Foundation tier unit 3a check in test

Non-calculator

Q1. The table shows information about some items for sale in a clothes shop.

Item	**Size**	**Colour**	**Price**
Dress	large	red	£28
Trousers	medium	black	£19
Shirt	medium	red	£15
Blouse	large	white	£12
Shorts	small	blue	£16
Fleece	extra large	red	£23

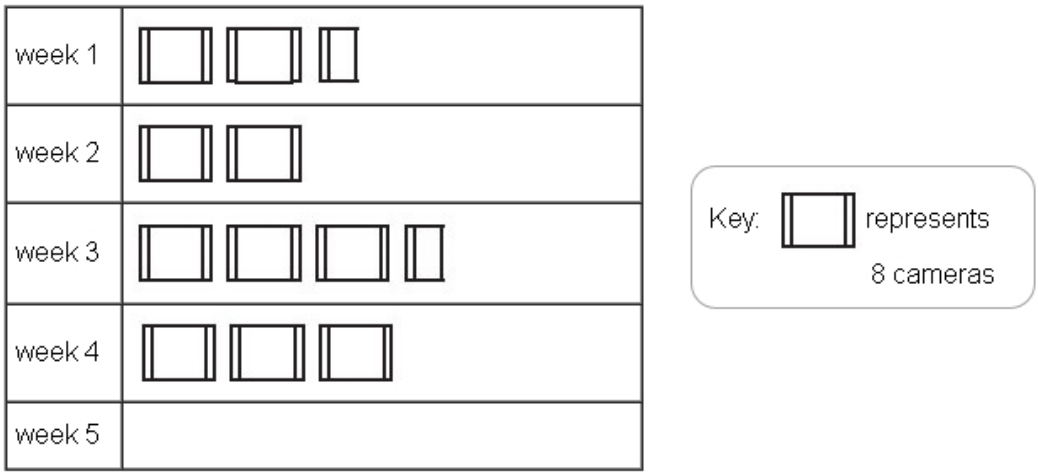
Write down the size of the cheapest item that is red.

Q2. Jim asked each person in his class how many cars their family have.
The frequency table shows the results.

Number of cars	**Frequency**
0	2
1	12
2	8
3	6
4	2

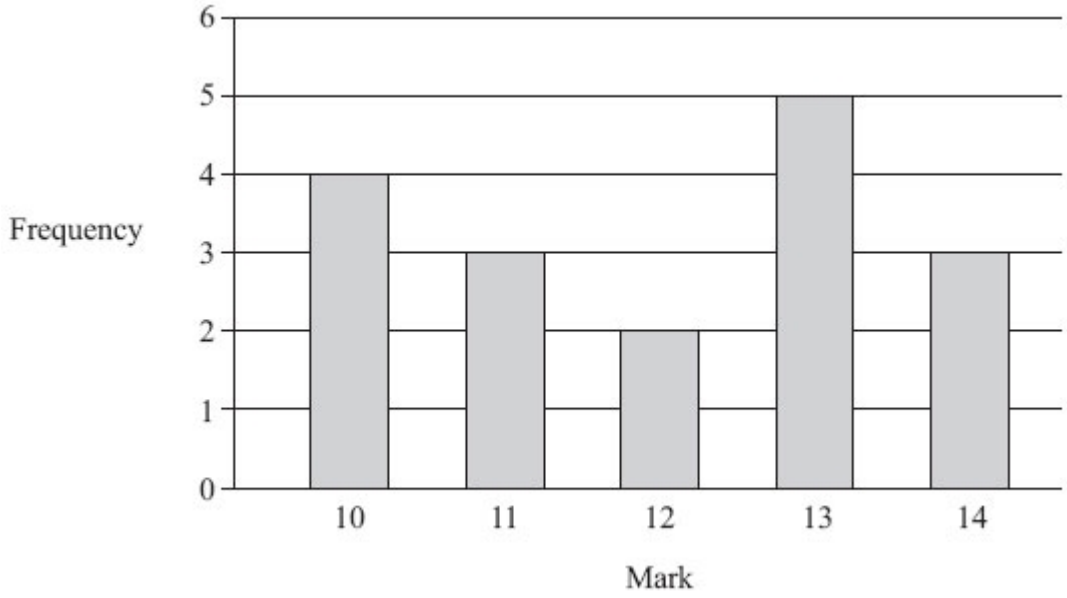
How many families have 2 cars?

Q3. The pictogram shows the number of cameras sold in a shop in week 1, in week 2, in week 3 and in week 4.



How many cameras were sold in week 3?

Q4. Mrs Smith gave her students a history test.
The bar chart shows information about the students' marks.



Write down the mode.

Q5. Helen went on 35 flights in a hot air balloon last year.
The table gives some information about the length of time, t minutes, of each flight.

Length of time (t minutes)	Frequency
$0 < t \leqslant 10$	6
$10 < t \leqslant 20$	9
$20 < t \leqslant 30$	8
$30 < t \leqslant 40$	7
$40 < t \leqslant 50$	5

What is the modal class?

Q6. Here is part of a train timetable from Birmingham to Leicester.

Birmingham	18 23	18 53	19 23	19 53
Coleshill	18 35	19 05	19 35	20 05
Nuneaton	19 00	19 22	19 51	20 22
Hinckley	–	19 29	19 58	20 29
Leicester	19 17	19 48	20 17	20 48

A train leaves Birmingham at 18 53
How many minutes should this train take to get to Hinckley?

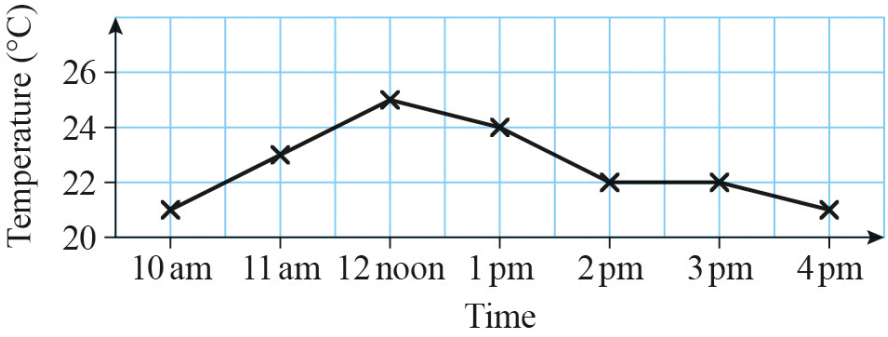
Q7. Some students watched a film.
James recorded the heart rates, in beats per minute, of the students after they had watched the film.
The back-to-back stem and leaf diagram gives information about his results.

