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Mathematics

0580

Paper_2

Statistics

Exercise_(M-19; M18; S-19; S-18; W-18)

(with answers)

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Statistics

1. The table shows the number of people in different age groups at a cinema.

Age (y years)	$15 < y \leq 25$	$25 < y \leq 30$	$30 < y \leq 50$	$50 < y \leq 80$
Number of people	35	32	44	12

Dexter draws a histogram to show this information.
The height of the bar he draws for the group $15 < y \leq 25$ is 7 cm.
Calculate the height of each of the remaining bars. ---[3]

S-19/22/Q18

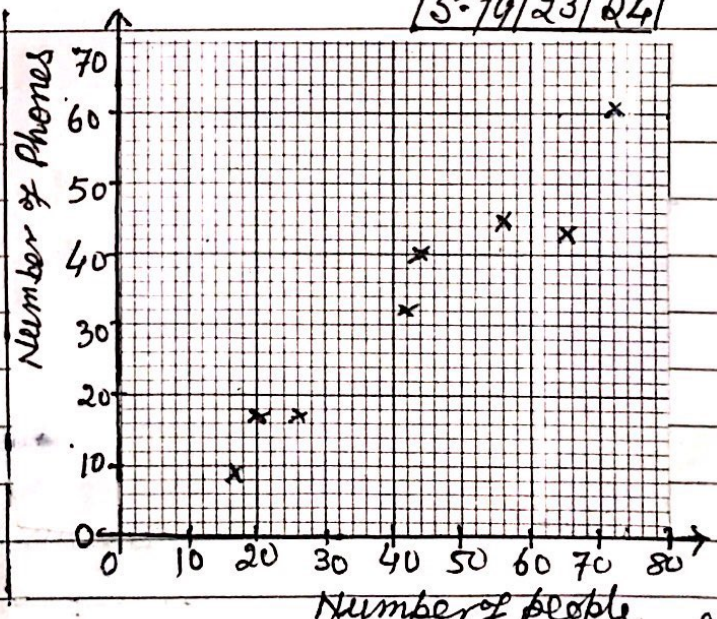
2. The table shows the different methods of travel for 20 people going to work.

Method of travel	Frequency
Car	10
Walk	5
Bike	3
Bus	2

Which type of average, mean, median or mode, can be used for this information? --[1]

