

Asking Statistical Questions and Showing Data

Grade 6 math · Worksheet Answer Key · Standards: 6.SP.A.1, 6.SP.A.2, 6.SP.B.4, 6.SP.B.5a, 6.SP.B.5b

Each solution shows the counts or the five values used, then states the answer. Compare your display with the one shown, checking the number line, the scale and the total number of observations.

Standards: 6.SP.A.1, 6.SP.A.2, 6.SP.B.4, 6.SP.B.5a, 6.SP.B.5b · **Level:** Grade 6

Problem 1 Statistical or not?

- a. Not statistical: it has one answer.
- b. Statistical: sleep time varies from student to student.
- c. Statistical: the heights of the players vary.
- d. Not statistical: the tower has one height.

(a) no; (b) yes; (c) yes; (d) no

Problem 2 Write a statistical question

A sample answer: "How many pets do the students in Ms. Ruiz's sixth-grade class own?" The answers vary from student to student, so the question is statistical. The attribute is the number of pets owned, and the unit is pets.

Sample question: How many pets do sixth graders in our class own?

Problem 3 Describe the data set

Count the values: 3, 5, 2, 4, 4, 6, 1, 3, 5, 4, 2, 7 is 12 numbers. Each value tells how many books a student read.

12 observations; attribute: number of books read last month; unit: books

Problem 4 Reading a dot plot

- a. $3 + 4 + 2 + 2 + 2 + 1 = 14$ dots.
- b. The dot stack above 1 has 4 dots.
- c. Values greater than 2 are 3, 3, 4, 4 and 6: 5 students.

(a) 14 students; (b) 4 students; (c) 5 students

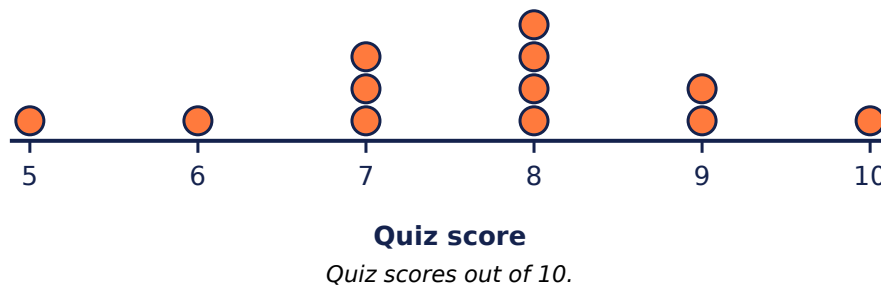
Problem 5 Reading a histogram

- a. The tallest bar is for 10-19 minutes (9 students).
- b. $4 + 1 = 5$ students are in 20-29 and 30-39.

(a) 10-19 minutes; (b) 5 students

Problem 6 Draw a dot plot

Count each score: 5 once, 6 once, 7 three times, 8 four times, 9 twice and 10 once. That is 12 dots in all.



The most common score is 8

Problem 7 Fix the question

A sample answer: "How many minutes do the students in the school band play their instruments on a typical weekday?" Different students will answer differently.

Sample question: How many minutes do band students play each weekday?

Problem 8 Describe the distribution

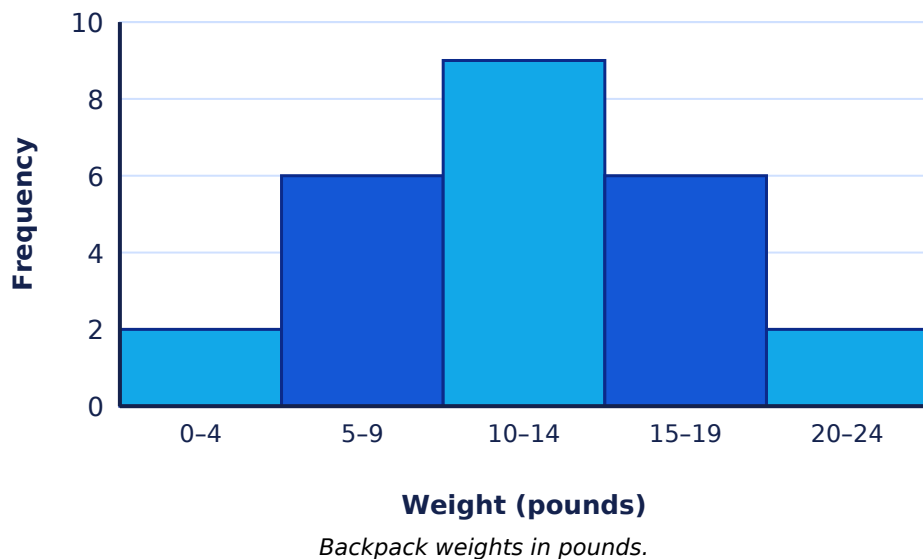
The values run from 2 to 8, so the spread is 6 messages. Most students cluster at 4 to 6 messages, with a peak at 5. The dots are close to symmetric around 5, with a slight tail to the right.

