

01. 0625_s23_ms_41 Q: 2

Question	Answer	Marks
(a)(i)	(speed =) 38 m/s	A2
	$a = \Delta v / \Delta t$ OR $(\Delta v =) a\Delta t$ OR $(\Delta v =) 7.2 \times 5.3$	C1
(a)(ii)	(resultant force =) 1700 N	A2
	$F = ma$ OR $(F =) ma$ OR $(F =) 240 \times 7.2$	C1
(b)(i)	(vector) has direction (as well as magnitude) OR scalar does not have direction	B1

Question	Answer	Marks
(b)(ii)	(velocity) changes (as direction of motion changes) OR direction (of velocity) changes	B1
(b)(iii)	any two from: <ul style="list-style-type: none"> because there is an acceleration / change in velocity / change in direction / change in momentum (which needs a resultant force) motorcyclist accelerates / changes momentum (because velocity / direction changes) (resultant) force is perpendicular to the motion (of the motorcycle) OR $a \propto F$ 	B2



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02. 0625_s23_ms_43 Q: 1

Question	Answer	Marks
(a)	1200 N AND $g = W/m$ OR $(W =) mg$ OR $(W =) 120 \times 9.8$	B1
(b)	$F = ma$ OR $(a =) F/m$	B1
	$(a =) 54/120$	B1
(c)	$(v =) 3.6 \text{ m/s}$	A2
	$a = (\Delta)v/t$ OR $(\Delta v =) at$ OR $(\Delta v =) 0.45 \times 8(.0)$	C1
(d)	$(d =) 14\text{m}$	A2
	<u>average</u> speed = (total) distance travelled / (total) time taken OR 1.8×8 OR $\left(\frac{3.6}{2}\right) \times 8$	C1

03. 0625_w23_ms_43 Q: 2

Question	Answer	Marks
(a)(i)	3.5 N/cm OR 350 N/m	A3
	$k = F/x$ OR $(k =) F/x$ OR $(k =) \text{load} / \text{extension}$ OR 14/4	C1
	$(k =) 14/4$ OR $14/0.04$ OR 3.5×10^4	C1
(a)(ii)	mark at end of straight-line portion	B1
(b)(i)	arrow below the horizontal and to the left of vertically down from car	M1
	arrow radial	A1
(b)(ii)	(force) increases	B1

04. 0625_s22_ms_41 Q: 1

Question	Answer	Marks
(a)	negative acceleration or decrease in velocity	B1
	<u>change</u> in velocity per unit time or rate of <u>change</u> of velocity	B1
(b)	delay in applying brakes or (human) reaction time or foot not removed from accelerator	B1
(c)(i)	gradient or slope	B1
(c)(ii)	$20.5 \text{ m/s} \leq \text{answer} \leq 23.5 \text{ m/s}$	A2
	the coordinates at one point on curve (e.g. (0.50, 11)) and (upper) time coordinate $\leq 1.0 \text{ s}$	C1
(d)(i)	air resistance / air friction acts on the car	B1
(d)(ii)	air resistance / resultant / resistive force decreases and as speed decreases / car decelerates	A2
	air resistance / resultant / resistive force decreases / changes	C1

05. 0625_s22_ms_42 Q: 2

Question	Answer	Marks
(a)	$(F = 2.0 \times 4.0 =) 8.0 \text{ N}$	A2
	$(F =) ma$ in any form	C1

Question	Answer	Marks
(b)	$(F = 30 - 12 =) 18 \text{ N}$	A3
	resultant force on 3kg mass $(3 \times 4 =) 12 \text{ (N)}$	C1
	(weight of 3 kg mass $= 3 \times 10) = 30 \text{ (N)}$	C1
(c)(i)	$(\Delta v =) 4.0 \times 0.80 (= 3.2 \text{ m/s})$	A2
	$(\Delta)v = at$ in any form	C1
(c)(ii)	$(t = 0.020 / 3.2 =) 0.0063 \text{ s OR } 6.3 \times 10^{-3} \text{ s}$	A2
	$(t =) d/v$ in any form	C1

06. 0625_s22_ms_43 Q: 3

Question	Answer	Marks
(a)(i)	suitable scale recorded (e.g. 2 cm : 25 N)	B1
	two vectors correctly drawn by eye AND correct resultant	M1
	130 N	A1
	(vertically) upwards	A1
(a)(ii)	13 kg	B1
(b)	acceleration	B1
	momentum	B1



