Momentum &

Impulse

Momentum: is the product of any object that is moving.

**Equation:**

**Momentum (*p*) = Mass (Kg) x Velocity (m/s)**

**Greek symbol “Rho”.**

# Units for Momentum: Kilograms meters per second (Kg m/s).

\*\*As the mass and velocity of an object goes up so does the momentum.

**Example:**

**10 m/s 10m/s**

**The 8 Kg mass has a higher momentum because it has more mass at the same velocity.**

Impulse: is the product of a moving object that applies a force on another due to a collision for a specific time.

Impulse (I) = Force (F) x Time of impact

( t).

Greek Symbol “Delta”.

In certain situations the over all impulse stays the same but either the force or the time interval can be changed in order to achieve a desired situation.

Example: Dropping a water melon on to pavement as apposed to in a pool. The over all impulse of both of the collisions are equal.

How are they different?

T = .1s T = 1 s

Water

pavement

I = 10 N x .1 s = 1.0 N s I = 1 N x 1s = 1.0N s

The water melon that hits the pavement has a much shorter time of impact which makes the force higher than the time of impact of the water melon that hits the water (long time of impact because it sinks) and that is why the water melon is less likely to explode.