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Box And Whisker Plot Worksheet

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Part 1: Building a Foundation

What is the primary purpose of a box and whisker plot?

Hint: Think about what information this type of plot conveys.

◯ A) To show the frequency of data points
◯ B) To display the distribution of a data set
◯ C) To compare two different data sets
◯ D) To calculate the mean of a data set

Which of the following are components of a box and whisker plot? (Select all that apply)

Hint: Consider the key elements that make up the plot.

☐ A) Mean
☐ B) Median
☐ C) Lower Quartile (Q1)
☐ D) Upper Quartile (Q3)

Describe what the 'whiskers' in a box and whisker plot represent.

Hint: Think about the range of the data outside the quartiles.

List the steps to calculate the interquartile range (IQR) of a data set.

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Hint: Consider the process of finding quartiles.

1. Step 1: Arrange the data in ascending order.

[   ]

2. Step 2: Find Q1 (the first quartile).

[   ]

3. Step 3: Find Q3 (the third quartile).

[   ]

4. Step 4: Calculate IQR.

[   ]

Part 2: Understanding and Interpretation

If the median of a data set is closer to the lower quartile than the upper quartile, what does this indicate about the data distribution?

Hint: Think about the symmetry of the data.

◯ A) The data is skewered to the right
◯ B) The data is skewered to the left
◯ C) The data is symmetric
◯ D) The data has no skew

Which statements are true about the interquartile range (IQR)? (Select all that apply)

Hint: Consider the properties of the IQR.

☐ A) It measures the spread of the middle 50% of the data
☐ B) It is affected by outliers
☐ C) It is calculated as Q3 minus Q1
☐ D) It represents the average of the data set

Explain how outliers are represented in a box and whisker plot.

Hint: Think about the visual representation of data points.

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Part 3: Application and Analysis

Given a data set with the following values: 3, 7, 8, 12, 13, 14, 18, 21, 23, 27, what is the median?

Hint: Remember how to find the median in a sorted list.

○ A) 12
○ B) 13
○ C) 14
○ D) 15

You have a box and whisker plot with a median of 50, Q1 of 30, and Q3 of 70. Which of the following statements are true? (Select all that apply)

Hint: Consider the definitions of median, Q1, and Q3.

☐ A) The interquartile range is 40
☐ B) The plot is symmetric
☐ C) The minimum value is 30
☐ D) The maximum value is 70

Create a box and whisker plot for the following data set: 5, 7, 8, 12, 15, 18, 22, 24, 30. Describe each step of your process.

Hint: Think about how to organize and visualize the data.

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If a box and whisker plot shows a long whisker on the right side, what can be inferred about the data?

Hint: Consider the implications of whisker length.

○ A) The data is skewered to the left
○ B) The data is skewered to the right
○ C) The data is symmetric
○ D) The data has no skew

Part 4: Evaluation and Creation

Which of the following changes would most likely reduce the interquartile range of a data set?

Hint: Think about how data points affect the spread.

○ A) Adding more data points at the extremes
○ B) Removing outliers
○ C) Increasing the number of data points in the middle range
○ D) Decreasing the overall number of data points

Consider a box and whisker plot that represents the ages of participants in a study. If the median age is significantly lower than the mean age, what might this suggest? (Select all that apply)

Hint: Think about the implications of the relationship between median and mean.

☐ A) The data is skewered to the right
☐ B) There are several young outliers
☐ C) The data is skewered to the left
☐ D) There are several older outliers

Design a box and whisker plot for a hypothetical data set that represents a scenario of your choice. Explain your choice of data points and the story they tell.

Hint: Think creatively about the data you want to represent.

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