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| **Guidance on the use of codes for this mark scheme** |
| M | Method mark |
| A | Accuracy mark |
| B | Mark awarded independent of method |
| C | Communication mark |
| P | Proof, process or justification mark |
| cao | Correct answer only |
| oe | Or equivalent |
| ft | Follow through |

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| **Question**  | **Working** | **Answer** | **Mark** | **AO** | **Notes**  | **Grade** |
| **1 a** **b** |  | Three appropriate questions using statistical measure for the data provided.e.g. What is the range of heights of the students?What is the median height of students?What is the mean average height of students?e.g. stem and leafThe number of data points makes it difficult to represent.Data all to the nearest cm makes it easy. | C3C1C1 | 2 | C1 for each questionC1 for stem and leaf oeC1 for appropriate evaluation of what makes it easy/hard to represent this data | B |
| **5** |
| **2** |  | Total number of data points and how many in each category.  | C1 | 2 | C1 for correct description of two pieces of required information | B |
| **1** |
| **3** |  | 11386_Probability_Ans_005.pngRange between 4 and 38 minutes, so choose at least four groups for data. | M1M1P1 | 2 | M1 for appropriate grouping of time rangesM1 for tally chart with frequencies identifiedP1 for evaluation of/reasoning for choice of time ranges. | B |
| **3** |
| **4**  |  | e.g. The classes overlap: where would you put a drink costing 40p or 60p?A drink could cost over £1. | C2 | 23 | C1 for each correct reason | B |
| **2** |
| **5** |  | Response identifying that the pie charts represent proportions not actual numbers. | P1 | 2 | P1 for correct reasoning and selection of ‘The proportion of people buying fruit in town is greater than in the village’ | B |
| **1** |
| **6** |  | Response explaining that Kevin may have data to show that crowds at the cricket ground always exceed 18 000.If there is no time when the crowds are below 18 000 then there is no point showing this part of the graph as it will be empty. | C1C1 | 2 | C1 for comment that data may exist to show that the minimum crowd is 18 000C1 for comment oe | B |
| **2** |

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| **7 a** **b** **c** **d** |  | Example of a small set of data that has a mode of 6 with a valid explanation.e.g. 6, 6, 6, 5Example of a small set of data that has a mode of 6 and a range of 15 with a valid explanation e.g. 1, 6, 6, 6, 6, 16Two different small sets of data that have the same mode and range with explanation.e.g. 1, 5, 5, 5, 82, 5, 5, 5, 9Set with a mean of 4 and a median of 3 with explanatione.g. 1, 3, 3, 9 | M1M1M1C1M1M1 | 23 | M1 for any data set with a mode of 6 and an explanation that more 6s than anything else were includedM1 for any data set with a mode of 6 and an explanation that more 6s than anything else were included and the difference between the greatest and least value is 15M1 for two correct data setsC1 for describing method for creating different rangesFor example, shifting the greatest and least values by the same amount to keep the difference the same oeM1 for correct medianM1 for data points summing to correct value (in the example, 4 data points must sum to 16 as 4 × 4 = 16) | B |
| **6** |
| **8 a** **b** | October:16 boys and 12 girlsDecember:18 boys and 10 girlsBoth months have 28 competitorsNumber of boys = × 25 = 10Number of girls =  × 18 = 12 | October and December Total number taking part is 22. So this would be their lowest month for participation. | A1M1M1M1C1 | 2 | A1 for accurate interpretation of data from graphM1 for correct calculation of number of boysM1 for correct calculation of number of girlsM1 for bar chart completed correctlyC1 for comment explaining relatively low participation | B |
| **5** |
| **9 a** **b**  |  | Shows the proportion not the number is greater. For example, if there were a larger number of men in the company, then their pie chart would represent greater numbers within each section of the chart.The pie charts show proportion but not the actual numbers. He needs to use proportion in the justification or he needs to provide the numbers of men and women involved in the survey. | P1P1 | 23 | P1 for comment that proportionality shown on pie chartsP1 for an understanding that some further clarification is needed if pie charts are used OR a suitable suggestion of an alternative such as a bar chart (which would need some numerical data) oe | B |
| **2** |
| **10 a** **b** **c** |  | Pictogram drawn with key11386_Statistics_Ans_001.pngAppropriate bar chart drawn11386_Statistics_Ans_002.pngChoice of either with justification such as the bar chart shows the increasing trend more clearly’ or ‘the pictogram is easier for readers to understand’. | M1M1M1M1P1 | 2 | M1 for pictogramM1 for keyM1 for bar chart with at least four bars correctly drawnM1 for appropriate scale on y-axis e.g. going up in 2sP1 for justification of choice | B |
| **5** |
| **11 a** **b** **c** **d** **e** |  | Internet search, secondary dataExperiment, primary dataInternet search (or questionnaire), secondary (or primary) dataInternet search (or questionnaire), secondary (or primary) dataQuestionnaire, primary data | M1M1M1M1M1 | 2 | M1 for each correct descriptionData handling cycle:Plan the data collectionCollect the dataChoose the best way to process and represent the data.Interpret the data and draw conclusionsPrimary data: collected by youSecondary data: used by you but collected by a third party | B |
| **5** |

