# Representing data

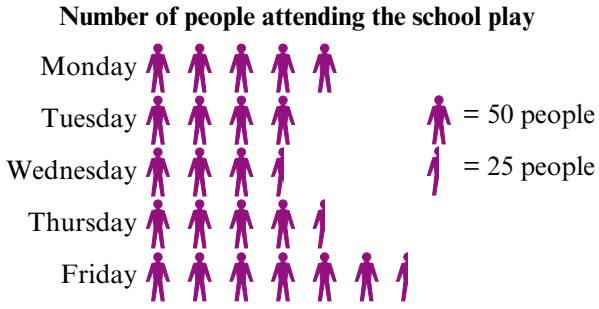
- Interpreting various types of chart used in statistics
- Drawing a bar chart
- Drawing a frequency diagram for grouped data

Keywords

You should know

explanation 1

**1** This pictogram shows how many people attended a school play.




**a** How many people attended the play on these days?

**i** Monday **ii** Thursday

**b** Which day was the most popular?

**c** What is the range of the attendance figures?

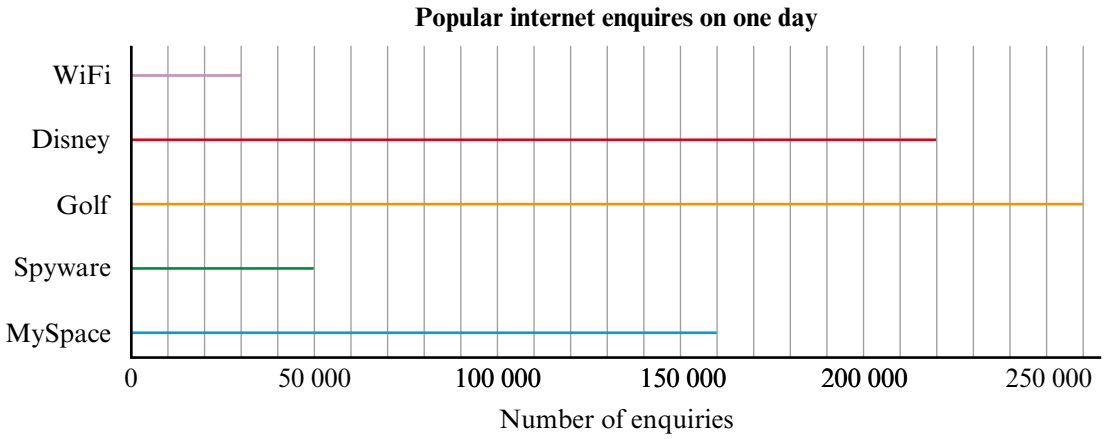
**d** How many people went to the play altogether?

**2** The table shows the highest speeds reached by some rides at Alton Towers.

Draw a bar-line graph to show this information.

| Ride | Speed (mph) |
|---|---|
| Air | 46 |
| Beastie | 9 |
| Corkscrew | 40 |
| Nemesis | 50 |
| Oblivion | 68 |
| Rita – Queen of speed | 61 |
| Runaway train | 22 |

**3** Internet search engines handle a huge number of enquiries every day. This bar-line graph shows some of the most popular enquiries on one particular day.



