CHAPTER 2: 1D Motion

Displacement : $\Delta \mathbf{x} = \mathbf{x}_f - \mathbf{x}_i$

Average velocity : $\bar{\mathbf{v}} = \dfrac{\Delta \mathbf{x}}{\Delta t} = \dfrac{\mathbf{x}_f - \mathbf{x}_i}{t_f - t_i}$

Average acceleration : $\bar{\mathbf{a}} = \dfrac{\Delta \mathbf{v}}{\Delta t} = \dfrac{\mathbf{v}_f - \mathbf{v}_i}{t_f - t_i}$

1D Kinematic Equations : a is constant and $t_0 = 0$

$$v = v_0 + at$$

$$x = x_0 + v_0 t + \frac{1}{2} at^2$$

$$x = x_0 + \left(\frac{v + v_0}{2} \right) t$$

$$v^2 = v_0^{\,2} + 2a(x - x_0)$$

Magnitude of acceleration due to gravity (near surface of Earth) :

$g = 9.8 \ \dfrac{m}{s^2}$