Experiment 7
DATA SHEET

Name: _____

Section: _____

A. Observations: As you slide the mass further down the meter stick, how does the difficulty of holding the meter stick change?_____
_____

_____

B. Calculation of Torque

position of fulcrum = _____cm mark

Combined mass of hanger pan, and mass (kg)	combined weight (N)	distance from fulcrum (m)	Calculated Torque (N*m)

C. Determination of an Unknown Mass

Step13: distance from rock and hanger to fulcrum _____ m

Step 14 a: known mass of hanger, pan, and 100g _____kg

Step 14 b: known weight of hanger, pan, and 100g _____N

Step 17: distance from known mass to fulcrum when balanced _____m

Step 18: calculated torque caused by known mass _____N * m

Step 21 a: calculated weight of rock and mass hanger _____N

Step 21 b: calculated mass of rock and mass hanger _____kg

Step 22: mass of rock and mass hanger measured by triple beam balance _____kg

Step 23: percent error of calculated mass of rock and hanger _____ %

D. Investigation of a "Solitary Seesaw"

mass of meter stick _____ kg

final position of fulcrum _____ cm mark

distance between fulcrum and mass _____cm

QUESTIONS

1. Define **torque** and draw a diagram that illustrates the definition, labeling where the fulcrum is located and where the distances are measured.

2. In part A, why did it become more difficult to rotate the meter stick each time you repositioned the mass?

3. After the meter stick was balanced in part B, the system was in **equilibrium**. Define equilibrium. Since forces were acting on the meter stick, explain why the meter stick was in equilibrium.

4. In part D, there was a mass placed on one side of the fulcrum that caused a torque. When the fulcrum was positioned so that the system was in equilibrium, there must have been a second torque to counteract the first. What produced this second torque?

5. At what position along the meter stick did this torque act?

6. A mass of 1 kg is located at the 0-cm end of the meter stick. If the meter stick is suspended at its center, what mass must be placed at the 75-cm mark to balance the stick?

7. Why is it easier to open a door by pushing on the edge of the door nearer the knob than the hinges?

8. Identify a measurement device we have been using in this laboratory that makes use of torque. Draw a picture of the device identifying the fulcrum and lever arm distances.