.

2. Now try one with the steps

Turn this word equation into symbols: carbon + oxygen → carbon dioxide.

Step 1 · Formulae

Step 2 · Write it

Step 3 · Count

Answer:

3. Practice

Show your working. The marks tell you how much is expected.

1. In a word equation, which side are the reactants written on? [1]

2. What does the arrow in an equation mean? [1]

3. Write the word equation: iron + sulfur make iron sulfide. [1]

4. What is the formula of oxygen gas? [1]

5. Write a word equation for copper reacting with oxygen. [1]

6. Why must a symbol equation be balanced? [2]

7. Is this equation balanced? $\text{H}_2 + \text{Cl}_2 \rightarrow 2\text{HCl}$ (yes or no) [1]

8. Balance: $\text{H}_2 + \text{O}_2 \rightarrow \text{H}_2\text{O}$. Write the balanced equation. [2]

9. Balance: $\text{Na} + \text{Cl}_2 \rightarrow \text{NaCl}$. Write the balanced equation. [2]

10. In $2\text{Mg} + \text{O}_2 \rightarrow 2\text{MgO}$, how many magnesium atoms are on each side? [1]

11. Why can't you balance $\text{Mg} + \text{O}_2 \rightarrow \text{MgO}$ by changing it to MgO_2 ? [2]

12. Balance: $\text{Zn} + \text{HCl} \rightarrow \text{ZnCl}_2 + \text{H}_2$. What number goes in front of HCl? [1]

13. Balance: $\text{CH}_4 + \text{O}_2 \rightarrow \text{CO}_2 + \text{H}_2\text{O}$. What number goes in front of O_2 ? [1]

14. Write the word equation for: $\text{CuCO}_3 \rightarrow \text{CuO} + \text{CO}_2$ [2]

4. Before you hand it in

Changing small numbers to balance (e.g. $\text{H}_2\text{O} \rightarrow \text{H}_2\text{O}_2$).

Only put big numbers in front of formulae.

Writing oxygen instead of O_2 .

Write H_2 , O_2 , N_2 , Cl_2 for these gases.

Forgetting to count atoms in every substance.

Make a table of atoms on each side and update it after every change.

Using = instead of →.

Use an arrow; use + between substances on the same side.