# Module 5, Part 1

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## Objectives

0 minutes

Refer to Module 5 Notes.pdf.

By the end of this class, the students should be able to...

- differentiate between several different types of chemical reaction:

    - decomposition reactions
    - formation reactions
    - complete combustion reactions
    - incomplete combustion reactions

- describe molecular mass

- give a succinct description of a *mole*

## Welcome & Devotion

5 minutes

- have one student read Psalm 107:33–42

## Types of Chemical Reactions

20 minutes

- work through definitions of:

    - decomposition reactions
    - formation reactions
    - complete combustion reactions
    - incomplete combustion reactions

- classify the following reactions after balancing them:

    - how do we classify $H_2 + O_2 \longrightarrow H_2O$?
    - how do we classify $C_3H_8 + O_2 \longrightarrow CO_2 + H_2O$?
    - how do we classify $C_8H_{18} + O_2 \longrightarrow CO + H_2O$?

# Molecular Mass

- work out on the board:

  - molecular mass of $H_2O$
  - molecular mass of $NaOH$
  - molecular mass of $H_2SO_4$
  - molecular mass of $CH_4$ (methane)
  - molecular mass of $C_4H_{10}$ (butane)
  - molecular mass of $C_3H_8$ (propane)
  - molecular mass of $C_6H_{14}$ (hectane)
  - molecular mass of $C_8H_{18}$ (octane)
  - molecular mass of $C_{12}H_{22}O_{11}$ (sucrose)

# The marvelous Mole

- what is a mole? $1 mol = 6.02214076 \times 10^{23} objects$

- Avagadro's number: $N_A = 6.02214076 \times 10^{23} objects$

| Name | Number |
|------|--------|
| pair | 2 |
| trio | 3 |
| half-dozen | 6 |
| dozen | 12 |
| baker's dozen | 13 |
| score | 20 |
| gross | 144 |
| **mole** | $6.022 \times 10^{23}$ |

# Questions for me

# Assignment

- Review Problems: p. 161 # 1–10 (not to be turned in)

- Practice Problems: p. 162 # 1–10 (due 2025-11-07)

- Experiment 5.1, p. 149 (due 2025-11-07)