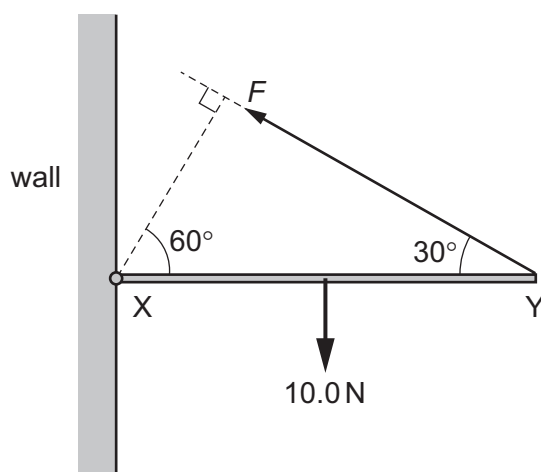


- 12** A uniform rod XY of weight 10.0 N is freely hinged to a wall at X. It is held horizontal by a force  $F$  acting from Y at an angle of  $30^\circ$  to the horizontal, as shown.



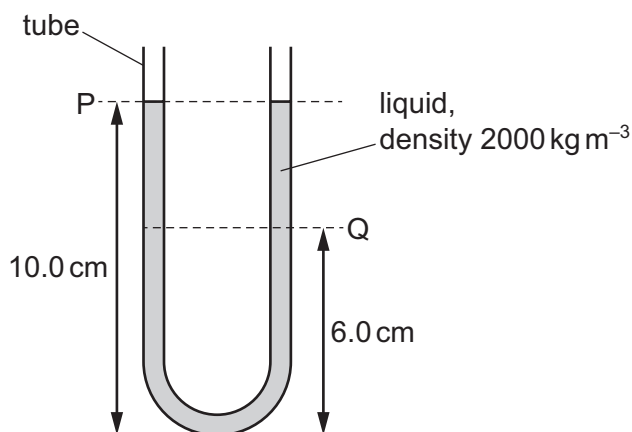
What is the value of  $F$ ?

- A** 5.0 N      **B** 8.7 N      **C** 10 N      **D** 20 N
- 13** Two solid cubes X and Y are made of material of the same density. Cube X has twice the mass of cube Y.

Cube X has sides of length  $x$ . Cube Y has sides of length  $y$ .

What is the ratio  $\frac{x}{y}$ ?

- A** 1.26      **B** 1.41      **C** 2.00      **D** 8.00
- 14** A U-shaped glass tube contains liquid of density  $2000 \text{ kg m}^{-3}$ , as shown.



What is the difference in pressure due to the liquid between levels P and Q?

- A** 780 Pa      **B** 1200 Pa      **C** 1600 Pa      **D** 2000 Pa