1.

	$11 \times 6\ (=66)$ **or** $\frac{16+15+3+2+9+x}{6}=11$		3	M1	for a correct calculation for the total **or** a correct equation for the last card eg using 'x'
	$16+15+3+2+9+x=$ "66" oe eg $45+x=$ "66" **or** "66" $-(16+15+3+2+9)$			M1	for a correct equation for 'x' with no fraction **or** a correct calculation for the number on the last card
	Correct answer scores full marks (unless from obvious incorrect working)	21		A1	if the answer line is blank, check the card
					Total 3 marks

2.

	2 **and** 7 correctly identified		2	M1	may also identify median (4)
	Correct answer scores full marks (unless from obvious incorrect working)	5		A1	
					Total 2 marks

3.

	for $k=18$ or eg $(8+j)\div 2=10$ or $(j=)\ 10\times 2-8$ or $8+j=2\times 10$ or $j=12$ or eg $k-h=13$ or "18" $-h=13$ or $h=5$		3	M1	For a correct value for h, j or k or for a correct statement for one of these
	for two of the above			M1	for 2 correct values from h, j or k or for 2 correct statements for them
	Correct answer scores full marks (unless from obvious incorrect working)	$h=5$ $j=12$ $k=18$		A1	All correct
					Total 3 marks

4.

	$4\times 11\ 800\ (=47\ 200)$ or $3\times 13\ 207\ (=39\ 621)$ or 86 821		3	M1	for one correct product or for the sum of the products
	$\frac{"47\ 200"+"39\ 621"}{7}\left(=\frac{86821}{7}\right)$			M1	for a fully correct method to find the mean for the 7 days
	Correct answer scores full marks (unless from obvious incorrect working)	12 403		A1	cao
					Total 3 marks

5.

		$(x=)\ 11$ (and) $(y=)\ 14$	2	B2 (B1 SC B1 for $x=14$ and $y=11$	for $x=11$ and $y=14$ for $x=11$ or $y=14$)
					Total 2 marks

6.

(a)		$25 < m$ „ 30	1	B1 Allow $25 < m < 30$ or $25 - 30$ oe
(b)	$2.5\times 8 + 7.5 \times 2 + 12.5 \times 6 + 17.5 \times 4 + 22.5 \times 12 + 27.5\times 18$ $(= 20 + 15 + 75 + 70 + 270 + 495)$ [total using lower boundary = 820 (gains M1)] [total using upper boundary = 1070 (gains M1)]		3	M2 For correct products using midpoints (allowing one error) with intention to add. M1 for products using frequency and a consistent value within the range (allowing one error) with intention to add or correct products using midpoint without addition.
	Working not required, so correct answer scores full marks (unless from obvious incorrect working)	945		A1 An answer of 18.9 gains M2 only [mean from lower boundary = 16.4 (M1)] [mean from upper boundary = 21.4 (M1)]
				Total 4 marks

7.

			2	M1 For identifying 4 and 13 (may also indicate 8 as part of their working)
	Working not required, so correct answer scores full marks (unless from obvious incorrect working)	9		A1
				Total 2 marks

8.

	$15 \times 5 + 45 \times 6 + 75 \times 8 + 105 \times 9 + 135 \times 2$ **or** $75 + 270 + 600 + 945 + 270$ [lower bound products are: 0, 180, 480, 810, 240] [upper bound products are: 150, 360, 720, 1080, 300]		3	M2 for correct products using midpoints (allow one error or omission) with attempt to add (M1 for products using a consistent value within range and attempt to add **or** for at least 4 correct products without addition)
	Correct answer scores full marks (unless from obvious incorrect working)	2160		A1 (an answer of 72 loses the final A mark but gains M2)
				Total 3 marks

9.

	Correctly identifying 15 and 25		2	M1 could be clearly shown in list (condone 19 also being indicated)
	Correct answer scores full marks (unless from obvious incorrect working)	10		A1
				Total 2 marks

10.

(a)	20 20 22 23 25 26 26 27 28 29 29		3	M1 for ordering the numbers Allow one omission or error in the list
	22 and 28 identified for LQ and UQ eg 20 20 <u>22</u> 23 25 26 26 27 <u>28</u> 29 29			M1 for identifying 22 **and** 28 (22 **and** 28 implies the first M1)
	Correct answer scores full marks (unless from obvious incorrect working)	6		A1
(b)		<u>Akari</u> and reason using IQR	1	B1 ft from part (a) Akari as the IQR is lower/smaller oe (IQR must be part of the statement) Must have a value in (a) to compare the IQRs
				Total 4 marks

11.

	$6 \times 11 + 18 \times 25 + 30 \times 23 + 42 \times 15 + 54 \times 6$ (= 2160) **or** 66 + 450 + 690 + 630 + 324 (= 2160) [lower bound products are: 0, 300, 552, 540, 288] [upper bound products are: 132, 600, 828, 720, 360]		4	M2 for at least **4** correct products added (need not be evaluated) **or** If not M2 then award: M1 for consistent use of value within interval (including end points) for at least **4** products which must be added or correct midpoints used for at least **4** products and not added
	"2160" ÷ "80"			M1 dep on at least M1 Allow division by their Σf provided addition or total under column seen
	Correct answer scores full marks (unless from obvious incorrect working)	27		A1
				Total 4 marks

12.

