Where must a 500 N weight hung on a uniform 150 N pole with a length of 5 m so that a girl at one end supports 1/4 as much as a man at the other end

Solution

$$F_{girl} = F = \frac{1}{4}F_{man}$$

$$F + 4F = 150 + 500 = 650 \ N.$$

$$F = \frac{650}{5} = 130 \ N.$$

Taking moments around man's position:

$$F(5) - 150\left(\frac{5}{2}\right) - 500x = 0$$

$$130(5) - 150\left(\frac{5}{2}\right) - 500x = 0$$

$$x = 0.55 \ m.$$

The weight need to be situated at 0.55 m from man's position.

Answer provided by https://www.AssignmentExpert.com