



Interpreting and communicating

- Interpreting more complex graphs and diagrams
- Comparing two or more distributions

Keywords

You should know

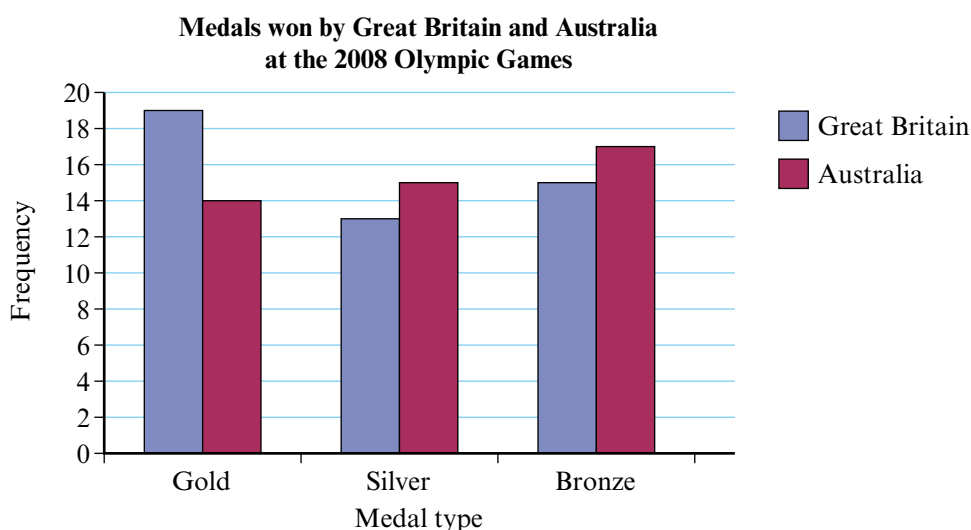
explanation 1a

explanation 1b

explanation 1c

explanation 1d

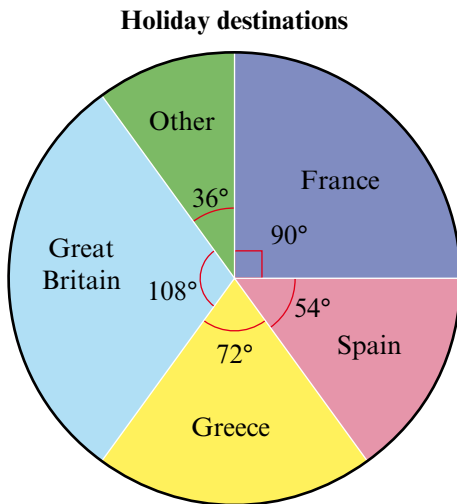
- 1** The dual bar chart shows the number of medals won by Great Britain and Australia in the 2008 Olympic Games.



- a** How many silver medals did Great Britain win?
- b** How many gold medals did Australia win?
- c** Which country won more bronze medals?
- d** Tony says 'Australia won more medals in total than Great Britain'. Is Tony correct? Give a reason for your answer.
- e** Maria wants to use a pie chart to display the data. Draw the graph or graphs that Maria might draw.
- f** Which type of graph shows the results more clearly? Explain your answer.

- 2** Dinesh asked his friends where they went on holiday last year.

The pie chart shows the results of his survey.



- a** What fraction of the people surveyed went to France?
 - b** Which country was most frequently chosen for holidays?
 - c** Dinesh says 'More people went to Spain than France'. Is Dinesh correct? Give a reason for your answer.
 - d** 30 people went to France for their holiday. How many people took part in the survey?
- 3** Sasha surveyed 36 girls and 36 boys to find out their favourite subject from English, maths, science, history and geography. The table shows how many girls and how many boys chose each subject.

Subject	Number of girls	Number of boys
English	9	6
Maths	7	11
Science	5	9
History	8	4
Geography	7	6

Sasha's English teacher wants to use a graph to show that more girls than boys prefer English.

Should she use a dual bar chart or a pie chart? Give a reason for your answer.

