

## Review Problems For Tomorrows Stoichiometry Test

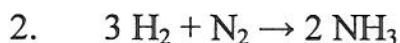


How many grams of  $\text{CO}_2$  can be produced from 50 L of  $\text{O}_2$ ?

$$50 \text{ L O}_2 \left( \frac{1 \text{ mol O}_2}{22.4 \text{ L O}_2} \right) \left( \frac{3 \text{ mol CO}_2}{5 \text{ mol O}_2} \right) \left( \frac{44 \text{ g CO}_2}{1 \text{ mol CO}_2} \right) = \boxed{158.93 \text{ g CO}_2}$$

How many molecules of  $\text{H}_2\text{O}$  can be produced from 150 g of  $\text{C}_3\text{H}_8$ ?

$$150 \text{ g C}_3\text{H}_8 \left( \frac{1 \text{ mol C}_3\text{H}_8}{44 \text{ g C}_3\text{H}_8} \right) \left( \frac{4 \text{ mol H}_2\text{O}}{1 \text{ mol C}_3\text{H}_8} \right) \left( \frac{6.02 \times 10^{23} \text{ molec.}}{1 \text{ mol H}_2\text{O}} \right) = \boxed{8.21 \times 10^{24} \text{ molec. H}_2\text{O}}$$

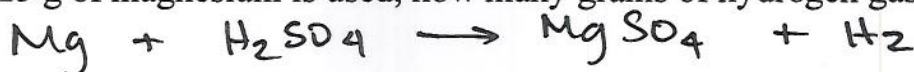


If 10 grams of each reactant are used, how many grams  $\text{NH}_3$  will be produced?

$$10 \text{ g H}_2 \left( \frac{1 \text{ mol H}_2}{2 \text{ g H}_2} \right) \left( \frac{2 \text{ mol NH}_3}{3 \text{ mol H}_2} \right) \left( \frac{17 \text{ g NH}_3}{1 \text{ mol NH}_3} \right) = 56.67 \text{ g NH}_3$$

$$10 \text{ g N}_2 \left( \frac{1 \text{ mol N}_2}{28 \text{ g N}_2} \right) \left( \frac{2 \text{ mol NH}_3}{1 \text{ mol N}_2} \right) \left( \frac{17 \text{ g NH}_3}{1 \text{ mol NH}_3} \right) = \boxed{12.14 \text{ g NH}_3}$$

3. Magnesium is added to hydrogen sulfate to produce magnesium sulfate and hydrogen gas. If 25 g of magnesium is used, how many grams of hydrogen gas are produced?



$$25 \text{ g Mg} \left( \frac{1 \text{ mol Mg}}{24.3 \text{ g Mg}} \right) \left( \frac{1 \text{ mol H}_2}{1 \text{ mol Mg}} \right) \left( \frac{2 \text{ g H}_2}{1 \text{ mol H}_2} \right) = \boxed{2.06 \text{ g H}_2}$$

4. If 50 g of aluminum nitrate react with 75 g of potassium sulfate how much  $\text{KNO}_3$  is produced?



$$50 \text{ g Al}(\text{NO}_3)_3 \left( \frac{1 \text{ mol}}{213 \text{ g Al}(\text{NO}_3)_3} \right) \left( \frac{6 \text{ mol KNO}_3}{2 \text{ mol Al}(\text{NO}_3)_3} \right) \left( \frac{101.1 \text{ g KNO}_3}{1 \text{ mol KNO}_3} \right) = \boxed{71.2 \text{ g KNO}_3}$$

$$75 \text{ g K}_2\text{SO}_4 \left( \frac{1 \text{ mol}}{174.2 \text{ g}} \right) \left( \frac{6 \text{ mol KNO}_3}{3 \text{ mol K}_2\text{SO}_4} \right) \left( \frac{101.1 \text{ g KNO}_3}{1 \text{ mol KNO}_3} \right) = 87.06 \text{ g KNO}_3$$

If you really make 18.7 g of  $\text{KNO}_3$ , what is your percent yield?

$$\frac{18.7 \text{ g KNO}_3}{71.2 \text{ g KNO}_3} \times 100 = \boxed{26.3 \% \text{ yield}}$$