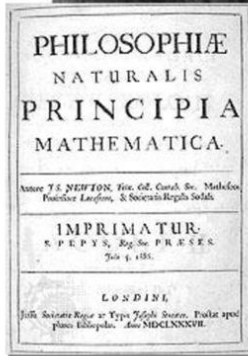
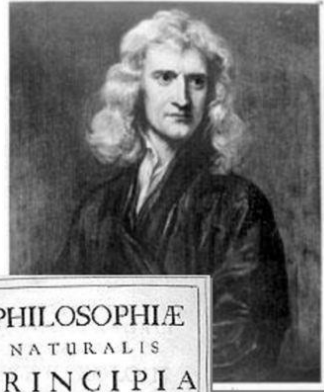


Newton's 1st Law – The Law of Inertia

Newton's First Law (1642-1727)



- “The Law of Inertia”
- A body remains at rest or moves in a straight line at a constant speed unless acted upon by a net force.
 - Objects do not accelerate unless a net force is applied.

Natural States

All Bodies Want to Be in a Natural State

Two Natural States

1. At Rest

(Not Moving)

2. Constant Velocity

(Moving in Straight Line at Constant Speed)

Inertia

- All objects have inertia.
- Inertia is measured by mass. More massive objects have more inertia than less massive ones.
- Inertia is the property that resists changes in motion and tries to preserve a natural state.
- A net unbalanced external force is required to overcome an object's inertia.

With no net external unbalance force, an object will:

Stay at Rest – Never Move



OR

Keep Moving in a Straight Line at Constant Speed



Examples of Newton's First Law

- If you slide a hockey puck on ice, eventually it will stop, because of friction on the ice. It will also stop if it hits something, like a player's stick or a goalpost.
- If you kicked a ball in space, it would keep going forever, because there is no gravity, friction or air resistance going against it. It will only stop going in one direction if it hits something like a meteorite or reaches the gravity field of another planet.
- If you are driving in your car at a very high speed and hit something, like a brick wall or a tree, the car will come to an instant stop, but you will keep moving forward. This is why cars have airbags, to protect you from smashing into the windscreen.