

1/5/16

Mole Ratio Worksheet

Key

1) Given this equation: $\text{N}_2 + 3\text{H}_2 \rightarrow 2\text{NH}_3$, write the following molar ratios:

a) N_2 / H_2 1:3

b) N_2 / NH_3 1:2

c) H_2 / NH_3 3:2

2) Given the following equation: $8\text{H}_2 + \text{S}_8 \rightarrow 8\text{H}_2\text{S}$, write the following molar ratios:

a) $\text{H}_2 / \text{H}_2\text{S}$ 8:8 \rightarrow 1:1 (reduced)

b) H_2 / S_8 8:1

c) $\text{H}_2\text{S} / \text{S}_8$ 8:1

3) Answer the following questions for this equation: $2\text{H}_2 + \text{O}_2 \rightarrow 2\text{H}_2\text{O}$

a) What is the $\text{H}_2 / \text{H}_2\text{O}$ molar ratio? 2:2 \rightarrow 1:1 (reduced)

b) Suppose you had 20 moles of H_2 on hand and plenty of O_2 , how many moles of H_2O could you make?

$$\frac{20 \text{ mole H}_2}{2 \text{ H}_2} \times \frac{2 \text{ H}_2\text{O}}{2 \text{ H}_2} = \boxed{20 \text{ mole H}_2\text{O}}$$

c) What is the $\text{O}_2 / \text{H}_2\text{O}$ molar ratio?

1:2

d) Suppose you had 20 moles of O_2 and enough H_2 , how many moles of H_2O could you make?

$$\frac{20 \text{ mol O}_2}{1 \text{ O}_2} \times \frac{2 \text{ H}_2\text{O}}{2 \text{ H}_2} = \boxed{40 \text{ mol H}_2\text{O}}$$

4) Use this equation: $\text{N}_2 + 3\text{H}_2 \rightarrow 2\text{NH}_3$, for the following problems

a) If you used 1 mole of N_2 , how many moles of NH_3 could be produced? 2

b) If 10 moles of NH_3 were produced, how many moles of N_2 would be required?

$$\frac{10 \text{ mol NH}_3}{2 \text{ NH}_3} \times \frac{1 \text{ N}_2}{1 \text{ N}_2} = \boxed{5 \text{ mol N}_2}$$

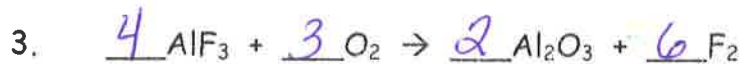
c) If 3.00 moles of H_2 were used, how many moles of NH_3 would be made?

$$\frac{3 \text{ mol H}_2}{3 \text{ H}_2} \times \frac{2 \text{ NH}_3}{2 \text{ NH}_3} = \boxed{2 \text{ mol NH}_3}$$

d) If 0.600 moles of NH_3 were produced, how many moles of H_2 are required?

$$\frac{0.6 \text{ mol NH}_3}{2 \text{ NH}_3} \times \frac{3 \text{ H}_2}{1 \text{ N}_2} = \boxed{0.9 \text{ mol H}_2}$$

* Balance each problem first *



a. 20 moles of AlF_3 will produce _____ moles of F_2 .

$$\frac{20 \text{ mol AlF}_3}{4 \text{ AlF}_3} \times \frac{6 \text{ F}_2}{6 \text{ F}_2} = \boxed{30 \text{ mol F}_2}$$

b. _____ moles of AlF_3 will react with 0.6 moles of O_2 .

$$\frac{0.6 \text{ mol O}_2}{3 \text{ O}_2} \times \frac{4 \text{ AlF}_3}{4 \text{ AlF}_3} = \boxed{0.8 \text{ mol AlF}_3}$$

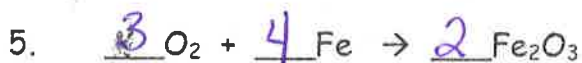


a. How many moles of oxygen react with 11 moles of C_3H_8 ?

$$\frac{11 \text{ mol C}_3\text{H}_8}{1 \text{ C}_3\text{H}_8} \times \frac{5 \text{ O}_2}{5 \text{ O}_2} = \boxed{55 \text{ mol O}_2}$$

b. How many moles of CO_2 are produced if 3.5 moles of water are produced?

$$\frac{3.5 \text{ mol H}_2\text{O}}{4 \text{ H}_2\text{O}} \times \frac{3 \text{ CO}_2}{3 \text{ CO}_2} = \boxed{2.63 \text{ mol CO}_2}$$



a. Fill in the following word equation-- 3 moles of oxygen gas react with 4 moles of iron to produce 2 moles of iron (III) oxide.

b. _____ moles of O_2 are required to produce 3.0 moles of iron (III) oxide.

$$\frac{3 \text{ mol Fe}_2\text{O}_3}{2 \text{ Fe}_2\text{O}_3} \times \frac{3 \text{ O}_2}{3 \text{ O}_2} = \boxed{4.5 \text{ mol O}_2}$$