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Course Name :- Data analytics with GenAi

Assignment :- Descriptive Statistics

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### Question1

A bakery tracks the daily sales of muffins (in dozens) over a week: [10, 12, 11, 15, 14, 13, 12].

What is the most representative value of their weekly sales, and why?

### Answer

[Descriptive Statistics 1.xlsx](#)

### Question2

A teacher records the marks of her students in a short quiz: [12, 15, 14, 16, 18, 20, 19]. What is the mean score, and what does it tell us about the class's performance?

### Answer

[Descriptive Statistics 1.xlsx](#)

### Question3

Mode in Real Life (Easy) A store records the shoe sizes sold in one day: [7, 8, 9, 8, 8, 10, 7, 9]. What is the mode, and why is this information useful for the store manager

Answer [Descriptive Statistics 1.xlsx](#)

#### **Question4**

**Median in Real Life (Medium)** A car dealer notes the prices of used cars: [\$8,000, \$9,500, \$10,200, \$11,000, \$50,000]. Why is the median a better measure than the mean in this case? Calculate the median

**Answer** [Descriptive Statistics 1.xlsx](#)

#### **Question5**

**Dispersion Introduction (Medium)** A student times how long it takes to finish a puzzle each day: [25, 30, 27, 35, 40]. What does the range tell us about the variation in the student's puzzle-solving time?

**Answer** [Descriptive Statistics 1.xlsx](#)

#### **Question6**

**: Range in Action (Medium)** A farmer records the weekly weight of harvested apples (kg): [100, 105, 98, 110, 120]. Find the range. How can this help the farmer in planning his packaging?

**Answer** [Descriptive Statistics 1.xlsx](#)

#### **Question7**

**Q7: Variance for Decision-Making (Medium)** Two delivery companies track delivery delays (in minutes). Company A: variance = 6 Company B: variance = 15 Which company is more consistent, and why?

**Answer**

Step 1: Recall what variance means

- Variance measures how spread out the data is around the mean.
- A smaller variance means the data points are closer to the average → more consistent.
- A larger variance means the data points are more spread out → less consistent.

 Step 2: Compare the two companies

- Company A: variance = 6
- Company B: variance = 15

Since  $6 < 15$ , Company A's delays are less spread out around the average

#### Step 3: Conclusion

- Company A is more consistent because its variance is smaller.
- This means their delivery delays are more predictable and closer to the average delay, while Company B's delays fluctuate more widely.

 In decision-making, a company with lower variance is often preferred because it provides reliability and predictability — even if the average delay is similar, customers value consistency.

## Question8

**Standard Deviation in Context (Hard)** A finance student compares the daily price fluctuations of two cryptocurrencies. Coin A: standard deviation = \$30  
Coin B: standard deviation = \$120 Which coin is riskier to invest in, and why

## Answer

Let's analyze this clearly:

#### Step 1: Recall what standard deviation means

- Standard deviation measures how much values fluctuate around the average.
- A higher standard deviation = greater volatility = more unpredictable.
- A lower standard deviation = more stable = less risky.

#### Step 2: Compare the two coins

- Coin A: standard deviation = \$30
- Coin B: standard deviation = \$120

Since \$120 is much larger than \$30, Coin B's daily price swings are much wider.

#### Step 3: Conclusion

- Coin B is riskier to invest in because its price fluctuates more dramatically from day to day.
- Investors prefer lower volatility when seeking stability, so Coin A would be considered more consistent.
- Coin B may offer higher potential gains, but it also carries higher risk of losses due to its unpredictability.

👉 In finance, higher standard deviation = higher risk.

### Question9

**9: Combining Measures (Hard)** A family records their monthly electricity usage (in kWh): [400, 420, 390, 450, 410]. Find the mean and standard deviation. What do these values together tell you about the family's energy use pattern?

Answer [Descriptive Statistics 1.xlsx](#)

### Question10

**Practical Application (Hard)** A basketball player's points in 8 games are recorded: [15, 18, 20, 22, 25, 17, 19, 21]. Find the mean, median, mode, range, and standard deviation. What insights can these measures provide about the player's scoring performance?

Answer [Descriptive Statistics 1.xlsx](#)