SCORE A+

Data & Measurement

With Classified answer book

8

Eng. Magda El-Labban

01007044107

6- Frequency Polygon

1. Amanda collected 20 leaves and wrote down their lengths, in cm. Here are her results.

5 6 5 2 4 5 8 7 5 4

7 6 4 3 5 7 6 4 8 5

(a) Complete the frequency table to show Amanda's results.

Length in cm	Tally	Frequency
2		
3		
4		
5		
6		
7		
8		

(b) Write down the modal length ....cm

(c) Work out the range. ....cm

2. Rosie had 10 boxes of drawing pins.

She counted the number of drawing pins in each box.

The table gives information about her results.

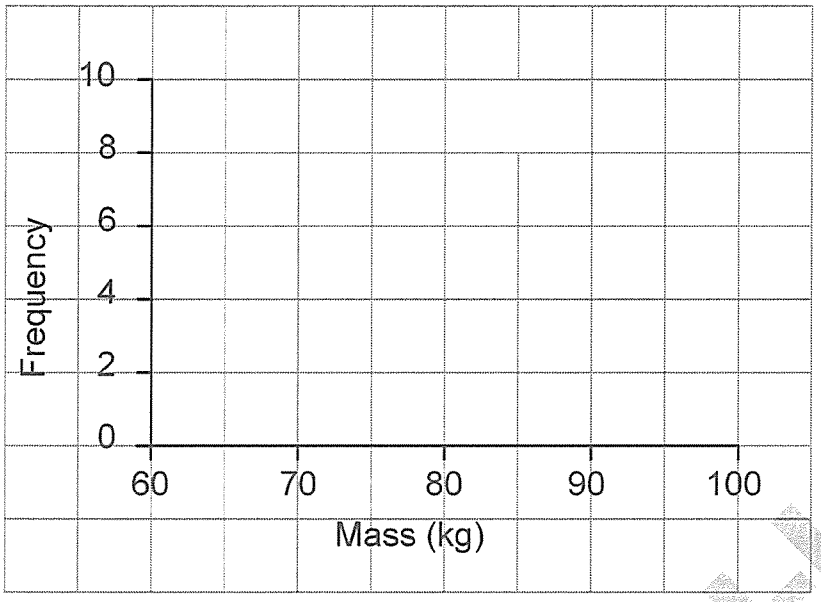
Number of	Frequency	
29	2	
30	5	
31	2	
32	1	

Work out the mean number of drawing pins in a box.

....

3 The frequency table shows the masses of 20 teachers.

Draw a frequency polygon to show the data.



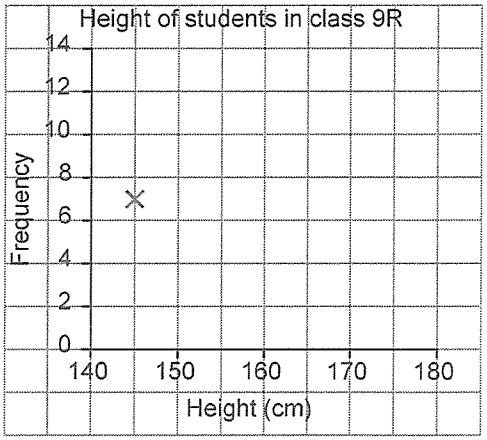
Mass, m (kg)	Frequency
$60 \leqslant m < 70$	4
$70 \leqslant m < 80$	5
$80 \leqslant m < 90$	9
$90 \leqslant m < 100$	2

4 The table shows the heights of the students in class 9R.

a Complete the table.

b Complete the frequency polygon.

Height, h (cm)	Frequency	Midpoint
$140 \leqslant h < 150$	7	
$150 \leqslant h < 160$	13	
$160 \leqslant h < 170$	6	
$170 \leqslant h < 180$	2	



5 The table shows the masses of the students in class 9T.

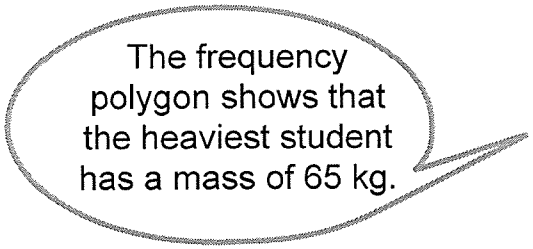
a Complete the table.

b Draw a frequency polygon for this data.

c How many students are there in class 9T?

d What fraction of the students have a mass less than 60 kg?

e Sally says:



Is Sally correct? Explain your answer.

