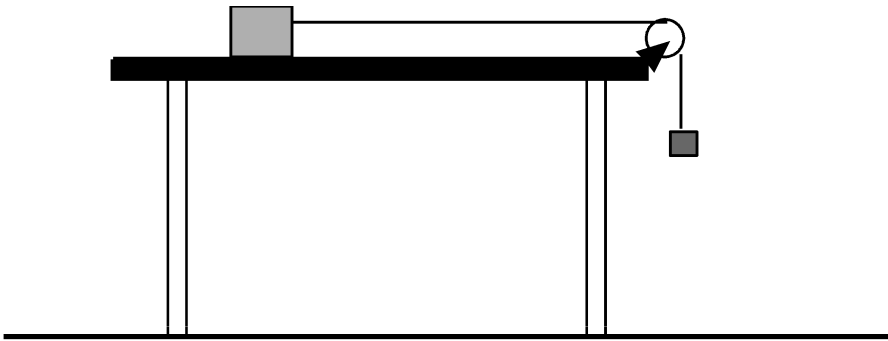


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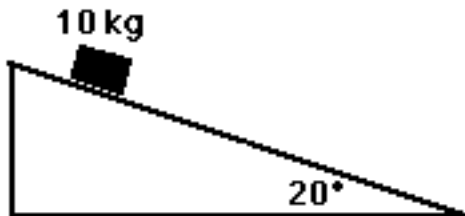
## Worksheet 7

1. Suppose a hanging 1.0 kg lab mass is attached to a 4.0 kg block on the table.



- a. If the coefficient of kinetic friction,  $\mu_k$  is 0.20., what is the acceleration of the block?
- b. What would be the minimum value of the coefficient of static friction,  $\mu_s$ , in order for the block to remain motionless?
2. A block weighing 300. N is moved *at constant speed* over a horizontal surface by a force of 50. N applied parallel to the surface.
- a. Construct a force diagram for the block.
- b. What is the coefficient of kinetic friction?

- c. What would be the acceleration of the block if  $\mu_k = 0$ ?
3. A 100. N force is applied to a 50. kg crate resting on a level floor. The coefficient of kinetic friction is 0.15.
- a. Draw a force diagram to represent this situation.
- b. What is the acceleration of the crate?
4. In the situation described above, the coefficient of static friction,  $\mu_s = 0.25$ . Is the 100. N force sufficient to cause the crate to accelerate? Draw a force diagram, then explain why or why not.



5. A 10 kg block is allowed to slide down a ramp with  $\mu_k = 0.15$ .
- a. What is the value of the frictional force opposing the block's slide down the ramp?
- b. What is the acceleration of the block?