MOMENTUM 2 MARK SCHEMES

QUESTION 1

QUESTION	ANSWER	EXTRA INFORMATION	MARKS
a)	direction		1
b)	54 000	allow 1 mark for calculating and identifying momentum as 10 800 or allow 1 mark for correct substitution into second equation ie $\frac{1200 \times 9}{0.2}$	2
c)	increases the time taken (for head) to stop decreases rate of change in momentum reduces the force (on the head)	accept increases impact time do not accept reference to slowing down time unless qualified accept reduces acceleration / deceleration accept increases the time taken to reduce momentum to zero is worth 2 reduces momentum is insufficient	1 1 1
Total marks			6

QUESTION 2

QUESTION	ANSWER	EXTRA INFORMATION	MARKS
a)i)	10800	allow 1 mark for correct substitution i.e. 900 × 12	2
a)ii)	arrow pointing towards the left	allow anywhere on the diagram or at bottom of the page	1
b)	Zero velocity is zero	accept 0 / none / nothing accept speed for velocity accept stopped / not moving	1 1

		accept a calculation i.e. 900 × 0 = 0	
Total marks			5

QUESTION 3

QUESTION	ANSWER	EXTRA INFORMATION	MARKS
a)	Y	accept the one in the middle accept 90	1
	has the biggest mass	reason does not score if X or Z is chosen accept weight for mass accept weighs the most accept they are the heaviest accept has a larger mass do not accept weighs 90kg's on its own biggest/larger on its own is not sufficient	1
b)	increases		1
Total marks			3

QUESTION 4

QUESTION	ANSWER	EXTRA INFORMATION	MARKS
a)i)	the thicker the tile, the greater the(fall) height	accept the higher(the fall) the thicker the tile accept there is a positive correlation do not accept they are proportional	1
a)ii)	60(mm)	accept any number or range between 60 and 85 inclusive if units are given must match range	1
	(minimum thickness) needed to reduce risk of injury	reason must match thickness choice do not accept to keep child safe accept an answer in terms of –	1

		the thicker the tile, the less chance there is of a serious injury if the answer given is greater than 60 accept answers in terms of use of graph e.g. the graph shows that for a 2m fall a thickness of 60mm is needed minimum level answer' the graph shows that's what's needed' accept only if 60 is the answer	
b)i)	the time taken (to stop)		1
b)ii)	(the) force (on)		1
Total marks			5

QUESTION 5

QUESTION	ANSWER	EXTRA INFORMATION	MARKS
a)i)	96 newton or N	allow 1 mark for correct substitution ie 80 × 1.2 allow Newton do not allow n	2 1
a)ii)	direction		1
a)iii)	velocity and time are continuous (variables)	answers must refer to both variables accept the variables are continuous / not categoric accept the data / 'it' is continuous accept the data / 'it' is not categoric	1
b)	C velocity is not changing forces must be balanced or resultant force is zero	the 2 marks for reason may be scored even if A or B are chosen accept speed for velocity accept speed is constant (9 m/s)	1 1 1

		accept not decelerating accept not accelerating accept reached terminal velocity accept forces are equal accept arrows are the same length / size do not accept the arrows are equal	
Total marks			8

QUESTION 6

QUESTION	ANSWER	EXTRA INFORMATION	MARKS
a)i)	Lorry greatest mass	reason only scores if lorry chosen accept weight for mass accept heaviest accept correct calculations for all 3 vehicles the biggest is insufficient	1 1
a)ii)	2450	allow 1 mark for correct substitution ie 175 × 14	2
b)i)	increases	accept any clear indication of the correct answer	1
b)ii)	Speed increases	accept velocity for speed accept gets faster do not accept it accelerates on its own moves more is insufficient	
b)iii)	straight line going to 6, 20 horizontal line from 6,20 to 8,20	allow 1 mark for a curve going to 6,20 or a straight line diagonally upwards but missing 6,20 allow a horizontal line from where their diagonal meets 20m/s to 8,20	2 2
Total marks			9