

Wkst 11.c

Ch 11

Mass to Mass Stoichiometry Problems

In the following problems, calculate how much of the indicated product is made. Show all your work.

1. If you start with 10.0g of lithium hydroxide and react it with hydrogen bromide, how many grams of lithium bromide will be produced?



$$\left(\frac{10.0\text{g LiOH}}{1} \right) \left(\frac{1 \text{ mole LiOH}}{23.9\text{g LiOH}} \right) \left(\frac{1 \text{ mole LiBr}}{1 \text{ mole LiOH}} \right) \left(\frac{86.8\text{g LiBr}}{1 \text{ mole LiBr}} \right) = \boxed{36.3\text{g LiBr}}$$

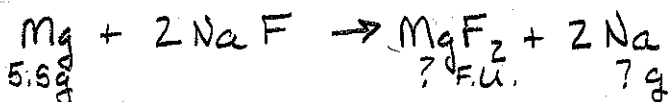
2. If you combust with 45.0 grams of ethylene (C_2H_4), how many grams of carbon dioxide and water will be produced?



$$\left(\frac{45.0\text{g C}_2\text{H}_4}{1} \right) \left(\frac{1 \text{ mole C}_2\text{H}_4}{28.0\text{g C}_2\text{H}_4} \right) \left(\frac{2 \text{ mole CO}_2}{1 \text{ mole C}_2\text{H}_4} \right) \left(\frac{44.0\text{g CO}_2}{1 \text{ mole CO}_2} \right) = \boxed{141\text{g CO}_2}$$

$$\left(\frac{45.0\text{g C}_2\text{H}_4}{1} \right) \left(\frac{1 \text{ mole C}_2\text{H}_4}{28.0\text{g C}_2\text{H}_4} \right) \left(\frac{2 \text{ mole H}_2\text{O}}{1 \text{ mole C}_2\text{H}_4} \right) \left(\frac{18.0\text{g H}_2\text{O}}{1 \text{ mole H}_2\text{O}} \right) = \boxed{57.9\text{g H}_2\text{O}}$$

3. Starting with 5.5 grams of magnesium and sodium fluoride, how many grams of sodium be produced? How many formula units of magnesium fluoride?



$$\left(\frac{5.5\text{g Mg}}{1} \right) \left(\frac{1 \text{ mole Mg}}{24.3\text{g Mg}} \right) \left(\frac{2 \text{ mole Na}}{1 \text{ mole Mg}} \right) \left(\frac{23.0\text{g Na}}{1 \text{ mole Na}} \right) = \boxed{10.1\text{g Na}}$$

$$\left(\frac{5.5\text{g Mg}}{1} \right) \left(\frac{1 \text{ mole Mg}}{24.3\text{g Mg}} \right) \left(\frac{1 \text{ mole MgF}_2}{1 \text{ mole Mg}} \right) \left(\frac{6.02 \times 10^{23} \text{ F.U. MgF}_2}{1 \text{ mole MgF}_2} \right) = \boxed{1.4 \times 10^{23} \text{ F.U. MgF}_2}$$

4. How many grams of hydrogen sulfate will be produced if you combine 20.0 grams of hydrochloric acid with sodium sulfate?



$$\left(\frac{20.0\text{g HCl}}{1} \right) \left(\frac{1 \text{ mole HCl}}{36.5\text{g HCl}} \right) \left(\frac{1 \text{ mole H}_2\text{SO}_4}{2 \text{ mole HCl}} \right) \left(\frac{98.1\text{g H}_2\text{SO}_4}{1 \text{ mole H}_2\text{SO}_4} \right) = \boxed{26.9\text{g H}_2\text{SO}_4}$$