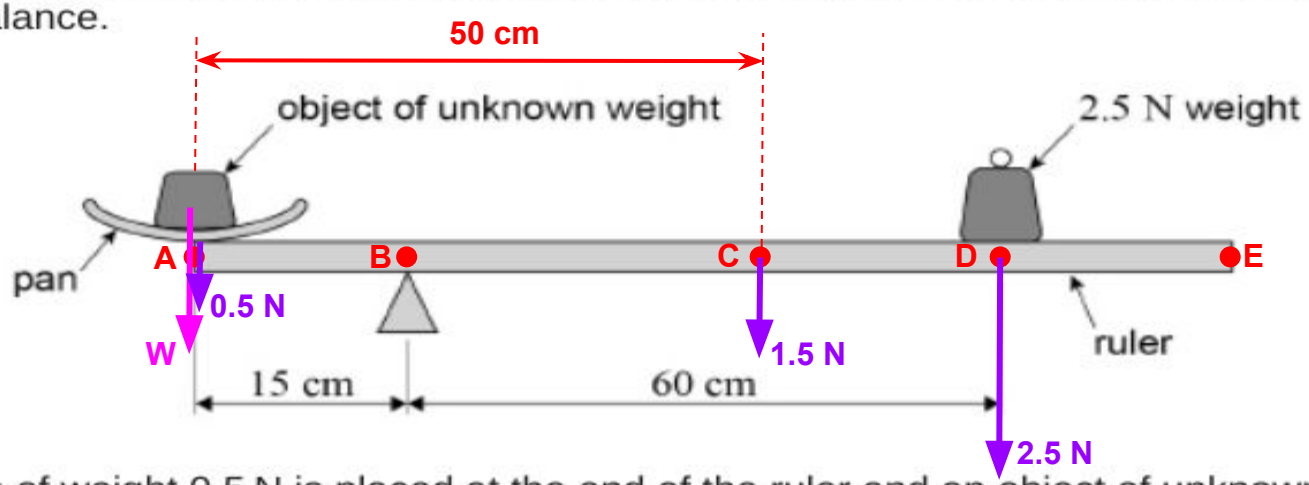
The diagram shows a uniform metre ruler of weight 1.5 N pivoted 15 cm from one end for use as a simple balance.




A scale pan of weight 0.5 N is placed at the end of the ruler and an object of unknown weight is placed in the pan. The ruler moves to a steady horizontal position when a weight of 2.5 N is added at a distance of 60 cm from the pivot as shown.

What is the weight of the object?

B = (1.5 x [0.50 - 0.15] ) + (2.5 x 0.60)

= (1.5 x 0.35) + (2.5 x 0.60)

= 2.025 N m

B = (W x 0.15 ) + (0.5 x 0.15)

= 0.15 W + 0.075

B = B

0.15 W + 0.075 = 2.025

0.15 W = 2.025 - 0.075

0.15 W = 1.95

W = 1.95 / 0.15

W = 13 N