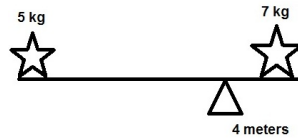# PHYS 211 Homework Assignment
Chapter 12

Problem 1 A 20-m long bar of mass 1 kg is resting on a pivot 4 m from the right edge. If a 7 kg star is placed on the right side of the bar, where must the 5 kg star be placed such that the system will be balanced? (In static equilibrium)

Problem 2 In the image below of a 70 kg man standing on a 15 meter long, 100 kg beam, how much force must the two supports be applying, and in what direction? (Assume the man and the support are both at opposite ends of the beam, and the second support is 2 meters away from the first.)
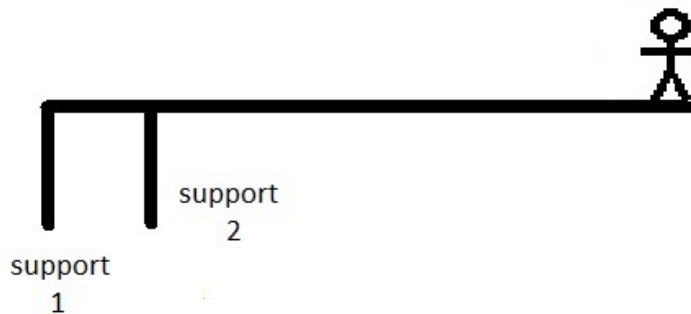
Problem 3 A uniform beam of length $L = 3$ m with a weight of 200 N is supported by a cable at an angle of 30° from the horizontal. A block of weight 300 N sits on the beam. If the cable can withstand only 500 N, what is:
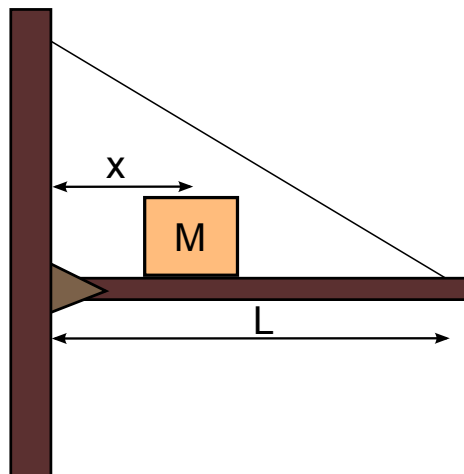
(a) the maximum distance x that the box can have from the hinge?

(b) the force from the hinge on the bar (vertical and horizontal) at this max distance x?