ASSIGNMENT

Comparing Data Using Mean (μ) and Standard Deviation

Given Data

$\mu = 55$

Data Sets: 04, 04, 048, 10, 04, 15

Introduction

The mean (μ) tells us the central or average value of a dataset. However, to properly compare or judge data, we must also understand how spread out the values are. This spread is measured using standard deviation (σ).

If values are very close to the mean, the standard deviation is small (more consistent data). If values are far from the mean, the standard deviation is large (less consistent data).

1. Observing the Pattern of the Data

Looking at the dataset:

4, 4, 48, 10, 4, 15

We can notice:

- Most values are very small (4 appears three times).
- Only one value (48) is somewhat near the mean.
- No value is equal to or greater than 55.

This shows that the data is not centered around the given mean.

2. Deviation Analysis

Deviation means the difference between each value and the mean.

For $\mu = 55$:

- 4 is 51 units below the mean
- 10 is 45 units below

- 15 is 40 units below
- 48 is 7 units below

Almost all values are far below 55.

This large gap indicates high variability in relation to the mean.

3. Spread and Distribution

In a good dataset:

- Values are distributed on both sides of the mean.
- Some values are slightly above, some slightly below.
- Data forms a balanced pattern.

In this case:

- All values are below the mean.
- Data is skewed to one side.
- There is no balance around 55.

This means the distribution is uneven and inconsistent.

4. Comparing with a More Stable Dataset

If we compare this dataset with another example:

Example B: 50, 53, 55, 57, 60

In Example B:

- Values are close to 55.
- Differences from mean are small.
- Variation is low.
- Standard deviation would be smaller.

Therefore, Example B would be considered better because it shows stability and consistency.

5. Real-Life Interpretation

If this dataset represented student marks:

- The mean is 55 (average performance).
- But most students scored far below the average.

- Only one student came close.

This would indicate poor overall performance and high inconsistency in results.

In business or performance analysis, consistent and balanced data is more reliable for decision-making.

Final Conclusion

The given dataset is not ideal because:

- Values are far from the mean.
- There is high dispersion.
- Data is not balanced around 55.
- Standard deviation would be large.

A better dataset would contain values clustered around 55 with less variation.