Mean Absolute Deviation Worksheet

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Part 1: Building a Foundation

What does Mean Absolute Deviation (MAD) measure in a data set?

Hint: Think about what MAD represents in terms of data points.

- ◯ A) The sum of all data points
- ◯ B) The average distance between each data point and the mean
- ◯ C) The highest value in the data set
- ◯ D) The lowest value in the data set

Which of the following are steps in calculating the Mean Absolute Deviation?

Hint: Consider the process of finding deviations and averaging them.

- ☐ A) Find the mean of the data set
- ☐ B) Square each data point
- ☐ C) Calculate the absolute deviation of each data point
- ☐ D) Average the absolute deviations

Explain why the Mean Absolute Deviation is considered less sensitive to outliers compared to standard deviation.

Hint: Think about how deviations are calculated in both measures.

List the four main steps involved in calculating the Mean Absolute Deviation.

Hint: Think about the sequence of actions taken to find MAD.

1. Step 1

2. Step 2

3. Step 3

4. Step 4

Part 2: Comprehension and Application

Why is the absolute value used in calculating MAD?

Hint: Consider the effect of negative values on the calculation.

- ◯ A) To simplify the calculation
- ◯ B) To ensure all deviations are positive
- ◯ C) To ignore the mean
- ◯ D) To increase the variability

In which scenarios would MAD be a more appropriate measure than standard deviation?

Hint: Think about the characteristics of the data sets.

- ☐ A) When data contains outliers
- ☐ B) When comparing two data sets with similar variances
- ☐ C) When a quick estimate of variability is needed
- ☐ D) When data is normally distributed

Given the data set [3, 7, 7, 2, 9], what is the Mean Absolute Deviation?

Hint: Calculate the mean and then find the absolute deviations.

- ◯ A) 2
- ◯ B) 3
- ◯ C) 4
- ◯ D) 5

Calculate the Mean Absolute Deviation for the data set [4, 8, 6, 5, 10]. Show your work.

Hint: Make sure to detail each step of your calculation.

Part 3: Analysis, Evaluation, and Creation

How does the Mean Absolute Deviation help in comparing the variability of two different data sets?

Hint: Consider what MAD represents in terms of data spread.

- ◯ A) By providing the sum of deviations
- ◯ B) By showing the average deviation from the mean
- ◯ C) By indicating the range of data
- ◯ D) By calculating the median

Analyze how the Mean Absolute Deviation would change if a data point significantly higher than the rest is added to the data set.

Hint: Think about the impact of outliers on the calculation.

Which measure would you recommend for analyzing a data set with significant outliers, and why?

Hint: Consider the sensitivity of different measures to outliers.

- ◯ A) Mean Absolute Deviation
- ◯ B) Standard Deviation
- ◯ C) VariANCE
- ◯ D) Range

Design a simple experiment or study where Mean Absolute Deviation could be used to analyze the results. Describe the data you would collect and how MAD would help interpret the findings.

Hint: Think about a scenario where variability is important.