DESCRIPTIVE STATISTICS ASSIGNMENT

QUESTION 1- Understanding Central Tendency.

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- MUFFIN SALES: [10, 12, 11, 15, 14, 13, 12]

10+12+11+15+14+13+12= 87

10, 12, 11, 15, 14, 13, 12= 7

Mean= 87÷7 = 12.4285...- 12.43.

WHY? Because the sales don't have extreme values, so the mean best summarizes the week.

QUERSTION 2- Mean in Real life.

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: QUIZ MARKS: [12, 15, 14, 16, 18, 20, 19]

12+ 15+14+16+18+20+19= 114

12, 15, 14, 16, 18, 20, 19= 7

Mean= 114÷7 = 16.2857...- 16.29

The class performed reasonably well; most marks are around 16.

QUESTION 3- <u>Mode in Real Life.</u>

A store records the shoe size 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: The mode is 8 because it appears 3 times.

<u>WHY?</u> It's the size most people bought, so the store knows which size to stock more.

QUESTIUON 4- <u>Median in Real Life.</u>

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: Sorted already. With 5 values the middle (3rd) is the median: $10,200.

<u>WHY median is a better measure than the mean in this case because</u>, $50,000 is an outlier that would skew the mean; median resists outlier.

QUESTION 5- <u>Dispersion Introduction.</u>

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: RANGE: Max-Min= 40-25 = 15 minutes.

MEANING: There's moderate variation; the student is not consistent every day.

QUESTION 6- Range in Action.

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: APPLE WEIGHTS (KG): [100, 105, 98, 110, 120]

Range: Max-Min= 120-98 = 22 kg

Helps farmer estimate fluctuations and plan packaging sizes.

QUESTION7- Variances for Decision-Making.

Two delivery companies track delivery delays (in minutes)

- **Company A: Variance = 6**
- **Company B: Variance = 15**

Which Company is more consistent, and why?

ANSWER: Variance A = 6

Variance B = 15

Lower variance = more consistent. So, Company A is more consistent.

QUESTION 8- <u>Standard Deviation in Context.</u>

A finance student compares the daily price fluctuation of two cryptocurrencies.

- **Coin A: Standard deviation = $30**
- **Coin B: Standard Deviation = $120**

Which coin is risker to invest in, and why?

ANSWER: Coin A SD = $30

Coin B SD = $120

Higher SD = more fluctuation = more risk. So, Coin B is risker.

QUESTION 9- <u>Combining Measures.</u>

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: <u>MEAN:</u>

400+420+390+450+410 = 2070

2070÷5 = 414

<u>DEVIATIONS SQUARED:</u>

400 – 414 = -14→ (-14)² = 196

420 – 414 = 6→ 6² = 36

390 – 414 = -24→ 576

450 – 414 = 36→ 1296

410 – 414 = -4→ 16

Sum of Square = 196+36+576+1296+16 = 2120

VARIANCE & SD (POPULATION FROM USED HERE)

Variance = 2120÷5 = 424

SD = √424 = 20.591…= 20.59

Monthly usage around 414 kWh with ±~20.6 kWh typical variation— fairly stable.

QUESTION 10: Practical Application.

A basketball player's point 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: MEAN

15+18+20+22+25+17+19+21 = 157
n = 8
Mean = 157 ÷ 8 = 19.625 ≈ 19.63

MEDIAN
Sorted: [15, 17, 18, 19, 20, 21, 22, 25]
Middle two (4th & 5th) = 19 and 20 → Median = (19 + 20) ÷ 2=19.5

MODE

No repeats → No mode

RANGE

25 − 15 = 10

STANDARD DEVIATION (POPULATION)

Deviations from mean (19.625) and squared:

- **15 − 19.625 = −4.625 → 21.390625**
- **17 − 19.625 = −2.625 → 6.890625**
- **18 − 19.625 = −1.625 → 2.640625**
- **19 − 19.625 = −0.625 → 0.390625**
- **20 − 19.625 = 0.375 → 0.140625**
- **21 − 19.625 = 1.375 → 1.890625**
- **22 − 19.625 = 2.375 → 5.640625**
- **25 − 19.625 = 5.375 → 28.890625**

Sum of squared deviations = 67.875

Variance = 67.875 ÷ 8 = 8.484375

SD = √8.484375 ≈ 2.9128 ≈ 2.91

INSIGHT: Mean ~19.63, median 19.5, SD ~2.91 — player usually scores about 19–20 points with low variability (consistent performer).