# Statistics and Data Displays

### Lesson 4 Medians and Unusual Values

Standards 6.SP.B.5c

Learning target I can find a median and compare it with the mean.

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 medians and unusual values. Use a quick model or estimate to make their starting ideas visible.

5–17 Teach and model. Order the data first. For an odd count, choose the middle value. For an even count, average the two middle values. The median often resists an unusually high or low value better than the mean. 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 8, 9, 9, 10, 11, 20. Find the median and mean. Explain the difference in this set. 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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Learning target I can find a median and compare it with the mean.

### Learn and Discuss

Order the data first. For an odd count, choose the middle value. For an even count, average the two middle values. The median often resists an unusually high or low value better than the mean.

Example 1 Reading times in minutes are 4, 5, 5, 6, 6, 7. Find the median. Show the middle positions.
Solution Median 11/2 min. 6 ordered values: average positions 3 and 4: (5 + 6) ÷ 2 = 11/2.
Example 2 Reading times in minutes are 8, 9, 9, 10, 11, 20. Find the median and mean. Explain the difference in this set.
Solution Median 19/2 min; mean 67/6 min; the high value pulls the mean upward. 6 ordered values: average positions 3 and 4: (9 + 10) ÷ 2 = 19/2.

### 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 4 Medians and Unusual Values

Name _____ Show calculations, models, and units.

1. Reading times in minutes are 4, 5, 5, 6, 6, 7. Find the median. Show the middle positions.

2. Reading times in minutes are 3, 4, 4, 5, 5, 6. Find the median. Show the middle positions.

3. Reading times in minutes are 2, 3, 3, 4, 4, 5. Find the median. Show the middle positions.

4. Reading times in minutes are 8, 10, 10, 12, 12, 14. Find the median. Show the middle positions.

5. Reading times in minutes are 4, 8, 8, 12, 12, 16. Find the median. Show the middle positions.

6. Reading times in minutes are 2, 7, 7, 12, 12, 17. Find the median. Show the middle positions.

7. Reading times in minutes are 6, 7, 7, 8, 9, 18. Find the median and mean. Explain the difference in this set.

8. Reading times in minutes are 4, 5, 5, 6, 7, 16. Find the median and mean. Explain the difference in this set.

9. Reading times in minutes are 3, 4, 4, 5, 6, 15. Find the median and mean. Explain the difference in this set.

10. Reading times in minutes are 8, 9, 9, 10, 11, 20. Find the median and mean. Explain the difference in this set.

# Medians and Unusual Values

Statistics and Data Displays

1. Median 11/2 min
Reasoning 6 ordered values: average positions 3 and 4: (5 + 6) ÷ 2 = 11/2.

2. Median 9/2 min
Reasoning 6 ordered values: average positions 3 and 4: (4 + 5) ÷ 2 = 9/2.

3. Median 7/2 min
Reasoning 6 ordered values: average positions 3 and 4: (3 + 4) ÷ 2 = 7/2.

4. Median 11 min
Reasoning 6 ordered values: average positions 3 and 4: (10 + 12) ÷ 2 = 11.

5. Median 10 min
Reasoning 6 ordered values: average positions 3 and 4: (8 + 12) ÷ 2 = 10.

6. Median 19/2 min
Reasoning 6 ordered values: average positions 3 and 4: (7 + 12) ÷ 2 = 19/2.

7. Median 15/2 min; mean 55/6 min; the high value pulls the mean upward
Reasoning 6 ordered values: average positions 3 and 4: (7 + 8) ÷ 2 = 15/2.

8. Median 11/2 min; mean 43/6 min; the high value pulls the mean upward
Reasoning 6 ordered values: average positions 3 and 4: (5 + 6) ÷ 2 = 11/2.

9. Median 9/2 min; mean 37/6 min; the high value pulls the mean upward
Reasoning 6 ordered values: average positions 3 and 4: (4 + 5) ÷ 2 = 9/2.

10. Median 19/2 min; mean 67/6 min; the high value pulls the mean upward
Reasoning 6 ordered values: average positions 3 and 4: (9 + 10) ÷ 2 = 19/2.