Working with data

- Finding the mode and modal class of some data
- Finding the median and mean of some data
- Finding the range of some data

Keywords

You should know

explanation 1 online

1 **a** These numbers were thrown on a dice.

2 4 5 4 6 1 4 5 5 1 2 4

What number was thrown most often?

b A coin was spun 10 times and these were the results.

H T T H T H T T H T

Which result happened most often?

2 Find the mode of each set of data.

a 7 11 10 7 9 10 7 12 9

b 18 24 21 20 23 21 18 21 22

c 5 m 3 m 4 m 6 m 3 m 6 m 8 m 6 m 5 m 6 m

d red blue yellow blue yellow green blue red blue yellow

e car car walk bus car bus walk walk bus car cycle car

3 These are the grades of 20 maths students.

A B B C E A D B C A B B D C E C C A E B

a Complete this table.

Grade	A	B	C	D	E
Tally					
Number of students					

b What is the modal grade? How do you know?

4 There are 31 pupils in a class. This table shows the number of absences recorded for the class in one week.

Number of absences	0	1	2	3	4
Number of pupils	24	3	2	0	

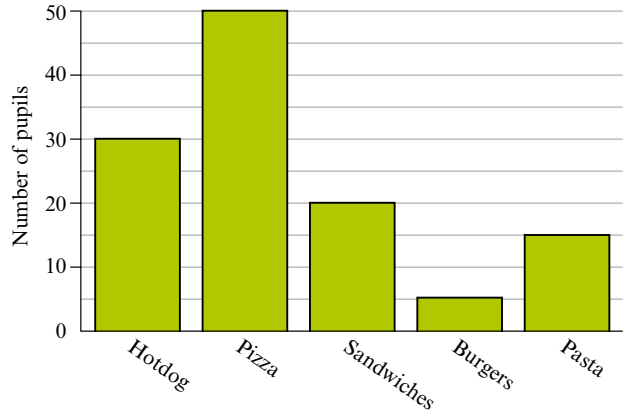
a How many pupils were absent on four occasions?

b What is the modal number of absences?

5 This set of data has two modal values. What are they?

52 49 55 51 49 57 55 53 49 55 56 49 54 55 51

6 This bar chart shows the results of a survey of favourite school dinners.



a How many pupils took part in the survey?

b What is the mode?

explanation 2 online

7 The ages of 20 players in a tennis tournament are shown below.

19 24 21 15 29 17 23 22 27 21

20 28 13 23 24 16 20 18 27 19

a Copy and complete the frequency table.

Age	10–14	15–19	20–24	25–29
Tally				
Frequency				

b Which is the modal class?

8 The scores of 20 pupils in their end of year exam are shown below.

48 29 36 33 14 24 43 27 39 34

21 28 33 48 36 47 20 18 39 49

a Copy and complete this frequency table.

Score	0–9	10–19	20–29	30–39	40–49
Tally					
Frequency					

b Which is the modal class?

9 The pulse rates of 30 pupils are shown below.

65 48 79 76 53 91 64 93 87 89

69 83 75 59 48 76 78 69 82 93

49 62 70 75 74 92 65 79 84 77

a Copy and complete this frequency table.

Pulse rate	40–49	50–59	60–69	70–79	80–89	90–99
Tally						
Frequency						

b Which is the modal class?

10 Here are three sets of data.

Set A 28 35 10 26 35 10 28 35 10

Set B 12 15 30 26 35 10 17 13 20

Set C 18 15 20 16 15 20 18 16 20

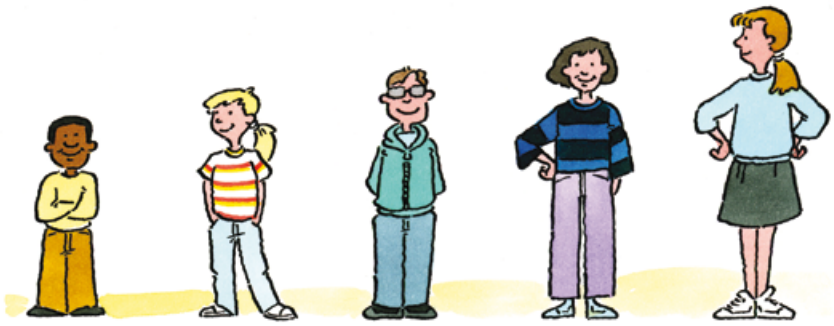
a Find the modes of set A.

b Why is the mode *not* a suitable average for set B?

c Find the mode of set C. Why is the mode not typical of the data in this case?

explanation 3 online

11



What is the median height of this group of friends?

