

9.7 Range and Mean Absolute Deviation

Chapter 9: Statistics and Data Analysis

Name: _____

Date: _____

Class/Period: _____

Problem 9.97 The temperatures are 3, 8, 5, 11, 7. Find the range and explain what the two endpoint values represent.

Problem 9.100 A student reports MAD -3 . Explain why a measure built from distances cannot be negative.

Problem 9.98 Find the MAD of 2, 2, 4, 4. Organize your work as mean, distances, total distance, and average distance.

Problem 9.101 A data set has minimum 7 and range 18. Find the maximum and explain which operation reverses the range formula.

Problem 9.99 All values in a data set are 5. Predict the range and MAD before calculating, then explain why both are zero.

Problem 9.102 A data set has maximum 30 and range 12. Find the minimum and check that the endpoints are 12 units apart.

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Problem 9.103 Travel times have mean 40 minutes and MAD 6 minutes. Complete: "A travel time is typically about _____ minutes away from _____ minutes."

Problem 9.106 Every value is doubled. Predict the changes in range and MAD and explain why multiplication changes the distances.

Problem 9.104 Two data sets have MADs 2.1 and 7.8. Which is more variable around its mean, and what does the comparison not tell you about their centers?

Problem 9.107 Explain why range can change dramatically when only one endpoint changes, even if the rest of the data stay fixed.

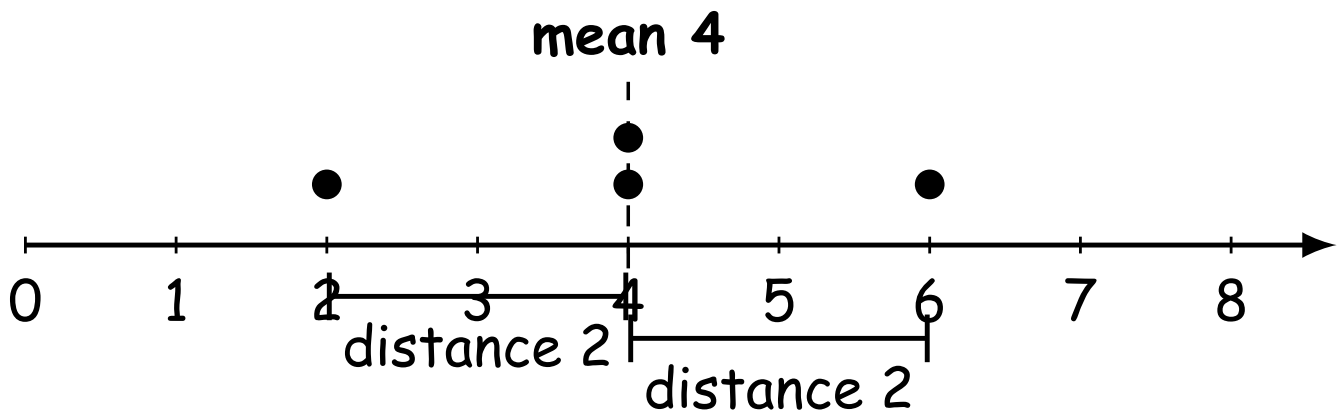
Problem 9.105 Every value increases by 10. Predict what happens to range and MAD, then justify using distances.

Problem 9.108 Create two data sets with the same mean and range but different MADs. Explain how the interior values cause the difference.

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Problem 9.109 The line plot shows 2, 4, 4, 6, with the mean marked.



List all four distances from the mean, including the repeated value. Find the MAD and explain why the distances on opposite sides do not cancel.

Problem 9.110 Compare 1, 3, 5, 7, 9 with 4, 5, 5, 5, 6. Both have mean 5. Find each MAD and explain which picture you would expect to look more spread out.

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Problem 9.111 A set has mean 12 and signed deviations $-4, -1, 0, 2, 3$. Find the MAD and explain why the signed deviations sum to zero while the absolute deviations do not.

Problem 9.112 One value is far from all the others. Compare how that value affects range and MAD, noting that one measure uses only endpoints and the other uses every observation.