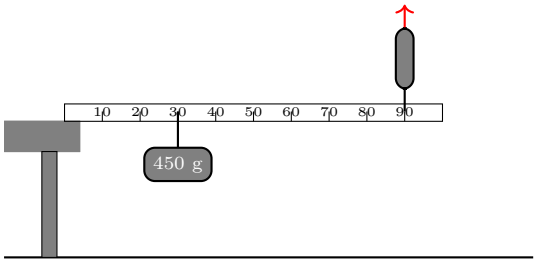
Name: Date: Period:

Torque Lab

An object is in *static equilibrium* when it is not rotating or translating. This means it has no net force ($\Sigma F = ma$) or net torque ($\Sigma\tau = 0$). The goal of this lab take a closer look at a simple case of static equilibrium and see how torques can cancel in equilibrium conditions.

Situation A

In a moment, we will set up the meter stick to look like this:



1. Find the mass of the meter stick.

2. What is the lever arm of this mass? (Think about CM)

3. How many torques are acting on this system? Draw them each on the diagram. Write down the forces and lever arms (r) of each torque below. Think about whether each torque is positive or negative.

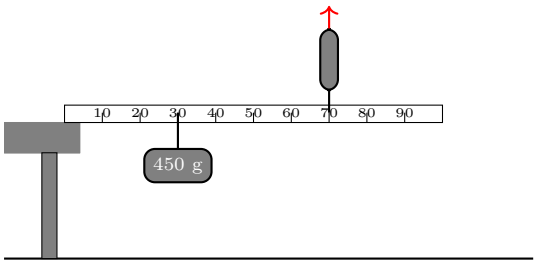
4. Set up your equilibrium equation $\Sigma\tau = 0$. Solve for the force that your scale should read.

5. Your answer is your expected reading for the two scale. Now set up the experiment and see how close your readings are to the expected values.

Expected	Measured	Percent Error

Situation B

In a moment, we will set up the meter stick to look like this:



6. Show all work for calculating the reading of the scale:

7. Your answer is your expected reading for the two scale. Now set up the experiment and see how close your readings are to the expected values.

Expected	Measured	Percent Error