1 Summary of Kinematic Equations

Kinematic Equations (when $a = k$)

Every "t" actually means Δt (change in time, as time is always changing)

$$d_f = d_i + \bar{v}t$$

Average Velocity:

$$\bar{v} = \frac{v_0 + v}{2} == AV = \frac{v_i + v_f}{2}$$

Final Velocity:

$$v_f = v_i + at$$

$$d_f = d_i + v_i t + \frac{1}{2}at^2$$

Timeless equation:

$$v_f^2 = v_i^2 + 2a(\Delta d)$$

Four-Step Analysis

1. State the standard slope formula: $y = mx + b$.
2. Then Substitute y and x for their values in an equation: $d_x = m * V_x + b$.
3. Then apply values for the remaining m and b: $d_x = 2.553(s) * V_x + (0)$.
4. Then determine a simpler formula from the substituted equation: $d_x = \Delta t V_x$.

2 Derived Equations

Velocity(v): $v = \frac{\Delta d}{\Delta t}$

Acceleration(a):

$$\begin{aligned} \bar{a} &= \frac{v_f - v_i}{t} \\ &= \frac{\Delta v}{\Delta t} \end{aligned} \tag{1}$$

Newtons(N):$N = kg * \frac{m}{s^2}$

- $\frac{m}{s^2} / \frac{1.0}{kg}$
- $\frac{m}{s^2} * \frac{kg}{1.0}$
- $kgx\frac{m}{s^2}$
- $N = kg * \frac{m}{s^2}$

Force Equation $F = ma$:

1. State slope: $y = mx + b$
2. Substitute x and why: $a = m * \frac{1}{m} + b$
3. substitute m and b: $a = 2.4N\frac{1}{m}$
4. evaluate: $a = F(\frac{1}{mass})$
5. then reorder: $F = ma$