Statistics and Data Displays

Lesson 3 Mean and Observation Counts

Standards 6.SP.B.5a, 6.SP.B.5b, 6.SP.B.5c

Learning target I can calculate and interpret the mean of numerical data.

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 and observation counts. Use a quick model or estimate to make their starting ideas visible.

5–17 Teach and model. The mean is a fair share: add all values and divide by the number of observations. Report the count and measurement units. A large unusual value can pull the mean toward it. 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 6, 7, 7, 8, 9, 18. Report n, units, and mean. If one more student reads 10 minutes, find the new mean. 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 calculate and interpret the mean of numerical data.

Learn and Discuss

The mean is a fair share: add all values and divide by the number of observations. Report the count and measurement units. A large unusual value can pull the mean toward it.

Example 1 Reading times in minutes are 5, 6, 6, 7, 7, 8. Report n, units, and mean.
Solution n = 6; minutes; mean 13/2 min. Sum = 39; mean = 39 ÷ 6 = 13/2.
Example 2 Reading times in minutes are 5, 6, 6, 7, 8, 17. Report n, units, and mean. If one more student reads 9 minutes, find the new mean.
Solution n = 6; minutes; mean 49/6 min; new mean 58/7 min. Sum = 49; mean = 49 ÷ 6 = 49/6. New sum = 58; divide by 7.

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 3 Mean and Observation Counts

Name _____ Show calculations, models, and units.

1. Reading times in minutes are 3, 4, 4, 5, 5, 6. Report n, units, and mean.

2. Reading times in minutes are 2, 3, 3, 4, 4, 5. Report n, units, and mean.

3. Reading times in minutes are 7, 8, 8, 9, 9, 10. Report n, units, and mean.

4. Reading times in minutes are 3, 9, 9, 15, 15, 21. Report n, units, and mean.

5. Reading times in minutes are 8, 14, 14, 20, 20, 26. Report n, units, and mean.

6. Reading times in minutes are 4, 9, 9, 14, 14, 19. Report n, units, and mean.

7. Reading times in minutes are 3, 4, 4, 5, 6, 15. Report n, units, and mean. If one more student reads 7 minutes, find the new mean.

8. Reading times in minutes are 8, 9, 9, 10, 11, 20. Report n, units, and mean. If one more student reads 12 minutes, find the new mean.

9. Reading times in minutes are 4, 5, 5, 6, 7, 16. Report n, units, and mean. If one more student reads 8 minutes, find the new mean.

10. Reading times in minutes are 6, 7, 7, 8, 9, 18. Report n, units, and mean. If one more student reads 10 minutes, find the new mean.

Mean and Observation Counts

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1. n = 6; minutes; mean 9/2 min
Reasoning Sum = 27; mean = 27 ÷ 6 = 9/2.

2. n = 6; minutes; mean 7/2 min
Reasoning Sum = 21; mean = 21 ÷ 6 = 7/2.

3. n = 6; minutes; mean 17/2 min
Reasoning Sum = 51; mean = 51 ÷ 6 = 17/2.

4. n = 6; minutes; mean 12 min
Reasoning Sum = 72; mean = 72 ÷ 6 = 12.

5. n = 6; minutes; mean 17 min
Reasoning Sum = 102; mean = 102 ÷ 6 = 17.

6. n = 6; minutes; mean 23/2 min
Reasoning Sum = 69; mean = 69 ÷ 6 = 23/2.

7. n = 6; minutes; mean 37/6 min; new mean 44/7 min
Reasoning Sum = 37; mean = 37 ÷ 6 = 37/6. New sum = 44; divide by 7.

8. n = 6; minutes; mean 67/6 min; new mean 79/7 min
Reasoning Sum = 67; mean = 67 ÷ 6 = 67/6. New sum = 79; divide by 7.

9. n = 6; minutes; mean 43/6 min; new mean 51/7 min
Reasoning Sum = 43; mean = 43 ÷ 6 = 43/6. New sum = 51; divide by 7.

10. n = 6; minutes; mean 55/6 min; new mean 65/7 min
Reasoning Sum = 55; mean = 55 ÷ 6 = 55/6. New sum = 65; divide by 7.