

### Mole Ratio Worksheet

1) Given this equation:  $N_2 + 3 H_2 \rightarrow 2 NH_3$ , write the following molar ratios:

- a)  $N_2 / H_2$
- b)  $N_2 / NH_3$
- c)  $H_2 / NH_3$

2) Given the following equation:  $8 H_2 + S_8 \rightarrow 8 H_2S$ , write the following molar ratios:

- a)  $H_2 / H_2S$
- b)  $H_2 / S_8$
- c)  $H_2S / S_8$

3) Answer the following questions for this equation:  $2 H_2 + O_2 \rightarrow 2 H_2O$

- a) What is the  $H_2 / H_2O$  molar ratio?
- 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?
- c) What is the  $O_2 / H_2O$  molar ratio?
- d) Suppose you had 20 moles of  $O_2$  and enough  $H_2$ , how many moles of  $H_2O$  could you make?

4) Use this equation:  $N_2 + 3 H_2 \rightarrow 2 NH_3$ , for the following problems

- a) If you used 1 mole of  $N_2$ , how many moles of  $NH_3$  could be produced?
- b) If 10 moles of  $NH_3$  were produced, how many moles of  $N_2$  would be required?
- c) If 3.00 moles of  $H_2$  were used, how many moles of  $NH_3$  would be made?
- d) If 0.600 moles of  $NH_3$  were produced, how many moles of  $H_2$  are required?

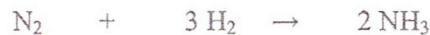
## Mole Ratio Worksheet

1. Consider the chemical reaction represented by the equation below:



- If 8 moles of magnesium chloride react with enough aluminum, how many moles of aluminum chloride are produced?
- How many moles of magnesium chloride are needed to with 10 moles of aluminum?

2. Consider the following chemical reaction:



- How many moles of nitrogen gas are needed to react with to react with 7.5 moles of hydrogen?
- How many moles of ammonia would you get if 4.5 moles of hydrogen gas reacted?
- How many moles of nitrogen gas are needed in order to produce 5 moles of  $\text{NH}_3$ ?

3. Consider the combustion of methane ( $\text{CH}_4$ ).

- How many moles of carbon dioxide are obtained when 20 moles of methane are burned?
- If only 15 moles of oxygen are available, how many moles of methane will burn?
- During combustion, 12 moles of carbon dioxide were obtained. How many moles of water were also obtained?