GCSE · Edexcel · Maths

3 hours 43 questions

Exam Questions

Statistical Diagrams

Stem & Leaf Diagrams / Tally Charts & Frequency Tables / Bar Charts & Pictograms / Frequency Polygons / Pie Charts / Time Series Graphs / Reading & Interpreting Statistical Diagrams / Comparing Statistical Diagrams

Easy (17 questions)	/68
Medium (17 questions)	/72
Hard (9 questions)	/54
Total Marks	**/194**

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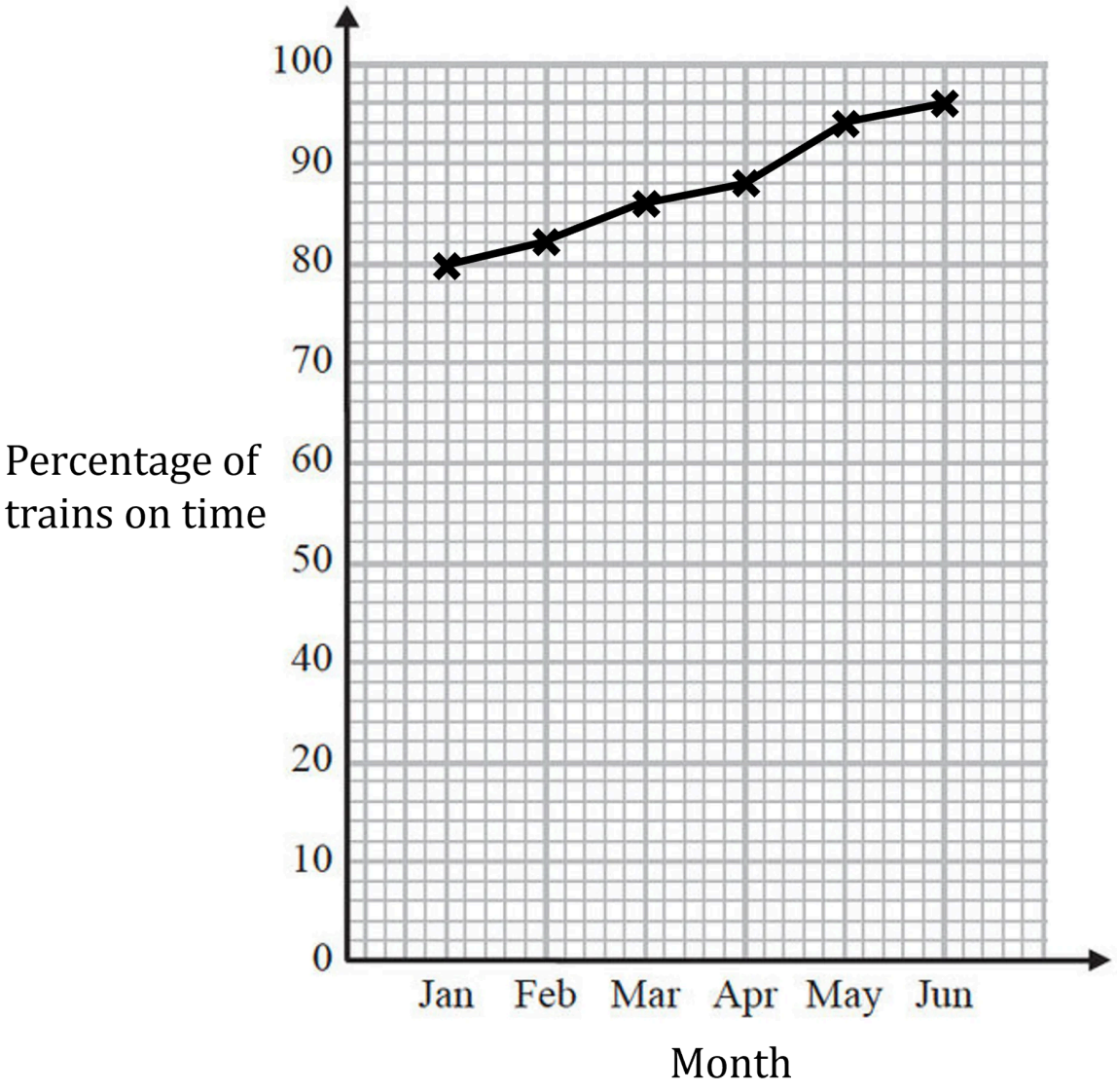
Easy Questions

1 Francis drew this graph to show the percentage of trains that arrived at his local train station on time for six months.



(i) Write down **one** thing that is wrong with the graph.

[1]

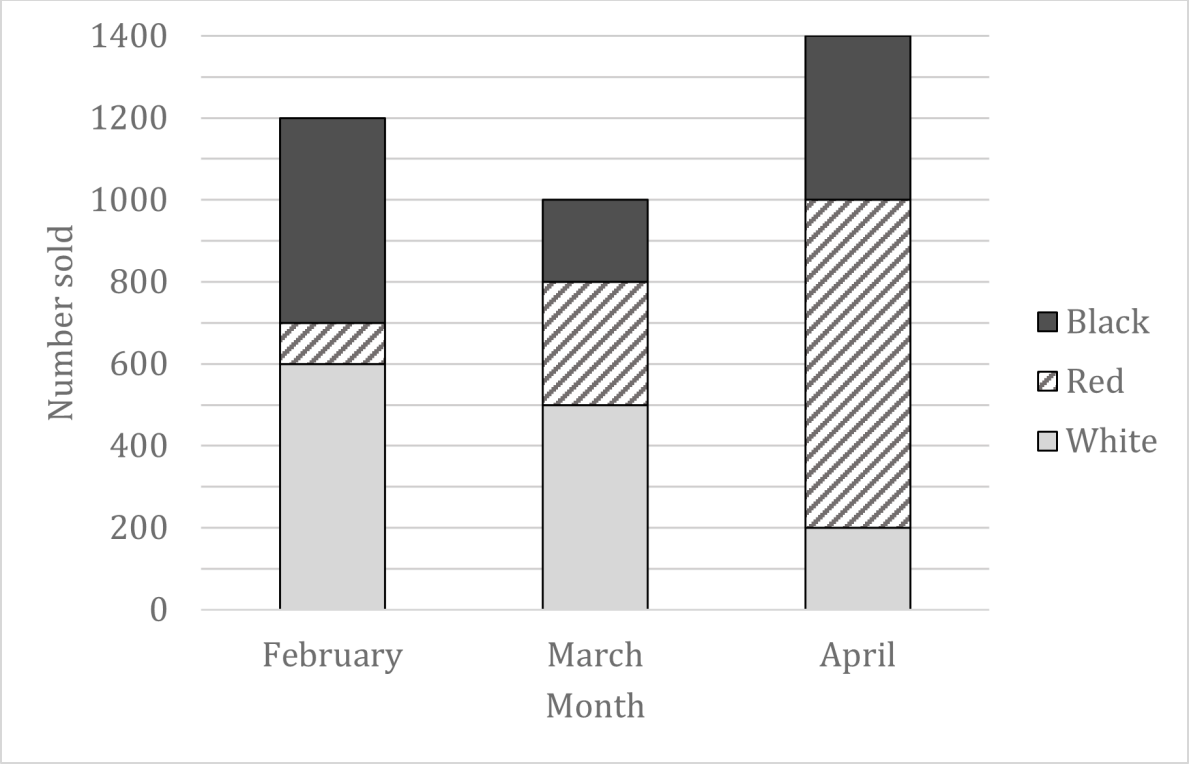
(ii) Describe the trend in the percentage of trains that got to the station on time.

[1]

(2 marks)

2 A car manufacturer produces a new car in three different colours; black, white, and red.

The composite bar chart shows the number of cars sold in each colour during three different months.



(i) Write down the number of black cars sold in March.

[1]

(ii) Write down the month in which the majority of cars sold were red.

[1]

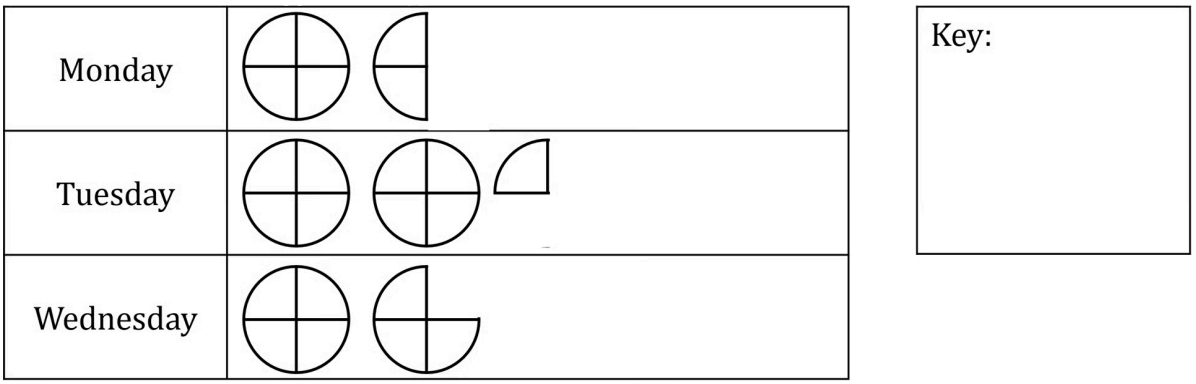
(iii) Calculate the total number of white cars that were sold.

[2]

(4 marks)

3 The pictogram shows information about the number of dogs staying in a kennel on three different days.

The key for the pictogram has not yet been completed.



On Monday, there are 12 dogs staying in the kennel.

(i) Complete the key for the pictogram.

[1]

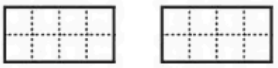
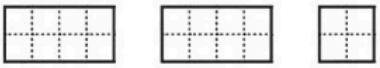
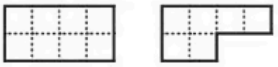
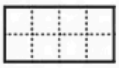
(ii) State which day the most dogs were staying in the kennel, and how many dogs there were on that day.

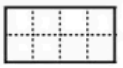
[1]

(2 marks)

4 George, Louis and Beatriz have a café.

George records the number of each type of meal sold.
He draws a pictogram to show his results.
All rows are complete except for Salad.

Type of meal	Number of meals
Meat curry	
Pasta	
Vegetarian	
Salad	
Fish	
Sandwich	

Key:  = 8 meals

i) Six salads were sold.

Complete the pictogram.

[1]

ii) Write down which type of meal was sold most.

[1]

iii) Find the number of meals sold altogether.

[1]

(3 marks)

5 The stem-and-leaf diagram shows the ages of the workers in a factory.

1	6	7	7	9		
2	2	3	4	6	8	
3	0	2	3	6	9	
4	1	4	4	8		
5	0	1	6	6	6	9
6	1	5	8			

Key : 2|3 represents 23

i) Write down the mode.

