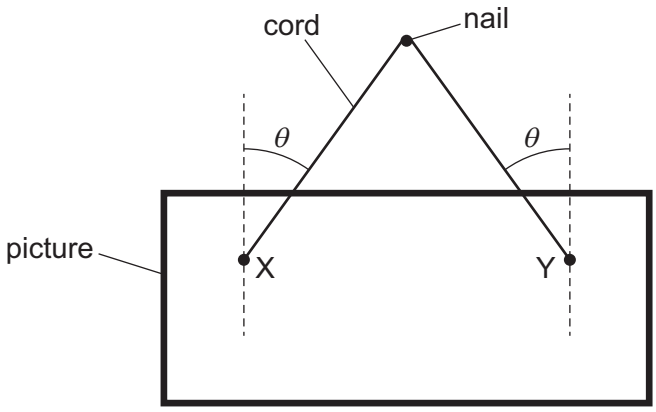
11 A picture is suspended from a nail by a single cord connected to two points X and Y on the picture. There is negligible friction between the cord and the nail so that the tension in both sides of the cord is the same. The picture hangs symmetrically, as shown.



The tension in the cord is T. The angle between the cord and the vertical is θ on both sides.

Which statement is correct?

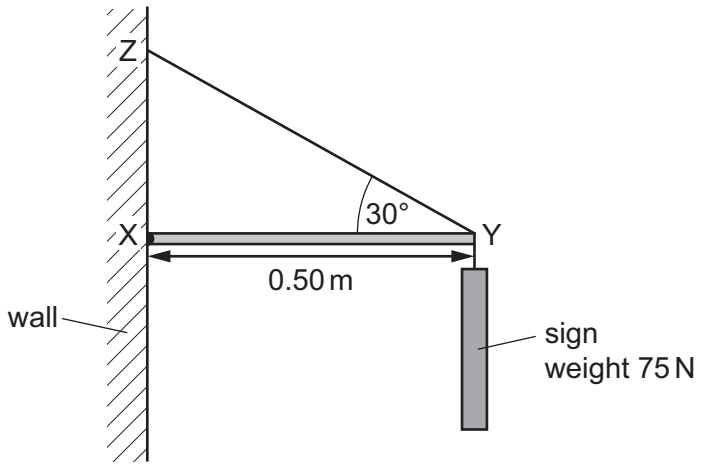
A Increasing the length of the cord, with points X and Y in the same place on the picture, would reduce the tension in the cord.

B Moving points X and Y further apart on the picture while keeping the length of the cord constant would reduce the tension in the cord.

C Moving points X and Y to the top edge of the picture while keeping their distance apart constant and the length of the cord constant would reduce the tension in the cord.

D The weight of the picture is equal to $T \cos\theta$.

12 A shop sign weighing 75 N hangs from a frame attached to a vertical wall.



The frame consists of a horizontal rod XY and a rod YZ that is at an angle of 30° to the horizontal. Rod XY is attached to the wall by a hinge at X and has length 0.50 m. Assume that the weights of the rods are negligible.

What is the horizontal force exerted by the wall on rod XY?

A 0 N **B** 43 N **C** 130 N **D** 150 N