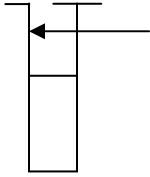


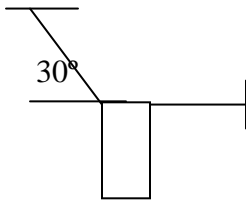
Teaching Assignment: Statics Problems

Each team will be assigned one problem to work through. They will be given 15 minutes to work out the problem and then each team will teach the class how to solve their problem.

1. What is the tension on the vertical cables that holds the 200-N traffic light? What is the mass of the traffic light? Be sure to draw the FBD of the system.



2. What is the tension on each cable that holds the 200-N traffic light? Be sure to draw the FBD of the system.



3. A gardener pushes a 30-kg lawnmower with a horizontal force of 500 N but the lawnmower stayed at rest.

- Draw the FBD of the lawnmower.
- What is the weight of the lawnmower?
- What is the normal force exerted by the ground on the lawnmower?
- What is the frictional force exerted on the lawnmower?

4. A gardener pushes a 30-kg lawnmower with a force of 500 N acting at 20° with the horizontal but the lawnmower stayed at rest.

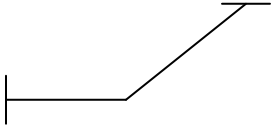
- Draw the FBD of the lawnmower.
- What is the weight of the lawnmower?
- What is the normal force exerted by the ground on the lawnmower?
- What is the frictional force exerted on the lawnmower?

5. Five people are playing tug-of-war. Clarissa and Ryan pull to the right with 45 N and 35 N, respectively. Angelo and Sebastian pull to the left with 53 N and 38 N, respectively. With what force and in what direction does Benito, the fifth player, pull if the game is tied?

6. One of the floats in a Thanksgiving Day parade requires 4 people pulling on the ropes to maintain a constant speed of 3 km/h for the float. Two people pull with a force of 210 N each, and the other two pull with a force of 140 N each.

- Draw the FBD.
- What is the frictional force between the float and the ground?

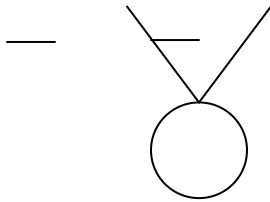
7. Find the magnitude of the force exerted by each cable to support the 625- N punching bag in the figure.



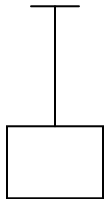
8. Terence, who weighs 400 N, goes on a 100-N sled and slides along the frictionless ice surface with a constant velocity.

- draw the FBD
- What is the normal force exerted by the surface to Darryl and the sled?
- What is the total mass of Darryl and the sled?

9. What is the tension in the wires that supports a 40-kg load?



10. A vertical rope supports a box which has a mass of 25 kg.



- Draw the FBD
- What is the tension on the string?
- If the wire suddenly breaks, draw the FBD of box when the wire broke.
- If the wire is pulled upward, draw the FBD of the box when the wire is pulled up.

11. While waterskiing behind his father's boat, Darryl is pulled at a constant speed with a force of 175 N by a rope that makes an angle of 10° with the horizontal. If Darryl has a mass of 65 kg, what is the frictional force between Darryl and the water?