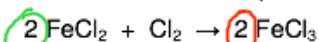


Name: KEYDate: 12/12/08

Chemistry Mole Ratios WS

- I. Use the following balanced equation to answer these questions (show your work!):



1. If you react 2 moles of FeCl_2 , you will form 2 moles of FeCl_3 . If you react 4 moles of FeCl_2 , how many moles of FeCl_3 will you form?

$$\frac{4 \text{ mol FeCl}_2}{2 \text{ mol FeCl}_2} \times 2 \text{ mol FeCl}_3 = 4 \text{ mol FeCl}_3 \text{ formed}$$

2. If you react 1 mole of Cl_2 , you will need 2 moles of FeCl_2 . How many moles of FeCl_2 do you need to react 7 moles of Cl_2 ?

$$\frac{7 \text{ mol Cl}_2}{1 \text{ mol Cl}_2} \times 2 \text{ mol FeCl}_2 = 14 \text{ mol FeCl}_2$$

3. If you form 2.28 moles of FeCl_3 in a reaction, how many moles of FeCl_2 did you start with?

$$\frac{2.28 \text{ mol FeCl}_3}{2 \text{ mol FeCl}_3} \times 2 \text{ mol FeCl}_2 = 2.28 \text{ mol FeCl}_2$$

4. If you react 3.25 moles of FeCl_2 , how many moles of Cl_2 did you also react?

$$\frac{3.25 \text{ mol FeCl}_2}{2 \text{ mol FeCl}_2} \times 1 \text{ mol Cl}_2 = 1.63 \text{ mol Cl}_2$$

- II. Complete the following mole ratio calculations, balancing equations where necessary:

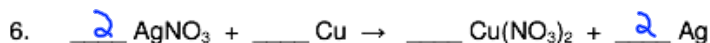


- a. Using the above equation, if 20.0 mol of Fe_2O_3 reacts with an excess of carbon monoxide, how many moles of carbon dioxide are formed?

$$\frac{20.0 \text{ mol Fe}_2\text{O}_3}{1 \text{ mol Fe}_2\text{O}_3} \times 3 \text{ mol CO}_2 = 60.0 \text{ mol CO}_2$$

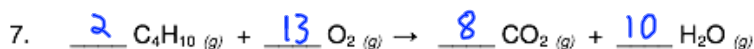
↑ mole ratio numbers come from the coefficients in your balanced equation - that's why balancing correctly is so important!

↳ ignore any chemicals in "excess"



- a. When 1.17 mol of copper (II) nitrate are formed in this reaction, how many moles of copper were reacted?

$$\frac{1.17 \text{ mol } \cancel{\text{Cu(NO}_3)_2}}{1 \text{ mol } \cancel{\text{Cu(NO}_3)_2}} \times \frac{1 \text{ mol Cu}}{1 \text{ mol } \cancel{\text{Cu(NO}_3)_2}} = 1.17 \text{ mol Cu}$$

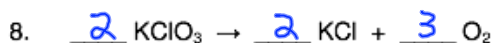


- a. 0.244 mol of C_4H_{10} are burned in excess O_2 . How many moles of CO_2 will be formed?

$$\frac{0.244 \text{ mol } \cancel{\text{C}_4\text{H}_{10}}}{2 \text{ mol } \cancel{\text{C}_4\text{H}_{10}}} \times \frac{8 \text{ mol CO}_2}{2 \text{ mol } \cancel{\text{C}_4\text{H}_{10}}} = 0.976 \text{ mol CO}_2$$

- b. In the ^{same given} above reaction, how many moles of water vapor will be formed?

$$\frac{0.244 \text{ mol } \cancel{\text{C}_4\text{H}_{10}}}{2 \text{ mol } \cancel{\text{C}_4\text{H}_{10}}} \times \frac{10 \text{ mol H}_2\text{O}}{2 \text{ mol } \cancel{\text{C}_4\text{H}_{10}}} = 1.22 \text{ mol H}_2\text{O}$$



- a. How many moles of KClO_3 were reacted if a laboratory experiment gives off 2.1 mol O_2 ?

$$\frac{2.1 \text{ mol } \cancel{\text{O}_2}}{3 \text{ mol } \cancel{\text{O}_2}} \times \frac{2 \text{ mol KClO}_3}{3 \text{ mol } \cancel{\text{O}_2}} = 1.4 \text{ mol KClO}_3$$

- b. How many moles of KCl were produced in the ^{same given} above experiment?

$$\frac{2.1 \text{ mol } \cancel{\text{O}_2}}{3 \text{ mol } \cancel{\text{O}_2}} \times \frac{2 \text{ mol KCl}}{3 \text{ mol } \cancel{\text{O}_2}} = 1.4 \text{ mol KCl}$$