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| **12** |  | Data set of 10 points plus reasons as to why this would not make a good stem-and-leaf (wide range; variance in place value)e.g. how far in kilometres ten people live from a Blackpool Tower: this could have a theoretical range of 0–1000 km (or greater), with any values in between, making it meaningless when selecting representation for the stem and the leaf.5.6, 6.7, 2.3, 10.9, 12.6, 15.0, 15.0, 57.9, 178.2, 897.4 | C1P1 | 2 | C1 for appropriate example where the range of data values is too varied to make a stem-and-leaf diagram have meaningP1 for appropriate reasoning | M |
| **2** |
| **13 a** **b** |  | Statements that identify that pie charts represents proportions, e.g.What proportion or percentage of people are in the East?What is the fraction of people in the South?What is the probability that someone is from the North?Total, range and mode are difficult to use as they are numerical and the pie chart shows proportions. | C1P1 | 2 | C1 for appropriate questionP1 for justification as to why numerical measures are difficult to use in this case | M |
| **2** |
| **14 a** **b** |  | The data is discrete/cannot take any values between the ones shown.It should be plotted as a bar chart.Continuous data, e.g. cost of living over time. | P1B1C1 | 23 | P1 for correct identification of discrete data oeB1 for bar chartC1 for appropriate example oe | M |
| **2** |
| **15** |  | e.g. a line graph is better for comparing trends over time as trends in the data are more obvious. | P1P1 | 3 | P1 for selection of line graph with appropriate reasoning (link to ‘over time’)P1 for further explanation (link to clarity of diagram) oe | M |
| **2** |
| **16** | 5, 5, 5, 5 (mean = 5)10, 10, 10, 10 (mean = 10) | True plus suitable explanatione.g.n, n, n, n (mean = n)2n, 2n, 2n, 2n (mean = 2n) | M1P1 | 2 | M1 for true with specific example to back up explanationP1 for more general example to demonstrate statement is true | M |
| **2** |

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| **17** | = 26.5th positionSo 3 days

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| Days *d* | 0 | 1 | 2 | 3 | 4 | 5 |
| Freq *f* | 17 | 2 | 4 | 13 | 15 | 1 |
| Cumulative frequency | 17 | 19 | 23 | 36 | 51 | 52 |

 | 3 days | M1M1A1 | 2 | M1 for correct method to find median value (tabulated calculations) oeM1 for correct calculation to find position of median oeA1 cao | M |
| **3** |
| **18** | Estimated mean = total profit ÷ total frequency= 15 418.5 ÷ 52= 296.5096

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| Profit, p £ | 0-200 | 201-400 | 401-600 | 601-800 |  |
| Freq,f | 15 | 26 | 8 | 3 | 52 |
| Midpoint, m | 100 | 300.5 | 500.5 | 700.5 |  |
| F × m | 1500 | 7813 | 4004 | 2101.5 | 15 418.5 |