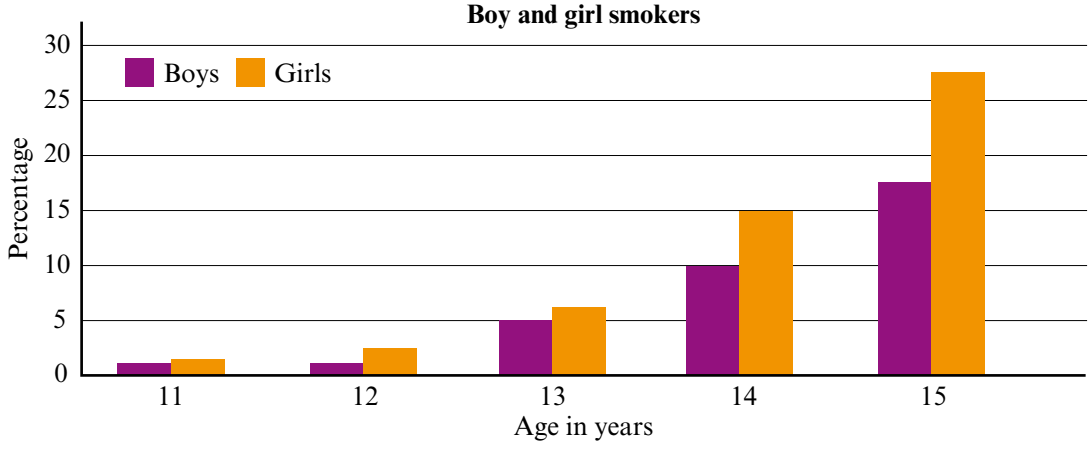

**a** How many enquires were there for Disney?

**b** Which enquiry was the mode?

**c** What is the total number of enquiries for the items shown?

explanation 2a explanation 2b

**4** This bar chart shows the percentage of regular smokers aged 11–15, according to a recent survey.




**a** What are the two key points that the chart shows?

**b** What is the increase in percentage of boys smoking from 12 to 15?

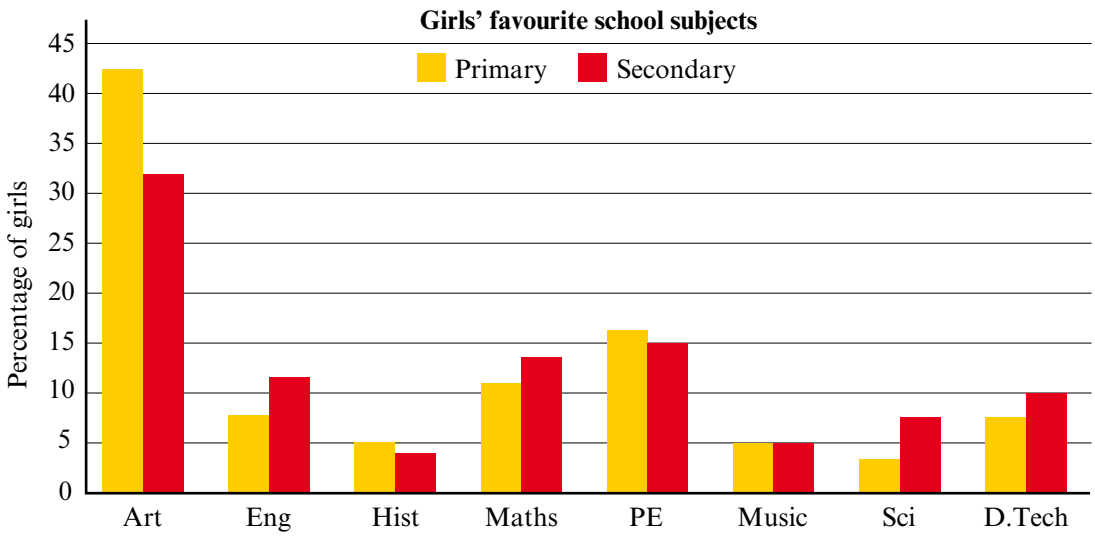
**c** What is the increase in percentage of girls smoking from 12 to 15?

**5** A group of pupils was asked about things that they might do at some point in the future. This table shows their responses.

Draw a bar chart for the data.

| To do | Boys % | Girls % |
|---|---|---|
| Learn to drive | 100 | 90 |
| Climb a mountain | 67 | 35 |
| Go to university | 33 | 40 |
| Get married | 74 | 92 |
| Bungee jump | 44 | 55 |
| Run a marathon | 38 | 40 |

**6** 100 girls in primary schools and in secondary schools were asked to name their favourite subject. The bar chart shows the results.




