

Exercise 1: Writing and Balancing Chemical Equations

For the following chemical reactions:

Step 1. Write the word equation.

Step 2. Write the chemical equation (use the criss-cross rule to find the formulas of ionic compounds).

Step 3. Balance the chemical equation.

The chemical formula for oxygen gas is _____ and for hydrogen gas is _____.

1. Silver metal reacts with hydrogen sulfide (H_2S) to form silver sulfide and hydrogen gas.
2. When pentane (C_5H_{12}) burns in air, it produces carbon dioxide and water vapour.
3. When ammonia (NH_3) reacts with water it produces ammonium hydroxide.
4. When gold metal is placed in nitric acid (HNO_3) it produces gold (I) nitrate and hydrogen gas.
5. When lead metal is added to nickel (II) sulfate, it produces nickel metal and lead (II) sulfate.
6. When nonane (C_9H_{20}) burns in air, it produces carbon dioxide and water vapour.
7. When sodium azide (NaN_3) reacts, it produces nitrogen gas and sodium metal.

8. Iron metal reacts with oxygen gas in the air to form iron (III) oxide (rust).

9. When propane (C_3H_8) burns in oxygen gas, it produces carbon dioxide and water.

10. When sodium hydrogen carbonate is heated, it breaks down to form sodium carbonate and water plus carbon dioxide.

11. Acetylene gas (C_2H_2) burns in oxygen to produce carbon dioxide and water vapour.

12. Calcium hydroxide reacts with copper (II) sulfate to produce calcium sulfate and copper (II) hydroxide.

13. Ammonium chloride reacts with barium hydroxide to produce ammonia gas (NH_3), water vapour and barium chloride.

14. When aluminum metal is placed in a solution of copper (II) sulfide, a reaction occurs that produces copper metal and aluminum sulfide.

Exercise 2: Chemical Reactions – Balancing Equations

