

Grade 6 - Mean, Median, Spread and Box Plots - Answer Key

Common Core 6.SP.A.3, 6.SP.B.5c, 6.SP.B.5d · maths-pdf.fr/en/

Check each statistic here. The solutions show the ordered data, the sums and distances used, and each final answer in bold. Box plots and dot plots support several solutions.

Grade 6 · Common Core State Standards: **6.SP.A.3, 6.SP.B.5c, 6.SP.B.5d**

Exercise 1 - Mean

Add: $4+8+6+10+12=40$.

Divide by 5: $40\div5=8$.

8

Exercise 2 - Median (odd)

Order: 1, 3, 5, 7, 9. The middle value is the 3rd.

5

Exercise 3 - Median (even)

The middle two values are 4 and 6.

$$\frac{4+6}{2}=5$$

5

Exercise 4 - Mode and range

The value 5 appears 3 times, more than any other.

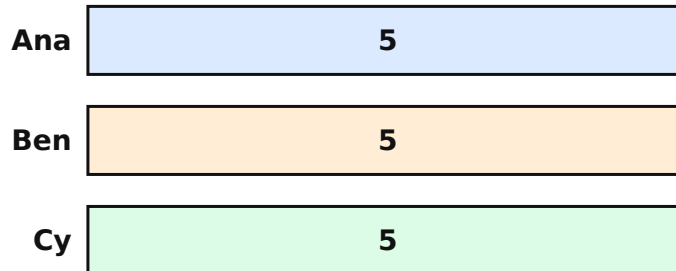
Range: $9-3=6$.

mode 5; range 6

Exercise 5 - Mean as a fair share

Total $3+5+7=15$; $15\div3=5$.

5 books each; the mean is 5



Each has 5 books.

Exercise 6 - Missing value

Total of five: $5\cdot12=60$.

Four numbers: $10+14+9+13=46$.

$$60-46=14$$

14

Exercise 7 - Mean absolute deviation

Mean: $20\div4=5$.

Distances from 5: 3, 1, 1, 3. Their mean: $\frac{3+1+1+3}{4}=2$.

2

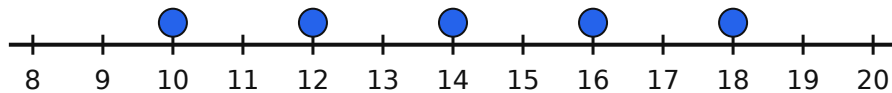
Exercise 8 - MAD of five values

Mean: $70\div5=14$.

Distances: 4, 2, 0, 2, 4. Sum 12.

MAD: $12\div5=2.4$.

mean 14; MAD 2.4



The values are 4, 2, 0, 2, 4 away from the mean 14.

Exercise 9 - Quartiles and IQR

Median (5th value): 10.

Lower half 3, 5, 7, 8: $Q1 = 6$. Upper half 12, 14, 15, 18: $Q3 = 14.5$.

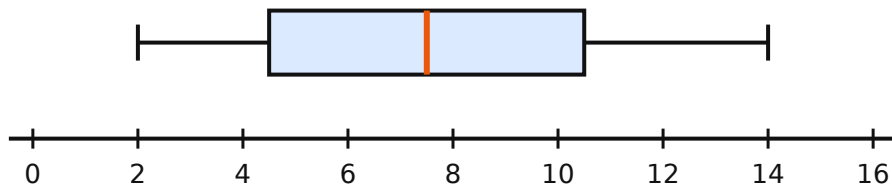
IQR: $14.5 - 6 = 8.5$.

median 10; Q1 6; Q3 14.5; IQR 8.5

Exercise 10 - Make a box plot

Min 2, max 14. Median: $\frac{7+8}{2} = 7.5$. $Q1 = 4.5$ and $Q3 = 10.5$.

2, 4.5, 7.5, 10.5, 14

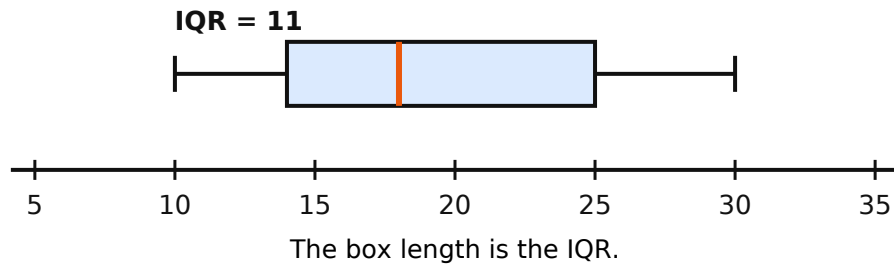


The box runs from 4.5 to 10.5.

Exercise 11 - Read a box plot

Median 18. Range $30 - 10 = 20$. IQR $25 - 14 = 11$.

median 18; range 20; IQR 11



Exercise 12 - Effect of an outlier

With 40: mean $75 \div 6 = 12.5$, median 7.5.

Without 40: mean $35 \div 5 = 7$, median 7.

The mean changes much more (from 12.5 to 7) than the median (7.5 to 7).

Exercise 13 - Choose the measure

Mean: $421 \div 6 \approx 70.2$. Median: $\frac{35+36}{2} = 35.5$.

The value 250 pulls the mean up.

The median (35.5) is better because the data are skewed by an outlier.

Exercise 14 - Compare two box plots

A: median 75, IQR $85 - 70 = 15$. B: median 80, IQR $90 - 65 = 25$.

Class B has the greater median and the greater spread.

Exercise 15 - Mean from a table

Students: $1+3+4+2=10$.

Total: $6+21+32+18=77$.

Mean: $77 \div 10 = 7.7$.

10 students; mean 7.7

Exercise 16 - Basketball points

Mean: $116 \div 8 = 14.5$.

Ordered: 9, 12, 12, 15, 15, 15, 18, 20; median $\frac{15+15}{2} = 15$.

Mode: 15.

mean 14.5; median 15; mode 15

Exercise 17 - Weekly temperatures

Mean: $306 \div 7 = 43.714286$.

Ordered: 38, 39, 41, 44, 45, 47, 52; median 44.

Range: $52 - 38 = 14$.

mean 43.714286; median 44; range 14

Exercise 18 - Mean and median together

Sum: $1+2+3+4+5+6+7+8+9+10 = 55$.

Mean: $55 \div 10 = 5.5$. Median: $\frac{5+6}{2} = 5.5$.

Both are 5.5

Exercise 19 - Interpret the IQR

IQR: $20 - 8 = 12$.

The middle half of the students have travel times that span 12 minutes, from 8 to 20 minutes.

Exercise 20 - Adding a score

First mean: $350 \div 4 = 87.5$.

New total: $350 + 70 = 420$; new mean: $420 \div 5 = 84$.

87.5, then 84; the mean went down