Impulse

Impulse, J, is delivered to an object in order to change its momentum

N x s == kg x m/s

Impulse is change in momentum

- An unbalanced force on an object causes a change in the object's momentum
- Fnet(unbalanced force) x time = change in P
- Fnet x time = change in P = J (N x s)

Example

- A 5.0 kg object traveling at 3 m/s EAST is subjected to a force that increases its velocity to 7 m/s EAST. Calculate P(initial), P(final), Change in P, Impulse delivered to the object.

- P = mV = 5 x 3 = 15 kg m/s
- P = mV = 5 x 7 = 35 kg m/s
- Change in P = 35 – 15 = 20 kg m/s
- J = F(net) x t = 20 N s

Group Activity

- 1. A 15 N force acdts on an object in a direction due EAST for 3.0 s. What will be the change in momentum of the object?
- 2. An unbalanced 6.0 N force acts EAST on an object for 3.0 s. The impulse produced by the force is how much?
- 3. A constant unbalanced force acts on an object for 3.0 s producing an impulse of 6.0 N seconds. What is the magnitude of the force?