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| Year  10 | | Mathematics Test  Further Measures of Spread | | Calculator Allowed |
| Short Answer Section | Name : \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | |
|  | Write all working and answers in the spaces provided on this test paper. | | | |
|  | **Questions 1 – 3 refer to the following.**  The Cats football team scored the following number of goals in their games last season.  0, 1, 2, 1, 3, 2, 1, 3, 0, 2, 1, 6, 2, 2, 1 | | | |
| 1. | Show that the median of the number of goals is 2.  ..........................................................................................................................................................    .......................................................................................................................................................... | | | |
| 2. | Find the upper and lower quartiles of the data.  ..........................................................................................................................................................    .......................................................................................................................................................... | | | |
| 3. | Find the interquartile range of the data.  ..........................................................................................................................................................    .......................................................................................................................................................... | | | |
|  | **Questions 4 – 6 refer to the following.**  Chris and Billie record the number of hours they spend on the internet each day over two weeks.  Chris 1, 3, 2, 2, 3, 4, 5, 1, 3, 2, 8, 2, 4, 3  Billie 0, 5, 6, 2, 1, 3, 5, 5, 2, 7, 8, 0, 1, 10 | | | |
| 4. | Find the interquartile range of the two sets of scores.  ..........................................................................................................................................................    .......................................................................................................................................................... | | | |
| 5. | Write a 5 number summary for the two sets of data.  ..........................................................................................................................................................    .......................................................................................................................................................... | | | |
| 6. | Use your answers from above to compare Chris’ and Billie’s internet usage.  ..........................................................................................................................................................    .......................................................................................................................................................... | | | |
|  | **Questions 7 – 8 refer to the following.**   |  |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | |  |  |  |  | O |  |  |  |  |  | |  |  |  |  | O |  |  |  |  |  | |  |  | O | O | O |  |  |  |  |  | |  | O | O | O | O | O | O |  |  | O | |  | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |   The dot plot shows the number of books read by a sample of 12 people. | | | |
| 7. | Find the upper and lower quartiles of the data.  ..........................................................................................................................................................    .......................................................................................................................................................... | | | |
| 8. | Write a five number summary of the data.  ..........................................................................................................................................................    .......................................................................................................................................................... | | | |
|  | **Questions 9 – 10 refer to the following.**      The box plot shows the distribution of marks on a 20 mark quiz. | | | |
| 9. | What was the range of the marks?  ..........................................................................................................................................................    .......................................................................................................................................................... | | | |
| 10. | What was the interquartile range of the scores?  ..........................................................................................................................................................    .......................................................................................................................................................... | | | |
| 11. | Use the five number summary below to draw a box plot.  3, 5, 10, 12, 14 | | | |
|  | **Question 12 – 14 refer to the following.**  Hamish is a stand-up comedian and he keeps a record of the audience numbers at each of his performances.  In February the audience numbers at his nine performances were:  45, 60, 80, 120, 55, 83, 150, 400, 125. | | | |
| 12. | Find the mean of the audience numbers.  ..........................................................................................................................................................    .......................................................................................................................................................... | | | |
| 13. | Find the standard deviation of the audience numbers.  ..........................................................................................................................................................    .......................................................................................................................................................... | | | |
| 14. | In January the mean of the audience numbers was 130 and the standard deviation was 62. Use your answers to questions 12 and 13 to compare the audience numbers in January to those in February.  ..........................................................................................................................................................    .......................................................................................................................................................... | | | |

