

1 Two way tables

120 people hired bikes. 68 were adults. 50 hired an electric bike. 18 children hired a pedal bike.

- a) Complete the table.
b) What percentage of the electric bikes did children hire?

	Electric	Pedal	Total
Adults	16	52	68
Children	34	18	52
Total	50	70	120

a) in the table

b) $34 \div 50 \times 100 = 68\%$

2 Averages and range

Five whole numbers have a median of 6, a mode of 4, a mean of 7 and a range of 9.

- a) Find the five numbers.
b) A sixth number is added. The mean goes up by 1. Find the sixth number.

$4, 4, 6, \dots, 13$; total $5 \times 7 = 35$

a) $4, 4, 6, 8, 13$

b) $6 \times 8 = 48$, $48 - 35 = 13$

3 Averages and range

Team A has 12 players with a mean age of 16.25. Team B has 8 players with a mean age of 19.

- a) Find the mean age of all 20 players.
b) Two more players join team B. Its mean age is now 18.5. Find the mean age of the two new players.

a) $12 \times 16.25 + 8 \times 19 = 195 + 152 = 347$

$347 \div 20 = 17.35$

b) $10 \times 18.5 - 152 = 33$, $33 \div 2 = 16.5$

4 Choosing the best average

The times, in minutes, that nine people take to get to work are 12, 15, 14, 18, 13, 16, 15, 58, 14.

- a) Find the mean and the median.
b) Which average better describes a typical time? Give a reason.

a) mean = $175 \div 9 = 19.4$ min, median = 15 min

b) the median: 58 is an outlier that pulls the mean up

Collecting data, averages and range

revision mat answers

Higher A

5 Mean from a frequency table

The table shows the number of people in each of 50 cars.

- a) Find the mean number of people in a car.
b) Some more cars with 4 people in arrive. The mean is now 2. How many more cars arrived?

People in the car	1	2	3	4
Frequency	23	15	7	5
People $\times$ frequency	23	30	21	20

a) $94 \div 50 = 1.88$

b) $94 + 4n = 2(50 + n)$, $n = 3$

6 Estimated mean: grouped data

The table shows the masses of 40 pumpkins at a show.

- a) Work out an estimate of the mean mass.
b) Which class contains the median?

Mass, m (kg)	$0 < m \leq 4$	$4 < m \leq 6$	$6 < m \leq 10$	$10 < m \leq 20$
Frequency	7	12	15	6
Midpoint	2	5	8	15
Frequency $\times$ midpoint	14	60	120	90

a) $284 \div 40 = 7.1$ kg

b) the 20th and 21st: $6 < m \leq 10$

7 Estimating from a sample

720 people saw a show at a theatre. The table shows how a sample of them travelled there.

- a) Estimate how many of the 720 people came by car.
b) The theatre says over a quarter of the 720 came by train. Does the sample agree? Show why.

Travel	Car	Train	Bus	Walk	Total
Sample	19	12	8	6	45

a) $720 \div 45 = 16$, $19 \times 16 = 304$

b) $12 \times 16 = 192 > 180$, so yes

8 Estimating from a sample

A gym asks 50 of its members and 18 of them swim. From this it estimates that 270 of its members swim.

- a) How many members does the gym have?
b) Rosa says the gym should ask 50 members at the pool instead. Explain why she is wrong.

a) $270 \div 18 = 15$, $15 \times 50 = 750$

b) people at the pool are more likely to swim, so the sample would be biased