

1 Two way tables

80 students each chose football or netball. 45 were boys. 30 chose netball. 12 girls chose football.

- a) Complete the table.
b) What fraction of the netball players are boys?

	Football	Netball	Total
Boys	38	7	45
Girls	12	23	35
Total	50	30	80

b) $\frac{7}{30}$

2 Averages and range

The mean of four numbers is 9. Three of the numbers are 5, 8 and 14.

- a) Find the fourth number.
b) Find the median and the range of the four numbers.

a) $4 \times 9 = 36, 36 - 27 = 9$

b) 5, 8, 9, 14

median 8.5, range 9

3 Averages and range

Ali's times for 100 m, in seconds, are 12.4, 12.9, 12.1, 13.0, 12.6

- a) Find the mean and the range of Ali's times.
b) Ben's times have a mean of 12.8 s and a range of 1.9 s. Compare the two runners.

a) $63 \div 5 = 12.6$ s, range $13.0 - 12.1 = 0.9$ s

b) Ali is faster on average and more consistent

4 Choosing the best average

The sizes of the last ten pairs of shoes a shop sold are 4, 5, 5, 6, 6, 6, 6, 6, 7, 9, 12

- a) Find the mean, median and mode.
b) Which average helps the shop most when it orders more shoes? Why?

a) mean 6.6, median 6, mode 6

b) the mode: it is the size sold most, and 6.6 is not a size

Collecting data, averages and range

revision mat answers

5 Mean from a frequency table

The goals scored in 30 matches.

- a) Find the mean number of goals, to 2 decimal places.
b) Find the median number of goals.

Goals in a match	0	1	2	3	4
Frequency	6	9	7	5	3
Goals $\times$ frequency	0	9	14	15	12

a) $50 \div 30 = 1.67$

b) the 15th is 1, the 16th is 2: 1.5

6 Estimated mean: grouped data

The times 30 people waited for a bus.

- a) Work out an estimate of the mean time.
b) Why is your answer only an estimate?

Time, t (minutes)	$0 < t \leq 10$	$10 < t \leq 20$	$20 < t \leq 30$	$30 < t \leq 40$
Frequency	5	12	9	4
Midpoint	5	15	25	35
Frequency $\times$ midpoint	25	180	225	140

a) $570 \div 30 = 19$ minutes

b) we use the midpoints, not the real times

7 Estimating from a sample

A sample of the 900 students at a school were asked their favourite subject.

- a) Estimate how many of the 900 chose science.
b) Estimate how many more of the 900 chose maths than English.

Subject	Maths	English	Science	Other	Total
Sample	21	15	18	6	60

a) $900 \div 60 = 15, 18 \times 15 = 270$

b) $(21 - 15) \times 15 = 90$

8 Estimating from a sample

A farmer has 1600 apples. She checks 40 of them, and 3 of those are bruised.

- a) Estimate how many of the 1600 apples are bruised.
b) She took the 40 from the top of one crate. Why might the estimate be wrong?

a) $1600 \div 40 = 40, 3 \times 40 = 120$

b) not random: one crate, and the top apples may be bruised less