Answer: £297 | M1M1A1 | 2 | M1 for correct method to find the estimated mean (tabulated calculations) oeM1 for correct final calculation with appropriate roundingA1 cao | M |
| **3** |
| **19** |  | Need to design a questionnaire and ask students what they have for breakfast. | C1 | 2 | C1 for descriptive comment about the data needed and/or method of collection oe | M |
| **1** |
| **20 a****b** | Start with 3, 3, 3 and adjust at both ends.Start with 3 in the centre and find a pair for the ends which sum to 6 with a difference of 3. | Any three values that sum to 9 with a difference between greatest and least of 3, e.g. 2, 2, 5Any three values with a sum of 9, a difference between greatest and least of 3 and a median of 3, e.g. 1.5, 3 , 4.5 | M1A1M1A1 | 23 | M1 for either correct range or meanA1 caoM1 for either correct range or meanA1 caoNote: this can be done by solving a pair of linear equationsa, 3, b such that *b* + *a* = 6 and b – a = 3; b = 4.5 and a = 1.5 | M |
| **4** |
| **21** |  | They could have been referring to two different averages.For example: in a class of 10 students with the following marks10, 17, 28, 28, 28, 28, 28, 35, 57, 61The median and modal mark is 28 but the mean mark is 32. | C1P1 | 3 | C1 for correct comment regarding two different averagesP1 for example to justify | M |
| **2** |

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| **22** | 11386_Statistics_Ans_003.png | A scatter graph with positive correlation shows a trend with a positive gradient/ as one quantity increases the other also increases. | C1C1 | 2 | C1 for diagram to support explanationC1 for comment oe |  |
| **2** |
| **23 a** **b** **c** | Total number of male students = 6111 ÷ 61 = 0.18 (to 2 dp)Total number of female students = 314 ÷ 31 = 0.13 (to 2 dp) | 18% to nearest percent 13% to nearest percentFind the mid-point of each classMultiply mid-point of class by frequency of class and add them all together.Divide the total earnings by the total frequency. | A1A1C1C1C1 | 23 | A1 caoA1 caoC1 for explanationC1 for explanationC1 for explanation (no credit for actual calculation as an explanation as this is specified in the question) | M |
| **5** |
| **24**  | Mean for boys = 204 ÷ 34 = 6

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| Texts, *T* | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |  |
| *f* | 5 | 6 | 4 | 5 | 4 | 5 | 3 | 2 | 34 |
| *T* × *f* | 15 | 24 | 20 | 30 | 28 | 40 | 27 | 20 | 204 |

 | Mean for boys is 6, so based on the information provided and this particular statistical measure then the answer would be no. However, the information is limited for example the sample of boys is small and you are not told how many girls are sampled. The mean could be based on a single girl.  | M1P1 | 23 | M1 for calculation of mean number of boys text messages for comparisonP1 for appreciation of sample size oe | M |
| **2** |
| **25 a** **b** |  | Demonstrate the use of data to produce a time series graph to predict the life expectancy in both countries in 2025.UK: 82–83, Ukraine: anything between 65 and 72UK may be easier to predict as historically it has been more consistent. | M1P1 | 23 | M1 for data interpretation either by time-series graph or by spreadsheetP1 for understanding of consistency making a trend easier to identify | M |
| **2** |

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| **26 a/b** **c** **d** **e** |  | Scatter diagram completed with line of best fit11386_Statistics_Ans_004.pngBen is most likely to be the student who was sick when they took maths as his score is much lower than his music score.Kris is likely to have scored around 40 marks in music as all students except Ben scored similar but less in music than in maths (see trend line)Lex could have scored 85 in maths with a 78 score in music (see trend line) | M1M1C1P1P1 | 3 | M1 for correct points plotted on scatter diagramM1 for line of best fitC1 for choice of student with valid reason oeP1 for score for music based on their trend line (ft)P1 for score for maths based on their trend line (ft) | M |
| **5** |

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| **27**  | Labour:= 31Conservative:= 37Lib Dem: = 20Other: = 12Angles:Labour:  × 360° = 112°Conservative: × 360° = 133°Lib Dem: × 360° = 72°Other: × 360° = 43° | Pie chart constructed accurately and clearly.11386_Statistics_Ans_005.png | M1M1M1M1 |  | M1 for calculation of average, rounded to the nearest percentageM1 for correct degree calculationsM1 for accurate measurement of sectorsM1 for correct labelling of sectors | M |
| **4** |
| **28**  |  | Suitable example Algebraic explanation: = 2 × modex1 + *x*2 + x3 + x4 = 8 × modee.g., if the mode is 2 the sum of the data would have to be 16 so that the mean was 4. One possible set could be: 2, 2, 2, 10. Mode is 2, mean is  = 16 ÷ 4  = 4 .Mean is twice mode, as required. | C1P1 | 2 | C1 for specific example with suitable explanation.P1 for general solution (could be presented algebraically or in words) | M |
| **2** |
| **29** |