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07. 0625_w22_ms_41 Q: 2

Question	Answer	Marks
(a)(i)		B2
	magnitude or size	B1
	direction	B1
(a)(ii)		B2
	any two from: acceleration / deceleration, gravitational field strength, impulse, momentum, velocity, weight	B2
(b)(i)	0.12 m	B1
(b)(ii)		B2
	beyond where the extension is not directly proportional to the load or (point) where extension stops being directly proportional to the load or point up to which extension is directly proportional to the load	B1
	$10.4 \text{ N} \leq \text{weight} \leq 10.9 \text{ N}$	B1
(b)(iii)	$22 \text{ N/m} \leq k \leq 25 \text{ N/m}$	A3
	clear subtraction of 0.12 from a length that is in Hooke's law region e.g. $0.54 - 0.12$	C1
	$k = F/x$ in any form or $k = W/x$ in any form or $k = 1/\text{gradient}$	C1

08. 0625_w22_ms_41 Q: 3

Question	Answer	Marks
(a)	620 N	B1
(b)		B2
	no resultant force (on object in equilibrium)	B1
	no resultant moment (on object in equilibrium)	B1
(c)(i)	560 N m	A2
	$(T =) Fx_{\perp}$ or 620×0.90	C1
(c)(ii)	540 N	A3
	use of any moment	C1
	$T \times 1.2 \sin 60^{\circ} (= 560)$ or $(T =) 560 / (1.2 \times \sin 60^{\circ})$	C1

09. 0625_w22_ms_43 Q: 1

Question	Answer	Marks
(a)	change of velocity per unit time or $\frac{v-u}{t}$	B1
(b)(i)	$(72/35 =) 2.1 \text{ m/s}^2$	A1
(b)(ii)	230 000 N OR 230 kN	A2
	$F = ma$ OR $(F =) ma$ OR $110\,000 \times 2.1$	C1
(b)(iii)	any one from: <ul style="list-style-type: none"> • (increase / change in) air resistance • (increase / change in) wind 	B1
(b)(iv)	any three from: <ul style="list-style-type: none"> • initial acceleration highest value AND horizontal line • curved or straight line downwards • curved or straight line downwards AND line not reaching zero by 35 s • horizontal line before and up to 35 s. 	B3

10. 0625_m21_ms_42 Q: 2

	Answer	Marks
(a)(i)	(moment of a force) is the turning effect (about a point / pivot)	B1
(a)(ii)	$2.8 \times 10^6 \text{ Nm}$	A2
	(moment =) Fd in any form	C1
(b)(i)	scalar / speed has magnitude only OR scalar / speed has no direction	B1
	vector / velocity has magnitude and direction	B1
(b)(ii)	any scalar quantity	B1
	any vector quantity	B1

	Answer	Marks
(c)	correct triangle or parallelogram drawn	B1
	resultant force (including correct arrow)	B1
	scale 1 cm = 4 N or 1 cm = 5 N	B1
	40–47 N AND 33°–40° (anticlockwise from 20 N)	B1

11. 0625_s21_ms_41 Q: 1

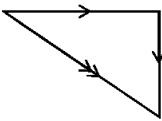
	Answer	Mark
(a)(i)	any value from 35 to 43 m / s ²	A2
	(a =) $(v - u) / t$ in any form or gradient (of line) or $(58 - 50) / 0.20$ or equivalent values from the graph	C1
(a)(ii)	3800 N	A3
	$(F =) ma$ in any form or $\Delta p / \Delta t$ in any form or $76 \times$ candidate's 1(a)(i) or 760 seen	C1
	$76 \times$ candidate's 1(a)(i) <u>evaluated</u> or $76 \times$ (candidate's 1(a)(i) + 10) or $76 \times$ (candidate's 1(a)(i)) + 760	C1
(b)	(deceleration because) upward force greater than weight or upward resultant force	B1
	air resistance decreases (with decreasing speed / with time) or deceleration decreases or resultant (upward) force decreases	B1
	(until / finally) weight equals air resistance or forces balance or at terminal / constant velocity / speed	B1
(c)	at zero speed there is no air resistance	B1
	weight / downwards force is (still) acting or there is (now) a resultant force (downwards at zero speed)	B1
	OR forces balance at a speed greater than zero	(B1)
	speed cannot decrease / no deceleration once forces balance	(B1)

