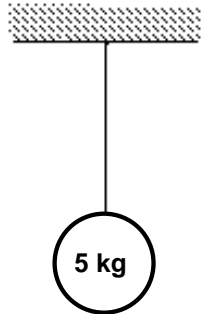


UNIT IV: Worksheet 2a

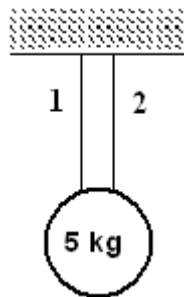
For each of the problems below, carefully draw a force diagram of the system before attempting to solve the problem.

1. Find the tension in the rope holding up the mass.



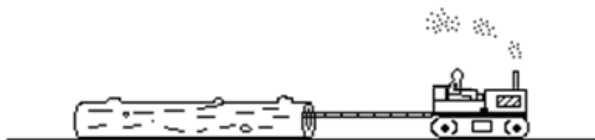
force diagram:

2. Two ropes equally support a hanging mass. Find the tension in each rope.



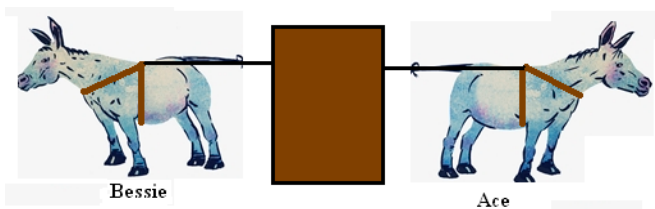
force diagram:

3. A tractor pulls a log at a constant speed across the ground. The log weighs 3750N and the friction force due to the ground is 725N . Find the tension in the cable.



force diagram:

4. Two not very bright donkeys pull in opposite directions on a crate. Bessie pulls to the left with 300N while Ace pulls to the right with 220N but the crate does not move. Find the force of friction on the crate.



force diagram:

5.



A person pulls on a 50 kg desk with a 20N force directed horizontally to the right. The desk does not budge.

Draw a force diagram for the desk.

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

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

- c. Determine the value of the frictional force.

- d. Determine the value of the normal force.

6. Suppose now that the person pulls with 85N of force and the desk slides across the floor to the right at a *constant speed*.
Draw a force diagram for the desk.

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

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

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