Lesson 2-9 · Session 1

Finding Mean Absolute Deviation (MAD)

Name _____ Date _____ Period _____

Maryland Standard 6.DS.6c · Learning target — I can find the mean absolute deviation of a data set and explain what it measures.

Show a model, calculation, or explanation. Answer every part and label units when needed.

Exercises 1–12 earn 1 point for a correct response and 1 for supporting work. Spiral Review and Test Practice earn 1 point each.

Learn from a model

REMEMBER

- MAD (mean absolute deviation) measures the average distance each data value is from the mean.
- Steps: 1) find the mean, 2) find each value's distance from the mean, 3) find the mean of those distances.
- Watch out — find the mean before you find any deviation; every distance is measured from it.
- Check it — the MAD is always 0 or greater, and it is 0 only when every value is the same.

WORKED EXAMPLE

Finding the Mean Absolute Deviation Five snack prices in cents are 80, 90, 100, 110, 120. Find the mean absolute deviation.

Step 1 Find the mean: the five prices total 500, and sharing that evenly gives 100.

Step 2 Measure each price's distance from 100: 20, 10, 0, 10, 20.

Step 3 Add the distances. They come to 60.

Step 4 Share that total distance among the five prices.

Answer The MAD is 12 cents — a typical price sits about 12 cents away from the mean.

Practice

1. Data: 4, 6, 8, 10, 12. Mean = 8. Find each distance from the mean: _____ , _____ , _____ , _____ , _____

Answer _____

SHOW YOUR THINKING

2. Find the MAD for the data in problem 1 (average the distances).

Answer _____

SHOW YOUR THINKING

3. What does a MAD of 0 tell you about a data set?

Answer _____

SHOW YOUR THINKING

4. The mean of 11, 17, 19, 21, 27 is 19. Find each distance from the mean.

a. 11 _____
b. 17 _____
c. 19 _____
d. 21 _____
e. 27 _____
f. MAD _____

Answer _____

SHOW YOUR THINKING

5. Puzzle Times. Four times in minutes are 8, 14, 16, 22. Find the mean and the MAD.

Answer _____

SHOW YOUR THINKING

6. Snack Prices. Five prices in cents are 55, 60, 70, 80, 85. Find the mean and the MAD, then explain what the MAD tells a shopper.

Answer _____

EXPLAIN WITH MATHEMATICAL EVIDENCE

7. Everyone the Same. Six students all scored 18 points. Find the mean and the MAD, then explain what the MAD tells you.

Answer _____

EXPLAIN WITH MATHEMATICAL EVIDENCE

8. Signs Cancel. Tavon found distances of −4, −1, 2, and 3 from the mean and reported a MAD of 0. Explain his mistake and find the correct MAD.

Answer _____

EXPLAIN WITH MATHEMATICAL EVIDENCE

9. Find the mean and the MAD of 2, 4, 6, and 8.

Answer _____ mean and MAD

SHOW YOUR THINKING

10. Find the mean and the MAD of 30, 40, 50.

Answer _____ mean and MAD

SHOW YOUR THINKING

11. Read the MAD. A set has a mean of 72 and a MAD of 4. Describe in one sentence how spread out the data is.

Answer _____ your sentence

EXPLAIN WITH MATHEMATICAL EVIDENCE

12. Find the Mistake. Omar wrote a deviation of −6 for a value below the mean. Explain the mistake.

Answer _____ the mistake

EXPLAIN WITH MATHEMATICAL EVIDENCE

Spiral review

13. From Lesson 2-8 Session 1. Find the mean of 14, 18, 22.

Answer _____

SHOW YOUR THINKING

14. From Lesson 2-7 Session 2. Find 11.2 ÷ 0.8.

Answer _____

SHOW YOUR THINKING

15. From Lesson 2-6 Session 1. Which measure of center resists outliers?

Answer _____

SHOW YOUR THINKING

Test practice

16. A MAD of 0 means every value —

- □ A. is different
- □ B. is zero
- □ C. is negative
- □ D. equals the mean

17. The MAD measures —

□ A. spread	□ B. center
□ C. count	□ D. shape

18. For 10, 10, 10, 10 the MAD is —

□ A. 10	□ B. 0
□ C. 40	□ D. 1

Check and revise

CHECK YOUR MATHEMATICS	HOW DID IT GO?
Every distance must be zero or positive. Divide by the number of values. Every part answered / Work shown / Units labeled when needed	I can do this: Independently / With a hint / With help Question to revisit: _____

One correction or question I want to discuss: _____

Check one response against the data. State which measure or feature supports your answer.