S-19/23/Q4

3. The scatter diagram shows the number of people and the number of phones in each of 8 buildings.

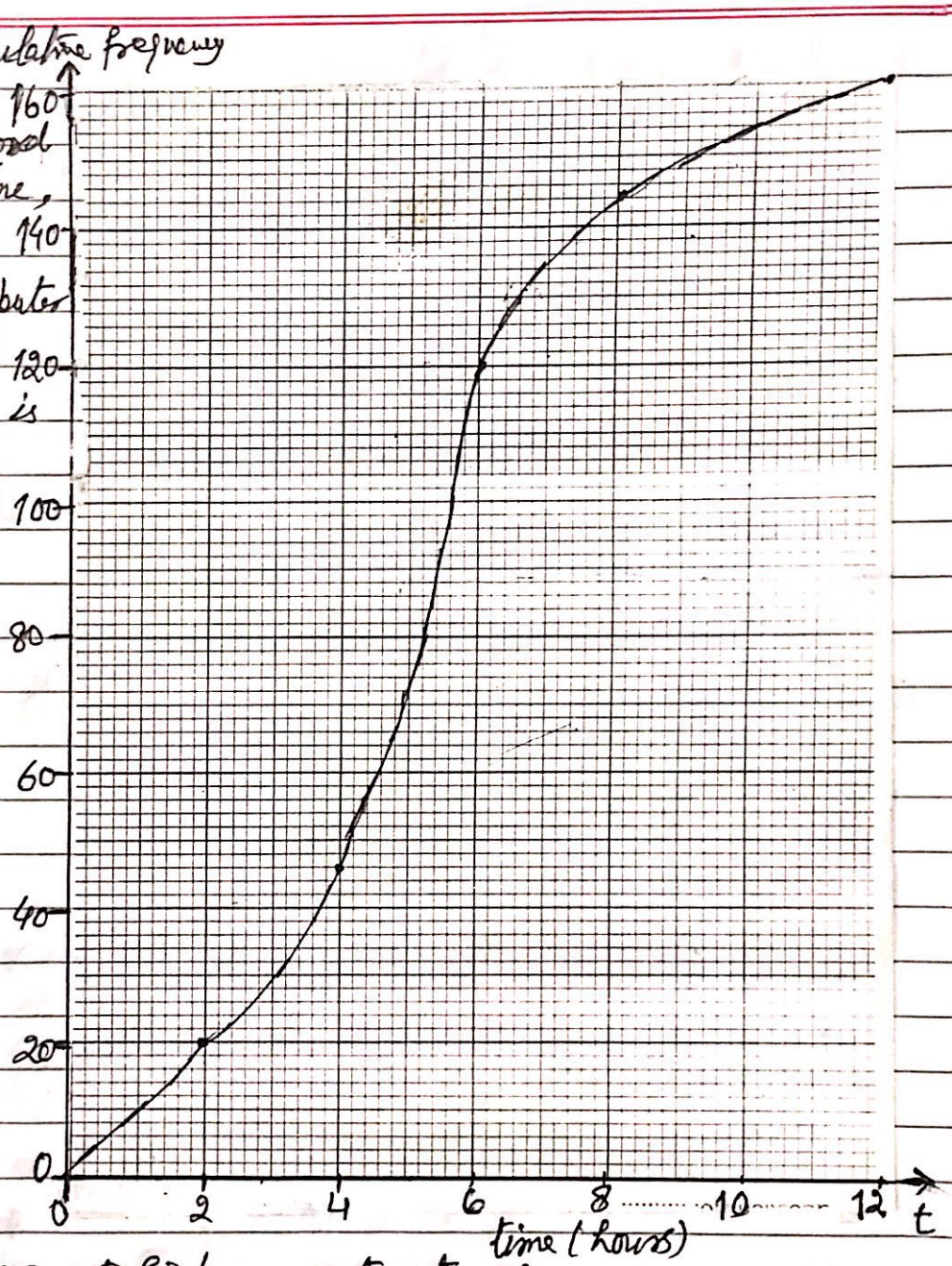


(a) One of the buildings contain 42 people. Write down the number of phones in this building. ---[1]

(b) What type of correlation is shown in the scatter diagram. --[1]

S-19/23/Q8

4. 160 students record the amount of time, t hours, they each spend playing computer games in a week. This information is shown in the cumulative fre. diagram.



(a) Use the diagram to find an estimate of,

(i) median --[1]

(ii) the interquartile range. --[2]

(b) Use the diagram to complete this frequency table.

Time (t hours)	$0 < t \leq 2$	$2 < t \leq 4$	$4 < t \leq 6$	$6 < t \leq 8$	$8 < t \leq 10$	$10 < t \leq 12$
Frequency	20			24	12	4

S-19|23|Q23 [2]

5. "We eat more icecream as the temperature rises." --[1]
What type of correlation is this.