12. 0625_s21_ms_42 Q: 2

	Answer	Mark
(a)	force \times <u>perpendicular</u> distance from pivot / point	B1
(b)	$(F_1 d_1 = F_2 d_2 =) 500 \times 20 = F \times 12$ numbers substituted in any form	C1
	$(F = 10\,000 / 12 =) 830$ N	A1

	Answer	Mark
(c)	clear diagram or description (of object) with pivot and <u>vertical</u> forces / weights / masses / cord tension causing moments in each direction	B1
	indicate / measure forces and perpendicular distances	B1
	calculates a moment or shows / describes how to AND confirms equality of total moment (in each direction) AND statement of equilibrium / balance	B1

13. 0625_w21_ms_41 Q: 1

Question	Answer	Marks
(a)	it / a vector has a direction	B1
(b)	two / three vectors and no more than one other quantity underlined	C1
	acceleration and momentum and velocity underlined and no others	A1
(c)(i)	5.5 N	B1
(c)(ii)	correct right-angled triangle / rectangle / intersecting arcs seen e.g. 	B1
	(magnitude from) 9.6 to 10.0 N	B1
	(angle to vertical from) 54.0 to 57.5°	B1
(c)(iii)	any two of: equal (in magnitude) opposite (in direction) the ring is in equilibrium or no resultant force on ring or forces on ring balance	B2

14. 0625_w21_ms_42 Q: 2

Question	Answer	Marks
(a)	extension is (directly) proportional to load (if elastic limit is not exceeded)	B1
(b)(i)	0 to 20.5 +/- 0.5 N	B1
(b)(ii)	(k =) F/x OR (k =) 1 / gradient	C1
	140 N/m OR 0.14 N/mm	A1
(b)(iii)	60 OR 61 OR 62 OR 63 (mm) seen	C1
	180 mm OR 0.18 m	A1
(c)	$W = mg$ in any form OR (m =) W/g OR (m) = $4 / 8.7$	C1
	0.46 kg	A1

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15. 0625_w21_ms_43 Q: 1

Question	Answer	Marks
(a)	0.0069 m/s ²	A2
	(acceleration =) gradient of graph or $\Delta v / \Delta t$ in any form OR $\frac{15-7.5}{(60-42)60}$	C1
(b)	48 000 m or 48 km	A3
	area under graph	C1
	$\frac{1}{2}(18 \times 7.5 \times 60) + (7.5 \times 18 \times 60) + (15 \times 40 \times 60)$	C1
(c)(i)	(force =) 2.0×10^5 N	A2
	(F =) ma OR $2.3 \times 10^7 \times 0.0087$ in any form	C1
(c)(ii)	there is a backward / drag force OR water resistance	B1

16. 0625_s20_ms_43 Q: 3

(a)	line of action of the centre of mass falls outside the base of the bus OR anticlockwise moment is greater than clockwise moment	B1
(b)	bus more likely to fall over / topple / less stable	M1
	(line of action of) centre of mass may fall outside (the base of) the bus	A1
(c)(i)	total mass of passengers = 73×65 (kg) OR 4700 kg	C1
	(total mass of bus, driver and 73 passengers) = 21 000 kg	A1
(c)(ii)	(F =) ma in any form	C1
	(F =) 15 000 N	A1

17. 0625_w20_ms_42 Q: 1

Question	Answer	Marks
(a)(i)	X near (30,60)	B1
(a)(ii)	Y AND Z near any horizontal section of graph	B1
(b)	any two from: <ul style="list-style-type: none"> • weight OR force of / due to gravity acts down • (force of / due to) air resistance / drag / friction acts up / opposes motion • initially / up to 10 s: resultant force is downward OR downward force is greater than upward force • resultant force causes acceleration • air resistance increases as speed increases / she accelerates 	B1
	any two from: <ul style="list-style-type: none"> • acceleration (down) initially / for first 10 s • acceleration decreases as air resistance increases / resultant force decreases • zero acceleration / constant speed / terminal velocity reached when upwards force = downwards force OR when no / zero resultant OR when forces balanced OR when downward force = air resistance • terminal velocity / constant speed reached after (about) 10 s OR at 60 m / s 	B2
(c)	(average speed =) {initial speed + final speed} / 2 words, symbols or numbers OR (average speed =) distance (from area) / time words, symbols or numbers	C1
	(average speed = $40 / 2$ =) 20 m / s OR (av speed = $80 / 4$ =) 20 m / s	A1