Female		**Male**
8 5	7	6 6 9
7 4 4 4 0	8	3 7 7 7
9 6 6 1	9	2 2 5 7 8
	10	1 3 7

Key	
5 | 7 represents 75 beats per minute for female students	7 | 6 represents 76 beats per minute for male students

What was the modal heart rate for the female students?

Q8. Beth recorded the temperature, in degrees (°C), inside her greenhouse every hour on one day. The graph shows information about her results.



Which of these statements is true?

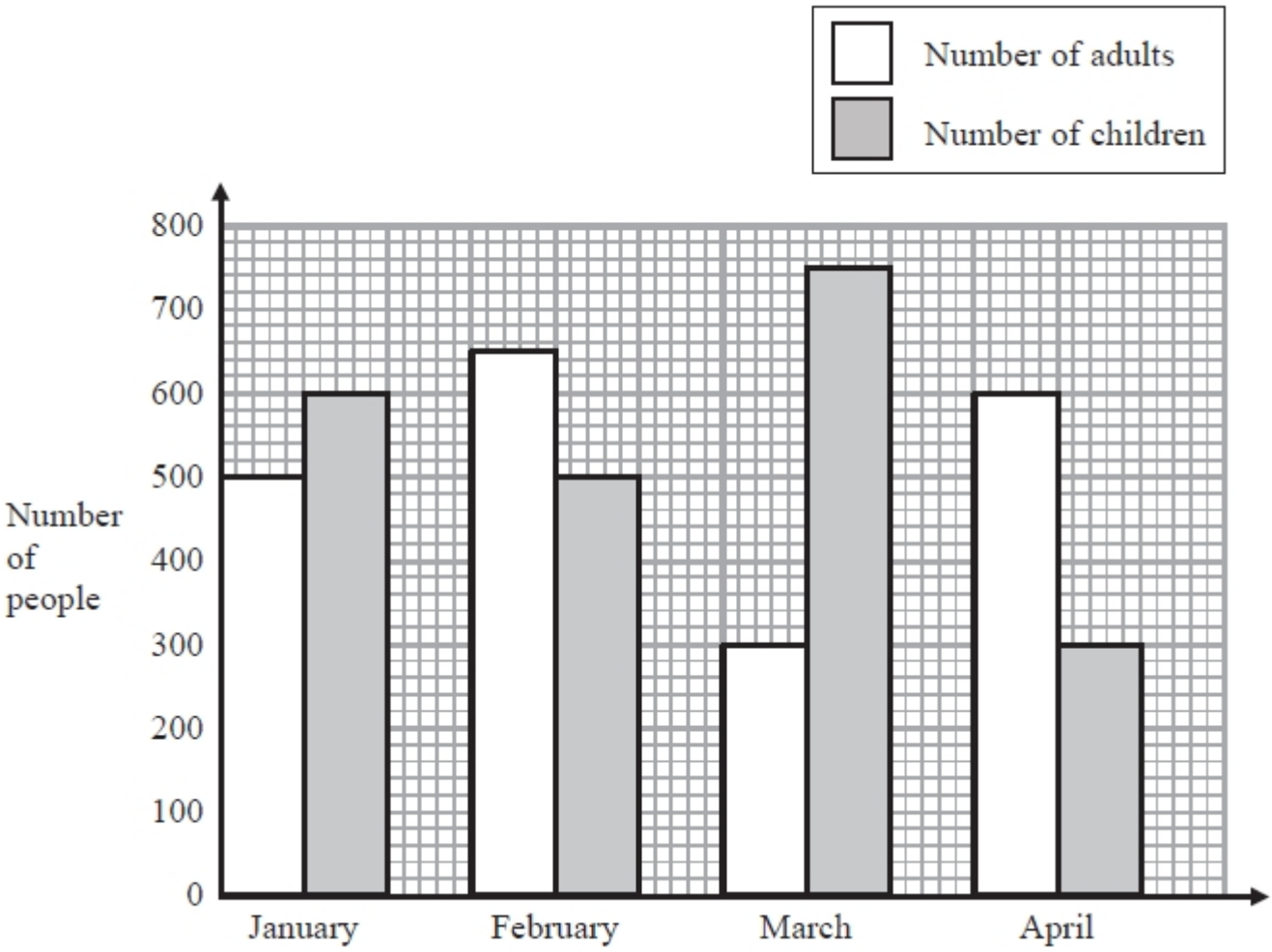
A The temperature rose by 4 degrees between 10 am and 12 noon
B The temperature fell by 4 degrees between 10 am and 12 noon
C The temperature rose by 5 degrees between 10 am and 12 noon
D The temperature rose by 4 degrees between 12 noon and 4 pm

Q9. The two-way table shows some information about how some men and some women travelled to work yesterday.

	Train	Car	Bus	Total
Men	12		6	28
Women		4		
Total			13	50

Work out the number of people who travelled to work by train yesterday.

Q10. The graph shows the number of adults and the number of children going to a museum each month from January to April.



More children than adults went to the museum in the 4 months from January to April.
Work out how many more.

