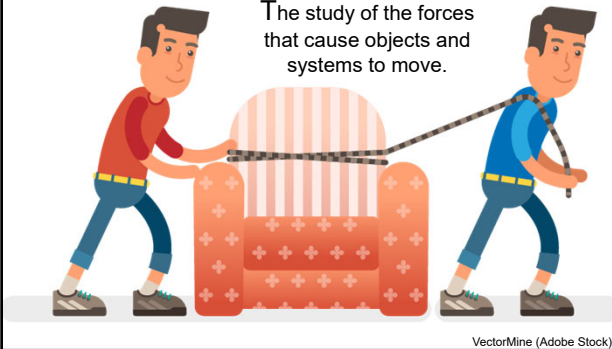


Dynamics

The study of the forces that cause objects and systems to move.



Newton's Second Law of Motion

- The acceleration of a system is directly proportional to and in the same direction as the net external force acting on the system, and inversely proportional to its mass.

$$\Sigma F = ma$$

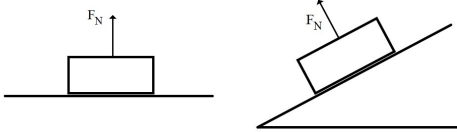
Translational Equilibrium

- An object is said to be in translational equilibrium if and only if the net force on the object is zero.
- The vector sum of all the forces acting on the object is zero

$$\Sigma F_x = \Sigma F_y = \Sigma F_z = 0$$

Normal Force

- A force normal (perpendicular) to the surface that an object is sitting on.
- This force is due to Newton's 3rd Law.



Frictional Force

- Force opposing the motion of an object on a surface.
- The amount of frictional force depends on two things
 - Type of surfaces in contact with each other
 - The normal force

Coefficient of Friction

- The coefficient of friction is a value representing the types of surfaces in contact with each other
- This value is different if the objects are moving or stationary
- Symbol: μ

Calculating Frictional Force

- The frictional force is proportional to the normal force on the object

$$F_f = \mu F_N$$
