Representing data

- Drawing a pie chart by calculating the degrees for each sector
- Drawing bar charts or frequency diagrams as appropriate for discrete and continuous data
- Drawing and interpreting simple line graphs
- Drawing and interpreting scatter graphs

Keywords

You should know

explanation 1 online

1 36 pupils were asked what colour their eyes are and the results were recorded in this table.

Eye colour	Blue	Brown	Green	Other
Frequency	12	15	4	5

a Work out how many degrees would represent one person.

b Construct an accurate pie chart to display this information.
Show the number of degrees in each sector.

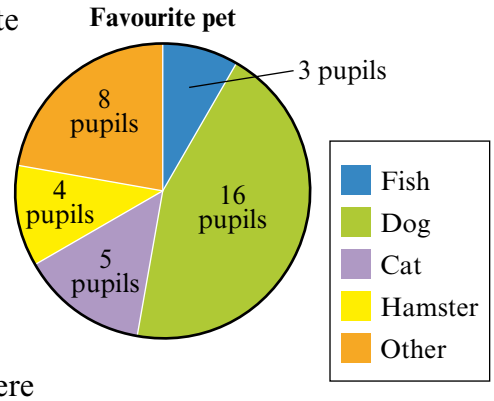
2 20 people were asked to choose which colour car they thought would be safest. The results are shown in this table.

Car colour	Blue	Green	Red	Silver	White
Frequency	2	1	8	4	5

a When the results are shown in a pie chart, how many degrees represent one person?

b Use the results to construct an accurate pie chart, showing the degrees in each section.

3 A survey was carried out to find the favourite pets of pupils in one year.
36 pupils were asked.
The pie chart shows the results.



a How many degrees represent one pupil?

b How many degrees of the pie chart represent pupils who said dogs were their favourite pet?

c What fraction of pupils said hamsters were their favourite pet?
Give your answer in its simplest form.

d Construct the pie chart accurately, showing the degrees in each section.

4 The table shows the results of a survey to find out how people usually travel to their local shopping centre.

Method of travelling	Walk	Cycle	Bus	Car	Other
Frequency	3	12	70	80	15

180 people were asked. The results are to be shown in a pie chart.

a Construct the pie chart accurately, showing the degrees in each section.

b What fraction of people surveyed said they usually cycle?
Give your answer in its simplest form.

c Who would be interested in the results of this survey?

5 30 pupils were surveyed to find out which was their favourite school lesson.
The results are shown in the table.

Subject	English	Maths	Science	P.E.	Drama	Other
Frequency	2	10	6	7	3	2

Draw and label a pie chart to display the results of the survey.

6 40 adults were surveyed to find out where they went on holiday.
The results are shown in the table.

Country	UK	France	USA	Spain	Greece
Frequency	18	8	3	8	3

Draw and label a pie chart to display this data.

explanation 2a | explanation 2b | explanation 2c — online

7 Sumire asked some of her friends their shoe size.
The table shows the results of her survey.

Shoe size	5	$5\frac{1}{2}$	6	$6\frac{1}{2}$	7
Frequency	6	9	10	7	2

a How many friends did Sumire ask in total?

b Draw a bar chart to show the results of her survey.

8 A coffee shop surveyed their customers to see what types of coffee they like to drink. The table shows the results.

Type of coffee	Cappuccino	Latte	Filter	Espresso	Other
Frequency	13	8	4	2	3

a How many people were surveyed in total?

b Is this data discrete or continuous?

c Construct a bar chart to show this data.

d Draw a pie chart to show the data.

e Which chart do you think shows the data more clearly?
Give a reason for your answer.

Remember to include a title and labels on your charts.

9 50 pupils were timed running 400 m. The results are shown in the table.

Time (s)	60 up to 70	70 up to 80	80 up to 90	90 up to 100
Frequency	2	6	28	14

Draw a frequency diagram for these results.

10 Noah asked some people how long, to the nearest minute, they used their mobile phones for in one day.

The results of his survey are shown in the table.

