

# Momentum

All moving objects have momentum which depends on the mass of the object and the velocity with which it is traveling

- The more momentum an object has, the harder it is to stop
- The formula for momentum is  $\text{Mass} \times \text{Velocity}$
- Conservation of momentum can be transferred. The total momentum of any group of objects remains the same unless acted on by an outside force (gravity, friction)

# Gravity and Motion

## Acceleration and Falling objects:

- Objects that fall are pulled down to Earth due to gravity
- All objects fall toward the Earth at the same rate. The rate is  $9.8 \text{ m/s}^2$  which means that for every second an object falls its downward velocity increases by  $9.8 \text{ m/s}$
- Air resistance is a type of friction
- The amount of air resistance depends on size, speed and shape of the object

Example crumpled paper vs. Flat paper



# Newton's Law of Universal Gravitation

- Gravity is a force of attraction between all objects.
- Force is small between small objects and large between large
- The greater the distance between objects the less the gravitational force