

Forces

September 8, 2015 1:34 PM

Gravitational Force: This is only an attractive force (that we know of) between two massive bodies.

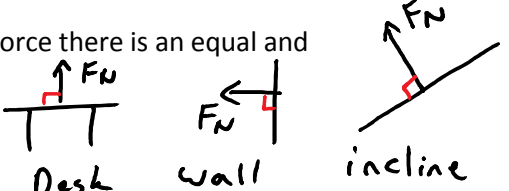
$$F_g = \frac{-Gm_1m_2}{d^2} \quad \text{or} \quad F_g = mg$$

$g = 9.8 \text{ m/s}^2$
 $G = 6.67 \times 10^{-11} \text{ Nm}^2/\text{kg}^2$
 $d = \text{distance between Centers}$

Normal Force: This comes from Newton's third law: For every action force there is an equal and opposite reaction force.

F_N

- F_N is a force from a surface
- Always perpendicular to the surface



Frictional Force: This is a non-conservative force (it can't be undone). It is due to the electrostatic forces between the atoms of two objects.

$F_f = \mu F_N$

μ : Coefficient of friction
we have two types of μ

- μ_s : Static (when the object is stationary)
- μ_k : kinetic (when the object is moving)

$$\mu_s > \mu_k$$

F_N : Normal Force

Steps to solve these problems:

Step 1: Draw a picture

Step 2: Draw a free body force diagram

Step 3: Use your Fnet equations to solve the horizontal and vertical components.