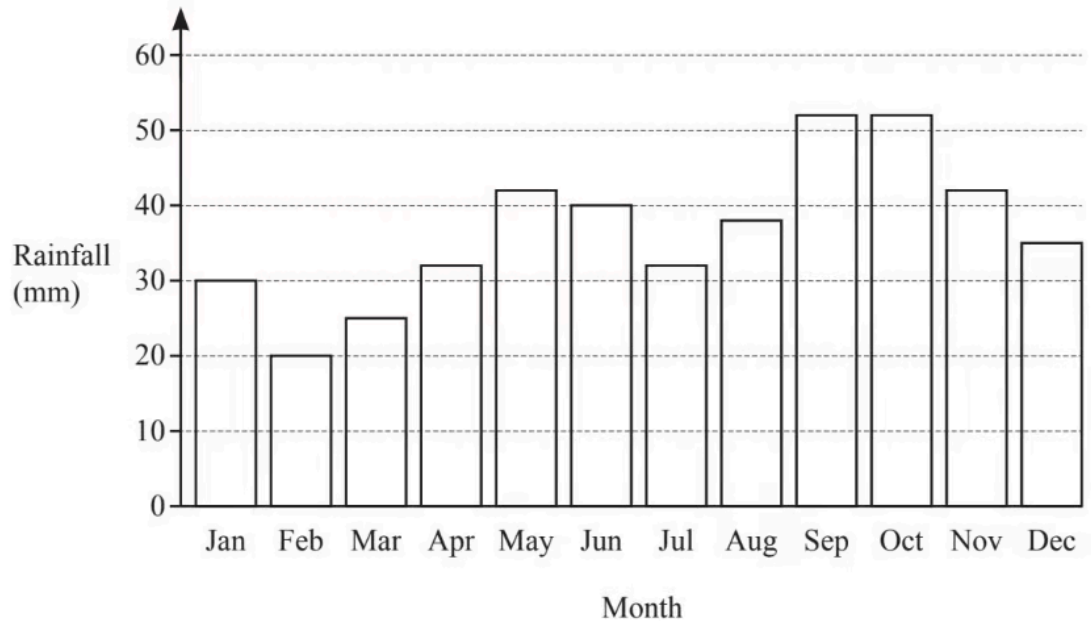
[1]

ii) Work out the range.

[1]

(2 marks)

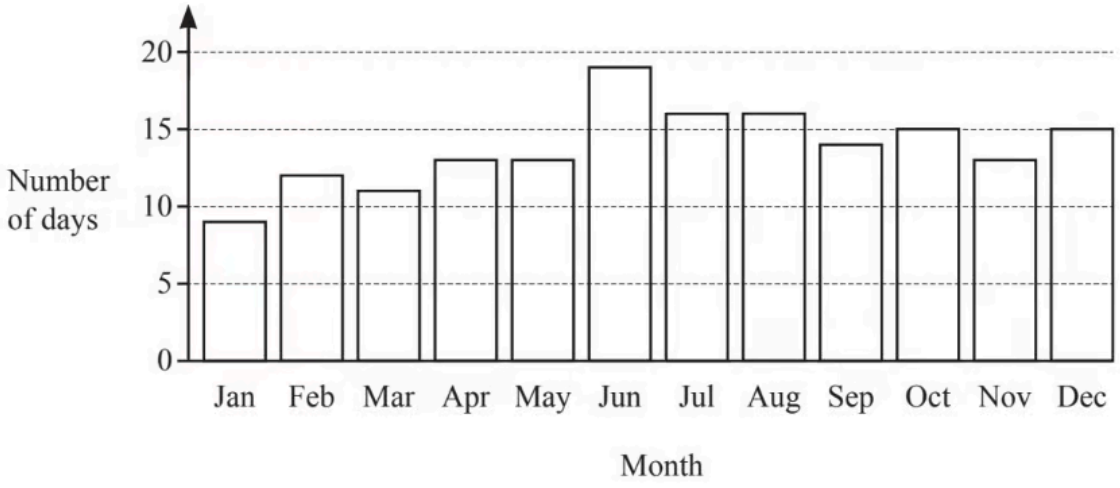
6 (a) This bar chart shows the amount of rainfall, in mm, for each month of one year in a city.



Write down the month with the least amount of rainfall.

(1 mark)

(b) This bar chart shows the number of days it rained each month for the same year in this city.



Mia says that the months with the most rainfall also have the greatest number of days it rained.

Explain why she is wrong.

(1 mark)

7 (a) 20 students from College A each run 5km.
The times, correct to the nearest minute, are recorded.

32	51	25	40	47	21	37	32	48	36
46	39	30	29	44	39	53	35	40	31

i) Complete the stem-and-leaf diagram.

2	
3	
4	
5	

Key: 3 | 4 represents 34 minutes

[2]

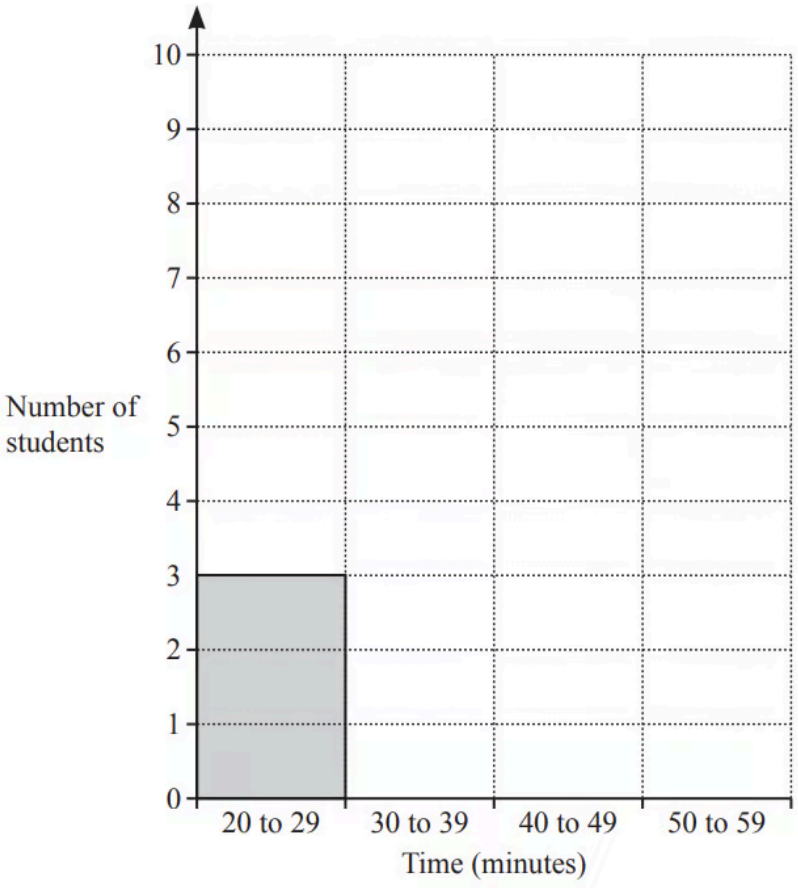
ii) Find the range of the times.

..... min [1]

iii) Find the median of the times.

..... min [1]

iv) Complete the bar chart for the times of the students.



[2]

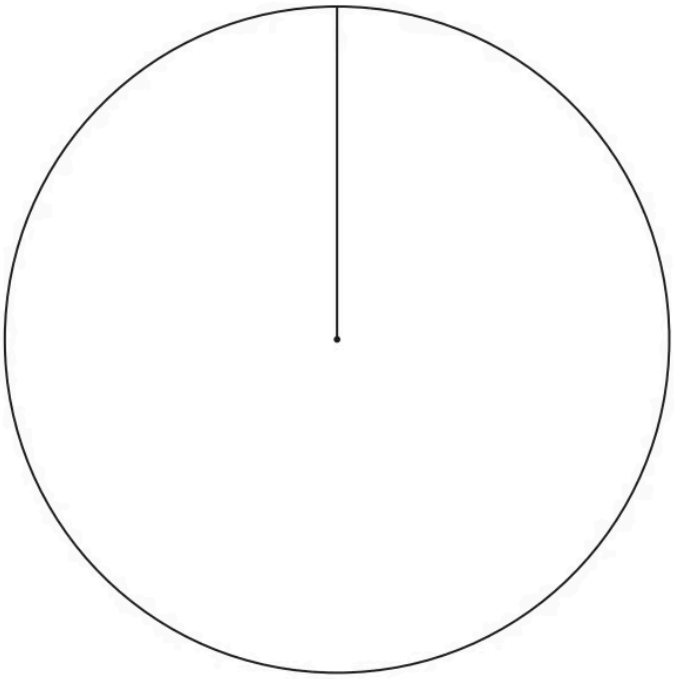
(6 marks)

(b) 20 students from College B each run 5km.
Their times, correct to the nearest minute, are recorded and the results are shown in the table.

Time (minutes)	Number of students	Pie chart sector angle
30 to 39	5	90°
40 to 49	8	
50 to 59	7	

i) Complete the table.

[2]



ii) Complete the pie chart.

[2]

(4 marks)

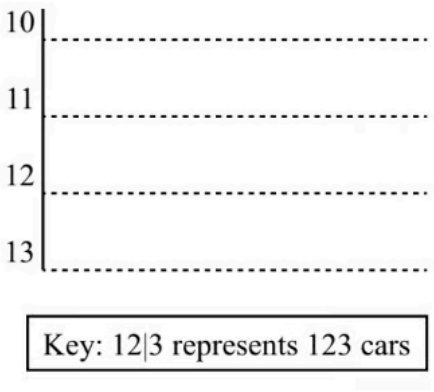
(c) Write down two comments comparing the times of students from College A with the times of students from College B.

(2 marks)

8 The number of cars parked in a car park at 9am is recorded for 10 days.

124	130	129	116	132	120	127	107	118	114

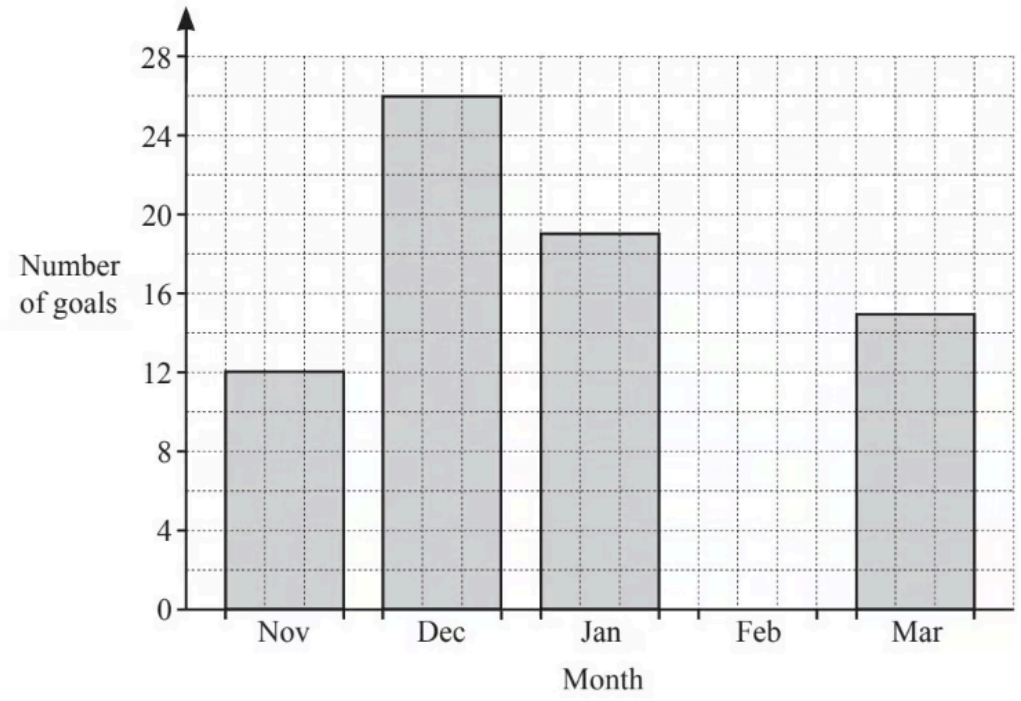
Complete the stem-and-leaf diagram.



(2 marks)

9 José manages a football team.
He records the number of goals scored by the team for each of five months.

Some of the results are shown on the bar chart.



i) In February, 10 goals were scored.

Complete the bar chart.

[1]

ii) Write down the month in which most goals were scored.

