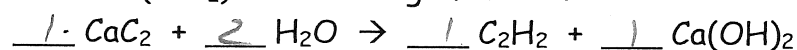


Limited Reaction In class Assignment

Name Key Period _____ Date _____

Use your knowledge of stoichiometry and limiting reactants to answer the following questions. Make sure you show your work, label units, and use correct sig. figs. Write your answer in the box!

- (1) Balance the following equation for the production of acetylene gas. How many grams of acetylene could be produced by combining 3.250 g of calcium carbide (CaC_2) with 10.00 g of water?



$$\begin{array}{ccc} 3.250\text{g} & 10.00\text{g} & ?\text{g} \\ 64.1\text{g/mol} & 18.0\text{g/mol} & 26.0\text{g/mol} \end{array}$$

$$\frac{3.250\text{g CaC}_2}{64.1\text{g}} \times \frac{1\text{mol CaC}_2}{1\text{mol CaC}_2} \times \frac{1\text{mol C}_2\text{H}_2}{1\text{mol CaC}_2} \times \frac{26.0\text{g}}{1\text{mol}} = 1.32\text{g C}_2\text{H}_2$$

$$\frac{10.00\text{g H}_2\text{O}}{18.0\text{g}} \times \frac{1\text{mol C}_2\text{H}_2}{2\text{mol H}_2\text{O}} \times \frac{26.0\text{g}}{1\text{mol}} = 7.22\text{g C}_2\text{H}_2$$

1.3g C_2H_2

- (2) Write the balanced equation for the reaction of lead (II) nitrate with sodium iodide to form sodium nitrate and lead (II) iodide. If the reaction starts with 25.00 grams of lead (II) nitrate and 15.00 grams of sodium iodide, how many grams of sodium nitrate can be formed?



$$25.00\text{g} \quad 15.00\text{g} \quad ?\text{g}$$

$$331.2\text{g/mol} \quad 149.9\text{g/mol} \quad 85.0\text{g/mol}$$

$$\frac{25.00\text{g Pb}(\text{NO}_3)_2}{331.2\text{g/mol}} \times \frac{1\text{mol}}{1\text{mol Pb}(\text{NO}_3)_2} \times \frac{2\text{mol NaNO}_3}{2\text{mol Pb}(\text{NO}_3)_2} \times \frac{85.0\text{g}}{1\text{mol Na}(\text{NO}_3)} = 12.8\text{g}$$

$$\frac{15.00\text{g NaI}}{149.9\text{g/mol}} \times \frac{1\text{mol}}{2\text{mol NaI}} \times \frac{2\text{mol NaNO}_3}{2\text{mol NaI}} \times \frac{85.0\text{g}}{1\text{mol Na}(\text{NO}_3)} = 8.51\text{g NaNO}_3$$

- (3) If 12.50 g of phosphoric acid combines with 10.00 g of sodium hydroxide, how many grams of water will form as a result of this double replacement reaction?



$$12.50\text{g} \quad 10.00\text{g}$$

$$98.0\text{g/mol} \quad 40.0\text{g/mol}$$

$$? \text{g}$$

$$18.0\text{g/mol}$$

$$\frac{12.50\text{g H}_3\text{PO}_4}{98.0\text{g/mol}} \times \frac{1\text{mol}}{1\text{mol H}_3\text{PO}_4} \times \frac{3\text{mol H}_2\text{O}}{3\text{mol H}_3\text{PO}_4} \times \frac{18.0\text{g}}{1\text{mol H}_2\text{O}} = 6.89\text{g H}_2\text{O}$$

$$\frac{10.00\text{g NaOH}}{40.0\text{g/mol}} \times \frac{1\text{mol}}{3\text{mol NaOH}} \times \frac{3\text{mol H}_2\text{O}}{3\text{mol NaOH}} \times \frac{18.0\text{g}}{1\text{mol H}_2\text{O}} = 4.50\text{g H}_2\text{O}$$