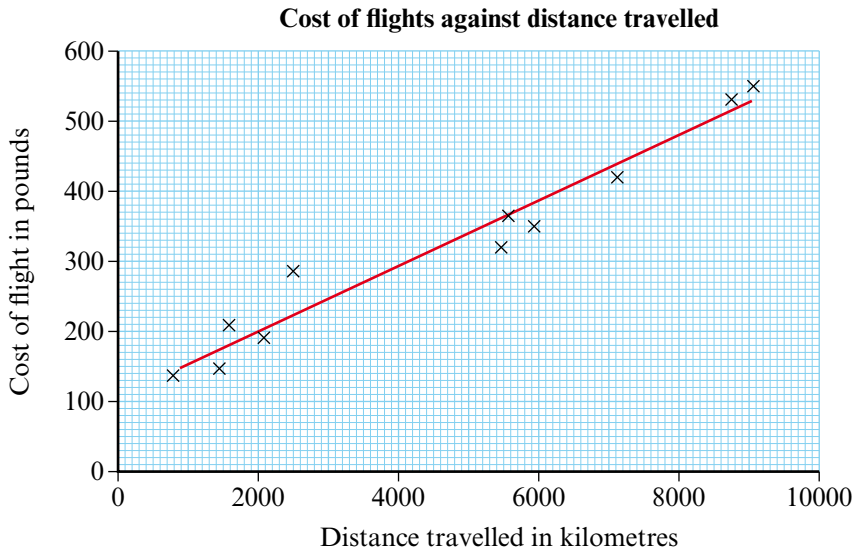
explanation 2a

explanation 2b

explanation 2c

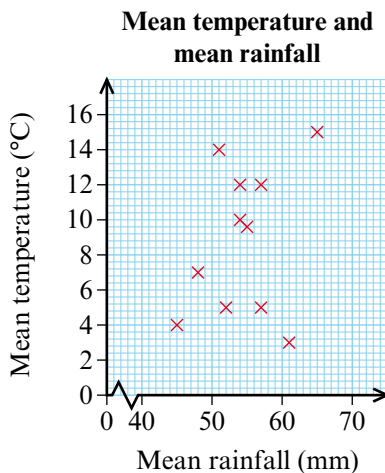
- 4** Alan wants to find out if there is a relationship between the distance travelled during an aeroplane flight and the cost of the flight.

He collects some data from an airline's website then uses the data to plot a scatter graph. He draws a line of best fit on his graph.



- a** How many of the flights were shorter than 5000 kilometres?
- b** How many flights cost more than £400?
- c** One of the points represents a flight from London to Miami. Miami is approximately 7100 km from London. Approximately how much did this flight cost?
- d** Alan thinks that the greater the distance travelled, the more the flights cost. Do you think Alan is correct?
Use information shown in the scatter graph to give reasons for your answer.

- 5** Paul lives in York. He thinks that the more it rains, the lower the temperature is. In order to see if his idea is correct he collected some data about the weather in York and used it to draw this scatter graph.



- a** Place a transparent ruler over the scatter graph. Move it until it shows the line of best fit.
 - b** Do you think Paul is correct? Explain how you used the information shown in the graph to reach your conclusion.
- 6** Anya is doing a geography project. She thinks that the higher the birth rate of a country, the lower the life expectancy in that country. She collects some data from the internet. The data is shown in the table below.

	Afghanistan	Australia	Ethiopia	Gambia	Ireland	Jamaica	Japan	Kuwait	Nigeria	Pakistan	Peru	UK
Births per 1000 people	48.2	12.4	38.2	34.9	15.5	19.9	8.3	17.9	39.9	27.2	20.9	12.0
Life expectancy	43.8	80.6	49.2	54.5	77.9	73.1	82.0	77.4	47.4	63.8	70.1	78.7

- a** What would be a suitable graph to test Anya's idea?
- b** Draw the graph.
- c** Is Anya correct? Explain how you used the information shown in the graph to reach your conclusion.

explanation 3a

explanation 3b

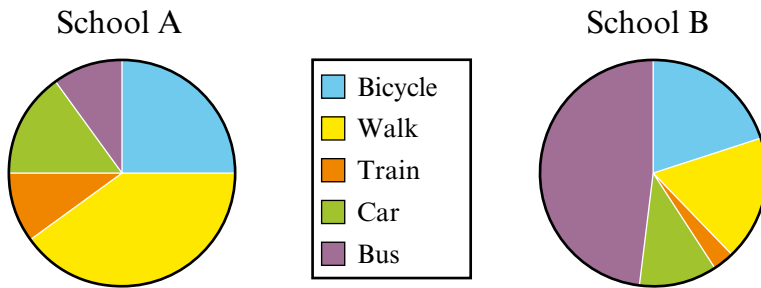
explanation 3c

- 7** Liam is carrying out some research into the number of births each month in England and Wales. He thinks that more babies are born during the winter. He finds out this information for the years 2006 and 2007. The results are shown in the table.

