

# Conservation of Momentum

The Law of Conservation of Momentum states, that the momentum of any closed isolated system does not change.

A closed isolated system is a system that does not gain or loses mass and the net external force acting on the system is zero.

$$\sum \vec{p}_i = \sum \vec{p}_f$$

## Collisions

- **An oblique collision** – an oblique impact occurs when the direction of motion of one or both of the particles is at an angle to the line of impact. Central impact occurs when the directions of motion of the colliding particles are along the line of impact.
- **An elastic collision.** A collision that conserves the kinetic energy of the system.  $KE_i = KE_f$ , thus  $v_i = v_f$ .
- **Inelastic collision.** A collision that does not conserve the kinetic energy of the system.  $KE_i \neq KE_f$ , thus  $v_i \neq v_f$ . Some of the kinetic energy is transformed in \_\_\_\_\_

**Explosions = “Collisions in reverse”**