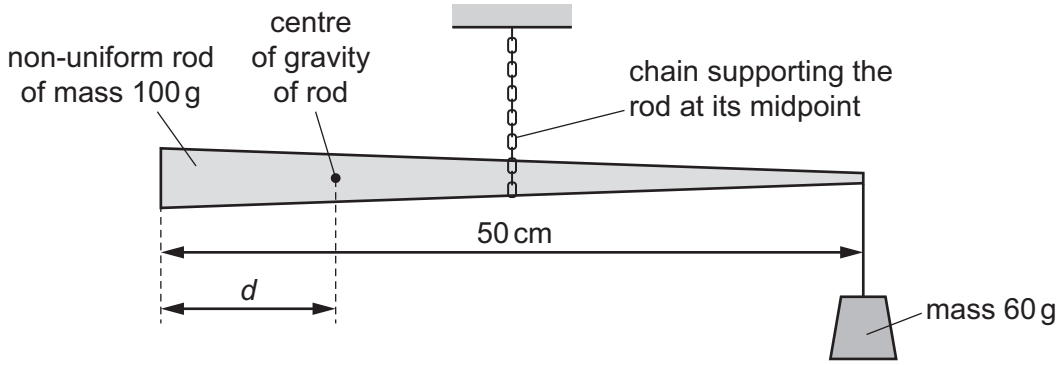
13 A non-uniform rod has a mass of 100 g and a length of 50 cm. It is supported by a chain at its midpoint. The rod is held in equilibrium by having a mass of 60 g suspended from its right-hand end, as shown.

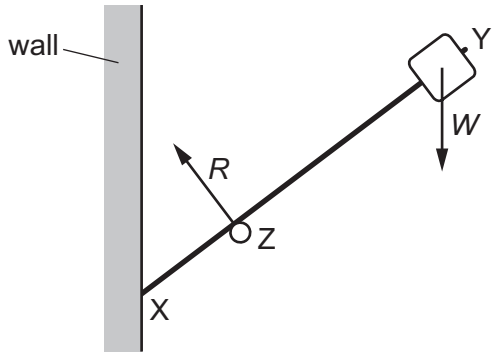


The centre of gravity of the rod is a distance *d* from its left-hand end.

What is the value of *d*?

A 10 cm **B** 15 cm **C** 25 cm **D** 40 cm

14 A light rigid rod XY has an object of weight *W* fixed at one end. The rod is in equilibrium, resting on a support at Z and a vertical wall at X. The support exerts a force *R* on the rod as shown. The diagram shows the directions, but not the magnitudes, of the forces *R* and *W*.



What is the direction of the force on the rod at X?

A **B** **C** **D**

15 Liquid Q has twice the density of liquid R.

At depth *x* in liquid R, the pressure due to the liquid is 4 kPa.

At which depth in liquid Q is the pressure due to the liquid 7 kPa?

A $\frac{2x}{7}$ **B** $\frac{7x}{8}$ **C** $\frac{8x}{7}$ **D** $\frac{7x}{2}$