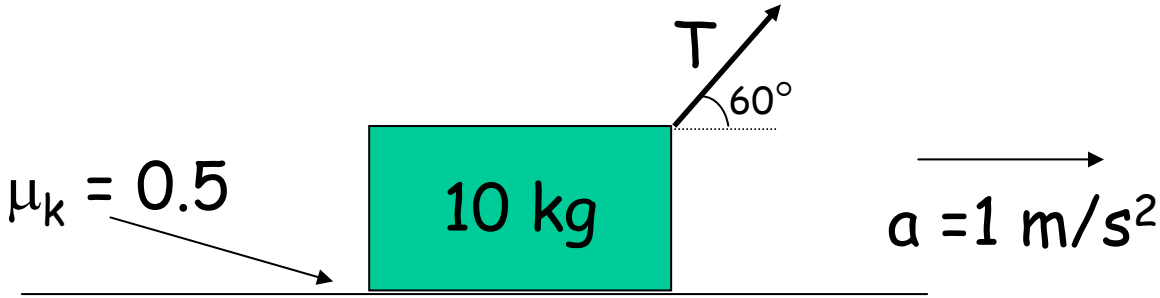
More NII Examples

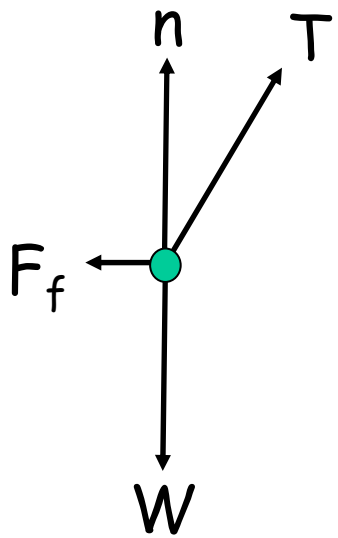
- Newton's 2nd Law with Friction Examples

Quick Quiz:

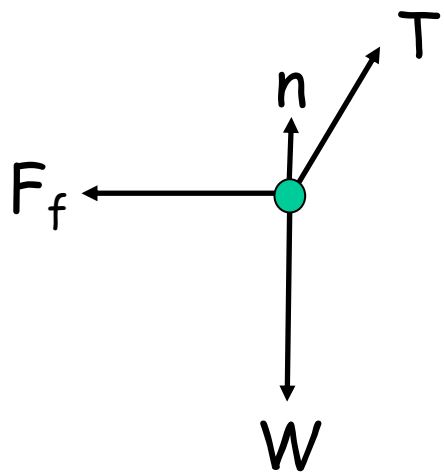
Which is the best free body diagram for the example shown?



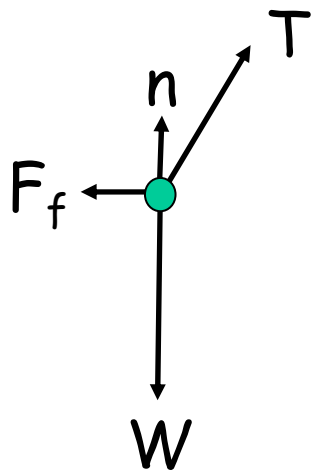
A)



B)

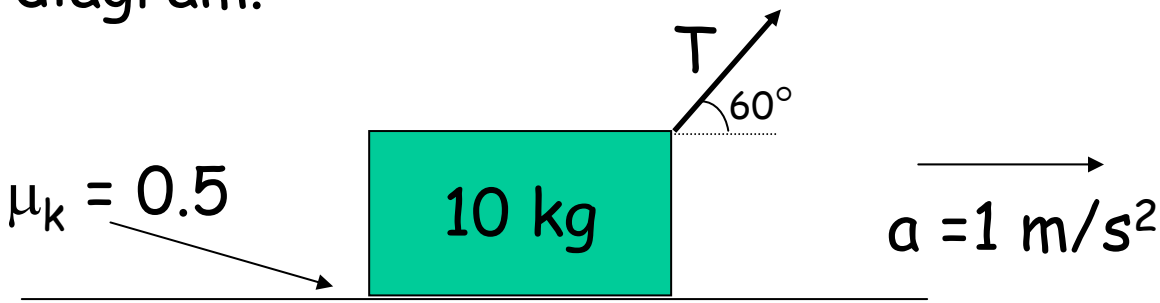


C)



