

**Vocabulary & Concepts**

- Mass
- Inertia
- Weight ( $F_g$ )
- Normal Force ( $F_N$ )
- Applied Force ( $F_a$ )
- Force of Friction ( $F_f$ )
- Newton’s 1<sup>st</sup> Law
- Net Force
- Newton’s 2<sup>nd</sup> Law
- Newton’s 3<sup>rd</sup> Law
- Static Friction
- Kinetic Friction
- Coefficient of Friction

**Equations**

$$F_g = ma_g$$

$$\text{net } F = ma$$

$$F_f = \mu F_N$$

***1D motion equations***

$$v_f = v_i + at$$

$$\Delta x = v_i t + \frac{1}{2} at^2$$

$$v_f^2 = v_i^2 + 2a\Delta x$$

$$\Delta x = \frac{1}{2} (v_i + v_f)t$$

**Core Concepts**

- What is the relationship between weight and mass? If you have one quantity how do you solve for the other?
- How do you draw a free body diagram?
- When looking at a free body diagram, how can you tell if something is moving at a constant velocity or at rest?
- What is net force?
- How do you calculate net force?
- What is Newton’s 2<sup>nd</sup> Law?
- If force is constant and you increase the mass, what happens to acceleration?
- If mass is constant and you increase the force, what happens to acceleration?
- If two objects collide, which will feel the greater force?
- What factors affect friction?
- What factors do not affect friction?
- What is the difference between static and kinetic friction?