Topics listed in objectives

- Use suitable data collection techniques (data to be integer and decimal values);
- Design and use data-collection sheets for grouped, discrete and continuous data, use inequalities for grouped data, and introduce ≤ and ≥ signs; Sort, classify and tabulate data, both discrete and continuous quantitative data, and qualitative data; Extract data from lists and tables;
- Use correct notation for time, 12- and 24-hour clock and work out time taken for a journey from a timetable;
- Construct tables for time–series data;
- Design, complete and use two-way tables for discrete and grouped data;
- Calculate the total frequency from a frequency table;
- Read off frequency values from a table;
- Read off frequency values from a frequency table;
- Find greatest and least values from a frequency table;
- Identify the mode from a frequency table;
- Identify the modal class from a grouped frequency table;
- Plotting coordinates in first quadrant and read graph scales in multiples;
- Produce and interpret:
  - pictograms;
  - composite bar charts;
  - dual/comparative bar charts for categorical and ungrouped discrete data;
  - bar-line charts;
  - vertical line charts;
  - line graphs;
  - line graphs for time–series data;
  - histograms with equal class intervals;
  - stem and leaf (including back-to-back);
- Calculate total population from a bar chart or table;
- Find greatest and least values from a bar chart or table;
- Find the mode from a stem and leaf diagram;
- Identify the mode from a bar chart;
- Recognise simple patterns, characteristic and relationships in bar charts and line graphs;
- Interpret and discuss any data.

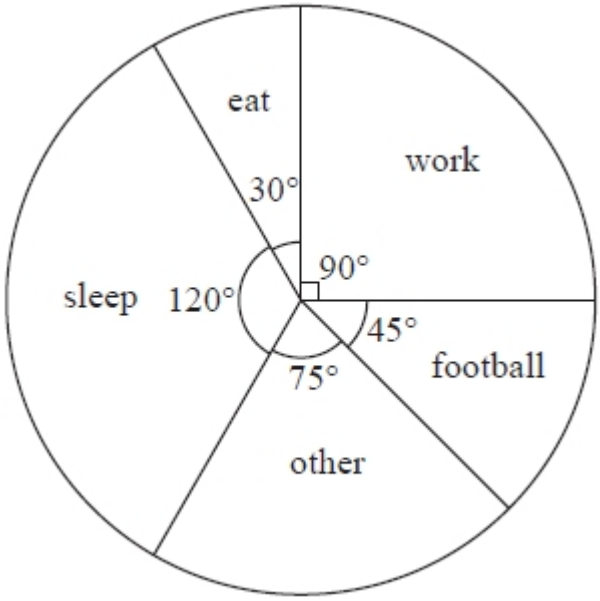
Answers

Q1. medium shirt
Q2. 8
Q3. 28
Q4. 13
Q5. $10 < t \leq 20$
Q6. 36 minutes
Q7. 84
Q8. A
Q9. 23
Q10. 100

Foundation tier unit 3b check in test

Calculator

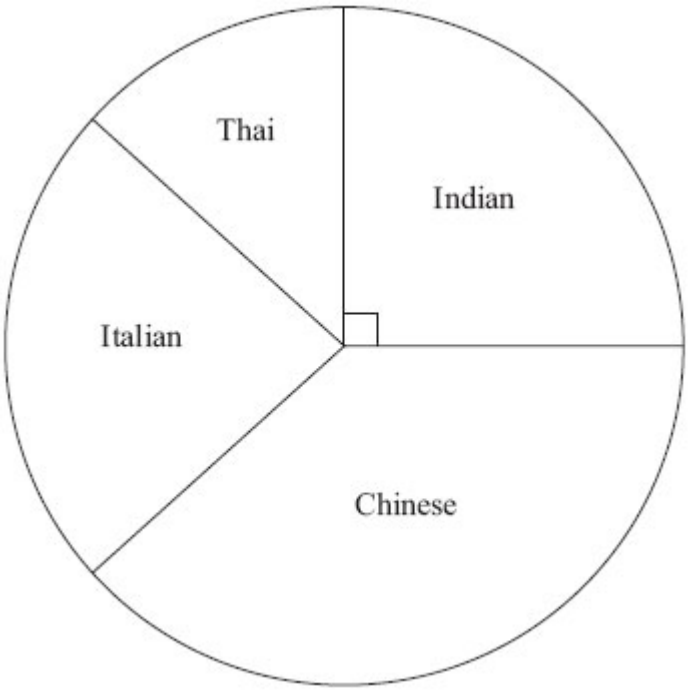
Q1. The pie chart gives information about what Ryan did in 24 hours one Saturday.



What did Ryan do most?

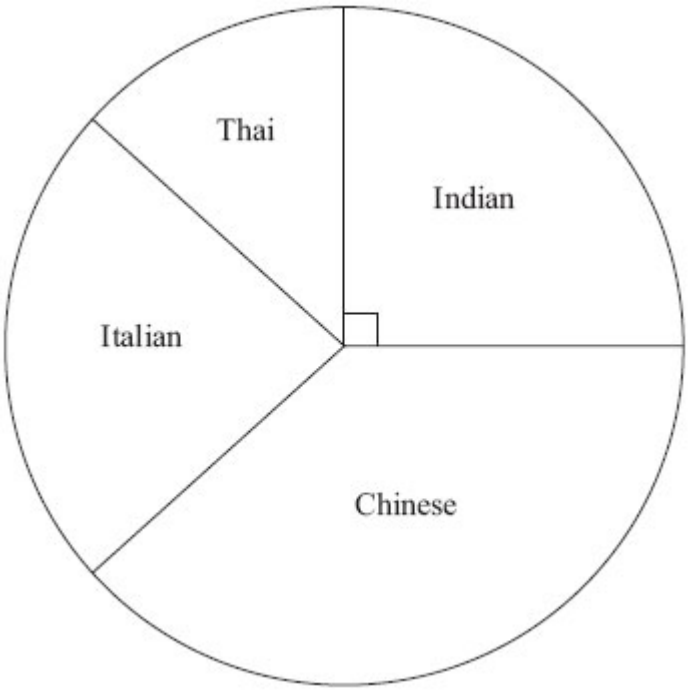
[Q2–3 linked]

Q2. The pie chart shows some information about the types of food that 80 people like best.



