Question			Answer	Marks	AO	Guidance	
6	(a)		• the bricks have negligible size so contact force with the plank acts at a point • The mass of plank is evenly spread across its length • the weight of plank acts at centre of plank.	**B1** **B1** **[2]**	**3.3** **3.3**	Allow "no size" or "size doesn't matter" or "shape is not relevant" etc Allow for either statement Allow the plank is the same throughout or centre of mass at centre	Allow "weight of bricks acts on the plank at point" Do not allow "mass acts" at the centre
6	(b)		when placed at the centre tensions are equal $2\times 75 = 2.3ng + 5g$ $n = \left[\dfrac{101}{2.3g}\right] = 4.48...$ so 4 bricks Alternative using moments $5g\times 0.4 + 2.3gn\times 0.4 = 75\times 0.8$ $n = \left[\dfrac{40.4}{9.016}\right] = 4.48...$ so 4 bricks	**M1** **A1** **M1** **A1** **[2]**	**3.1b** **1.1b** **1.1b**	Using symmetry to establish equation for n soi. Allow if the weight of the plank or one of the tensions is missing Final answer must be the integer Allow if 4 seen www Allow for missing moment of weight or one of the tensions Final answer must be the integer Allow if 4 seen www	Trial and improvement may be used Every term must be a moment
6	(c)		$2.3gnx$ Nm	**B1** **B1** **[2]**	**1.1b** **1.2**	Allow positive or negative $22.54nx$	Allow in an equation.
6	(d)		4 bricks on the point of breaking x m from A Taking moments about A $5g\times 0.4 + 4\times 2.3gx = 75\times 0.8$ $9.2gx = 60 - 2g$ $x = 0.448$ [so 44.8 cm from A]	**M1** **A1** **A1**	**3.1b** **1.1b** **1.1b**	Taking moments about any point to form an equation. FT their n All forces used in a moment. Allow sign errors. Allow an incorrect distance used. Could be an inequality Fully correct equation FT their n. Allow corresponding inequality Need not be simplified cao	

Question			Answer	Marks	AO	Guidance	
				[3]			