

Q1. (2018)

15	Men had more consistent scores than women	B1	
	Additional Guidance		

Q2. (2020)

(A)

Q	Answer	Mark	Comments
5(a)	Plots at least 3 points correctly	M1	$\pm \frac{1}{2}$ square
	All four points correctly plotted and joined	A1	$\pm \frac{1}{2}$ square ignore working for part (b)
	Additional Guidance		
	$\pm \frac{1}{2}$ square means half a small square horizontally and vertically		
	If a point is within tolerance the line must be within $\pm \frac{1}{2}$ square of their point		
	Mark intention for joining point to point		

(B)

Q	Answer	Mark	Comments
5(b)	[70, 78]	B1	
	Additional Guidance		
	Answer in range with or without working, with no graph or incorrect graph		B1
	70.5 – 75 on answer line (both values in range)		B1

Q3. (2020)

(A)

Q	Answer	Mark	Comments
17(a)	[82.5, 83.5]	B1	
	Additional Guidance		

(B)

Q	Answer	Mark	Comments
17(b)	156	B1	accept 155 or 157
	their $156 \times (0.)32$ or 4992 or 49.92 and $(200 - \text{their } 156) \times (0.)39$ or $44 \times (0.)39$ or 1716 or 17.16	M1	$0 < \text{their } 156 < 200$ but their 156 cannot be 90 6708 implies B1M1
	67.08	A1ft	ft their 156
	Additional Guidance		
	155 $155 \times 0.32 + 45 \times 0.39$ $= 49.60 + 17.55$ $= 67.15$	B1 M1 A1	
	157 $157 \times 0.32 + 43 \times 0.39$ $= 50.24 + 16.77$ $= 67.01$	B1 M1 A1	
	158 $158 \times 0.32 + 42 \times 0.39$ $= 50.56 + 16.38$ $= 66.94$	B0 M1 A1ft	
	90 $90 \times 0.32 + 110 \times 0.39$ $= 28.80 + 42.90$ $= 71.70$	B0 M0 A0	

Q4. (2023)
(A)

Q	Answer	Mark	Comments
14(a)	Alternative method 1 Works out best estimate of the percentage of employees with hourly rate more than £17		
	$32 \div 2$ or 16	M1	oe implied by 41 or 82
	$(15 + 10 + \text{their } 16) \div 123$ or $41 \div 123$ or $\frac{1}{3}$ or 0.33(...) or $(66 + \text{their } 16) \div 123$ or $82 \div 123$ or $\frac{2}{3}$ or 0.66(...) or 0.67	M1dep	oe eg $(123 - 66 - \text{their } 16) \div 123$ or $13(0...)(\%) + [12, 12.2](\%) + 8(1...)(\%)$
	$33(3...)(\%)$	A1	oe eg 0.33(3...) and 0.3 allow 33.2(%) from $13(\%) + 12.2(\%) + 8(\%)$ SC3 37 (or 36.9) and explains that a minimum of 12 of 32 people earn more than £17
	Alternative method 2 Compares best estimate of the number of employees with hourly rate more than £17 with 30% of number of employees		
	$32 \div 2$ or 16	M1	oe implied by 41 or 82
	0.3×123 or 36.9 or 0.7×123 or 86.1	M1	oe accept 36 or 37 for 36.9 accept 86 or 87 for 86.1
	41 and 36.9 or 82 and 86.1	A1	accept 36 or 37 for 36.9 accept 86 or 87 for 86.1 SC3 37 (or 36.9) and explains that a minimum of 12 of 32 people earn more than £17

14(a) cont	Alternative method 3 Shows that a value of x gives a percentage $> 30\%$		
	$(15 + 10 + x) \div 123$ where $12 \leq x \leq 32$	M2	oe eg $(25 + x) \div 123$ must see 15 and 10 or 25
	$(15 + 10 + x) \div 123$ where $12 \leq x \leq 32$ and evaluates $(15 + 10 + x) \div 123 \times 100$ correctly	A1	evaluations rounded or truncated to nearest integer or better SC3 37 (or 36.9) and explains that a minimum of 12 of 32 people earn more than £17
	Alternative method 4 Shows a number of employees that gives a percentage $> 30\%$		
	0.3×123 or 36.9	M1	oe accept 36 or 37 for 36.9
	$15 + 10 + x$ or $25 + x$ where $12 \leq x \leq 32$	M1dep	must see 15 and 10 or 25
	36.9 and evaluates $15 + 10 + x$ correctly where $12 \leq x \leq 32$	A1	accept 36 or 37 for 36.9 SC3 37 (or 36.9) and explains that a minimum of 12 of 32 people earn more than £17
	Additional Guidance		
	Up to M2 may be awarded for correct work with no answer or incorrect answer, even if this is seen amongst multiple attempts		
	16 may be seen by the table		
	Alt 1 67% needs further explanation to score A1		
	Ignore irrelevant working in an otherwise fully correct response		
	For the SC3, minimum of 12 may be implied by an explanation that $10 + 15 + x$ is at least 37 or $25 + x$ is at least 37		
	Responses involving interpolation should be escalated		

