|  |  |
| --- | --- |
| **Western Mathematics**  **2013 Year 10**  **Half Yearly Examination**  **Advanced Mathematics Course**  **Solutions** | |
| **Short Answer Questions** | |
| 1. |  |
| 2. |  |
| 3. |  |
| 4. |  |
| 5. |  |
| 6. |  |
| 7. | 4.5 kilograms : 750 grams = 4500 g : 750 g  = 450 : 75  = 18 : 3  = 6 : 1 |
| 8. | What is the value of *x* in the diagram? |
| 9. | The base angles *x*o are equal. |
| 10. | |  |  |  | | --- | --- | --- | |  | Property | Yes /No | | All sides equal | Y | | All angles equal | N | | Diagonals are equal | N | | Diagonals intersect at right angles | Y | | Axes of symmetry | Y (2) |   The name is a RHOMBUS |
| 11. |  |
| 12. |  |
| 13. |  |
| 14. |  |
| 15. |  |
| 16. |  |
| 17. |  |
| 18. |  |
| 19. | OR |
| 20. |  |
| 21. | Solve |
| 22. |  |
| 23. | Dance and Games are both 60o which is  of his time. |
| 24. | James spent 6 hours a week playing sport =  of total. |
| 25. | From 20 scores median between 10th and 11th so between 2 and 3. **Median = 2.5**     |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | |  |  |  | ~~O~~ |  |  |  |  |  | | ~~O~~ |  | O | ~~O~~ |  |  |  |  |  | | ~~O~~ |  | ~~O~~ | ~~O~~ | ~~O~~ |  |  |  |  | | ~~O~~ | ~~O~~ | ~~O~~ | ~~O~~ | ~~O~~ |  |  |  |  | | ~~O~~ | ~~O~~ | ~~O~~ | O | ~~O~~ | ~~O~~ |  |  | ~~O~~ | | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | |

|  |  |  |
| --- | --- | --- |
| **Multiple Choice Questions** | | |
|  | |  |  |  |  | | --- | --- | --- | --- | | 7 | 4 | 5 | – | | 2 | 6 | 8 |  | | 4 | 7 | 7 |  |   ⌂ = 7 and □ = 6 | A |
|  |  | A |
|  |  | B |
|  |  | D |
|  | Half is $1250. | A |
|  |  | A |
|  | B. | B |
|  |  | C |
|  |  | D |
|  |  | D |
|  |  | C |
|  |  | C |
|  |  | C |
|  |  | A |
|  |  | B |
|  | So the first three are all factors but D is not. | D |
|  |  | C |
|  |  | D |
|  |  | C |
|  |  | A |
|  | |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | | Ages of Emattogah Cricket Players | | | | | | | | | | 1 | 4 | 5 | 6 | 6 | 8 | 9 |  |  | | 2 | 0 | 2 | 4 | 6 | 7 | 9 | 9 | 9 | | 3 | 1 | 3 | 4 | 5 | 5 | 7 |  |  | | 4 | 2 | 6 |  |  |  |  |  |  | | 5 | 3 |  |  |  |  |  |  |  | | |
|  | Counting the leaves, there are 23. | B |
|  | From 23 the middle is the 12th leaving 11 above and 11 below. The 12th score is 29 | C |
|  | From the upper 11 scores the middle is the 6th of these leaving 5 above and 5 below, 6th from top is the 18th score which is 35. | B |
|  | |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | |  |  |  |  |  |  |  |  |  | |  |  |  |  |  |  |  |  |  | |  | O |  |  |  |  |  | O |  | |  | O |  |  |  |  |  | O |  | |  | O | O |  |  |  | O | O |  | | O | O | O | O |  | O | O | O | O | | O | O | O | O | O | O | O | O | O | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |  | |  |
|  | It is both Bimodal (2 and 8) and symmetrical. | B |
|  | From observation mean = 5, median = 5,  modes = 2 and 8 and range = 9 - 1 = 8  Mean and median are equal. | C |
| 51. | Compounding monthly at 6% p.a. for 1.5 years | C |
| 52. |  | C |
| 53. |  | D |
| 54. |  | B |
| 55. |  | D |
| 56. |  | A |
| 57. | B is not true. | B |
| 58. |  | A |
| 59. |  | C |
| 60. |  | D |
| 61. |  | A |
| 62. |  | B |
| 63. |  | D |
| 64. |  | A |
| 65. | Line 4 should be | D |
| 66. | Since it starts and stops above the axis and does not rise initially C is the only logical explanation. | C |
| 67 |  | B |
| 68. |  | B |
| 69. |  | C |
| 70. | Shape is a cubic graph and since passes through (0, 1) and (-1, 0) it is | C |
| 71. | In the word EXCITEMENT, there are 10 letters of which 3 are E’s and 1 is an I. | D |
| 72. | There are 70 people altogether, of which 12 are males with reusable bags. | A |
| 73. | B shows there is a longer tail at one end and the median is not in the middle of the box, so is skewed. | B |
| 74. | |  |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | | Frequency |  |  |  | O |  |  |  |  |  | |  |  |  | O |  |  |  |  |  | |  |  | O | O |  |  |  |  |  | |  | O | O | O | O |  |  | O |  | | O | O | O | O | O | O | O | O | O | | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | | Score | | | | | | | | | |   18 scores, so median is between 9th and 10th scores which are both 7’s, so median is 7.  From bottom 9 scores, LQ is 5th score which is a 6.  From top 9 scores, UQ is 14th score which is a 9.  Interquartile range = 9 – 6 = 3 | A |
| 75. | From Calculator  Mean = 6.25 and standard deviation = 2.3 | A |

