Q	Answer	Mark	Comments
1a	discrete **and** quantitative	B2	B1 for 1 correct word if only one word circled or B1 for both correct words and one other circled or B1 for one correct word and at most one incorrect word circled

Q	Answer	Mark	Comments
1b	Lowest 50 and highest 99	B1	
	Lower quartile 65	B1	
	Median 75	B1	
	Upper quartile 82	B1	

Q	Answer	Mark	Comments
1c	Both fully completed box plots drawn accurately with at least one labelled	B3 ft	±½sq ft their values for Paper 2 B2 One fully completed box plot drawn accurately and labelled or both box plots correct but no labels B1 one box plot fully correct with no label or both boxes (median and quartiles box) correctly drawn (no label needed)

Additional Guidance

Ignore whiskers extended into box

Whiskers do not need end lines

Any height of box is allowed

If boxes overlap mark to scheme if clear which is which

Q	Answer	Mark	Comments
1d	Comparing equivalent values median, IQR/width of box, range, both quartiles, lowest value, highest value, particular parts of distribution Eg On Paper 2 there were more students who got 90+ On Paper 2 nobody got under 50 marks but on Paper 1 one person did On Paper 1 there were fewer students who got under 70 marks The average was higher on Paper 2	M1	ft correct conclusion for their Paper 2 median If they do not draw both boxes then they must show values for IQR and/or range
	compares median in context eg the median was higher on Paper 2 so on average they did better on Paper 2 eg the average mark was higher on Paper 2 so they did better on this paper	A1ft	ft correct conclusion for their medians
	Compares spread in context Eg the IQR was smaller so the marks were more consistent on Paper1	A1ft	ft correct conclusion for their quartiles/width of box They can use the IQR or the range

1d	**Additional Guidance**
	Only award A marks for comparison of median and IQR in context.
	For the comparison of spread they must mention the word consistent or variation in results/more varied etc
	Eg 1 Paper 2 had a higher median M1 A0A0
	Eg 2 The box was wider on paper 2 so the marks on Paper 1 were more consistent M1A1
	Eg 3 The median was higher on Paper 2 so on average they did better on Paper 2. They were more consistent on Paper 1. M1A1A0 (no evidence to back up consistent)
	Eg 4 The median was higher on Paper 2 so on average they did better on Paper 2. The smaller IQR on Paper 1 shows they were more consistent on Paper 1. M1A1A1
	Eg 5 They had a better success rate on paper 2 as the median was higher M1A1
	Eg 6 There was a wider range of marks on Paper 2 M1A0A0

Q	Answer	Mark	Comments
2	**Alternative method 1**		
	$22.5(0) \times 1.2$ or $\frac{20}{100} \times 22.5(0) + 22.5$ or 10% of $22.5(0) = 2.25$ **and** $2.25 \times 2 + 22.5$ or 27 seen	M1	oe
	their $27 \div 0.9$	M1	oe
	30	A1	Not 30% SC1 29.70
	Alternative method 2		
	$0.9 \div 1.2$ or 0.75	M1	or $1.2 \div 0.9$ or $1.33….$
	$22.5(0) \div$ their 0.75	M1	$22.5(0) \times$ their $1.33…$
	30	A1	Not 30%
	Additional Guidance		
	If 1.3 is seen do not assume it is from $1.2 \div 0.9$. It is more likely to be from adding 10% and 20%. In this case $22.5(0) \times 1.3 = 29.25$ is M0		

Q	Answer	Mark	Comments
4a	Full explanation eg Yes as it takes the sample in proportion to the number of girls and boys or Yes as there are more girls than boys in year 12 so the sample will have more girls than boys or Yes as it is (more) representative of the number of girls and boys or Yes as it is representative of the population or Yes as the ratio of girls to boys in the sample is the same as in the year group	B2	B1 partial explanation eg Yes as there are more girls than boys Yes as it is more representative
	Additional Guidance		
	Yes may be implied , eg It is, because….. Answer of No is B0 Reference to not using other year groups is B0		

Q	Answer	Mark	Comments
4b	Number the girls	B1	Not 'Number the girls from 1 to 34'
	Use a random number generator/button/ tables	B1	
	Use the first 34 different numbers (within the range) or Use the first 34 numbers ignoring repeats	B1	SC2 Number each girl, put all the numbers in a hat/box etc and pick out 34 oe
	Additional Guidance		
	Put all the girls names in a hat and pick out 34 is B0		

