Western Mathematics Exams

Half Yearly Examination

2015

Year 10

Mathematics Course

Solutions

|  |  |  |  |
| --- | --- | --- | --- |
| Year 10 | | *WME Half Yearly Maths* | Non Calculator |
| **Section 1** Short Answer Section | | | |
| ANSWERS | | | |
| No. | WORKING | | ANSWER |
|  |  | | 25 |
|  |  | |  |
|  |  | |  |
|  |  | | $0.24 |
|  | 30% discount leaves 70% to pay. | | $196 |
|  |  | | $220 |
|  |  | | 3 : 2 |
|  |  | | 28o |
|  | Let third angle =  Using angle sum,    So angles are 55o, 55o and 70o  Triangle is **isosceles** and **acute.** | | **isosceles** and **acute.** |
|  |  | | 108o |
|  |  | | 2.8 m |
|  |  | | 84 cm |
|  | The 22 cm base and 60 cm height are perpendicular. | | 660 cm2 |
|  |  | | 5 m3 |
|  | Distance through W = 60 + 80 = 140 m | | 40 m |
|  |  | | *ab* + 15*a* |
|  |  | |  |
|  |  | |  |
|  | Or by using the number plane diagram. | |  |
|  |  | |  |
|  |  | | *m* = 8 |
|  | Number of marbles = 19 + 16 + 5 = 40 | |  |
|  | Arrange in order.  0.87, 0.95, 1.24, 1.32, 1.35, 1.45, 1.65, 1.75, 1.84, 1.88.  Middle two of 10 are 1.35 and 1.45. | | 1.40 m |
|  | Between 1985 and 1987 the increase was $1 600 which was the biggest. | | 1985 and 1987 |
|  | Current record is 6.0 (in 2003)  Increase of 10% =  So need to make 6.6  In 2015 profit was 5.2, so increase compared to 2015 is  6.6 – 5.2 = 1.4 so $1 400. | | $1 400 |

|  |  |  |  |  |
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| Year 10 | | *WME Half Yearly Maths* | Calculator Allowed | |
| **Section 2 Part A** Multiple Choice Section | | | | |
| ANSWERS | | | | |
| No. | WORKING | | | ANSWER |
|  | The rest are equal. | | | B |
|  |  | | | D |
|  |  | | | C |
|  |  | | | A |
|  |  | | | B |
|  |  | | | A |
|  | A is not regular  B is non convex  C is not an octagon  D is a convex regular octagon. | | | D |
|  | A and B are reflections  C is a rotation through 180o  D is a rotation through 90o | | | C |
|  |  | | | B |
|  | Given that *AB* | | *DC* and *BC* | | *AD*, the quadrilateral is a parallelogram, so the diagonals bisect one another.  So *AC* bisects *BD.* | | | A |
|  | Rhombus | | | C |
|  |  | | | A |
|  |  | | | B |
|  |  | | | B |
|  |  | | | A |
|  |  | | | A |
|  | is not a factor of as | | | C |
|  |  | | | C |
|  |  | | | D |
|  |  | | | D |
|  | They won 5 ( lost 2 and drew 1) | | | B |
|  | When they scored more than 15 points they won 5 games and drew 1, and when less than 15 points they won 1 and lost 2.  So B is incorrect as they did not win all games when they scored over 15 points. | | | B |
|  | Mean = | | | C |
|  | Range = 20 – 10 = 10 | | | D |
|  | Sum of scores = | | | D |
|  |  | | | A |
|  | Sales over $4000 = $2500.  Commission =    Pay for week = 700 + 250 = $950 | | | C |
|  |  | | | D |
|  |  | | | B |
|  |  | | | D |
|  |  | | | A |
|  |  | | | B |
|  | Although a quadrilateral is present, it’s angle sum is not used in this proof. | | | B |
|  |  | | | C |
|  |  | | | C |
|  |  | | | D |
|  |  | | | C |
|  |  | | | A |
|  |  | | | A |
|  | Bearing of P from Q  is 270o + 43o = 313o | | | D |
|  |  | | | D |
|  |  | | | C |
|  |  | | | C |
|  |  | | | B |
|  |  | | | B |
|  | Counting the leaves there are 21 scores. | | | B |
|  | Median is the middle number of 21 ( the 11th) which is 33.     |  |  |  |  |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | |  |  |  |  |  |  |  |  |  |  |  |  |  | |  |  |  |  |  | 1 | 1 | 4 | 6 |  |  |  |  | |  |  |  |  |  | 2 | 2 | 5 | 6 | 7 | 8 |  |  | |  |  |  |  |  | 3 | 0 | 2 | 3 | 5 | 6 | 6 | 9 | |  |  |  |  |  | 4 | 2 | 4 | 7 | 9 |  |  |  | |  |  |  |  |  | 5 | 3 | 5 |  |  |  |  |  | | | | A |
|  | Middle of lower 10 scores is between 25 and 26 so 25.5  Middle of upper 10 scores is between 42 and 44 so 43  Interquartile range = 43 – 25.5 = 17.5   |  |  |  |  |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | |  |  |  |  |  |  |  |  |  |  |  |  |  | |  |  |  |  |  | 1 | ~~1~~ | ~~4~~ | ~~6~~ |  |  |  |  | |  |  |  |  |  | 2 | ~~2~~ | 5 | 6 | ~~7~~ | ~~8~~ |  |  | |  |  |  |  |  | 3 | ~~0~~ | ~~2~~ | 3 | ~~5~~ | ~~6~~ | ~~6~~ | ~~9~~ | |  |  |  |  |  | 4 | 2 | 4 | ~~7~~ | ~~9~~ |  |  |  | |  |  |  |  |  | 5 | ~~3~~ | ~~5~~ |  |  |  |  |  | | | | A |
|  | The distribution is bimodal and symmetrical. | | | A |
|  | As it is symmetrical the median and the mean are the same (at 23), as it is bimodal the mode is different (22 and 24), and the range of 6 is different again. | | | D |

