Planner

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

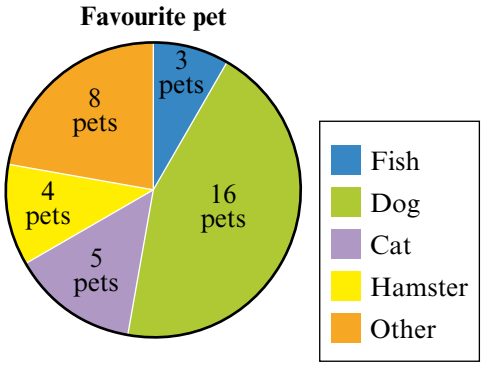
You should know

explanation 1

online

1 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.

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

Mode of transport	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 How many degrees will represent each person in the survey?

b How many degrees of the pie chart will represent those who usually travel by bus?

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

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

3 A class of 30 pupils was surveyed to find out what their favourite lesson was. The results are shown in the table.

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

a How many degrees of a pie chart will represent each pupil?

b How many degrees of a pie chart will represent the pupils who said maths was their favourite subject?

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

explanation 2a explanation 2b online

4 A coffee shop carried out a survey to see what type of coffee their customers like drinking. The table shows the results.

Type of coffee	Cappuccino	Latte	Filter	Espresso	Other
Frequency	25	17	8	4	6

a How many people were surveyed in total?

b Construct a bar chart to show this data.

c Draw a pie chart to show the data.

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

5 Thirty children were asked how much time they spend watching television on average each week. The results are given in this grouped frequency table.

Time (hours)	**Frequency**
$0 \leq T < 2$	6
$2 \leq T < 4$	1
$4 \leq T < 6$	4
$6 \leq T < 8$	9
$8 \leq T < 10$	5
$10 \leq T < 12$	5

a Draw a grouped frequency diagram for the data.

b What is the modal time group?

6 50 pupils are timed running 400 m. The results are shown in the table.

Time (s)	$60 \leq T < 70$	$70 \leq T < 80$	$80 \leq T < 90$	$90 \leq T < 100$	$100 \leq T < 110$
Frequency	2	6	28	13	1

a Explain what is meant by the time $90 \leq T < 100$.

b Draw a frequency diagram for these results.

7 Some of the world's mountains that are higher than 8000 m are listed below.

Mountain peak	**Location**	**Height (m)**
Everest	China/Nepal/Tibet	8850
K2	Pakistan/China	8611
Kanchenjunga	India/Nepal	8586
Lhotse I	China/Nepal/Tibet	8516
Makalu I	China/Nepal/Tibet	8463
Cho Oyu	China/Nepal/Tibet	8201
Dhaulagiri	Nepal	8167
Nanga Parbat	Pakistan	8163
Annapurna	Nepal	8091
Gasherbrum I	Pakistan/China	8068
Broad Peak	Pakistan/China	8047
Gasherbrum II	Pakistan/China	8035
Shisha Pangma	China	8013

a Copy and complete the grouped frequency table.

b Draw a frequency diagram showing the heights of the world's tallest mountains.

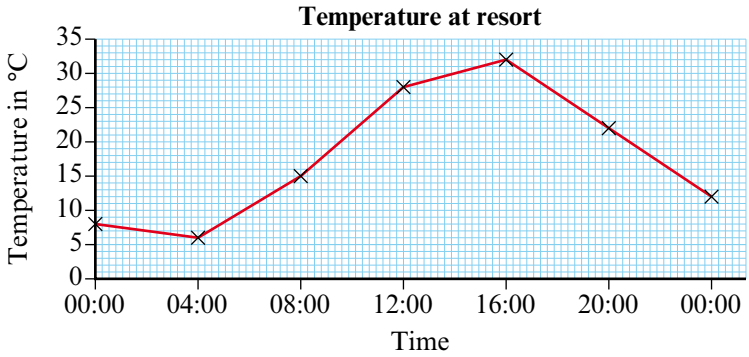
c Which is the modal height group?

Height (m)	**Frequency**
$8000 \leq H < 8200$	
$8200 \leq H < 8400$	
$8400 \leq H < 8600$	
$8600 \leq H < 8800$	
$8800 \leq H < 9000$	

explanation 3

8 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 that the temperature rose above 32 °C on that day? Explain your answer.

9 A class at a primary school decide to see how many millimetres of rain fell over a 10-week period. The reading for the total rainfall is recorded every seven days, as shown in the table.

Days	7	14	21	28	35	42	49	56	63	70
Total rainfall (mm)	2	2	8	10	10	10	23	25	26	28

a Draw a line graph to 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 average weekly rainfall during the 10-week period.

e From your graph estimate the total amount of rain that had fallen by the 45th day.

10 The table gives the median weight of baby girls from 0 to 36 months.

Age (months)	0	3	9	15	24	36
Weight (kg)	3.4	5.6	8.4	10.3	12.0	13.8

a Plot a line graph of the median weight of baby girls from 0 to 36 months.

b Estimate from your graph the median weight of a 12-month baby girl.

c A doctor is checking the weight of a baby girl who is 20 months old. The doctor weighs her and records her weight as 11.8 kg. Use your graph to determine whether the girl is heavier than the median weight for her age.

11 The table shows the total UK population from 1950 and projected forward to 2050 .

Year	Population (millions)
1950	50.1
1960	52.3
1970	55.6
1980	56.2
1990	57.5
2000	59.5
2010	61.3
2020	63.1
2030	64.3
2040	64.5
2050	64.0

a Construct a line graph showing the total population of the UK from 1950 to 2050.

b Use your line graph to estimate the total UK population in 2008.

c One decade was described as the 'baby boom' years. From your graph work out in which decade the baby boom occurred.

d Justify your answer to part **c**.

explanation 4a | explanation 4b

12 A group of 15 pupils sat a maths and a science test. Their percentage scores 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 scatter graph of the science results plotted against the maths results.

b State whether you agree or disagree with the following statements.

i All pupils with at least 60% in maths scored at least 60% in science.

ii Most pupils with at least 60% in maths scored at least 60% in science.

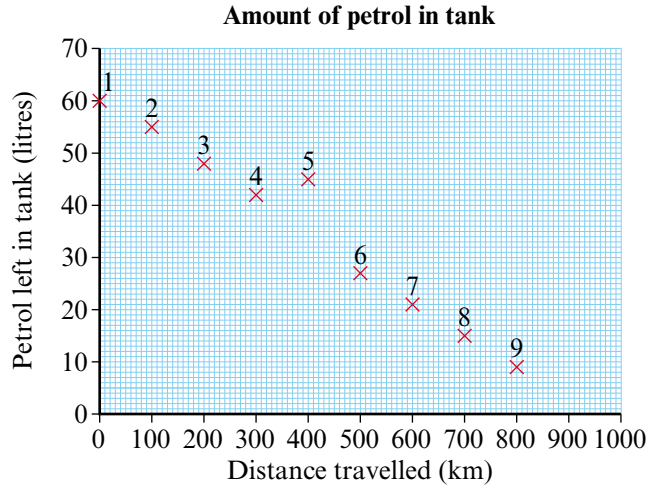
iii All pupils with less than 40% in maths scored less than 40% in science.

c How many pupils scored less than 50% in maths?

13 A motorist puts 60 litres of petrol in her car. Every 100 km travelled she records the amount of petrol in her 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

She then plots a scatter graph of the amount of petrol left against the distance travelled.



a One of the points is plotted incorrectly. Which is it?

b Plot an accurate scatter graph of the results.

c Is there a relationship between distance travelled and the amount of petrol left?