Example:

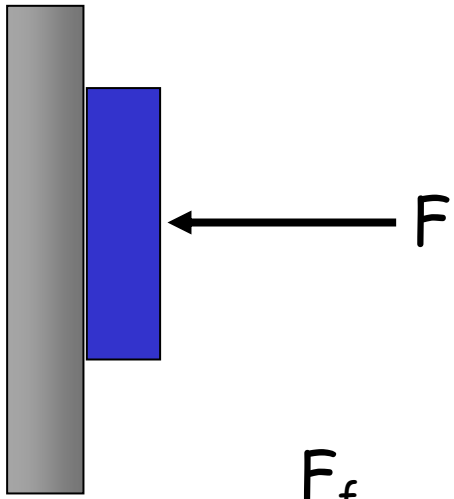
A box is being pulled by a rope across a level floor as shown in the diagram.



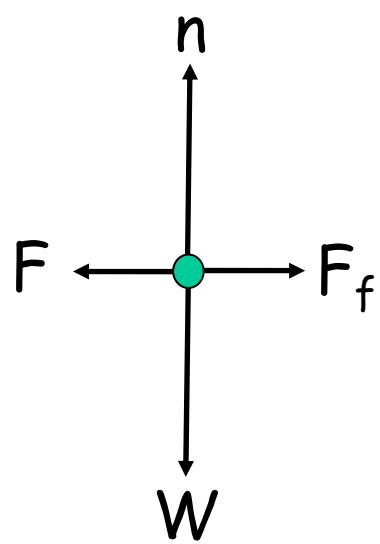
What is the tension in the rope?

Quick Quiz:

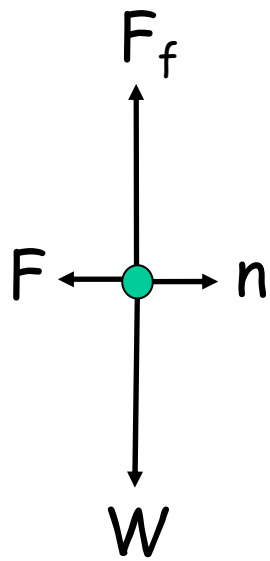
Which is the best free body diagram for a book held stationary up against a wall as shown?



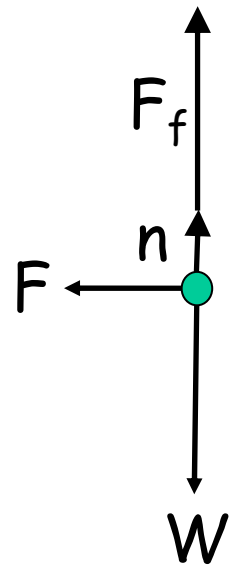
A)



B)



