Paper: 1MA1/2H				
Question	**Working**	**Answer**	**Mark**	**Notes**
10 (a)		0 to 20 seconds	B1	for between 0 seconds and 20 seconds
Q1		with reason	C1	for reason given eg gradient is greatest oe
(b)		18	B1	ft from (a)

Paper: 1MA1/3H				
Question	**Working**	**Answer**	**Mark**	**Notes**
18 (a)	values 0, 2, 5, 10,18	130	M1	for starting to find area under the curve, eg 0.5×5×2 (= 5)
Q2			M1	for a complete method to find the area under the curve using 4 strips of equal width, eg "5" + 0.5×5×(2+5) (= 17.5) + 0.5×5×(5+10) (= 37.5) + 0.5×5×(10+18) (= 70)
			A1	for 130 or answer in range 130.1 to 132 supported by accurate working
(b)		overestimate with reason	C1	for "overestimate" and appropriate reason linked to method eg area between trapeziums and curve also included

Paper: 1MA1/3H				
Question	**Answer**	**Mark**	**Mark scheme**	**Additional guidance**
15 (a)	488 to 507	M1	for method to find area of one strip using trapezia, eg $\frac{1}{2} \times 5 \times 22$ (= 55) or $\frac{1}{2} \times 5 \times (22 + 28)$ (= 125) or $\frac{1}{2} \times 5 \times (28 + 32)$ (= 150) or $\frac{1}{2} \times 5 \times (32 + 35)$ (= 167.5) **OR** for a method to find an estimate for the area using rectangles eg 5×22 or 5×28 or 5×32 or 5×35	May use area of triangle + area of rectangle for the second, third and fourth strips – lengths must be correct. May use triangle for first strip, $\frac{1}{2} \times 5 \times 22$
Q3		M1	for complete and correct method to find the area using four strips, eg $\frac{1}{2} \times 5 \times 22 + \frac{1}{2} \times 5 \times (22 + 28) + \frac{1}{2} \times 5 \times (28 + 32)$ $+ \frac{1}{2} \times 5 \times (32 + 35)$ or $5 \times 22 + 5 \times 28 + 5 \times 32 + 5 \times 35$	May use triangle for first strip, $\frac{1}{2} \times 5 \times 22$
		A1	for answer in the range 488 to 507 (SC B1 for using area under the curve)	
(b)	Underestimate (supported)	C1	(dep M1) for underestimate since parts not included below the graph **OR** ft their method	

Paper: 1MA1/3H				
Question	**Answer**	**Mark**	**Mark scheme**	**Additional guidance**
16 (a) **Q4**	129 to 160	M1 A1	for a method to find an estimate for the area under the curve eg $0.5 \times 30 \times 9$ for value in the range 129 to 160 (If M0, SC B1for 126 or 127.5)	Do not accept 30×9 Award full marks for any correct method leading to a better estimate.
(b)	underestimate with reason	C1	(dep M1) for "underestimate" and appropriate reason linked to their method, eg area between triangle and curve not included	
(c)	Explanation	C1	for explanation, **Acceptable examples** method gives average acceleration (in first 60 seconds) he has not used/drawn a tangent (at time 60 seconds) he has not worked out the gradient (at time 60 seconds) **Not acceptable examples** he has not used strips he has calculated it accurately rather than using an estimate the estimate of 13 should be about 4.4 the answer should be approximately 0.073	

Paper: 1MA1/2H				
Question	**Answer**	**Mark**	**Mark scheme**	**Additional guidance**
3 (a)	80	M1	for a complete method eg $\frac{20}{15} \times 60$ **or** 20×4 **or** $20 \div \frac{1}{4}$	
		A1	cao	
(b)	Travel graph	M1	for method to find distance travelled in last 20 minutes, eg $75 \times \frac{20}{60}$ (= 25)	Can be implied by a distance of 25km drawn on the graph
Q5		C2	for a fully correct travel graph	
		(C1	for horizontal straight line from (10 15, 20) to (10 25, 20) **or** for a line of the correct length and gradient to indicate a speed of 75km/h eg a straight line from (10 25, 20) to (10 45, 45))	

Paper: 1MA1/3H				
Question	**Answer**	**Mark**	**Mark scheme**	**Additional guidance**
21 (a)	19.1	M1	for a method to find an estimate for the area of at least 1 trapezium under the curve eg $0.5 \times 1 \times (4 + 6)$ or $0.5 \times 1 \times (6 + 7.2)$ or $0.5 \times 1 \times (7.2 + 7.8)$	
Q6		M1	for a complete method eg $0.5 \times 1 \times (4 + 6) + 0.5 \times 1 \times (6 + 7.2) + 0.5 \times 1 \times (7.2 + 7.8)$ or $0.5\{(4 + 7.8) + 2(6 + 7.2)\}$	Allow a maximum of 2 errors in y values used
		A1	cao	Ignore any reference to units
(b)	Statement	C1	eg distance (travelled)	If units are given they must be correct

Paper: 1MA1/2H				
Question	**Answer**	**Mark**	**Mark scheme**	**Additional guidance**
21 (a) **Q7**	52.5	P1	starts to find area under graph, eg $\frac{30\times12}{2}$ (=180) **or** 50 × 12 (=600) **or** $\frac{20\times12}{2}$ (=120)	
		P1	complete process to find area under graph, eg $\frac{30\times12}{2}+50\times12+\frac{20\times12}{2}$ (= 900)	
		P1	starts process to find half way time, eg (("900" ÷ 2) – 180) ÷ 12 (=22.5)	
		A1	52.5 oe	
(b)	Comparison	C1	acceptable comparison **Acceptable** (acceleration) during first part is positive but (acceleration) during last part is negative / deceleration (acceleration is) greater during the last part than during the first part gradient is steeper in the last part / longer to speed up than slow down speed / (acceleration) is increasing at start and decreasing at end (acceleration) is slower in the first part (acceleration) is ascending in the first part and descending in the last part 0.4 is the first part and –0.6 in the last part **Not acceptable** goes down in the last part speed is greater in last part than first part	