18. 0625_w20_ms_42 Q: 2

Question	Answer	Marks
(a)	force × <u>perpendicular</u> distance (from point)	B1
(b)(i)	0.80 N	B1
(b)(ii)	(moment = force × distance =) 0.8×0.25	C1
	(moment =) 0.20 N m	A1
(b)(iii)	same value as (ii) with correct unit	B1
(b)(iv)	$F \times 0.75 = 0.20$ in any form OR $(F =) 0.2 / 0.75$	C1
	$(F = 0.2 / 0.75 =) 0.27$ N	A1
(c)	(perpendicular) distance (from pivot) of F decreases / is less (than 0.75 m) OR (perpendicular) distance (from pivot) of W increases / is more (than 0.75 m)	M1
	(so) increased / greater (force F) (needed for greater moment)	A1

19. 0625_w20_ms_43 Q: 1

Question	Answer	Marks
(a)(i)	same distance travelled in same time / 0.02 s / dots equally spaced	B1
(a)(ii)	trolley accelerates OR trolley increases speed / velocity	B1
	a resultant force is acting on the trolley	B1
(b)	distance = area under graph, in any form	C1
	(distance = $\frac{0.5 \times 0.75}{2}$ =) 0.19 m	A1
(c)	any three from <ul style="list-style-type: none"> • initially velocity increases or the metal ball is accelerating OR (downwards) resultant force • resistance (of liquid) has increased (as velocity increases) • downwards force (on metal ball) = upwards force (on metal ball) (at point X) • (metal ball) travels at constant velocity / speed 	B3

20. 0625_w20_ms_43 Q: 3

Question	Answer	Marks
(a)(i)	One other scalar quantity	B1
(a)(ii)	One other vector quantity	B1
(b)(i)	$v = d \div t$ in any form OR $(t =) d \div v$ OR $3.9 \div 0.3$	C1
	$(t =) 13$ s	A1
(b)(ii)	inward arrow labelled F towards centre of circle	B1
(b)(iii)	1 frictional / inward force / resultant force insufficient (at higher speed)	B1
	2 tangential arrow at P in either direction, labelled S	B1

21. 0625_m19_ms_42 Q: 3

(a)	Accelerate or increase speed OR Decelerate or decrease speed OR Change speed	B1
	Change direction OR causes rotation	B1
(b)	Sensible scale stated	B1
	T vectors, labelled T or with arrow, both of same length, drawn at right angles (any orientation)	B1
	Triangle or parallelogram completed using candidate's T vectors	B1
	Correct orientation vector diagram with 360N vector vertical	B1
	T value stated: 250 or 260 N	B1

22. 0625_s19_ms_41 Q: 2

(a)	$(W =) mg$ OR $3.4 \times 10^3 \times 10$	C1
	$3.4 \times 10^4 \text{ N}$	A1
(b)(i)	moment = Fx in any form OR (moment) = Fx OR 0.50 (seen)	C1
	$3.4 \times 10^4 \times (1.8 - 1.3)$ OR $3.4 \times 10^4 \times 0.50$	C1
	$1.7 \times 10^4 \text{ N m}$	A1
(b)(ii)	1. (the point) where (all) the mass can be considered to be concentrated	B1
	2. $1.7 \times 10^4 / (1.3 + 0.70)$ OR $1.7 \times 10^4 / (2.0)$	C1
	$8.5 \times 10^3 \text{ N}$	A1
(c)	(moment / it) increases	B1
	perpendicular distance (between P and line of action of) W increases	B1

23. 0625_w19_ms_41 Q: 1

(a)(i)	$a = \Delta v / \Delta t$ or $a = (v - u) / t$ in any form words, symbols or numbers or $(a =) \Delta v / \Delta t$ or $(a =) (v - u) / t$ or $15(-0) / 5.0$ or $(a =)$ gradient	C1
	3.0 m / s^2	A1
(a)(ii)	$(F =) ma$ in any form words, symbols or numbers or $(F =) ma$ or 2300×3.0	C1
	6900 N	A1
(b)	accelerating or speed / velocity increasing at a decreasing rate or acceleration decreasing gradient (of graph is positive and) decreasing	B1 B1 B1
(c)	air resistance or friction mentioned or resistive force	B1
	air resistance or friction or resistive force increases (with speed)	B1

