

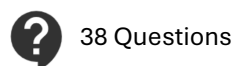


Acumen Teach
To the point

Statistics & Data

Master-box

Statistics—Logic—Mathematical knowledge application—Data Analysis—Averages—Graphs



Easy (12 Questions)	/12
Moderate(12 Questions)	/24
Difficult(12 Questions)	/36
Total Marks	/72
How did you do?	



Easy Questions

1. Mode represents the most frequently occurring value in a data set.
2. Mean = $(4 + 6 + 8 + 10) \div 4 = 7$.
3. Median = 7 (after arranging data: 3, 5, 7, 9, 12).
4. Range = $22 - 10 = 12$.
5. 25% = $1/4$ of the total.
6. Probability of red ball = $3/10$.
7. Most frequent outcome corresponds to the highest frequency in the table.
8. Outlier: A value significantly different from the rest of the data.
9. Cumulative frequency: Running total of frequencies in a data set.
10. Positive correlation: Points trend upwards as x increases.
11. Probability of even number = $3/6 = 1/2$.
12. Line in the middle of a box plot = Median.



Moderate Questions

13. Mean = $((1 \times 3) + (2 \times 5) + (3 \times 2)) \div 10 = 1.9$.
14. Probability of at least one head = $1 - \text{Probability of no heads} = 1 - (1/2 \times 1/2) = 3/4$.
15. Area in histogram represents frequency density \times class width.
16. Lower quartile = 7 (position $1/4$ of data in sorted order).
17. Spread comparison: Use the range or interquartile range.
18. Weak negative correlation: As x increases, y slightly decreases.
19. Median from cumulative frequency graph: Locate value at $n/2$ position.
20. Probability tree for heads/tails: $1/2$ for each branch.
21. Neither = Total - French - German + Both = $30 - 15 - 10 + 5 = 10$.
22. Stratified sample = $50 \times (30 \div 300) = 5$ students.
23. Compare box plot medians and IQRs for spread and central tendency.
24. Grouped mean = Estimate midpoint \times Frequency \div Total frequency = 15.



Difficult Questions

25. Standard deviation = $\sqrt{\frac{\sum (x - \text{mean})^2}{n}}$.
26. Probability with replacement = $(\frac{3}{5}) \times (\frac{3}{5}) = \frac{9}{25}$.
27. Probability without replacement = $(\frac{3}{5}) \times (\frac{2}{4}) = \frac{3}{10}$.
28. Outlier effect: Skews mean more than median.
29. $y = mx + c$: m = gradient, c = y -intercept.
30. Compare using IQR for spread and median for central tendency.
31. Z-score = $(75 - 70) \div 5 = 1$.
32. Chi-squared: Tests independence between categorical variables.
33. Probability tree: Multiply dependent probabilities for branches.
34. Normal distribution: Symmetric, bell-shaped curve.
35. Expected value = $(0.1 \times 20) + (0.9 \times 0) - 5 = -3$.
36. Interquartile range = $Q3 - Q1$, read from cumulative graph.