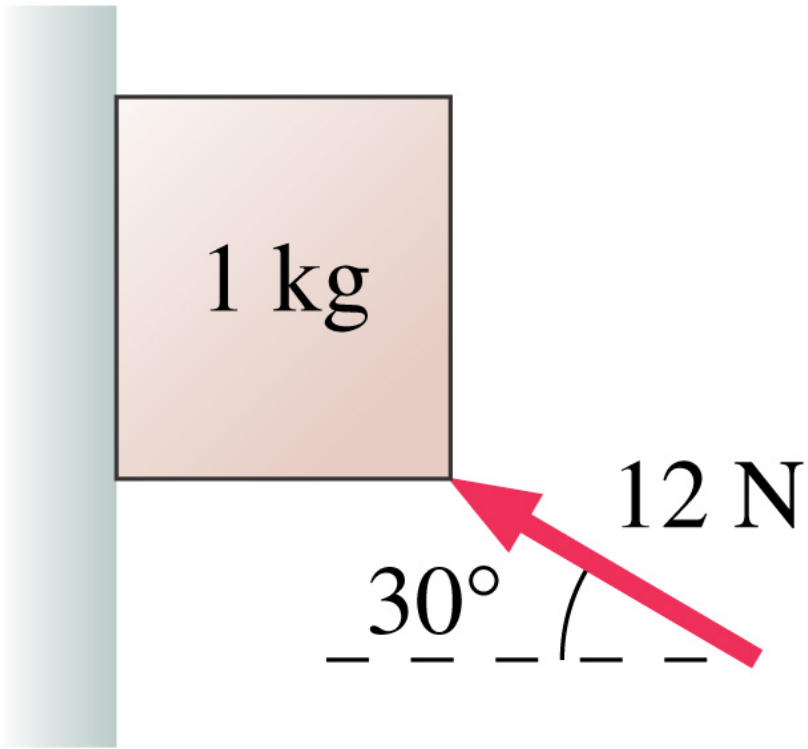
C)



Example:

A 1 kg wood block is pressed against a vertical wood wall by the 12 N force shown. If the block is initially at rest, will it move upward, move downward, or stay at rest?

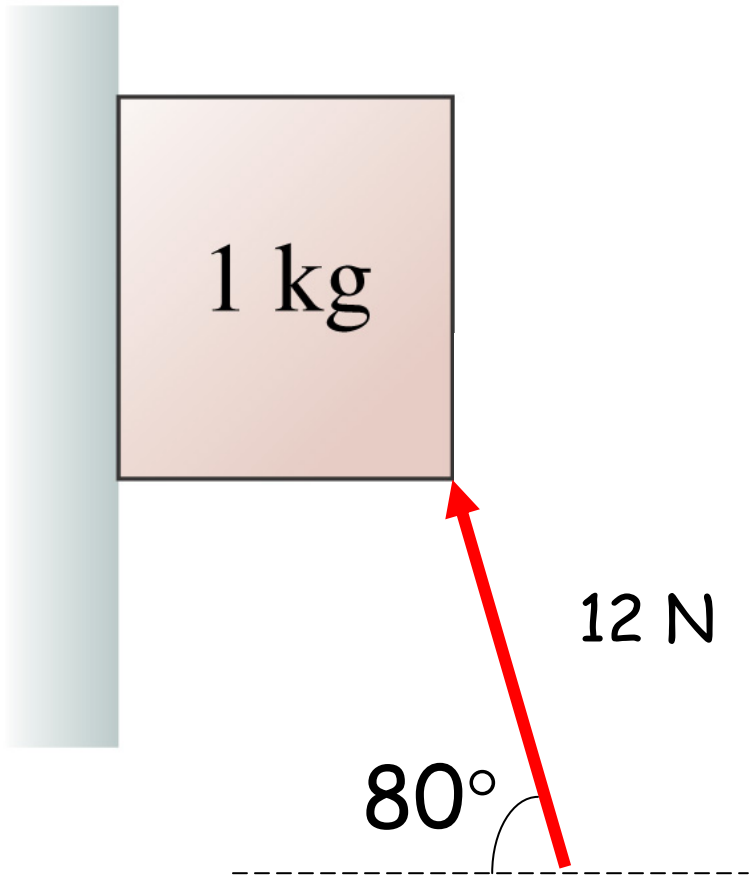
($\mu_s = 0.5$, $\mu_k = 0.2$)



Example:

A 1 kg wood block is pressed against a vertical wood wall by the 12 N force shown. If the block is initially at rest, will it move upward, move downward, or stay at rest?

($\mu_s = 0.5$, $\mu_k = 0.2$)



How does this problem change if the angle changes?

Example:

A 10 kg box is being pulled up a 45° ramp by a rope, but the box is being held in place by the force of static friction. The coefficient of static friction between the box and the ramp is $\mu_s = 0.5$.

What is the maximum tension in the rope? Minimum?