12 Find the median of each set of numbers.

a 4 4 5 6 6 7 8

b 72 75 76 76 78 78 79

c 16 17 18 18 18 19

d 21 24 27 29 30 30

e 9 10 10 12 13 15

13 Maya wanted to work out the median number of sweets in a packet.

She counted the sweets in seven packets.

24 21 23 20 24 22 21

a What mistake has Maya made?

b What is the median number of sweets in a packet?

14 Find the median of each set of numbers.

a 32 37 28 31 33 29 33 37 32

b 24 19 25 23 25 20 26 19 27 23 24

c 16 14 12 9 13 12 14 15 13 12 10 9 11

d 53 47 55 48 59 56 49 50

e 2.5 2.3 2.7 2.7 2.9 2.5 2.6 2.7

15 Anita wants to work out her average journey time by car to get to school.

She records how many minutes it takes her to get to school over two weeks.

10 12 15 14 11 10 16 13 10 40

a Find the modal journey time.

b Why is the mode not a good average to use?

c Find the median journey time.

explanation 4a explanation 4b online

16 Erica and Asad are comparing their last five homework marks.

a Erica's marks are 6, 9, 7, 8 and 10.
Show that her mean homework score is 8.

b Asad scored 5, 8, 7, 7 and 8.
Work out Asad's mean homework mark.

c Which pupil did better overall?
How do you know?

17 Work out the mean of each set of numbers.

a 2 3 1 4 5

b 4 4 5 6 1

c 5 4 4 3 6 8

d 21 29 20 30

e 6 14 7 13 11 9

18 **a** Find the mean of 2, 3 and 7.

b The mean of three numbers is 4. What do the three numbers add up to?

c The mean of three numbers is 4. Two of the numbers are 1 and 6.
What is the value of the third number?

19 **a** The mean of 4 numbers is 5. What do the four numbers add up to?

b The mean of 3, 4, 6 and ? is 5. What is the value of the missing number?

20 Harry plays for the school football team.
His mean number of goals for the last four matches is 2.
In the first three of these games he scored 2, 1 and 2 goals.
How many goals did he score in the last match?

21 Use a calculator to find the mean of each set of data.

a 47 63 58 49 65 72

b 14 12 21 18 19 13 20 16 15 18

c 18.3 cm 14.6 cm 13.9 cm 17.8 cm 19.3 cm 16.9 cm 14.7 cm

d 7.8 kg 4.3 kg 6.1 kg 7.2 kg 8.7 kg 9.8 kg 8.5 kg 6.8 kg

22 The hourly rates of the six workers and their boss at a small company are

£6.80 £7.30 £6.20 £6.60 £6.20 £6.90 £30

a Work out the mean hourly rate.

b Explain why the mean is not typical of the data.

c Find the median and the mode.

explanation 5 online

23 Find the range of each set of data.

a 24 32 31 19 21 25 20 29

b 4.7 4.8 3.6 5.1 4.7 3.8 5.4

c 9 cm 11 cm 6 cm 12 cm 14 cm 13 cm 10 cm

d 28.4 m^2 27.6 m^2 24.9 m^2 26.7 m^2 29.9 m^2

24 The tallest person in Luke's class has a height of 160 cm.

The range of the heights is 18 cm.

What is the height of the shortest person in Luke's class?

25 The range of the following numbers is 5.

5 8 **?** 9 6

One possible value of the missing number is 4. What is the other possible value?

26 The mode of three numbers is 10 and the range is 2.

What could the three numbers be?

27 The range of a set of numbers is zero. What do you know about the numbers?

28 The range of these numbers is 11 and their median is 14.

? 13 14 15 22

What is the missing number?

29 **a** Write down five numbers with a range of 4 and a median of 10.

b Copy and complete these statements using the highlighted words below.

i If the range of a set of numbers is very small then ...

ii If the range of a set of numbers is large then ...

… all of the numbers must be far apart.

… all of the numbers must be close together.

… not all of the numbers can be close together.