Analysing data (1)

- Understanding that statistics can be misleading
- Calculating the mean, median and mode from a frequency diagram
- Constructing a stem and leaf diagram
- Calculating the range, mean, median and mode from a stem and leaf diagram

Keywords

You should know

explanation 1a | explanation 1b | online

1 Ten pupils scored these marks out of 15 in a mental arithmetic test.

8, 15, 13, 13, 9, 10, 12, 8, 9, 13

Calculate these statistics for the scores.

a the range **b** the mode **c** the mean **d** the median

2 These are the masses in kilograms of 15 rugby players.

81, 110, 92, 95, 115, 118, 99, 95, 100, 102, 88, 89, 100, 111, 103

Work out these statistics for the masses.

a the range **b** the mode **c** the mean **d** the median

3 An Olympic 100 m sprinter ran these times, measured in seconds, in her last eight competitive races.

12.82, 12.79, 12.02, 12.01, 12.88, 12.05, 12.52, 11.99

Work out these statistics for the times.

a the range **b** the mode **c** the mean **d** the median

4 The five players in a 5-a-side hockey team have these masses in kilograms.

60, 64, 58, 57, 61

a Calculate the total mass of the five players.

b Calculate the mean mass of the five players.

The mean mass of the five players and the substitute is 61 kg.

c Calculate the total mass of the six players.

d Calculate the mass of the substitute.

5 Peter and Amelia play three games. Some of their scores are given in the table.

Their scores have the same mean.

The range of Peter's scores is twice that of Amelia's scores.

Copy and complete the table.

Peter		44	
Amelia	38	45	49

explanation 2

6 Tony scored these marks out of 20 in his last eight maths tests.

4, 5, 20, 20, 3, 6, 2, 7

a For this set of scores, calculate these averages.

i the mean **ii** the median **iii** the mode

b Tony says that his average test score is 20. Is this true?

c In this case, which average is the best indicator of his results? Give reasons for your answer.

7 A manufacturer of batteries tests the life of the batteries by testing ten batteries. They lasted for these numbers of hours.

14.5, 16.2, 17.1, 3.3, 16.0, 17.2, 17.8, 3.3, 18.1, 17.0

a Find these averages for the ten batteries tested. Give your answers in hours and minutes.

i the mean

ii the median

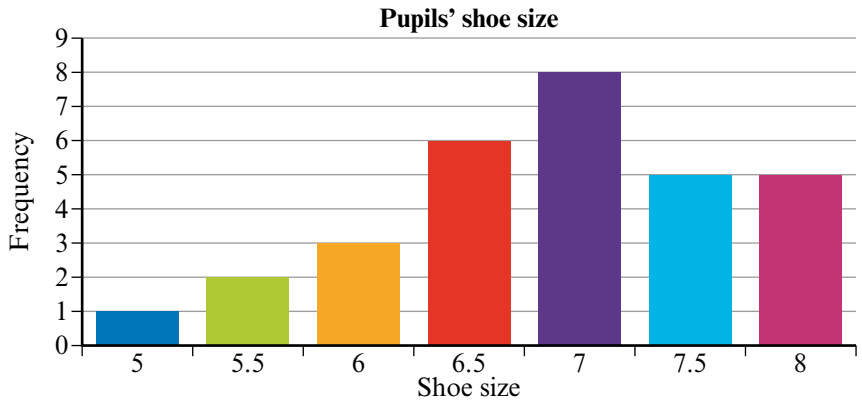
iii the mode

b A rival battery manufacturer claims that these results show that on average the batteries only last 3.3 hours. Is this claim true? Give reasons for your answer.

c Explain which is the most reliable form of average for this set of data.

explanation 3 online

8 The shoe sizes of 30 pupils in a class are shown in the bar chart.



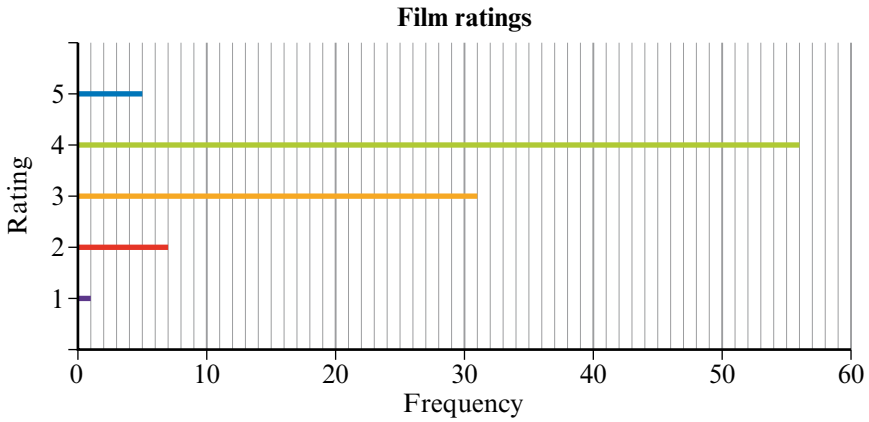
a How many pupils have a shoe size of 6?

b Calculate the mean shoe size of the 30 pupils.

c Find the median shoe size of the pupils.

d State the modal shoe size of the pupils.

9 Reviewers were asked to preview a film and give it a rating from 1 to 5.
The responses are shown in the bar-line chart (1 means awful, 5 means excellent).



a How many people took part in the survey?

b How many people rated the film excellent?

c Calculate the mean rating for the film.

d Find the median rating for the film.

e Calculate the modal rating for the film.

explanation 4

10 25 caterpillars were measured. The lengths in millimetres are shown in this stem and leaf diagram.

0	9
1	2 2 4 7 9
2	1 1 3 4 5 5 7 8 8 9
3	3 3 4 5 6 6 6
4	1 1

Key: 2|1 represents a length of 21 mm

a Write the length of the shortest and the longest caterpillars measured.

b Find the modal caterpillar length.

c What is the median caterpillar length?

11 20 girls and 20 boys sat the same maths test. These are their results out of 50.

Girls: 28, 32, 26, 21, 33, 33, 42, 7, 12, 14, 28, 50, 48, 14, 20, 38, 33, 32, 27, 22
Boys: 37, 26, 32, 32, 27, 2, 36, 7, 27, 33, 33, 36, 5, 7, 37, 36, 12, 31, 32, 12

a Draw a stem and leaf diagram for the girls' results and another for the boys' results.

b Write the modal results for the girls and for the boys.

c Find the median result for the girls and for the boys.

d Calculate the range of the girls' results and the range of the boys' results.

e Calculate the mean result for the girls and the mean result for the boys.

f Use your answers to help you write a short paragraph comparing the girls' and boys' results.