4c	Cluster	B1	Accept convenience

Q	Answer	Mark	Comments
6	**Alternative method 1**		
	31 785 + 10 600 or 42 385	M1	Calculating threshold for 40% tax Condone 31 876 + 10 600 or 42 386
	their 42 385 – 39 500 or 2885	M1	Calculating extra salary for 20% tax and 12% N.I
	43 500 – 42 385 or 1115	M1	Calculating amount charged at 40% tax and 2% N.I
	their 2885 × 0.2 + their 1115 × 0.4 or 577 + 446 or 1023	M1	Tax Allow 577.20 from 31876 used
	their 2885 × 0.12 + their 1115 × 0.02 or 346.2(0) + 22.3(0) or 368.5(0)	M1	N.I Allow 346.32 from 31876 used
	(£)1023 **and** (£)368.5(0) or (£) 1023.20 **and** (£)368.62 or (£)1391.5(0) or (£)1391.82	A1	extra tax and extra N.I.
	(43500 – 39500) – their 1023 – their 368.5(0) or (£)2608.50 or (£)2608.18	M1	or their 1023 + their 368.5(0) + 12 × 150 or 3191.5(0) or 3191.82
	their (£)2608.5(0) ÷ 12 or their (£)2608.18 ÷ 12	M1	43500 – 39500 or 4000
	217.(..) per month **and** Yes or 67 extra or 150 × 12 =1800 and 2608.5(0) **and** Yes or 4000 **and** 3191.(50) **and** Yes or 4000 **and** 3191.(82) **and** Yes	A1ft	ft their increase in net pay per month/year compared with travel costs per month/year

Additional Guidance
Allow use of 31785 or 31786 for upper tax limit
Ignoring higher tax limit and taxing all at 20% can gain max 7 marks (loses 4th M1 and 1st A1)
Ignoring higher NI or only needing to use 12% can gain max 7 marks (loses 5th M1 and 1st A1)
Ignoring both higher limits can gain max 6 marks
For premature rounding allow all method marks
1023 or 577 + 446 implies the first 4 method marks
368.5(0) or 346.2(0) + 22.3(0) implies first 3 and 5th method marks

Q	Answer	Mark	Comments
6	**Alternative method 2**		
	43 500 – 10 600 or 32 900	M1	taxable income
	(32 900 – 31786) × 0.4 + 31786 × 0.2 or 445.6(0) + 6357.2(0) or 6802.8	M1	calculating annual tax Allow 31785 used giving 446 + 6357 or 6803
	their 6802.8 ÷ 12 or 566.9(.)	M1	monthly tax
	43500 ÷ 12 or 3625	M1	monthly gross pay
	(their 3625 – 3532) × 0.02 or 1.86 or (3532 – 672) × 0.12 or 343.2(0) or 345.(..)	M1	N.I at 2% or 12%
	3625 – (their 566.9(0) + their 1.86 + their 343.2(0))	M1	Total tax and NI
	2713.(...)	A1	calculating new net monthly salary
	their 2713.(..) – 2495.64 or their 2713.(...) – 150	M1	Increase in net pay or subtracting 150 from their new net pay
	217.(..) per month **and** Yes or 67 extra or 2563.(..) **and** Yes	A1ft	ft their increase in net pay per month/year compared with travel costs per month/year Comparison with recalculated wrong old net pay loses this mark
	Additional Guidance		
	Allow use of 31785 or 31786 for upper tax limit		
	Ignoring higher tax limit and taxing all at 20% can gain max 7 marks (loses 2nd M1 and 1st A1)		
	Ignoring higher NI or only needing to use 12% can gain max 7 marks (loses 5th M1as neither bracket will be correct, and 1st A1)		
	Ignoring both higher limits can gain max 6 marks		
	6802.8 or 6803 implies M2 566.9() implies M3 2713.(..) is the first 7 marks		