Time (minutes)	0 up to 5	5 up to 10	10 up to 15	15 up to 20	20 up to 25
Frequency	3	8	12	9	7

a How many people took part in Noah's survey?

b Draw a frequency diagram to show this data.

c Which is the modal group?

11 Emily asked 40 of her friends how long they took to travel to school.

The table shows her results.

Time (minutes)	0 up to 10	10 up to 20	20 up to 30	30 up to 40	40 up to 50
Frequency	6	15	10	5	4

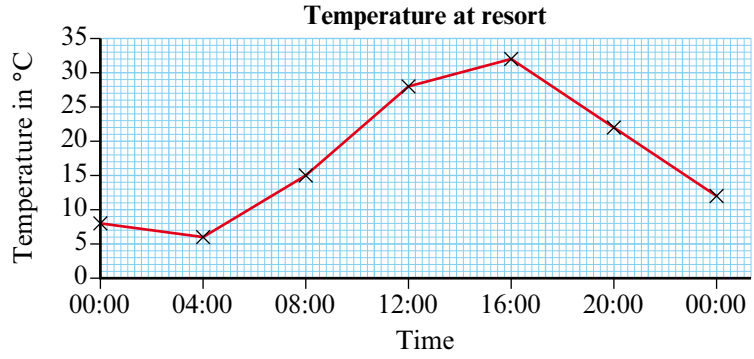
a Draw a frequency diagram to show this information.

b Which is the modal group?

explanation 3

12 The graph below shows the temperature in degrees Celsius (°C) at a holiday resort over a 24-hour period.

Temperature readings were taken every 4 hours.



a What was the temperature at noon?

b What was the lowest temperature recorded over the 24-hour period?

c Is it possible for the temperature to have risen above 32 °C on that day? Explain your answer.

13 A class at a primary school decided to see how many millimetres of rain fell over a 10-week period. The reading for the total rainfall was recorded every week and the results were recorded in a table.

From the table you can see that at the end of week 1 there had been 2 mm of rain, by the end of week 2 there had still only been 2 mm of rain but by the end of week 3 there had been 8 mm of rain.

Week	1	2	3	4	5	6	7	8	9	10
Total rainfall (mm)	2	2	8	10	10	10	23	25	26	28

a Draw a line graph with weeks on the x-axis and total rainfall on the y-axis. Show the total amount of rainfall over the 10-week period.

b **i** In which weeks was there no rain?

ii Explain how you got your answer to part **i**.

c **i** In which week was there the most rain?

ii Explain how you got your answer to part **i**.

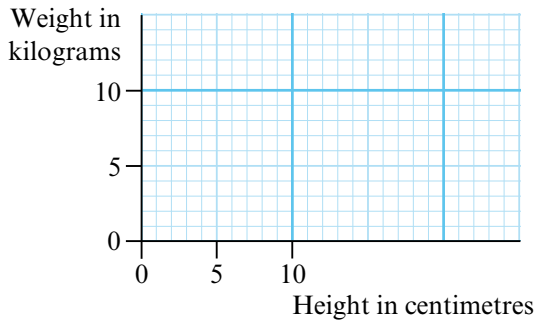
d Calculate the mean average weekly rainfall during the 10-week period.

explanation 4a explanation 4b

14 The heights and weights of 8 dogs are shown in this table.

Height (cm)	48	42	44	40	34	28	45	50
Weight (kg)	20	16	18	9	7	3	14	22

a Draw a graph with the x-axis going from 0 to 50 and the y-axis going from 0 to 25. Scale your axes like this.



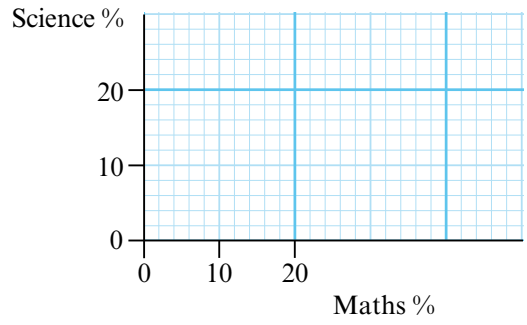
b Plot the points given in the table on your graph.

c Does the graph show that there is any relationship between a dog's height and weight?

