Momentum

Momentum is an idea that combines mass and velocity into one package. It is an idea that is similar to inertia and kinetic energy.
Inertia is the property of an object to stay at rest or in motion.
Kinetic energy is the amount of energy that an object due to its motion. ($E_k = ½ mv^2$)

Momentum is not truly either of these, but ends up like a mix of the two.

- **If you compare and contrast momentum and kinetic energy, you'll notice a couple things…**
- **First, they both have mass and velocity in their formulas.**
- **Second, kinetic energy has to do with ability to do work, momentum doesn't.**
- **Although they are similar, they are not the same.**
- **We haven't given you any way to calculate inertia yet, so is momentum the same as inertia?**
- **Not really. Inertia is a concept, not something that is directly measured.**

Momentum is calculated by multiplying the mass and velocity of an object.

$$p = m\,v$$

p = momentum (kg m/s)
m = mass (kg)
v = velocity (m/s)

Example 1: A 1000 kg car is moving at 10km/h. Determine the momentum of the car.

p = mv
p = 1000kg (2.78m/s)
p = 2.78e3 kg m/s