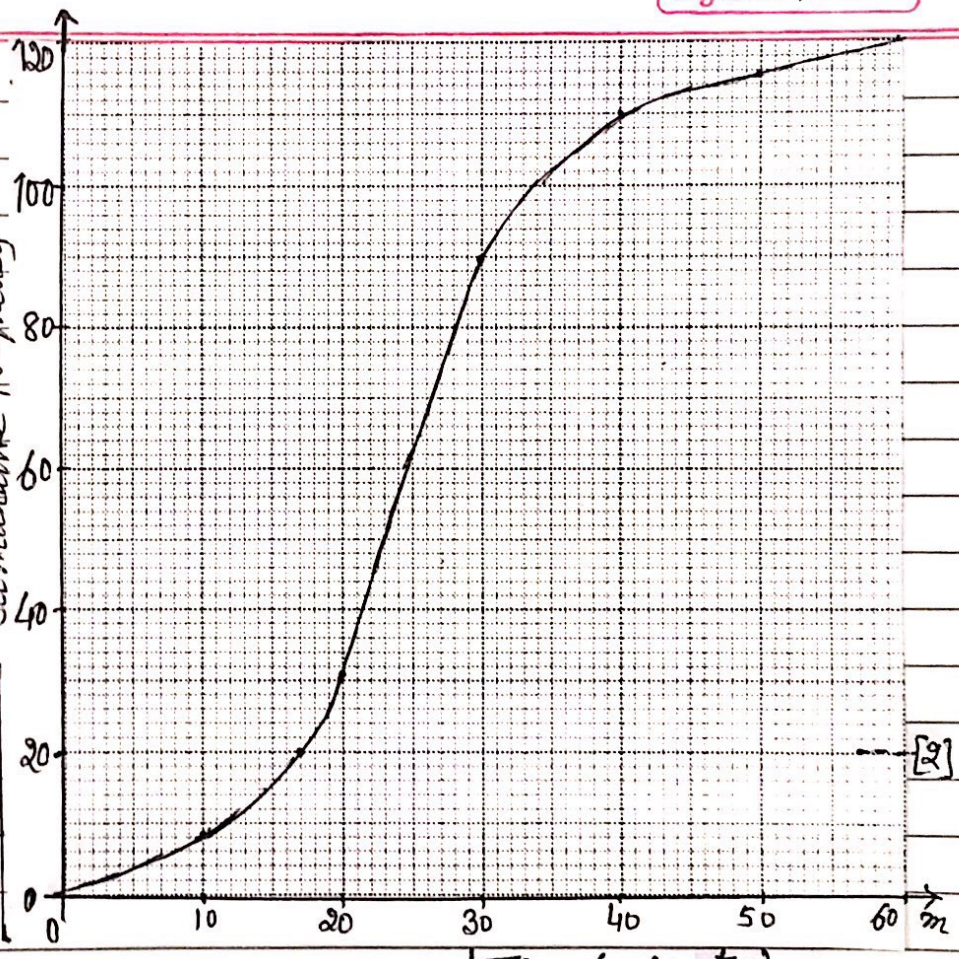
M-18|22|Q1

Statistics

6. The cumulative frequency diagram shows information about the time, m minutes, taken by 120 students to complete some homework. Use cumulative frequency diagram to find an estimate of,

(a) the interquartile range.

(b) the numbe of students who took more than 50 minute to complete the homework.



---[2]

S-18/21/Q18 ---[2]

7. 40 people were asked how many times they visited the cinema in one month. The table shows the results.

