

AP Statistics · Exploring One-Variable Data · Worksheet Answer Key

Common Core AP Statistics Unit 1 (2026-27) · mathovore.fr

This ap statistics one worksheet answer key solves all 22 problems of the exploring one-variable data worksheet step by step.

Every solution below shows the full work, including the quartile method, the fences and the z-score calculation, so students can find the exact step where an error occurred. Final answers appear in bold, and several solutions add a graph.

AP StatisticsCommon Core: AP Statistics Unit 1 (2026-27)

AP Statistics One Worksheet Answer Key: problems 1-5

Problem 1: Classify variables

An area code is a label, so arithmetic on it is meaningless.

- a. Eye color: **categorical**.
- b. Minutes of homework: **quantitative**.
- c. Area code: **categorical**, because it is a label even though it looks like a number.
- d. Number of pets: **quantitative**.

Problem 2: Relative frequencies

Divide each count by 50 and convert to a percent.

- Dog: $\frac{21}{50} = 42\%$
- Cat: $\frac{15}{50} = 30\%$
- Fish: $\frac{6}{50} = 12\%$
- Bird: $\frac{3}{50} = 6\%$
- None: $\frac{5}{50} = 10\%$

Check: $42+30+12+6+10=100$. **Dog 42%, cat 30%, fish 12%, bird 6%, none 10%.**

Problem 3: Reading a bar chart

- a. $\frac{126}{300} = 0.42$, so **42%** ride the bus.
- b. Walk plus bike is $54+30=84$, and $\frac{84}{300} = 0.28$. **28%** neither ride the bus nor take a car.

Problem 4: Mean and median

Mean: $\bar{x} = \frac{12+18+9+22+15+18+25}{7} = \frac{119}{7} = 17$.

Ordered: 9, 12, 15, 18, 18, 22, 25. The middle (fourth) value is 18.

Mean 17 points, median 18 points.

Problem 5: Effect of an outlier

Before: $\bar{x} = \frac{86}{5} = 17.2$ and the median is 17.

After: $\bar{x} = \frac{166}{6} \approx 27.67$. The ordered values are 14, 16, 17, 19, 20, 80, so the median is $\frac{17+19}{2} = 18$.

The mean rose by about 10.5 minutes while the median rose by 1. **The median is resistant to the outlier; the mean is not.**

AP Statistics One Worksheet Answer Key: problems 6-10

Problem 6: Range and IQR

The median is the sixth value, 13. Leave it out. The lower five values 4, 7, 9, 10, 12 have median $Q_1 = 9$. The upper five 15, 18, 19, 22, 30 have median $Q_3 = 19$.

$IQR = 19 - 9 = 10$ and $range = 30 - 4 = 26$. **Range 26, IQR 10.**

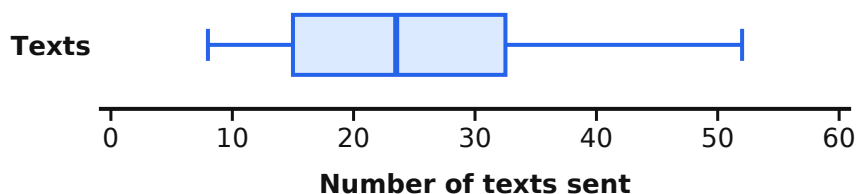
Problem 7: Five-number summary

The 12 values are already ordered. The median is the mean of the sixth and seventh values: $\frac{22+25}{2} = 23.5$.

Lower half 8, 12, 15, 15, 18, 22 has median $\frac{15+15}{2} = 15$. Upper half 25, 27, 31, 34, 40, 52 has median $\frac{31+34}{2} = 32.5$.

Five-number summary: **8, 15, 23.5, 32.5, 52.**

$IQR = 32.5 - 15 = 17.5$, so the fences are $15 - 1.5(17.5) = -11.25$ and $32.5 + 1.5(17.5) = 58.75$. All values lie inside, so **there are no outliers.**



Problem 8: Sample standard deviation

$\bar{x} = \frac{55}{5} = 11$. The deviations are $-5, -2, -1, 2, 6$ and their squares are $25, 4, 1, 4, 36$, with sum 70.

