

## Honors Chemistry: Stoichiometry 2 Problem Set- Multi-Step Stoichiometry Problems

1. 2.5-mol of water is made from its elements. How many particles of hydrogen reacted?
2. How many moles of calcium phosphate are formed when 32.5 moles of calcium nitrate reacts with sodium phosphate?
3. A 34.5-gram sample of lithium reacts with chromium(III) chloride. How many grams of lithium chloride are formed?
4. A 45.6-L volume of  $H_2$  is formed when zinc is reacted with nitric acid. How many grams of zinc reacted?
5. In an explosive reaction, 14.5-g of cesium reacts with water to form hydrogen and cesium hydroxide. How many molecules of hydrogen were formed?
6. What mass of ammonia,  $NH_3$ , is necessary to react with  $2.1 \times 10^{24}$  molecules of oxygen gas when ammonia ( $NH_3$ ) reacts with oxygen gas to form water and nitrogen monoxide?

7. Calculate the volume of carbon dioxide produced when 250 g of pentane,  $C_5H_{12}$ , burn. Assume the carbon dioxide is cooled to STP.

8. Nitrogen gas reacts with oxygen to form dinitrogen trioxide. How many molecules of oxygen are needed to make 5.5 L of  $N_2O_3$  at STP?

9. Silver nitrate reacts with sodium chloride to make the silver chloride and sodium nitrate. When 2.53 grams of silver nitrate is reacted, how many grams of silver chloride are formed?

10. Methane ( $CH_4$ ) is burned in air. When 50.6 L of methane is burned how many grams of carbon dioxide will be formed?

11. Calcium carbonate decomposes into calcium oxide and a common gas. When 45.5 grams of calcium oxide is formed, how many liters of gas is also formed from this reaction.

12. When 3.25 g of copper(II) nitrate reacts with ammonium hydroxide. How many grams of the precipitate will form?