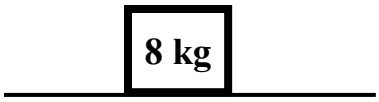
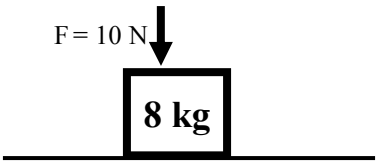
A-Day: Due Mon., Nov 3 (Assigned: 10/30)
B-Day: Due Tues., Nov 4 (Assigned: 10/31)

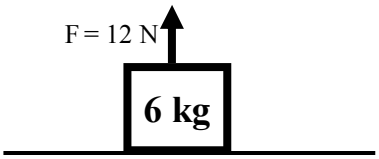
2008 Forces 5



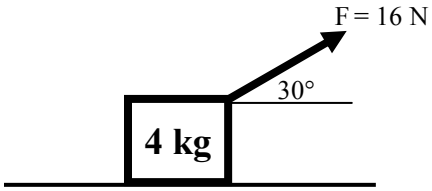
1. Let's finally conquer normal force.
   A. Write the equation for weight (look on "Types of Forces").
   B. What is the weight of the 8 kg object above?
   C. If the normal force supports this weight, what is the normal force acting on the 8 kg object?



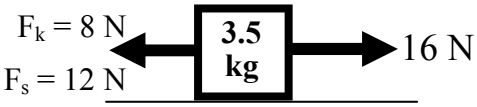
2. Then a 12 N force pushes down on the 8 kg object.
   A. Does the table have to push harder or softer?
   B. Does the mass seem heavier or lighter to the table?
   C. Would you add or subtract this number from the weight?
   C. So the normal force is 80N ___10 N? (+ or −)
   D. What is the normal force acting on this object?



3. Now a 12 N force is pulling up on a 6 kg object.
   A. Does the force increase or decrease the normal force?
   B. Will you add or subtract this force from the weight?
   C. What is the normal force acting on the object?



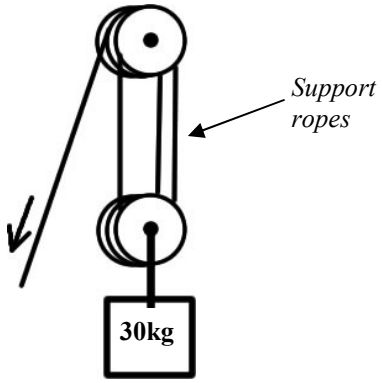
4. This time a 16 N object is pulling up on the object at an angle of 30°.
   A. Since it is pulling up, does this increase or decrease the normal force?
   B. Is it the x or y-component that affects the normal force?
   C. Calculate the normal force.



5. A. What is the weight of the above object?
   B. What is the normal force pushing up on the object?
   C. How much force is necessary to start it sliding?
   D. How much force is necessary to keep it sliding?
   E. If it starts at rest, will it begin sliding?
   F. Find your equation for friction and calculate the coefficient of static and kinetic friction (μ_s and μ_k) .

Using your "Gravity" notes.

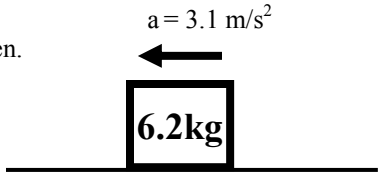
6. Gravity increases or decreases?
   A. If you increase one of the masses?
   B. If the distance decreases?
   C. If the two objects get farther away?
7. If one of the masses triples, how does the gravity change?
8. If the distance between the objects triples, how does the gravity change?
9. Calculate the gravity between a 3.5×10^{16} kg object and a 8.9×10^{26} kg object that are 350 m apart.



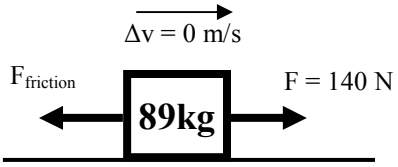
10. A. What is the weight of the object being lifted by the pulleys?
    B. How many support ropes are pulling up on the bottom pulley?
    C. The ropes have to SHARE the force. How much does each rope have to pull up?
    D. Since the tension in a rope is the same everywhere in the rope, with how much force do you have to pull on the rope (with the arrow) to lift the object?
    E. If you lift the object 2 m up, each of the support ropes must shorten 2 m, which you have to pull out of the pulleys. How much rope will you pull out?

11. If an object has NO NET FORCE acting on it.
    A. What is its acceleration?
    B. What does that mean?

12. If there IS a net force on an object give three things that can happen.



13. Given the net force and mass of the object at the right, calculate the net force of the object.



14. An 89 kg object is moving to the right at constant speed.
    A. Since it is at constant speed, a =
    B. Since it is at constant speed, what is the net force?
    C. What is the force of friction pulling back on the object?
    D. Is the object gripping or slipping?
    E. What kind of friction is this?
    F. What is the normal force on this object?
    G. Calculate the coefficient of friction for this surface.

15. If the forces on an object are balanced what is the speed of the object?

16. An 18 kg object is pulled up a 6 m ramp to get it to the back of a 1 m tall table.
    A. What is the weight of the object?
    B. If you lifted it straight up, how much force would you have to use?
    C. Using the ramp you use ____ times as much distance, so you only need 1/____ the force to pull it.
    D. How much force do you need to pull it up the ramp?