

Exercise walk-through

4.1

Data types, tables and charts

OxfordAQA · International GCSE · Mathematics

1. Unit 3.4 at a glance

Unit 3.4 at a glance

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.

Check yourself

Check yourself

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.

Exercises 2.1·2.3

2.1 Classify: number of pets per household; favourite colour; mass of luggage. [3]

2.2 A two-way table shows 25 students: 14 play football, 11 basketball, 5 both. Fill the four cells and find how many play neither. [3]

2.3 Name the best chart for showing each: parts of a daily schedule; the trend of temperature over a week; comparing two classes' favourite subjects. [3]

Exercises 2.1·2.3

2.1 Classify: number of pets per household; favourite colour; mass of luggage. [3]

2.1 Discrete; qualitative; continuous.

2.2 A two-way table shows 25 students: 14 play football, 11 basketball, 5 both. Fill the four cells and find how many play neither. [3]

2.2 Football only 9, both 5, basketball only 6, neither 5.

2.3 Name the best chart for showing each: parts of a daily schedule; the trend of temperature over a week; comparing two classes' favourite subjects. [3]

2.3 Pie chart; line graph; dual bar chart.

Exercises 3.1·3.2

3.1 (*Original.*) The two-way table below shows 40 shoppers by gender and purchase.

	Bought	Did not buy	Total
Male	12	a	20
Female	b	7	c
Total	25	d	40

(a) Find a , b , c and d . (b) A shopper is chosen at random: find the probability they are female AND bought. [4]

3.2 (*Original.*) From a printed train timetable extract: the departure time of the 3rd train on weekdays, and how many minutes the 2nd train takes versus the 4th (state your reads). (*If the table is unavailable, describe exactly which cells you would read.*) [2]

Exercises 3.1·3.2

3.1 (*Original.*) The two-way table below shows 40 shoppers by gender and purchase.

	Bought	Did not buy	Total
Male	12	a	20
Female	b	7	c
Total	25	d	40

(a) Find a , b , c and d . (b) A shopper is chosen at random: find the probability they are female AND bought. [4]

3.1 (a) $a = 20 - 12 = 8$; $d = 40 - 25 = 15$; $b = 25 - 12 = 13$; $c = 8 + 7 = 15$ (check: $13 + 7 = 20$? No: $c = b + 7 = 20$; and $c = 40 - 20 = 20$ ✓ with $b = 13$). (b) $\frac{13}{40}$.

3.2 (*Original.*) From a printed train timetable extract: the departure time of the 3rd train on weekdays, and how many minutes the 2nd train takes versus the 4th (state your reads). (*If the table is unavailable, describe exactly which cells you would read.*) [2]

3.2 Read the weekday column, 3rd row for the departure; the 2nd and 4th rows' arrival minus departure cells for the durations; state both reads with units.

Local review guidance: row/column totals used to fill cells; cells consistent BOTH ways; chart choices justified by data type. This is authored classroom guidance.