

Model Answers

Exercise 1 — Model Answer

Dataset:

14, 16, 15, 18, 20, 17, 16, 19, 18, 21, 17, 16

1. Mean

Sum:

$$\text{Mean} = \frac{207}{12} = 17.25$$

2. Median

Sorted data:

14, 15, 16, 16, 16, 17, 17, 18, 18, 19, 20, 21

$$\text{Median} = \frac{17 + 17}{2} = 17.5$$

3. Mode

$$\text{Mode} = 16$$

4. Range

$$\text{Range} = 21 - 14 = 7$$

5. Variance

Squared deviations sum:

$$\sum (x - \bar{x})^2 = 46.25$$
$$\sigma^2 = \frac{46.25}{12} = 3.854$$

6. Standard deviation

$$\sigma = \sqrt{3.854} = 1.964$$

Exercise 2 — Model Answer

1. Midpoints

250, 350.5, 450.5, 550.5, 650.5

2. Mean

$$\bar{x} = \frac{13313}{30} = 443.77$$

3. Cumulative Frequency

4, 11, 21, 26, 30

4. Median Class

$$N/2 = 15$$

The 15th value lies in:

$$\boxed{401-500}$$

Exercise 3 — Model Answer

1. Covariance

$$\text{Cov} = 24.6$$

2. Correlation

$$r = 0.98$$

3. Regression Line

$$b = 9.318, \quad a = 22.13$$

$$\boxed{y = 22.13 + 9.318x}$$

4. Prediction for $x = 6$

$$y = 22.13 + 9.318(6) = 77.018$$

$$\boxed{y \approx 77}$$