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|  | Mean | Median | Mode | Range |
| Girls’ scores% | 52.5 | 50.5 | 24, 47 | 71 |
| Boys’ scores% | 63 | 66 | 82 | 74 |

 | Comparison of different statistical measures that provide counterargument. e.g. Boys have a higher mean, median and modal score.The range is very similar. | M1M1P1 | 2 | M1 for calculation of at least two averages or one average and the range to compareM1 for calculation of further averages to support argument in favour of boysP1 for evaluation and interpretation of averages to provide counter argument for boys | M |
| **3** |

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| **30 a** **b** |

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|  | Median | Mode | Range | Max | Min |
| Male | 37m 20s | None | 05 m 04 s | 38m 42s | 33 m 38 s |
| Female | 42m 46s | 39m 08 s | 07 m 57 s | 46m 37s | 38m 40s |

 | Valid comparison of the distributions for male and female runners. e.g. all men except one ran faster than the women (max and min values)Or there was less variance in men’s running times than women’s (range)e.g. median valuesValid couple of sentences to summarise findings suitable for a national running magazine.  | C1C1C1C1 | 23 | C1 for first comparisonC1 for further comparison such as the median valuesC1 for each of two summary sentences based on their interpretations of the distributions (ft) | M |
| **4** |
| **31 a** **b** | 112 ÷ 200 × 50 00028 000 × 0.9 = 25 200 | 28 000Over 50% of voters so should be confident of winning. | M1M1P1 | 2 | M1 for multiplication of total population by proportion of sampleM1 for 28 000 × 0.9P1 for explanation that his represents over half the whole population and so a majority is likely | M |
| **3** |
| **32** | 7 ÷ 28 × 1260 = 315  | 315 | M1A1 | 2 | M1 for multiplication of total population by proportion of sampleA1 cao | M |
| **2** |
| **33** |  | At four different points in the concert, entrances or bars, each point to conduct the survey on approximately 100 people each, trying to ask as many males as females. | P1C1 | 23 | P1 for explanation of general method of samplingC1 for specific example related to the concert crowd | H |
| **2** |

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| **34 a** **b** |  | Define what is meant by a ‘good’ train service. Could be number of trains per hour or number of trains that are on time in a specified period or customer satisfaction regarding the quality of various aspects of the journey such as level of cleanliness, availability of sets etc.To find out if the statement is true or not, the first step is to see what has changed since the aunt has been travelling (see above)Data to be collected would be dependent on what the aunt felt had changed (or what has actually changed).This could be data from the train company on volume of trains, amount of rolling stock at one time, number of complaints received and about what.This could also be data collected from a customer survey. However, this would be real time and would be hard to gather retrospectively as this would be subjective and may not be possible, depending on time frame. | P1C1P1C1C1 | 3 | P1 for explanation of subjective nature of this enquiryC1 for description of what might be seen as ‘good’P1 for explanation of possible data to be collected with reasonC1 for appreciation of this being a subjective enquiry over timeC1 for a correct description of a data collection process, such as constructing a questionnaire | H |
| **5** |
| **35** | 2.5 × 20 = 50So 50 eggs in total0 × 2 = 01 × 3 = 32 × 4 = 85 × 1 = 50 + 3 + 8 + 5 = 16 eggs50 – 16 = 34 eggs to findHens could lay 3 or 4 eggs.(3 × 6 ) + (4 × 4) = 18 + 16 = 34(3 × 2) + (4 × 7) = 6 + 28 = 34 |

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| **Eggs** | 0 | 1 | 2 | 3 | 4 | 5 |
| **Frequency** | 2 | 3 | 4 | 6 | 4 | 1 |
| **Egg × frequency** | 0 | 3 | 8 | 18 | 16 | 5 |

Could be 3 eggs, frequency 6 and 4 eggs, frequency 4Or could be 3 eggs, frequency 2 and 4 eggs, frequency 7 | M1M1M1M1C1 | 23 | M1 for total eggs (50)M1 for multiplication of eggs by frequency plus addition and subtraction to find how many eggs are left to find oeM1 for one solutionM1 for a second solutionC1 for clear description or table oe | H |
| **5** |

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| **36 a** **b** **c** **d** | 1 + 12 + 24 + 15 + 13 + 9 + 5 = 79= 34.86…..Estimated mean = 35 minutesModal time = 21–30 minutesMedian time: 31–40 minutes= 4040th person is the median. 40th person is in the 31–40 groupOver one hour (61–70) is 5 patients=0.00632….So 6% of patients were over an hour100 – 6 = 94% | 79 patients