**a** Which subjects lost popularity from primary to secondary?

**b** Which subject maintained the same level of popularity?

**c** List the subjects in order of popularity at primary level.

**d** List the subjects in order of popularity at secondary level.

**e** Which subjects gained in popularity from primary to secondary?

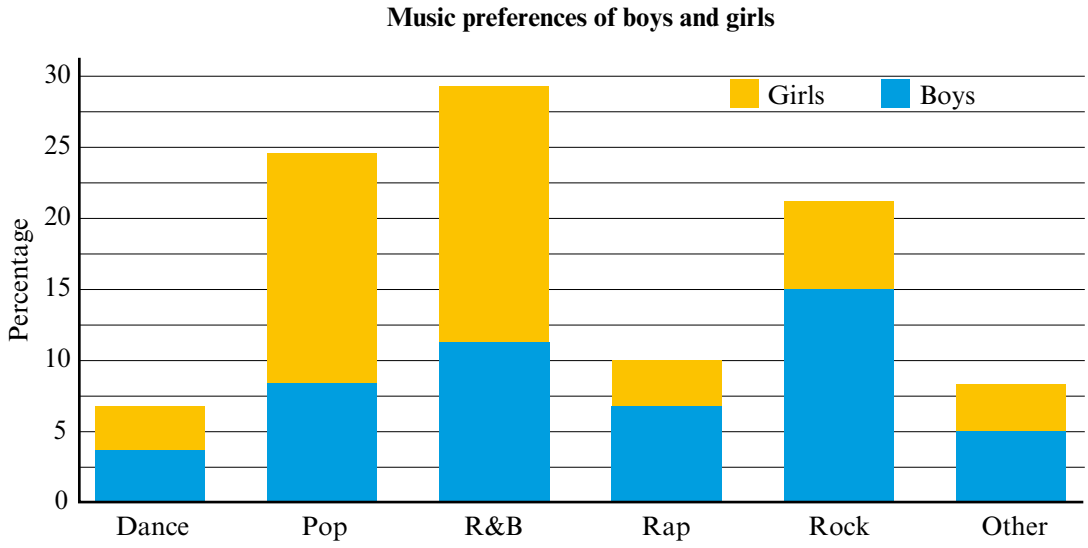
**7** The table shows the favourite subjects of 100 boys at primary level and 100 boys at secondary level.

| Subject | Primary | Secondary |
|---|---|---|
| Art | 35 | 20 |
| English | 5 | 7 |
| History | 6 | 4 |
| Maths | 11 | 15 |
| PE | 28 | 32 |
| Music | 3 | 3 |
| Science | 5 | 8 |
| Design and Tech. | 7 | 11 |

**a** Draw a bar chart to represent this data.

**b** Compare your chart to the one in question **6**. Which two subjects show the biggest difference between the girls and the boys?

**8** This compound bar chart shows the music preferences of secondary school pupils.




**a** Overall, which type of music is the most popular?

**b** Which type of music is most popular with boys?

**c** Which two types of music do girls prefer?

explanation 3 online

**9** A prize was offered at a school fair for the best estimate of the number of sweets in a large jar. The estimates were:

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 147 | 138 | 124 | 150 | 97 | 134 | 110 | 137 |
| 82 | 115 | 142 | 163 | 158 | 133 | 117 | 155 |
| 136 | 149 | 112 | 160 | 98 | 125 | 158 | 142 |
| 140 | 156 | 128 | 167 | 144 | 131 | 138 | 150 |
| 129 | 131 | 146 | 140 | 149 | 98 | 111 | 146 |
| 139 | 140 | 150 | 109 | 167 | 130 | 135 | 152 |

**a** Copy and complete the table using equal-sized class intervals.

| **Estimate** | 80–99 | 100–119 | | | |
|---|---|---|---|---|---|
| **Tally** | | | | | |
| **Frequency** | | | | | |

**b** Draw a frequency diagram to represent the data.

**c** What is the modal class?

**d** What is the range of the estimates?

**e** How many estimates were less than 140?

**10** This table shows the number of Christmas raffle tickets sold by the pupils of 7T.

| **Number of tickets** | 1–5 | 6–10 | 11–15 | 16–20 | 21–25 | 26–30 |
|---|---|---|---|---|---|---|
| **Frequency** | 5 | 11 | 6 | 3 | 1 | 2 |

**a** Draw a frequency diagram to represent the data.

**b** What is the modal class?

**c** Explain why the range cannot be found exactly.

**d** There are 30 pupils in 7T. How many didn't sell any tickets?

**e** How many pupils sold more than 15 tickets? What percentage is this?

**11** Earthworms are known to improve the quality of soil. The number of earthworms present in an area gives one measure of the quality of the soil. This table shows how the number of worms varied in an area of pasture.

| **Worms/m$^2$** | 100–199 | 200–299 | 300–399 | 400–499 | 500–599 |
|---|---|---|---|---|---|
| **Frequency** | 9 | 13 | 19 | 12 | 7 |

