15 problems based on Descriptive Stats: 30 mins



Introduction to Statistics

1. Problem:

A researcher collects the following data on the heights (in cm) of a sample of five plants:

120, 125, 130, 135, 140 .

Classify the type of data as:

a) Structured b) unstructured

c) Numerical d) categorical

Answer: C

2. Problem:

A survey records the following data for 10 individuals: their age, favorite color, and hours

spent on social media per day.

Identify the types of data for:

a) Age

b) Favorite color

c) Hours spent on social media

Answer:

A numerical dataset

B categorical

C Numerical dataset 

Measures of Central Tendency

3. Problem:

Calculate the mean, median, and mode for the dataset:

3, 7, 7, 10, 15, 20 .

Answer:

Mean = 10

Median = 8.8

Mode = 7

4. Problem:

The weights (in kg) of five parcels are: 12, 15, 18, 21, 25 .

Add an outlier weight of 50 . How does this affect the mean and median?

Answer:

Mean changes its value from 18.2 to 23.5

Median changes from 18 to 19.5



Measures of Dispersion

5. Problem:

Find the range and interquartile range (IQR) for the dataset:

5, 10, 15, 20, 25, 30, 35 .

Answer:

Range = 35-5 = 30

IQR = Q3 - Q1

Q1= Median of 5,10,15 = 10

Q3=Median of 20,30,35 = 30

IQR = 30 – 10 = 20

6. Problem:

A dataset has a standard deviation of 5 . If all values in the dataset are doubled, what is the

new standard deviation?

Answer:

Given standard deviation is 5 when all values are doubled the standard deviation also doubles and gives new standard deviation of 10.

7. Problem:

Calculate the coefficient of variation for a dataset with a mean of 50 and a standard

deviation of .



Correlation and Skewness

8. Problem:

Two variables, X and Y , have a correlation coefficient

0.85 . Interpret this value.

Answer:

●Since it is positive value the correlation is strong and tends to linear relationship closely.

● As X increases Y also increases.

9. Problem:

A dataset has a positive skew. Which measure of central tendency (mean, median, or mode) is likely the largest?

Answer:

The mean is largest

In positive skew mode<median<mean

10. Problem:

Calculate the Pearson correlation coefficient for the following paired data: X : 1, 2, 3, 4 Y : 2, 4, 6, 8

Answer:

We can observe that Y = 2X

So the relation is positive linearly skewed with Pearson coefficient 1.



Five Point Summary and Visualization

11. Problem:   
Determine the five-point summary for the dataset: 5, 8, 12, 14, 18, 20, 24 .

Answer:

Maximum= 24

Median= 18

Minimum=8

Q1 = 8

Q3 = 20

12. Problem:   
A box plot shows the median closer to Q1, with a long tail extending to the right. What does this indicate about the dataset's skewness?

Answer:

It indicates positive skewness or right skewed

13. Problem:   
Construct a histogram for the following dataset: 2, 2, 3, 3, 3, 4, 5, 6, 6, 7 .

Suggest appropriate bin sizes.

Answer:

Bin sizes can be 2-3, 3-4, 4-5, 5-6, 6-7



Application Problems

14. Problem:   
A factory measures daily production output (units): 200, 210, 190, 220, 230, 240, 205 .

Find the standard deviation.

Answer:

Standard deviation = square root of variance

After calculation Variance is 262 and standard deviation is 16.1

15. Problem:   
 You are analyzing sales data for two products.

Product A: Mean sales = 100 , Standard deviation = 20 , Standard deviation = 30 Product B: Mean sales = 150   
Which product has higher relative variability?

Answer:

Variability of product A

= (20/100)\*100%=20%

Variability of Product B

= (30/150)\*100%=20%

Since both are giving 20% both products have same relative variability