

## Newton's 1<sup>st</sup> Law:

It takes an overall force to change the motion of an object.

· Overall force, net force, unbalanced force: when all the forces on an object DON'T just cancel each other out.

· Changing motion: Changes direction, speeds up, slows down (ACCELERATION)  
NET FORCES CAUSE ACCELERATION

## Example predictions:

- If an object is moving and there is not an overall force on it, it will keep moving at the same speed in the same direction.
- If something is slowing down, there is a net force acting on the object.
- If something is being pushed but is not speeding up, there must be another force in the opposite direction balancing the push.

## Hidden forces:

- Gravity is always pulling straight down (on earth)
- Friction is always pushing against a moving object if it's sliding or moving along a surface.
- Air resistance is always pushing against a moving object.

## Predictions:

- Will the object slow down?
  - Will the object speed up?
  - Will the object change direction?
  - Is the object feeling an overall (net) force - and in what direction?
- } If NO to all three...  
"constant velocity"