Impulse

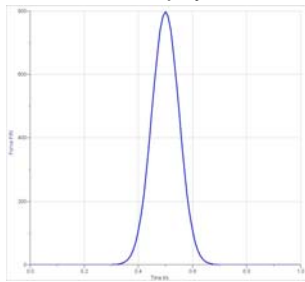
Impulse

- In a collision of two ordinary objects, both objects are deformed, often considerably, due to the large forces involved.

- When the collision occurs, the force usually jumps from zero at the moment of contact to a very large value within a very short period of time, and then abruptly returns to zero again.

- From Newton's second law, the net force on an object is equal to the rate of change of momentum:

$$F = \frac{\Delta p}{\Delta t}$$

Multiplying both sides by *Δt* gives:

$$\boxed{\text{Impulse} = F\Delta t = \Delta p = m\Delta v}$$

- Impulse helps us when dealing with forces that occur over a short period of time.
  - A baseball bat hitting a ball

- It should be noted that Impulse (*FΔt*) represents the area under a graph of force vs time.