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| **Western Mathematics**  **2014 Year 10**  **Yearly Examination**  **Mathematics Course**  **Solutions** |

| **2014 Yearly Mathematics Exam**  **Short Answer Questions**  **Answers** | |
| --- | --- |
|  | The temperatures in increasing order are :    -15o C, -6o C, -2o C, 0o C and 3o C |
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|  | ***NB Different printers will produce small differences in the sizes of the diagram. Check your own printed copy by measuring, before marking student responses.*** |
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|  |  |
|  | Or by using the distance formula |
|  |  |
|  | |  |  |  |  |  | | --- | --- | --- | --- | --- | | 42 | 15 | 27 | 34 | 62 | | 72 | 48 | 18 | 33 | 55 | | 37 | 52 | 15 | 32 | 17 | | 57 | 44 | 38 | 19 | 22 | |
|  |  |
|  | |  |  |  |  | | --- | --- | --- | --- | | 0 | 2 |  |  | | 1 | 1 | 2 |  | | 2 | 2 | X |  | | 3 | 0 | 2 | 3 | | 4 | 2 | 3 |  | | 5 | 0 |  |  |   Sum of scores given = 2+11+12+22+30+32+33+42+43+50 = 277  Missing score = 301 – 277 = 24  The X represents 4 to make 24. |
|  | Length of whole graph = 12 units and length for winner (Lorna) = 4 units.  Votes for Lorna = |
|  |  |
|  | Arrange in order first.  11.0, 11.1, 11.2, 11.4, 11.4, 11.6, 11.9, 12.0, 12.1, 12.5  Lower Q Median = 11.5 Upper Q  Interquartile range = 12.0 – 11.2 = 0.8 |

| **2014 Yearly Mathematics Exam**  **Multiple Choice Section**  **Answers** | | |
| --- | --- | --- |
|  |  | **D** |
|  |  | **C** |
|  |  | **A** |
|  |  | **C** |
|  |  | **A** |
|  |  | **B** |
|  |  | **D** |
|  |  | **C** |
|  |  | **C** |
|  |  | **D** |
|  |  | **C** |
|  |  | **B** |
|  |  | **B** |
|  |  | **A** |
|  |  | **D** |
|  |  | **B** |
|  | Midpoint of *U*(-3, 8) and *W*(-7, -6). | **A** |
|  |  | **D** |
|  |  | **D** |
|  | is a concave  down parabola passing  through 16 on the y axis. | **A** |
|  | Very likely indicates a high probability, reasonably close to 1, so 0.8 is the best to suit this situation. | **D** |
|  | He asked 250 people out of the 2 000 people so it is a sample.  The answer to the question will be names, so it is categorical data. | **B** |
|  | 1. 56% of Anderson’s employees are male.   Less than half are male, so this is false.   1. 43% of Beattie’s’s employees are male.   More than half are male so this is false.   1. Curran has half the number of female employees as Evans.   Curran has 10 and Evans has 20 so this is true.   1. Dowler and Beattie have the same number of male employees   Beattie has more than Dowler, so this is false. | **C** |
|  |  | **B** |
|  | There is a 7 degree increase between 8 am and 9 am which is the greatest. | **A** |
|  |  | **C** |
|  |  | **B** |
|  |  | **B** |
|  | Value has halved when it reaches $20 000.    From Graph this is after 3 years. | **D** |
|  |  | **D** |
|  |  | **A** |
|  |  | **D** |
|  |  | **A** |
|  |  | **C** |
|  |  | **C** |
|  |  | **D** |
|  |  | **C** |
|  |  | **B** |
|  |  | **C** |
|  |  | **B** |
|  |  | **D** |
|  | has a gradient of  and a y intercept of -3.  A. | **A** |
|  | Noah’s average speed on his return journey  So statement A is not true. The others are all correct. | **A** |
|  | The others are all equal to | **B** |
|  | A and B both include equality signs so do not match the graph  C has solution with inequality in opposite direction.    D has correct solution | **D** |
|  |  | **A** |
|  | The others will not always have a probability of | **A** |
|  | 1. The median is calculated using all the prices and the mean is not.   Both are found using all the prices.   1. The median gives a better indication of the spread of the data.   The median gives no indication of the spread.   1. The median is less effected by outliers than the mode.   Neither are affected by outliers.   1. The median is less effected by outliers than the mean.   The mean can be effected by a few very large (or small) prices. | **D** |
|  | |  |  |  | | --- | --- | --- | | Class Centre | Frequency | fx | | 3 | 6 | 18 | | 8 | 15 | 120 | | 13 | 35 | 455 | | 18 | 40 | 720 | | 23 | 37 | 851 | | 28 | 14 | 392 | |  | 147 | 2556 |     Or by entering data in scientific calculator. | **B** |
|  | Both B and C indicate linear relationships, and C has a positive gradient. | **C** |