Number of cinema visit	0	1	2	3	4	5	6	7
Frequency	5	5	6	6	7	3	6	2

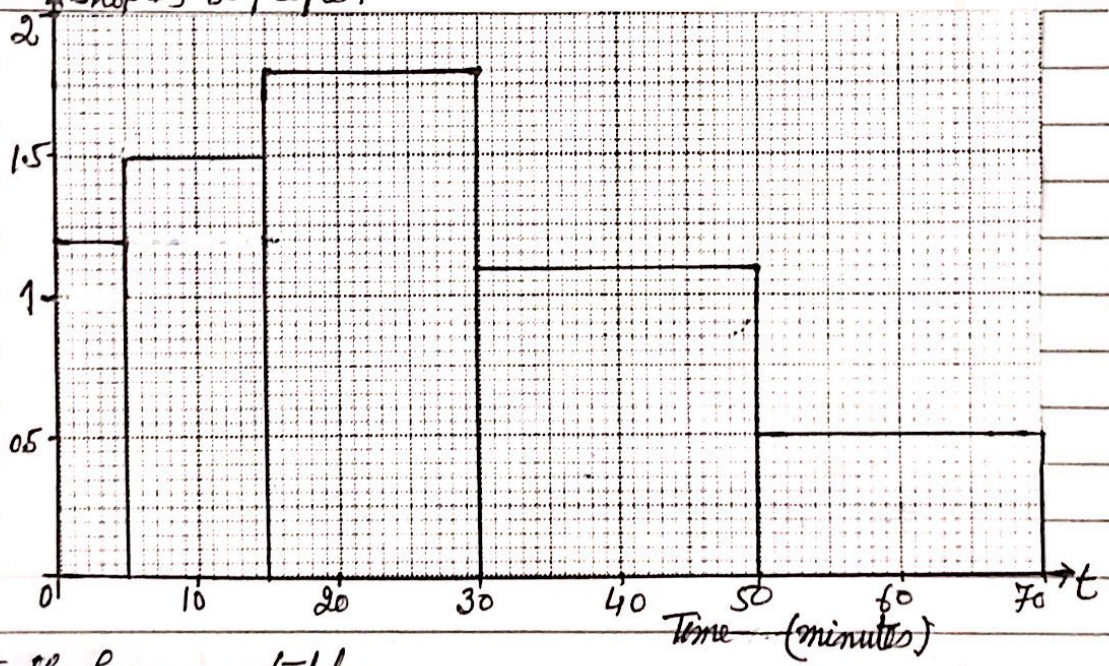
(a) (i) Find the mode ---[1]

(ii) Calculate the mean ---[3]

(b) Omar wants to show the information from the table in a pie chart. Calculate the sector angle for the people who visited the cinema 5 times.

S-18/21/Q23 ---[2]

8. The histogram shows information about the time, t minutes, spents in a shop by 80 people.



Complete the frequency table:

Time (t min.)	$0 \leq t \leq 5$	$5 < t \leq 15$	$15 < t \leq 30$	$30 < t \leq 50$	$50 < t \leq 70$
No. of people	6		27		10

--- [2]

S-18 | 22 | Q13

9. The scatter diagram shows the values, in thousand of dollars, of eight houses in 1996 and the value of the same houses in 2016.

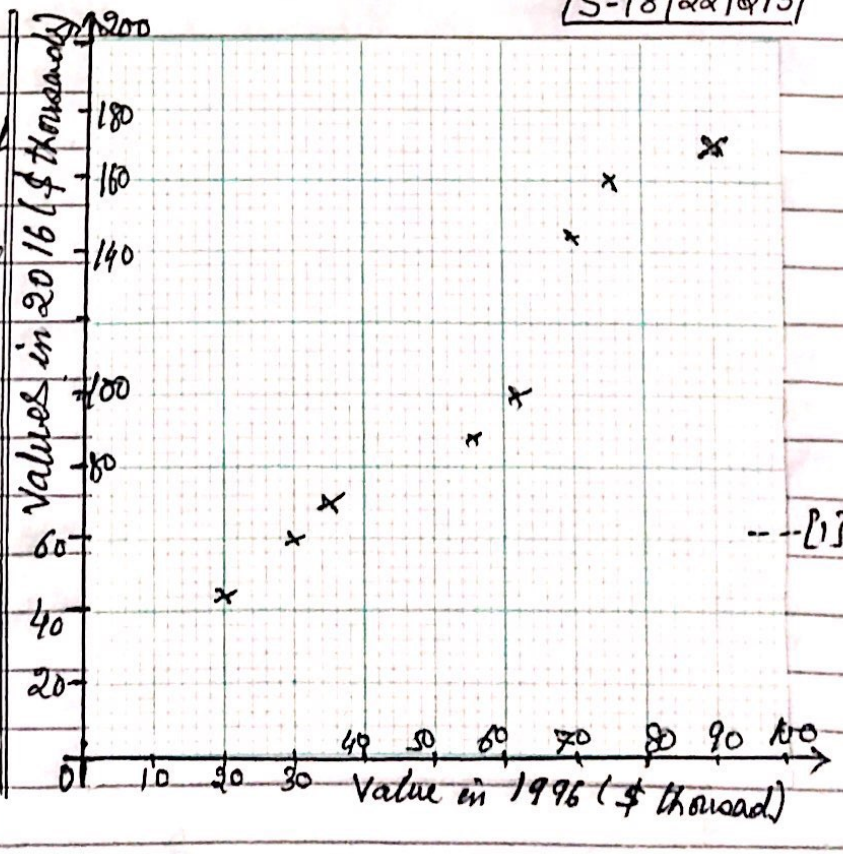
(a) One of these eight houses had a value of $70 000 in 1996. Write down the value of this house in 2016.