High School

Half 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

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Year 10 | | *WME Half Yearly Maths* | Calculator Allowed | |
| **Section 2 Part B** Longer Answer Section | | | | |
| ANSWERS | | | | |
|  | | | | **Marks** | |
| 76. | (a) Cost after discount = 80% of normal price.  = | | | 1 mark for correct answer |
|  | (b) Method of comparing by finding cost per kg.    The 6 kg pack is the best value.  (Or convert all some common amount such as 12 kg.) | | | 2 marks for correct answer with working to justify answer  1 mark for wrong answer with some correct working relevant to answer |
| 77. | (a) | | | **1 mark for an answer including basically correct reasoning.** |
|  | (b) Depending on reasoning in part (a) may refer to results there. | | | **2 marks for any correct reasoning leading to conclusion of 33o.**  **1 mark for an answer including some correct reasoning** |
| 78. | (a) | | | **1 mark for correct answer** |
|  | (b) | | | **2 marks for correct answer including area and number of tins.**  **1 mark for an answer with an error in either calculation of area or number of tins** |
| 79. | (a) | | | **1 mark for correct answer** |
|  | (b)  Or by using the angle found in (a) | | | **1 mark for correct answer** |
|  | (c) DF = 16+4 = 20 | | | **2 marks for correct answer**  **1 mark for an answer with an error in either calculation of AF or of CD** |
| 80. | (a) Number of romances = 200 – (35+15+40) = 30 | | | **1 mark for correct answer** |
|  | (b) | | | **1 mark for correct answer** |
| 81. | (a) | | | **1 mark for correct answer** |
|  | (b) Median from 64 scores is between 32nd and 33rd scores.  Both of these are 8’s so median = 8. | | | **1 mark for correct answer** |
|  | (c) The higher frequencies are toward the higher scores, so the distribution is negatively skewed. | | | **1 mark for correct answer** |
| 82. | (a) | | | **1 mark for correct answer** |
|  | (b) | | | **1 mark for correct answer** |
| 83. |  | | | **2 marks for correct answer .**  **1 mark for an answer with a minor error in calculation or logic.** |
| 84. | (a) Mark Points *B* and *D* as shown. | | | **1 mark for 2 points, can award ½ for each if you wish.** |
|  | (b) The quadrilateral is joined and found to be a trapezium. | | | **1 mark for correct answer** |
|  | (c) Using the triangle *ABC* which is right angled, or by the formula. | | | **1 mark for correct answer** |