

## Box And Whisker Plot Worksheet Answer Key PDF

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### Part 1: Building a Foundation

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

undefined. A) To show the frequency of data points

**undefined. B) To display the distribution of a data set ✓**

undefined. C) To compare two different data sets

undefined. D) To calculate the mean of a data set

The primary purpose of a box and whisker plot is to display the distribution of a data set.

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

undefined. A) Mean

**undefined. B) Median ✓**

**undefined. C) Lower Quartile (Q1) ✓**

**undefined. D) Upper Quartile (Q3) ✓**

The components of a box and whisker plot include the median, lower quartile (Q1), and upper quartile (Q3).

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

**The whiskers in a box and whisker plot represent the range of the data outside the interquartile range, extending to the minimum and maximum values.**

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

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

**Sort the data from smallest to largest.**

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

**Locate the median of the lower half of the data.**

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

**Locate the median of the upper half of the data.**

4. Step 4: Calculate IQR.

**Subtract Q1 from Q3.**

To calculate the IQR, find Q1 and Q3, then subtract Q1 from Q3.

## Part 2: Understanding and Interpretation

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**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?**

undefined. A) The data is skewed to the right

**undefined. B) The data is skewed to the left ✓**

undefined. C) The data is symmetric

undefined. D) The data has no skew

If the median is closer to the lower quartile, it indicates that the data is skewed to the left.

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

**undefined. A) It measures the spread of the middle 50% of the data ✓**

undefined. B) It is affected by outliers

**undefined. C) It is calculated as Q3 minus Q1 ✓**

undefined. D) It represents the average of the data set

The IQR measures the spread of the middle 50% of the data and is calculated as Q3 minus Q1.

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

**Outliers are represented as individual points that fall outside the whiskers of the box and whisker plot.**

## Part 3: Application and Analysis

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

undefined. A) 12

undefined. B) 13

**undefined. C) 14 ✓**

undefined. D) 15

The median of the data set is 14.

**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)**

**undefined. A) The interquartile range is 40 ✓**

undefined. B) The plot is symmetric

**undefined. C) The minimum value is 30 ✓**

undefined. D) The maximum value is 70

The interquartile range is 40, and the minimum value is 30.

**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.**

**To create the plot, first find the quartiles, then draw the box and whiskers based on the data.**

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

undefined. A) The data is skewed to the left

**undefined. B) The data is skewed to the right ✓**

undefined. C) The data is symmetric

undefined. D) The data has no skew

A long whisker on the right side indicates that the data is skewed to the right.

## Part 4: Evaluation and Creation

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

undefined. A) Adding more data points at the extremes

**undefined. B) Removing outliers ✓**

undefined. C) Increasing the number of data points in the middle range

undefined. D) Decreasing the overall number of data points

Removing outliers would most likely reduce the interquartile range of a data set.

**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)**

**undefined. A) The data is skewed to the right ✓**

**undefined. B) There are several young outliers ✓**

undefined. C) The data is skewed to the left

undefined. D) There are several older outliers

If the median is lower than the mean, it suggests that the data is skewed to the right and there are several young 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.**

**The design should reflect a clear scenario, with data points chosen to illustrate a specific story.**