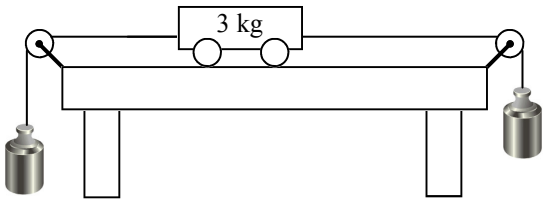
A-Day: Due Fri., Oct 23
B-Day: Due Mon., Oct 26

2009 Forces 2



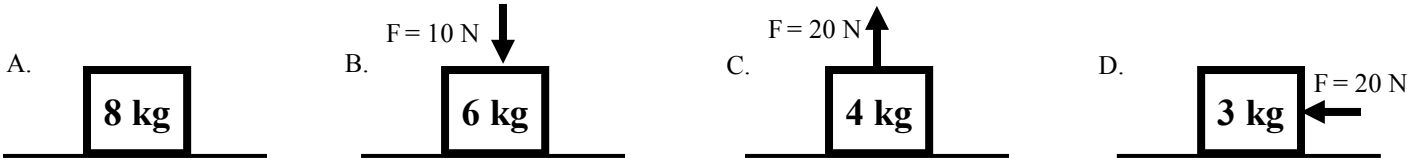
1. A. How many normal forces are acting on the cart?
   B. Draw the normal forces on the cart.
   C. How many normal forces are acting on the hanging masses?

   D. What force is acting on all the cart and on the masses?

   E. Calculate the force of weight of the cart.

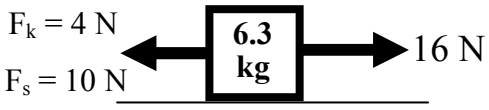
   F. If the cart is moving, is it accelerating or at constant speed?
   G. Why?

2. Calculate the normal forces acting on the objects below.



3. If $F_N = 25$ N and $\mu_s = 0.24$ and $\mu_k = 0.10$, calculate static and kinetic friction.

4. Static or Kinetic Friction?
   A. _____ Usually the smaller one.
   B. _____ If this is greater than the applied force, the object will slow down and eventually stop.
   C. _____ Between your shoes and the ground when you are walking normally.
   D. _____ Use to calculate acceleration.
   E. _____ When you are going down a slide.
   F. _____ How much force is needed to keep an object sliding.
   G. _____ When a car "loses traction".
   H. _____ Only exists when the object is not moving.
   I. _____ Maximum friction before an object slides.
   J. _____ Exists only when the object is moving.



5. For the mass at the left:
   A. How much force is necessary to keep this object moving?
   B. How much force is necessary to start this object sliding?
   C. If this object starts at rest, will this object slide?
   D. If an object is accelerating, is it at rest or moving?
   E. Find the acceleration of the object.

   F. What is the weight of the object?

   G. Find the normal force on the object.

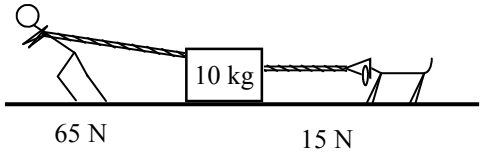
6. What are the units for force?

7. What are the units for mass?

8. A 20 kg object is floating in space.
   A. What is its mass? B. What is its weight?

9. A 15 kg object is floating in space. What is it mass?

10. A 28 N object is sitting on a desk. What is its weight?

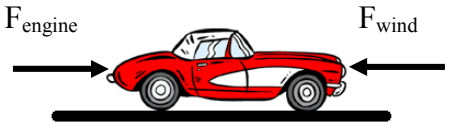


11. Slim Jim is trying to move a 10 kg object. His dog "Bim" is trying to be helpful, but not always succeeding.
   A. What is the weight of the object?

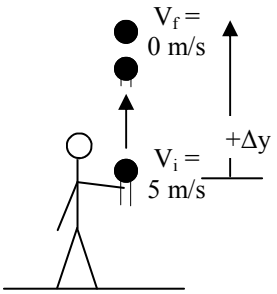
   B. What is the normal force on the object?

   C. What is the net force in the x-direction?

   D. Calculate the acceleration of the object.



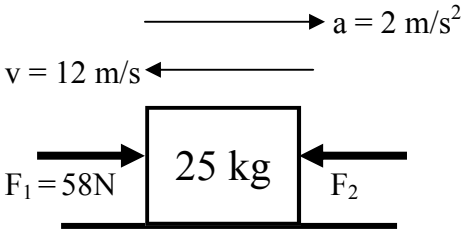
12. A car is moving and there is wind resistance.
   A. What kind of force is wind pushing against the car?
   B. Draw and label any other forces acting on the car.
   C. If $F_{wind} > F_{engine}$, is acceleration + or –?
   D. If $F_{wind} = F_{engine}$ the car could have its c_____ c_____ on.
   E. What is the speed of the object if $F_{wind} = F_{engine}$?
   F. If $F_{wind} = F_{engine}$, then the object is at e_____.
   (*Look on the "Forces and Newton's First Law of Motion" notes.)*



13. A 2 kg object is thrown into the air going 5 m/s.
   A. Is the object's initial velocity + or −?
   B. Is the object's acceleration + or −?
   C. What is the force pulling down on the object (give a number).

   Notice that an object can be moving the opposite way of the acceleration.

14. A 25 kg object is moving 12 m/s to the left. It has an acceleration of 2 m/s^2 to the right.
   A. Is the object speeding up or slowing down?
   B. Is the acceleration positive or negative?
   C. Which force must be bigger?
   D. Use $F_{net} = ma$ to calculate the net force on the object.



   E. Since the two force must equal F_{net}, calculate F_2.