--- [1]

(b) The values of two more houses are shown in the table.

Value in 1996 ($ thousand)	40	80
Value in 2016 ($ thousands)	80	150

On the scatter diagram, plot these values. --- [1]



(Continued →)

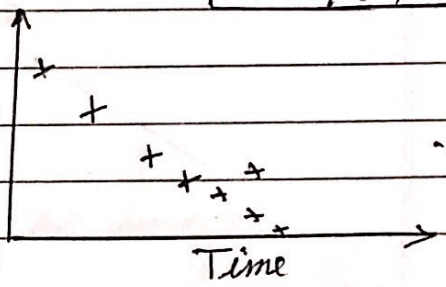
(Continued→)

9.(c) On the scatter diagram, draw a line of best fit. ---[1]

(d) Another house had a value of $50 000 in 1996.
Find an estimate of the value of this house in 2016. ---[1]

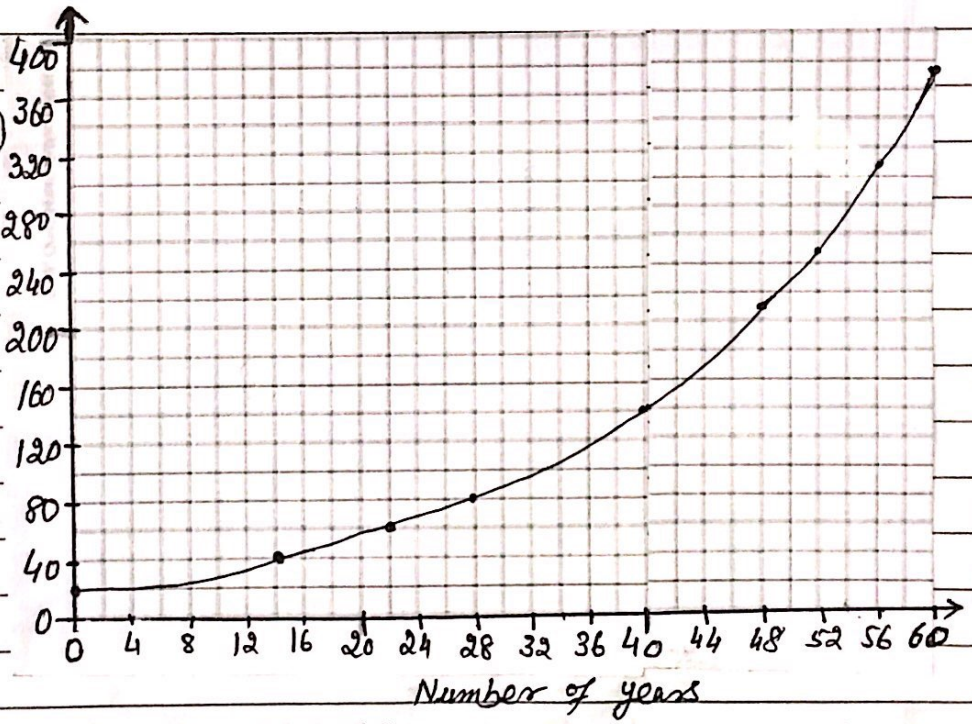
[S-18/22/Q21]

10. What type of correlation does the scatter diagram show? ---[1]



[W-18/21/Q3]

11.