[1]

iii) Find the total number of goals scored.

[1]

iv) Calculate the mean number of goals scored each month.

[1]

(4 marks)

10 Nadira owns a clothes shop.

The pictogram shows the number of skirts that were sold each day in one week.

Day	Number of skirts
Monday	○ ◖
Tuesday	○
Wednesday	○ ○ ◖
Thursday	○ ○ ◖
Friday	○ ○ ○ ○
Saturday	○ ○ ○ ◖

Key: ○ = 10 skirts

i) On which day were most skirts sold?

[1]

ii) How many skirts were sold on Wednesday?

[1]

iii) Work out how many more skirts were sold on Friday than on Thursday.

[1]

(3 marks)

11 (a) Davina records the colour of each car passing her house one morning.

red	grey	black	red	grey
white	white	black	black	white
grey	red	grey	white	grey
black	grey	black	white	grey

Complete the frequency table.
You may use the tally column to help you.

Colour of car	Tally	Frequency
Black		
Grey		
Red		
White		

(2 marks)

(b) Write down the mode.

(1 mark)

12 (a) Kyung records the number of people in each of 24 cars on Wednesday.
His results are shown below.

1	3	6	1	2	2	4	5
3	4	1	5	3	2	4	1
1	1	2	4	4	1	2	1

i) Complete the frequency table.
You may use the tally column to help you.

Number in a car	Tally	Frequency
1		
2		
3		
4		
5		
6		

[2]

ii) Write down the mode.

[1]

iii) Work out the range.

[1]

iv) Work out the median.

[1]

v) Calculate the mean.

[3]

vi) One of these cars is chosen at random.
Find the probability that the number of people in this car is 4.

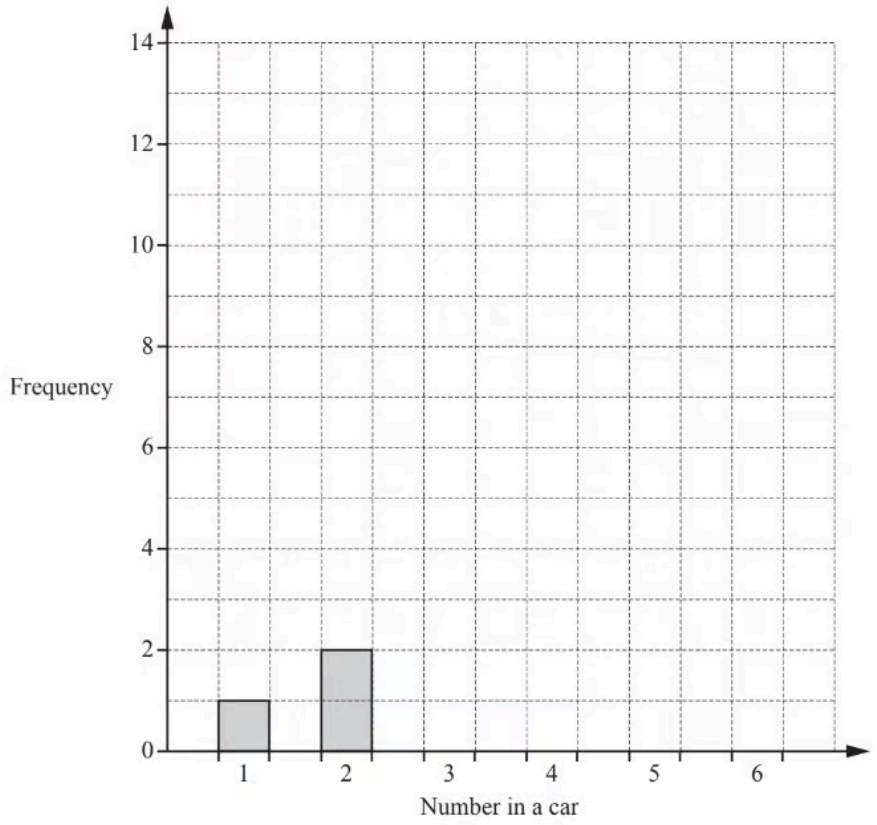
[1]

(9 marks)

(b) Kyung also records the number of people in each of 24 cars on Saturday. The table shows the results.

Number in a car	1	2	3	4	5	6
Frequency	1	2	5	13	2	1

On the grid, complete the bar chart to show these results.



(2 marks)

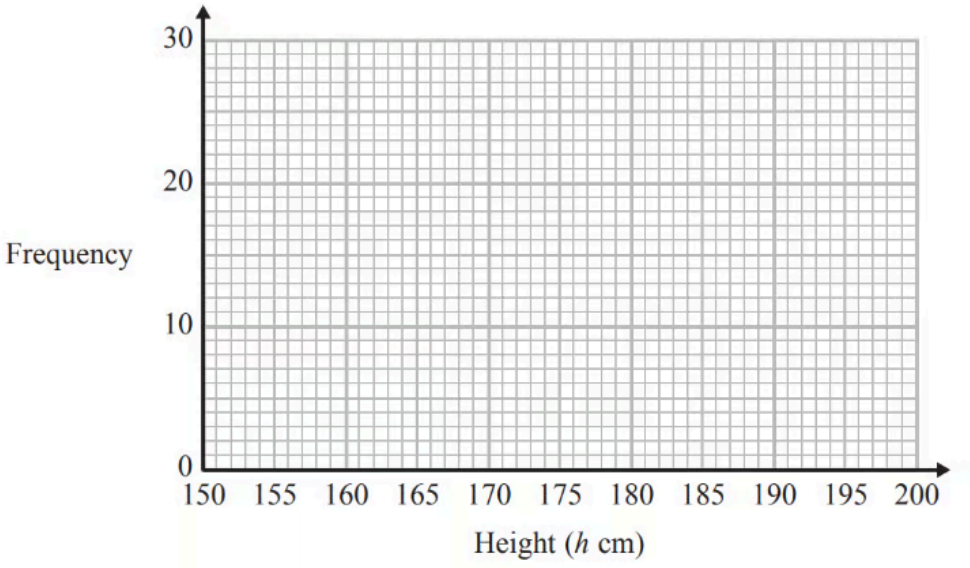
(c) Write down one comparison between the frequency tables in **part (a)(i)** and **part (b)**.

(1 mark)

13 The frequency table gives information about the heights of some people.

Height (h cm)	Frequency
$160 < h \leqslant 165$	2
$165 < h \leqslant 170$	5
$170 < h \leqslant 175$	10
$175 < h \leqslant 180$	21
$180 < h \leqslant 185$	16
$185 < h \leqslant 190$	4

Draw a frequency polygon for this information.



(2 marks)

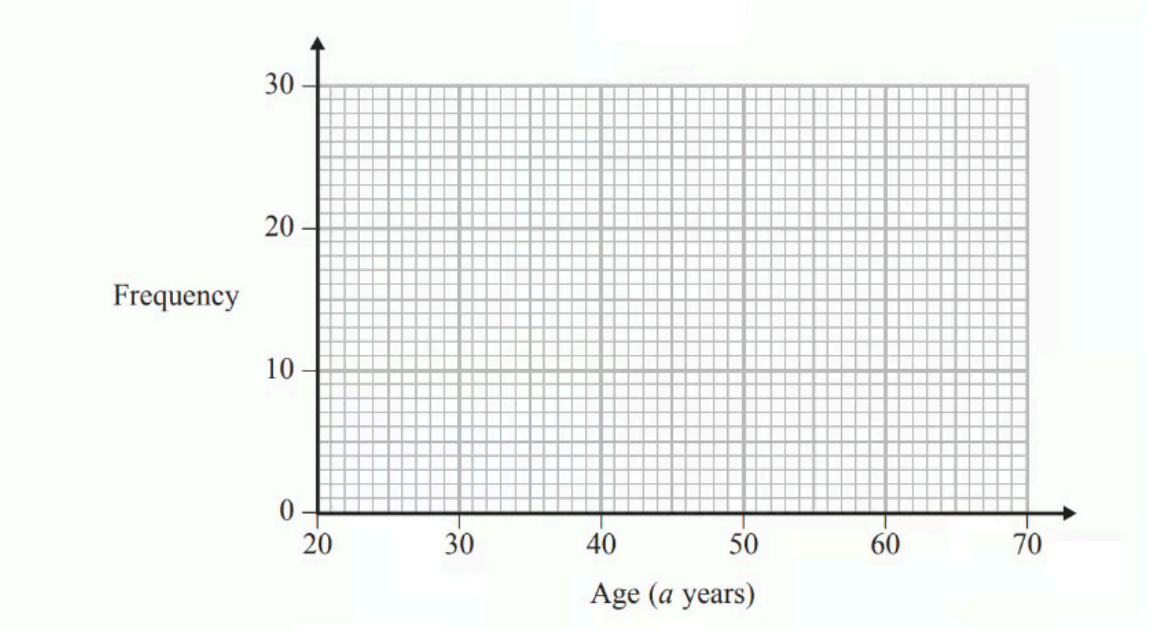
14 (a) The table shows some information about the ages of 60 teachers.

Age(a years)	Frequency
$20 < a \leqslant 30$	6
$30 < a \leqslant 40$	16
$40 < a \leqslant 50$	14
$50 < a \leqslant 60$	22
$60 < a \leqslant 70$	2

Write down the modal class interval.

(1 mark)

(b) Draw a frequency polygon for the information in the table.

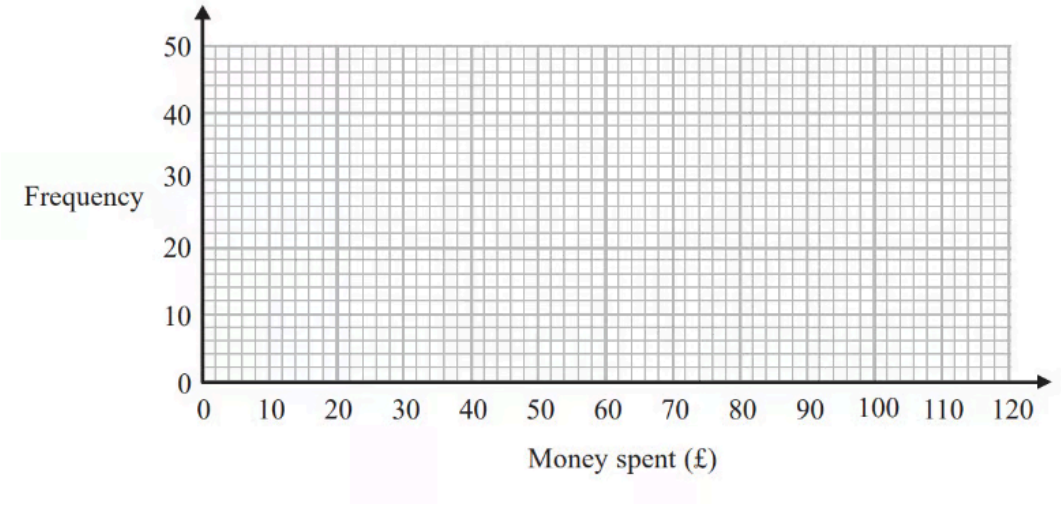


(2 marks)

15 (a) The table gives information about the money, £A, some people spent on an internet site one day.

Money spent(£A)	Frequency
$0 < A \leqslant 20$	10
$20 < A \leqslant 40$	15
$40 < A \leqslant 60$	25
$60 < A \leqslant 80$	40
$80 < A \leqslant 100$	6

On the grid, draw a frequency polygon for this information.



(2 marks)

(b) Write down the modal class interval.

(1 mark)

16 (a) Gurpreet is conducting a survey. She asks 30 friends which city they would like to meet in.

Here are the results.

