

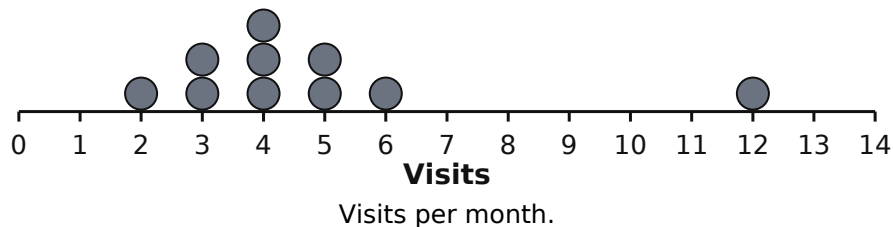
AP Statistics - Mean, Median, Standard Deviation and Outliers - Test Answer Key

Common Core AP STAT 1.6, AP STAT 1.7, HSS-ID.A.2, HSS-ID.A.3 · maths-pdf.fr/en/

Each solution is followed by a scoring guide. Give credit for a correct method even when an arithmetic slip changes the final number, and require a context sentence where one is requested.

AP Statistics · Common Core State Standards: **AP STAT 1.6, AP STAT 1.7, HSS-ID.A.2, HSS-ID.A.3**

Question 1 - Mean and median [3 pts]



(a) Sum 48, $\frac{48}{10} = 4.8$.

(b) 4 and 4, so median 4.

(c) The mean is larger because the outlier 12 pulls it up (skewed right).

4.8; 4; mean larger.

Scoring: 1 point per part.

Question 2 - Five-number summary [2 pts]

Median 16; lower half 11, 13, 14 so $Q_1 = 13$; upper half 18, 19, 22 so $Q_3 = 19$.

11, 13, 16, 19, 22; IQR 6.

Scoring: 1 point for the five numbers, 1 point for IQR 6.

Question 3 - Standard deviation [3 pts]

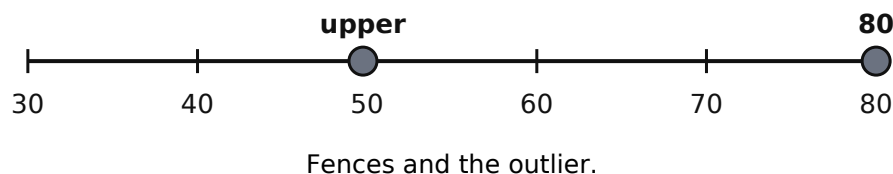
Mean 5. Deviations: -3, -1, 1, 3. Squares: 9, 1, 1, 9 = 20.

$$s = \sqrt{\frac{20}{3}} \approx 2.58.$$

2.58.

Scoring: 1 point for the mean, 1 point for the sum of squares 20, 1 point for 2.58.

Question 4 - Outlier rule [3 pts]



$Q_1 = 33.5$, $Q_3 = 40$, $IQR = 6.5$. Upper fence: $40 + 1.5(6.5) = 49.75$.

80 is above the upper fence 49.75, so it is an outlier.

Scoring: 1 point for the quartiles, 1 point for the fence, 1 point for the conclusion.

Question 5 - Resistance [2 pts]

The mean includes every value, so it increases greatly. The median depends on the middle position only.

The mean increases; the median does not (if 70 was above the median).

Scoring: 1 point for naming the mean, 1 point for the reason.

Question 6 - Linear transformation [2 pts]

Mean: $66 \times 2.54 = 167.64$. Standard deviation: $3 \times 2.54 = 7.62$.

167.64 cm and 7.62 cm.

Scoring: 1 point for each.

Question 7 - Interpret the standard deviation [2 pts]

The standard deviation is the typical distance of a wait from the mean.

Wait times typically differ from the mean of 8 minutes by about 2.5 minutes.

Scoring: 1 point for typical distance, 1 point for context (8 minutes, waits).

Question 8 - Choose the summary [3 pts]

(a) Mean: $\frac{2825000}{5} = 565000$. Median: \$240,000.

(b) The median, because the \$1,900,000 home skews the mean.

Mean \$565,000; median \$240,000; use the median.

Scoring: 1 point each for mean and median; 1 point for median with the outlier reason.

Total
20 points