

Data Detectives

Use data to spot patterns and make decisions.

GRADE 7 • TEKS 7.2

7.2 "Scientific and engineering practices. The student analyzes and interprets data to derive meaning, identify features and patterns, and discover relationships or correlations to develop evidence-based arguments or evaluate designs..."

NAME _____

DATE _____

MEAN, RANGE, AND OUTLIERS

Find the mean by adding all data values and dividing by the number of values. Find the range by subtracting the least value from the greatest value. An outlier is a value far from the rest and may signal an error or unusual result.

WORKED EXAMPLE

Find the mean of data points A, B, C, and D.



1. Read the values: 2, 4, 6, and 8.
2. Add: $2 + 4 + 6 + 8 = 20$.
3. Divide: $20 / 4 = 5$.

Answer: Mean = 5

PRACTICE 4 problems

- 1** Find the mean of 5, 10, and 15.

ANSWER _____

- 2** Find the range of 11, 15, 13, and 18.

ANSWER _____

- 3** A model car travels 7 cm, 9 cm, 10 cm, and 14 cm in four trials. Find the mean distance.

ANSWER _____

- 4** A sensor gives readings of 12, 13, 14, and 40. Which reading is most likely an outlier? Give a reason.

ANSWER _____

APPLY IT Show your work

- 1** A student tests bean plants with different amounts of light. Find the mean growth for each light amount. Which amount produced the higher mean growth?

BEAN PLANT GROWTH

Light each day	Growth (cm)
5 hours	9
5 hours	11
7 hours	13
7 hours	15

CALCULATE BOTH MEANS

ANSWER _____

- 2** A student tests phone cases that help a phone battery last longer. Case A lasts 41, 43, and 45 minutes. Case B lasts 50, 52, and 54 minutes. Find each mean, then choose the better design.

WORK SPACE

ANSWER _____

CHALLENGE One step up

Trial masses are 14 g, 16 g, 18 g, and x g. The mean mass is 17 g. Find x and explain how you know.

WORK SPACE AND ANSWER

PART 1 • PRACTICE

#	PROBLEM	ANSWER
1	Find the mean of 5, 10, and 15.	10
2	Find the range of 11, 15, 13, and 18.	7
3	A model car travels 7 cm, 9 cm, 10 cm, and 14 cm in four trials. Find the mean distance.	10 cm
4	A sensor gives readings of 12, 13, 14, and 40. Which reading is most likely an outlier? Give a reason.	40; it is much greater than the other readings.

PART 2 • APPLY IT

- 5 hours: 10 cm. 7 hours: 14 cm. Seven hours produced the higher mean growth.** The 5-hour plants have a mean of 10 cm, and the 7-hour plants have a mean of 14 cm. Compare the two means.
- Case A mean: 43 minutes. Case B mean: 52 minutes. Case B is better because its mean battery time is 9 minutes longer.**
Add each case's three times and divide by the number of tests. Case B has the greater mean battery time.

CHALLENGE

$x = 20$ g. The total for all values must be 68 g. The known masses total 48 g, so x is 20 g.

Accept equivalent wording for the outlier explanation and design choice when it correctly compares the data. Require units for measured quantities.