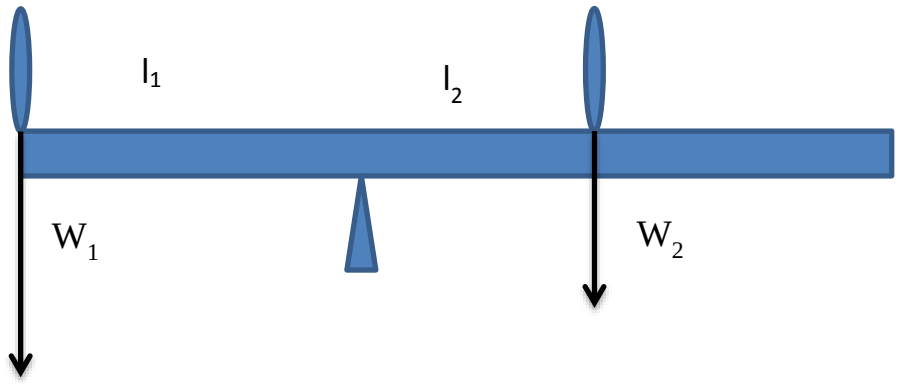
Two young boys are playing at the seesaw that is 3.90m in length. The first boy, who weighs 20N, sits on one end of the seesaw that is 1.5m from the midpoint. The other boy, who weighs 22N, sits on the other end.

1) If the seesaw is to be in equilibrium, how far must the second boy sit from the midpoint?
2) If the first boy is to sit 1.2m from the midpoint, where should the second boy sit to maintain the equilibrium state of the seesaw?

1)



Where $W_1 = 20\ N, W_2 = 22N$ – weighs of first and second boys, $l_1 = 1.5\ m, l_2$ – distances from the midpoint

Using the law of the lever:

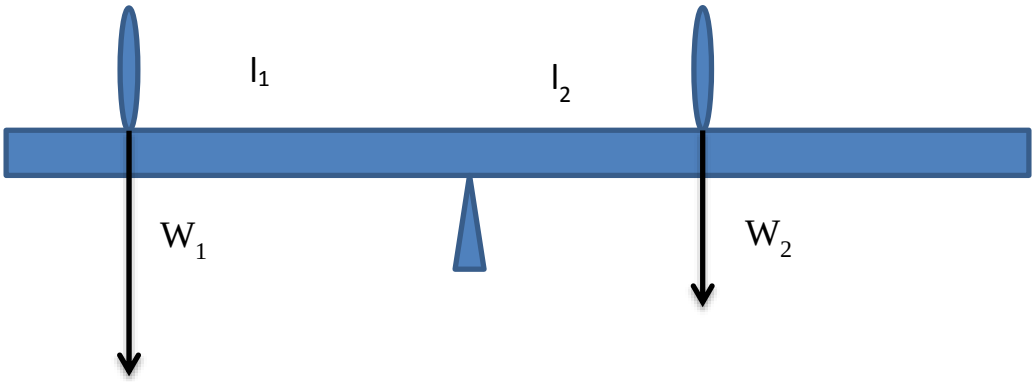
$$W_1 l_1 = W_2 l_2$$

Therefore, l_2 equals:

$$l_2 = l_1 \frac{W_1}{W_2} = 1.5\ m \frac{20}{22} = \frac{15}{11}\ m \cong 1.36\ m$$

Answer: $1.36\ m$

2)



Where $W_1 = 20\ N, W_2 = 22N$ – weighs of first and second boys, $l_1 = 1.2\ m, l_2$ – distances from the midpoint

Using the law of the lever:

$$W_1 l_1 = W_2 l_2$$

Therefore, l_2 equals:

$$l_2 = l_1 \frac{W_1}{W_2} = 1.2\ m \frac{20}{22} \cong 1.09\ m$$

Answer: $1.09\ m$ from the midpoint