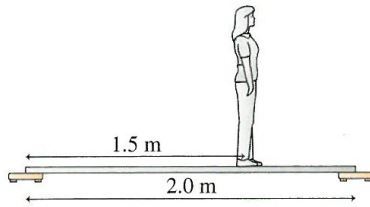


## Rotational Equilibrium Practice

(The Blue Ball of Death Kills Torques)

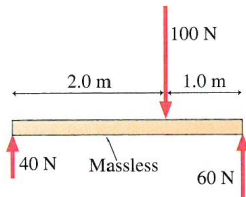
Name: \_\_\_\_\_

1. A 64 kg woman stands on a very light (no mass), rigid board that rests on a bathroom scale at each end, as shown in the figure below. What is the reading on each of the scales?

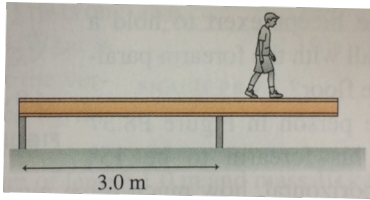


2. Now suppose the woman in the figure above is 54 kg and the board is no longer massless, but instead has a mass of 10.0 kg. Calculate the new reading on each scale. (Hint: You can treat the weight of the board as coming from its exact midpoint or center of gravity.)

3. Is the object in the figure below in equilibrium? Defend your answer with numbers.



4. A 40.0 kg, 5.0 m long beam is supported by, but not attached to, the two posts in the figure below. A 20.0 kg boy starts walking along the beam. How close can he get to the right end of the beam without it tipping?



5. A 400.0 N child and a 300.0 N child sit on either end of a 2.00 m long seesaw. Where along the seesaw should the pivot be placed to ensure rotational equilibrium? (Disregard the mass of the seesaw and give answer in terms of distance from the 300.0 N child.)

6. On same seesaw as in 5 (same pivot location, still disregarding seesaw's mass) a third child (300.0 N) sits 0.200 m from the 400.0 N child. Where must a fourth child, 325 N, sit to maintain rotational equilibrium?