Lesson 2-5 · Session 1

Range and IQR

Name _____ Date _____ Period _____

Maryland Standard 6.DS.3 · Learning target — I can find the range and the interquartile range of a data set.

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

- Range = maximum minus minimum.
- IQR (interquartile range) = Q3 minus Q1; it measures the spread of the middle 50% of the data.
- Watch out — the range uses only two values, so it can be driven entirely by one unusual data point.
- Check it — the IQR is always less than or equal to the range.

WORKED EXAMPLE

Finding the Range and the IQR Seven history test scores are 74, 90, 83, 68, 86, 77, 94. Find the range and the IQR.

Step 1 Order the values: 68, 74, 77, 83, 86, 90, 94.

Step 2 Range: take the least value away from the greatest value. That gives 26 points.

Step 3 The median is 83, so quartile 1 is 74 and quartile 3 is 90.

Step 4 IQR: take quartile 1 away from quartile 3. That gives 16 points.

Answer The range is 26 points and the interquartile range is 16 points.

Practice

1. Data: 3, 5, 5, 7, 9, 11, 13. Min _____ Max _____ Range _____

Answer _____

SHOW YOUR THINKING

2. For the same data, Q1 = 5 and Q3 = 11. Find the IQR. _____

Answer _____

SHOW YOUR THINKING

3. Which measure, range or IQR, is affected less by an extreme outlier? Explain.

Answer _____

EXPLAIN WITH MATHEMATICAL EVIDENCE

4. Find the measure named in each part.

a. Range of 12, 19, 7, 25 _____
b. Range of 40, 33, 55, 47 _____
c. Range of 6, 6, 6, 6 _____
d. Range of 88, 62, 94, 70 _____
e. IQR when Q1 = 14 and Q3 = 29 _____

Answer _____

SHOW YOUR THINKING

5. Paper Airplanes. Seven flights traveled 9, 21, 14, 30, 18, 25, 12 feet. Find the range and the IQR.

Answer _____

SHOW YOUR THINKING

6. Soup Can Drive. Seven classrooms collected 46, 58, 52, 70, 61, 49, 64 cans. Find the range and the IQR, then tell what each one measures.

Answer _____

SHOW YOUR THINKING

7. Working Backward. A set of seven values has a minimum of 11, a range of 47, a Q1 of 20, and an IQR of 26. Find the maximum and Q3.

Answer _____

SHOW YOUR THINKING

8. Can IQR Be Zero? Sondra says the IQR can never be 0. Explain whether she is right, and give a data set that supports your answer.

Answer _____

EXPLAIN WITH MATHEMATICAL EVIDENCE

9. Find the range and the IQR of 55, 70, 62, 48, 66, 58, and 74.

Answer _____ range and IQR

SHOW YOUR THINKING

10. A set has min 14, Q1 20, median 26, Q3 33, max 45. Find the range and the IQR.

Answer _____ range and IQR

SHOW YOUR THINKING

11. Compare. Set P has an IQR of 6 and set Q has an IQR of 19. Which set has the steadier middle half? Explain.

Answer _____ set and why

EXPLAIN WITH MATHEMATICAL EVIDENCE

12. Find the Mistake. Omar computed the IQR as max − min. Explain his mistake and name what he actually found.

Answer _____ the mistake

EXPLAIN WITH MATHEMATICAL EVIDENCE

Spiral review

13. From Lesson 2-4 Session 1. Name the five numbers in a five-number summary.

Answer _____

RECORD YOUR RESPONSE

14. From Lesson 2-3 Session 1. Find the median of 44, 39, 51, 47, 42.

Answer _____

SHOW YOUR THINKING

15. Grade 5. Find 2.4 × 7.

Answer _____

SHOW YOUR THINKING

Test practice

16. IQR stands for —

- □ A. item quality range
- □ B. internal quota rate
- □ C. inverse quarter ratio
- □ D. interquartile range

17. Q1 = 22 and Q3 = 37 give an IQR of —

□ A. 15	□ B. 22
□ C. 37	□ D. 59

18. Which measure is least affected by one extreme value?

□ A. range	□ B. IQR
□ C. maximum	□ D. minimum

Check and revise

CHECK YOUR MATHEMATICS	HOW DID IT GO?
Use consistent units and the same measure when comparing two groups. 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.