When Heidi was born, her grandfather invested some money in an account that paid compound interest. The graph shows the exponential growth of this investment.

(a) Use the graph to find, (i) the original amount of money invested. --[1]

(ii) the number of years it took for the original amount to double. --[1]

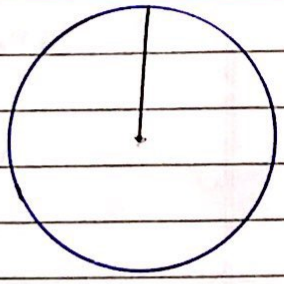
(iii) the value of investment after 54 years. --[1]

(b) This account earned compound interest at a rate of r% per year. Use your answers to part (a)(i) and part (a)(ii) to write down an equation in terms of r. ---[2]

You do not have to solve your equation. [W-18/21/Q21]

12. 120 students choose what they want to do when they leave school. Their choices are shown in the table.

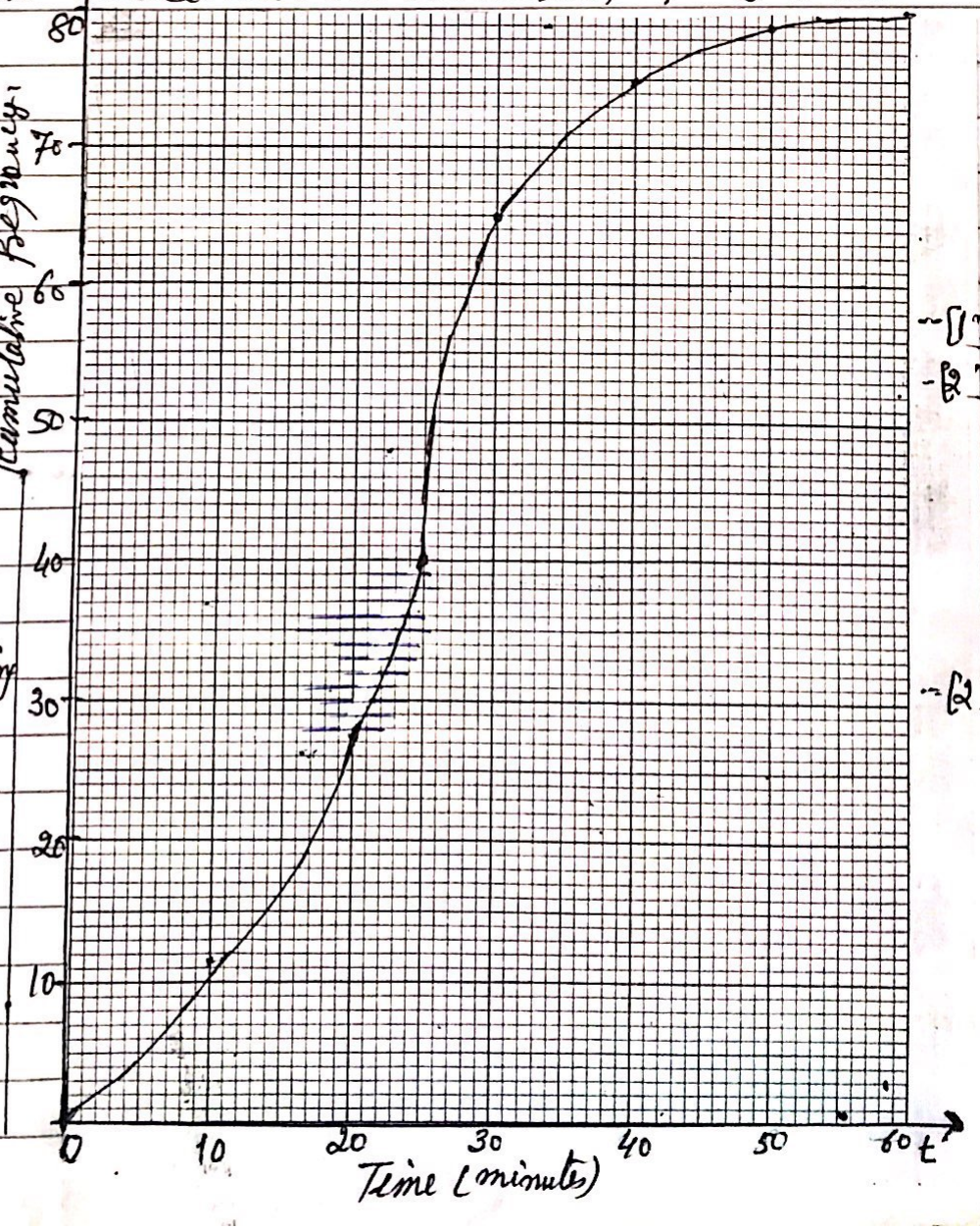
Choice	Number of students
University	57
Training	45
Work	18