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| **Time** | 0–10 | 11–20 | 21–30 | 31–40 |
| **Mid point** | 5 | 15.5 | 25.5 | 35.5 |
| **Frequency** | 1 | 12 | 24 | 15 |
| **Mid-point × frequency** | 5 | 186 | 612 | 532.5 |

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| **Time** | 41–50 | 51–60 | 61–70 |
| **Mid point** | 45.5 | 55.5 | 65.5 |
| **Frequency** | 13 | 9 | 5 |
| **Mid-point × frequency** | 591.5 | 499.5 | 327.5 |

Sum of mid-point × frequencies = total number of minutes = 2754Estimate mean waiting time = 35 minutesMode94% | M1M1M1M1C1M1M1P1M1A1 | 3 | M1 for addition of frequenciesM1 for mid-points × frequenciesM1 for total minutesM1 for division of total minutes by total patients (ft)C1 for appropriate rounding to whole minutesM1 for modeM1 for medianP1 for correct , shortest, average waiting timeM1 for calculation of 1 – () or as a percentageA1 cao | H |
| **10** |

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| **37 a** **b** | Estimate: Often = 90° (=25%)Very often = 80° (≈20%)Rarely = 100° (≈30%)Never = 80° (≈20%)Always= 10° (≈5%) | No, it only shows proportionse.g. All percentages are estimates based on the approximate angle of the sector of the pie chart.25% of people sampled said that they often considered their health when planning a diet, with 5% saying that this was always the case and 20% saying very often.30% rarely consider their health when planning a diet and 20% never do.e.g. So approximately half the sample consider their health to some degree and half do not. | P1C1C2 | 3 | P1 for reference to proportionsC1 for comment on the proportions of people giving the range of answersC2 for summary | H |
| **3** |
| **38** |  | The 5 minutes spent waiting is halfway between the 4- and 6-minute groups. These people are in that band, but maybe no one had to wait exactly 5 minutes. | P1 | 3 | P1 for awareness that the 5 minutes represents the mid-point of grouped data. People may have been waiting for any time between 4 and 6 minutes | H |
| **1** |
| **39** |  | Divide the frequency of the class interval by the width of the class interval. | C1 | 3 | C1 for correct method for calculations of frequency density | H |
| **1** |
| **40** | Kathy’s mean = (8 + 7 + 6 + 5 + 5 + 5 + 4) ÷ 9 = 5.7Connie’s mean = (9 + 8 + 7 + 2 + 2) ÷ 5 = 5.6Evie’s mean = (8 + 8 + 3 + 2 + 1) ÷ 5 = 4.4

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| **Dancer** | Scores | Mean | Median | Mode |
| **Kathy** | 8, 7, 6, 5, 5, 5, 4 | 5.7 | 5 | 5 |
| **Connie** | 9, 8, 7, 2, 2 | 5.6 | 7 | 2 |
| **Evie** | 8, 8, 3, 2, 1 | 4.4 | 3 | 8 |

 | Kathy: mean score of 5.7Connie: median score of 7Evie: modal score of 8 | M1M1M1C1 | 2 | M1 for calculation of all three meansM1 for identification of all three modesM1 for identification of all three mediansC1 for correct average identified in all three cases | H |
| **4** |

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| **41** | RangeA = 86 – 18 = 70RangeB = 45 – 22= 23MeanA =  = 31.555…MeanB=  = 27.888…

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| **Firm** | Range | Mean | Median | Mode |
| **A** | £70 000 | £31 556 | £18 000 | £18 000 |
| **B** | £23 000 | £27 889 | £26 000 | £26 000 |

 | Valid advice based on the salary scales provided (see notes) e.g. Jasmin should join firm B if she is prepared to accept that the higher final salary is not as high as A. However, the starting salary is higher and Jasmin can progress more quickly to a higher salary with B than A. There is a greater range of salaries in firm A than firm BJasmin should join firm A if she aspires to being the boss.Alternatively she could start with firm B and move to firm A after 7 salary increments for maximum earnings. | M1M1M1M1P1C1 | 2 | M1 for calculation of rangesM1 for calculation of meansM1 for identification of mediansM1 for identification of modesP1 for justification of either firm A or firm BC1 for use of table oe for comparison | H |
| **6** |

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| **42 a** **b** **c** **d** | e.g. 0 ≤ x <5; 5 ≤ x < 25; 25 ≤ x < 32Estimated range (from mid-points) = 28.5–2.5e.g.

