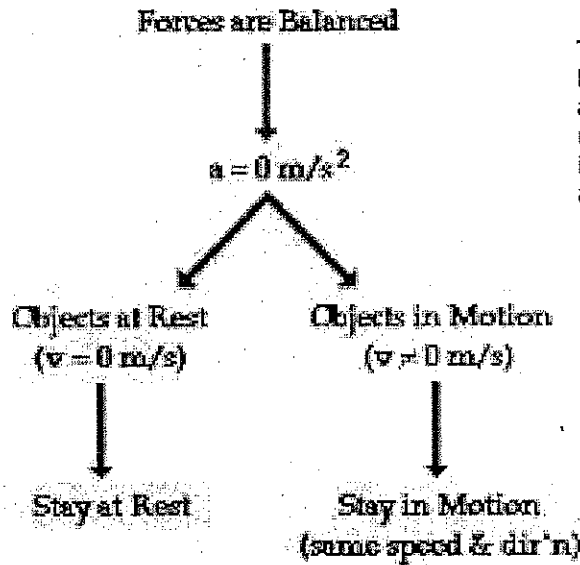


## Newton's 1<sup>st</sup> Law

$$F_{\text{Net}} = 0$$

Equilibrium



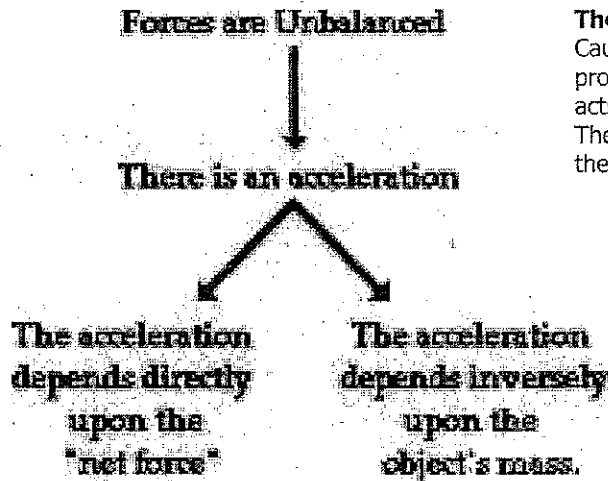
### The Law of Inertia

Natural State: An object at rest stays at rest and an object in uniform motion stays in uniform motion with the same speed and in the same direction unless acted upon by a net unbalanced force.

## Newton's 2<sup>nd</sup> Law

$$F_{\text{Net}} = ma$$

Non-Equilibrium



### The Law of Acceleration

Cause and Effect: An object's acceleration is proportional to the net unbalanced force that acts on it and inversely proportional to its mass. The acceleration of a body is always directed in the same direction as the net unbalanced force.

## Newton's 3<sup>rd</sup> Law

$$F_{A/B} = -F_{B/A}$$

These force pairs act on different objects.  
The forces are equal in magnitude and opposite in direction.

### The Law of Interaction

Action-Reaction: Force is the mechanism by which objects interact. For every action (force) there is an equal and opposite reaction (force). Forces always come in pairs. The third law involves two interacting objects and the two forces they exert on one another.