

Grade 6 · Statistical Questions and Data Displays · Worksheet Answer Key

Common Core 6.SP.A.1, 6.SP.A.2, 6.SP.B.4, 6.SP.B.5a, 6.SP.B.5b · mathovore.fr

This answer key shows a full worked solution for each of the 20 problems. Each solution counts the data, names the attribute and unit, and describes clusters, gaps, and any value far from the rest. Compare your bold answers and your drawings with the solution figures.

Grade 6 Common Core: 6.SP.A.1 · 6.SP.A.2 · 6.SP.B.4 · 6.SP.B.5a · 6.SP.B.5b

Problem 1: Statistical or not

- a. **Statistical.** Each student's time can be different.
- b. **Not statistical.** There is one answer.
- c. **Not statistical.** One store has one price.
- d. **Statistical.** Different stores can have different prices.

Problem 2: Spot the statistical question

- a. **Not statistical.** There is one correct answer and no variability.
- b. **Statistical.** Different students sleep different numbers of hours, so the answers vary.
- c. **Not statistical.** It asks about one day, so there is one answer.
- d. **Statistical.** The daily highs change from day to day, so the data vary.

Problem 3: Describe the measurements

- a. Count the values: **12 plants.**
- b. Attribute: **height of a bean plant.** Unit: **centimeters.** Measured **with a ruler, to the nearest centimeter.**
- c. 16 appears 3 times, more than any other height: **16 centimeters, 3 times.**

Problem 4: Reading a dot plot

- (a) There are 3 dots above 2, so **3 students.**
- (b) More than 2 means 3, 4, or 5 siblings: $2+1+1=4$, so **4 students.**
- (c) The tallest stack is above 1 with 5 dots, so the most common number is **1 sibling.**

Problem 5: Pets dot plot

- (a) The stack above 0 has 3 dots, so **3 students**.
- (b) Fewer than 2 means 0 or 1 pets: $3+6=9$, so **9 students**.
- (c) At least 3 means 3, 4, or 5 pets: $2+0+1=3$, so **3 students**.
- (d) The tallest stack is above 1 with 6 dots, so the most common number is **1 pet**.

Problem 6: Describe the data set

Number of observations: **10 pencils**.

Attribute: **length of a pencil**. Unit: **inches**.

How measured: **with a ruler, to the nearest inch**.

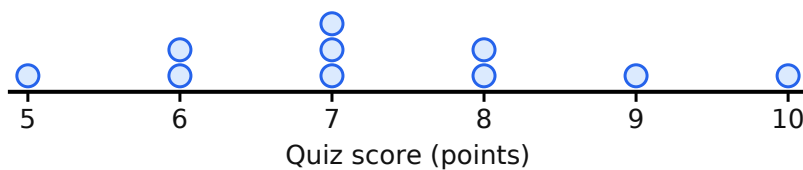
Most often: 8 inches appears 4 times, so the most common length is **8 inches**.

Problem 7: Draw a dot plot

Draw a number line from 5 to 10 and put one dot for each score, stacking repeated scores.

The tallest stack is at 7 with 3 dots. Most scores are from 6 to 8, and all scores are from 5 to 10, so the scores spread over 5 points. There are no gaps.

Number of observations: **10**.



Solution figure.

Problem 8: Reading a histogram

- (a) $3+7+6+3+1=20$, so **20 students**.
- (b) The intervals 0 to 5 and 5 to 10: $3+7=10$, so **10 students**.
- (c) The tallest bar has 7 students, so the interval is **5 to 10 minutes**.
- (d) The intervals 15 to 20 and 20 to 25: $3+1=4$, so **4 students**.

Problem 9: Practice time histogram

- (a) $4+9+10+5+2=30$, so **30 students**.
- (b) The intervals 0 to 30 and 30 to 60: $4+9=13$, so **13 students**.
- (c) The tallest bar has 10 students, so the interval is **60 to 90 minutes**.
- (d) The intervals 90 to 120 and 120 to 150: $5+2=7$, so **7 students**.