15 15 pupils sat both a maths and a science test.
The percentage scores of each pupil are shown in the table.

Maths %	98	55	27	38	82	77	64	12	62	68	84	55	36	90	60
Science %	88	60	34	38	75	81	70	20	65	55	92	60	30	100	72

a Draw a graph with both the x- and y-axes going from 0 to 100.
Scale your axes like this.



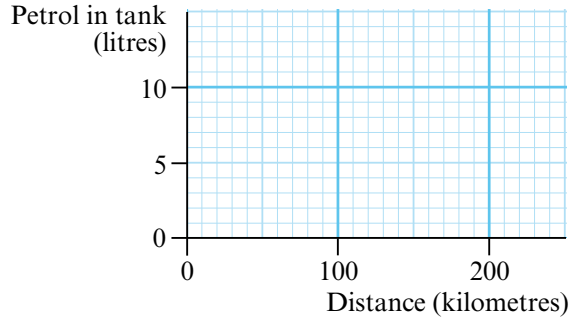
b Plot the points given in the table on your graph.

c Does the graph show that there is any relationship between the maths and science scores?

16 A motorist had 60 litres of petrol in her car. She started on a journey.
After every 100 km she recorded the number of litres of petrol still in her petrol tank. The readings are given in the table.

Distance (km)	0	100	200	300	400	500	600	700	800
Petrol in tank (litres)	60	55	48	42	35	27	21	15	9

a Draw a graph with the x-axis going from 0 to 800 and the y-axis going from 0 to 60.
Scale your axes like this.



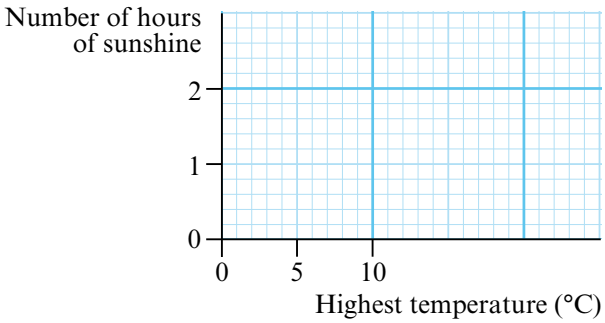
b Plot the points given in the table on your graph.

c What does the graph show about the distance travelled and the amount of petrol left in the tank?

17 The table shows the highest temperature and the average number of hours of sunshine per day in a city each month for 12 months.

Highest temperature (°C)	11	13	15	19	23	28	30	30	26	22	16	13
Sunshine (hours)	4	4	6	7	8	9	11	10	8	6	4	4

a Draw a graph with the x-axis going from 0 to 35 and the y-axis going from 0 to 12. Scale your axis like this.

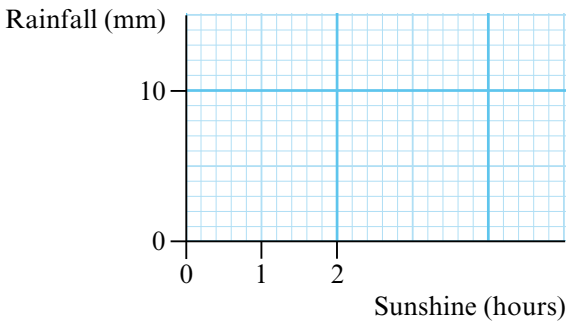


b Describe the relationship between the number of hours of sunshine and the highest temperature.

18 The table shows the average number of hours of sunshine per day and the total rainfall each month in a city over 12 months.

Sunshine (hours)	5	6	6	8	9	11	12	11	9	6	5	5
Rainfall (mm)	39	34	43	48	47	27	11	15	32	53	47	48

a Draw a graph with the x-axis going from 0 to 14 and the y-axis going from 0 to 50. Scale your axis like this.



b Describe the relationship between the number of hours of sunshine and the amount of rainfall.