Acumen Teach
To the point

# Statistics & Data Master-box

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

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To the point

| | |
|---|---|
| Easy (12 Questions) | /12 |
| Moderate(12 Questions) | /24 |
| Difficult(12 Questions) | /36 |
| **Total Marks** | **/72** |

How did you do?

2 hours

38 Questions

# Easy Questions

**1.** What does the mode represent in a bar chart?

**(1 marks)**

**2.** Find the mean of the numbers: 4, 6, 8, 10.

**(1 marks)**

**3.** What is the median of the data set: 7, 12, 9, 5, 3?

**(1 marks)**

**4.** Calculate the range for the data: 15, 22, 10, 18.

**(1 marks)**

**5.** If a pie chart shows 25% of the chart shaded, what fraction of the total is represented?

**(1 marks)**

**6.** A bag contains 3 red balls and 7 blue balls. What is the probability of selecting a red ball?

**(1 marks)**

**7.** From a frequency table, identify the most frequent outcome.

**(1 marks)**

**8.** What is an outlier in a data set?

**(1 marks)**

**9.** Define cumulative frequency.

**(1 marks)**

**10.** What does a positive correlation on a scatter graph look like?

**(1 marks)**

**11.** A die is rolled. What is the probability of rolling an even number?

**(1 marks)**

**12.** What does the line in the middle of a box in a box plot represent?

**(1 marks)**

# Moderate Questions

**13.** Calculate the mean of this data:

| Value | Frequency |
|---|---|
| 1 | 3 |
| 2 | 5 |
| 3 | 2 |

**(2 marks)**

**14.** A coin is flipped twice. What is the probability of getting at least one head?

**(2 marks)**

**15.** Explain what the area of each bar in a histogram represents.

**(2 marks)**

**16.** Find the lower quartile for the data: 3, 7, 8, 12, 15, 20, 21.

**(2 marks)**

**17.** Explain how you would compare the spread of two data sets using their ranges.

**(2 marks)**

**18.** A scatter graph shows a weak negative correlation. What does this mean?

**(2 marks)**

**19.** From a cumulative frequency graph, estimate the median of a data set.

**(2 marks)**

**20.** Draw and calculate probabilities using a tree diagram for flipping two coins.

**(2 marks)**

**21.** In a class of 30 students, 15 study French, 10 study German, and 5 study both. How many study neither?

**(2 marks)**

**22.** A school has 300 students. If 30 students are in Year 10, how many should be in a stratified sample of 50?

**(2 marks)**

**23.** Compare the spread and medians of two box plots.

**(2 marks)**

**24.** Estimate the mean for grouped data:

| Interval | Frequency |
|---|---|
| 0–10 | 3 |
| 10–20 | 5 |
| 20–30 | 2 |

**(2 marks)**

# Difficult Questions

**25.** Calculate the standard deviation for the numbers: 2, 4, 6, 8.

**(3 marks)**

**26.** A bag contains 3 red balls and 2 blue balls. Two balls are drawn with replacement. What is the probability both are red?

**(3 marks)**

**27.** A bag contains 3 red balls and 2 blue balls. Two balls are drawn without replacement. What is the probability both are red?

**(3 marks)**

**28.** Explain how an outlier affects the mean and median of a data set.

**(3 marks)**

**29.** Explain the significance of the equation $y = mx + c$ in a regression line.

**(3 marks)**

**30.** Compare two distributions using their interquartile ranges and medians.

**(3 marks)**

**31.** Calculate the z-score for a data point $x = 75$, where the mean is 70 and the standard deviation is 5.

**(3 marks)**

**32.** What is the purpose of a chi-squared test in statistics?

**(3 marks)**

**33.** Calculate probabilities for dependent events using a probability tree.

**(3 marks)**

**34.** Describe the properties of a normal distribution.

**(3 marks)**

**35.** A game costs £5 to play. The probability of winning £20 is 0.1, and the probability of winning nothing is 0.9. What is the expected value of playing the game?

**(3 marks)**

**36.** Interpret a cumulative frequency graph to estimate the interquartile range.

**(2 marks)**