Mass, m (kg)	Frequency	Midpoint
$40 \leqslant m < 50$	4	
$50 \leqslant m < 60$	12	
$60 \leqslant m < 70$	8	

6 Ahmad carried out a survey on the length of time patients waited to see a doctor at two different doctors' surgeries.
The tables showthe results of his survey.

Oaklands Surgery		
Time, t (minutes)	Frequency	Midpoint
$0 \leqslant t < 10$	25	
$10 \leqslant t < 20$	10	
$20 \leqslant t < 30$	12	
$30 \leqslant t < 40$	3	

Birchfields Surgery		
Time, t (minutes)	Frequency	Midpoint
$0 \leqslant t < 10$	8	
$10 \leqslant t < 20$	14	
$20 \leqslant t < 30$	17	
$30 \leqslant t < 40$	11	

a How many people were surveyed at each surgery?

b Copy and complete the tables.

c On the same grid, draw a frequency polygon for each set of data.
Make sure you show clearly which frequency polygon represents which surgery.

d Compare the two frequency polygons. What can you say about the waiting times at the two surgeries?

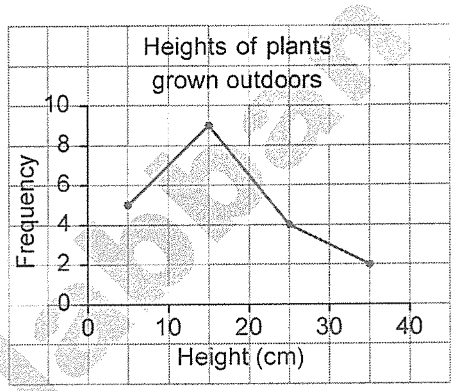
7 Jeff grew 40 plants. He grew 20 plants in a greenhouse and 20 plants outdoors.

The heights of the 20 plants grown in the greenhouse are shown in the table.

Height, h (cm)	Frequency
$0 \leqslant h < 10$	2
$10 \leqslant h < 20$	4
$20 \leqslant h < 30$	8
$30 \leqslant h < 40$	6

a Draw a frequency polygon for the data in the table.

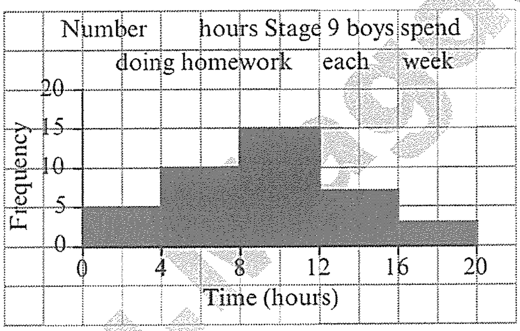
b This frequency polygon shows the heights of the 20 plants grown outdoors.

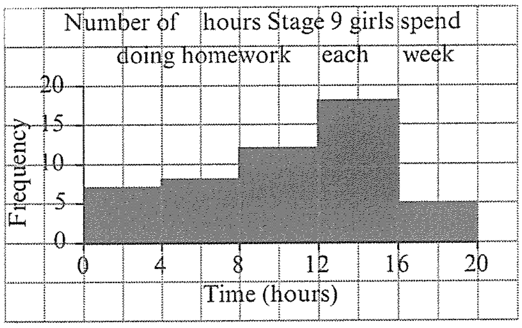


Compare the two frequency polygons (the diagram shown here and the diagram you drew in part **a**).
What can you say about the heights of the two sets of plants?

8 Liza carried out a survey on the number of hours that some learners spent doing homework each week.

The frequency diagrams show the results of her survey.





a On the same grid, draw a frequency polygon for each set of data.

b Compare the two frequency polygons.
What can you say about the amount of time that boys and girls spend doing homework?

c How many boys and how many girls were surveyed?

d Do you think it is fair to make a comparison using these sets of data?
Explain your answer

9 The table shows the ages of the members of a dance club.

Age, a (years)	Frequency	Midpoint
$20 \leqslant a < 30$	6	
$30 \leqslant a < 40$	12	
$40 \leqslant a < 50$	14	
$50 \leqslant a < 60$	8	

a Complete the midpoint column in the table.

b How many members are there in the dance club?