(B)

Q	Answer	Mark	Comments
14(b)	Valid reason	B1	eg all employees in the second interval may earn less than £17
	Additional Guidance		
	Fewer than 12 employees could earn more than £17 per hour		B1
	Only 10 might get more than £17 in second class interval (10 could be replaced by any integer from 0 to 11 inclusive)		B1
	More than 12 in group 2 earn less than £17		B0
	Everyone in second group may earn 14 or 15 or 16		B1
	21 people may earn between £14 and £17 (21 could be replaced by any integer from 22 to 32 inclusive)		B1
	More people may earn between £14 and £17		B0
	People in the 14 to 20 group aren't evenly distributed		B0
	Not everyone in 14 – 20 earns more than £17		B0
	Not many in second group may get more than £17		B0
	Some of second group may get more than £17		B0
	14 to 20 includes people who get less than £17		B0
	2nd group includes some getting less than 17 and some getting more than 17		B0
	We don't know what each person earns		B1
	We don't know how many of 2nd group earn less than £17 per hour		B1
	Under £17 isn't in the data		B1
	Grouped data or it is only an estimate or using midpoints or data is wrong		B0
	Ignore irrelevant working but do not ignore incorrect working		

(C)

Q	Answer	Mark	Comments
14(c)	12 × 66 or 792 and 17 × 32 or 544 and 30 × 15 or 450 and 70 × 10 or 700	M1	oe implied by 2486 may be seen by the table allow one product or fx value to be incorrect
	(their 792 + their 544 + their 450 + their 700) ÷ 123 or 2486 ÷ 123	M1dep	oe eg $\frac{792+544+450+700}{66+32+15+10}$ condone bracket error if working seen eg 792 + 544 + 450 + 700 ÷ 123
	20.2(1...)	A1	allow 20.20 if M2 seen and no errors
	Additional Guidance		
	Four values with three correct from 792, 544, 450, 700 can score up to M2 if they add and divide by 123		
	Correct products or values seen but a different method used eg 123 ÷ 4		M0M0
	20.2(1...) in working with answer given as the interval $20 \leq p < 40$		M2A0
	Ignore any references to statement B eg £20.21 which makes B wrong		M2A1
	Condone $20.\dot{2}$, $20.\dot{2}1$ etc for $20.\dot{2}113\dot{8}$		
	Do not allow rounding of any of their 4 values in the second mark eg 792 544 450 700 (800 + 544 + 450 + 700) ÷ 123		M1 M0

(D)

Q	Answer	Mark	Comments
14(d)	Valid reason referring to the distribution	B1	eg 98 employees earned below £20
	Additional Guidance		
	Less than a half earned more than £20		B1
	Over a half earned between £10 and £14		B1
	Lots earned 10 to 14		B0
	Only 25 people were over £20		B1
	25 people were over £20		B0
	Not many earned more than the mean		B0
	Most earned less than £20		B1
	Some earned less than the mean, some earned more		B0
	Mean is not a real amount of money		B0
	Median is between £10 and £14		B1
	Median is better or mode is better		B0
	Modal class is $10 \leq p < 14$		B1
	The mode is between £10 and £14 (condone mode as modal class)		B1
	We don't know what each person earns		B0
	Grouped data or it is only an estimate or using midpoints or data is wrong		B0
	The range is large		B0
	The data has extreme values or outliers or anomalous values		B1
	The data is (positively) skewed		B1
	The distribution is not symmetrical		B1
	The distribution is not evenly spread		B1
	Not representative		B0
	Lots of low values or high values can make the mean inaccurate		B0
	Ignore irrelevant working but do not ignore incorrect working		