10 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** $80\,\text{cm}^3$

11 An astronaut throws a stone horizontally near to the surface of the Moon, where there is no atmosphere.

Which row describes the horizontal and vertical forces acting on the stone after release?

	horizontal force	vertical force
A	non-zero and constant	constant
B	non-zero and constant	decreasing
C	zero	constant
D	zero	decreasing

12 A cylindrical block of wood has cross-sectional area A and weight W. It is totally immersed in water with its axis vertical. The block experiences pressures p_t and p_b at its top and bottom surfaces respectively.

Which expression is equal to the upthrust on the block?

A $(p_b - p_t)$

B $(p_b - p_t)A$

C $(p_b - p_t)A - W$

D $(p_b - p_t)A + W$