24. 0625_w19_ms_42 Q: 2

(a)	no resultant force OR forces are balanced OR all forces in opposite directions are equal OR forces cancel	B1
	no resultant {moment / torque / turning effect} OR (sum of) clockwise moment(s) = (sum of) anticlockwise moment(s)	B1
(b)(i)	1. down arrow labelled W at dashed line on 50 cm mark	B1
	2. up arrow labelled R at pivot	B1
(b)(ii)	expression / evaluation for one correct moment seen	C1
	expressions / evaluation for all correct moments seen	C1
	equation seen relating correct expressions / evaluations for moments: moment of 0.5 N + moment F = moment of W OR 90 F = 43 OR 0.9F = 0.43	C1
	(F = 43 / 90 OR 0.43 / 0.9 =) 0.48 N	A1
(b)(iii)	upwards force = downwards force	C1
	(R =) 1.2 N	A1

25. 0625_w19_ms_43 Q: 2

(a)(i)	moment = force × distance	C1
	moment = force × perpendicular distance	A1
(a)(ii)	turning effect owtte	B1
(a)(iii)	(quantity that has) magnitude <u>and</u> direction	B1
(b)	provides (anticlockwise) moment	M1
	total clockwise moment = total anticlockwise moment OR resultant turning effect = 0	A1

26. 0625_m18_ms_42 Q: 3

(a)	...(the) force × its <u>perpendicular</u> distance from pivot / a point	B1
(b)(i)	centre of mass	B1
(b)(ii)	(mass =) 160 / 10 = 16 kg	B1
(b)(iii)	(Not moving up or down because) no resultant (vertical) force OR upward force = downward force	C1
	80 N + 80 N = 160 N	A1
	(Not rotating because) no resultant moment (about any point) OR (sum of) clockwise moments = (sum of) anticlockwise moments	C1
	clockwise moment (about centre) = 80 × 1.2 anticlockwise moment (about centre) = 80 × 1.2	A1

27. 0625_w18_ms_41 Q: 1

(a)(i)1	$(4800 / 120 =) 40 \text{ m/s}$	B1
(a)(i)2	$(v =)$ gradient of any part of straight line	C1
	Value between 50 and 60 m/s	A1
(a)(ii)	At $t = 20 \text{ s}$, acceleration $>$ zero / acceleration is taking place / greater acceleration than at 100 s	B1
	At $t = 100 \text{ s}$, acceleration = zero / 0	B1
(b)(i)	$(F =) ma$ OR $5.6 \times 10^5 \times 0.75$	C1
	$4.2 \times 10^5 \text{ N}$	A1
(b)(ii)	Speed / velocity decreases (with time) OR slowing down OR negative acceleration OR Rate of decrease of speed / velocity	B1

28. 0625_w18_ms_41 Q: 2

(a)	$P \times 1.5$	B1
(b)(i)	$(W \times 1.0$ OR $210 \times 1.0 =) 210 \text{ Nm}$	B1
(b)(ii)	$P \times 1.5 = 210$ OR $P = 210 / 1.5$	C1
	140 N	A1
(b)(iii)	$P + Q = 210$ OR $140 + Q = 210$ OR $Q \times 1.5 = 210 \times 0.5$ OR $Q = 210 \times 0.5 / 1.5$ OR $P \times 0.5 = Q$	C1
	$Q = 70 \text{ N}$	A1

29. 0625_w18_ms_42 Q: 1

(a)(i)	$(v =)$ gradient or $1800 / 60$ or $900 / 30$	C1
	30 m/s	A1
(a)(ii)	$(v =) d/t$ or (average speed =) d/t OR $(2700 - 1800) / (120 - 60) = 900 / 60$	C1
	$(v =) 15 \text{ m/s}$	A1
(b)(i)	0 (m/s^2)	B1
(b)(ii)	$1.4 \times 10^4 \text{ N}$	B1
(c)	speed / velocity decreases (with time) or negative acceleration or deceleration	B1
	to zero (speed) / stationary	B1