_____

c What fraction of the members are less than 50 years old?

_____

d Is this statement true or false? Explain your answer.

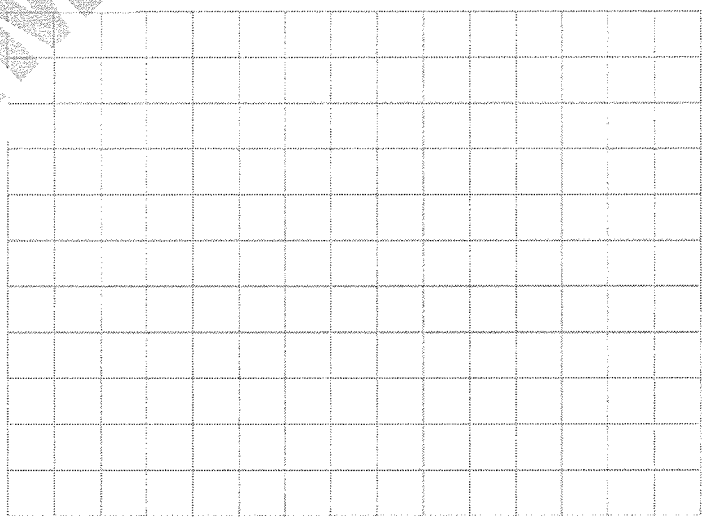
'The youngest person in the dance club is 20 years old'.

_____

_____

_____

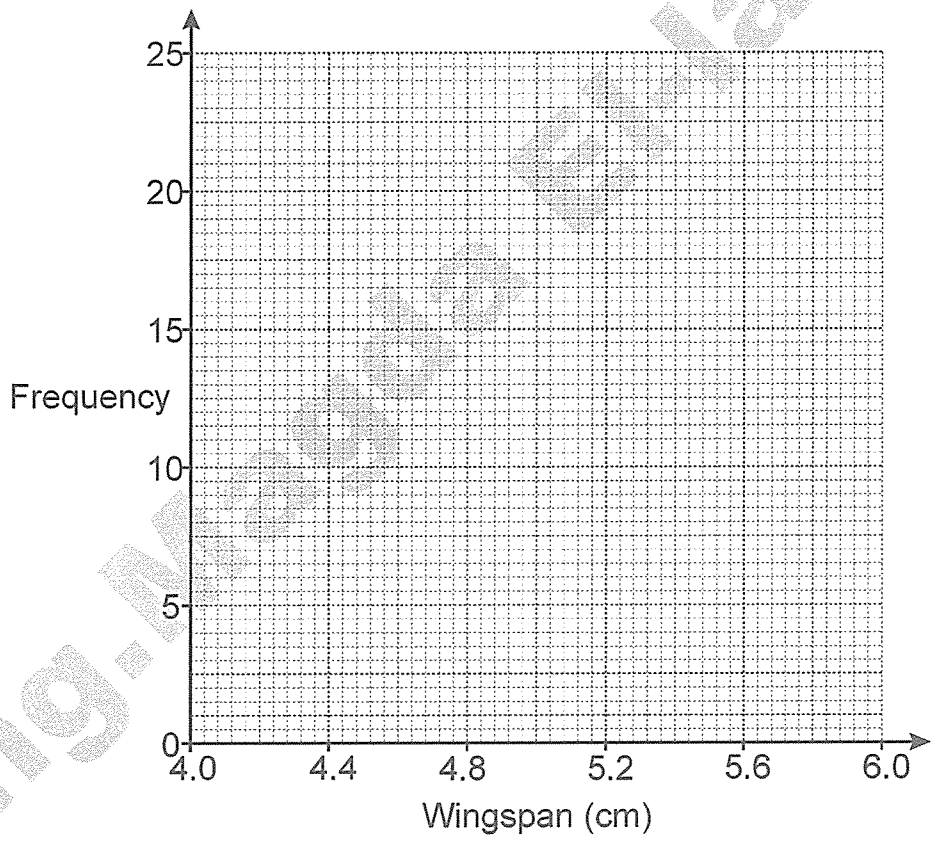
e Draw a frequency polygon for this data.