Problem 10: Reading a box plot

- (a) The line in the box is at **8**.
- (b) The box runs from **5** to **12**, so $Q_1=5$ and $Q_3=12$.
- (c) The middle half of the values lie between **5 and 12**.
- (d) The whiskers end at **2** and **18**.

Problem 11: Points per game box plot

- (a) The line inside the box is at **13**.
- (b) The box runs from **9** to **17**, so $Q_1=9$ and $Q_3=17$.
- (c) The box holds the middle half of the data: $40 \div 2 = 20$, so about **20 games**.
- (d) The greatest quarter of the scores lies between Q_3 and the maximum: **17 and 26**.

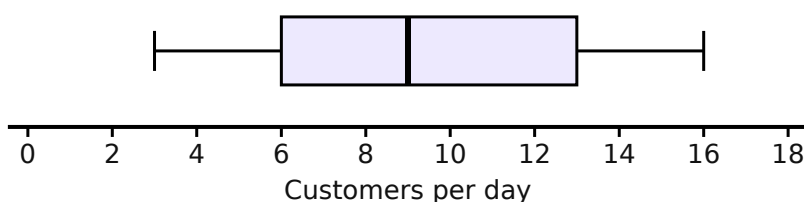
Problem 12: Make a box plot

Order the data: 3, 5, 6, 7, 8, 9, 10, 12, 13, 15, 16.

The median is the 6th value, **9**.

Lower half: 3, 5, 6, 7, 8, so $Q_1=6$. Upper half: 10, 12, 13, 15, 16, so $Q_3=13$.

Minimum **3**, maximum **16**.



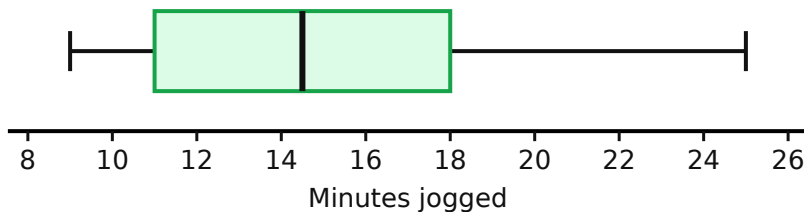
Problem 13: Quartiles of ten values

Order the data: 9, 10, 11, 12, 14, 15, 17, 18, 21, 25.

There are 10 values, so the median is the mean of the 5th and 6th values: $(14+15)\div 2=14.5$.

Lower half: 9, 10, 11, 12, 14, so $Q_1=11$. Upper half: 15, 17, 18, 21, 25, so $Q_3=18$.

Minimum **9**, Q_1 **11**, median **14.5**, Q_3 **18**, maximum **25**.



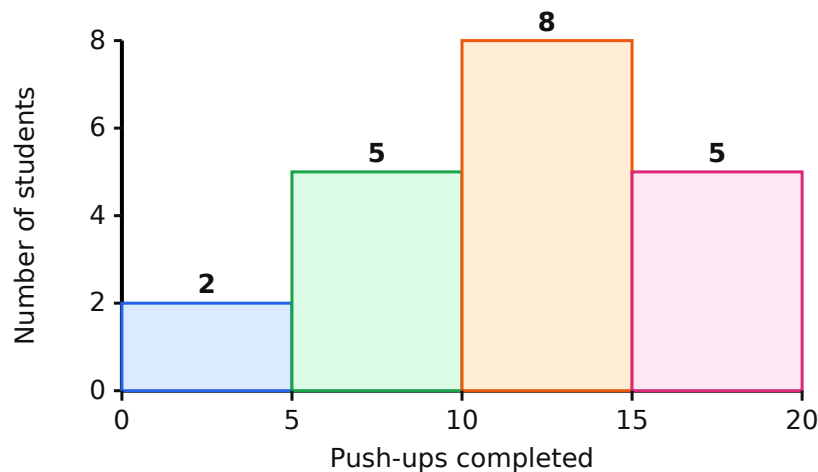
Box plot of the jogging times.

Problem 14: Make a histogram

Count the values in each interval. A value on an endpoint goes in the interval that starts there.

0 to 5: 3, 4 (**2**). 5 to 10: 6, 7, 7, 8, 9 (**5**). 10 to 15: 10, 11, 11, 12, 12, 13, 14, 14 (**8**). 15 to 20: 15, 16, 17, 18, 19 (**5**).

Check: $2+5+8+5=20$. Draw one bar for each interval with the bars touching.



Histogram of push-ups.

Problem 15: Choose the display

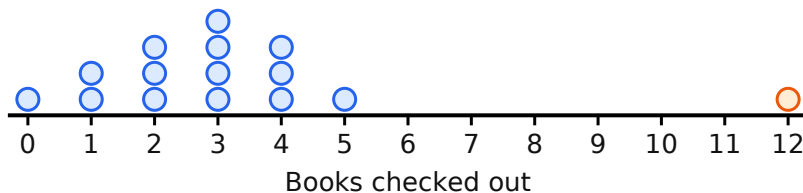
- a. **Dot plot.** There are few data and only a few different values, so each dot can show one student.
- b. **Histogram.** There are many values spread over a wide range, so grouping them into intervals shows the overall shape.
- c. **Box plot.** A box plot shows the minimum, the quartiles, the median, and the maximum at a glance.

Problem 16: Hours of sleep

- (a) $2+5+9+6+2=24$, so **24 students**.
- (b) The intervals 8 to 9 and 9 to 10 hold $6+2=8$ students. $\frac{8}{24}=\frac{1}{3}$, so $\frac{1}{3}$ of the students.
- (c) The data peak at 7 to 8 hours and fall off evenly on both sides, so the shape is **roughly symmetric** with its center in the 7 to 8 hour interval.

Problem 17: Library books dot plot

- a. Count the dots: $1+2+3+4+3+1+1=15$. **15 observations**
- b. The attribute is **the number of books a student checked out**, counted in **books**.
- c. The dot at **12** is far from the rest.
- d. The other 14 values cluster from 0 to 5 books, with the tallest stack of 4 dots at 3. There are no gaps in the cluster.
- e. More than 3 means 4, 5, or 12: $3+1+1=5$. **5 students**



The orange dot at 12 is far from the others.

Problem 18: Homework survey

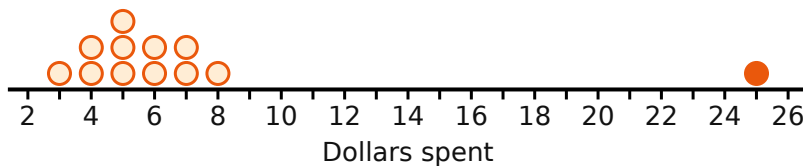
- (a) **Yes.** Students will give different answers, so the data vary.
- (b) Number of observations: **25**. Attribute: **time spent on homework each week**. Unit: **hours**. Measured by **a survey, to the nearest half hour**.
- (c) A **histogram** is better. With 25 values spread over many different numbers, a dot plot would have too many tiny stacks, while a histogram groups the values into intervals and shows the overall shape.

Problem 19: Step counts histogram

- a. The intervals 2 to 4, 4 to 6, and 6 to 8: $2+5+9=16$. **16 students**
- b. The intervals 8 to 10 and 10 to 12: $6+3=9$. $9\div25=0.36$. **36%**
- c. The data peak at 6 to 8 thousand steps and fall off on both sides, so the shape is **roughly symmetric**.
- d. **No**. A histogram only shows how many values are in each interval, so the exact values are not visible.

Problem 20: Bake sale spending

- (a) There are **12** dots.
- (b) The attribute is **the amount a customer spent**, in **dollars**.
- (c) The dot at **\$25** is far from the others.
- (d) The other 11 values cluster from **\$3** to **\$8**, with the tallest stack of 3 dots at **\$5**. The values spread over **\$5** in the cluster.



Solution figure: the dot at 25 is the value far from the rest.