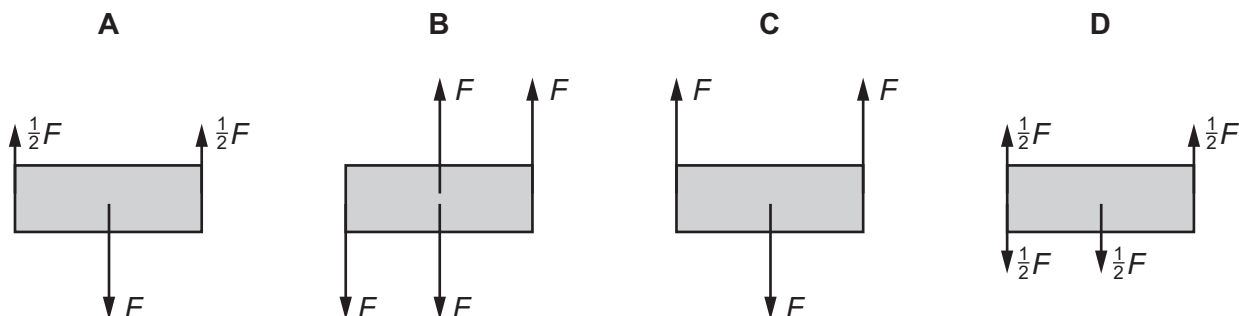
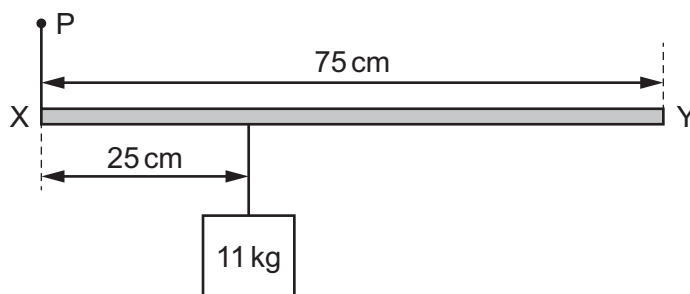


- 12 Forces are applied to a rigid object. The forces all act in the same plane.

In which diagram is the object in equilibrium?



- 13 A rigid rod XY has negligible mass and length 75 cm. The rod is suspended from a fixed point P by a string attached to end X. An object of mass 11 kg is suspended by a string that is attached to the rod at a distance of 25 cm from end X, as shown.



Which vertically upward force acting on end Y of the rod would hold the rod horizontally in equilibrium?

- A 3.7 N      B 33 N      C 36 N      D 320 N
- 14 The density of water is  $1.0 \text{ g cm}^{-3}$  and the density of glycerine is  $1.3 \text{ g cm}^{-3}$ .

Water is added to a measuring cylinder containing  $40 \text{ cm}^3$  of glycerine so that the density of the mixture is  $1.1 \text{ g cm}^{-3}$ . Assume that the mixing process does not change the total volume of the liquid.

What is the volume of water added?

- A  $40 \text{ cm}^3$       B  $44 \text{ cm}^3$       C  $52 \text{ cm}^3$       D  $80 \text{ cm}^3$