$s = \sqrt{\frac{70}{5-1}} = \sqrt{17.5} \approx 4.18$. **s is about 4.18.**

Problem 9: Shape and median from a histogram

- The graph has one peak at 40 to 60 minutes and a longer tail toward the large values: **unimodal and skewed right**.
- The 20th and 21st ordered values locate the median. The cumulative counts are 4, 15, 28, so both lie in the 40 to 60 class: **40 to 60 minutes**.
- Skewed right means the long tail pulls the mean toward large values, so **the mean is likely greater than the median**.

Problem 10: Counting from a histogram

- $2+5=7$, so **7 students** scored below 70.
- $9+4=13$ students scored 80 or higher, and $\frac{13}{30} \approx 0.433$. **About 43.3%.**
- The cumulative counts are 2, 7, 17. The 15th and 16th values lie in the third class: **70 to 80**.

AP Statistics One Worksheet Answer Key: problems 11-15

Problem 11: Test for outliers with IQR

Lower five values 22, 24, 25, 27, 28 give $Q_1 = 25$. Upper five 29, 31, 33, 34, 62 give $Q_3 = 33$.

$IQR = 33 - 25 = 8$, and $1.5 \times 8 = 12$.

Upper fence: $33 + 12 = 45$. Lower fence: $25 - 12 = 13$.

Since $62 > 45$, **62 is an outlier**. No other value is outside 13 to 45.

Problem 12: Reading a boxplot

- Median 7, $Q_1 = 5$, $Q_3 = 9$ (thousand steps).

- b. $IQR = 9 - 5 = 4$ and the upper fence is $9 + 1.5(4) = 15$. Since $17 > 15$, **17 is an outlier**. The upper whisker ends at 13, the largest value inside the fence.
- c. The box holds the middle half of the data: **about 50%**.

Problem 13: Compute a z-score

- a. $z = \frac{84 - 72}{6} = 2$. **$z = 2$** : the score is 2 standard deviations above the mean.
- b. $x = 72 + (-1.5)(6) = 63$. **The score was 63.**

Problem 14: Compare two z-scores

Jamal: $z = \frac{78 - 70}{5} = 1.6$. Sofia: $z = \frac{85 - 75}{8} = 1.25$.

Jamal did better relative to his class, because his score is 1.6 standard deviations above the mean and Sofia's is 1.25.

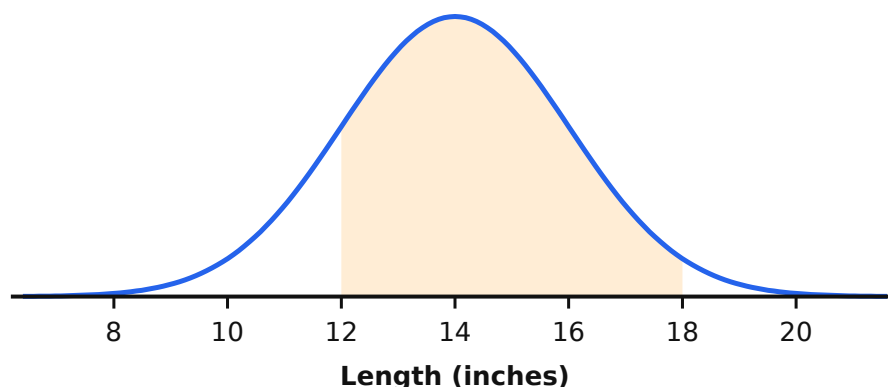
Problem 15: Percentiles

- a. $\frac{21}{25} = 0.84$, so Ethan is at the **84th percentile**.
- b. $0.60 \times 40 = 24$. **24 students** scored below Maya.

AP Statistics One Worksheet Answer Key: problems 16-20

Problem 16: Empirical rule percentages

- a. $12 = 14 - 1(2)$ and $18 = 14 + 2(2)$. The area from -1 to 2 standard deviations is $34\% + 34\% + 13.5\% = 81.5\%$. **About 81.5%.**
- b. Beyond 2 standard deviations on the high side lies $\frac{100\% - 95\%}{2} = 2.5\%$. **About 2.5%.**



The shaded area from 12 to 18 inches is $34\% + 34\% + 13.5\% = 81.5\%$.

