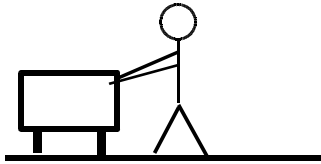


Worksheet 2

1. A person pulls on a 50 kg desk with a 200N force acting at 30° angle above the horizontal. The desk does not budge.

Draw a force diagram for the desk.



- a. Write the equation that describes the forces that act in the x-direction.

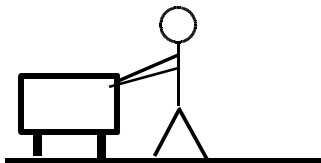
- b. Write the equation that describes the forces which act in the y-direction.

- c. Determine the x and y components of the force of tension.

- d. Determine the value of the frictional force. Do the same for the normal force.

2. Suppose in the diagram above, the person were *pushing* down at a 30° angle with 200 N of force. The desk still does not move.

Draw a force diagram for the desk.



- a. Write the equation that describes the forces that act in the x-direction.

- b. Write the equation that describes the forces that act in the y-direction.

- c. Determine the value of the frictional force. Do the same for the normal force.

Worksheet 3

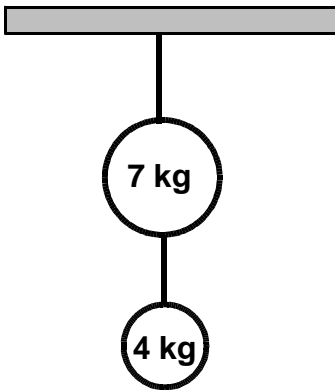
For each of the problems below, carefully draw a force diagram of the system before attempting to solve the problem.

1. Determine the tension in each cable in case A and case B.

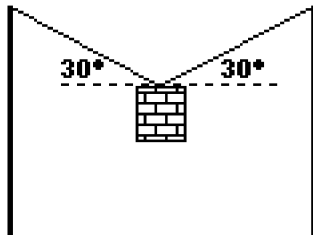
Case A

Case B

2. Determine tension in each cable. (Hint: There is more than one way to define the system.)

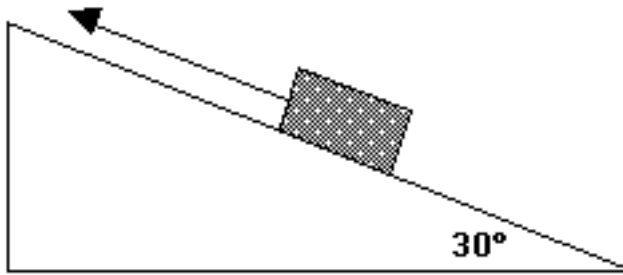


3. The object hung from the cable has a weight of 25 N. Write the equation for the sum of the forces in the y-direction. What is the tension in the cable?



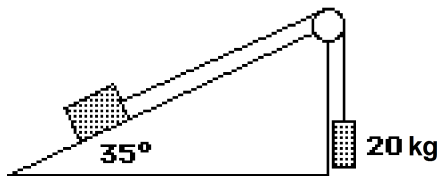
Repeat the problem above with a 5° angle. How does the tension compare?

4. The box on the *frictionless* ramp is held at rest by the tension force. The mass of the box is 20 kg. What is the value of the tension force?

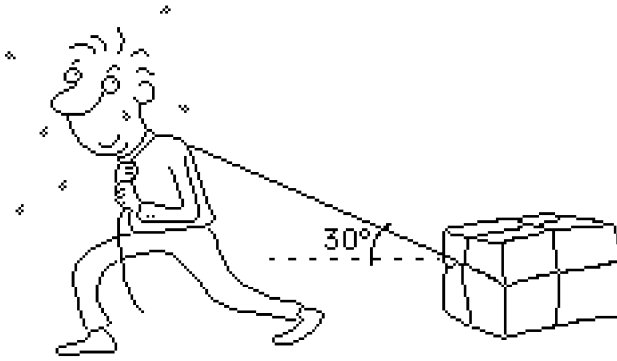


What is the value of the normal force?

5. In the system below the pulley and ramp are *frictionless* and the block is in static equilibrium. What is the **mass** of the block on the ramp?



6. A man pulls a 50 kg box *at constant speed* across the floor. He applies a 200 N force at an angle of 30° .



- a. Sum the forces in the x-direction. What is the value of the frictional force opposing the motion?
- b. Sum the forces in the y-direction. What is the value of the normal force?

7. A man pushes a 2.0 kg broom *at constant speed* across the floor. The broom handle makes a 50° angle with the floor. He pushes the broom with a 5.0 N force.



- a. Sum the forces in the y-direction. What is the value of the normal force?
- b. Sum of the forces in the x-direction. What is the value of the frictional force opposing the motion?
- c. If the frictional force were suddenly reduced to zero, what would happen to the broom?

Name _____