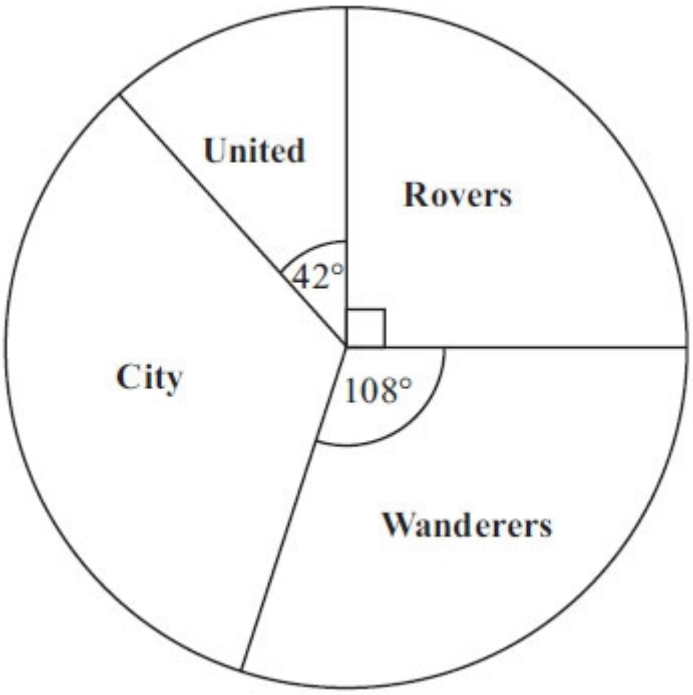
Estimate the fraction of the people who like Thai food best.

Q3. The pie chart shows some information about the types of food that 80 people like best.



Estimate the number of people who like Chinese food best.

Q4. Alex asked some people to name their favourite football team.
The pie chart shows his results.



What percentage of the people named Rovers as their favourite team?

Q5. The table gives some information about the birds Paula sees in her garden one day.

Bird	Frequency
Magpie	15
Thrush	10
Starling	20
Sparrow	27

Paula is going to draw an accurate pie chart to show this information.
How many degrees does she use to represent one bird?

Q6. The table shows the sports played by 120 students during their PE lesson.

Football	Basketball	Hockey	Rugby
40	20	25	35

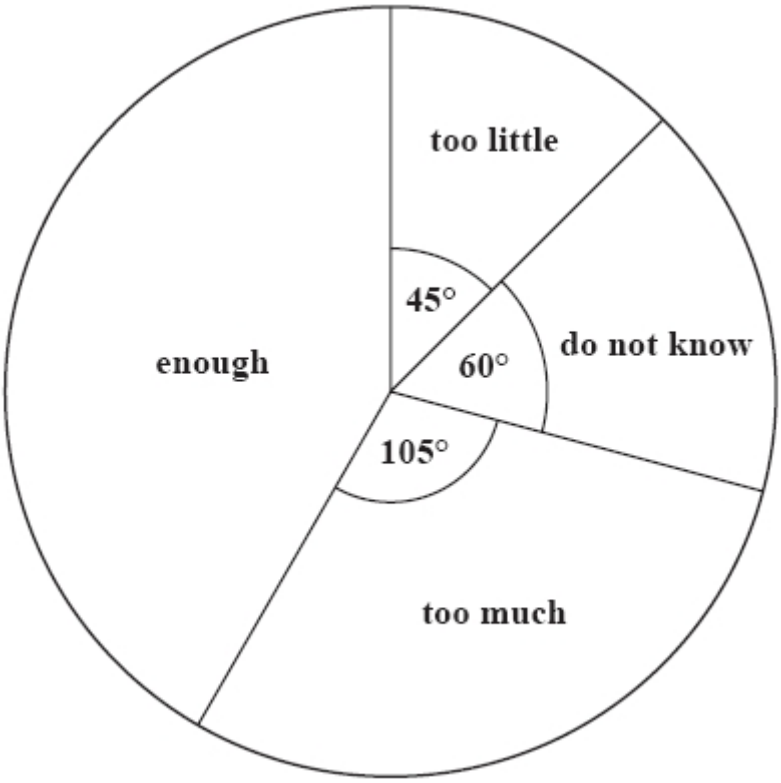
Sally is going to draw an accurate pie chart to show this information.
Work out the size of the angle on the pie chart for the sector representing hockey.

Q7. Kim asked 40 people how many text messages they each sent on Monday.
The table shows her results.

Number of text messages sent	Frequency
0 to 4	6
5 to 9	3
10 to 14	5
15 to 19	12
20 to 24	14

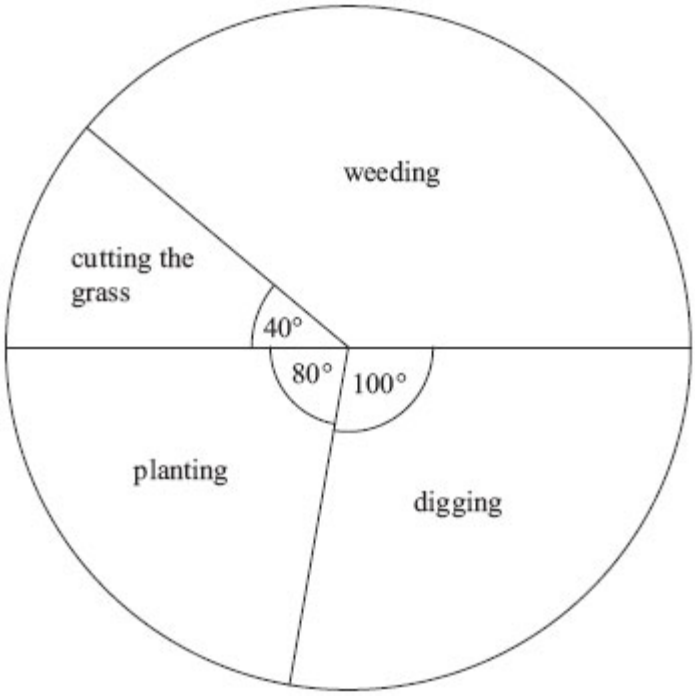
Kim is going to draw a pie chart for this information.
Work out the size of the angle on the pie chart for the sector representing 0 to 4 text messages.

Q8. 120 students are asked if they have enough homework one night.
The pie chart shows some information about their answers.



