

Question Number	Answer	Acceptable answers	Mark
1 (a) (i)	8 – 0 (m/s)	8	(1)

Question Number	Answer	Acceptable answers	Mark
1(a)(ii)	substitution 8 / 5 (1)	ecf from (i)	(2)
	evaluation 1.6 (m/s ²) (1)	full marks for correct answer (or ecf) with no working shown.	

Question Number	Answer	Acceptable answers	Mark
1(a)(iii)	0	Nil / nothing / zero / none (no mark for no response)	(1)

Question Number	Answer	Acceptable answers	Mark
1(b)	substitution F = 1200 x 0.8 (1)	full marks for correct answer with no working shown.	(2)
	evaluation 960 (N) (1)		

Question Number		Indicative Content	Mark
QWC	*)	<p>an explanation linking some of the following points:</p> <p>compared to a car with just the driver, a fully loaded car will</p> <ul style="list-style-type: none"> • have a greater mass / be heavier • greater kinetic energy / momentum • experience the same braking force (when brakes are applied) • require a greater braking force (than available) to stop (in the same distance) • have a smaller acceleration / deceleration • take a longer time to come to rest (from given speed) • travel greater distance in this time • needs to do more work with same amount of force • use of relevant equations such as $F = ma$, work done = $F \times d$ • consequence of driver distractions 	(6)
Level	0	No rewardable content	
1	1 - 2	<ul style="list-style-type: none"> • a limited explanation using one idea from the indicative content eg fully loaded car is heavier. • in answer communicates ideas using simple language and uses limited scientific terminology • spelling, punctuation and grammar are used with limited accuracy 	
2	3 - 4	<ul style="list-style-type: none"> • a simple explanation which links ideas from the indicative content eg it is heavier and so it takes a longer distance to stop • the answer communicates ideas showing some evidence of clarity and organisation and uses scientific terminology appropriately • spelling, punctuation and grammar are used with some accuracy 	
3	5 - 6	<ul style="list-style-type: none"> • a detailed explanation which links several ideas from the indicative content e.g. It has more momentum and so it will take a longer time to stop. This means that it will travel a further distance. The answer communicates ideas clearly and coherently uses a range of scientific terminology accurately • spelling, punctuation and grammar are used with few errors 	

Question number	Answer	Additional guidance	Mark
2(a)	Rearrangement (1) $m = \frac{f}{a}$ Substitution and conversion (1) $m = \frac{1870}{1.83}$ Answer and rounding to 3 s.f. (1) 1020 (kg)	maximum 2 marks if kN not converted to N award full marks for correct numerical answer without working	(3)

Question number	Answer	Additional guidance	Mark
2(b)	Rearrangement of $\frac{(v-u)}{t} = a$ (1) $v = u + at$ Substitution (1) $v = 0 + 1.83 \times 16$ Answer (1) 29.3 (m/s)	award full marks for correct numerical answer without working	(3)

Question number	Answer	Mark
2(c)	Correctly identifies data points from the graph to calculate areas (1) Calculates area under AB (1) 240 m Calculates area under CD (1) 135 m distance travelled at constant speed = 240 m is greater than distance travelled when slowing down = 135 m (1)	(4)