12 A student states that:

> 'If an object is in equilibrium, the sum of the clockwise moments about a point X is equal to the sum of the anticlockwise moments about a point Y.'

Which condition would make the student's statement correct?

A Either X or Y is the centre of gravity of the object.

B Either X or Y is the pivot of the object.

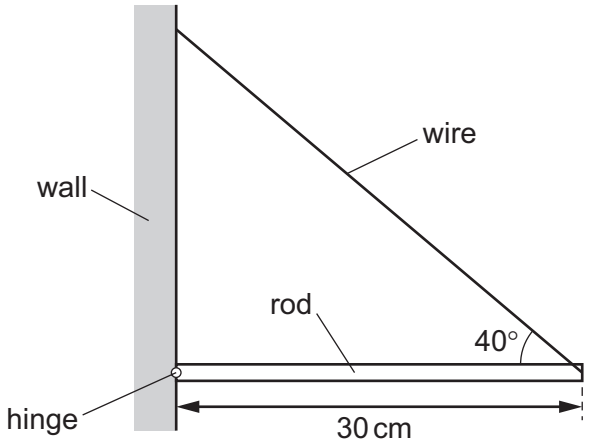
C X and Y are at opposite ends of the object.

D X and Y are the same point on the object.

13 A uniform rod of length 30 cm and weight 5.2 N is attached to a wall by a hinge at one end.

The other end of the rod is supported by a wire so that the rod is horizontal and in equilibrium.

The wire is at an angle of 40° to the horizontal.



What is the tension in the wire?

A 3.4 N **B** 4.0 N **C** 6.8 N **D** 8.1 N

14 Water is pumped through a nozzle at the end of a hose. The nozzle has a circular cross-section of diameter 50 mm. A mass of 100 kg of water takes a time of 2.0 s to move through the nozzle. The density of water is 1000 kg m^{-3}.

What is the speed of the water in the nozzle?

A 6.4 m s^{-1} **B** 13 m s^{-1} **C** 25 m s^{-1} **D** 51 m s^{-1}