

# Measuring Center and Variability in Data

Grade 6 math · Worksheet · Standards: 6.SP.A.3, 6.SP.B.5c, 6.SP.B.5d

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Class: \_\_\_\_\_

These twenty problems train standards 6.SP.A.3, 6.SP.B.5c and 6.SP.B.5d: finding the mean, median, range, quartiles, IQR and mean absolute deviation, and choosing the best measure when data have outliers.

The problems start with single measures and move to dot plots, box plots, comparisons and outliers. The last problems combine several measures in one data set. Order the data before using the median or quartiles.

**Standards:** 6.SP.A.3, 6.SP.B.5c, 6.SP.B.5d · **Level:** Grade 6

## **Problem 1 Mean of five values** (easy)

Five volunteers at a food pantry packed 18, 21, 15, 20 and 26 boxes. Find the mean number of boxes.

## **Problem 2 Median of an odd count** (easy)

Find the median of 23, 7, 15, 31 and 19.

## **Problem 3 Median of an even count** (easy)

Find the median of 12, 18, 9, 22, 15 and 20.

## **Problem 4 Range of temperatures** (easy)

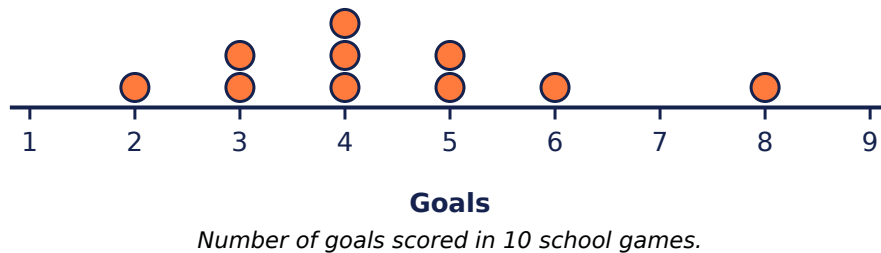
The noon temperatures on five days were 54°F, 61°F, 47°F, 66°F and 58°F. Find the range.

## **Problem 5 Fair share** (easy)

Four friends have 6, 9, 3 and 10 marbles. They pool them and share equally. How many marbles does each friend get, and what is this value called?

### Problem 6 Mean and median from a dot plot (medium)

The dot plot shows the goals scored in 10 school games. Find the mean and the median.



### Problem 7 Quartiles and IQR (medium)

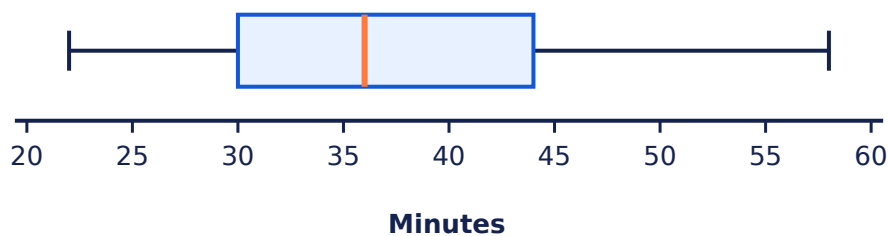
Find the median, Q1, Q3 and IQR of 14, 18, 21, 25, 26, 29, 33 and 36.

### Problem 8 Mean absolute deviation (medium)

Find the mean and the mean absolute deviation of 6, 8, 9, 10 and 12.

### Problem 9 Reading a box plot (medium)

The box plot shows daily minutes of physical activity in a month.



- Give the median.
- Find the range.
- Find the IQR.

### Problem 10 Effect of an outlier (medium)

The data set 8, 9, 10, 11, 12 has a new value of 40 added. Find the mean and median before and after.

**Problem 11 Choose the best measure** (medium)

Five homes on a street sold for \$210,000, \$225,000, \$230,000, \$240,000 and \$1,200,000. Find the mean and the median, and tell which better describes a typical price.