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| Class | 0 ≤ *x* < 45 | 45 ≤ *x* < 47 | 47 ≤ *x* < 50 |
| Mid-point |  | 46 |  |
| Frequency | 5 | 1 | 5 |
| Cumulative frequency | 5 | 6 | 11 |

*n* = 11 hence 6th data point is the median Estimated median (from mid-point) = 46e.g.

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| Class | 0 ≤ *x* < 20 | 20 ≤ *x* < 25 | 25 ≤ *x* < 119 |
| Mid-point | 10 | 22.5 | 72 |
| Frequency | 5 | 1 | 5 |
| Cumulative frequency | 5 | 6 | 11 |

*n* = 11 hence 6th data point is the median Estimated median (from mid-point) = 22.5Estimated range (from mid-points) = 72–10 = 62e.g.

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| Class | Frequency | Mid-point | Frequency × mid-point |
| 0 ≤ *x* < 6 | 0 | 3 | 0 |
| 6 ≤ *x* < 10 | 2 | 8 | 16 |
| 10 ≤ *x* < 20 | 5 | 15 | 75 |
| 20 ≤ *x* < 30 | 5 | 25 | 125 |
| 30 ≤ *x* < 40 | 9 | 35 | 315 |
| 40 ≤ *x* < 62 | 15 | 51 | 765 |
| Totals | 36 |  | 1296 |

Estimated mean = 1296 ÷ 36 = 36 (to one decimal place) | M1M1M1M1M1M1 | 23 | M1 for correct example (class widths do not need to be equal)M1 for correct example (class widths do not need to be equal)M1 for correct example of estimated medianM1 for correct example of estimated range(class widths do not need to be equal)M1 for correct division: (sum of frequencies × mid-point) ÷ (total frequency)M1 for correct example of estimated mean (ft) (class widths do not need to be equal) | H |
| **6** |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **43**  | Median = value Lower quartile = value Upper quartile = valueSo if you have a table with 12 values these will be the 6th, 3rd and 9th values.

|  |  |  |
| --- | --- | --- |
| Order  | Value  |  |
| 1 |  |
| 2 |  |
| 3 | 7 | Difference between 14 and 7 equals 7 as required. |
| 4 |  |
| 5 |  |
| 6 | 10 |
| 7 |  |
| 8 |  |
| 9 | 14 |
| 10 |  |  |
| 11 |  |

These can be adapted as long as rows are added equally in each section (see example below)

|  |  |  |
| --- | --- | --- |
| Order  | Value  |  |
| 1 |  |
| 2 |  |
| 3 |  |  |
| 4 | 7 | Difference between 14 and 7 equals 7 as required. |
| 5 |  |
| 6 |  |
| 7 |  |
| 8 | 10 |
| 9 |  |
| 10 |  |
| 11 |  |
| 12 | 14 |
| 13 |  |  |
| 14 |  |
| 15 |  |

 | C1C1C1M1P1 | 2 | C1 for correct formula for medianC1 for correct formula for lower quartileC1 for correct formula for upper quartileM1, for values for upper and lower quartile with a difference of 7P1 for explanation of difference in relation to range in this context | H |
| **5** |
| **44** |  | Either Harold, as he had bigger tomatoes, or Connie, as she had more tomatoes (depending on if you want lots of tomatoes or large tomatoes!) | P1C1 | 2 | P1 for choice of one person with justificationC1 for further consideration of second person | H |
| **2** |
| **45 a** **b i** **ii** |  | The following statement is more precise: ‘There is strong evidence to support my hypothesis’. In reality it is usually not possible to prove a hypothesis just to gather evidence to support it. Because you may not have gathered enough evidence. Because you haven’t gathered enough evidence or you’re using a ‘null’ hypothesis.  | P1P1P1 | 2 | P1 for selection of ‘There is strong evidence to support my hypothesis’ with explanation about practicalities of proving an hypothesisP1 for explanation of having sufficiently large sample/evidenceP1 for giving same reason / an awareness of the practical difficulties of getting all other variables equal or unchanged so that they do not affect the success or otherwise of your evidence gathering oe | H |
| **3** |