London London Sheffield Manchester London

Manchester London Sheffield Sheffield Manchester

Sheffield London London Manchester London

London London Sheffield Manchester London

London Sheffield Sheffield Sheffield Manchester

Manchester Sheffield Sheffield Manchester London

Complete the frequency table.

City	Tally	Frequency
London		
Sheffield		
Manchester		

(2 marks)

(b) Write down the mode.

(1 mark)

(c) Explain why Gurpreet is unable to calculate a median for this data.

(1 mark)

17 (a) This pictogram shows some information about the different genres of books stocked on a shelf.

Genre	Number of Books
Thriller	
Science Fiction	
Historical	
Fantasy	

Key:

Represents 4 books

Write down the number of books that are:

(i) thriller

(ii) science fiction

(2 marks)

(b) The total number of historical and fantasy books stocked on the shelf is 28.

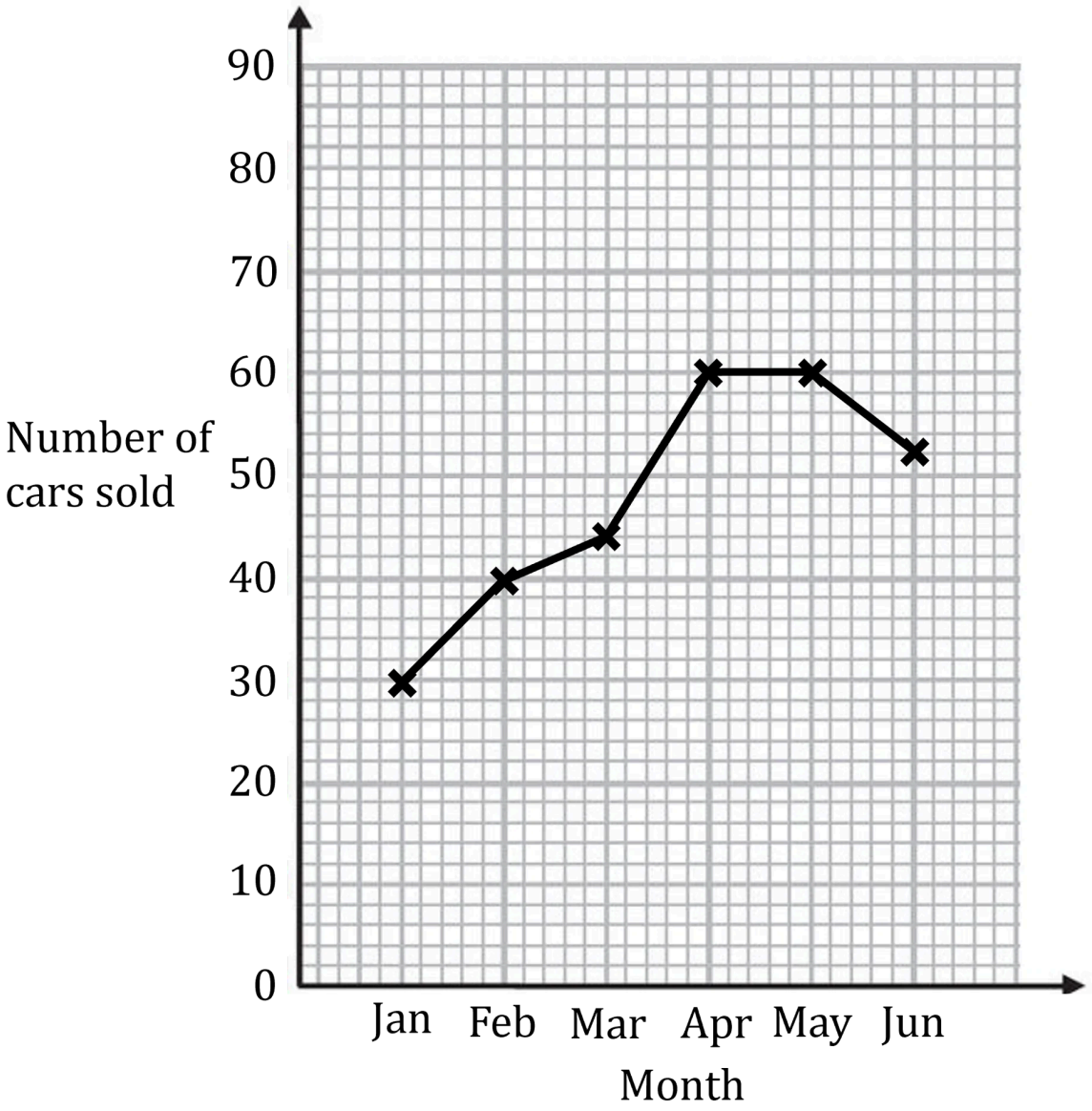
The number of fantasy books is three times the number of historical books.

Use this information to complete the pictogram.

(3 marks)

Medium Questions

1 The graph shows information about the number of cars sold by a car dealership in each of six months last year.



(i) How many more cars were sold in April than in January?

[1]

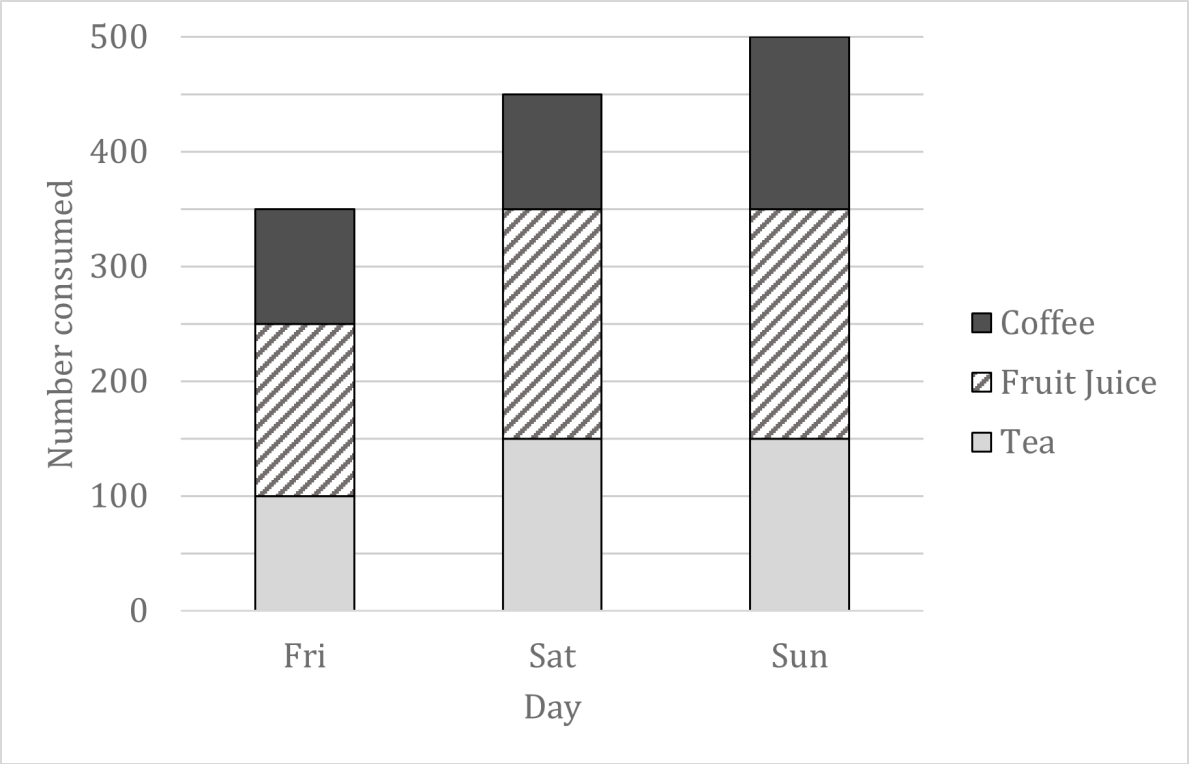
(ii) Find the number of cars sold in May as a percentage of the total number of cars sold between January and June.

[2]

(3 marks)

2 A hotel manager is investigating the number of different drinks consumed each day at breakfast.

The manager produces the composite bar chart below, showing the number of cups of coffee, tea, and fruit juice consumed on Friday, Saturday, and Sunday.



(i) Find the total number of cups of coffee consumed over the three days.

[2]

(ii) Calculate the percentage of drinks consumed on Sunday that were coffee.

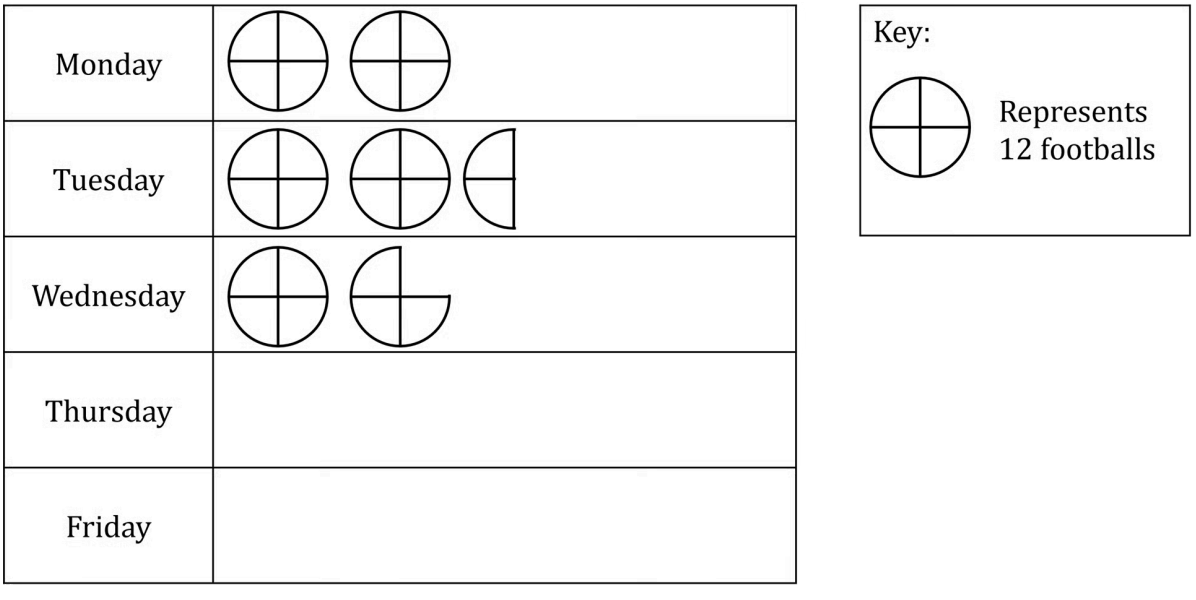
[2]

(iii) Find the **mean** number of drinks consumed in total each day.

[2]

(6 marks)

3 The pictogram shows information about the number of footballs sold in a large sports shop on Monday, Tuesday, and Wednesday.



(i) How many footballs were sold on Monday?

[1]

(ii) More footballs were sold on Tuesday than on Wednesday.

How many more?

[2]

(iii) On Thursday and Friday, a total of 24 footballs were sold.

25% of these 24 footballs were sold on Thursday.

Complete the pictogram for Thursday and Friday.

[3]

(6 marks)

4 (a) Fernando records the favourite sport of each of 20 people.

football	cricket	rugby	cricket	rugby	rugby	football	football	rugby	football
cricket	rugby	tennis	football	tennis	football	rugby	cricket	football	cricket

Complete the frequency table to show this information.
You may use the tally column to help you.

