6.2 Charts, tables, time series and scatter

Name: _____ Class: _____ Date: _____ **Total: 24 marks**

KEY WORDS time series • correlation

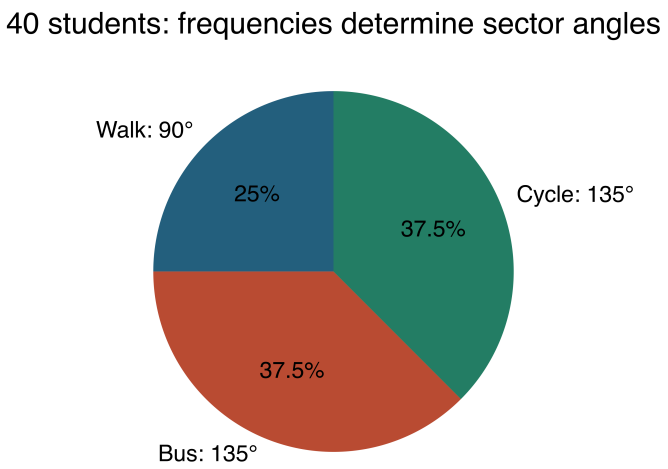
Charts, tables, time series and scatter

Objective

Interpret and construct tables, charts and diagrams – bar, pie, pictogram, vertical line, time series – construct and interpret histograms and cumulative frequency graphs, apply statistics to describe a population, and use scatter graphs with correlation and best-fit lines (rows S2–S3, S5–S6).

1 Key knowledge and worked examples

Displays and bivariate data. Pie angle $= \frac{f}{n} \times 360°$; histogram area is frequency, so height (density) = frequency ÷ class width; cumulative frequency plots at UPPER class boundaries. Correlation has direction (positive, negative, none) and strength (strong, weak) – and never proves causation. Best-fit lines interpolate safely and extrapolate dangerously.



Original native-lesson illustration; labels belong to its worked example.

2 Practice

2.1 Of 40 students, 10 walk, 15 take the bus and 15 cycle. Work out the three pie-chart angles. [2]

2.2 A pie-chart sector has angle 162°. What percentage of the total does it represent? [2]

2.3 Daily attendance over a week reads 32, 35, 33, 36, 34. Write down the range and the largest value. [2]

2.4 Which display suits categorical data with named categories: a bar chart or a time-series line graph? [2]

2.5 Name the correlation type when points rise together tightly, and when points fall loosely. [2]

2.6 A line of best fit is $\hat{y} = 40 + 4.5x$ for inputs observed from 1 to 5. Predict y at $x = 3.6$ and at $x = 10$, stating which prediction is safer. [3]

3 Exam-style questions

3.1 *(June 2024 3H Q8, adapted.)* Six table values are 8, 9, 9, 6, 9, 10. (a) Work out their mean. (b) A pie chart of the same data has a 162° sector. Work out $4 \times$mean$+$percentage, where the percentage is the sector's share. [4]

3.2 *(Original, Higher.)* Classes $0 \le x < 10$, $10 \le x < 20$, $20 \le x < 40$ have frequencies 20, 30, 20. Work out the frequency densities and check that the areas recover the frequencies. [3]

3.3 *(Original, Higher.)* For the same data, write down the cumulative frequency points and estimate the median, which reads at cumulative frequency 35. [2]

3.4 *(Original.)* A pictogram key says one symbol represents five students. How many symbols represent 12 students, and why must fractional symbols be allowed? [2]