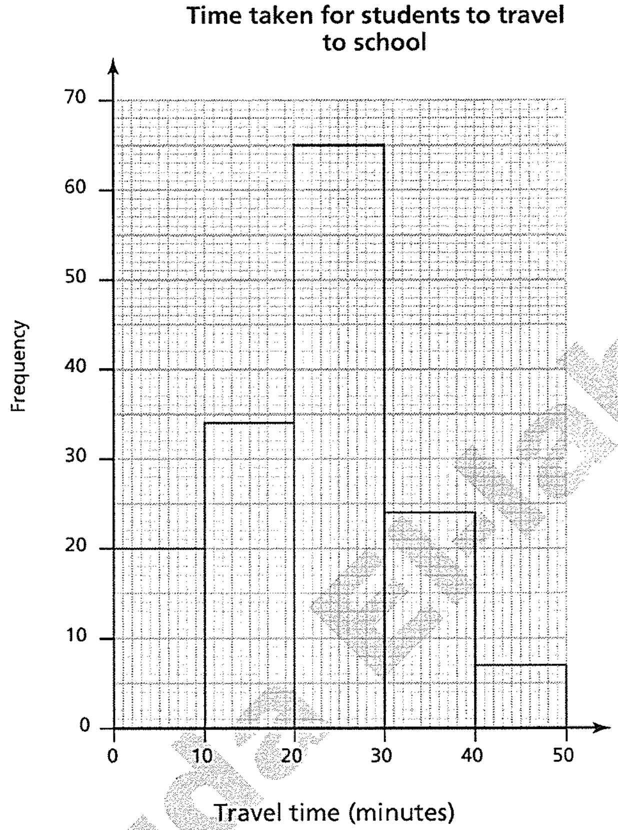
10 The table shows information about the wingspans of 50 butterflies.

Wingspan (x cm)	Frequency
$4.0 \leq x < 4.4$	5
$4.4 \leq x < 4.8$	12
$4.8 \leq x < 5.2$	23
$5.2 \leq x < 5.6$	8
$5.6 \leq x < 6.0$	2

Draw a frequency polygon to show this information.



11 The frequency diagram below shows time taken for students to travel to school on a particular day.



a) How many students took part in the survey?

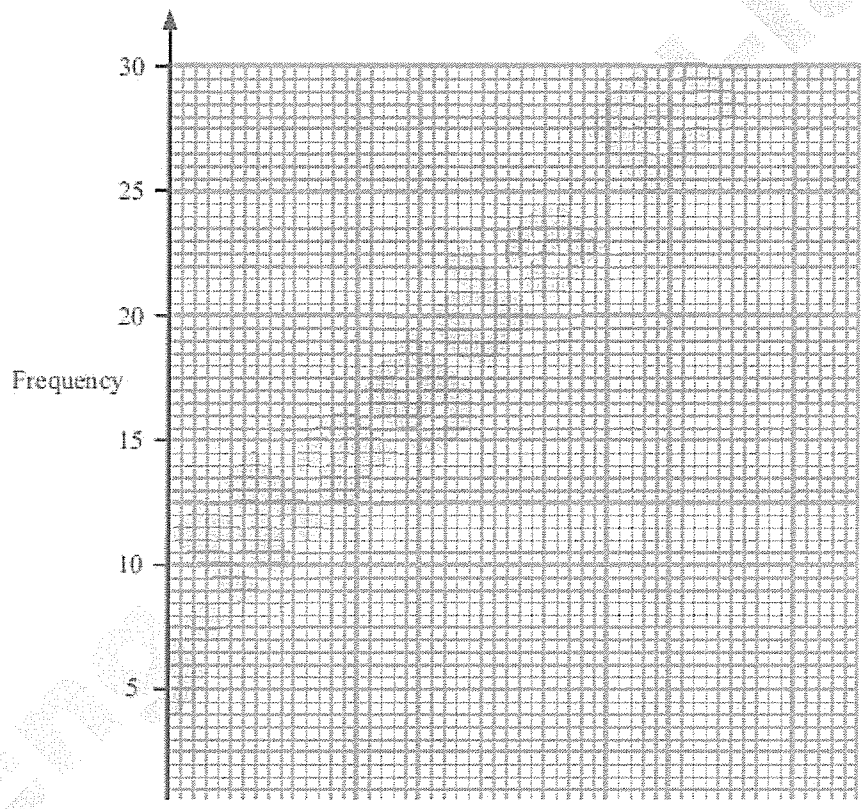
b) How many students took more that 30 minutes to travel to school?

c) What percentage of students can get to school in less than 20 minutes?

