1. Scenario: A company wants to analyze the sales performance of its products in different regions. They have collected the following data:

Region A: [10, 15, 12, 8, 14]

Region B: [18, 20, 16, 22, 25]

Calculate the mean sales for each region

Answer: region a: mean =11.8

Region b mean=20.2

2. Scenario: A survey is conducted to measure customer satisfaction on a scale of 1 to 5. The data collected is as follows:

[4, 5, 2, 3, 5, 4, 3, 2, 4, 5]

Calculate the mode of the survey responses.

Answer: modes 4,5

3. Scenario: A company wants to compare the salaries of two departments. The salary data for Department A and Department B are as follows:

Department A: [5000, 6000, 5500, 7000]

Department B: [4500, 5500, 5800, 6000, 5200]

Calculate the median salary for each department.

Answer: median of department a:5750

Median of department of b:5500

4. Scenario: A data analyst wants to determine the variability in the daily stock prices of a company. The data collected is as follows:

[25.5, 24.8, 26.1, 25.3, 24.9]

Calculate the range of the stock prices.

Answer: range=1.3

5. Scenario: A study is conducted to compare the performance of two different teaching methods. The test scores of the students in each group are as follows:

Group A: [85, 90, 92, 88, 91]

Group B: [82, 88, 90, 86, 87]

Perform a t-test to determine if there is a significant difference in the mean scores between the two groups.

Answer: null hypothesis : mean a equal to mean of b

Alternative hypothesis : mean of a not equal to mean of b

Mean of a: 89.2

Mean of b :86.6

Standard deviation =0.97

Test static:2.927

Degree of freedom:8

T value=2.306 at 5% level of significance

Conclusion : computed value is less than the table value ,hence there is a significant difference between means

6. Scenario: A company wants to analyze the relationship between advertising expenditure and sales. The data collected is as follows:

Advertising Expenditure (in thousands): [10, 15, 12, 8, 14]

Sales (in thousands): [25, 30, 28, 20, 26]

Calculate the correlation coefficient between advertising expenditure and sales.

Answer: correlation coefficient: 2.924

7. Scenario: A survey is conducted to measure the heights of a group of people. The data collected is as follows:

[160, 170, 165, 155, 175, 180, 170]

Calculate the standard deviation of the heights.

Answer : standard deviation =8.45

8. Scenario: A company wants to analyze the relationship between employee tenure and job satisfaction. The data collected is as follows:

Employee Tenure (in years): [2, 3, 5, 4, 6, 2, 4]

Job Satisfaction (on a scale of 1 to 10): [7, 8, 6, 9, 5, 7, 6]

Perform a linear regression analysis to predict job satisfaction based on employee tenure.

Answer: job satisfaction =8.11 -0.417\*Employee tenure

9. Scenario: A study is conducted to compare the effectiveness of two different medications. The recovery times of the patients in each group are as follows:

Medication A: [10, 12, 14, 11, 13]

Medication B: [15, 17, 16, 14, 18]

Perform an analysis of variance (ANOVA) to determine if there is a significant difference in the mean recovery times between the two medications

Answer: mean of a: 12

Mean of b =16

Grand mean =14

Sum of square between groups is =40 df=1

Sum of square within the group is 22 df=8

Mean square between =40

Mean square within =2.72

f-value=14.4

Table f =5.32

Conclusion : there is significant difference between groups

10. Scenario: A company wants to analyze customer feedback ratings on a scale of 1 to 10. The data collected is

as follows:

[8, 9, 7, 6, 8, 10, 9, 8, 7, 8]

Calculate the 75th percentile of the feedback ratings.

Answer: 75 th percentile : 8.25

11. Scenario: A quality control department wants to test the weight consistency of a product. The weights of a sample of products are as follows:

[10.2, 9.8, 10.0, 10.5, 10.3, 10.1]

Perform a hypothesis test to determine if the mean weight differs significantly from 10 grams.

Answer: h0=10 grams

H1 not equal 10 grams

T value:1.34

Df =5

T value falls within range critical region -2.51 to 2.51

Reject null hypothesis

12. Scenario: A survey is conducted to measure customer satisfaction with a product on a scale of 1 to 10. The data collected is as follows:

[7, 9, 6, 8, 10, 7, 8, 9, 7, 8]

Calculate the 95% confidence interval for the population mean satisfaction score.

Answer: 7.14 tio 8.656

13. Scenario: A company wants to analyze the distribution of customer ages. The data collected is as follows:

[25, 30, 35, 40, 45, 50, 55, 60, 65, 70]

Calculate the interquartile range (IQR) of the ages.

Answer: iqr=q1-q3

=57.5-32.5

=25

19. Scenario: A survey is conducted to measure the satisfaction levels of customers with a new product. The data collected is as follows:

[7, 8, 9, 6, 8, 7, 9, 7, 8, 7]

Calculate the standard error of the mean satisfaction score.

Answer: standard error =0.26