

Measuring Center and Variability in Data

Grade 6 math · Test Answer Key · Standards: 6.SP.A.3, 6.SP.B.5c, 6.SP.B.5d

Award the points in each scoring line. Give credit for correct work carried through from an earlier slip. Accept answers written as fractions or decimals, and take off a point when a median is found without ordering the data.

Standards: 6.SP.A.3, 6.SP.B.5c, 6.SP.B.5d · **Level:** Grade 6

Question 1 Mean and median (2 points)

Mean: $(14 + 9 + 21 + 12 + 24) \div 5 = 80 \div 5 = 16$. Ordered: 9, 12, 14, 21, 24, so the median is 14.

mean 16; median 14

Scoring: 1 point for each measure.

Question 2 Median and range (2 points)

Ordered: 26, 28, 31, 35, 36, 40. The median is $(31 + 35) \div 2 = 33$. The range is $40 - 26 = 14$.

median 33; range 14

Scoring: 1 point for each measure.

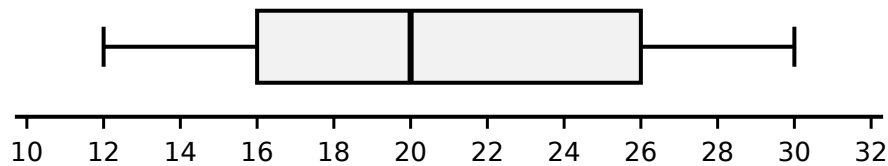
Question 3 Mean and MAD from a dot plot (3 points)

- The sum is $2 + 3 + 4 + 4 + 5 + 5 + 5 + 6 + 7 + 9 = 50$, so the mean is $50 \div 10 = 5$.
- The distances from 5 are 3, 2, 1, 1, 0, 0, 0, 1, 2, 4, with a total of 14. The MAD is $14 \div 10 = 1.4$.

Scoring: 1 point for the mean; 2 points for the MAD (1 point for the distances, 1 point for the answer).

Question 4 Quartiles (3 points)

- The median is $(18 + 22) \div 2 = 20$.
- $Q1 = (15 + 17) \div 2 = 16$ and $Q3 = (25 + 27) \div 2 = 26$.
- $IQR = 26 - 16 = 10$.



Value

Box plot of the 8 values.

Scoring: 1 point for each part.

Question 5 Missing score (2 points)

The total is $4 \times 84 = 336$. The known scores total $80 + 92 + 78 = 250$. The fourth score is $336 - 250 = 86$.

86

Scoring: 1 point for the total of 336, 1 point for the answer.

Question 6 Adding an outlier (3 points)

- Mean: $375 \div 5 = 75$. Median: 75. **Both are 75.**
- The sum is 390, so the mean is $390 \div 6 = 65$. The ordered values 15, 70, 72, 75, 78, 80 have median $(72 + 75) \div 2 = 73.5$. **Mean 65; median 73.5.**
- The mean changed by 10 and the median by 1.5. **The mean changed more.**

Scoring: 1 point for each part.

Question 7 Choosing a measure (3 points)

- The sum is 300,000, so the mean is $300,000 \div 6 = \mathbf{\$50,000}$.
- The middle values are \$33,000 and \$35,000, so the median is **\$34,000**.
- The **median** is better: the \$134,000 salary is an outlier that pulls the mean above five of the six salaries.

Scoring: 1 point for each part.

Question 8 Comparing two teams (2 points)

- Team 1 median is 55 and Team 2 median is 58, so **Team 2**.
- Team 1: $62 - 48 = 14$. Team 2: $60 - 52 = 8$. **Team 1** has the greater IQR.

Scoring: 1 point for each part.