12. The table shows some information about the weights, in kg, of 100 boxes.

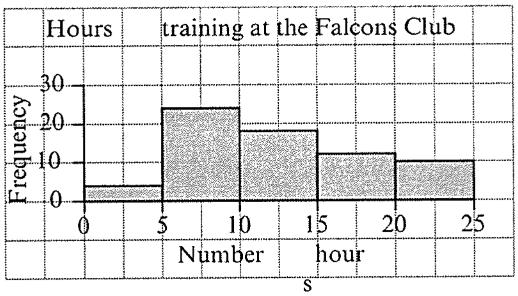
Weight of box (w kg)	Frequency
$0 < w \leq 4$	10
$4 < w \leq 8$	17
$8 < w \leq 12$	28
$12 < w \leq 16$	25
$16 < w \leq 20$	20

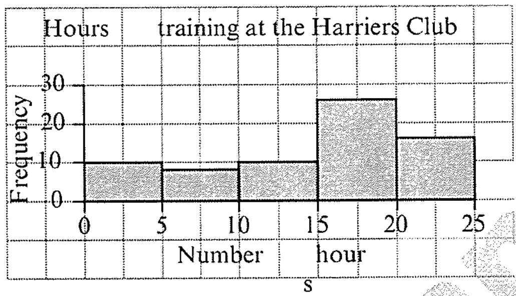
Draw a frequency polygon to show this information.



13 Harsha completed a survey on the number of hours that the athletes from two different clubs spend training each week.

The frequency diagrams show the results of her survey.





a Compare the two frequency polygons. What can you say about the number of hours that the athletes from the two clubs spend training each week?

b How many athletes from each club were surveyed?

c Do you think it is fair to make a comparison using these sets of data? Explain your answer.

14 Here is some information about the time spent on social media by 50 people.

Time, t minutes	Number of people
$0 < t \leqslant 15$	2
$15 < t \leqslant 30$	9
$30 < t \leqslant 45$	31
$45 < t \leqslant 60$	8

Circle the number of people who spent more than 30 minutes.

9   11   31   39

15 Katy records the number of cars using a drive-through each hour for 24 hours. Here are the results.

36	20	37	53	42	41	24	18	39	35	40	47
38	17	23	18	13	35	10	7	6	18	31	57

Katy makes this tally and frequency chart to put the data into groups.

Number of cars	Tally	Frequency
0 to 10		
10 to 20		
20 to 30		
30 to 40		
40 to 50		

Make **two** criticisms of Katy's tally and frequency chart.
You do **not** need to complete the chart.

Criticism 1 _____

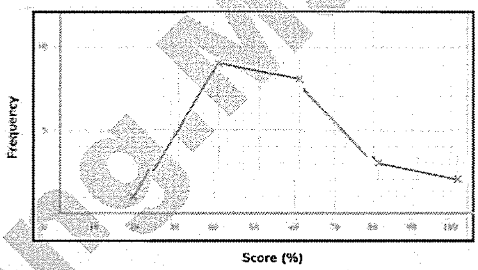
Criticism 2 _____

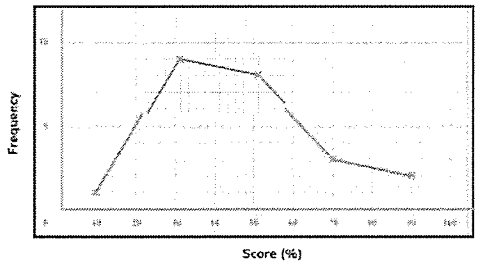
16. Complete the two way table.

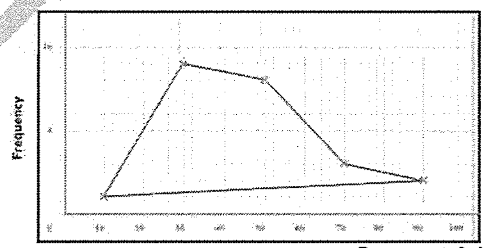
	French	German	Spanish	Total
Class X	10			27
Class Y			8	
Total		21	17	53

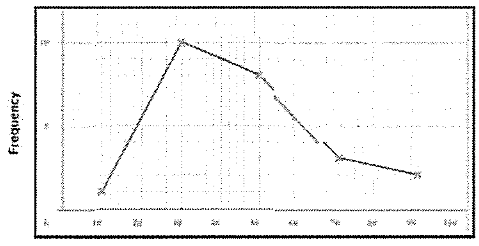
17. Which of these is the correct frequency polygon for the frequency table below?

Score (%)	Frequency
$0 < score \leq 20$	1
$20 < score \leq 40$	9
$40 < score \leq 60$	8
$60 < score \leq 80$	3
$80 < score \leq 100$	2

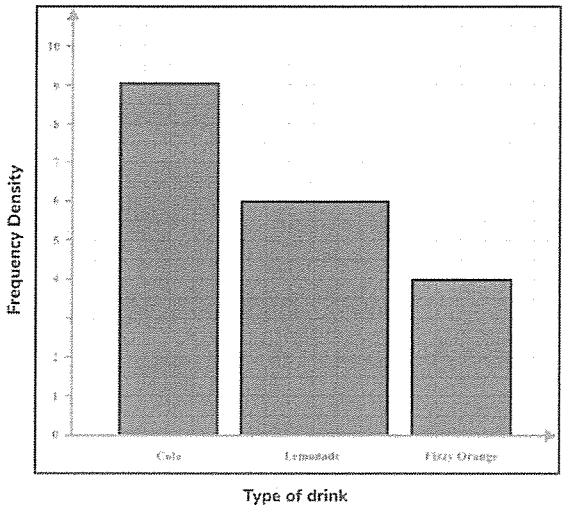




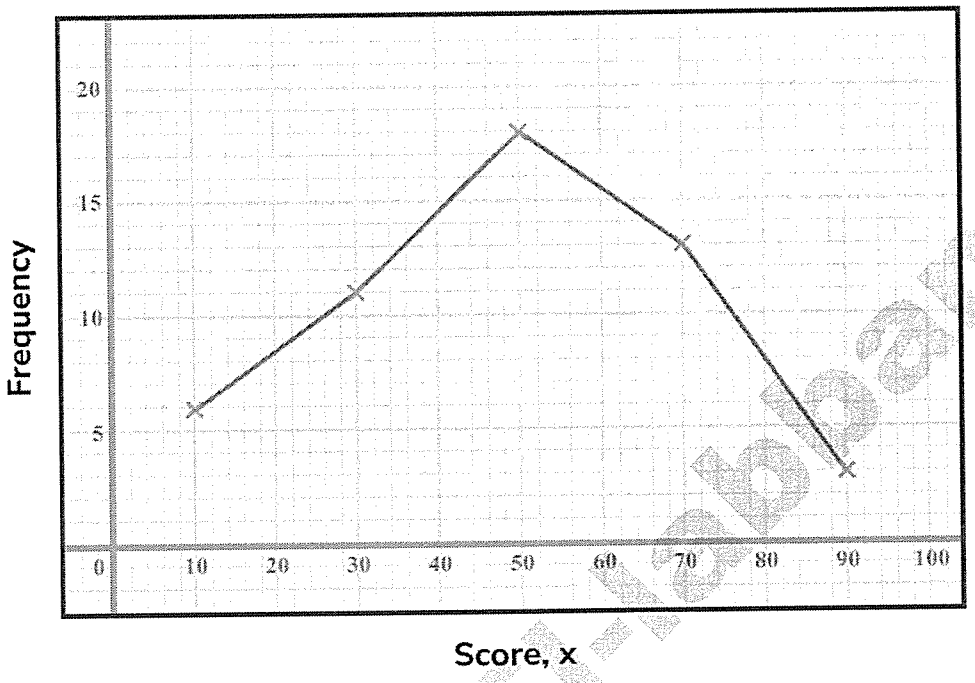




18. Sam has drawn this bar chart. Give two criticisms of the bar chart.



19 Here is a frequency polygon showing scores in a test.



(a) Complete the grouped frequency table:

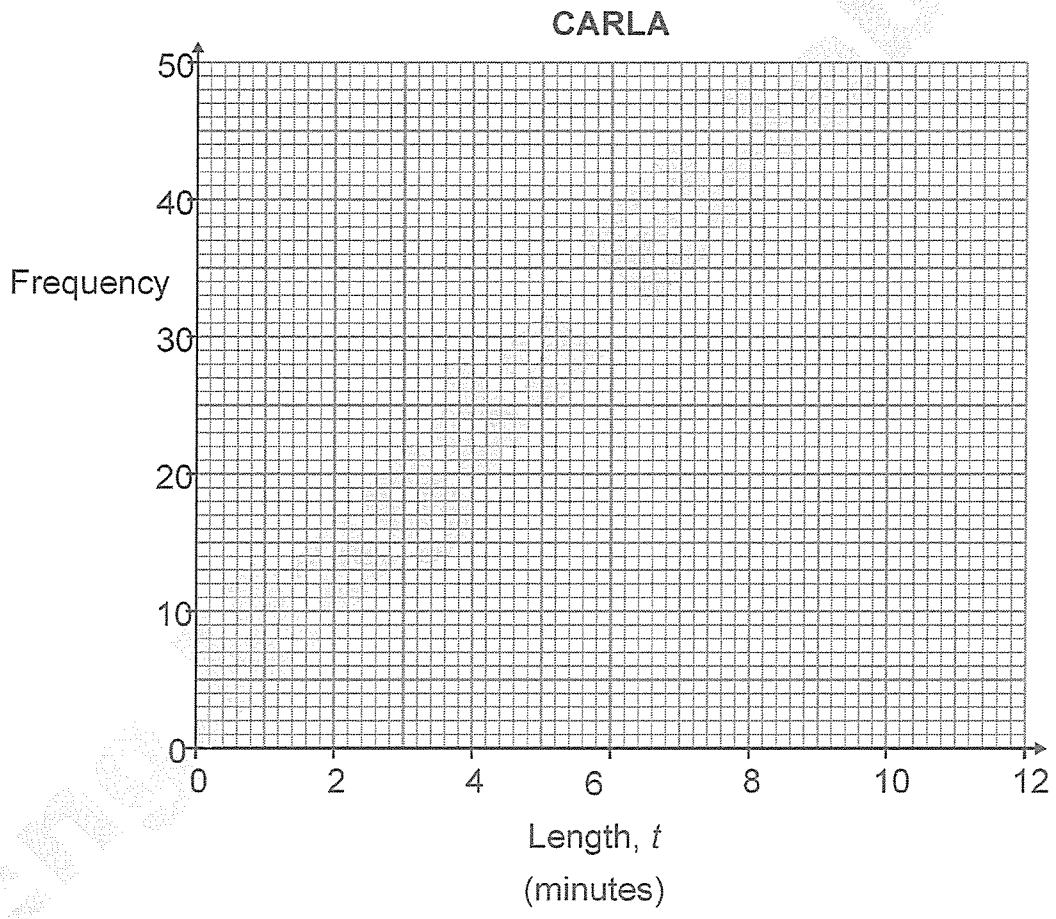
Scores, x	Frequency
$0 \leq x < 20$	
$20 \leq x < 40$	
$40 \leq x < 60$	
$60 \leq x < 80$	
$80 \leq x < 100$	

(b) The pass mark was 40.
How many people passed the test?

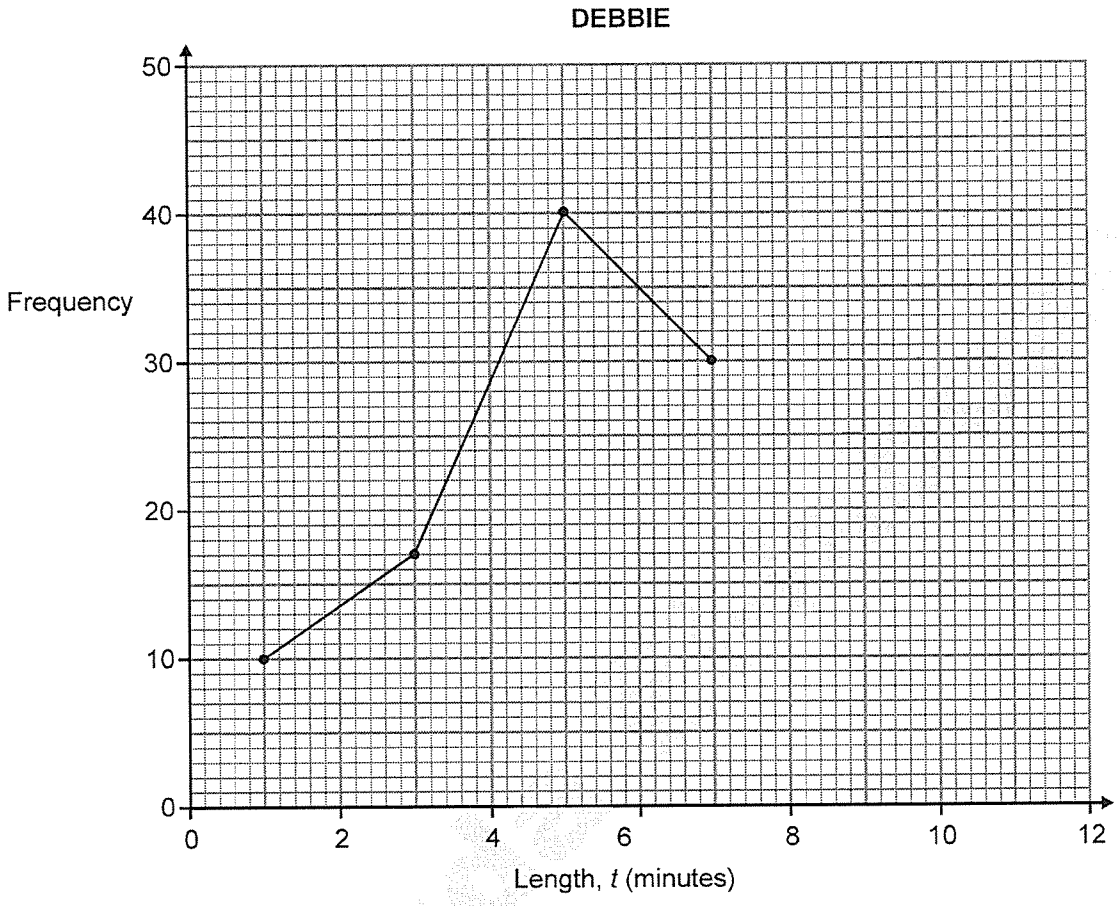
20. Carla and Debbie are telephone sales assistants.
The length and frequency of telephone callsmade by Carla during one day are shown in the table.

Length, t (minutes)	Frequency
$0 < t \leq 2$	25
$2 < t \leq 4$	40
$4 < t \leq 6$	18
$6 < t \leq 8$	10
$8 < t \leq 10$	4

Draw a frequency polygon for this data.



(b) The frequency polygon below shows the length and frequency of telephone calls made by Debbie during the same day.



Write down **two** comparisons between the lengths of telephone calls made by Carla and Debbie that day.

Comparison 1 .....

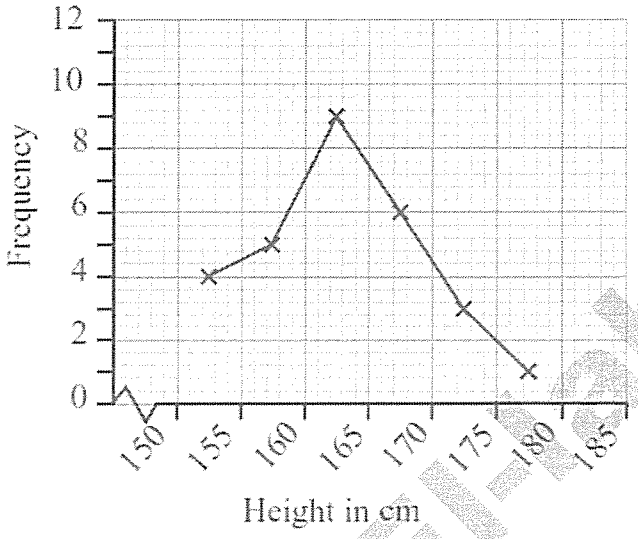
.....

Comparison .....

.....

.....

21 The frequency polygon below shows information on the heights of all the members of a gymnastics club.



a) What is the modal class for the gymnasts' heights?

b) How many gymnasts are there in the club?

c) Copy the frequency polygon for the gymnasts and draw a frequency polygon for the heights of the netball players on the same axes.

d) Use the frequency polygons to compare the heights of the netball players and the gymnasts.