Force and Motion

Newton's First Law

- An object at rest remains at rest and an object in motion remains in motion with the same speed and direction unless acted upon by an external unbalanced force.

Newton's Second Law

- The acceleration of an object depends directly upon the net force acting upon the object, and inversely upon the mass of the object.
  - As the force acting upon an object is increased, the acceleration of the object is increased.
  - As the mass of an object is increased, the acceleration of the object is decreased.

Newton's Third Law

- Forces always come in pairs
  - In other words, if you push down on the table, the table is pushing back up at you with equal force

Summary

- If an object is **ACCELERATING**, then the **NET** (TOTAL) **force** acting on it is **NOT ZERO**.
  - The amount of acceleration will depend on the amount of net force and the mass.
- If an object is moving with a **CONSTANT VELOCITY** (or stationary), then the **NET** (TOTAL) **force** acting on it is **ZERO**.