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
Number of births in 2006 (thousands)	53.5	50.2	55.9	53.0	56.7	56.5	57.5	58.4	59.1	58.5	55.5	55.0
Number of births in 2007 (thousands)	56.3	51.4	56.3	54.2	58.8	56.5	60.2	60.9	60.3	60.1	57.0	57.9

- a** Draw an appropriate graph or graphs to display this data.
- b** Is Liam correct?
Explain how you used the information in the table to reach your conclusion.

- 8** The pie charts show how all pupils travel to two different schools.



- a** What fraction of pupils from school A travel to school by bicycle?
Give your fraction in its simplest form.
- b** What fraction of pupils from school B travel to school by bicycle?
Give your fraction in its simplest form.
- c** Emily says that more pupils cycle to school A than school B.
Is Emily correct? Give a reason for your answer.
- d** How do most pupils travel to school A?
- e** How do most pupils travel to school B?
- f** One of the schools is out in the country and the other is in a town.
Which school is most likely to be in a town? Give a reason for your answer.

- 9** Two classes take the same test. There are 20 pupils in each class.

The stem and leaf diagrams show their results.

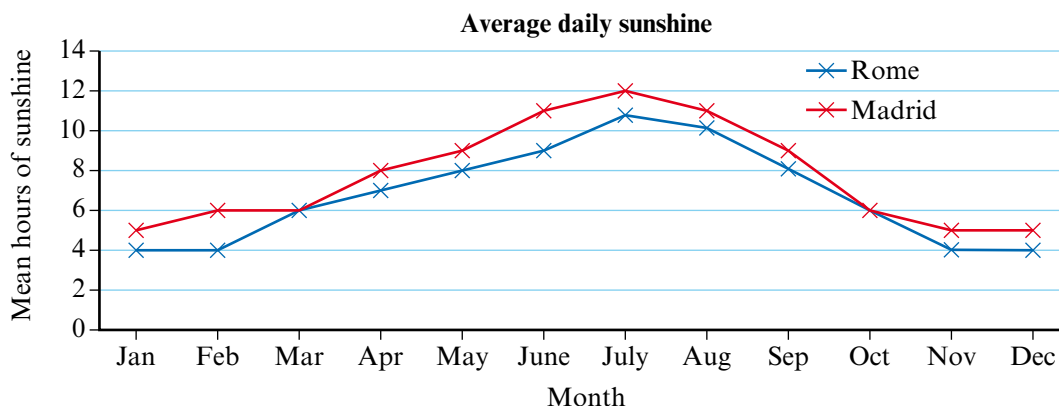
Class A					Class B				
0					0	7			
1	0	2	2	6	1	6	7	8	
2	1	4			2	3	5	8	
3	4	8	9		3	1	3	4	4
4	1	5	5		4	2	6	6	
5	1	2	6	7	5	7	8		
6	0	1	2	4	6	2	4	4	5

Key: 3 | 5 represents a score of 35



- Find the range for class A and the range for class B.
- What does the range tell you about the abilities of the pupils in each class?
- Find the median result for class A and the median result for class B.
- Calculate the mean result for class A and the mean result for class B.
- Which class performed better in the test? Justify your answer using the medians and means worked out in **c** and **d**.

- 10** The line graphs show the mean number of hours of sunshine in both Rome and Madrid each month.



- What was the mean number of hours of sunshine per day for Rome in August?
- In which two months do Rome and Madrid both have a mean of 6 hours of sunshine per day?
- Which city has the greater number of hours of sunshine in a year? Give a reason for your answer.

- 11** Nell and Paula both record the number of minutes they spend talking on their mobile phone each day for a fortnight. Here are their results.

Nell	1	2	4	5	7	8	10	11	12	12	13	16	18	21
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Paula	2	2	5	6	8	8	9	9	12	14	15	16	17	17
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- Display this information in a suitable way.
 - Work out the mean, median and range for each set of data.
 - Who uses their phone more? Justify your answer using the means, medians and ranges worked out in **b**.
- 12** The ages of some Ford Fiestas and their values are shown in the table.

Age (years)	Value (£1000s)
4	5.0
2	5.5
3	6.5
1	5.9
2	5.8
6	1.9
10	1.2
5	3.8
1	7.3
8	2.0
6	3.7
5	3.2

- Do you think there will be a relationship between a car's age and its value? Explain your answer.
- Display this information in a suitable graph.
- Does the graph show whether there is a relationship between a car's age and its value?