Favourite sport	Tally	Frequency
Cricket		
Football		
Rugby		
Tennis		

(2 marks)

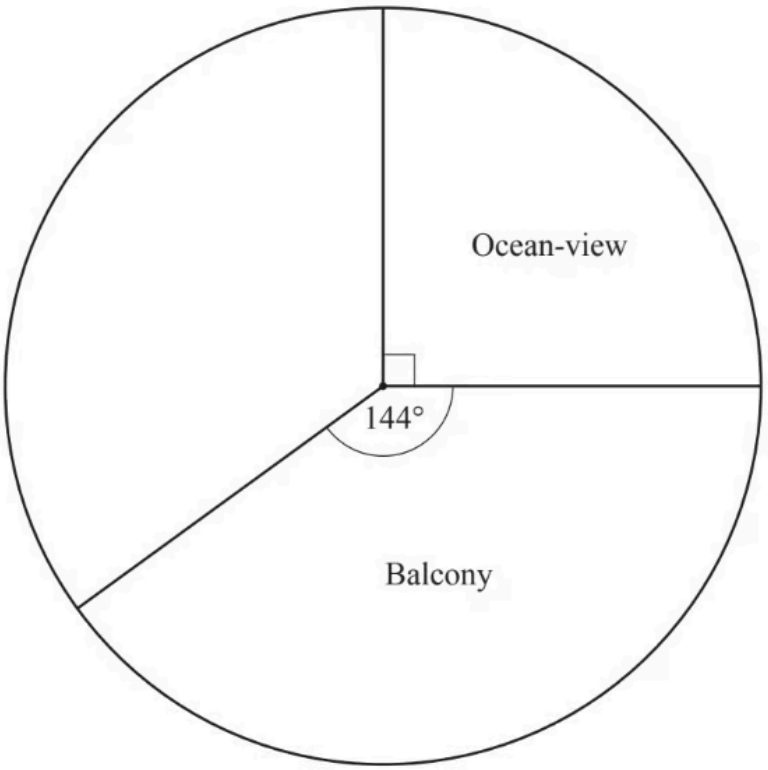
(b) Fernando wants to draw a pie chart to show this information.

Work out the sector angle for football.

(2 marks)

5 There are 480 cabins on a ship.
There are four types of cabin: Ocean-view, Balcony, Interior and Suite.

Hannah starts to draw a pie chart to show the numbers of each type of cabin.



i) Show that there are 120 Ocean-view cabins on the ship.

iia) The table shows information about each type of cabin.

Type of cabin	Number of cabins	Sector angle in a pie chart
Ocean-view	120	90°
Balcony	192	144°
Interior	68	
Suite	100	

Complete the table.

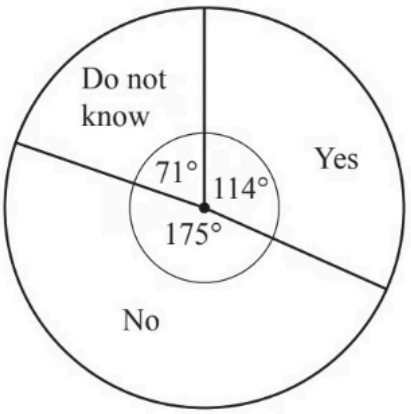
[2]

iib) Complete the pie chart.

[1]

(4 marks)

6 The 840 students in a school are asked if they want a change of school uniform.
The results are shown in the pie chart.



Show that the number of students who said Yes is 266.

(1 mark)

7 (a) The number of people swimming in a pool is recorded each day for 12 days.

24	28	13	38	15	26
45	21	48	36	18	38

Complete the stem-and-leaf diagram.

1	
2	
3	
4	

Key: 1|3 represents 13 swimmers

(2 marks)

(b) Find the median number of swimmers.

(1 mark)

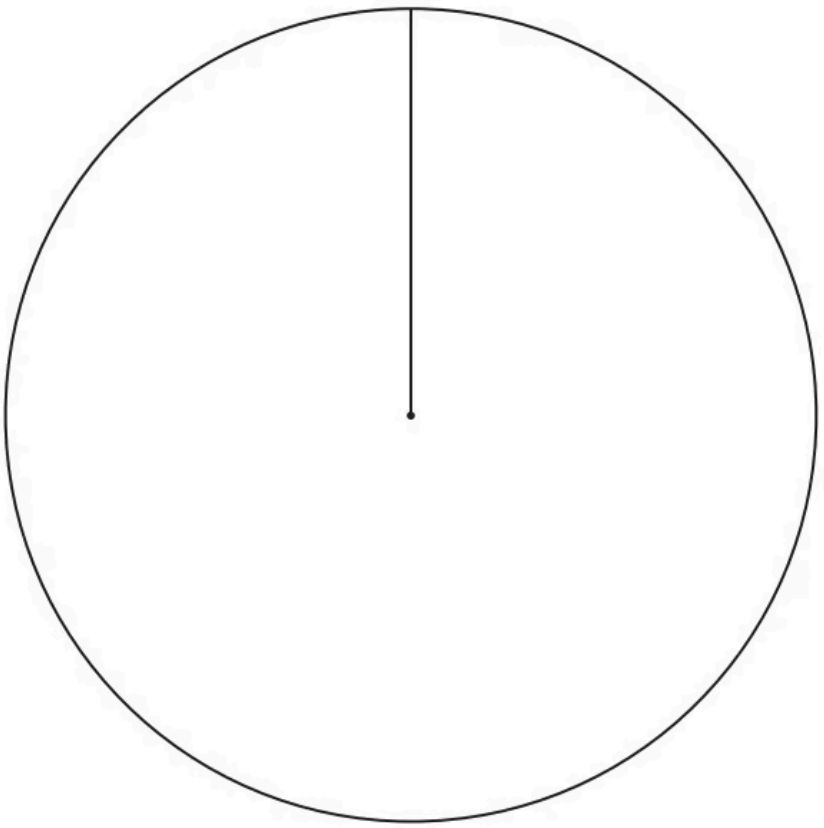
8 The treasure is a bag of coins.
The coins are made from three different metals.

Metal	Percentage	Pie chart sector angle
Copper	70%	
Zinc	20%	
Tin	10%	

i) Complete the table.

[2]

ii) Complete the pie chart.



[2]

(4 marks)

9 The table shows how children in Ivan's class travel to school.

Travel to school	Number of children
Walk	12
Car	7
Bicycle	9
Bus	4

Ivan wants to draw a pie chart to show this information.

Find the sector angle for children who walk to school.

(2 marks)

10 50 students each record the number of glasses of water they drink in one day.
The results for 10 of the students are shown below.

2	5	1	3	2	1	0	0	1	1

i) The results for the remaining 40 students are recorded in the table.

Complete the table to show the results for all 50 students.

Number of glasses of water	Tally	Frequency
0	𝍸 I	
1	II	
2	𝍸 III	
3	𝍸 𝍸 I	
4	𝍸 III	
5	𝍸	
	Total	50

[2]

ii) Write down the range.

[1]

iii) Find the median.

[2]

iv) Find the percentage of the 50 students who drink 4 glasses of water.

[1]

v) One of the 50 students is chosen at random.

Find the probability that this student drinks fewer than 2 glasses of water in one day.
Give your answer as a fraction in its lowest terms.

[2]

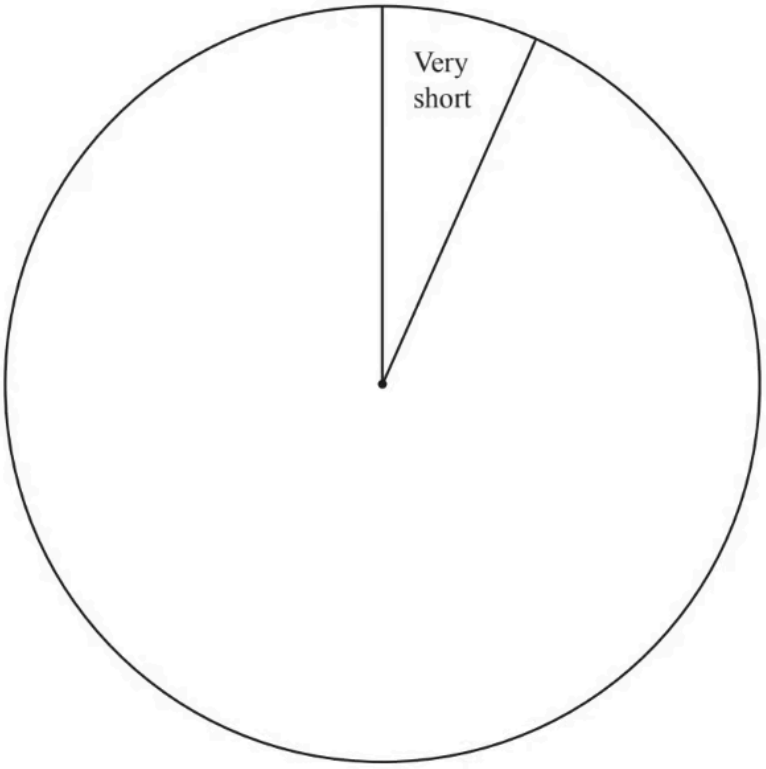
(8 marks)

11 The table shows information about the first 90 words in a book.

i) Complete the table.

Length of word	Frequency	Pie chart angle
Very short	6	24°
Short	34	
Medium	41	
Long	9	

ii) Complete the pie chart to show this information.

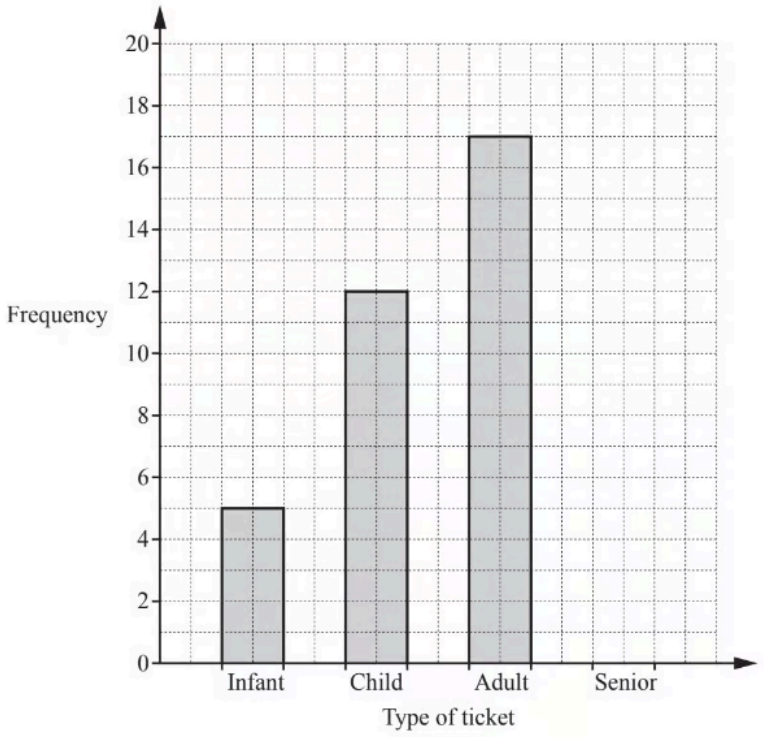


[2]

(4 marks)

12 On Monday, Main Street station sells 40 tickets. There are four types of ticket; infant, child, adult and senior.

The bar chart shows the number of infant, child and adult tickets sold.



i) Complete the bar chart.

[3]

ii) Find how many more adult tickets were sold than child tickets.

[1]

iii) Write down the modal type of ticket.