Center near 5; spread from 2 to 8; roughly symmetric

Problem 9 Draw a histogram

Count the students in each interval. The table has 2, 6, 9, 6 and 2 students. Draw one bar for

each interval with those heights; the bars touch.



The 10-14 pound interval holds the most students (9)

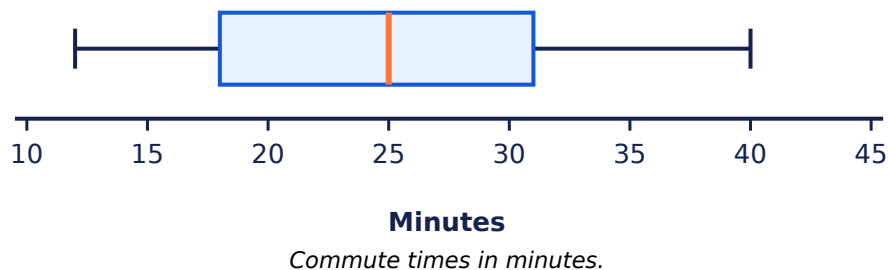
Problem 10 Reading a box plot

- a. The line inside the box is at 70.
- b. The whiskers end at 54 and 91.
- c. 62 is the first quartile, so about one quarter, or $\frac{1}{4}$, of the days are at or below it.
- d. The box runs from 62 to 77.

(a) 70°F; (b) 54°F and 91°F; (c) about $\frac{1}{4}$; (d) 62°F and 77°F

Problem 11 Draw a box plot

Mark 12, 18, 25, 31 and 40 on a number line. Draw a box from 18 to 31, a line in the box at 25, and whiskers to 12 and 40.



Box from 18 to 31, median 25, whiskers from 12 to 40

Problem 12 Choose the display

- a. A dot plot, because each value is a small whole number and the dot plot shows every exact value.
- b. A histogram, because 90 scores are too many for dots and intervals of 10 points group them clearly.
- c. A box plot, because the box shows the middle half of each class.

(a) dot plot; (b) histogram; (c) box plot

Problem 13 Noon temperatures

Count the temperatures: 10 values. Each value is the temperature at noon, in degrees Fahrenheit. The least is 68 and the greatest is 75.

10 observations; attribute: temperature at noon; unit: °F; least 68, greatest 75

Problem 14 Reading a histogram of reading time

- a. $3 + 8 = 11$ students.
- b. $2 + 1 = 3$ students read 60 minutes or more, out of 21: $3/21 = 1/7$.
- c. No. The histogram only shows that one student falls in the 80–99 interval, not the exact time.

(a) 11 students; (b) 1/7; (c) no, only an interval is shown

Problem 15 Comparing two classes

- a. The medians are 78 and 80, so Class B is higher.
- b. Class A: $96 - 60 = 36$. Class B: $90 - 55 = 35$. Class A is greater.
- c. The box for Class A runs 70 to 86 (16 points) and for Class B 72 to 84 (12 points), so Class B is narrower.

