

Question number	Answer	Notes	Marks
5	<p>any four from -</p> <p>MP1 momentum reduced; MP2 by same amount; MP3 over longer time; MP4 so force reduced; MP5 use of "force = rate of change of momentum"; MP6 less force means less damage/injuries;</p>	<p>Responses should be in the context of momentum</p> <p>ignore "momentum absorbed"</p> <p>ignore "impact reduced" simple mention of eqn is insufficient</p>	max 4

Total 4 marks

Question number	Answer	Notes	Marks
8 (a)	weight of (the) plank		1
(b) (i)	moment = force x (perpendicular) distance (from pivot)		1
(b) (ii)	substitution; final value; e.g. 1200×0.75 900 (Nm)		2
(c)	principle of moments (stated or implied); correct calculation of distance from hand to pivot; calculation of total anticlockwise moment; final value; e.g. $(F \times 2.25) + (200 \times 0.75) = (1200 \times 0.75)$ $F = 330 \text{ (N)}$	Allow ecf from (b) 2.25 (m) seen in working $(F \times 2.25) + (200 \times 0.75)$ Allow 333 N	4

Total 8 marks