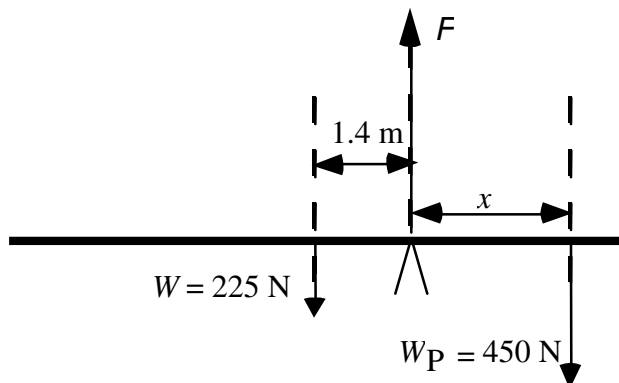


12. **REASONING** When the board just begins to tip, three forces act on the board. They are the weight W of the board, the weight W_P of the person, and the force F exerted by the right support.



Since the board will rotate around the right support, the lever arm for this force is zero, and the torque exerted by the right support is zero. The lever arm for the weight of the board is equal to one-half the length of the board minus the overhang length: $2.5\text{ m} - 1.1\text{ m} = 1.4\text{ m}$.

The lever arm for the weight of the person is x . Therefore, taking counterclockwise torques as positive, we have

$$-W_P x + W(1.4\text{ m}) = 0$$

This expression can be solved for x .

SOLUTION Solving the expression above for x , we obtain

$$x = \frac{W(1.4\text{ m})}{W_P} = \frac{(225\text{ N})(1.4\text{ m})}{450\text{ N}} = \boxed{0.70\text{ m}}$$