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Assignment - 3

1) i) Data in ascending order:-

28, 42, 45, 48, 49, 50, 55, 58, 60

$$\text{Range} = H - L = 60 - 28 = 32$$

The difference of the highest and lowest air quality index values of S. California is 32

$$Q_3 = P_{75} = \frac{n+1}{100} \times 75 = 7.5^{\text{th}} \text{ position}$$

$$\text{Hence, } Q_3 = 55 + 0.5 \times (58 - 55) = 56.5$$

$$Q_1 = P_{25} = \frac{n+1}{100} \times 25 = 2.5^{\text{th}} \text{ position}$$

$$\text{Hence, } Q_1 = 42 + 0.5 \times (45 - 42) = 43.5$$

$$\text{Interquartile range} = Q_3 - Q_1 = 56.5 - 43.5 = 13$$

The interquartile range of air quality index values of Southern California is 13.

$$\text{ii) Mean, } \bar{x} = \frac{28 + 42 + \dots + 49 + 60}{9} = 48.33$$

$$x - \bar{x} = -20.33, -6.33, -3.33, -0.33, 0.67, 1.67, 6.67, 9.67, 11.67$$

$$\text{ii) Variance, } s^2 = \frac{\sum (x - \bar{x})^2}{n-1} = \frac{741.98}{8} = 92.75$$

The average squared distance of the ^{air quality index} values from mean is 92.75.

$$\text{iii) Standard deviation, } s = \sqrt{\frac{\sum (x - \bar{x})^2}{n-1}} = 9.63$$

The average distance of the air quality index values from mean is 9.63.

iii) On the basis of the given descriptive statistics we can compare the coefficient of variation between Pomona and Anaheim.

For Pomona:-

$$CV = \frac{s}{\bar{x}} \times 100\% = \frac{9.63}{48.33} \times 100\% = 19.93\%$$

For Anaheim:-

$$CV = \frac{s}{\bar{x}} \times 100\% = \frac{11.66}{48.5} \times 100\% = 24.01\%$$

The air quality index values of Pomona is more consistent than Anaheim.

2] 25 days were studied.

ii] There is only 1 observation in the first class.

iii] The minimum value is 38 and maximum value is 106.

iv] The actual values of fourth row are:-

60, 61, 63, 63, 65, 65, and 69.

v] There are no values for second row.

vi] There are 9 values less than 70.

vii] There are 9 values which are more than 80.

viii]

$$\text{Median} = \frac{25+1}{2} = 13^{\text{th}} \text{ position}$$

Hence, median is 76.

the company produces less than 76 units^{of} products at half of the time and produces above it at rest of the time.

ix] 16 values are between 60 and 89, inclusive.