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| Year  10 | | Mathematics Test  Further Measures of Spread | | Calculator Allowed |
| Multiple Choice Section | Name : \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | |
|  | Mark all your answers on the accompanying multiple choice answer sheet, not on this test paper. You may do any working out on this test paper. Calculators are allowed for this section. | | | |
| 1. | What is value of the lower quartile of the scores below?  25, 28, 28, 30, 31, 32, 35, 36, 38, 40, 40, 42  A. 10 B. 28 C. 29 D. 30 | | | |
| 2. | What is the interquartile range of the scores below?  5, 8, 8, 9, 10, 11, 15, 16, 16, 18, 20  A. 8 B. 8.5 C. 9 D. 15 | | | |
| 3. | Frank makes a deposit each week in a savings account. He only deposits what he can afford each week. In the last 9 weeks he has deposited the following amounts.  $20, $35, $12, $10, $120, $56, $140, $18, $48.  What is the interquartile range of the deposits?  A. $15 B. $28 C. $35 D. $73 | | | |
|  | **Questions 4 – 6 refer to the following:**  Kevin collects information on the number of weeks that construction projects take to complete.  The box plot below is drawn from the data. | | | |
| 4. | What is the interquartile range of the data?  A. 7 B. 9 C. 11 D. 16 | | | |
| 5. | From the box plot, which term could be used to describe the data?  A. bimodal B. normal C. skewed D. symmetrical | | | |
| 6. | Which statement is true?  A. 25% of projects took less than 31 weeks. B. 75% of projects took more than 31 weeks.  C. 25% of projects took more than 22 weeks. D. 75% of projects took more than 22 weeks. | | | |
| 7. | Which box plot could represent the data shown in the histogram?  A. B.  C. D. | | | |
| 8. | Which box plot could represent a symmetric set of data?  A. B.  C. D. | | | |
|  | **Questions 9 and 10 refer to the following.**  The two box plots show the points scored by two football teams in a season of 20 games each. | | | |
| 9. | Which statement is true?  A. The ranges of the two teams are the same, but the interquartile ranges are different.  B. The interquartile ranges of the two teams are the same, but the ranges are different.  C. The ranges of the two teams are the same and so are the interquartile ranges.  D. The ranges of the two teams are the different and so are the interquartile ranges. | | | |
| 10. | Which statement is not true?  A. The Stripes had twice as many scores below 85 than the Cannons.  B. The Cannons had twice as many scores above 105 than the Cannons.  C. The Cannons scored over 110 in 25% of their games.  D. The Stripes scored over 80 in 25% of their games. | | | |
| 11. | Verity recorded the number of reviews that her band received for all of the twelve performances they had last year.  They were : 8, 5, 6, 9, 1, 8, 6, 11, 7, 9, 8, 3.  What were the mean and standard deviation of the number of reviews? (Correct to one decimal place.)  A. Mean = 6.8 and standard deviation = 4.5 B. Mean = 6.8 and standard deviation = 2.6  C. Mean = 7.5 and standard deviation = 4.5 D. Mean = 7.5 and standard deviation = 2.6 | | | |
| 12. | Two apprentice carpenters, Mike and Jackie each cut 40 pieces of timber for a frame.  The pieces should be 2 400 mm long.  The pieces that each apprentice cuts are measured by their boss.   |  |  |  | | --- | --- | --- | | Apprentice | Mean length | Standard Deviation | | Mike | 2 401 mm | 9 mm | | Jackie | 2 399 mm | 2 mm |     Which statement best describes the accuracy of the apprentices.  A. Their average accuracy was about the same, but Mike was more consistent.  B. Their average accuracy was about the same, but Jackie was more consistent.  C. Mike’s average accuracy was better and he was more consistent.  D. Jackie’s average accuracy was better and she was more consistent. | | | |

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| Year  10 | Mathematics Test  Further Measures of Spread | Name : \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
| Multiple Choice Answer Sheet | |

Completely fill the response oval representing the most correct answer.

1. A B C D

2. A B C D

3. A B C D

4. A B C D

5. A B C D

6. A B C D

7. A B C D

8. A B C D

9. A B C D

10. A B C D

11. A B C D

12. A B C D

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|  | Mathematics Test  Further Measures of Spread |
| Answer Sheet |

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| Short Answer | |
| 1 | In order:  0,0,1,1,1,1,1,2,2,2,2,2,3,3,6  Median =2 |
| 2 | Lower Q 1 Upper Q 2 |
| 3 | Interquartile R = 2-1 =1 |
| 4 | Chris 4 – 2 =2  Billie 6 – 1 = 5 |
| 5 | Chris 1, 2, 3, 4, 8  Billie 0, 1, 4, 6, 10 |
| 6 | Chris has a smaller range and interquartile range, meaning her use was more consistent, Billie tended to be more erratic in the amount of time spent on internet. |
| 7 | Lower Q 5.5  Upper Q 7.5 |
| 8 | 4, 5.5, 7, 7.5, 12 |
| 9 | Range = 20 – 1 =19 |
| 10 | Inter Q Range = 16 – 6 =10 |
| 11 |  |
| 12 | Mean = 124.2 |
| 13 | Standard Deviation = 103.1 |
| 14 | The February crowds were lower on average by about 6. The Feb crowds were less consistent as well, Jumping between large and small crowds; possibly due to venue size. |

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| Multiple Choice | |
| 1 | C |
| 2 | A |
| 3 | D |
| 4 | B |
| 5 | C |
| 6 | D |
| 7 | A |
| 8 | A |
| 9 | C |
| 10 | D |
| 11 | B |
| 12 | B |