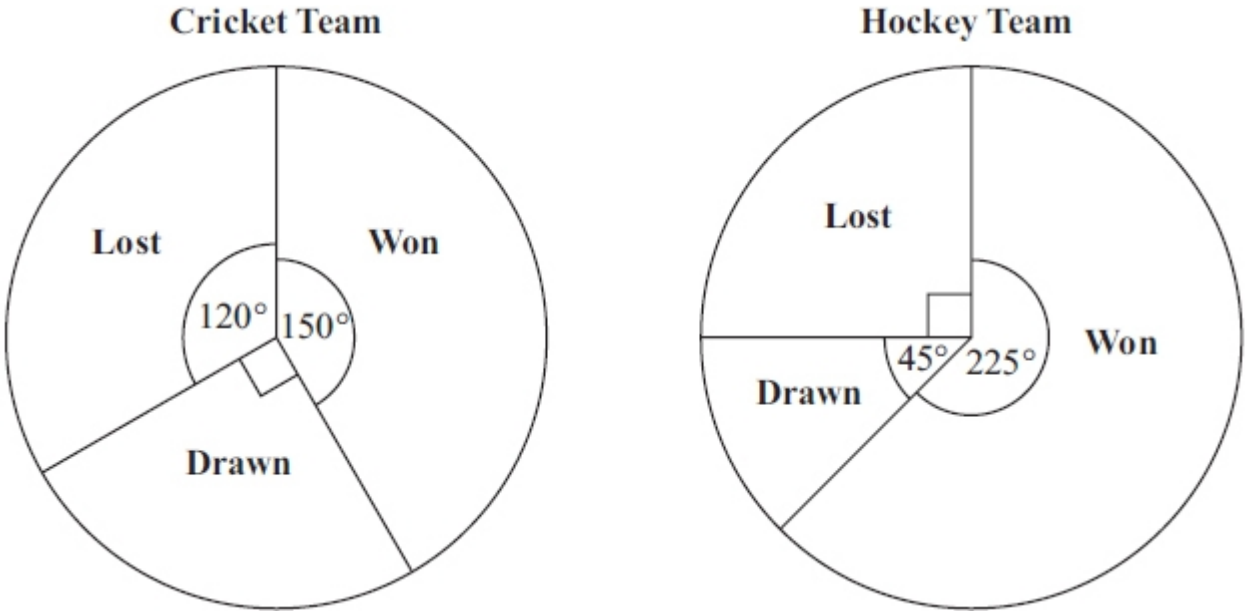
Work out the number of students who answered **enough**.

Q9. The pie chart shows some information about the time Gill spent working in her garden one month.



Gill spent 7 hours weeding.
How much time did Gill spend in the garden that month?

Q10. The pie charts show some information about the numbers of matches won, drawn and lost by a cricket team and by a hockey team last year.



The cricket team won 15 matches.
Which of these statements is true?

A The cricket team won more matches than the hockey team.
B The hockey team won more matches than the cricket team.
C The cricket team drew as many matches as the hockey team lost.
D The hockey team won a higher proportion of matches than the cricket team.

Topics listed in objectives

- Interpret tables; represent data in tables and charts;
- Know which charts to use for different types of data sets;
- Draw circles and arcs to a given radius;
- Know there are 360 degrees in a full turn, 180 degrees in a half turn, and 90 degrees in a quarter turn;
- Measure and draw angles, to the nearest degree; Construct pie charts for categorical data and discrete/continuous numerical data;
- Interpret simple pie charts using simple fractions and percentages; $\frac{1}{2}$, $\frac{1}{4}$ and multiples of 10% sections;
- From a pie chart:
  - find the mode;
  - find the total frequency;
- Understand that the frequency represented by corresponding sectors in two pie charts is dependent upon the total populations represented by each of the pie charts.

