PreAP Physics: Due 10/18

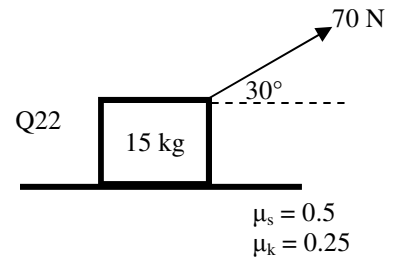1. For the object at the right
   A) Find the normal force on the object at the right.

   70 N

   30°

   Q22

   15 kg

   B) Find the static and kinetic friction acting on the object.

   $\mu_s = 0.5$
   $\mu_k = 0.25$

   C) Will the object move and why?

   D) If it does move find acceleration. If it doesn't move, how much more force is necessary to move it.
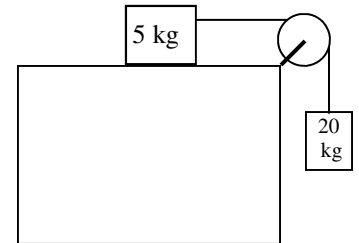
2. For the object at the right.
   A) Draw all of the forces on the 5 kg object.
   B) Draw all of the forces on the 20 kg object.
   C) Which object is denser?
   D) (This is the part I blew in class: pick a direction for the system [both masses].
      Assume this is the positive direction for both objects. Then it will work out.)
      Write Newton's second law equations for both masses.

   5 kg

   20 kg

   E) Find the tension in the rope.

   F) Find the acceleration of the system.
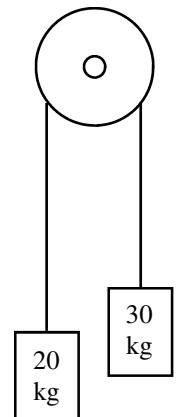
3. Again, choose a direction that you think the system will move. Treat that direction as positive.
   A) Draw all forces on both objects.

   B) Give both second law equations:

   C) Find the tension in the rope.

   30 kg

   D) Find the acceleration of the system.

   20 kg

4. If both masses were equal, would the system be at equilibrium?
5. Why or why not?