(a) Class B; (b) Class A; (c) Class B

Problem 16 Reading survey

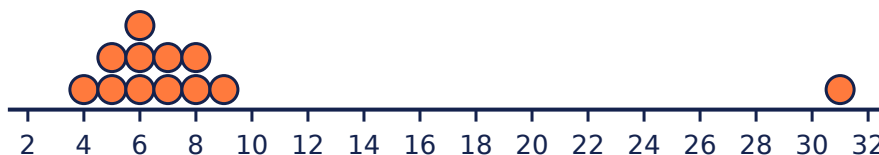
Sort the answers into intervals. 10 and 15 fall in 10–19. 20, 20, 25 and 25 fall in 20–29. 30, 30, 35 and 35 fall in 30–39. 40 and 45 fall in 40–49.

Minutes	10-19	20-29	30-39	40-49
Classmates	2	4	4	2

Check: $2 + 4 + 4 + 2 = 12$.

Problem 17 The bike club

- a. Most of the data cluster between 4 and 9 miles.
- b. The value 31 miles is far from the rest.
- c. The data are bunched on the left with one value far to the right.



Miles

The cluster and the far value.

(a) 4 to 9 miles; (b) 31 miles; (c) skewed right with an unusual value

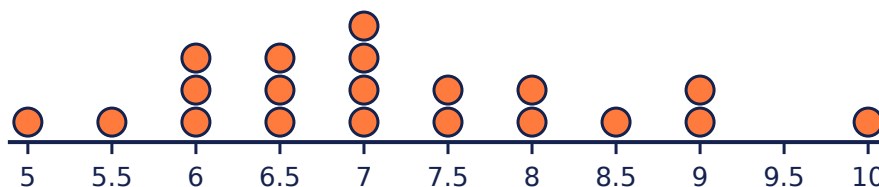
Problem 18 Museum visitor ages

- a. The middle half of the data lies between Q1 and Q3: $48 \div 2 = 24$ visitors.
- b. Half of the visitors are below the median: $48 \div 2 = 24$ visitors.
- c. $41 - 5 = 36$.

(a) about 24 visitors; (b) about 24 visitors; (c) 36 years

Problem 19 Shoe sizes

Count each size: 5 once, 5.5 once, 6 three times, 6.5 three times, 7 four times, 7.5 twice, 8 twice, 8.5 once, 9 twice and 10 once. The dots total 20.



Shoe size

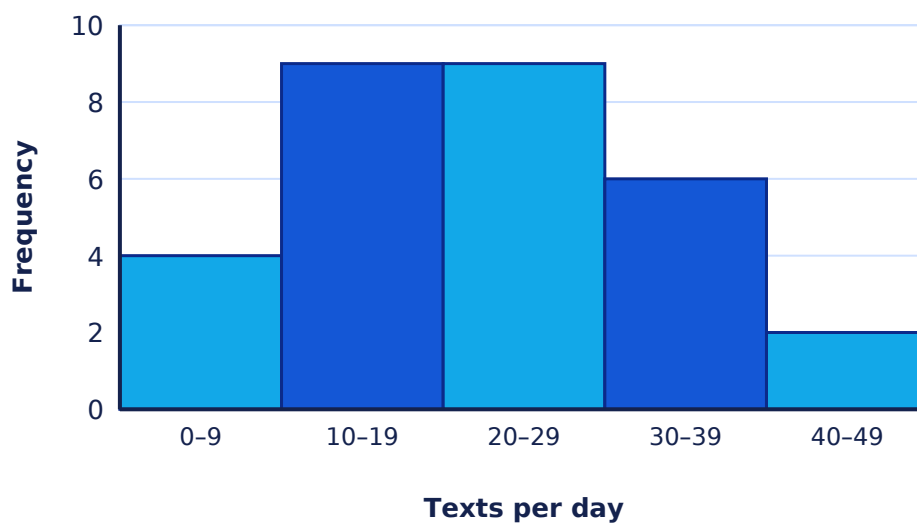
Shoe sizes of 20 students.

Most sizes cluster from 6 to 7.5, with a peak at 7 and a tail toward the larger sizes.

Peak at size 7; roughly symmetric with a slight tail to the right

Problem 20 Survey histogram

- a. $30 - (4 + 9 + 6 + 2) = 30 - 21 = 9$.
- b. Draw bars with heights 4, 9, 9, 6 and 2.
- c. $9 + 6 + 2 = 17$ students send 20 or more texts, so the fraction is $17/30$.



Texts sent per day by 30 students.

(a) 9 students; (c) 17/30