

Exercise 1: Writing and Balancing Chemical Equations

For the following chemical reactions:

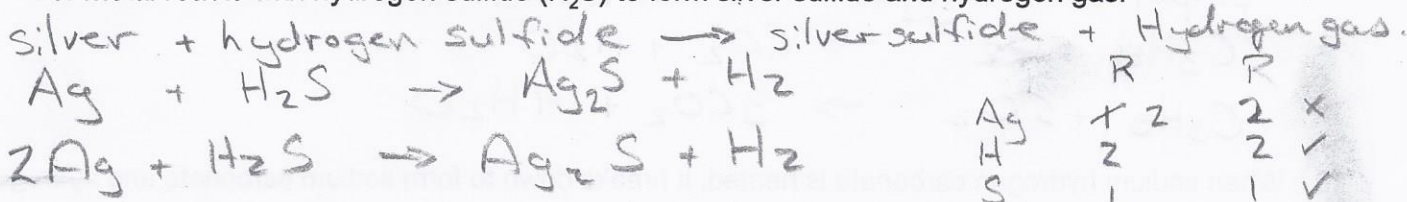
Step 1. Write the word equation.

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

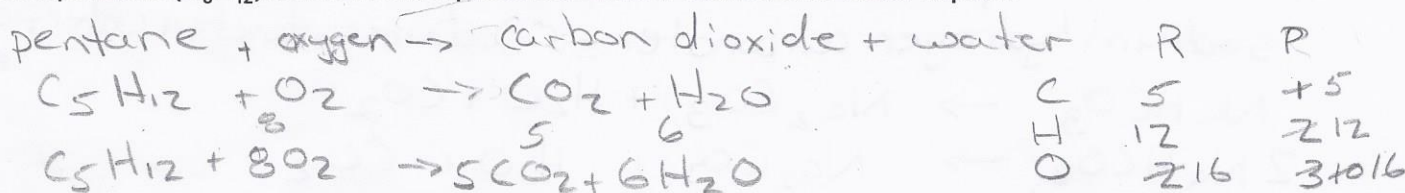
Step 3. Balance the chemical equation.

The chemical formula for oxygen gas is O₂ and for hydrogen gas is H₂.

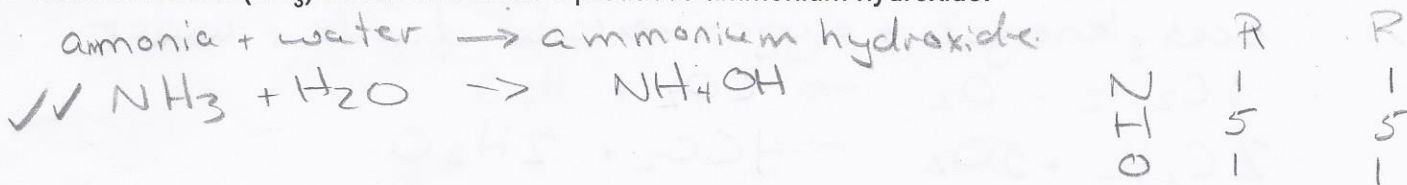
1. Silver metal reacts with hydrogen sulfide (H₂S) to form silver sulfide and hydrogen gas.



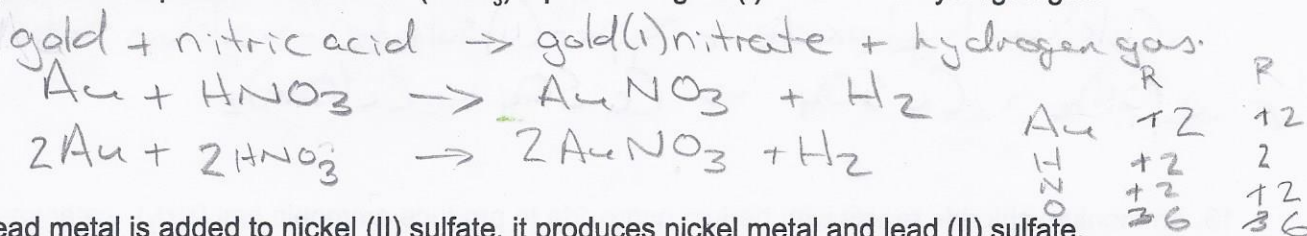
2. When pentane (C₅H₁₂) burns in air, it produces carbon dioxide and water vapour.



