

# MOTION IN OUR WORLD

## 1. What is Motion?

- Motion
  - = change in position (object's location) in a given time interval
  - involves measurement of distance, direction and time
    - to measure motion, you must have a **Frame of Reference**
      - = movement is measured from a reference point  
(point from which movement is determined)
      - Example: Are you in motion when driving in your car?
  - involves force
    - **Newton's 3 Laws of Motion:**
      - 1) An object at rest will remain at rest unless acted on by an unbalanced force. An object in motion continues in motion with the same speed and in the same direction unless acted upon by an unbalanced force.
        - = **Law of Inertia**
      - 2) When a force acts on a mass it accelerates. The greater the mass of the object, the greater the amount of force needed to accelerate it. **(F = m x a)**
        - = **Law of Acceleration**
      - 3) For every force there is a reaction force that is equal in size, but opposite in direction.
        - = **Law of Action & Reaction**
- Types of Motion
  - a) **Uniform motion**
    - = the simplest motion
    - : occurs when an object moves at a constant rate in a straight line.
    - : This motion cannot be sustained for a long period of time, since friction & other factors will affect the ability of an object to maintain movement.
  - b) **Nonuniform Motion** = occurs when an object changes the rate and/or direction in which it is travelling

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