

Question		Answer	Marks	AO	Guidance
7	(a)	<p>Total in the AB direction is $3 - 3 = 0$</p> <p>Total in the direction AD is $4 + 5 - 9 = 0$</p> <p>So zero resultant force</p>	<p>M1</p> <p>A1</p> <p>[2]</p>	<p>2.1</p> <p>2.1</p>	<p>Considers forces in each direction</p> <p>AG Allow if clear statement of zero force in two perpendicular directions, Do not allow for “equilibrium” on its own eg $3=3$ and $4+5=9$ is not sufficient without a comment</p>
7	(b)	<p>Take moments anticlockwise (N cm)</p> <p>$4 \times 14 - 5 \times 14 + 3 \times 9 - 9 \times 14 + 3 \times 9$</p> <p>$= -86 \text{ N cm}$</p> <p>$= -0.86 \text{ [N m]}$</p>	<p>B1</p> <p>M1</p> <p>A1</p> <p>[3]</p>	<p>1.1</p> <p>1.1</p> <p>1.1</p>	<p>At least one moment about the centre or any corner</p> <p>Combines moments of 5 forces about the centre. Allow only sign errors</p> <p>Do not allow as final answer</p> <p>Allow for 0.86 N m clockwise but not -0.86 N m clockwise</p> <p>Allow B1 SC1 for -0.86 Nm as the total moment about a different point.</p>
7	(c)	<p>The book will rotate clockwise [about the centre of mass]</p>	<p>B1</p> <p>B1</p> <p>[2]</p>	<p>2.2a</p> <p>1.2</p>	<p>Allow turn or spin but not move, tilt or flip</p> <p>Allow “there is a clockwise moment” for the second mark</p>