

FORCES & FRICTION

KEY WORDS & DEFINITIONS

1. Friction

A force which opposes motion.

2. Coefficient of Friction μ

A measure of how resistant to motion two surfaces are

3. Limiting Equilibrium

The point at which there is equilibrium, but friction is at its maximum

FORMULAE

To calculate Maximum Friction:

$$F_{\max} = \mu R$$

Where:

F is the frictional force

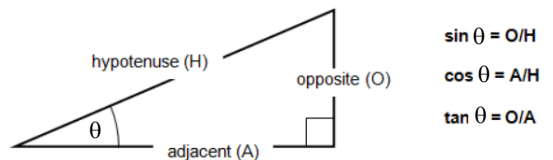
μ is the coefficient of friction

R is the normal reaction between the surfaces.

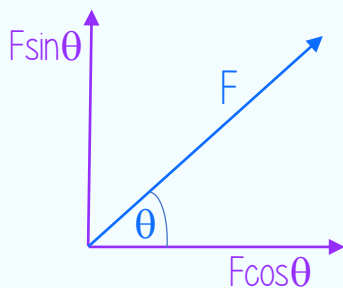
RESOLVING FORCES

"Cos through, Sine away"

Using SOH CAH TOA



when resolving forces gives the following result:



Component $F_x = F \cos \theta$ (through the angle)

Component $F_y = F \sin \theta$ (away from the angle)
(or $= F \cos(90 - \theta)$)

WHAT DO I NEED TO KNOW

1. If a force is applied at an angle to the direction of motion, resolve it in two perpendicular directions to find the component of force that acts in the direction of motion OR use the triangle law for vector addition.

2. To solve problems on inclined planes, resolve parallel and perpendicular to the plane. REMEMBER, the normal reaction force acts at right angles to the plane, not vertically.

