Equilibrium Lab

Procedure

Briefly, but completely, describe the procedure for this lab – and include a labeled sketch.

Data

	Counterclockwise Torques					
	m	**F**	**θ**	**r**	**$F_\perp$**	**τ**
Purple Mass						
Red Tension						

	Clockwise Torques					
	m	**F**	**θ**	**r**	**$F_\perp$**	**τ**
Meter Stick						
Green Mass						
$Mass_1$						
$Mass_2$						

Scale Drawing

Using appropriate scales, labels and units, draw the meter stick and a scale drawing of all the forces acting on it. Include a scale for the size of the forces.

Questions

1) Complete the data table by calculating the perpendicular forces and torques – assuming that the bottom force sensor is the pivot point. Show one example of each calculation.

2) Use your torque values to find the total CCW torque and the total CW torque. Find the percent difference between the two values. Explain any similarities or differences between these two values.

3) Using your experimental forces, calculate the magnitude and direction of the force exerted on the meter stick by the force sensor on the end. Show your work.

4) Using your magnitude from your answer to question #3 as your experimental value, and the force sensor measurement as the actual value, find the percent error for the magnitude of the force exerted at the pivot point of the problem.

Error Analysis

Thoroughly explain what the main sources of error are for this lab, and how you would correct them.