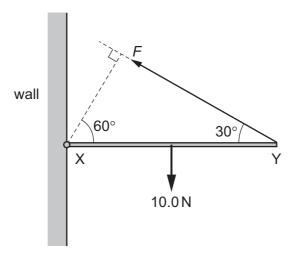
12 A uniform rod XY of weight  $10.0 \, \text{N}$  is freely hinged to a wall at X. It is held horizontal by a force F acting from Y at an angle of  $30^{\circ}$  to the horizontal, as shown.



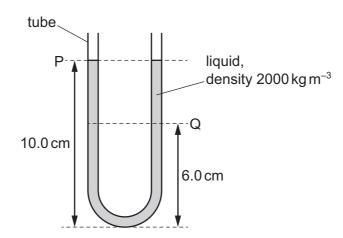
What is the value of *F*?

- **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  $2000 \, \text{kg} \, \text{m}^{-3}$ , 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