

Statistics

9260 unit 3.4 full package: Core S1-S5 with Extension additions, specimen-family anchors, unsampled lines labelled

1. Unit 3.4 at a glance

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Core S1-S5: data types, table extraction, two-way tables, the chart bank and the basic averages. Extension additions: histograms with UNEQUAL class intervals, cumulative frequency diagrams, box plots, quartiles, inter-quartile range and percentiles.

Must-know: frequency density = frequency over width, area is frequency; cumulative totals plot at UPPER boundaries; median at $n/2$, quartiles at $n/4$ and $3n/4$; grouped mean via midpoints.

2. Data, tables and charts

Data, tables and charts

Qualitative categorises, discrete counts, continuous measures - grouped or ungrouped. Extract from tables by reading headers first, quoting units.

Two-way tables cross-tabulate: cells sum to row and column totals (30 students, 18 cricket, 15 tennis, 7 both: cells 11, 7, 8, 4). Chart choice by data type - bars, dual bars, pie, lines, scatter; the Core bank also has stem-and-leaf, tally, pictograms, frequency polygons and equal-width histograms.

3. Extension diagrams

Extension diagrams

Unequal histograms: height is frequency density (widths 2, 3, 5, 10, 15 holding 5, 12, 18, 14, 9 give heights 2.5, 4, 3.6, 1.4, 0.6) and the AREA is the frequency - the 1E specimen marks exactly this.

Cumulative frequency plots at UPPER boundaries (the 1E correction); box plots show the five-number summary with the box spanning the IQR. 60 workers with totals 6, 17, 27, 42, 60 at 10-30 hours: median 21, quartiles 14.1 and 25.8, IQR 11.7.

4. Averages, quartiles, percentiles

Averages, quartiles, percentiles

Mean via midpoints for grouped data; median by ordering; mode and modal class (by density when widths differ). For 3, 7, 8, 10, 12: mean 8, median 8, range 9.

Quartiles: order, halve, halve again - $IQR = Q3 - Q1$. Percentiles read at $p/100$ of n : the 90th percentile of 60 values is the 54th value; the 2E specimen's 38% family reads 19 of 50.

Check yourself

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Classify data; extract from tables with units; two-way tables that check both ways; the Core chart bank chosen by data type.

Unequal-interval histograms by density; cumulative frequency at upper boundaries with median, quartile and percentile reads; box plots; grouped means; quartiles and the IQR from data or the curve.