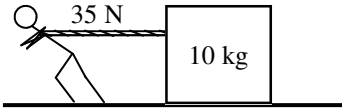
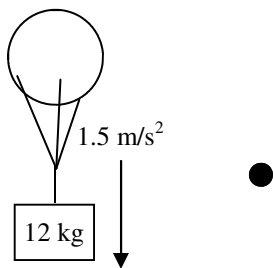


2012 PreAP Forces 6

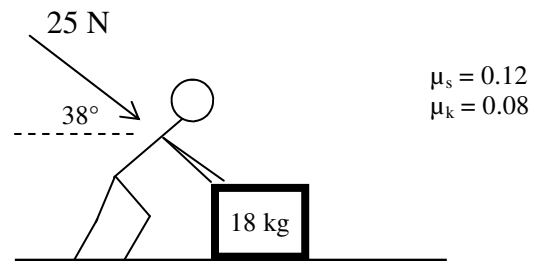


- Slim Jim pulls with 35 N on a 10 kg box across the floor at constant speed. There is friction.
 - On the dot, draw all of the forces acting on the box.
 - * Since it is at constant speed, what is a_x ?
 - In the x-direction, solve for the force of friction on the box.
 - Calculate the normal force acting on the object.
 - Is it kinetic or static friction?
 - * Calculate the coefficient of friction between the box and the floor.



- A 12 kg box is suspended by a balloon. It accelerates downward at 1.5 m/s^2 .
 - On the given dot, draw a force body diagram of the mass (not the balloon).
 - * Calculate the tension in the rope.

- Slim Jim is pushing down on a 18 kg box with 25 N at an angle of 38° .
 - Which is stronger Jim's force on the box or the box's force on Jim?
 - * After drawing a force diagram, calculate the normal force and forces of friction on the box. (See HW 4 for a step-by-step walkthrough).



- Decide if the box will slide or not.
 - Calculate how much additional force is necessary to move the box OR the acceleration of the box.
- A 26 kg object weighs 180 N on the planet Zorg.
 - Write the equation for weight.
 - What is the mass of the object on the earth?
 - What is the mass of the object on Zorg?
 - What is the acceleration due to gravity on Zorg? (What is "g", also known as the gravitational field?)

1B) $a_x = 0 \text{ m/s}^2$

2B) 102 N

1F) 0.35 (no units)

3B) $F_n = 195.4\text{N}$; $F_s = 23.4 \text{ N}$