**a** Draw a frequency diagram to represent the data.

**b** What is the modal class?

**c** Which class contains the median?

**d** What percentage of the sample area contained less than 200 worms/m$^2$?

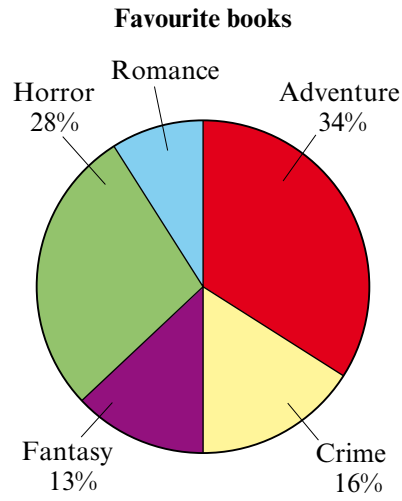
explanation 4 online

**12** This pie chart shows the favourite reading of a group of pupils.

**a** What percentage of pupils chose Romance?

**b** What was the modal choice?

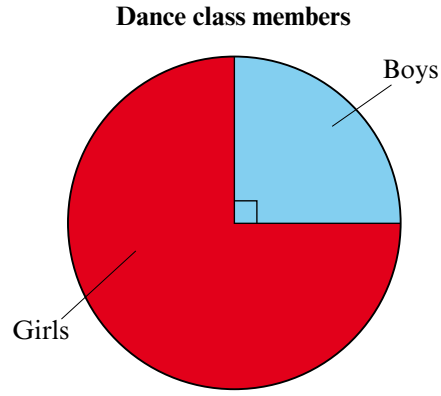
**c** If 26 pupils chose Fantasy, how many chose Crime?




**13** This pie chart shows the mix of boys and girls who joined an after-school dance class.

**a** What percentage of the class were boys?

**b** If there were 27 girls in the class, how many pupils attended altogether?



**14** Equal numbers of boys and girls were asked how many cans of drink they had drunk in the last two days. These pie charts show the results.

**a** Did more boys or girls drink 1 can in the last two days?

**b** Overall, did boys or girls drink the most cans?

**c** What is the modal number of cans drunk?

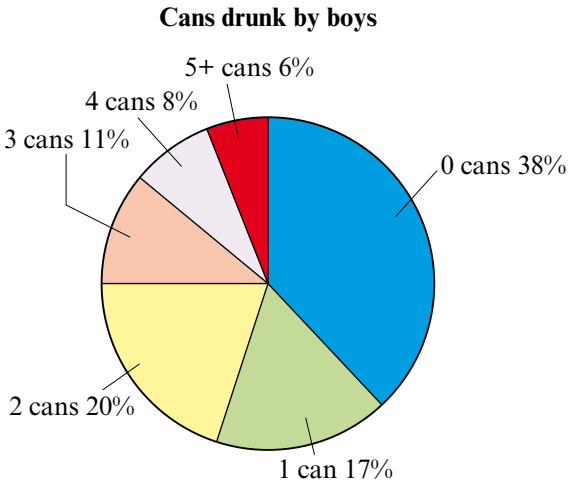
**d** 32 girls drank 2 cans in the last two days.

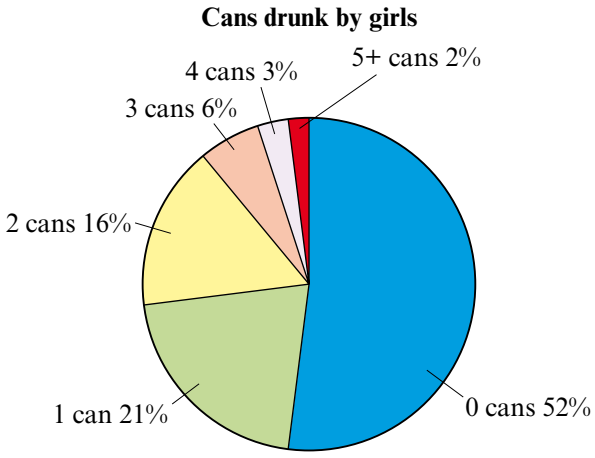
**i** How many boys drank 2 cans?

**ii** How many girls drank less than 2 cans?

**iii** How many boys drank more than 3 cans?

**iv** How many pupils took part?




explanation 5

**15** In 1982 the California Condor was on the brink of extinction. Between 1982 and 1987 the remaining 27 birds were captured. This line graph tells the story between 1987 and 2007.

**a** In 1992 some birds were re-introduced to the wild. How many?

**b** What was the total population of California Condors in 1997?

**c** Explain the dip in the captive population shown between 2002 and 2007.

**d** What was the total population in 2007?