Forces at an Angle Practice

1) A 70 kg block is being pulled with a 400 N force at 45° to the horizontal.

(a) Draw the Free Body Diagram of all the forces acting upon the 70 kg block on the dot below.

(b) Calculate the horizontal (x) force moving to the **left** from the pull.

(c) Calculate the vertical (y) force moving **up** from the pull.

(d) Calculate the force of gravity of the box moving **down**.

(e) Knowing your answers to (c) and (d), what is the resulting normal force?

(f) If the force of friction is 108 N and you know the normal force, calculate the coefficient of friction.

(g) If the force of friction is 108 N and you know your answer to (b), what is the net force?

(h) If you know the net force, what is the acceleration of the block?

2) A 5 kg block is being pushed with a 25 N force at 30° to the horizontal.

(a) Draw the Free Body Diagram of all the forces acting upon the 5 kg block on the dot below.

(b) Calculate the horizontal (x) force moving to the **right** from the push.

(c) Calculate the vertical (y) force moving **down** from the push.

(d) Calculate the force of gravity of the box moving **down**.

(e) Knowing your answers to (c) and (d), what is the resulting normal force?

(f) If the coefficient of friction is 0.1872 and you know the normal force, what is the force of friction?

(g) If you know your answers to (b) and (f), what is the net force?

(h) If you know the net force, what is the acceleration of the block?