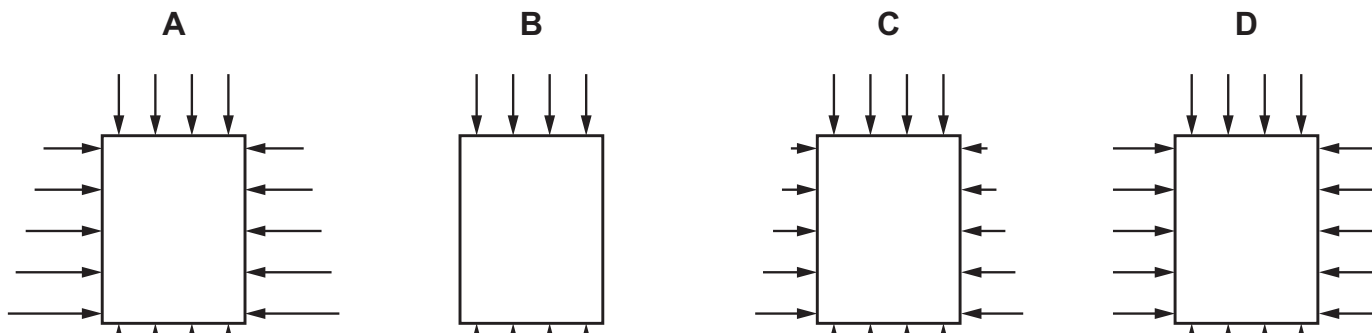


- 16** A block is submerged vertically in a liquid. The four diagrams show the block viewed from the side.

Which diagram shows, to scale, the forces exerted on equal areas of the block by the liquid?



A-Level Physics: s25 13

- 15** A measuring cylinder contains 80 cm^3 of a liquid.

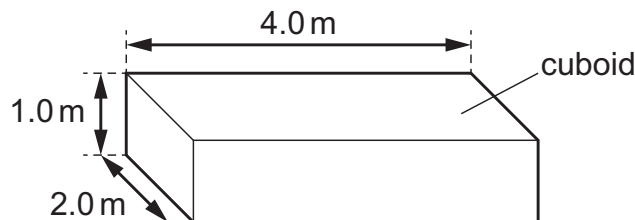
The pressure due to the liquid at the 60 cm^3 mark is 1200 Pa .

What is the pressure due to the liquid at the base of the measuring cylinder?

- A** 1200 Pa **B** 1600 Pa **C** 3600 Pa **D** 4800 Pa

A-Level Physics: s25 14

- 12** A solid metal cuboid of density 2700 kg m^{-3} has sides of lengths 1.0 m , 2.0 m and 4.0 m .



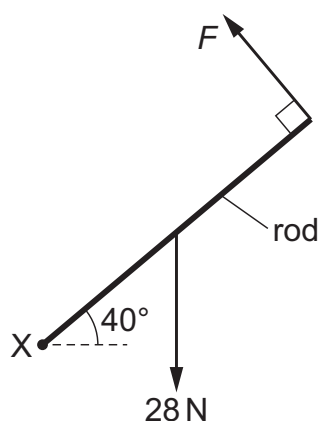
The cuboid can be placed on a horizontal surface so that it rests on any one of its six faces.

What is the largest pressure that the cuboid can exert on the surface due to its weight when it rests on one of its six faces?

- A** 11 kPa **B** 26 kPa **C** 53 kPa **D** 110 kPa

- 13** A uniform rod of weight 28 N is supported at one end by force F .

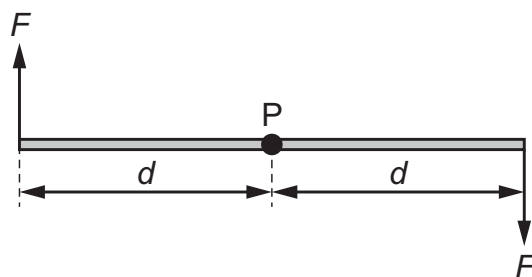
The rod is in equilibrium and attached to a frictionless hinge at end X.



What is the magnitude of F ?

- A** 9.0 N **B** 11 N **C** 18 N **D** 21 N

- 14** Two forces, each of magnitude F , act in opposite directions on a rod.



Each force acts on the rod at a distance d from the pivot P.

What is the torque of this couple about P?

- A** 0 **B** $F \times d$ **C** $2F \times d$ **D** $2F \times 2d$

- 15** A man of weight 600 N stands with both feet flat on the ground.

What is a reasonable estimate of the pressure exerted on the ground by the weight of the man?

