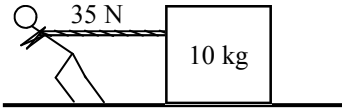


PreAP Forces 6



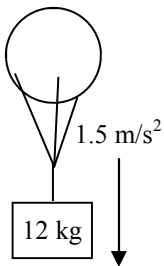
1. Slim Jim pulls with 35 N on a 10 kg box across the floor at constant speed. There is friction.
 - A. On the dot, draw all of the forces acting on the box.
 - B. * Since it is at constant speed, what is a_x ?
 - C. In the x-direction, solve for the force of friction on the box.



D. Calculate the normal force acting on the object.

E. Is it kinetic or static friction?

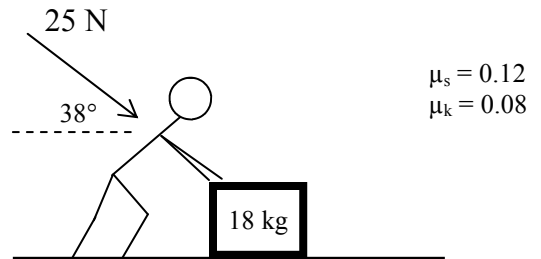
F. * Calculate the coefficient of friction between the box and the floor.



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



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



C. Decide if the box will slide or not.

D. Calculate how much additional force is necessary to move the box (if it doesn't slide) OR the acceleration of the box (if it does slide).

4. A 26 kg object weighs 180 N on the planet Zorg.
 - A. Write the equation for weight.
 - B. What is the mass of the object on the earth?
 - C. What is the mass of the object on Zorg?
 - D. What is the acceleration due to gravity on Zorg? (Calculate "g", also known as the gravitational field.)

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

2B) 102 N

1F) 0.35 (no units)

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