|  |  |  |
| --- | --- | --- |
| **Longer Answer Questions** | | |
| 76. a) |  | **2 marks**  **Total**  2 marks for correct order  1 mark if one out of place. |
| b) |  | **1 mark** |
| 77. a) |  | **1 mark** |
| b) |  | **1 mark** |
| c) |  | **1 mark** |
| 78 |  | **3 marks in total**  3 marks for correct answer.  2 marks if either AC or AD working correct.    1 mark if some correct progress made. |
| 79. a) | Principal =$6 000  4.4% p.a. compound quarterly = 1.1% per quarter.  r = 0.011  A term of 9 months = 3 quarters n = 3 | **1 mark** |
| b) | V = 680.00  18% p.a. compounded monthly = 1.5% per month  r= 0.015  6 months n = 6 | **1 mark** |
| 80. a) |  | **1 mark** |
| b) |  | **1 mark** |
| c) |  | **2 marks total**  2 for correct answer.  1 for making some correct progress. |
| 81 a) |  | **1 mark** |
| b) |  | **2 marks total**  1 for surd value  1 for decimal to correct accuracy |
| 82 a) |  | **1 mark** |
| b) |  | **1 mark** |
| c) |  | **2 marks total**  1 for correct shape  1 for y intercept and turning point |
| 83 a) | From Calculator :  Group B  Mean = 24.25  SD = 15.4 | **2 marks total**  1 for mean  1 for SD |
| b) | Group A  Mean = 34.1 SD = 15.0  Group B  Mean = 24.25 SD = 15.4  Group B has a significantly lower mean while maintaining a similar SD, however it is strongly skewed toward the lower values, while group A is symmetrical and clustered at the centre.  The medians (Group A 25 versus Group B 23.5) also suggest a lowering of the pain.  The quartiles show 75% are below 45.5 for Group A while 75% are below 36 for Group B.  It would appear that the drug has achieved the purpose of reducing pain as it gives significantly lower perceived pain. | **1 mark**  1 for any valid analysis |

High School

Half - Yearly Exam

Advanced Mathematics Course

Multiple Choice Section Answer Sheet

Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Teacher \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Completely fill the response oval representing the most correct answer.

26. A B C D

27. A B C D

28. A B C D

29. A B C D

30. A B C D

31. A B C D

32. A B C D

33. A B C D

34. A B C D

35. A B C D

36. A B C D

37. A B C D

38. A B C D

39. A B C D

40. A B C D

41. A B C D

42. A B C D

43. A B C D

44. A B C D

45. A B C D

46. A B C D

47. A B C D

48. A B C D

49. A B C D

50. A B C D

51. A B C D

52. A B C D

53. A B C D

54. A B C D

55. A B C D

56. A B C D

57. A B C D

58. A B C D

59. A B C D

60. A B C D

61. A B C D

62. A B C D

63. A B C D

64. A B C D

65. A B C D

66. A B C D

67. A B C D

68. A B C D

69. A B C D

70. A B C D

71. A B C D

72. A B C D

73. A B C D

74. A B C D

75. A B C D