Answers

Q1. sleeping

Q2. $\frac{1}{8}$

Q3. 30

Q4. 25%

Q5. 5°

Q6. 75°

Q7. 54°

Q8. 50

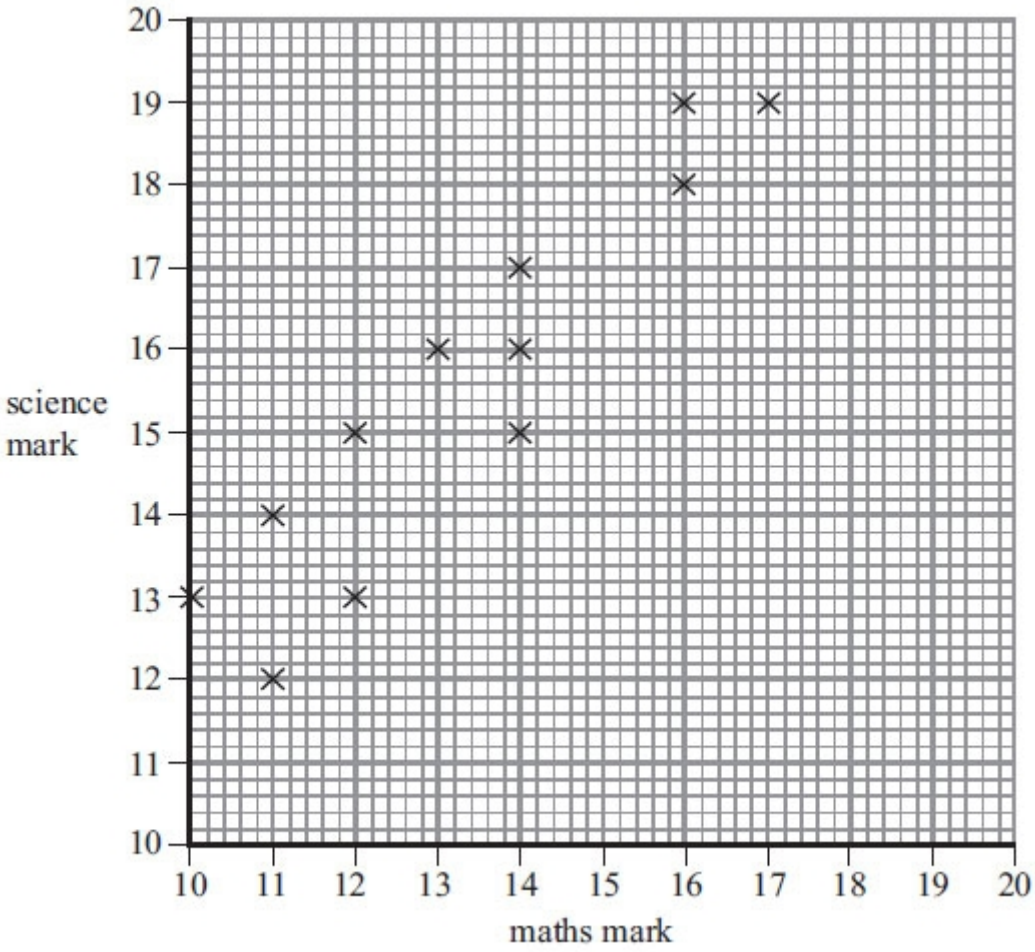
Q9. 18 hours

Q10. D

Foundation tier unit 3c check in test

Non-calculator

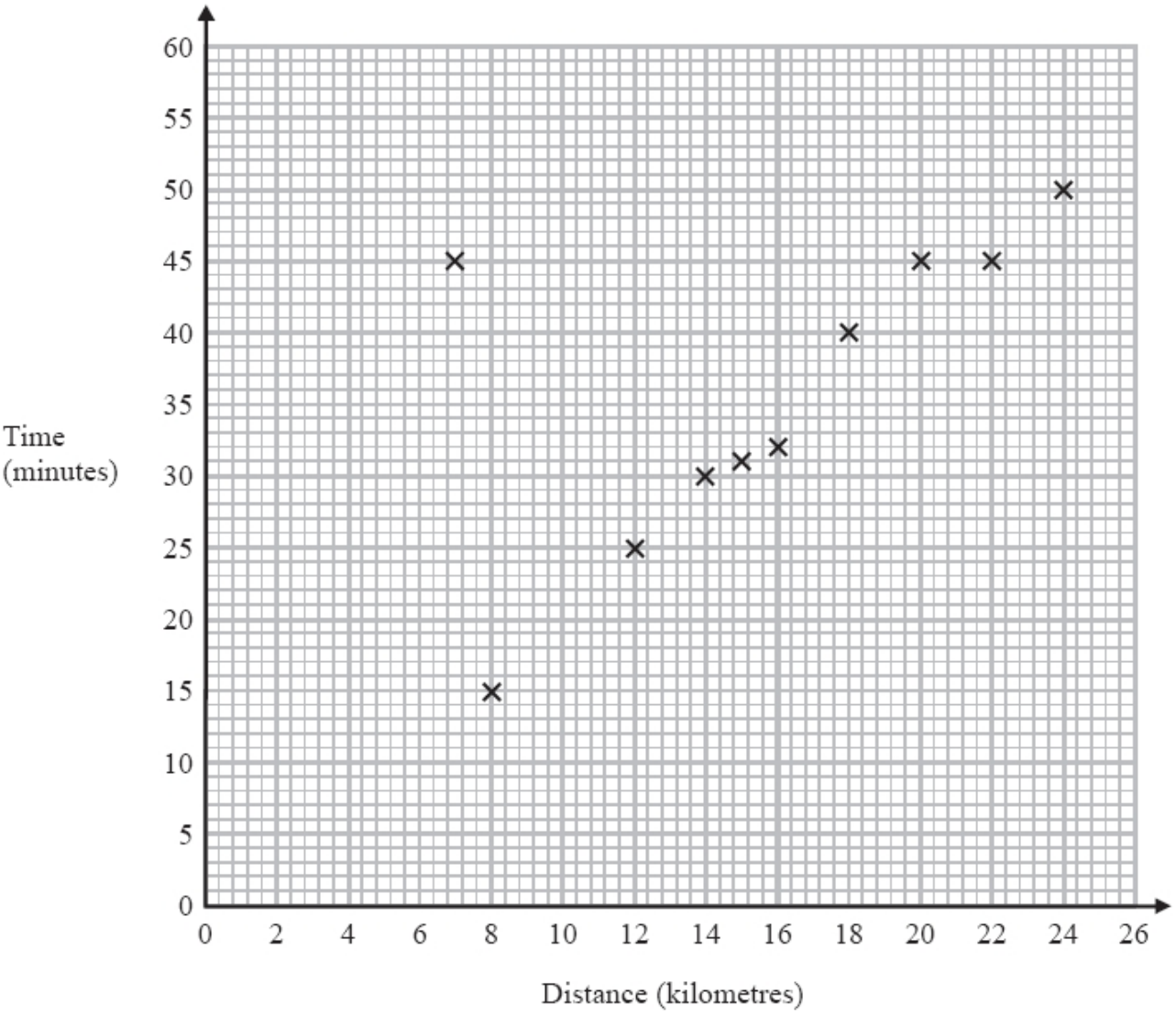
Q1. Mr Kent's students did a maths test and a science test.
The scatter graph shows the marks of 12 of these students.



One of the students scored 17 in maths.
What was this student's science mark?

[Q2–3 linked]

