2011 PreAP Forces 11

$F_k =$
$F_s =$

$F_N =$

$\mu_s = 0.3$
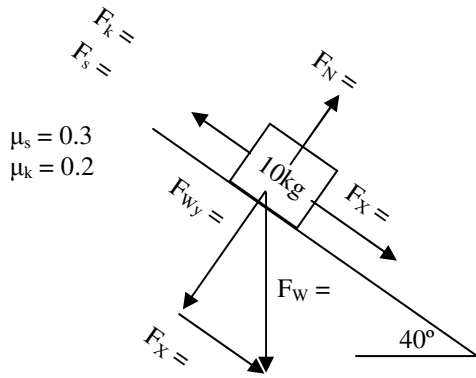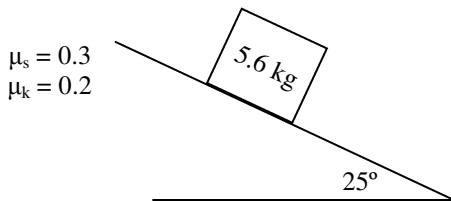$\mu_k = 0.2$

10kg

$F_{Wy} =$

$F_X =$

$F_W =$

$F_X =$

40°

1. * After filling in the diagram at the left, answer the following questions.
   A. Does the object start to slide?
   B. If it doesn't slide, how much more force is necessary to move it?
   C. If it does slide, calculate its acceleration.

$\mu_s = 0.3$
$\mu_k = 0.2$

5.6 kg

25°

●

2. 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. * 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.
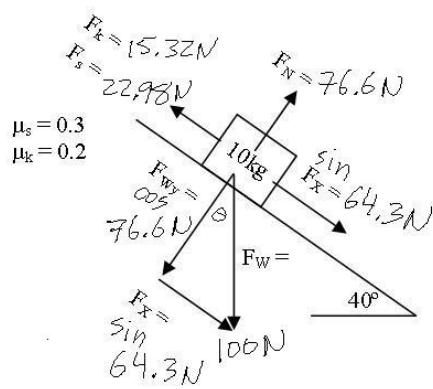
30 kg

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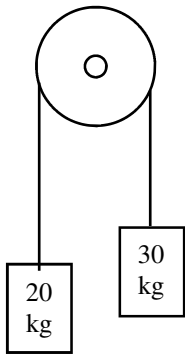
3. Two masses are suspended from a frictionless, massless pulley. Following the "Connected Object and Ramps" notes exactly, calculate the * acceleration and tension in the rope.

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.

$F_s = 76.6\,(.3) =$

$F_k = 76.6\,(.2) =$

$\mu_s = 0.3$
$\mu_k = 0.2$

$F_k = 15.32\,N$
$F_s = 22.98\,N$

$F_N = 76.6\,N$

10kg

$F_{wy} = \cos = 76.6\,N$

$\sin F_x = 64.3\,N$

$F_W =$

θ

$40°$

$F_x = \sin = 64.3\,N$

$100\,N$

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.