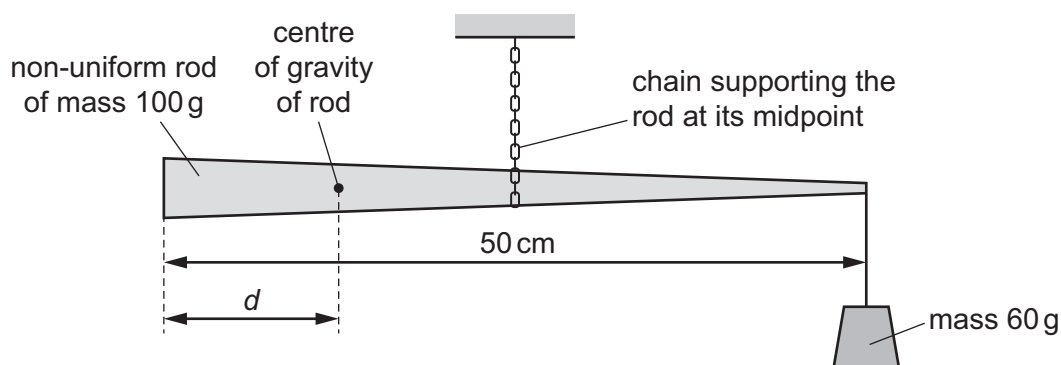**13** A non-uniform rod has a mass of 100 g and a length of 50 cm. It is supported by a chain at its midpoint. The rod is held in equilibrium by having a mass of 60 g suspended from its right-hand end, as shown.

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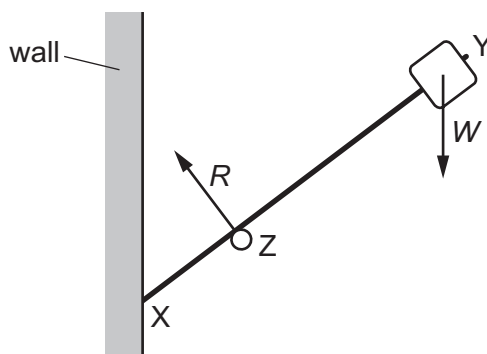
What is the direction of the force on the rod at X?

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 $\dfrac{2x}{7}$ B $\dfrac{7x}{8}$ C $\dfrac{8x}{7}$ D $\dfrac{7x}{2}$