

Bin Size Matters

See how interval width changes a histogram.

GRADE 7 • 7.PS.2.e

7.PS.2.e "Investigate and explain how using different intervals could impact the representation of the data in a histogram."

NAME _____

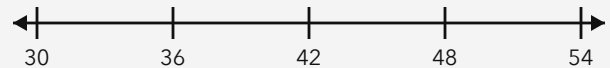
DATE _____

CHOOSE EQUAL INTERVALS

A histogram groups data into equal-width intervals. Smaller intervals show more detail, while larger intervals combine data and can hide patterns.

WORKED EXAMPLE

The number line marks the starts of equal intervals. A data set has 31, 34, 36, 41, 47, and 52. Find the frequency in each interval.



1. The tick marks are 6 units apart, so each interval has width 6.
2. Put 31 and 34 in 30-35, and put 36 and 41 in 36-41.
3. Put 47 in 42-47 and 52 in 48-53.

Answer: 30-35: 2; 36-41: 2; 42-47: 1; 48-53: 1

PRACTICE 4 problems

- 1** Data values go from 1 through 28. Using intervals of width 7, how many intervals are needed?

ANSWER _____

- 2** A data set is grouped using intervals of width 2 and then intervals of width 8. Which grouping shows more detail? Explain.

ANSWER _____

- 3** Which interval contains 27: 0-9, 10-19, 20-29, or 30-39?

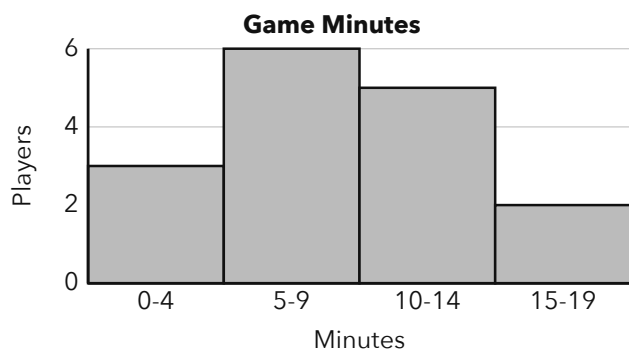
ANSWER _____

- 4** A histogram has 7 data values in 40-49 and 4 data values in 50-59. If these are combined into 40-59, what is the new frequency, and what detail is lost?

ANSWER _____

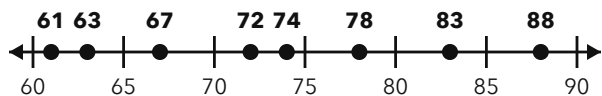
APPLY IT Show your work

- 1** The histogram shows minutes spent on a game by players in a club. Combine the bars into intervals 0-9 and 10-19. Give each new frequency. Which histogram shows more detail, the original or the combined one?



ANSWER _____

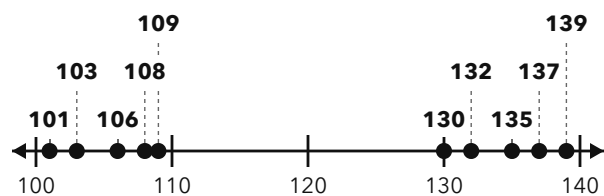
- 2** The number line shows points earned by eight players in a game tournament. Use intervals 60-69, 70-79, and 80-89. Find the frequency in each interval.



ANSWER _____

CHALLENGE One step up

The number line shows scores from a robotics contest. Group the scores using width-10 intervals and then width-20 intervals. Which interval width better shows that scores form two separate clusters? Explain.



WORK SPACE AND ANSWER

PART 1 • PRACTICE

#	PROBLEM	ANSWER
1	Data values go from 1 through 28. Using intervals of width 7, how many intervals are needed?	4 intervals
2	A data set is grouped using intervals of width 2 and then intervals of width 8. Which grouping shows more detail? Explain.	Intervals of width 2 show more detail because they separate the data into smaller groups.
3	Which interval contains 27: 0-9, 10-19, 20-29, or 30-39?	20-29
4	A histogram has 7 data values in 40-49 and 4 data values in 50-59. If these are combined into 40-59, what is the new frequency, and what detail is lost?	11; the separate frequencies for 40-49 and 50-59 are no longer shown.

PART 2 • APPLY IT

- 0-9: 9; 10-19: 7. The original histogram shows more detail.** Add $3 + 6$ for 0-9 and $5 + 2$ for 10-19. The original has narrower intervals, so it shows the distribution more precisely.
- 60-69: 3; 70-79: 3; 80-89: 2** Count the plotted values in each 10-point interval.

CHALLENGE

Width 10. The width-10 frequencies are 100-109: 5, 110-119: 0, 120-129: 0, and 130-139: 5, so the two clusters and the gap are visible. Width-20 intervals give 100-119: 5 and 120-139: 5, which hides the gaps inside the intervals.

Accept equivalent wording about narrower intervals showing more detail and wider intervals combining groups. For interval counts, accept correct frequencies written in a table or sentence.