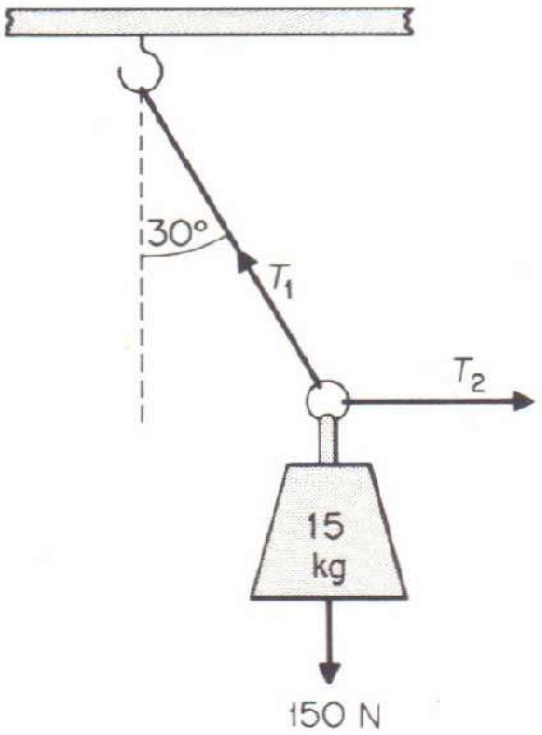
Forces 2D Flipped Lesson

Forces are Vectors

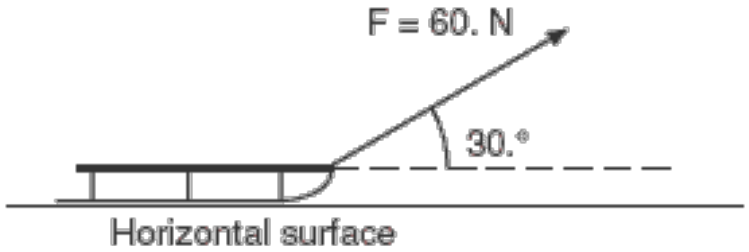
Objects at Equilibrium

Object is at rest. Sum of forces is zero.



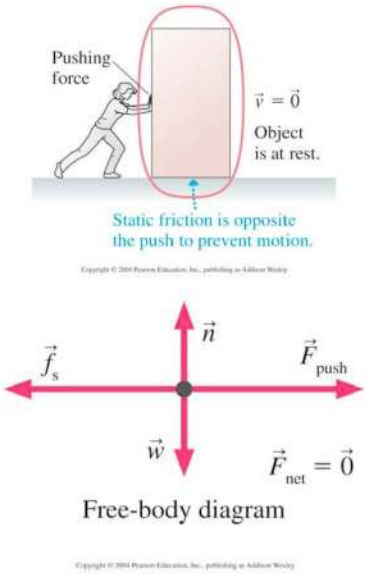
Newton's Second Law in 2D

An object is in motion (accelerating)

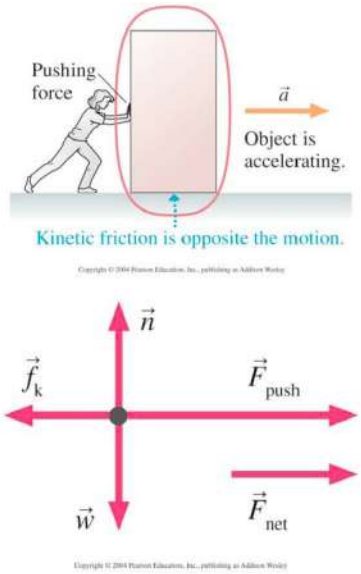


Friction

Static



Kinetic



$$F_s = \mu_s N$$

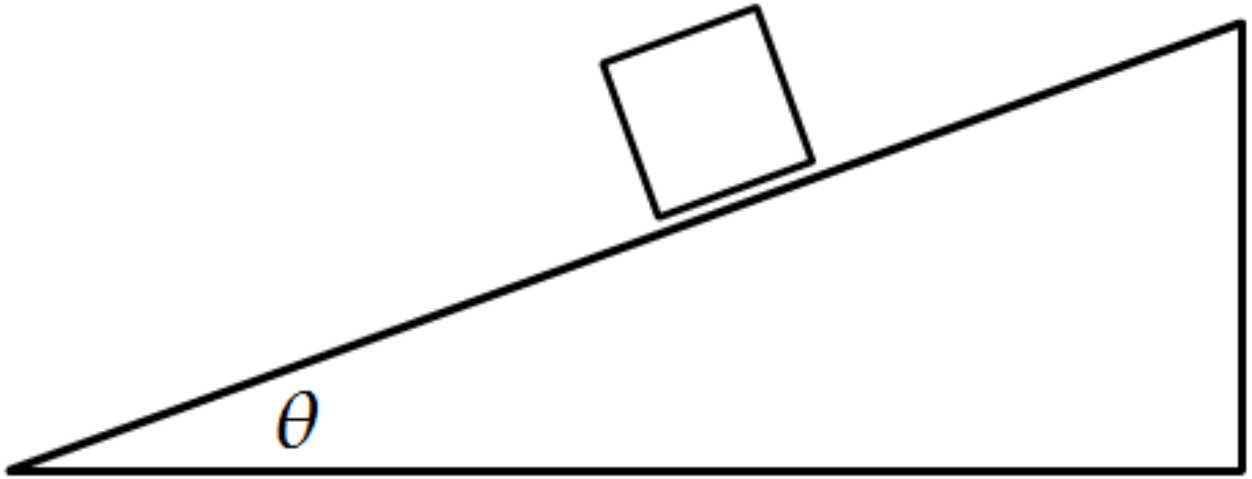
F_s = Force of static friction.

