

| Question | | | Answer | Marks | Part Marks and Guidance |
|----------|-----|------|----------------------|-------|---|
| 1 | (a) | (i) | 0.41 0.29 0.18 0.12 | 3 | B1 for 200 soi And M1 for use of $\frac{\text{frequency}}{\text{their total}}$ At least once |
| | | (ii) | Large sample size oe | 1 | |
| | (b) | | 0.3[0] oe | 2 | -1 for poor notation M1 for <i>their</i> (0.18) + <i>their</i> (0.12) soi or for $(36 + 24) \div (82+58+36+24)$ oe Eg 0.30/1; 3 in 10 etc |
| | (c) | | 1312 | 2 | M1 for <i>their</i> (0.41) \times 3200 soi or for $82 \div (82+58+36+24) \times 3200$ oe Ignore rounding after correct answer |

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| 2 | (a) | | At least 3 response boxes covering all eventualities from at least 1 m to 20 m No overlaps between categories (must have at least 3 categories; categories must not be more than 1 m apart) | 1 | For this mark they must mention appropriate units Condone heights implicitly to nearest metre or better as having no gaps eg 0-2 m, 3-5 m etc | Condone < 20 m as upper limit; condone omission of 'no trees in garden' or 'no garden' category; top category must start from 3 m or more |
| | | | | 1 | After 0 for question allow SC1 if clear intent to cover all eventualities (as for first mark) but poor notation (eg of inequality signs) has meant they earned 0 | 0 for eg ...10-15 then 15-20 etc but bod intent with ...10-14 then 15-20 then 20+ or with ...10-14 then 15-19 then 20+ Condone no boxes if clear categories |
| | (b) | 12 | | 2 | nfw M1 for $\frac{202}{823} \times 50$ oe or for 12.2 to 12.3 | eg M1 for $823 \div 50 [= 16.(46)]$ then $202 \div$ answer Or M1 for $823 \div 202 [= 4.07(...)]$ then $50 \div$ answer |

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| | (c) | (i) | Plots at midpoints of groups Heights correct Joins with ruled straight lines | 1 1 1 | At 2, 7, 12, 17; condone one error within the correct interval Tolerance 1 mm Within 1 mm of points; ignore joins to axes from endpoints, but 0 if endpoints are joined | Use overlay As well as correct, allow heights mark for bars or for plots not at midpoints but elsewhere in correct interval Ignore bars if a frequency polygon also seen; otherwise bars can earn the mark for heights correct |
| | | (ii) | 7.6 | 4 | nfw M1 for midpoints 2, 7, 12, 17 seen or used M1 for <i>their</i> midpoints \times frequency (14, 70, 72, 34; total 190) M1 for (<i>their</i> sum of midpoints \times frequency) \div <i>their</i> 25; FT <i>their</i> (7 + 10 + 6 + 2) A1 for 7.6 Accept 8 for A1 if M3 earned and no errors seen | At least three of them seen At least 3 correct or for total 190 nfw Allow first two M1 s if seen even if not used for answer on answer line Second and third M s are available for ' <i>their</i> midpoints' being an attempt using other points in interval, or endpoints (at least 3 seen) Answers of 5.6 or 9.6 imply second and third M1 s |

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| 3 | (a) ▲ | $1 \leq g < 1.5$ | 1 | Condone poor notation such as '1 to 1.5' or '<' used instead of '≤' | 0 for single value within correct interval or for 13 0 for ' $1 \leq g < 1.5$ 13' but allow ' $1 \leq g < 1.5$ <u>because</u> 13' oe |
| | (b) ▲ | Plots at midpoints of intervals at least four heights correct: 5, 7, 13, 5, 2 Plots joined with straight line segments | 1 1 1 | tolerance 1mm (eg accept ht of 5 on nearest gridlines) Within 1 mm of points | Use overlay as well as correct, allow heights mark for bars or for plots not at midpoints but elsewhere in correct interval; Ignore joins to axes from endpoints, but last mark not earned if endpoints are joined ignore bars if a frequency polygon also seen; otherwise bars can earn the mark for heights correct |

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| 4 | (a) | <p>Frequencies in each group soi: [5], 10, 17, 33, 35 Correct boundaries to groups</p> <p>Frequencies \times midpoints attempted: 5×25, 10×75, 17×150, 33×350, 35×750</p> <p><i>Their</i> total of midpoints \times freq \div 100</p> <p>412.25 [so over 400 h]</p> | <p>M1 Allow this M1 for two or more correct</p> <p>M1 Condone poor notation such as 200-500, 500-1000 if endpoints correct</p> <p>M1 At least 3 correct or FT correct: may be 125, 750, 2550, 11550, 26250 [total = 41 225]</p> <p>M1 May be implied by correct answer or by FT answer if <i>their</i> total seen</p> <p>A1 Or allow final M1 A1 for comparison of 41225 with 400×100</p> | <p>Condone 24.5, 74.5, 149.5 etc</p> <p>No FT from endpoints used</p> |
| | (b) | <p>Estimate of mean uses midpoints, but actual values may have been towards lower end of groups oe</p> | <p>1</p> | <p>Comment should indicate values might have been towards low end of groups, not just that they are grouped and we do not know actual values</p> |