Q	Answer	Mark	Comments
	Alternative method 3		
	43 500 – 10 600 or 32 900	M1	taxable income
	(32 900 – 31786) × 0.4 + 31786 × 0.2 or 445.6(0) + 6357.2(0) or 6802.8 or (32 900 – 31786) × 0.6 + 31786 × 0.8 or 668.4 + 25428.8 or 26097.(..)	M1	Allow 31785 used giving 446 + 6357 or 6803
6	(43500 – 42385) × 0.02 or 22.3 or (42385 – 8064) × 0.12 or 4118.52 or 4140.(..)	M1	2% or 12% NI
	their 6802.8 +their 22.3 + their 4118.52 or 10943.82 or their 26097.(..) – their 22.3 – their 4118.52 or 21956.38	M1	or their 6802.8 + their 4140.82 their total tax + NI Must be consistent time periods
	43500 – their 10943.82 or their 21956.38 + 10600	M1	Gross salary – (tax +NI) Must be consistent time periods or 43500 – 10943.82 - 1800
	32556.(18)	A1	or 30756.(18) (only if 12 × 150) deducted
	their 32556.(18) ÷ 12 or 2713.(..) or 2495.64 × 12 or 29947.(68) **and** 12 × 150 (if not included at some other point	M1	their 30756.18 ÷ 12 or 2563.(..) or 2495.64 × 12 or 29947.(68)
	their 2713.(..) – 2495.64 or their 32556.(..) – their 29947.68	M1	For 1800 subtracted earlier, answer of 30756.(..) **and** 29947.(..) **and** Yes or 2563.(..) **and** Yes implies final M1and A1as no subtraction is required

217.(..) per month **and** Yes or 67 extra or 2563.(…) **and** Yes or 30756.(..) **and** 29947.(..) **and** Yes	A1ft	2563.(..) **and** Yes ft their increase in net pay per month/year compared with travel costs per month/year Comparison with recalculated wrong old net pay loses this mark

Additional Guidance
Allow use of 31785 or 31786 for upper tax limit
Ignoring higher tax limit and taxing all at 20% can gain max 7 marks (loses 2nd M1 and 1st A1)
Ignoring higher NI or only needing to use 12% can gain max 7 marks (loses 3rd M1as neither bracket will be correct, and 1st A1)
Ignoring both higher limits can gain max 6 marks
For premature rounding allow all method marks
6802.8 or 6803 implies M2 566.9() implies M3 2173.(..) is first 7 marks

Q	Answer	Mark	Comments
7	Scale 1 cm^2 = 25 people or 24 cm^2 = 600 or 1 small square = 1 person or frequency density scale labelled in 5's every cm or one other bar shown with correct frequency	M1	
	[(5 × 12) + (1 × 15)] × 9 or 75 × 9 or 675 **and** 5 × 3 × 9 or 15 × 9 or 135 or (75 + 15) × 9 or 810	M1	Correct method for either end implies correct scale so 1st M1
	[600 – their (75 +15)] ×12 or [(9 ×15) + (5 × 22) + (5 × 24) + (10 × 10) + (15 × 3)] × 12 or 510 × 12 or 6120	M1	their 75 + 15 must be from use of correct scale Condone 1 error when adding **all** the other bars/ages (must include all of bar up to 65)
	(£)6930	A1	
	Additional Guidance		
	6975 or 6921 may imply M2 from combining 20-21 within the £12 or 64 -65 within the £9		

Q	Method	Mark	Comments
8	9300 – 6200 or 3100	M1	calculates loan amount
	their 3100 × 1.055 or 3270.5	M1	oe
	(56 700 – 21 000) ÷ 12 or 2975	M1	or (56700 – 21000) × 0.09 or 3213
	their 2975 × 0.09 or 267.75	M1	their 3213 ÷ 12 or 267.75
	10 × their 267.75 or 2677.50	M1	
	their 3270.5 – their 2677.5	M1dep	dep on previous M1 their 3270.5 can be 3100
	593	A1	SC5 318.(..) for use of repayment plan 1 if no working seen

Additional guidance

The 3rd and 4th method marks can be in either order or combined

So (56700 – 21000) × 0.09 ÷ 12   gains 3rd and 4th method marks

If students use repayment plan 1 and show working then they can achieve
B1,M1,M0,M1,M1,M1,A0

eg gets 3270.5 M2

 (56700 – 17335) × 0.09 =3542.85 M0

3542.85 ÷ 12 = 295.(..) M1

10 × 295. (..) = 2952.(..) M1

3270.5 – 2952.(..)   M1

318.(..) A0

If no working is seen award SC5 for the correct answer of £318.(..)

Failing to subtract 21000 loses 3rd M1 and A1 so can gain 5 marks