3. When ammonia (NH₃) reacts with water it produces ammonium hydroxide.



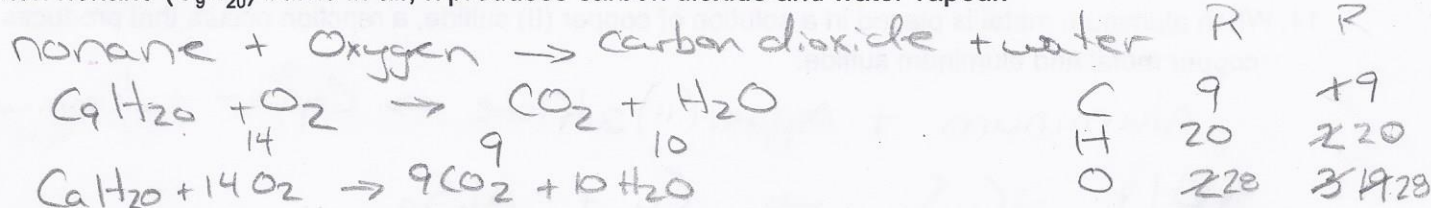
4. When gold metal is placed in nitric acid (HNO₃) it produces gold (I) nitrate and hydrogen gas.



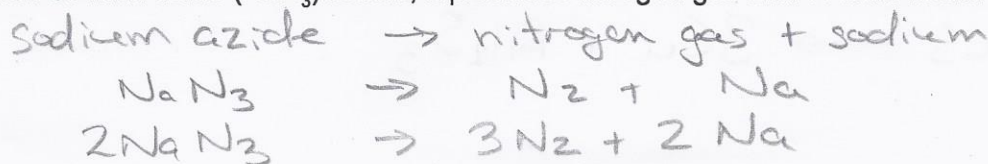
5. When lead metal is added to nickel (II) sulfate, it produces nickel metal and lead (II) sulfate.



6. When nonane (C₉H₂₀) burns in air, it produces carbon dioxide and water vapour.



7. When sodium azide (NaN₃) reacts, it produces nitrogen gas and sodium metal.



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

iron + oxygen gas \rightarrow iron(III) oxide.



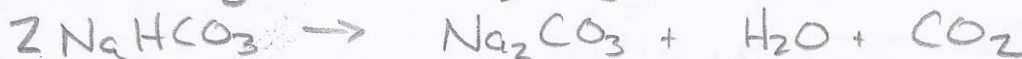
9. When propane (C_3H_8) burns in oxygen gas, it produces carbon dioxide and water.

propane + oxygen \rightarrow carbon dioxide + water



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

sodium hydrogen carbonate \rightarrow sodium carbonate + water + carbon dioxide.



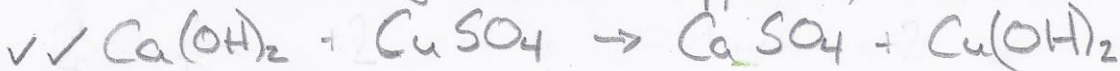
11. Acetylene gas (C_2H_2) burns in oxygen to produce carbon dioxide and water vapour.

acetylene gas + oxygen \rightarrow carbon dioxide + water



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

Calcium hydroxide + copper(II) sulfate \rightarrow calcium sulfate + copper(II) hydroxide



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

ammonium chloride + barium hydroxide \rightarrow ammonia gas + water + 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.

aluminum + copper(II) sulfide \rightarrow Copper + aluminum sulfide

