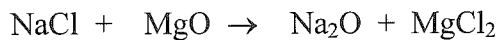


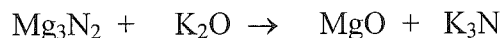
## Worksheet on Stoichiometry (Show all required parts)

Use the following to answer questions 1 & 2.



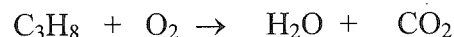
1. If 24 grams of sodium chloride reacts with an excess amount of magnesium oxide, how many grams of sodium oxide will be produced?
2. If 53 grams of magnesium oxide reacts with an excess amount of sodium chloride, how many grams of magnesium chloride will be made?

Use the following to answer questions 3 & 4.



3. If 14 moles of potassium oxide reacts with an excess amount of magnesium nitride, how many grams of potassium nitride will be made?
4. How many grams of magnesium nitride is needed to react with an excess amount of potassium oxide to produce 11.6 grams of magnesium oxide?

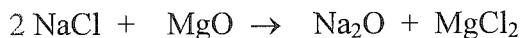
Use the following to answer questions 5 - 8.



5. 32 grams of propane ( $\text{C}_3\text{H}_8$ ) is burned in excess oxygen gas to produce how many grams of water?
6. How many grams of oxygen gas is needed to make 30 grams of carbon dioxide?
7. If 0.45 grams of water is formed during the combustion of propane, how many grams of carbon dioxide is formed?
8. How many grams of propane,  $\text{C}_3\text{H}_8$ , are needed to make 140 grams of water?

## Worksheet on Stoichiometry (Show all required parts)

Use the following to answer questions 1 & 2.



1. If 24 grams of sodium chloride reacts with an excess amount of magnesium oxide, how many grams of sodium oxide will be produced?

A                      B

Given: 24 g NaCl = ? grams Na<sub>2</sub>O

Conversions: Molar mass of NaCl: 1 mole NaCl = 58 g NaCl  
Mole to mole ratio: 2 mole NaCl = 1 mole Na<sub>2</sub>O  
Molar mass of Na<sub>2</sub>O: 1 mole Na<sub>2</sub>O = 62 g Na<sub>2</sub>O

Setup:

$$24 \text{ g NaCl} \times \frac{1 \text{ mole NaCl}}{58 \text{ grams NaCl}} \times \frac{1 \text{ mole Na}_2\text{O}}{2 \text{ mole NaCl}} \times \frac{62 \text{ g Na}_2\text{O}}{1 \text{ mole Na}_2\text{O}} = 12.8 \text{ g Na}_2\text{O}$$

2. If 53 grams of magnesium oxide reacts with an excess amount of sodium chloride, how many grams of magnesium chloride will be made?

A                      B

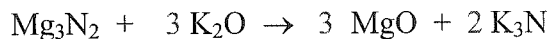
Given: 53 g MgO = ? g MgCl<sub>2</sub>

Conversions: Molar mass of MgO: 1 mole MgO = 40 g MgO  
Mole to Mole Ratio : 1 mole MgO = 1 mole MgCl<sub>2</sub>  
Molar mass of MgCl<sub>2</sub> : 1 mole MgCl<sub>2</sub> = 94 g MgCl<sub>2</sub>

Setup:

$$53 \text{ g MgO} \times \frac{1 \text{ mole MgO}}{40 \text{ g MgO}} \times \frac{1 \text{ mole MgCl}_2}{1 \text{ mole MgO}} \times \frac{94 \text{ g MgCl}_2}{1 \text{ mole MgCl}_2} = 124.55 \text{ g MgCl}_2$$

Use the following to answer questions 3 & 4.



3. If 14 moles of potassium oxide reacts with an excess amount of magnesium nitride, how many grams of potassium nitride will be made?

A                      B

Given: 14 grams K<sub>2</sub>O = ? g K<sub>3</sub>N

Conversions: Molar mass of K<sub>2</sub>O: 1 mole K<sub>2</sub>O = 94 g K<sub>2</sub>O  
Mole to mole ratio: 3 moles K<sub>2</sub>O = 2 moles K<sub>3</sub>N  
Molar mass K<sub>3</sub>N: 1 mole K<sub>3</sub>N = 131 g K<sub>3</sub>N

Setup:

$$14 \text{ grams K}_2\text{O} \times \frac{1 \text{ mole K}_2\text{O}}{94 \text{ g K}_2\text{O}} \times \frac{2 \text{ moles K}_3\text{N}}{3 \text{ moles K}_2\text{O}} \times \frac{131 \text{ g K}_3\text{N}}{1 \text{ mole K}_3\text{N}} = 13 \text{ g K}_3\text{N}$$

KEY IS ON NEXT PAGE



4. How many grams of magnesium nitride is needed to react with an excess amount of potassium oxide to produce 11.6 grams of magnesium oxide?