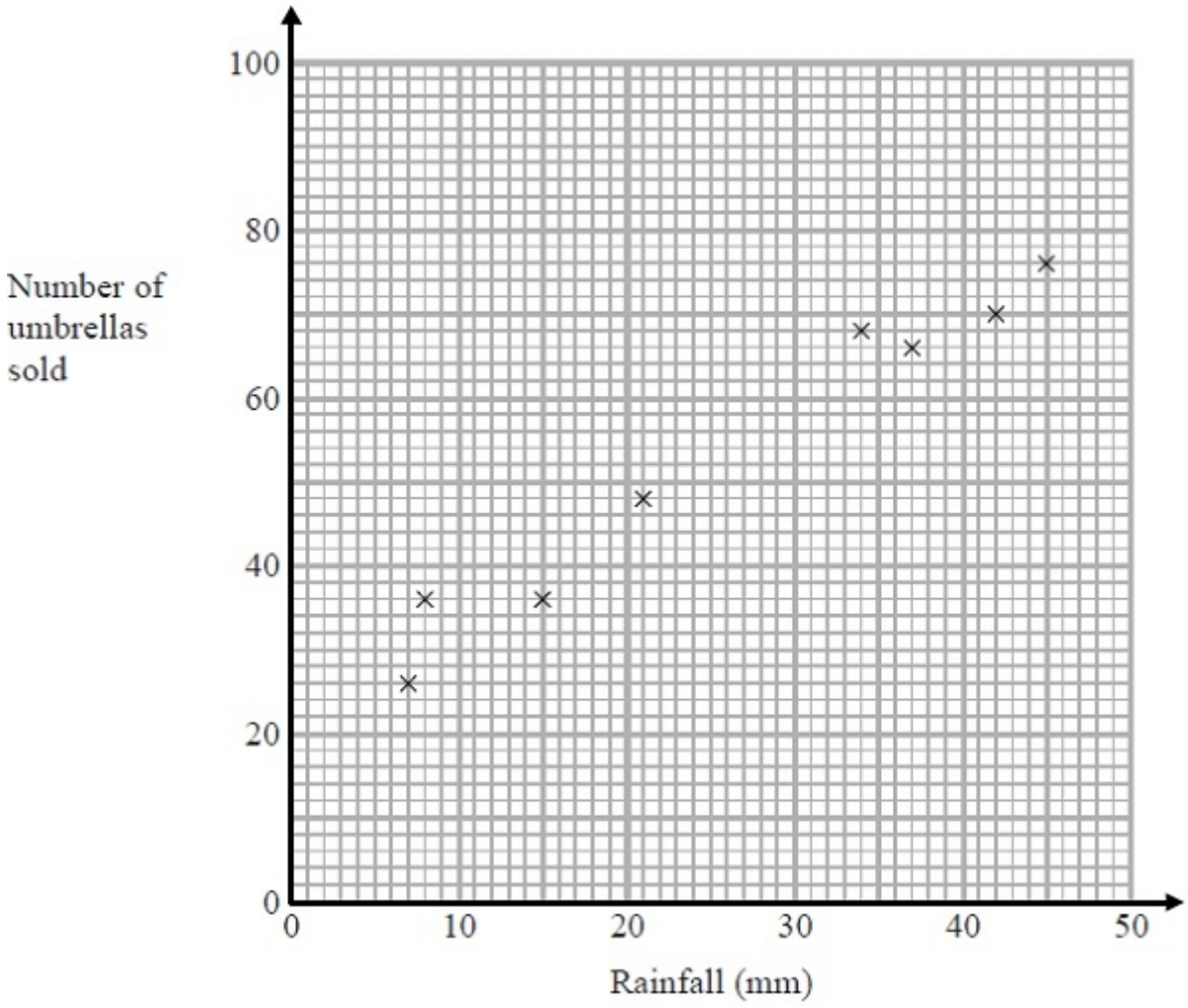
Q2. A delivery driver records for each delivery the distance he drives and the time taken.
The scatter graph shows this information.



During one of the deliveries, the driver was delayed by road works.
Use the graph to find the time taken for this delivery.

Q3. What is the name for a point on scatter graph that doesn't fit the pattern of the other points?

Q4. The scatter graph gives information about the rainfall (mm) and the number of umbrellas sold in a shop for each of eight months last year.

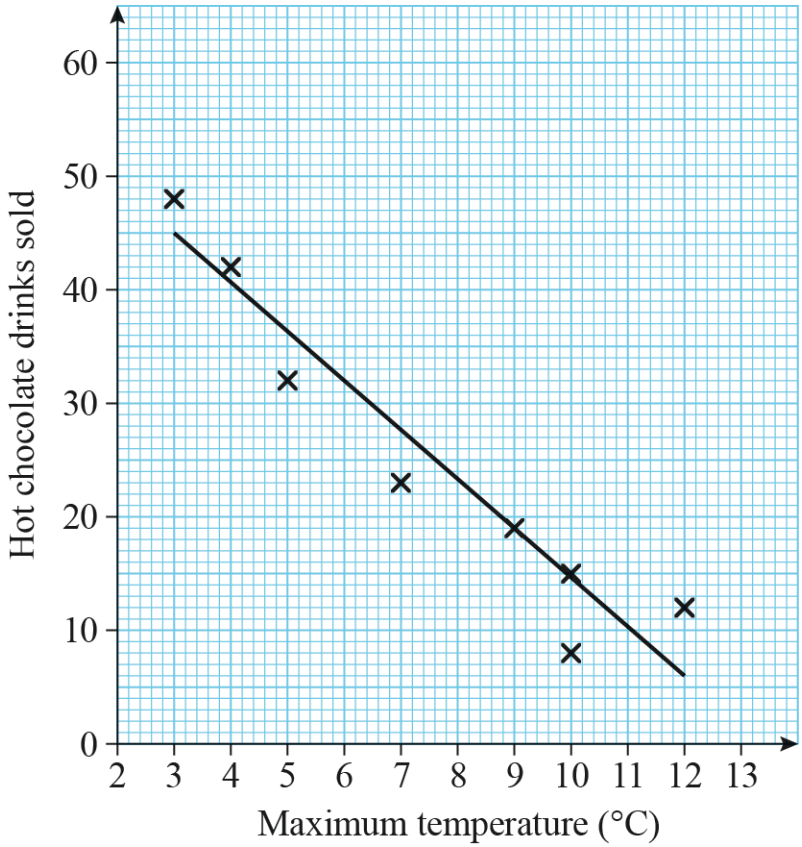


Which of these statements best describes the data?

A If the rainfall is more than 5mm, people buy umbrellas
B Rain makes people buy umbrellas
C The more umbrellas were sold, the more it rained
D The higher the rainfall, the more umbrellas were sold

[Q5–6 linked]

Q5. Carlos has a cafe in Clacton. Each day, he records the maximum temperature in degrees Celsius (°C) in Clacton and the number of hot chocolate drinks sold.
The scatter graph shows this information.



