A-Day: due Fri., 11/9 (Assigned 11/7)
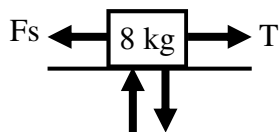B-Day: due Mon., 11/12 (Assigned 11/8)

2007 Forces 7

Make sure that you have all of the equations and variables for this chapter. Go back thru each of the homeworks, to check.

1. Consider a 180 kg object.
   A. What is its weight on the earth?
   B. What would be its mass on the moon which has 1/6th the force of gravity of the earth?

Fs ← [8 kg] → T

2. Use the 8 kg object at the left to answer the following:
   A. Label the two forces under the mass.
   B. What does the "T" tell you is pullin the object to the right?
   C. Is the object moving or not?
   D. What is a_y for this mass?

3. Write the vertical and horizontal Newton's second law equations for the above 8 kg mass.

   $\Sigma F_y = ma_y$ $\Sigma F_x = ma_x$

4. Find the normal force on the above 8 kg mass.

40 N
20°
[7 kg]

$\mu_s = 0.2$
$\mu_k = 0.15$

5. *Let me talk you through this one last time. Show your work on the diagram.*
   A. Since you have a force pulling at an angle,
       find its components (notice F is pushing down).

   B. Draw all forces on the object.

   C. In what direction do you calculate normal force?
   D. What is the normal force on the object?
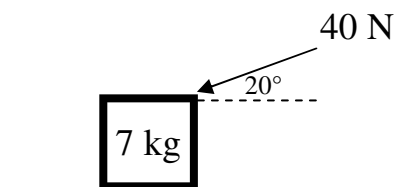
   E. Calculate static and kinetic friction.

   F. Prove whether or not it will slide?

   G. If it is accelerating, which kind of friction exists?

   H. Find the acceleration of the object OR any extra force necessary to move it.

6. (*From your book*) What is centripetal force?

7. Give two elements that have the same reactivity as Helium.

8. When do you need a big MA, to move a heavy object or to move a light object?

9. An object has a force pushing it forward that is balanced with another force pushing backwards.
   A. Is the object definitely at rest?
   B. Is the object accelerating?
   C. Is the object at equilibrium?

10. A person pushes a 480 N crate up a 24 m long ramp to get the crate to the back of a 2 m tall delivery truck.
    A. What is Fout?

    B. Calculate MA for the ramp.

    C. How much force is necessary to push the crate up the ramp?

11. A 35 N net force causes a 6.5 m/s^2 acceleration. What is the mass of the object?
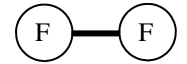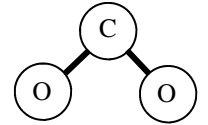
12. Using the diagram at the right:
    A. How many atoms are there?
    B. How many elements are there?
    C. How many molecules are there?
    D. How many compounds are there?

    Use the extra time to study hard.