A                      B

Given: 11.6 grams MgO = ? g Mg<sub>3</sub>N<sub>2</sub>

Conversions: Molar mass of MgO: 1 mole MgO = 40 g MgO

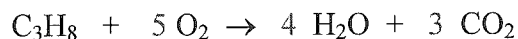
Mole to mole ratio: 3 moles MgO = 1 mole Mg<sub>3</sub>N<sub>2</sub>

Molar mass Mg<sub>3</sub>N<sub>2</sub>: 1 mole Mg<sub>3</sub>N<sub>2</sub> = 100 g Mg<sub>3</sub>N<sub>2</sub>

Setup:

$$11.6 \text{ grams MgO} \times \frac{1 \text{ mole MgO}}{40 \text{ g MgO}} \times \frac{1 \text{ mole Mg}_3\text{N}_2}{3 \text{ moles MgO}} \times \frac{100 \text{ g Mg}_3\text{N}_2}{1 \text{ mole Mg}_3\text{N}_2} = 9.7 \text{ g Mg}_3\text{N}_2$$

Use the following to answer questions 5 - 8.



5. 32 grams of propane (C<sub>3</sub>H<sub>8</sub>) is burned in excess oxygen gas to produce how many grams of water?

A                      B

Given: 32 g C<sub>3</sub>H<sub>8</sub> = ? g H<sub>2</sub>O

Conversions: Molar mass C<sub>3</sub>H<sub>8</sub>: 1 mole C<sub>3</sub>H<sub>8</sub> = 44 g C<sub>3</sub>H<sub>8</sub>

Mole to Mole ratio: 1 mole C<sub>3</sub>H<sub>8</sub> = 4 moles H<sub>2</sub>O

Molar mass H<sub>2</sub>O: 1 mole H<sub>2</sub>O = 18 g H<sub>2</sub>O

Setup:

$$32 \text{ g C}_3\text{H}_8 \times \frac{1 \text{ mole C}_3\text{H}_8}{44 \text{ g C}_3\text{H}_8} \times \frac{4 \text{ moles H}_2\text{O}}{1 \text{ mole C}_3\text{H}_8} \times \frac{18 \text{ g H}_2\text{O}}{1 \text{ mole H}_2\text{O}} = 52.4 \text{ g H}_2\text{O}$$

6. How many grams of oxygen gas is needed to make 30 grams of carbon dioxide?

A                      B

Given: 30 g CO<sub>2</sub> = ? g O<sub>2</sub>

Conversions: Molar mass CO<sub>2</sub>: 1 mole CO<sub>2</sub> = 44 g CO<sub>2</sub>

Mole to mole ratio: 3 moles CO<sub>2</sub> = 5 moles O<sub>2</sub>

Molar mass of O<sub>2</sub>: 1 mole O<sub>2</sub> = 32 g O<sub>2</sub>

Setup:

$$30 \text{ g CO}_2 \times \frac{1 \text{ mole CO}_2}{44 \text{ g CO}_2} \times \frac{5 \text{ moles O}_2}{3 \text{ moles CO}_2} \times \frac{32 \text{ g O}_2}{1 \text{ mole O}_2} = 36.4 \text{ g O}_2$$

7. If 0.45 grams of water is formed during the combustion of propane, how many grams of carbon dioxide is formed?

A B

Given: 0.45 g H<sub>2</sub>O = ? grams CO<sub>2</sub>

Conversions: Molar mass of H<sub>2</sub>O: 1 mole H<sub>2</sub>O = 18 g H<sub>2</sub>O

Mole to mole ratio: 4 moles H<sub>2</sub>O = 3 moles CO<sub>2</sub>

Molar mass of CO<sub>2</sub> : 1 mole CO<sub>2</sub> = 44 g CO<sub>2</sub>

Setup:

$$0.45 \text{ g H}_2\text{O} \times \frac{1 \text{ mole H}_2\text{O}}{18 \text{ g H}_2\text{O}} \times \frac{3 \text{ moles CO}_2}{4 \text{ moles H}_2\text{O}} \times \frac{44 \text{ g CO}_2}{1 \text{ mole CO}_2} = .825 \text{ g CO}_2$$

8. How many grams of propane, C<sub>3</sub>H<sub>8</sub>, are needed to make 140 grams of water?

A B

Given: 140 g H<sub>2</sub>O = ? g C<sub>3</sub>H<sub>8</sub>

Conversions: Molar mass H<sub>2</sub>O: 1 mole H<sub>2</sub>O = 18 g H<sub>2</sub>O

Mole to mole ratio: 4 moles H<sub>2</sub>O = 1 mole C<sub>3</sub>H<sub>8</sub>

Molar mass C<sub>3</sub>H<sub>8</sub> : 1 mole C<sub>3</sub>H<sub>8</sub> = 44 g C<sub>3</sub>H<sub>8</sub>

Setup:

$$140 \text{ g H}_2\text{O} \times \frac{1 \text{ mole H}_2\text{O}}{18 \text{ g H}_2\text{O}} \times \frac{1 \text{ mole C}_3\text{H}_8}{4 \text{ moles H}_2\text{O}} \times \frac{44 \text{ g C}_3\text{H}_8}{1 \text{ mole C}_3\text{H}_8} = 85.4 \text{ g C}_3\text{H}_8$$