Statistics and Data Displays

Lesson 6 Mean Absolute Deviation

Standards 6.SP.B.5c

Learning target I can calculate and interpret mean absolute deviation.

Materials Grid paper, rulers, colored pencils, data tables.

Lesson Flow 50 Minutes

0–5 Activate prior knowledge. Read the learning target. Ask students what they already know about mean absolute deviation. Use a quick model or estimate to make their starting ideas visible.

5–17 Teach and model. Find the mean. Calculate each value’s distance from the mean, add those distances, then divide by the number of observations. MAD describes a typical distance from the mean in the original units. Work through the two examples on the attached instruction page. Have students name the first step before showing it.

17–22 Guided practice. Revisit worked Example 2 with its solution covered. Students propose the next step and explain why it is valid; uncover and compare with the worked solution.

22–45 Independent classwork. Assign the attached 10 questions in order. Check items 1–3 for entry-level understanding, 4–6 for connected procedures, 7–8 for representation and explanation, and 9–10 for application or justification. Ask students to use the instruction-page notes area or extra grids for longer work.

45–50 Check understanding. Use classwork question 10 as an exit discussion: Reading times in minutes are 7, 8, 8, 9, 10, 19. Calculate the mean and MAD. Show all absolute deviations. Interpret MAD in a sentence. Compare the result with the answer key and ask a student to defend the method.

Support and Extension

Support Model item 1 together with the listed tools, then have students attempt item 2 independently. Watch sorting before finding medians, quartile conventions, counting every observation once, and mean versus variability.

Extension Ask students to solve a final item another way, draw a second representation, or create a related problem with a checked answer.

Next step Record which students can explain the target independently. Begin the next teaching session with a brief correction for any recurring error.

Name _____ Date _____

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Learn and Discuss

Find the mean. Calculate each value's distance from the mean, add those distances, then divide by the number of observations. MAD describes a typical distance from the mean in the original units.

Example 1 Reading times in minutes are 5, 6, 6, 7, 7, 8. Calculate the mean and MAD. Show all absolute deviations.
Solution Mean 13/2 min; MAD 5/6 min. Distances: 3/2, 1/2, 1/2, 1/2, 1/2, 3/2; sum 5; divide by 6 = 5/6.
Example 2 Reading times in minutes are 5, 6, 6, 7, 8, 17. Calculate the mean and MAD. Show all absolute deviations. Interpret MAD in a sentence.
Solution Mean 49/6 min; MAD 53/18 min; a typical distance from the mean is 53/18 min. Distances: 19/6, 13/6, 13/6, 7/6, 1/6, 53/6; sum 53/3; divide by 6 = 53/18.

Classwork Show Your Work

Complete the 10 problems on the following page. Refer to the examples, draw models, and check your results.

My Notes or Second Method

Lesson 6 Mean Absolute Deviation

Name _____ Show calculations, models, and units.

1. Reading times in minutes are 8, 9, 9, 10, 10, 11. Calculate the mean and MAD. Show all absolute deviations.

2. Reading times in minutes are 7, 8, 8, 9, 9, 10. Calculate the mean and MAD. Show all absolute deviations.

3. Reading times in minutes are 2, 3, 3, 4, 4, 5. Calculate the mean and MAD. Show all absolute deviations.

4. Reading times in minutes are 8, 10, 10, 12, 12, 14. Calculate the mean and MAD. Show all absolute deviations.

5. Reading times in minutes are 8, 12, 12, 16, 16, 20. Calculate the mean and MAD. Show all absolute deviations.

6. Reading times in minutes are 4, 6, 6, 8, 8, 10. Calculate the mean and MAD. Show all absolute deviations.

7. Reading times in minutes are 4, 5, 5, 6, 7, 16. Calculate the mean and MAD. Show all absolute deviations. Interpret MAD in a sentence.

8. Reading times in minutes are 3, 4, 4, 5, 6, 15. Calculate the mean and MAD. Show all absolute deviations. Interpret MAD in a sentence.

9. Reading times in minutes are 2, 3, 3, 4, 5, 14. Calculate the mean and MAD. Show all absolute deviations. Interpret MAD in a sentence.

10. Reading times in minutes are 7, 8, 8, 9, 10, 19. Calculate the mean and MAD. Show all absolute deviations. Interpret MAD in a sentence.

Mean Absolute Deviation

Statistics and Data Displays

1. Mean 19/2 min; MAD 5/6 min
Reasoning Distances: 3/2, 1/2, 1/2, 1/2, 1/2, 3/2; sum 5; divide by 6 = 5/6.

2. Mean 17/2 min; MAD 5/6 min
Reasoning Distances: 3/2, 1/2, 1/2, 1/2, 1/2, 3/2; sum 5; divide by 6 = 5/6.

3. Mean 7/2 min; MAD 5/6 min
Reasoning Distances: 3/2, 1/2, 1/2, 1/2, 1/2, 3/2; sum 5; divide by 6 = 5/6.

4. Mean 11 min; MAD 5/3 min
Reasoning Distances: 3, 1, 1, 1, 1, 3; sum 10; divide by 6 = 5/3.

5. Mean 14 min; MAD 10/3 min
Reasoning Distances: 6, 2, 2, 2, 2, 6; sum 20; divide by 6 = 10/3.

6. Mean 7 min; MAD 5/3 min
Reasoning Distances: 3, 1, 1, 1, 1, 3; sum 10; divide by 6 = 5/3.

7. Mean 43/6 min; MAD 53/18 min; a typical distance from the mean is 53/18 min
Reasoning Distances: 19/6, 13/6, 13/6, 7/6, 1/6, 53/6; sum 53/3; divide by 6 = 53/18.

8. Mean 37/6 min; MAD 53/18 min; a typical distance from the mean is 53/18 min
Reasoning Distances: 19/6, 13/6, 13/6, 7/6, 1/6, 53/6; sum 53/3; divide by 6 = 53/18.

9. Mean 31/6 min; MAD 53/18 min; a typical distance from the mean is 53/18 min
Reasoning Distances: 19/6, 13/6, 13/6, 7/6, 1/6, 53/6; sum 53/3; divide by 6 = 53/18.

10. Mean 61/6 min; MAD 53/18 min; a typical distance from the mean is 53/18 min
Reasoning Distances: 19/6, 13/6, 13/6, 7/6, 1/6, 53/6; sum 53/3; divide by 6 = 53/18.