30. 0625_m17_ms_42 Q: 1

(a)(i)	Constant positive or negative gradient, labelled A	B1
(a)(ii)	Decreasing positive or negative gradient, labelled B	B1
(b)(i)	Constant positive or negative gradient, labelled S	B1
(b)(ii)	Increasing positive or negative gradient, labelled T	B1
(c)	F = ma in any form OR (a =) F / m OR 56000 / 16000	C1
	3.5 (m/s ²)	C1
	a = (v – u) / t in any form OR v – u = at OR v = at OR at OR 3.5 × 16	C1
	56 m/s	A1
	Total:	8

31. 0625_m17_ms_42 Q: 3

(a)(i)	No resultant force/net force OR Forces are balanced OR Forces in opposite directions are equal OR Forces cancel	B1
(a)(ii)	no resultant/net moment/torque/turning effect OR (Sum of) clockwise moments = (sum of) anticlockwise moments	B1
(b)(i)	24 × 0.4 = 9.6 kN m OR 24 000 × 0.4 = 9600 N m	B1
(b)(ii)	T ₁ × 1.6	B1
	= 9.6 OR = 9600	C1
	(T ₁ =) 6 kN OR (T ₁ =) 6000 N	A1
(b)(iii)	T ₁ + T ₂ = 24 000 OR 6000 + T ₂ = 24 000	C1
	(T ₂ =) 18 000 N	A1
	OR	
	T ₁ + T ₂ = 24 OR 6.0 + T ₂ = 24	(C1)
	(T ₂ =) 18 kN	(A1)
	OR	
	T ₂ × 0.40 = 6000 × 1.2	(C1)
	(T ₂ =) 18 000 N	(A1)
	OR	
	T ₂ × 0.40 = 6.0 × 1.2	(C1)
(T ₂ =) 18 kN	(A1)	
	Total:	8

32. 0625_w17_ms_41 Q: 1

(a)(i)	Distance = area under graph OR $0.5 \times 20 \times 13$	C1
	130 m	A1
(a)(ii)	$(a =) (v - u) / t$ OR $(a =) v / t$ OR 13 / 20	C1
	0.65 m/s^2	A1
(a)(iii)	$(F =) ma$ OR 1200×0.65	C1
	= 780 N	A1
(b)	Acceleration decreases OR rate of increase of speed decreases OR speed increases at a lower rate	B1

33. 0625_w17_ms_41 Q: 2

(a)	Extension of a spring is (directly) proportional to load / force / weight OR $F = ke$ where e is extension	B1
(b)(i)	<u>Straight</u> line drawn from origin to (64 mm, 120 N)	B1
(b)(ii)	$F = ke$ in any form OR 120 / 64 OR 120 / 6.4 OR 120 / 0.064	C1
	c.a.o. 1.9 N / mm OR 19 N / cm OR 1900 N / m	A1
(c)	Above 120 N / at 140 N, the spring does not obey Hooke's law OR the extension is not proportional to the load / weight / force	B1
	The elastic limit / limit of proportionality of the spring has been exceeded	B1

34. 0625_w17_ms_42 Q: 2

(a)	accelerate / increase speed OR decelerate / decrease speed OR stop	B1
	change direction / move in a curve o.w.t.t.e.	B1
(b)	change of shape OR size	B1
(c)(i)	$F = ma$ in any form OR $(a =) F / m$ OR $(a =) 3500 / 1400$	C1
	$(a =) 2.5 \text{ m/s}^2$	A1
(c)(ii)	$a = (v - u) / t$ in any form OR $(t =) (v - u) / a$ OR $(t =) (30 - 0) / 2.5$ OR 30 / 2.5	C1
	$(t =) 12 \text{ s}$	A1
(c)(iii)	friction / air resistance / drag	B1

35. 0625_w17_ms_43 Q: 1

(a)(i)	$(x =) \frac{1}{2} vt$ or $\frac{1}{2} \times 12 \times 30$ or $(x =) \frac{1}{2} at^2$ or $\frac{1}{2} \times 0.40 \times 30^2$	C1
	180 m	A1
(a)(ii)	$(a =) \Delta v / t$ or 12 / 30	C1
	0.40 (m/s^2) or 12 / 30	C1
	$(F =) ma$ or $2.0 \times 10^4 \times 0.40$ or $2.0 \times 10^4 \times 0.40 \times 12 / 30$	C1
	8000 N	A1
(b)	drag / friction / air resistance mentioned	C1
	drag / friction / air resistance increases (as speed increases)	A1