[1]

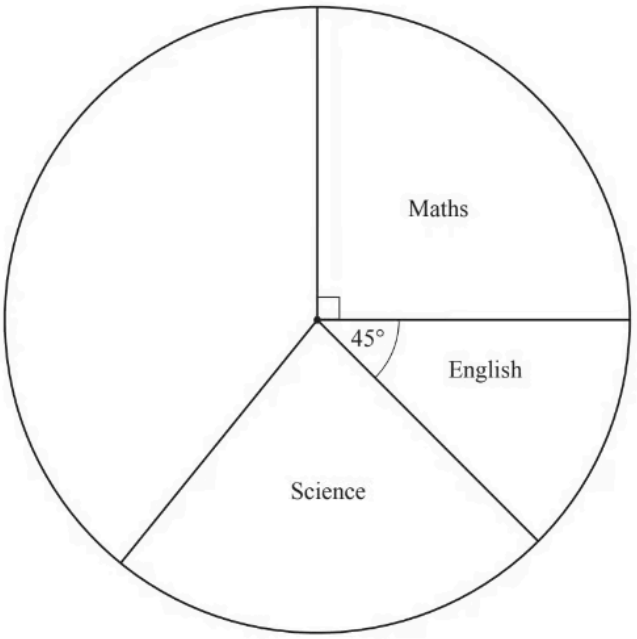
iv) One of these 40 people is chosen at random.

Find the probability that this person is a child.

[1]

(6 marks)

13 (a) Jason spends 480 minutes at school each day.
The pie chart shows the time he spends in three of his lessons.



Measure the sector angle for science.

(1 mark)

(b) Work out the time, in minutes, Jason spends in English.

.....min

(2 marks)

(c) Jason spends 100 minutes in geography and the rest of the day is free time.

Complete the pie chart.

(2 marks)

14 25 students go on a water sports trip.
The students each choose their favourite water sport.
These are the results.

Rafting	Fishing	Surfing	Snorkelling	Surfing
Snorkelling	Rafting	Kayaking	Rafting	Snorkelling
Fishing	Surfing	Surfing	Kayaking	Surfing
Fishing	Snorkelling	Surfing	Surfing	Rafting
Rafting	Fishing	Snorkelling	Snorkelling	Surfing

i) Complete the frequency table for the results.
You may use the tally column to help you.

Favourite water sport	Tally	Frequency
Rafting		
Surfing		
Fishing		
Kayaking		
Snorkelling		

[2]

ii) Write down the mode.

[1]

iii) Work out the percentage of students whose favourite water sport is snorkelling.

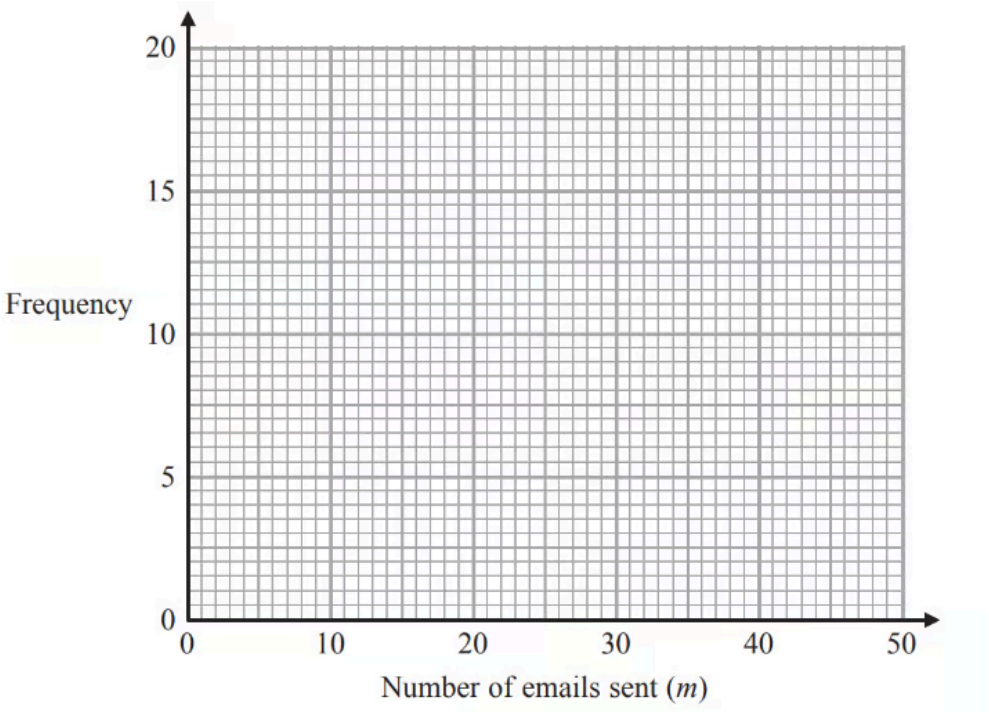
..... % [1]

(4 marks)

15 (a) The frequency table gives information about the numbers of emails sent by 51 teachers on Monday.

Number of emails sent(m)	**Frequency**
$0 < m \leqslant 10$	5
$10 < m \leqslant 20$	17
$20 < m \leqslant 30$	14
$30 < m \leqslant 40$	9
$40 < m \leqslant 50$	6

On the grid below, draw a frequency polygon for this information.



(2 marks)

(b) Nalini says that at least a quarter of these teachers sent more than 30 emails.

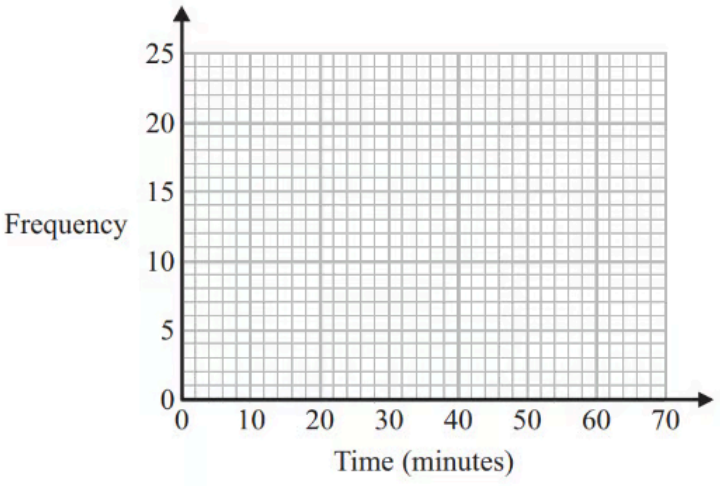
Is Nalini correct?
You must explain your answer.

(2 marks)

16 (a) The frequency table gives information about the times it took some office workers to get to the office one day.

Time(t minutes)	Frequency
$0 < t \leqslant 10$	4
$10 < t \leqslant 20$	8
$20 < t \leqslant 30$	14
$30 < t \leqslant 40$	16
$40 < t \leqslant 50$	6
$50 < t \leqslant 60$	2

Draw a frequency polygon for this information.



(2 marks)

(b) Write down the modal class interval.

(1 mark)

(c) One of the office workers is chosen at random.

Work out the probability that this office worker took more than 40 minutes to get to the office.

(2 marks)

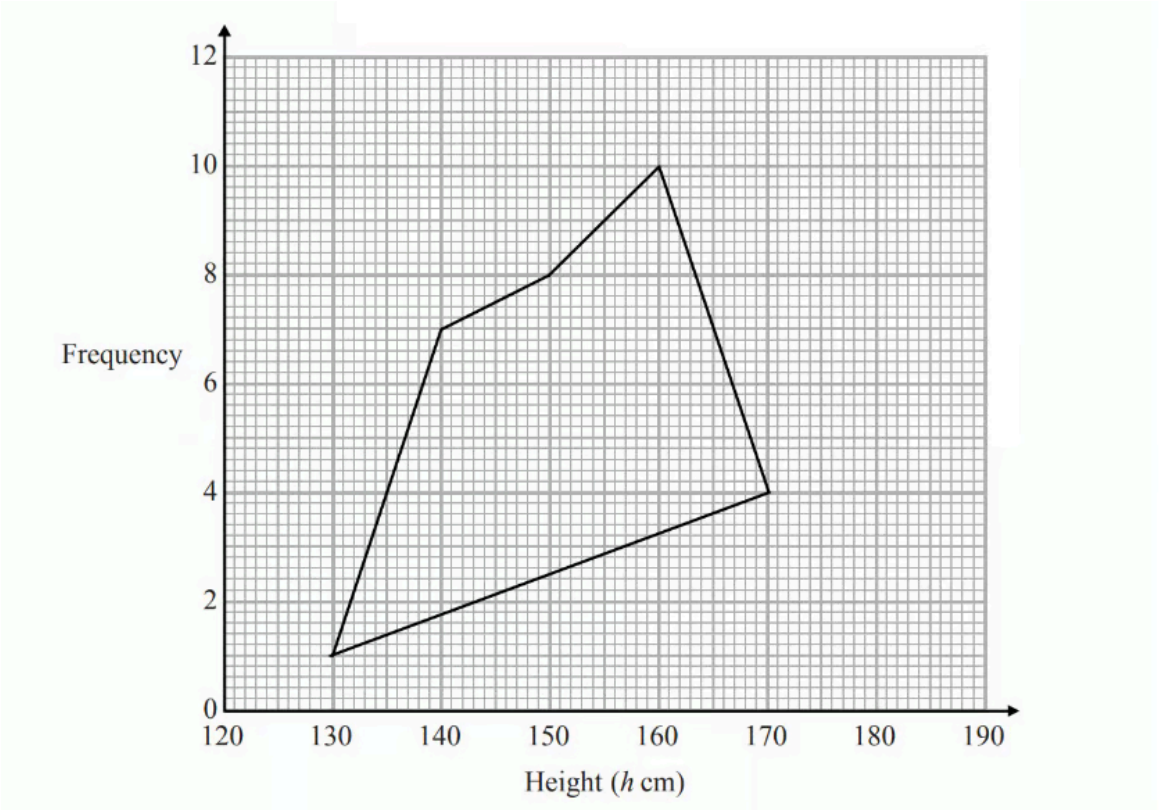
17 (a) The grouped frequency table gives information about the heights of 30 students.

Height(h cm)	Frequency
$130 < h \leqslant 140$	1
$140 < h \leqslant 150$	7
$150 < h \leqslant 160$	8
$160 < h \leqslant 170$	10
$170 < h \leqslant 180$	4

Write down the modal class interval.

(1 mark)

(b) This incorrect frequency polygon has been drawn for the information in the table.