| **2014 Yearly Mathematics Exam**  **Longer Answer Section**  **Answers** | | |
| --- | --- | --- |
| 76. | 1. Total Sales = $12 500 + $24 000 + $45 000 = $81 500 | **2 marks for correct answer.**  **1 mark if one of the values is correctly calculated or a simple error is made.** |
|  |  | **1 mark for correct answer.** |
| 77. |  |  |
|  | 1. Both lines are parallel to the *x* axis, hence they are parallel.   Both lines are horizontal, hence they are parallel. | 1 mark for any reasonable explanation. |
|  | So the two intervals are parallel. | 1 mark for any reasonable explanation that includes the gradient of *AD*. |
|  | 1. The quadrilateral is a parallelogram, since there are two pairs of opposite sides parallel. | 1 mark for correct name. |
|  | 1. Area = | 1 mark for correct area. |
| 78. | (a) | 1. mark for correct answer. |
|  | (b) | 1 mark for correct answer. |
| 79. | (a) | 1 mark if the distance is shown correctly and either of the angles shown is provided correctly. |
|  | (b) | 1 mark for correct answer. |
|  | (c) | 2 marks for correct answer to HI and extra distance,  1 mark for calculating either HI or extra distance correctly. |
| 80. | |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | |  | **1** | **2** | **3** | **4** | **5** | **6** |  |  | | **1** | 1, 1 | 1, 2 | 1, 3 | 1, 4 | 1, 5 | 1, 6 |  |  | | **2** | 2, 1 | 2, 2 | 2, 3 | 2, 4 | 2, 5 | 2, 6 |  |  | | **3** | 3, 1 | 3, 2 | 3, 3 | 3, 4 | 3, 5 | 3, 6 | Same Number | | | **4** | 4, 1 | 4, 2 | 4, 3 | 4, 4 | 4, 5 | 4, 6 |  |  | | **5** | 5, 1 | 5, 2 | 5, 3 | 5, 4 | 5, 5 | 5, 6 | Product 12 | | | **6** | 6, 1 | 6, 2 | 6, 3 | 6, 4 | 6, 5 | 6, 6 |  |  | |  |
|  | (a) | 1 mark for correct answer - doesn’t need to be simplified. |
|  | (b) | 1 mark for correct answer - doesn’t need to be simplified. |
| 81. | |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | |  |  |  | ● |  | ● |  |  |  | |  |  |  | ● |  | ● |  | ● |  | |  |  | ● | ● |  | ● | ● | ● |  | |  | ● | ● | ● |  | ● | ● | ● | ● | |  | ● | ● | ● | ● | ● | ● | ● | ● | |  | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | |  |
|  | (a) Bimodal means that there are two modes, in this case 5 and 7 both occur the same number of times and more than any other scores. | 1 mark for correct explanation |
|  | (b) There are 25 scores, so the median is the 13th score, with 12 below and 12 above.  Counting though the 13th score is 7. | 1 mark for correct answer |
|  | 1. Sum of scores   =  = 164  Mean = | 1 mark for correct answer |
| 82. |  |  |
|  | (a) | 1 mark for correct reasoning. |
|  | (b) | 2 marks for correct answer with correct reasoning.  1 mark if an arithmetic/algebraic error is made, with correct reasoning, or a minor error in reasoning is made. |
| 83. | Since the angle of the sun is the same for both the tree and the man and they are both vertical, the triangles are equiangular, so they are also similar. | 2 marks for correct answer with correct reasoning.  1 mark if an arithmetic/algebraic error is made, with correct reasoning, or a minor error in reasoning (eg incorrect matching of sides) is made with correct calculations. |

High School

2014 Yearly Exam

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