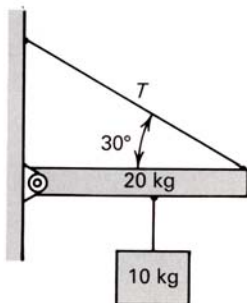


# SAINT JOSEPH'S PREPARATORY SCHOOL

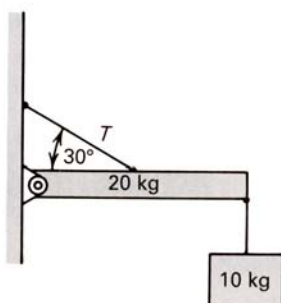
## PHYSICS HOMEWORK PROBLEMS

### TORQUE

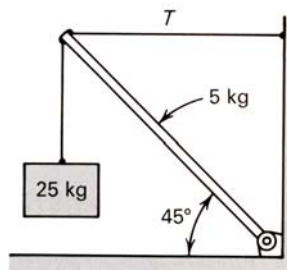
1. Find the tension in the supporting wire in each of the figures.



(a)



(b)



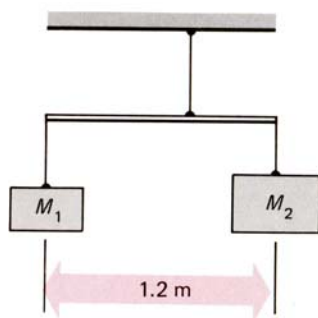
(c)

$T_a$ : \_\_\_\_\_

$T_b$ : \_\_\_\_\_

$T_c$ : \_\_\_\_\_

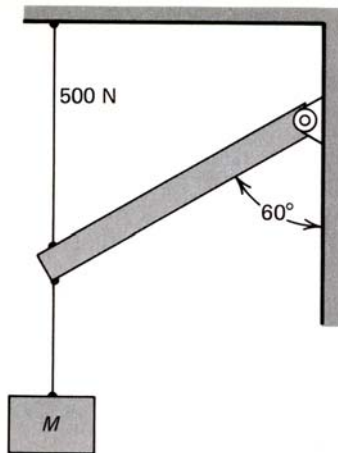
2. Two masses,  $M_1 = 1.60$  kg and  $M_2 = 2.00$  kg are suspended from the ends of a light (essentially massless) aluminum rod of length 1.20 m as shown in the figure. The rod itself is suspended from the ceiling by a string. Find the tension in the string and the point on the rod where it must be attached so that the rod can remain horizontal.



tension: \_\_\_\_\_

location: \_\_\_\_\_

3. A uniform beam of 20.0 kg mass is hinged to a vertical wall and supported at its other end by a wire, as shown. What is the value of the mass supported by the beam if the tension in the wire is 500 N? What is the force exerted by the hinge on the beam?

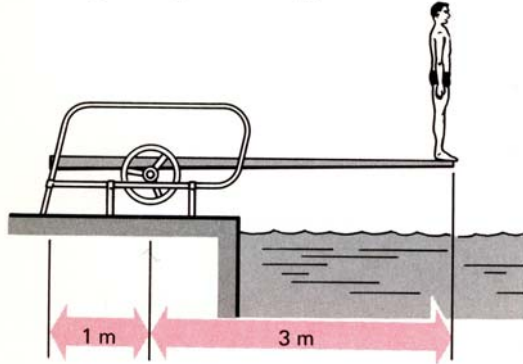


mass: \_\_\_\_\_

$F_x$ : \_\_\_\_\_

$F_y$ : \_\_\_\_\_

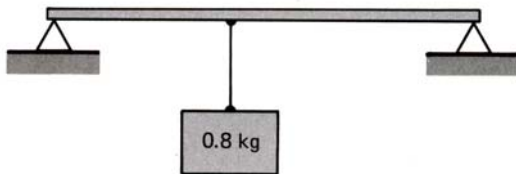
4. A uniform diving board whose mass is 60.0 kg is held fixed at two points, as shown. If an 80.0 kg diver stands at the edge of the board, what are the forces acting at the points of support?



force (left): \_\_\_\_\_

force (right): \_\_\_\_\_

5. A 0.20 kg meterstick is supported at its two ends, as shown. A mass of 0.80 kg is hung from the meterstick. Where should the mass be placed so that the force the meterstick exerts on the right-hand support is 3.00 N? (Be clear about how the location is measured.)



location: \_\_\_\_\_