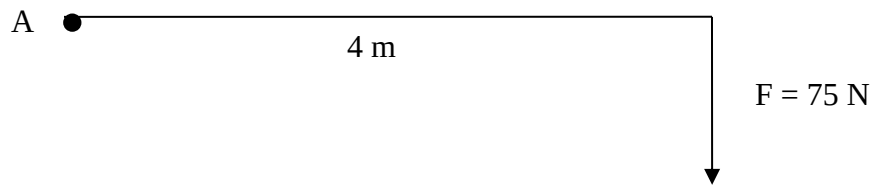
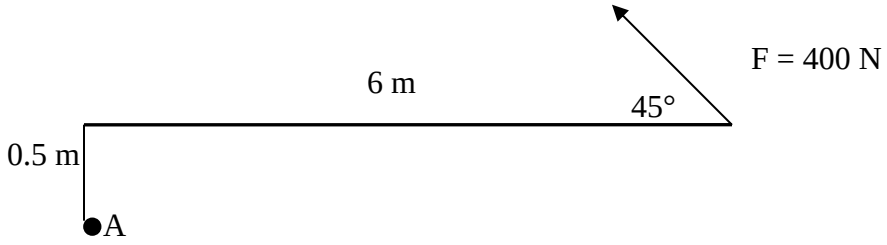
ASSIGNMENT 5

Monday October 29th, 2018

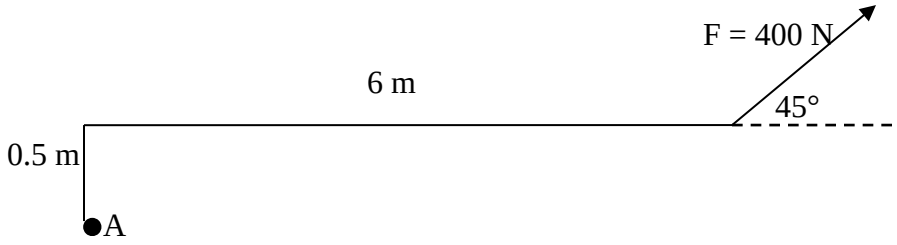
1. Determine the moment about point A from the application of force F. (1)



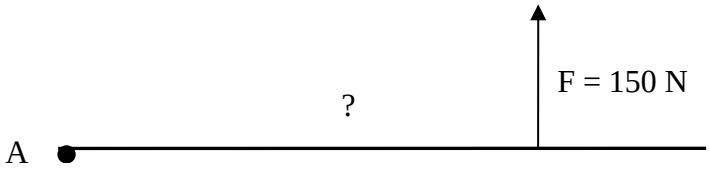
2. What is the torque produced about point A? (1)



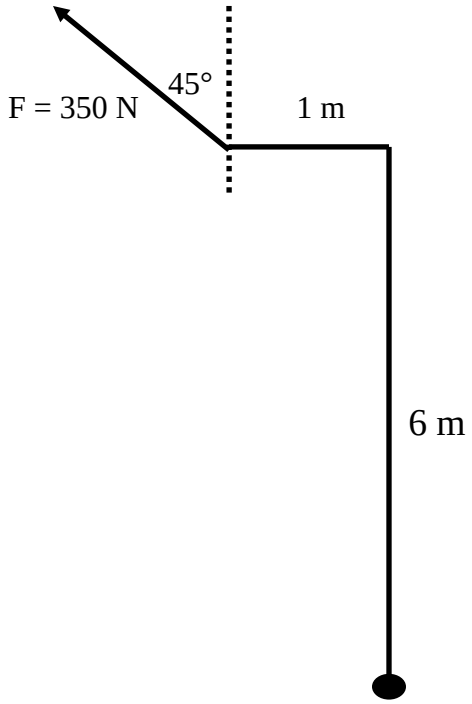
3. What is the magnitude of the torque produced about point A? (1)



4. What is the length of the moment arm if the torque produced about point A is 675 Nm? (1)

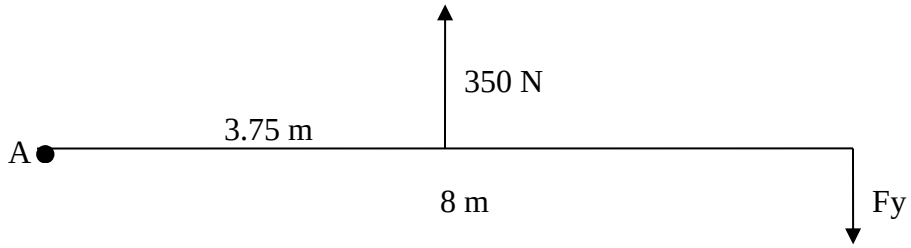


5. What is the torque produced about point A? (1)



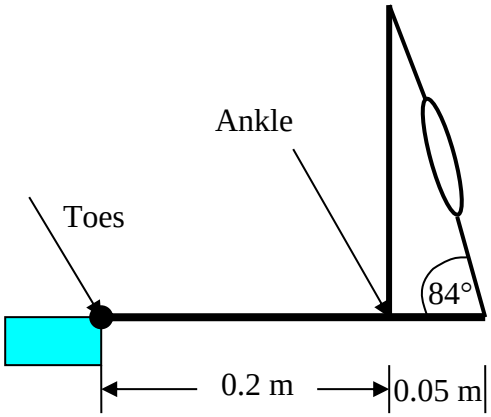
6. Considering the following object which is in static equilibrium.

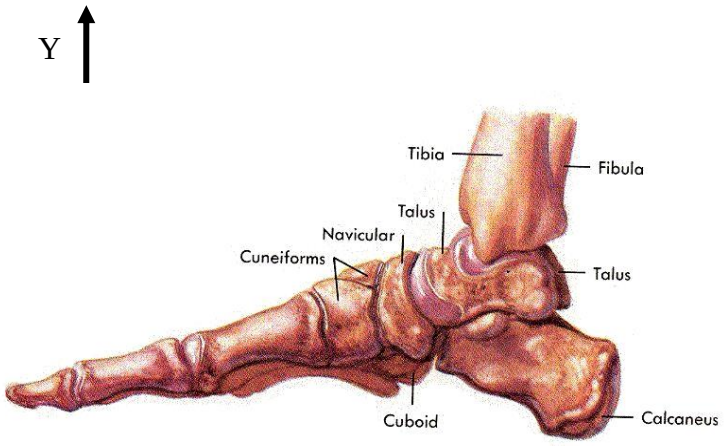
a. What must Fy equal in order to keep the object in static equilibrium? (1)
b. What is the resultant contact force (joint reaction force) at point A? (1)



7. Based on your knowledge of levers and torques, answer the following questions for the diagram below.

a. Determine the force in the Achilles tendon required to maintain the system in static equilibrium. Assume that the mass of the foot is negligible to the analysis and that the tibia's mass represents half of the person's total mass of 100 kg. Therefore assume the tibia has a mass of 50 kg. (1)
b. Determine the Y component of force acting on the foot at the toes. (1)
c. Determine the Y component of force acting on the foot at the ankle. (1)
d. What is the class of the lever system? Explain your reasoning. (1)
e. Does the lever have potential to increase speed or force? Explain. (1)
f. What is the mechanical advantage of the lever? (1)





13

This assignment is due in class on Monday November 5th, 2018. Please show all your work and BOX your answers. Be sure to include units.

Late assignments will be deducted by 25% per day and will not be accepted once solutions are posted.