- A** $1 \times 10^0 \text{ Pa}$ **B** $1 \times 10^2 \text{ Pa}$ **C** $1 \times 10^4 \text{ Pa}$ **D** $1 \times 10^6 \text{ Pa}$

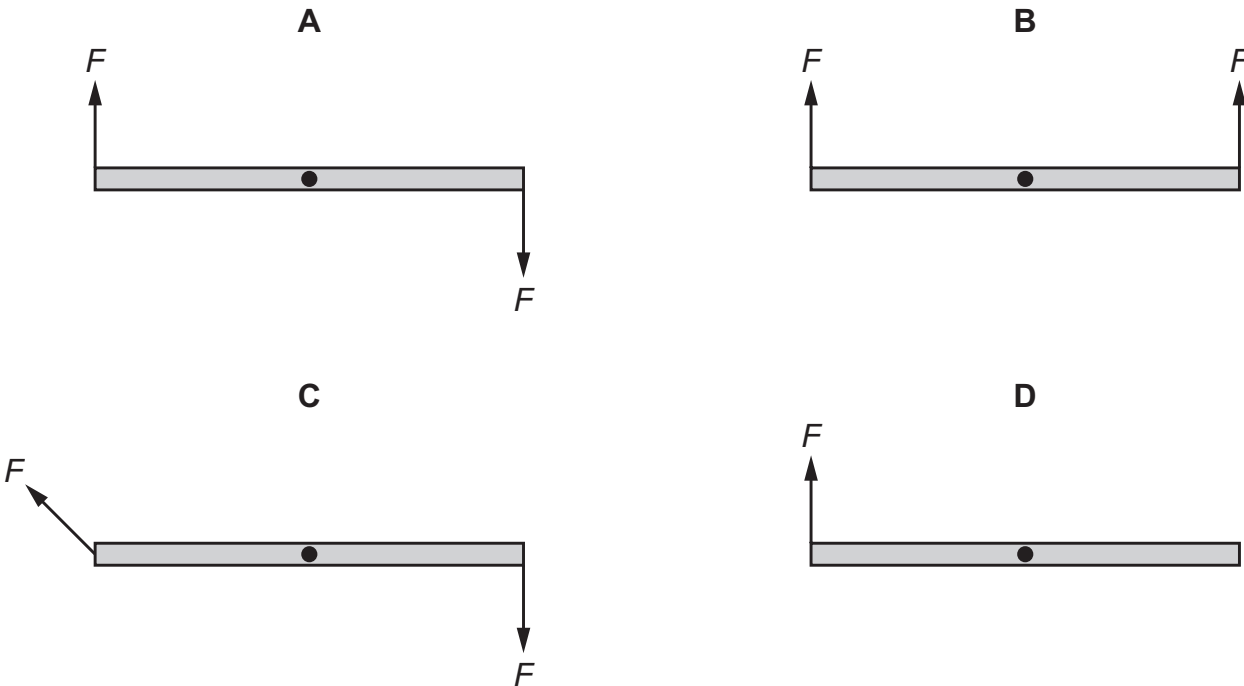
16 The formula for the upthrust on a block of wood partially submerged in water is shown.

$F = \rho g V$

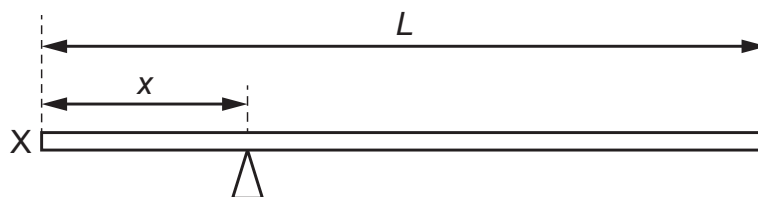
What do the symbols ρ and V represent?

	ρ	V
A	density of water	volume of whole block
B	density of water	volume of block below surface of water
C	density of wood	volume of whole block
D	density of wood	volume of block below surface of water

13 Which diagram shows a couple?



- 14** The diagram shows a uniform bar of mass M and length L resting on a pivot at a distance x from end X.



An object of mass m is placed on the bar at distance y from the pivot so that the bar is in equilibrium.

What is an expression for y ?

- A** $\frac{xM}{m}$ **B** $\frac{M}{m}(L - x)$ **C** $\frac{M}{2m}(L - 2x)$ **D** $\frac{1}{m}(Lm - xM)$

- 15** The mass and volume of an object are varied.

Which two changes, when made together, **must** increase the density of the object?

	mass	volume
A	decrease	decrease
B	decrease	increase
C	increase	decrease
D	increase	increase