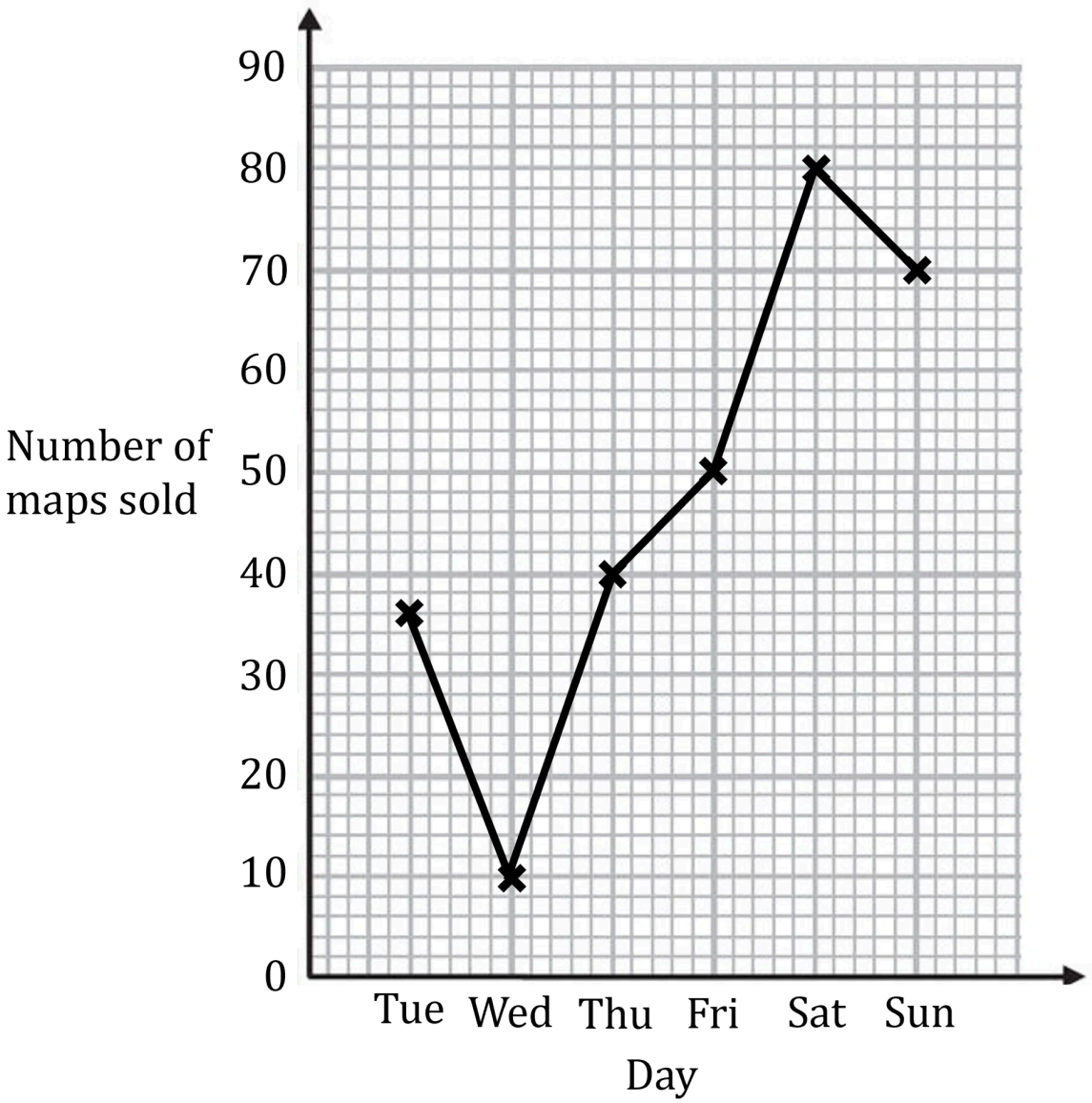


Write down two things wrong with this incorrect frequency polygon.

(2 marks)

Hard Questions

1 The graph shows information about the number of maps sold between Tuesday and Sunday at a popular hiking destination.



(i) Find the **range** of the number of maps sold between Tuesday and Sunday.

[1]

(ii) Find the **median** number of maps sold between Tuesday and Sunday.

[1]

(iii) A member of staff who sells the maps suggests that one of the data points is an outlier.

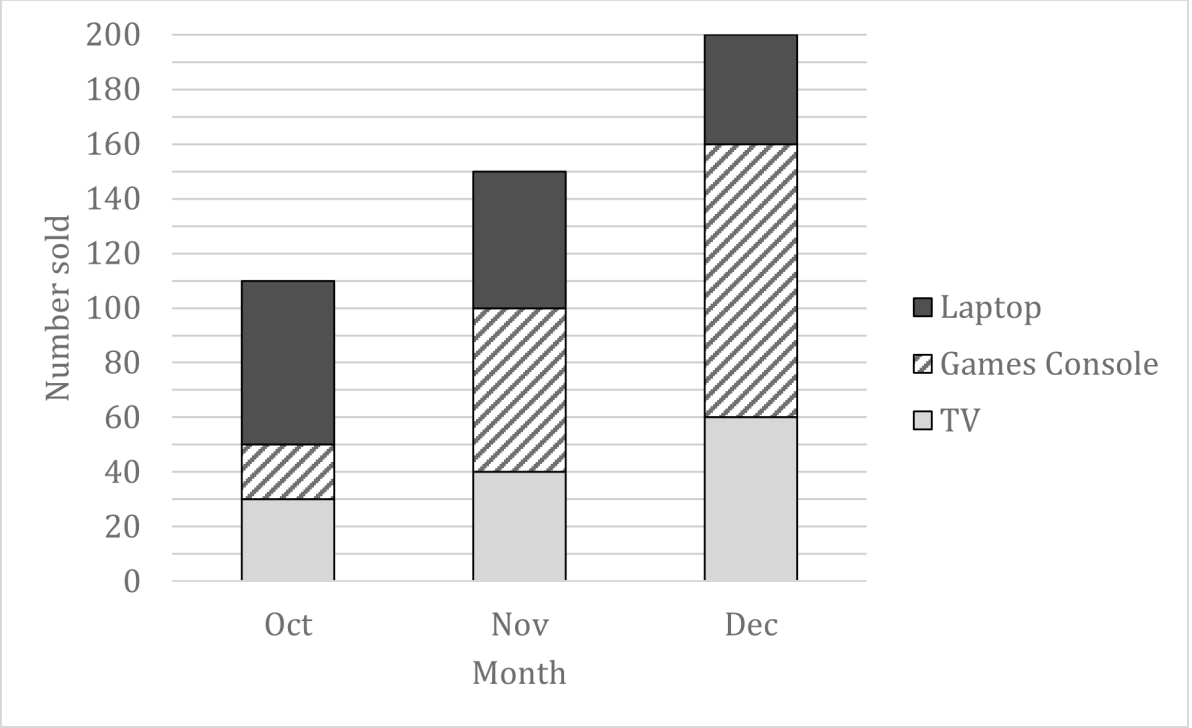
Identify which point they think is an outlier, **and suggest a possible reason** which may have caused this outlier.

[2]

(4 marks)

2 The composite bar chart below shows the number of TVs, laptops, and games consoles sold by a

technology shop in October, November, and December.



(i) Calculate the number of games consoles sold in December as a percentage of the total number of games consoles sold during the three month period.

[3]

(ii) Find the **mean** number of laptops sold each **day** during the three month period.

Assume that the shop is open every day.

[3]

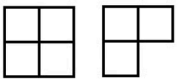
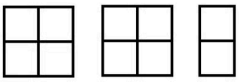
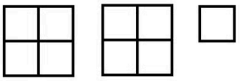
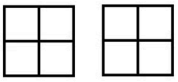
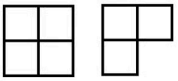
(iii) If the assumption in part (ii) is not correct, explain how this would affect your answer to part (ii).

[1]

(7 marks)

3 The pictogram shows information about the number of bottles produced by a bottle factory over five days.

The key has not been completed.

Monday	
Tuesday	
Wednesday	
Thursday	
Friday	

Key:

The number of bottles produced on Monday was 280.

(i) Complete the key for the pictogram.

[1]

(ii) Find the median number of bottles produced per day.

[2]

(iii) The manager of the factory states that:

"Three fifths of the bottles produced this week were produced by the end of Wednesday"

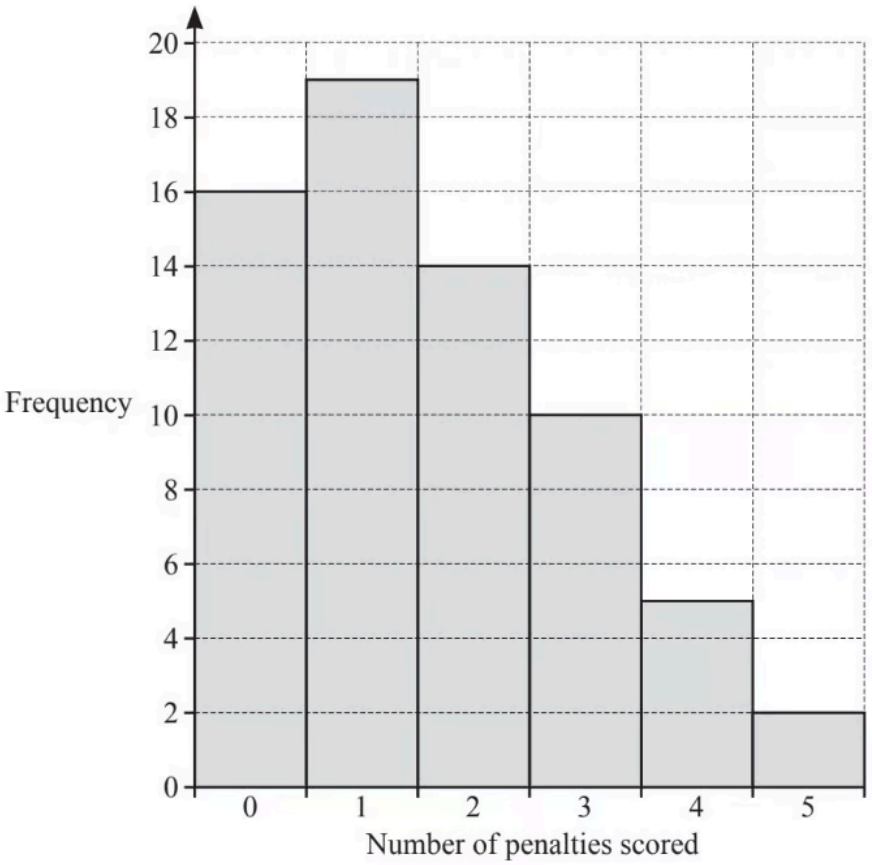
Showing your working clearly, decide if this statement is true or not.

[3]

(6 marks)

4 66 football players each take five penalties.
The number of penalties that each player scores is recorded.

The results are shown in the bar chart.



i) Write down the mode.

[1]

ii) Write down the range.

[1]

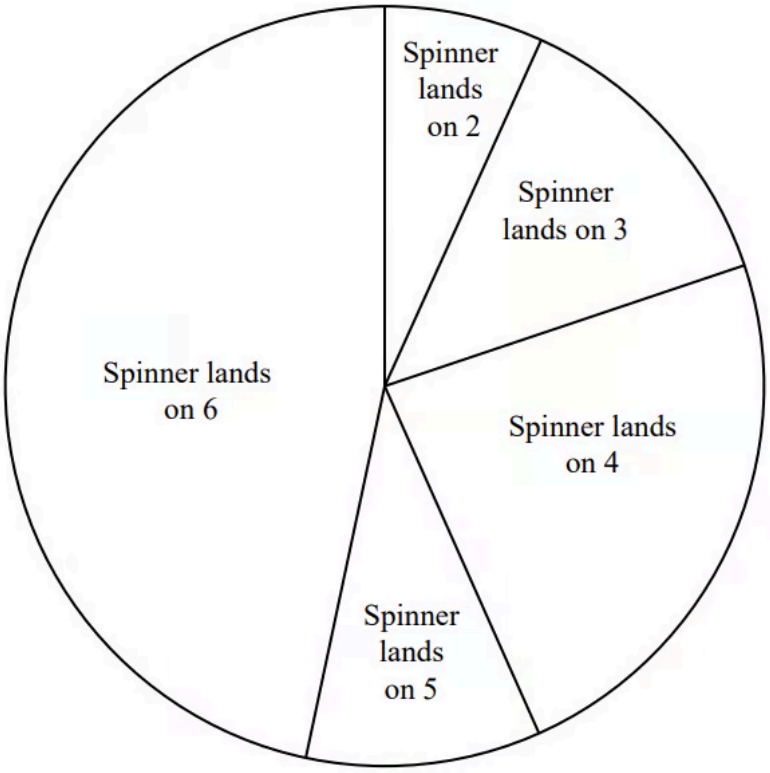
iii) Calculate the mean.

