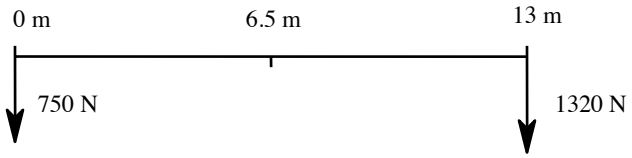
TORQUE NOTEBOOK PROBLEMS *Due: _____* *Mr. Forrest / A.P. Physics 1*

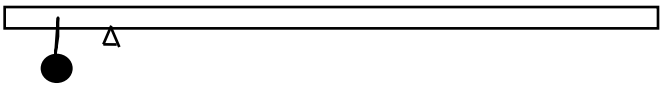
MAKE DIAGRAMS - THEY HELP!!! (Remember, torques involve perpendicular forces)

1) A 13.0 m long see-saw has Grandma (1320 N) sitting on the right side and Mr. Forrest (750 N) sitting on the left side. Calculate the clockwise, counterclockwise, and net torques. (Assume the see-saw is normally balanced at its CG.)



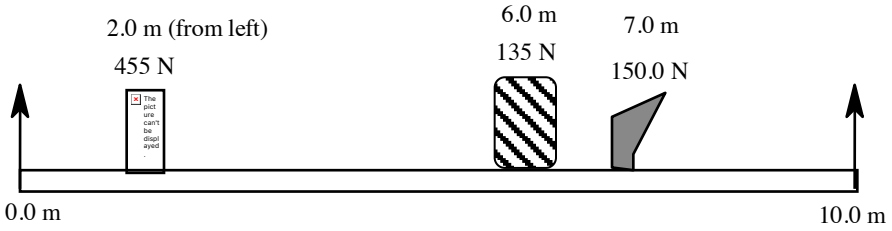
2) Where will Grandma have to sit on the see-saw in # 1 so that the net torque will be zero? (Assume Forrest stays in the same place)

3) A meterstick is supported at the 10.0 cm mark and has a 9.00 N object hanging from the 5.00 cm mark. What is the weight of the meterstick?
This is similar to your lab!!!!



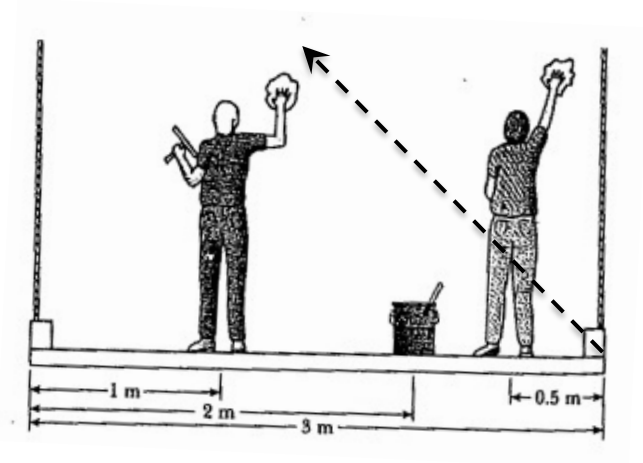
4) A bridge 20.0 m long and weighing 4.0×10^5 N is supported by two pillars (L and R) located 3.00 m from each end. If a 1.96×10^4 N car is parked 5.00 m from the left end of the bridge, how much force does each pillar exert? (Choose your pivot point carefully!)

5) What is the force on each of the cables shown if they are supporting the weights as shown? Assume the plank is 10.0 m long and weighs 500.0 N.



6) Two window washers, Archibald and Ebeneezer, are on a 3.00 m long scaffold that weighs 345 N. The scaffold is supported by two vertical cables attached to its ends. Archibald, who weighs 750.0 N, stands 1.00 m from the left end, as shown in Figure 1. Two meters from the left end is a bucket which has 500.0 N of washer fluid in it. Ebeneezer is 0.500 m from the right end of the scaffold and weighs 1000.0 N.

a) Given that the scaffold is in translational and rotational equilibrium, what are the forces on each cable?



b) Now assume that the rope on the right side breaks, and a new rope is connected at the same spot but pulling at an angle of 45° (see dashed line). Would the force of this new rope be more, less or the same as the force on the right rope you calculated in Part (a)?