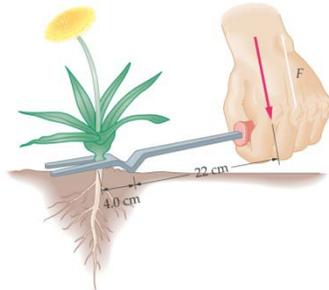


Torque 2

Solve the following problems

1. Peter and Paul are playing on a see saw. Paul, who weighs 42 N, is sitting 1.3 meters to the right of the fulcrum of the see-saw. Peter, who weighs 67 N, is sitting on the left side 2.4 meters from the center. Where must their friend Mary, who weighs 45 N, sit on the right in order to balance out the see-saw?
2. What are the conditions for rotational equilibrium? Explain how they apply to children attempting to balance a seesaw.
3. Two girls are seesawing on the school playground and decide to see if they can move to the correct location to make the seesaw balance. One girl weighs 400 N and sits 2 m from the fulcrum. The second girl weighs 450 N. Where should the other girl sit to balance the seesaw?
4. Suppose that a meter stick is supported at the center, and a 20-N block is hung at the 80-cm mark. Another block of unknown weight just balances the system when it is hung at the 10-cm mark. What is the weight of the second block?
5. (Walker, p. 342, #2) The gardening tool shown in Figure 11–24 is used to pull weeds. If a $1.23\text{-N}\cdot\text{m}$ torque is required to pull a given weed, what force did the weed exert on the tool?



6. (Walker, p. 342, #6) At the local playground, a 16-kg child sits on the end of a horizontal teeter-totter, 1.5 m from the pivot point. On the other side of the pivot an adult pushes straight down on the teeter-totter with a force of 95 N. In which direction does the teeter-totter rotate if the adult applies the force at a distance of (a) 3.0 m, (b) 2.5 m, or (c) 2.0 m from the pivot?