



## Flipping Physics Lecture Notes:

### You Can't Run from Momentum

- Symbol for momentum is a lowercase  $p$ .
  - $p$  is for the Latin word “petere” which means “to make for”, “to travel to”, “to seek”, or “to pursue”. It’s pretty clear this word is where the letter  $p$  for momentum comes from.
  - Do not confuse lowercase “ $p$ ” for momentum with:
    - Uppercase  $P$ , which is for Power.
    - $\rho$  which is for density. (The lowercase Greek symbol  $\rho$  is called rho.)
- Equation for momentum is  $\vec{p} = m\vec{v}$ 
  - $m$  is for mass
  - $v$  is for velocity
- Momentum is a vector. So momentum has both magnitude and direction.
- Units for momentum are  $\frac{kg \cdot m}{s}$ 
  - $\vec{p} = m\vec{v} \Rightarrow (kg) \left( \frac{m}{s} \right) = \frac{kg \cdot m}{s}$
  - $\frac{kg \cdot m}{s}$  have no special name.
  - Not to be confused with  $\frac{kg \cdot m}{s^2}$  which is a newton.
- If the velocity of the object is zero, then the momentum of the object is zero.
  - $\vec{p} = m\vec{v} = m(\mathbf{0}) = \mathbf{0}$