Question Number	Answer		Mark
13(a)	• Use of $\Sigma F = 0$, seen or implied • $F = 11$ N • Use of moment of force = Fx (with any corresponding force and known distance from an end, A or midpoint) • Use of the principle of moments • $x = 0.86$ m Example of calculation $F_A + F_B = 8.5\text{ N} + 14\text{ N} = 22.5\text{ N}$ $F_A = F_B$ $2F = 22.5$ N $F = 11.25$ N if moments taken from the left end $(11.25\text{ N} \times 0.15\text{ m}) + (11.25\text{ N} \times x) = (8.5\text{ N} \times 0.35\text{ m}) + (14\text{ N} \times 0.60\text{ m})$ $x = 0.861$ m if moments taken from midpoint $(11.25\text{ N} \times 0.45\text{ m}) = (11.25\text{ N} \times x) + (8.5\text{ N} \times 0.25\text{ m})$ $x = 0.261$ m so distance = 0.261 m + 0.6 m = 0.861 m if moments taken from A $(8.5\text{ N} \times 0.20\text{ m}) + (14\text{ N} \times 0.45\text{ m}) = (11.25\text{ N} \times x)$ $x = 0.711$ m so distance = 0.711 + 0.15 m = 0.861 m	(1) (1) (1) (1) (1)	**5**
13(b)	The moment (of B) must be the same For a smaller distance (from the left end of the shelf), the (normal contact) force must increase	(1) (1)	**2**
	Total for question 13		**7**