Question 2: Finding x and y for the Median and Mode

The median class is 20–30 with a total frequency of 60 and median 28.5.

1. Calculate the cumulative frequency (CF) before the median class.

2. Use the median formula:

$$\text{Median} = L + \left(\frac{\frac{N}{2} - CF}{f}\right) \times h$$

For the mode:

$$\text{Mode} = L + \left(\frac{f_m - f_1}{2f_m - f_1 - f_2}\right) \times h$$

Question 3: Profit Earned by Two Companies

We have:

$$\frac{X + Y}{2} = 34 \implies X + Y = 68$$

$$\sqrt{XY} = 16 \implies XY = 256$$

From the arithmetic and geometric mean formulas, solve the quadratic equation:

$$X^2 - 68X + 256 = 0$$

$$X = 48, Y = 20$$

Question 4: Mean, Median, and Mode Advantages and Disadvantages

Mean:

- **Advantages:** Utilizes all data points, simple to compute.