Problem 17: Normal probability above a value

$$z = \frac{15 - 12.0}{2.5} = 1.2.$$

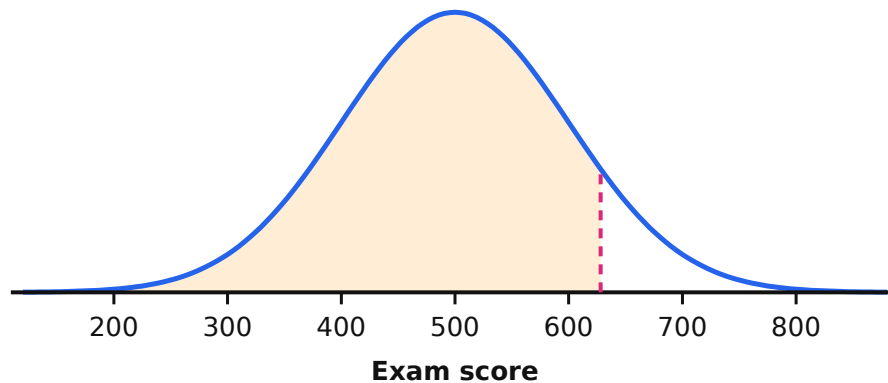
The area to the left of $z = 1.2$ is 0.8849, so the area to the right is $1 - 0.8849 = 0.1151$.

About 11.5% of deliveries take more than 15 minutes.

Problem 18: Value at a percentile

For a left area of 0.90, the z-score is $z \approx 1.28$ ($\text{invNorm}(0.90) = 1.2816$).

$x = 500 + 1.2816(100) \approx 628.2$. **The 90th percentile is about 628.**



The 90th percentile leaves 90% of the area to its left.

Problem 19: Compare two distributions

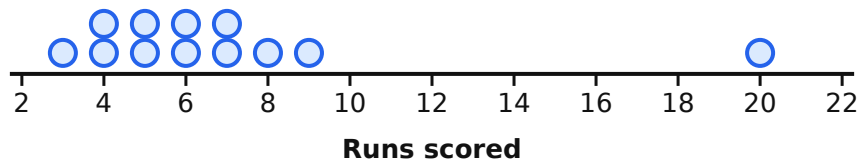
Center: the median for Group 2 (23 minutes) is 6 minutes higher than for Group 1 (17 minutes), so Group 2 typically took longer.

Spread: the IQR is 12 minutes for Group 2 and 8 minutes for Group 1, and the ranges are 29 and 22 minutes, so Group 2 times vary more.

Shape: Group 1 has a longer upper whisker (the median is nearer Q1), which suggests a distribution skewed right; Group 2 is close to symmetric. Neither group has an outlier (upper fences 34 and 47).

Problem 20: Two outlier rules

- $Q_1 = \frac{4+5}{2} = 4.5$, $Q_3 = \frac{7+8}{2} = 7.5$, $IQR = 3$. The upper fence is $7.5 + 1.5(3) = 12$ and the lower fence is $4.5 - 1.5(3) = 0$. **Only 20 is an outlier.**
- $\bar{x} = \frac{84}{12} = 7$ and $s \approx 4.45$. The limits are $7.5 \pm 2(4.45)$, that is -1.90 to 15.90 . **Only 20 is outside, so it is the only outlier** under this rule too.



Runs per game for a Little League team; the value 20 is far from the rest.

AP Statistics One Worksheet Answer Key: problems 21-22

Problem 21: Changing units

Multiplying by 1.8 multiplies the mean, median, standard deviation and IQR by 1.8; adding 32 shifts only the measures of center.

- Mean: $1.8(20) + 32 = 68$
- Median: $1.8(19) + 32 = 66.2$
- Standard deviation: $1.8(4) = 7.2$
- IQR: $1.8(6) = 10.8$

Mean 68 °F, median 66.2 °F, standard deviation 7.2 °F, IQR 10.8 °F.

Problem 22: Salaries at a bakery

- $\bar{x} = \frac{468,000}{9} = \$52,000$. The ordered middle (fifth) value gives a median of \$36,500.
- $Q_1 = \frac{33,500 + 34,000}{2} = \$33,750$ and $Q_3 = \frac{39,000 + 41,000}{2} = \$40,000$, so $IQR = \$6,250$. The upper fence is $40,000 + 1.5(6,250) = \$49,375$. Since $180,000 > 49,375$, **the owner's salary is an outlier.**
- The median, \$36,500.** The mean of \$52,000 is higher than 8 of the 9 salaries because the owner's pay pulls it up, while the median is resistant.

How to use this ap statistics one worksheet answer key

Read this ap statistics one worksheet answer key after trying each problem yourself, and redo any problem you missed.