μ_s = Coefficient of static friction.

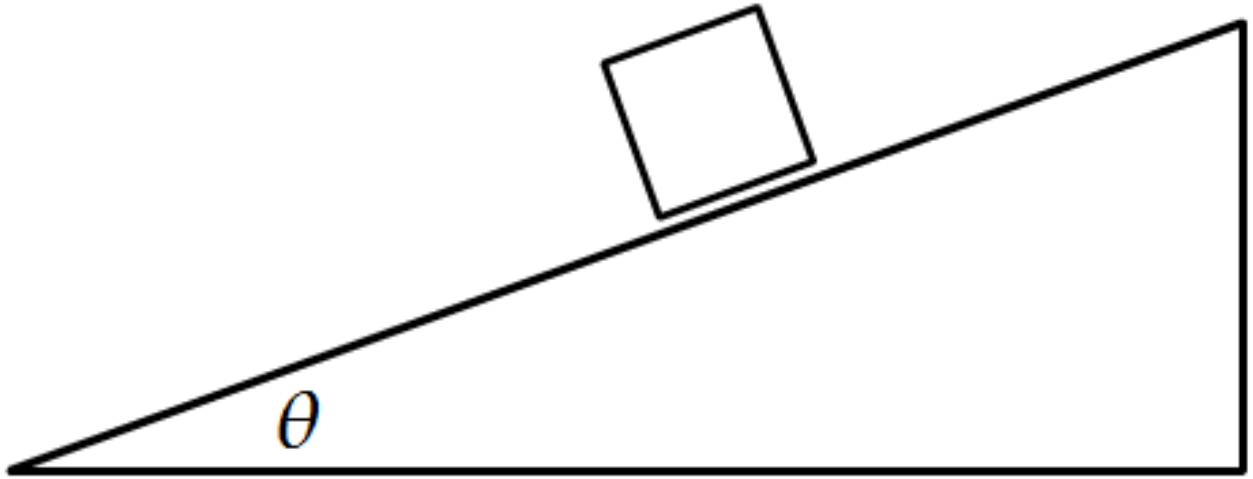
$\mathbf{N}$ = Normal force.

Incline Planes- At rest

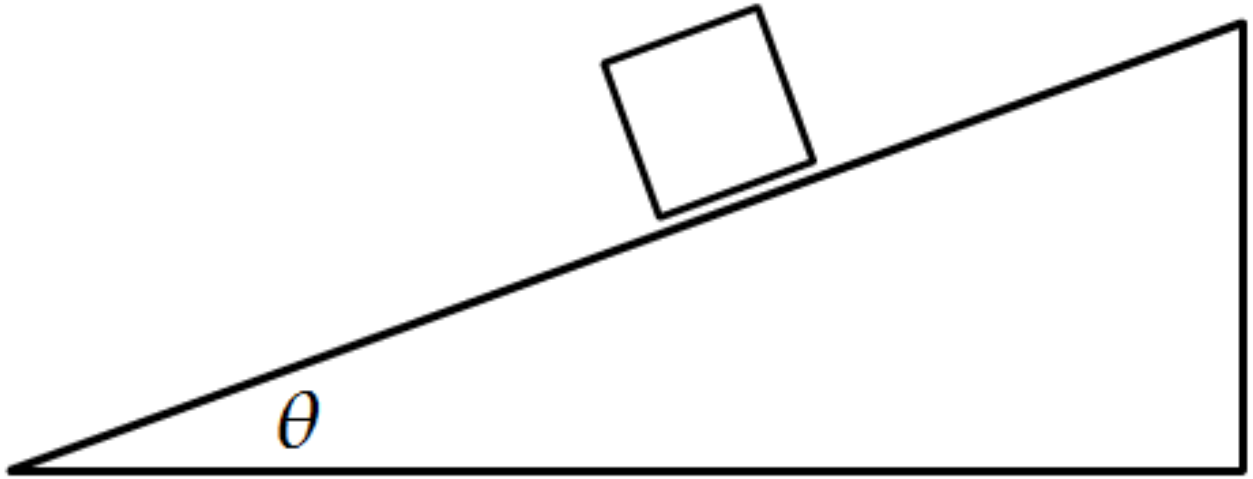
Coefficient of Friction?



Slope- Accelerating No Friction

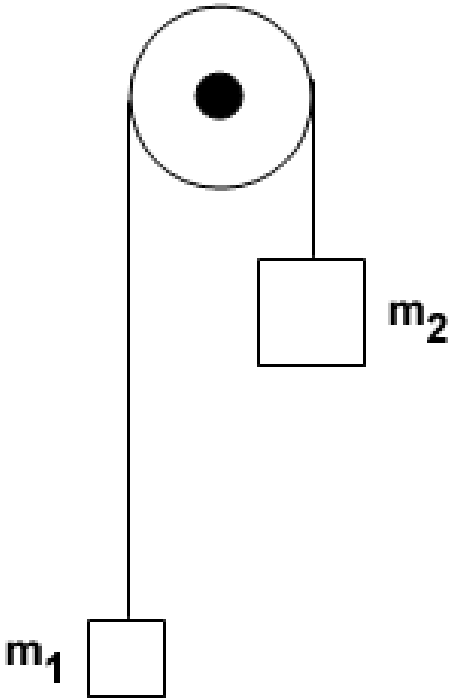


Slope- Accelerating WITH No Friction



Objects Linked Together

Atwood's Machine



Tips on Solving Forces Problems

1) Read the problem
2) Draw a sketch
3) Free Body Diagram your Sketch (all forces present)
4) Choose an axis system
5) Determine your unknown
6) Break angles into x and y components
7) Break into x and y table (if needed)
8) Determine whether the situation is at rest/constant velocity (Sum of Forces = 0) OR acceleration (F=ma)
9) Solve