[3]

(5 marks)

5 Joel spins a fair five-sided spinner numbered 2, 3, 4, 5, and 6.

Joel asks 30 students to guess the number that the spinner will land on next.
This pie chart shows the results.



i) The sector angle for the number 6 is 168°.

How many students guessed the number 6?

[2]

ii) Find the percentage of the students who guessed a number **less than** 5.

[3]

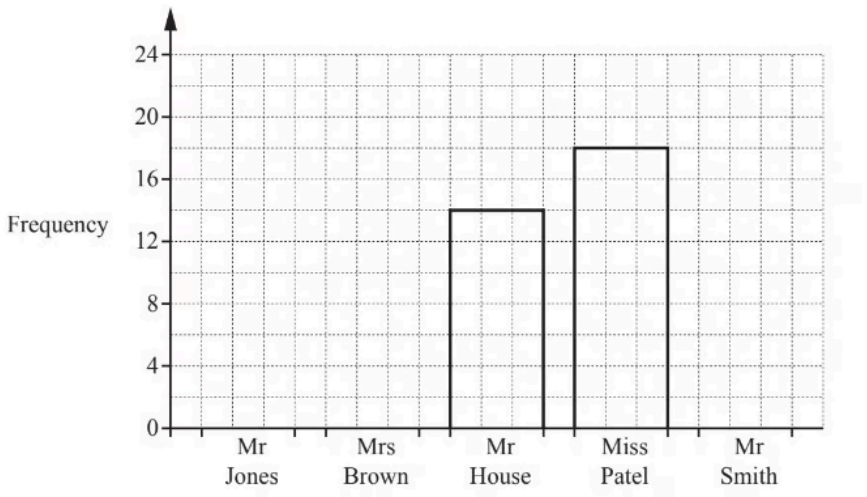
iii) Joel spins the spinner.
10% of the students guessed correctly.

Which number did the spinner land on?

[2]

(7 marks)

6 (a) 80 students each record the name of their mathematics teacher. The number of these students taught by Mr House and by Miss Patel are shown in the bar chart.



How many more students are taught by Miss Patel than by Mr House?

(1 mark)

(b) 15 students are taught by Mr Smith.
Twice as many students are taught by Mrs Brown than by Mr Jones.

Use this information to complete the bar chart.

(4 marks)

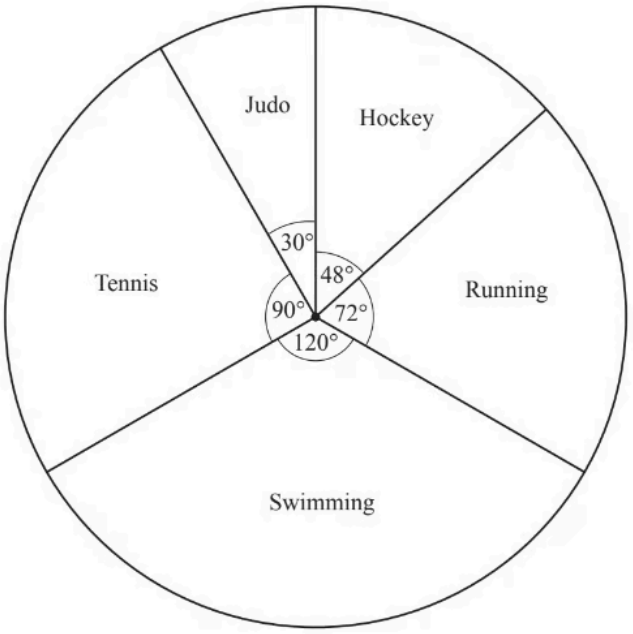
(c) Write down the mode.

(1 mark)

(d) This information is also to be shown in a pie chart.
Work out the sector angle for Miss Patel.

(2 marks)

7 (a) 60 boys are asked to name their favourite sport.
The results are shown in the pie chart.



i) Write down the most popular sport.

[1]

ii) Write down the fraction of boys who choose Running.

[1]

iii) Work out how many boys choose Judo.

[2]

iv) One of the boys is chosen at random.
Work out the probability that his favourite sport is **not** Judo.

[1]

v) Complete this statement.

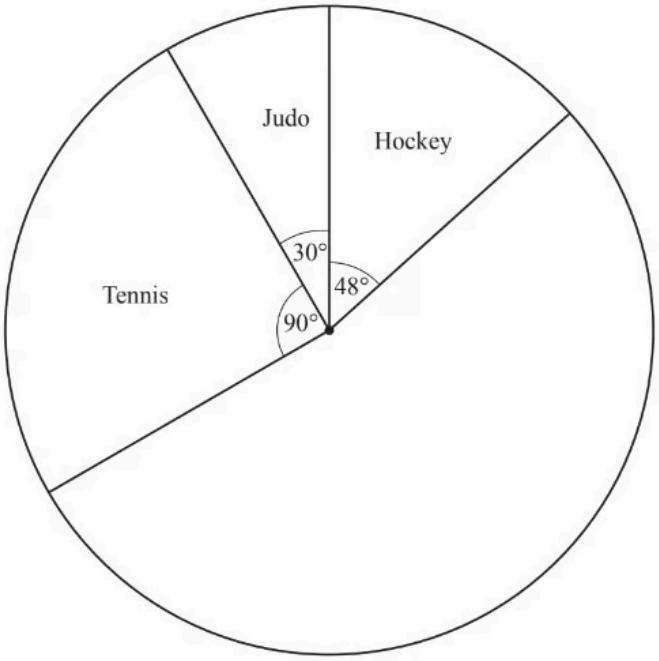
Three times as many boys choose .....
than choose .....

[1]

(6 marks)

(b) Two of the boys in **part (a)** then change their choice from Running to Swimming.

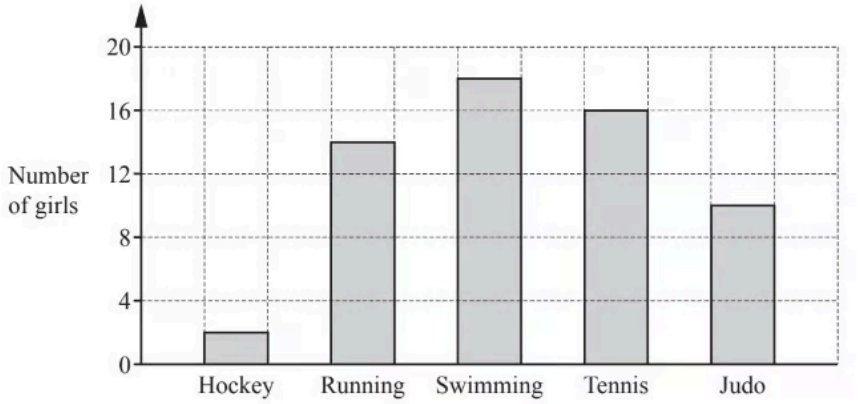
Complete the pie chart after this change.
The Tennis, Judo and Hockey sectors have been drawn for you.



(2 marks)

(c) 60 girls are asked to name their favourite sport.

Their results are shown in the bar chart below.



Using your pie chart in **part (b)** and the bar chart above, write down one similarity and one difference between the girls' results and the boys' results.

Similarity .....
Difference .....

(2 marks)

8 Some people go fishing and catch four types of fish.

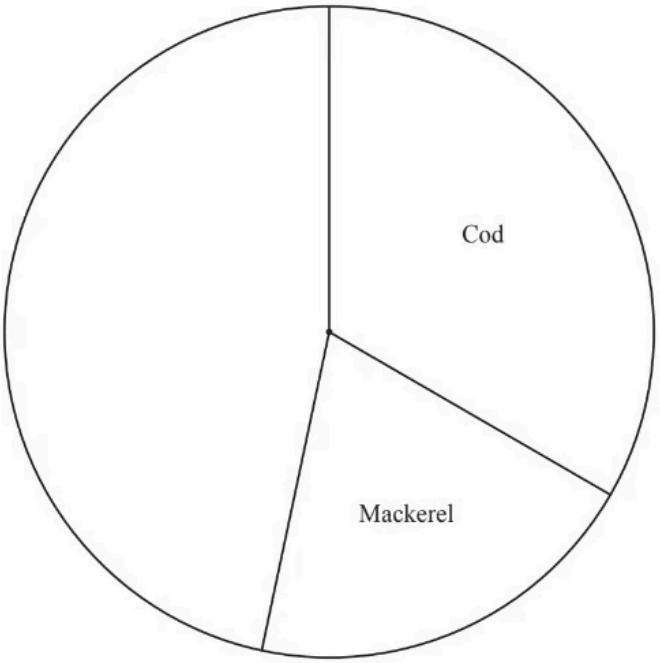
Some information is shown in the table.

Type of fish	Number of fish	Pie chart sector angle
Cod	15	120°
Mackerel	9	72°
Herring		32°
Tuna		

i) Complete the table.

[3]

ii) Complete the pie chart.



[1]

(4 marks)

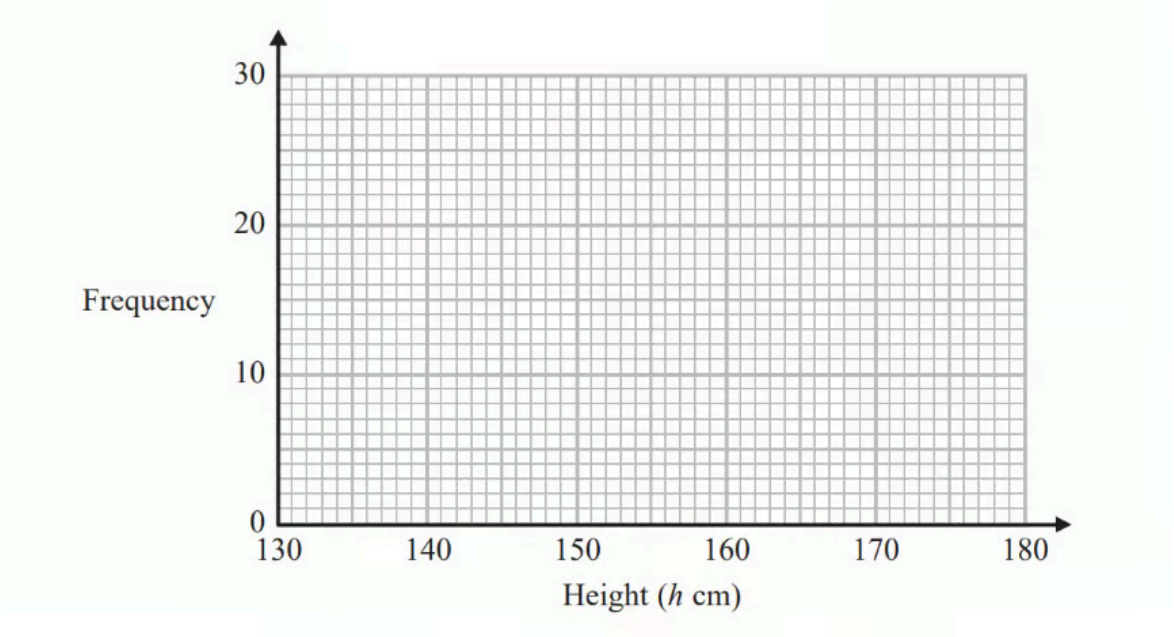
9 (a) The table shows information about the heights of 80 children.

Height(h cm)	Frequency
$130 < h \leqslant 140$	4
$140 < h \leqslant 150$	11
$150 < h \leqslant 160$	24
$160 < h \leqslant 170$	22
$170 < h \leqslant 180$	19

Find the class interval that contains the median.

(1 mark)

(b) Draw a frequency polygon for the information in the table.



(2 marks)