



Comparing data

- Comparing data using charts
- Comparing data using an average and the range

Keywords

You should know

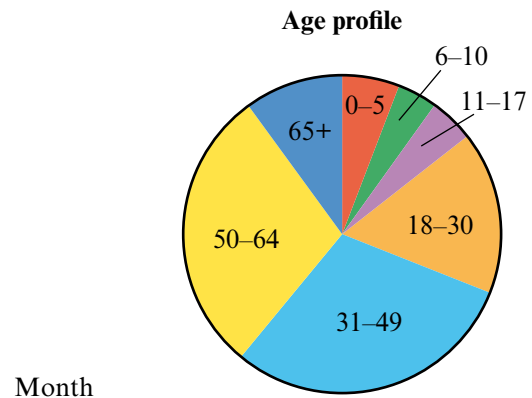
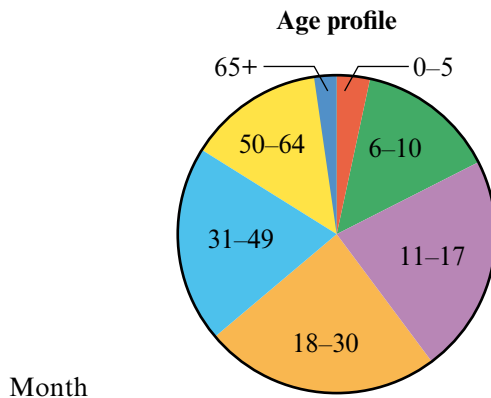
explanation 1a

explanation 1b

1 Luca is the entertainment manager at a holiday resort.

He has some pie charts that show him the age profiles of the people on holiday.

Each chart below shows the proportion of holidaymakers in each age group in a single month.



Unfortunately, he isn't sure which months they refer to!

He knows that one is for May and one is for July.

- Compare the charts and describe the main differences.
- Which chart do you think represents July?
Explain how you were able to decide.
- On the second chart, the 18–30 class has a larger angle than the 11–17 class.
What does this mean?
- The 31–49 class shown on the first chart has a smaller angle than the 31–49 class shown on the second chart. Does this mean that it contains fewer people?
Explain your answer.

explanation 2

- 2** Sarah and Rifat have been running. Their trainer records their pulse rates every minute during the next few minutes.

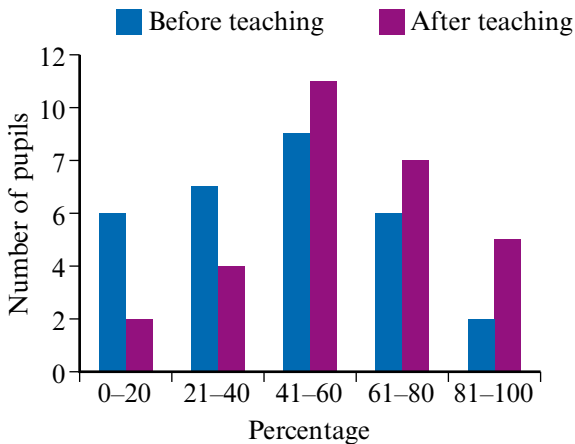
Sarah's median pulse rate is 120 with a range of 70.

Rifat's median pulse rate is 130 with a range of 40.

Your pulse rate increases with exercise and reduces again as you recover.

- a** Suggest possible values of the highest and lowest pulse rates for each runner.
- b** Who do you think had the lower pulse rate at the end of the run? Explain your answer.
- c** Who is showing the greater rate of recovery? Explain your answer.

- 3** This chart shows two sets of test results for a group of pupils.

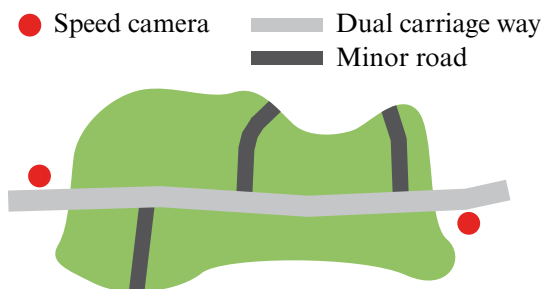


The first test was given during the introduction to a topic.

The second test was given after the topic had been taught.

- a** Compare the performance of pupils in the two tests.
Is the mean score in the second test greater or less than the mean score in the first test?
- b** What is the modal class for each test?
Do you think that the modal class is a useful way of measuring the difference between the two sets of scores?
- c** Is it possible for the range of scores to be the same in both tests? Explain your answer.

- 4** This diagram shows a section of dual carriageway passing through a village.

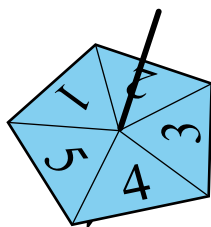


The speed limit is 40 mph, but many motorists did not slow down. The villagers were concerned about safety.

A survey found that the mean speed of cars on the dual carriageway was 53 mph. The range of speeds was 32 mph.

Police then set up speed cameras, as shown by red dots, and put up signs to warn motorists.

- a** What effect do you think this had?
 - b** Explain the likely effect on the mean speed and range.
 - c** What would you expect the modal speed to be? Explain your answer.
- 5** A group of pupils each made a five-sided spinner for a probability experiment.



Each pupil carried out ten spins and recorded how many 4s they scored.

- a** Mark scored three 4s from ten spins.
Write this as a percentage of the number of spins in the trial.
 - b** Approximately how many 4s should each pupil expect from ten spins?
 - c** Write your answer to part **b** as a percentage.
 - d** Approximately what percentage of 4s would you expect from twenty spins?
- The group recorded their results in the table shown on the next page.

- e Copy the table and fill in the missing values.

Number of 4s in ten spins	Percentage of 4s	Frequency	Percentage × Frequency
0	0	3	
1	10	8	
2	20	9	
3	30	6	
4	40	3	
5	50	1	
		Total:	Total:

The *frequency* tells you how many pupils scored the number of 4s shown in the first column.

Three pupils got no 4s, eight pupils got one 4, nine pupils got two 4s, and so on.

- f Use the table to work out the mean of the percentages to 1 decimal place.
- g Write down the range of the percentages.
- h This table shows the results after each pupil has done 20 spins. Copy it and fill in the missing values.

Number of 4s in twenty spins	Percentage of 4s	Frequency	Percentage × Frequency
1	5	2	
2	10	3	
3	15	6	
4	20	7	
5	25	7	
6	30	3	
7	35	2	
		Total:	Total:

- i Work out the new mean to 1 decimal place.
- j Work out the new range.
- k Look at how the mean and range values have changed.

What do you think might happen to the mean and range if the number of spins is increased more and more?