

Collisions Theory

- Momentum $\vec{p} = m\vec{v}$
- Impulse $J = \Delta p = Ft$

- Net Momentum = $\sum \vec{p}$
Vector sum of all of the momentum in a system

- Law of Conservation of Momentum: In a collision,
Net momentum before = net momentum after.
$$\sum \vec{p}_i = \sum \vec{p}_f$$
- Elastic Collisions: there is no loss of energy or deformation of the object
Think of the pool balls hitting, or that desk toy
In these collisions, kinetic energy is conserved, we will talk more about this later
- Inelastic Collisions: the collision creates heat. Energy is not conserved, but momentum still is!
- Always remember that momentum will be a vector sum

- Do number 63 on the Momentum sheet
- Ex: Two people on roller skates following one another. One weighs 50kg, going 6m/s, other weighs 100kg, going 4m/s... total is 300+400 = 700kgm/s
- Ex: Two balls that have just hit one another, now going in opposite directions. 0.25kg, 3m/s, 0.5kg, 1.5m/s – sum to zero
- Ex: Two cars moving towards one another. One weighs 500kg and is going 70km/hr, other weighs 500kg and is going 50km/hour. Convert into m/s is best.

Homework: p105 #14-22