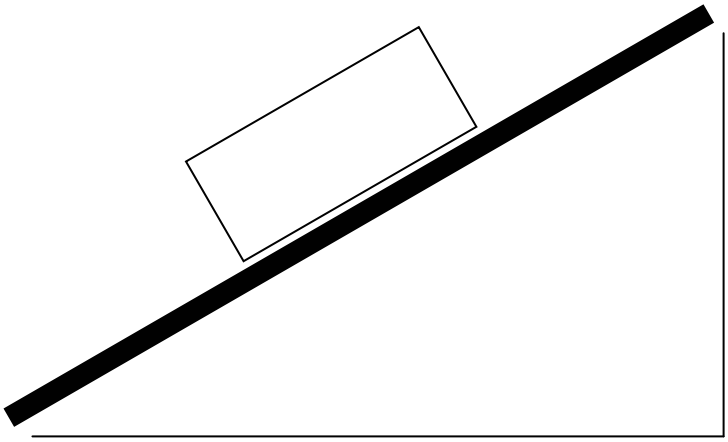
Name _____ Physics

Forces in 2 – D



Problem: A wooden trunk weighing 562 N is resting on a wooden plane inclined 30.0 degrees above the horizontal. It is not moving

1. Draw and label the following forces and components acting on the crate:
    a. Weight (F_g)
    b. Normal Force (F_N)
    c. Force of Friction
    d. Component of weight parallel to plane of motion
    e. Component of weight perpendicular to plane of motion

2. Solve for the normal force

3. What is the net force in the y-direction?

4. Solve for the force of friction

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

Problem #2: A 62 – kg person on skies is going down a hill sloped at 37 degrees. There is 200N of friction resisting this motion.

1. Draw and label the following forces and components acting on the crate:
    a. Weight (F_g)
    b. Normal Force (F_N)
    c. Force of Friction = 200N
    d. Component of weight parallel to plane of motion
    e. Component of weight perpendicular to plane of motion

2. Solve for the weight of the skier.

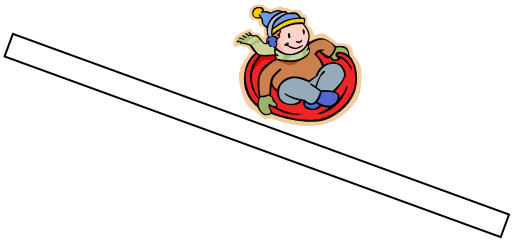
3. Solve for the normal force

4. What is the net force in the y-direction?

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

6. Is this skier accelerating? Explain your answer

Problem #3: A 160 – kg sled is going down a hill sloped at 15 degrees.



1.Draw and label the following forces and components acting on the crate:
   a. Weight (F_g)
   b. Normal Force (F_N)
   c. Force of Friction = 406N
   d. Component of weight parallel to plane of motion
   e. Component of weight perpendicular to plane of motion

2. Solve for the weight of the skier.

3. Solve for the normal force

4. What is the net force in the y-direction?

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

6. Is this skier accelerating? Explain your answer