2.1 Momentum

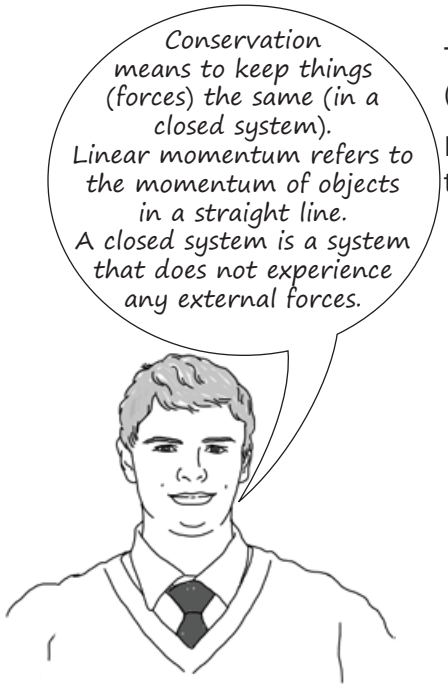
Momentum is a vector quantity with the same direction as the object's velocity.

You need to remember the differences between speed and velocity.

Speed	Velocity
• Speed is the distance covered per unit time • Speed is a scalar quantity (thus has magnitude and no direction). • Symbol: v	• Velocity is the rate at which an object is displaced. • Velocity is a vector (thus has magnitude and direction). • Symbol: $\vec{v}$

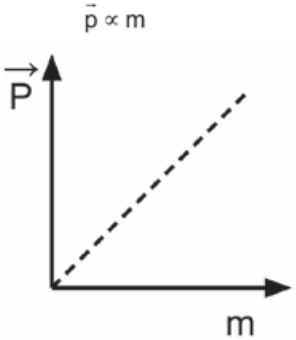
The formula for momentum is: $p = mv$

- where
  p = momentum
  m = mass
  v = velocity
- mass is measured in kilograms (kg)
- velocity is measured in $m \cdot s^{-1}$
- the unit of momentum is: $kg \cdot m \cdot s^{-1}$



The **momentum** of an object is defined as the product of its mass and velocity ($\vec{p} = m\vec{v}$)

Momentum is **directly proportional** to the **mass** of the object:



Momentum is also **directly proportional** to the **velocity** of the object: