

Statistics and Data Displays: practice solutions, Grade 6 – download the PDF

Written solutions to the chapter problems. Check each step, then correct yourself.

1 Which questions are statistical?



A question is statistical when we expect different answers.

- a. Not statistical: there is one person and one answer.
- b. Statistical: each student reads a different amount of time.
- c. Not statistical: there is exactly one answer.
- d. Statistical: the players have different heights.

Questions b and d are statistical.

2 Reading a dot plot of shoe sizes



- a. The tallest stack is at size 7 with 4 dots, so the mode is size 7.
- b. Size 8 has 2 dots and size 9 has 1 dot: $2 + 1 = 3$ students.

Check: $2 + 3 + 4 + 2 + 1 = 12$ students, which matches the 12 dots (size 5: 2, size 6: 3).

3 Building a frequency table



Count each value.

Rainy days	1	2	3	4	Total
Frequency	2	3	4	1	10

The total is $2 + 3 + 4 + 1 = 10$, the number of weeks, so no value was missed.

4 Mean of five numbers



Sum: $8 + 6 + 9 + 7 + 10 = 40$. Divide by 5: $40 \div 5 = 8$.

The mean is 8 laps.

5 Median of an odd list



In order: 41, 48, 53, 59, 66. There are 5 values, so the median is the 3rd value, 53.

The median temperature is 53 °F.

6 Find the mode



The value 4 appears 3 times, 7 appears 2 times, and the others once. The mode is 4.

It means the shop most often sold 4 sandwiches in a day.

7 Range of temperatures



Maximum: 71. Minimum: 49. Range = $71 - 49 = 22$.

The range is 22 °F.

8 Median of an even list



In order: 3, 5, 7, 8, 10, 12. Six values, so average the 3rd and 4th: $\frac{7+8}{2} = 7.5$.

The median is 7.5 pages.

9 Fair share of savings



Total: $12 + 20 + 8 + 16 = 56$ dollars. Fair share: $56 \div 4 = 14$ dollars each.

The siblings with 12 and 8 dollars receive money; the ones with 20 and 16 give. Check the balance: gives $6 + 2 = 8$; receives $2 + 6 = 8$.

10 Find the missing score



Total needed: $5 \times 84 = 420$. First four: $80 + 92 + 78 + 85 = 335$. Fifth: $420 - 335 = 85$.

The fifth score was 85.

11 Reading a histogram of plant heights



a. Bins 0–5 and 5–10: $2 + 5 = 7$ plants.

b. The bin 10–15, with 9 plants.

c. Bins 10–15 and 15–20: $9 + 6 = 15$ plants out of 24, so $\frac{15}{24} = \frac{5}{8}$.

d. No. The histogram only shows that the tallest plant is in the bin 20–25 cm, not its exact height.

Check: $2 + 5 + 9 + 6 + 2 = 24$.

12 Five-number summary



There are 9 values already in order. Median: the 5th value, 8. Lower half (without the median): 2, 4, 5, 7, so $Q_1 = \frac{4+5}{2} = 4.5$. Upper half: 9, 12, 13, 15, so

$$Q_3 = \frac{12+13}{2} = 12.5.$$

Summary: 2, 4.5, 8, 12.5, 15. IQR = $12.5 - 4.5 = 8$.

13 The effect of an outlier



Before: sum = **63**, mean = $63 \div 9 = 7$; the median is the 5th value, 7.

After: sum = **93**, mean = $93 \div 10 = 9.3$. In order the 5th and 6th values are 7 and 7, so the median is 7.

The mean rose from 7 to 9.3, while the median did not change. The mean is more affected by the outlier.

14 Mean absolute deviation



Mean: $35 \div 5 = 7$. Distances: 4, 2, 0, 2, 4. Sum: 12. **MAD** = $12 \div 5 = 2.4$.

On average the values are 2.4 units from the mean.

15 Choosing bins for run times



10–15: 11, 12, 14, so 3 values. 15–20: 15, 17, 18, 19, so 4 values. 20–25: 21, 22, 24, so 3 values.

Bin (seconds)	10–15	15–20	20–25	Total
Frequency	3	4	3	10

The total is 10, as expected. The bars would have heights 3, 4 and 3.

16 Same mean, different spread



Team A: mean $70 \div 5 = 14$. Distances: 4, 2, 0, 2, 4, sum 12, **MAD** = 2.4.

Team B: mean $70 \div 5 = 14$. Distances: 8, 4, 0, 4, 8, sum 24, **MAD** = 4.8.

Both teams average 14 points, but Team A has the smaller MAD, so Team A is more consistent.

17 Comparing two box plots



a. Class A: 65. Class B: 70.

b. Class A: range $95 - 40 = 55$, IQR $80 - 55 = 25$. Class B: range $90 - 50 = 40$, IQR $75 - 60 = 15$.

c. Class B, because its IQR (15) is smaller than the IQR of Class A (25): the middle half of its scores is packed in a narrower interval.

18 A missing value from the mean



The sum must be $5 \times 9.6 = 48$. Known values: $4 + 7 + 12 + 15 = 38$. So $x = 48 - 38 = 10$.

The list 4, 7, 10, 12, 15 is in increasing order, and the median is 10.

19 Which center describes house prices?



Sum: $210 + 225 + 230 + 240 + 250 + 255 + 900 = 2310$. Mean: $2310 \div 7 = 330$, that is 330 thousand dollars.

Median: the 4th value, 240 thousand dollars.

The median is better: six of the seven houses cost less than 260 thousand, and the single 900 thousand house pulls the mean up. The data are skewed right.

20 Adding a new score



Before: mean $50 \div 5 = 10$, median 10.

After: 6, 8, 10, 12, 14, 22. Sum = **72**, mean = $72 \div 6 = 12$. Median = $\frac{10 + 12}{2} = 11$.

The mean increased by 2 and the median increased by 1. The large new score affects the mean more.

21 The balance point



Mean: $(2 + 2 + 3 + 9) \div 4 = 16 \div 4 = 4$.

Below 4: $2 + 2 + 1 = 5$ units (the dots 2, 2, 3 are 2, 2 and 1 away). Above 4: the dot 9 is $9 - 4 = 5$ away.

Both totals equal 5, so the number line balances at 4.

22 Describe the distribution



The bars rise to a peak at 40–60 and then fall, with similar tails on both sides: the shape is roughly symmetric, with the peak in the middle.

The median is the mean of the 10th and 11th values. Counting: $2 + 4 = 6$ values are below 40, and $6 + 8 = 14$ are below 60, so the 10th and 11th values are both in the bin 40–60.

With no outliers and a roughly symmetric shape, the mean and the MAD are a good choice (the median and IQR would also work).



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