(a)		$48 < S \leqslant 54$	1	B1	Allow 48 – 54 oe
(b)	$(33 \times 4) + (39 \times 14) + (45 \times 18) + (51 \times 19) + (57 \times 5)$ or 132 + 546 + 810 + 969 + 285 (= 2742) [lower bound products are: 120, 504, 756, 912, 270] [upper bound products are: 144, 588, 864, 1026, 300]		4	M2	M2 for at least **4** correct products added (need not be evaluated) **or** If not M2 then award: M1 for consistent use of value within interval (including end points) for at least **4** products which must be added or correct midpoints used for at least **4** products and not added
	$\frac{"2742"}{60}$			M1	dep on M1 Allow division by their Σf provided addition or total under column seen
	Correct answer scores full marks (unless from obvious incorrect working)	45.7		A1oe	$45\frac{7}{10}$ or $\frac{457}{10}$ (accept 46 from correct working)
					Total 5 marks

13.

		(x =) 3	3	B1
		(y =) 6		B1
		(z =) 10		B1
				Total 3 marks

14.

			3	M1	4 and 34 clearly indicated – either in list or in working (condone 26 also indicated in list)
				A1	For IQR for team **A** = 34 – 4 (= 30)
		The IQR for Team **B** was higher than the IQR for Team **A** oe or Team **B** had an interquartile range of "12" more than team **A** **or** The runs scored were more spread out for Team **B** than for Team **A** oe **or** The runs for Team **A** were more consistent oe		B1ft	Must ft dep on IQR stated for team **A** Either comparing the IQR correctly or for giving a comparison in context about spread as long as not contradicted by further statements as this would be choice **NOT** Team **B** scored more runs than team **A** The average score of **B** is higher than the average score of **A** The IQR of **A** was 30 while the IQR of **B** was 42 The range of **B** was more than the range of **A**
					Total 3 marks

15.

	55×32 (= 1760) **or** 52×28 (= 1456) **or** $55 \times 32 + 52 \times 28$ (= 3216)		3	M1	for one correct product or method to find the total mark for both classes
	eg $\frac{"1760"+"1456"}{32+28}$ **or** $\frac{3216}{60}$			M1	for a complete method
	Correct answer scores full marks (unless from obvious incorrect working)	53.6		A1	
					Total 3 marks

16.

(a)	11 – 2		2	M1	2 and 11 clearly identified either in list or stated
	Working required	9		A1	dep on M1
(b) (i)		Kim as she has a higher median	1	B1	oe, ft their median if value given **Acceptable examples** Kim as she has a higher median Kim as/because her median is 11 and/but/whereas Rutger's is 8 Kim's median is 3 more (than Rutger's) Kim as Rutger's median is 3 less **Not acceptable examples** Kim's median is 11 and Rutger's is 8 Kim as she has a higher median and a lower IQR
(ii)		Kim as she has a smaller IQR	1	B1	oe, ft their part (a) **Acceptable examples** Kim as she has a smaller IQR Kim as/because her IQR is 5 and/but/whereas Rutger's is 9 Kim's IQR is 4 less (than Rutger's) Kim as Rutger's IQR is 4 more **Not acceptable examples** Kim's IQR is 5 and Rutger's is 9 Kim as she has a higher median and a lower IQR
					Total 4 marks

17.

(a)		(5), 8, 8, 20, x, (24)	3	B3	for (5), 8, 8, 20, x, (24) where $x = 21$ **or** 22 **or** 23
				(B2	for (5), 8, 8, 20, x, (24) where x is blank or **any** value other than 21, 22 or 23)
				(B1	for a list with a median of 14 **or** a mode of 8 **or** the 3rd and 4th cards having a sum of 28 (ignoring other cards))
(b)	eg 5×21 (= 105) **or** 6×23 (= 138)		3	M1	
	eg $6 \times 23 - 5 \times 21$			M1	
		33		A1	
					Total 6 marks

18.

	$(0\times13)+1\times17+2\times8+3x+4\times11$ or $(0+)\ 17+16+3x+44\ (=77+3x)$			M1	at least **3** correct products with intention to add. eg award for 77 seen as this is sum of 3 products
	$(13+17+8+x+11)$ oe eg $49+x$ **or** $98+2x$			M1	Sum for total frequency or (frequency × 2)
	$\frac{"77+3x"}{"49+x"} = 2$ oe e.g. $"77+3x" = 2("49+x")$			M1	for use of mean in valid equation (ft their values for sum of products and their total frequency if M2 awarded previously)
		21		A1	
					Total 4 marks

19.

	5 5 7 8 10 12 13 14 16 21 23		3	M1	For ordering the numbers Allow one error or omission in the list.
	16 & 7 identified for LQ and UQ			M1	For identifying 16 and 7 – may also have identified the median (12)
		9		A1	
					Total 3 marks