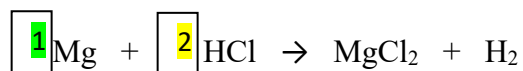


Name _____

Period _____

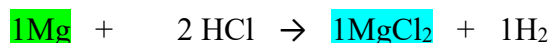
Date _____

Mole to Mole Conversions (QUESTIONS 1-4)**1. EXAMPLE: USE THIS TO HELP WITH THE PROBLEMS**

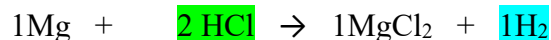
- a. If 2.48 moles of magnesium reacts to completion, how many moles of hydrochloric acid (HCl) were consumed in the reaction?

HAVE: 2.48 moles magnesium**WANT: moles of HCl**

$$\frac{2.48 \text{ mole Mg}}{1} \times \frac{2 \text{ mole HCl}}{1 \text{ mole Mg}} = 4.96 \text{ mol HCl}$$

2. Using the following chemical reaction, to determine the mole to mole conversion.

- a. If 0.56 moles of magnesium reacts to completion, how many moles of magnesium chloride are produced in the reaction?

3. Using the following chemical reaction, to determine the mole to mole conversion.

- a. If 6.52 moles of hydrogen gas are produced (H₂), how many moles of hydrochloric acid (HCl) were consumed in the reaction?

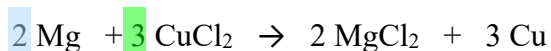


Use the equation above to determine the following mole to mole calculations

a If 3.24 moles of ammonia gas are produced, how many moles of hydrogen gas were consumed in the reaction?

Mole to Mass (QUESTIONS 5- 6)

5. EXAMPLE: USE THIS TO HELP WITH THE PROBLEMS



a. If 1.86 moles of magnesium reacts to completion, how many grams of copper (II) chloride were consumed in the reaction?

HAVE: 1.86 moles Mg

WANT: grams of CuCl₂

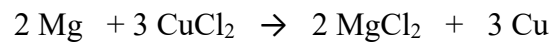
Molar Mass Work
 Cu = 1 x 63.55 = 63.55
 Cl = 2 X 35.45 = 70.90
 =
 134.45 g/mol

$\frac{1.86 \text{ moles Mg}}{1} \times \frac{3 \text{ moles CuCl}_2}{2 \text{ moles of Mg}} \times \frac{134.45 \text{ g CuCl}_2}{1 \text{ mole CuCl}_2}$

$1.86 \times 3 \times 134.45 = 375 \text{ g CuCl}_2$

$1 \times 2 \times 1$

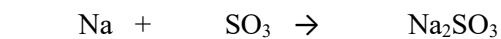
6. Using the following chemical reaction, to determine the mole to mass conversion.



- a. If 0.252 moles of copper were produced, how many grams of magnesium were consumed in the reaction?

7. Using the following chemical reaction, to determine the mole to mass conversion.

BALANCE EQUATION

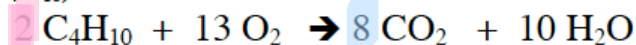


- a. If 5.36 moles of sodium are consumed, how many grams of sulfur trioxide gas were consumed in the reaction?

Mass (g) to Mass (g) (QUESTIONS 8-10)

8. EXAMPLE

Some cars can use butane (C₄H₁₀) as fuel:



How many grams of CO₂ are produced from the combustion of 100. grams of butane?

$$100. \cancel{\text{g C}_4\text{H}_{10}} \left| \frac{1 \cancel{\text{mol C}_4\text{H}_{10}}}{58.12 \cancel{\text{g C}_4\text{H}_{10}}} \right| \left| \frac{8 \cancel{\text{mol CO}_2}}{2 \cancel{\text{mol C}_4\text{H}_{10}}} \right| \left| \frac{44.01 \cancel{\text{g CO}_2}}{1 \cancel{\text{mol CO}_2}} \right| = 303 \text{ g CO}_2$$

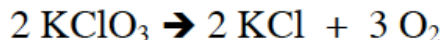
Molar Mass Work

$$\begin{aligned} \text{C} &= 4 \times 12.01 = 48.04 \\ \text{H} &= 10 \times 1.008 = 10.08 \\ &= 58.12 \text{ g/mol} \end{aligned}$$

Molar Mass Work

$$\begin{aligned} \text{C} &= 1 \times 12.01 = 12.01 \\ \text{O} &= 2 \times 16.00 = 32.00 \\ &= 44.01 \text{ g/mol} \end{aligned}$$

9. Using the following chemical reaction, to determine the **mass to mass** conversion.

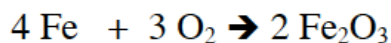


How many grams of O₂ will be formed from 3.76 grams of KClO₃?

$$3.76 \text{g KClO}_3 \left| \frac{1 \text{ mol KClO}_3}{122.55 \text{ g KClO}_3} \right| \left| \frac{__ \text{ mol O}_2}{__ \text{ mol KClO}_3} \right| \left| \frac{__ \text{ g O}_2}{__ \text{ mol O}_2} \right| = __ \text{ g O}_2$$

Molar Mass of KClO₃ = 122.55 g/mol

10. Using the following chemical reaction, to determine the **mass to mass** conversion.



How many grams of Fe₂O₃ are produced when 42.7 grams of Fe is reacted?

$$42.7 \text{ g Fe} \left| \frac{__ \text{ mol Fe}}{__ \text{ g Fe}} \right| \left| \frac{__ \text{ mol Fe}_2\text{O}_3}{__ \text{ mol Fe}} \right| \left| \frac{__ \text{ g Fe}_2\text{O}_3}{__ \text{ mol Fe}_2\text{O}_3} \right| = __ \text{ g Fe}_2\text{O}_3$$