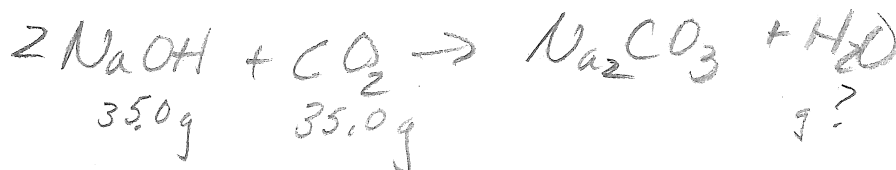


Limiting Reactant Homework

Honors - use .01 from PT

- (1) If sodium hydroxide reacts with carbon dioxide to produce sodium carbonate and water, how many grams of water form when 35.0 g of each of the reactants are combined?



$$\frac{35.0 \text{ g NaOH} / \text{mol}}{46.01 \text{ g}} \times \frac{1 \text{ mol H}_2\text{O}}{2 \text{ mol NaOH}} \times 18.01 \text{ g} = \boxed{7.88 \text{ g H}_2\text{O}}$$

$$\frac{35.0 \text{ g CO}_2 / \text{mol}}{44.01 \text{ g}} \times \frac{1 \text{ mol H}_2\text{O}}{1 \text{ mol CO}_2} \times 18.01 \text{ g} = 14.3 \text{ g H}_2\text{O}$$

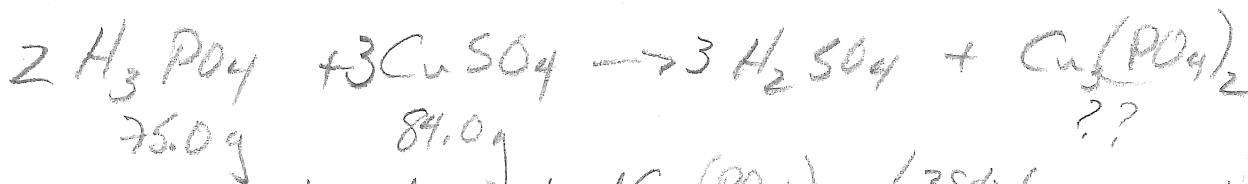
- (2) How many grams of hydrogen are released when 30.0 g of aluminum reacts with 95.0 g of hydrochloric acid?



$$\frac{30.0 \text{ g Al} / \text{mol}}{26.98 \text{ g}} \times \frac{3 \text{ mol H}_2}{2 \text{ mol Al}} \times 2.02 \text{ g} = 3.37 \text{ g H}_2$$

$$\frac{95.0 \text{ g HCl} / \text{mol}}{36.46 \text{ g}} \times \frac{3 \text{ mol H}_2}{6 \text{ mol HCl}} \times 2.02 \text{ g} = \boxed{2.63 \text{ g H}_2}$$

- (3) How many grams of copper (II) phosphate are formed by the double replacement reaction of 75.0 g of phosphoric acid and 84.0 g of copper (II) sulfate?



$$\frac{75.0 \text{ g H}_3\text{PO}_4 / \text{mol}}{98.00 \text{ g}} \times \frac{1 \text{ mol Cu}_3(\text{PO}_4)_2}{2 \text{ mol H}_3\text{PO}_4} \times 380.6 \text{ g} = 146 \text{ g Cu}_3(\text{PO}_4)_2$$

$$\frac{84.0 \text{ g CuSO}_4 / \text{mol}}{158.52 \text{ g}} \times \frac{1 \text{ mol Cu}_3(\text{PO}_4)_2}{3 \text{ mol CuSO}_4} \times 380.6 \text{ g} = \boxed{67.2 \text{ g Cu}_3(\text{PO}_4)_2}$$