**Problem 12 Find the missing score** (medium)

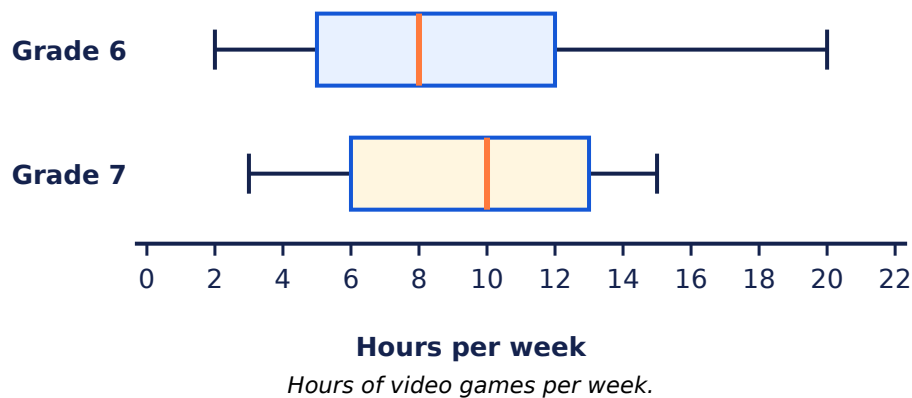
The mean of four test scores is 85. Three of the scores are 82, 90 and 78. Find the fourth score.

**Problem 13 Same mean, different spread** (medium)

Team A scored 8, 9, 10, 11 and 12 points. Team B scored 4, 7, 10, 13 and 16 points. Show that both teams have the same mean, find the MAD of each, and tell which team is more consistent.

**Problem 14 Comparing two grades** (hard)

The box plots show the weekly hours of video games for two grades.



- Which grade has the greater median?
- Which grade has the greater range?
- Which grade has the greater IQR?

**Problem 15 Bowling scores** (hard)

A bowler scored 142, 156, 138, 160, 149, 151, 148 and 152. Find the mean, the median, the range and the IQR.

**Problem 16 Delivery times** (hard)

Delivery times in minutes were 22, 25, 24, 27, 26, 23, 25 and 62.

- Find the mean.
- Find the median.
- Which measure better describes a typical delivery time? Explain.

### Problem 17 Monthly rainfall (hard)

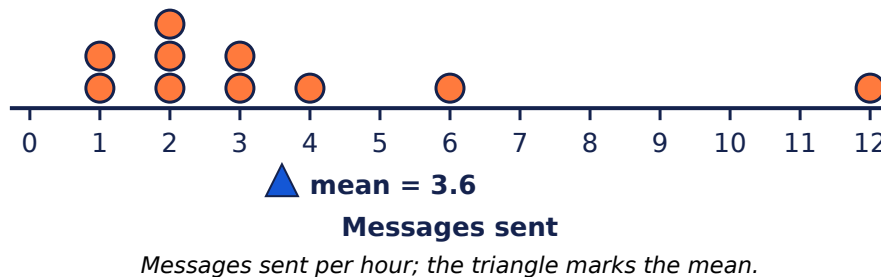
Monthly rainfall in inches was 2, 4, 6, 6, 8 and 10. Find the mean, the MAD, the median and the IQR.

### Problem 18 Adding a value (hard)

The data set 10, 12, 14, 16, 18 has mean 14 and MAD 2.4. A sixth value of 14 is added. Describe what happens to the mean and the MAD.

### Problem 19 Skewed messages (hard)

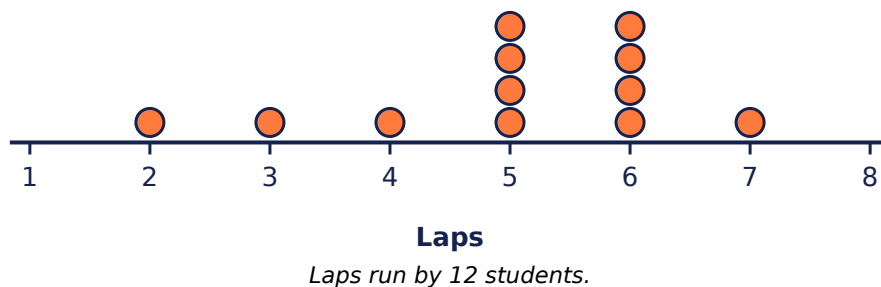
The dot plot shows messages sent per hour by 10 students. The mean is marked.



- Find the median.
- Which is greater, the mean or the median, and why?
- Which measure of center better describes a typical student?

### Problem 20 Laps run (hard)

The dot plot shows the laps run by 12 students.



- a. Find the mean and the median.
- b. Find the range and the IQR.
- c. Find the MAD.