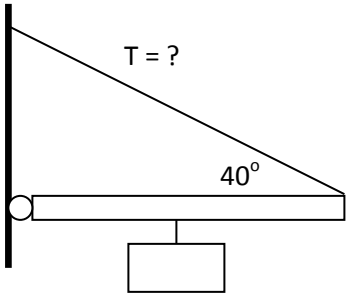
Name: _____ Phys 12

**Worksheet 3.6 Torque (part 2)**

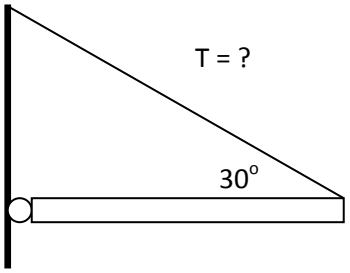
1) A beam of negligible mass is attached to a wall by means of a hinge. Attached to the centre of the beam is a 400 N weight. A rope also helps to support this beam as shown in the diagram.



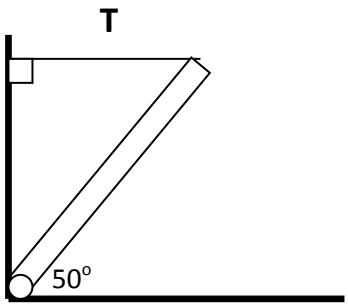

a) What is the tension in the rope? (311 N)

b) What are the vertical and horizontal forces that the wall exerts on the beam? (V: 200 N, H: 238 N)

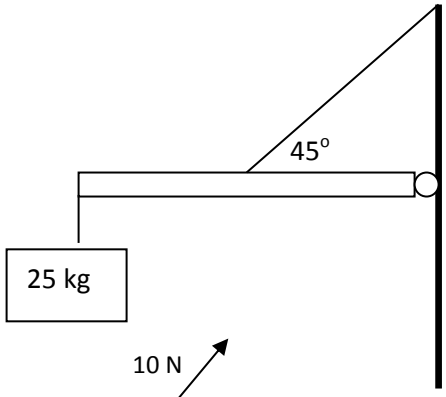
2) Find the tension in the rope supporting the 200 N hinged uniform beam as shown in the diagram. (200 N)




3) Find the tension in the rope supporting the 200 N hinged uniform beam as shown in the diagram. (83.9 N)



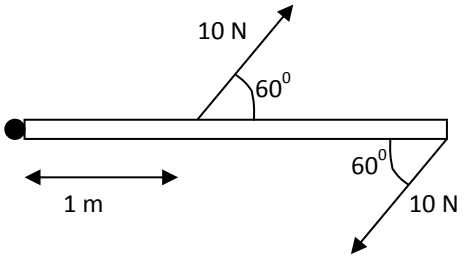

4) A uniform beam (mass = 22 kg) is supported by a cable that is attached to the centre of the beam a shown in the diagram.



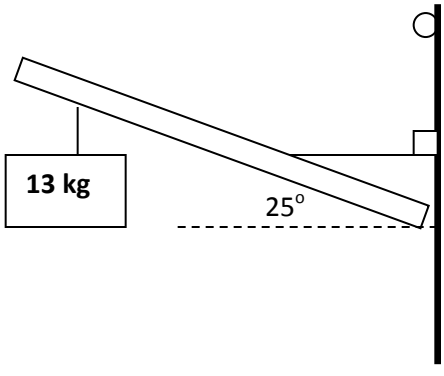

a) find the tension in the cable. (1000 N)

b) find the horizontal and vertical forces acting on the hinge. (Fx = 710 N, Fy = 240 N)

5) The diagram below shows the top view of a door that is 2 m wide. Two forces are applied to the door as indicated in the diagram. What is the net torque on the door with respect to the hinge? (8.66 Nm clockwise)




6) A 2.6 m uniform beam (mass of 9.0 kg) is attached to a wall by a hinge and supported by a rope. A 13 kg mass hangs from the beam 2.2 m from the hinge. Find the tension in the rope which is attached to the beam 1.1 m from the wall. (770 N)




**Bonus** – A uniform ladder of mass 12.5kg leans against a wall at an angle of 73° to the horizontal. The coefficient of static friction between the ladder and the wall and between the ladder and the ground is 0.76. How heavy of a person can climb all the way to the top of the ladder before the ladder starts to slip?