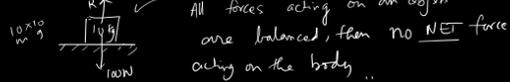


Jacob
1st law: A body or object is either at rest or in motion with respect to its surroundings

Case (i) It is at rest:



All forces acting on an object are balanced, then no NET force acting on the body.

Case (ii) Object is in motion



Continue to be in rest or motion
Weight = Reaction force
Object does not move
S < F: object stops
S > F: object stops
S = F: object stops

II law: From Rest object starts moving
Change in its Speed/Velocity

There is an acceleration 'a'

a ∝ net force or a ∝ Force of action



$$a \propto F$$

$$a = \frac{F}{m}$$

m: mass of the object

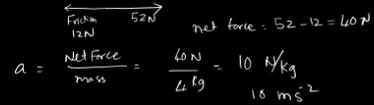
* a ↑ if m ↓ if F is constant
* a of M' (bigger) is small

$$F = ma$$

$$a = \frac{V_{final} - V_{initial}}{\text{time}}$$

✓ a: Positive ... Speed/Velocity increasing
Negative ... decreasing

A 4 kg box is pushed forward with a force of 52 N when a frictional force of 12 N acts on it. Calculate: (a) net forward force acting on the box (b) its acceleration



Force acted on the object
There will be another force by the object

✓ If object A exerts a force on object B, object B also exerts an equal and opposite force on object A.



Factor: Force by water (Reaction)

Person A who is 60 kg pushes an almirah of mass 40 kg with a force of 100 N. Theoretically, force exerted by the almirah on the person = 100 N
Acceleration of the almirah = $a = \frac{F}{m} = \frac{100N}{40kg} = \frac{5}{2} m/s^2$
Acceleration of person = $a = \frac{F}{m} = \frac{100N}{60kg} = \frac{5}{3} m/s^2$



- On Earth, a scale shows that you weigh 585 N. ($g=10 \text{ N/Kg}$)
 - What is your mass? 58.5 Kg
 - What would the scale read on the Moon ($g = 1.60 \text{ m/s}^2$)? 57.5 Kg

2. Anuska is holding a stuffed dog, with a mass of 0.30 kg, when Simha decides that she wants it and tries to pull it away from Anuska. If Sarah pulls horizontally on the dog with a force of 10.0 N and Anuska pulls with a horizontal force of 11.0 N, what is the horizontal acceleration of the dog?

