

1)	2	(a) (i) 4 (ii) 5 (iii) 4.75  (b) $\frac{190 + 3n}{40 + n}$	1 1 3  2	  <b>M1</b> for $1 \times 2 + 1 \times 3 + 17 \times 4 + 12 \times 5 + 6 \times 6 + 3 \times 7$ condone one slip <b>then M1</b> dependent result (190) $\div$ 40  <b>SC1</b> for their $190 + 3n$
2	(a)	(Mode) = 11 (Median) = 12.5  (Mean) = 12.8 (0 ....)	1 2 3	<b>B1</b> <b>M1</b> for evidence of finding mid-value e.g. $(126 + 1) \div 2$ oe, (condone $126 \div 2$ ) <b>M1</b> for correct use of $\Sigma fx$ (allow one slip) <b>M1</b> (dependent) for $\div 126$
	(b) (i)	15, 27, 30, .....	3	<b>B1 B1 B1</b>
	(ii)	9.67 (9.674 to 9.675) cao      www 4	4	<b>M1</b> for mid-values, condone one error or slip <b>M1</b> for use of $\Sigma fx$ , with $x$ 's anywhere in intervals and their frequencies (allow one slip) <b>M1</b> (dependent on second M) for $\div 126$ (or their $\Sigma f$ ) isw any conversion into hours and minutes
3)	6 (a)	32.5      cao      www4	4	<b>M1</b> for mid-values seen <b>M1</b> for use of $\Sigma fx$ with $x$ 's anywhere in each interval $(10 \times 15 + 30 \times 30 + 20 \times 45)$ <b>M1</b> $\div 60$ dependent on second M1
	(b)	Histogram drawn	3	<b>B1</b> Bars correct positions and widths – no gaps <b>B2</b> Heights of bars 1, 1.5 and 2 ( <b>B1</b> for any two correct or for heights in the ratio 2:3:4)
4)	8	14.2  14 13  (b) (i) 21, 30, 15 (ii) 20      20      10      (10) 1.05      1.5      1.5      (0.9)  (c) $\frac{10 \times 2.5 + 12 \times 3 + 4n}{10 + 12 + n} (= 3.1)$  multiplying across and collecting terms  ( $n =$ ) 8      www 4	3  2 1  2 3  M2  M1 A1	M1 for $\Sigma fx$ $(10 \times 11 + 8 \times 12 + 16 \times 13 + 11 \times 14 + 7 \times 15 + 8 \times 16 + 6 \times 17 + 9 \times 18)$ (1065) (allow one error or omission) M1dep for $\div \Sigma f (10 + 8 + 16 + 11 + 7 + 8 + 6 + 9)$ (75) (allow one further error or omission)  M1 for 37th, 37.5th or 38th seen  B1 for 2 correct 1, 1, 1 for each correct vertical pair  M1 for either numerator or denominator seen  dep on linear numerator and denominator their $(68.2 - 25 - 36) =$ their $(4 - 3.1) \times n$

5)

5)	<b>6 (a)</b>	(i) $45 < t \leq 55$	1	Allow any indication e.g. 4 <sup>th</sup> interval
		(ii) 52.6 (52.63.....)      www 3	3	M1 for $6 \times 10 + 15 \times 27.5 + 19 \times 40 + 37 \times 50 + 53 \times 62.5 + 20 \times 75 (= 7895)$ Allow 1 error/omission and M1 dep for $\div 150$
	<b>(b)</b>	(i) 40, 77, 130, 150	2	B1 for 2 or 3 correct values
		(ii) Correct scales 6 correct plots ft	S1 P3ft	ft from (i) if increasing values. (35, 21) must be inside square $20 - 22$ but (55, 77) may be inside or edge of square P2 for 4 or 5 correct plots ft P1 for 2 or 3 correct plots ft
		Curve or ruled lines through the 6 points	C1ft	ft their points if increasing condone graph starting at (20, 6)
	<b>(c)</b>	(i) 54 to 55	1	
		(ii) $18.5 - 22.5$	2	B1 for $UQ = 62.5$ to $65$ or $LQ = 42.5$ to $44$ seen
		(iii) Their reading at 60 – their reading at 50	1	
		(iv) $\frac{150 - \text{their reading at } 50 (\pm 2)}{150}$ oe	2	SC1 for $\frac{\text{their reading at } 50 (\pm 2)}{150}$ oe
		(v) If their (iv) is $\frac{k}{150}$ , then ft their $\frac{k}{150} \times \frac{k-1}{149}$	2ft	In (iv) and (v), condone answers as decimals to 3 sf Penalise first occurrence only of 2sf decimals isw cancelling/conversion M1 for $\frac{k}{150} \times \frac{k-1}{149}$

6)

6)	<b>6 (a)</b>	(i) 5.8	1	
		(ii) 4.6 to 4.65	1	
		(iii) 2.35 to 2.5	1	
		(iv) 172 or 171	2	SC1 for 28 or 29
	<b>(b)</b>	(i) 72 to 76, 38 to 42	2	Must be integers. B1 either.
		(ii) Their correct $\Sigma fx \div 200$	4	M1 for 3 or 4 correct mid-values seen 2, 5, 6.5, 8.5 M1 for $\Sigma fx$ , ft their frequencies and $x$ anywhere in interval, including boundaries $36 \times 2 + (72 \text{ to } 76) \times 5 + (38 \text{ to } 42) \times 6.5 + 50 \times 8.5$ M1 for $\div 200$ or their 200 (dependent on second M1) (74, 40 give 1127 then 5.635 (or 5.64 or 5.63)) Other pairs of frequencies from (b)(i) must have a sum of 114 to gain the A mark.
		(iii) $p \div 2, q$ , where $p, q$ are from (b)(i)	2ft	B1 either ft (ft their table)
		Histogram with two new columns of correct width		
		Two correct heights	2ft	B1 ft (ft their freq. densities)