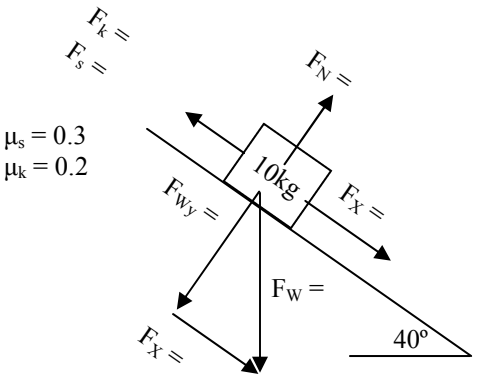
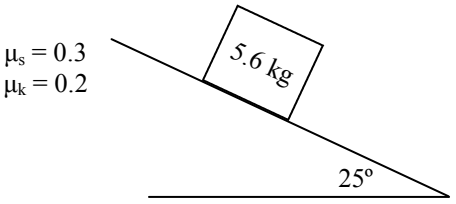
Due Mon., Nov 5

2012 PreAP Forces 10

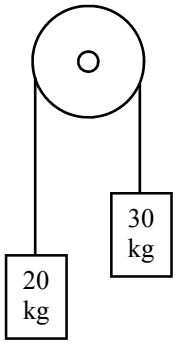
Use the "Connected Objects and Ramps" notes to answer the following questions. You may need to work the examples on the notes first.



1. A 10 kg object is placed on a ramp that is titled at 40º.
   A. * Following the example on the notes, fill in the diagram at the left. Notice that the example on the notes is different. Follow the procedure. Do not just copy the numbers.
   B. Does the object start to slide?
   C. If it doesn't slide, how much more force is necessary to move it. If it does slide, calculate its acceleration.



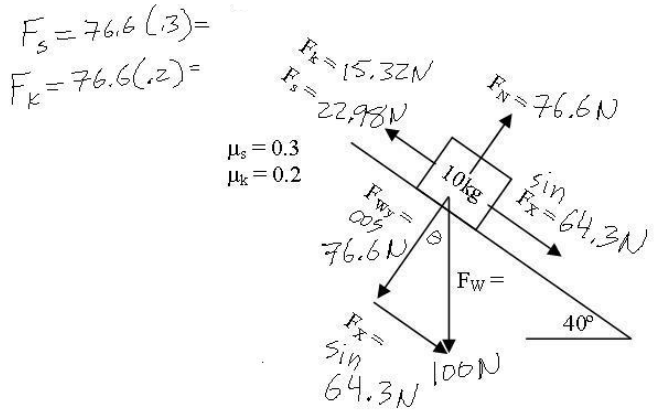
2. Now a 5.6 kg object is placed on a ramp that is tilted at 25º.
   A. On the dot, draw a force diagram for the mass.
   B. As the ramp tilts higher, does the normal force increase or decrease?
   C. Following the same procedure as before, calculate each quantity and label the diagram.
   D. * Decide whether or not the object on the ramp will slide or not. If it will slide, find the acceleration. If it doesn't slide, what additional force is necessary to make it move.



3. Two masses are suspended from a frictionless, massless pulley. Following the "Connected Object and Ramps" notes exactly, calculate the * acceleration and tension in the rope.

Action/Reaction: Newton's 3rd Law.

4. What is the reaction force for the following:
   A. Horse pushing on the ground.
   B. Horse pulling on the harness.
   C. Harness pulling on the cart.
   D. Cart's force on the ground.



1) a = 4.9 m/s^2

2) Fn = 50.8 N (cos)
a = 2.4 m/s^2

3) a = 2 m/s^2 get the tension on your own.