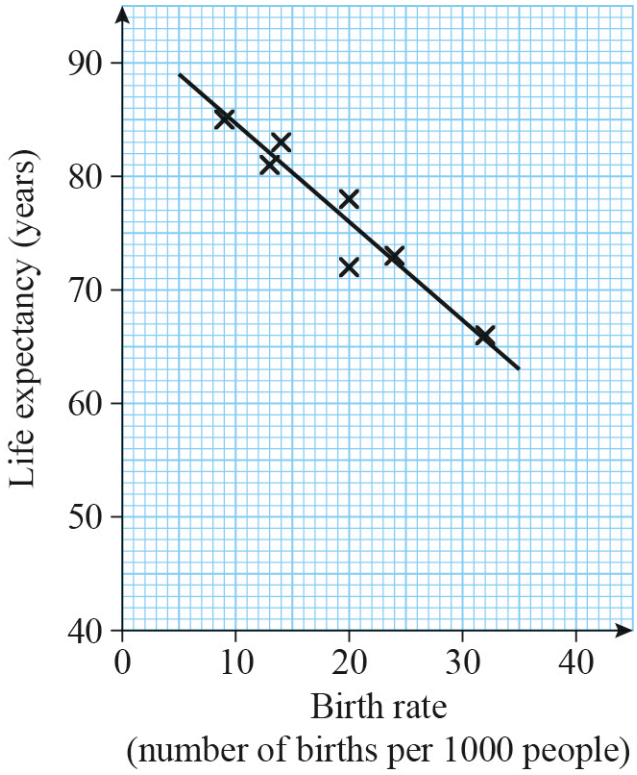
Which of these statements best describes the data?

A The lower the maximum temperature, the fewer hot chocolate drinks Carlos sold.
B The lower the maximum temperature, the more hot chocolate drinks Carlos sold.
C The maximum temperature had no effect on the number of hot chocolate drinks Carlos sold.
D The point at (10, 8) doesn't fit the pattern so we can't make any statements about the data.

Q6. One day the maximum temperature in the cafe was 8 °C.
Estimate how many hot chocolate drinks were sold.

[Q7–8 linked]

Q7. The scatter graph gives data on birth rate and the life expectancy for seven countries.



What type of correlation does the scatter graph show?

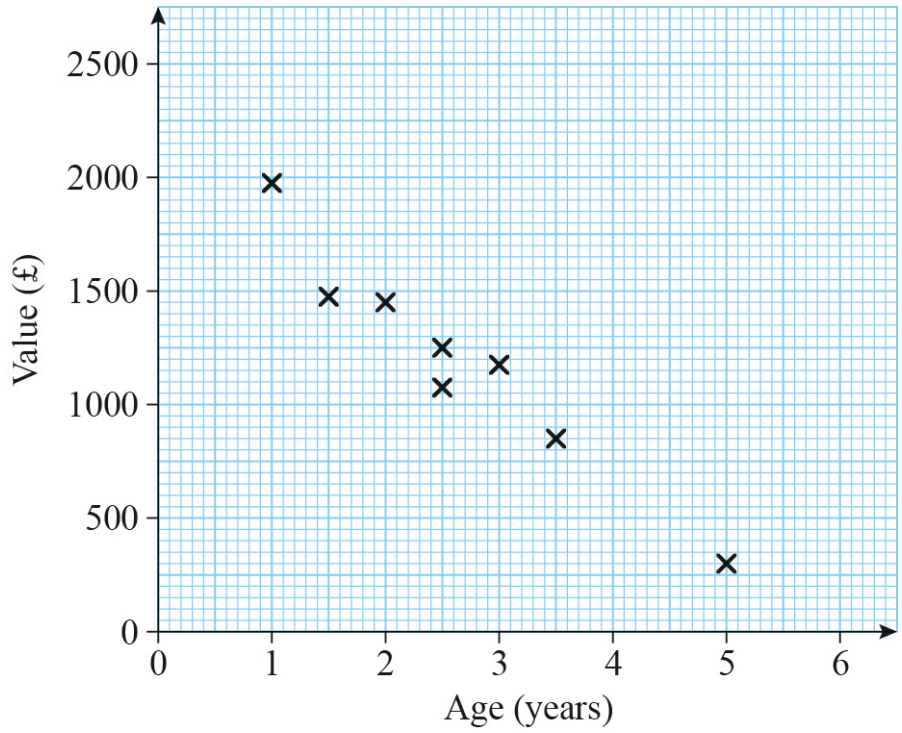
Q8. The birth rate in Niger is 50 births per 1000 people.

Why might it not be reliable to use the line of best fit to estimate the life expectancy for Niger?
Choose the best statement.

A The line of best fit stops at 35.
B You can only use the line of best fit between the two outermost points.
C We can't be sure the relationship is the same for a birth rate significantly above 32.
D The line of best fit only goes through two of the points.

[Q9–10 linked]

Q9. The scatter graph shows information about the ages and values of seven Varley motor scooters.



Mark wants to sell a Varley motor scooter that is 4 years old.
Predict how much it will sell for.

Q10. Mark wants to sell a Varley motor scooter that is 4 years old.

He predicts that it will sell for £650.
How sure can he be of his prediction?

Choose the best statement.

A He can be very sure because the correlation is strong.
B He can be fairly sure because the correlation is strong but other factors might affect the scooter's value.
C He can't be sure at all because older scooters are often very valuable.
D He can't be sure at all because 4 years is towards the end of the line of best fit.

Topics listed in objectives

- Draw scatter graphs;
- Interpret points on a scatter graph;
- Identify outliers and ignore them on scatter graphs;
- Draw the line of best fit on a scatter diagram by eye, and understand what it represents;
- Use the line of best fit make predictions; interpolate and extrapolate apparent trends whilst knowing the dangers of so doing;
- Distinguish between positive, negative and no correlation using lines of best fit;
- Use a line of best fit to predict values of a variable given values of the other variable;
- Interpret scatter graphs in terms of the relationship between two variables;
- Interpret correlation in terms of the problem;
- Understand that correlation does not imply causality;
- State how reliable their predictions are, i.e. not reliable if extrapolated.

Answers

Q1. 19
Q2. 45 minutes
Q3. outlier
Q4. D
Q5. B
Q6. 23
Q7. strong negative correlation
Q8. C
Q9. £650 (check against line of best fit)
Q10. B