



- 1 Here are seven numbers.

3 7 7 4 9 7 2

Write down the mode of these numbers.

(1 mark)

The mode is the value that appears most often

7 appears three times, more than any other number, so the mode is 7

7

- 2 Here are four numbers.

6 11 9 14

Work out the mean of these numbers.

(2 marks)

The mean is the amount each value would have if the total were shared equally.

Add all the values, then divide by how many values there are

Total

$$6 + 11 + 9 + 14 = 40$$

Mean

$$40 \text{ divided by } 4 = 10$$

10

3

a. Find the median of these numbers.

14 9 21 11 17 9 12

b. Here are the heights, in cm, of six pupils. Find the median height.

152 147 160 155 149 158

(3 marks)

a) put them in order first

9, 9, 11, 12, 14, 17, 21

7 numbers, so the middle is the 4th

12

b) in order

147, 149, 152, 155, 158, 160

two middle values

$$(152 + 155) \div 2 = 153.5$$

153.5 cm

4

A shoe shop records the sizes of the last eight pairs of trainers it sold.

5 7 6 5 8 5 9 6

a. Write down the modal shoe size.

b. Work out the range of the shoe sizes.

(3 marks)

a) Size 5 appears three times, more than any other size, so the mode is 5

b) Range

$$9 - 5 = 4$$

5

A group of Year 7 pupils and a group of Year 8 pupils did the long jump.

	Median	Range
Year 7	2.9 m	1.2 m
Year 8	3.3 m	0.8 m

Make two comparisons between the long jumps of the two year groups.

(2 marks)

compare the average

$$3.3 \text{ m} > 2.9 \text{ m}$$

on average Year 8 jumped further

compare the spread

$$0.8 \text{ m} < 1.2 \text{ m}$$

Year 8 were more consistent

6

Seven friends write down how much pocket money they get each week.

£5 £8 £6 £10 £5 £7 £15

a. Work out the mean, the median, the mode and the range.

b. Which average best represents the pocket money of the friends? Give a reason for your answer.

(4 marks)

a) in order

5, 5, 6, 7, 8, 10, 15

mean

$$5 + 5 + 6 + 7 + 8 + 10 + 15 = 56$$

$$56 \div 7 = 8$$

median: 4th value

median = £7

mode: most common

mode = £5

range

$$15 - 5 = 10$$

mean £8, median £7, mode £5, range £10

b) £15 is much bigger than the rest

median, because £15 pulls the mean up

7

Here are the numbers of goals scored by Ayo and Ben in their last six football matches.

Ayo	2	1	3	2	2	2
Ben	0	5	1	4	0	2

- Work out the mean and the range for each player.
- The coach wants a player who scores steadily every match. Which player should she choose? Give a reason.

(4 marks)

a) Ayo

$$2 + 1 + 3 + 2 + 2 + 2 = 12$$

$$12 \div 6 = 2$$

$$3 - 1 = 2$$

Ayo: mean 2, range 2

Ben

$$0 + 5 + 1 + 4 + 0 + 2 = 12$$

$$12 \div 6 = 2$$

$$5 - 0 = 5$$

Ben: mean 2, range 5

b) same mean, Ayo has the smaller range

Ayo, he is more consistent

8

The table shows the number of children in each of 20 families.

Number of children	Frequency
0	3
1	8
2	6
3	3

Work out the mean number of children per family.

(3 marks)

$$\text{Total children} = (0 \times 3) + (1 \times 8) + (2 \times 6) + (3 \times 3) = 0 + 8 + 12 + 9 = 29$$

$$\text{Total families} = 20$$

$$\text{Mean} = 29 \div 20 = 1.45$$

1.45

- 9 Freya plays six rounds of a quiz. Her mean score for the six rounds is 15.

Here are her scores for the first five rounds.

12 18 9 21 14

Work out her score in the sixth round.

(4 marks)

Total of all six scores

$$6 \times 15 = 90$$

Total of the first five scores

$$12 + 18 + 9 + 21 + 14 = 74$$

Sixth score

$$90 - 74 = 16$$

16

- 10 20 pupils each timed how long it took them to solve a puzzle.

Time (t seconds)	Frequency
$0 < t \leq 10$	3
$10 < t \leq 20$	8
$20 < t \leq 30$	6
$30 < t \leq 40$	3

- Write down the modal class.
- Work out an estimate for the mean time.
- Why is your answer to part (b) only an estimate?

(4 marks)

a) highest frequency

$$10 < t \leq 20$$

b) midpoint $\times$ frequency

$$5 \times 3 = 15$$

$$15 \times 8 = 120$$

$$25 \times 6 = 150$$

$$35 \times 3 = 105$$

$$15 + 120 + 150 + 105 = 390$$

$$390 \div 20 = 19.5$$

19.5 seconds

c)

the exact times are not known, so midpoints are used

11

The table shows information about the time, t minutes, that 30 customers waited at a garage.

Time (t minutes)	Frequency
$0 < t \leq 10$	4
$10 < t \leq 20$	9
$20 < t \leq 30$	12
$30 < t \leq 40$	5

Work out an estimate for the mean waiting time.

(3 marks)

The individual measurements are unknown. Represent each class by its midpoint, halfway between its boundaries, then multiply by its frequency to estimate that class's total. Divide the sum of these totals by the total frequency

Use the midpoints 5, 15, 25 and 35

$$(5 \times 4) + (15 \times 9) + (25 \times 12) + (35 \times 5) = 20 + 135 + 300 + 175 = 630$$

$$\text{Estimated mean} = 630 \div 30 = 21 \text{ minutes}$$

21 minutes

12

- a. Three cards each have a whole number on them. The mode of the numbers is 5 and the mean is 6. Work out the three numbers.
- b. Three different cards each have a whole number on them. The median is 7, the range is 6 and the mean is 7. Work out the three numbers.

(4 marks)

a) mode 5, so two cards are 5

$$3 \times 6 = 18$$

$$18 - 5 - 5 = 8$$

5, 5, 8

b) the middle card is 7

$$3 \times 7 = 21$$

$$21 - 7 = 14$$

smallest + largest = 14, largest - smallest = 6

$$14 - 6 = 8$$

$$8 \div 2 = 4$$

$$4 + 6 = 10$$

4, 7, 10