Complete the pie chart to show this information. Label each sector clearly. [4]

[W-18/22/Q18]

13. The time, t minutes, 80 students each spend completing their home work is recorded. The cumulative frequency shows the results.



Use the cumulative frequency diagram to find an estimate of:

(a) the median [1]

(b) the interquartile range. [2]

(c) the number of students who spend more than 40 minutes completing their home work. [2]

[W-18/22/Q24]

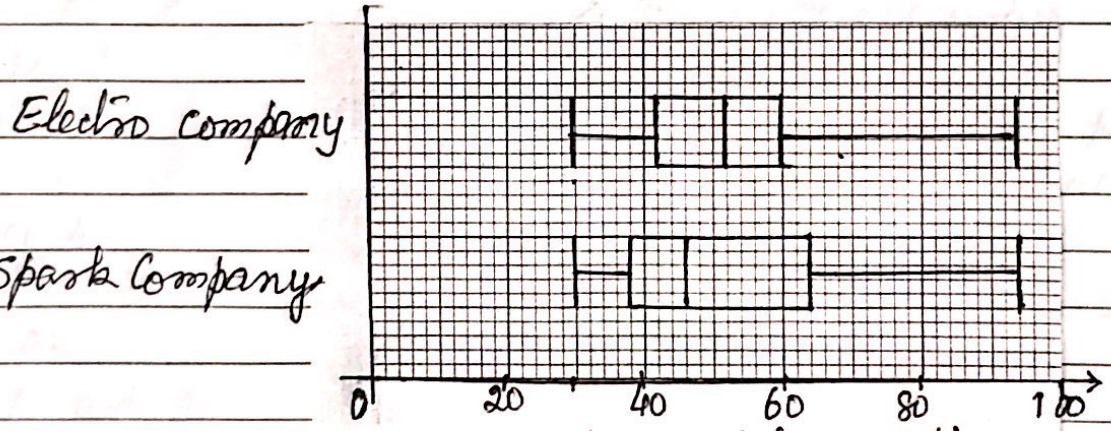
14. The number of cars parked in a car park at 9am. is recorded for 10 days.
124, 130, 129, 116, 132, 120, 127, 107, 118, 114.
Complete the stem-and-leaf diagram.

10	----
11	----
12	----
13	----

[SP-20|02|Q6]

[Key: 12|3 represents 123 cars.] ---[2]

15.

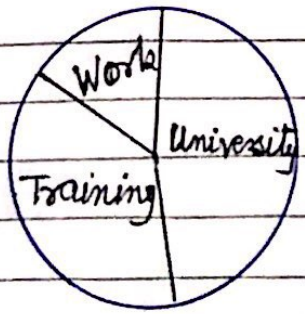


---[4]

Tom says that the monthly costs with Electro company are lower and vary less than with Spark company.
Is tom correct?
Justify your answer with reference to the box-and-whisker plot.

[SP-20|02|Q24]

Answers

1. 12·8 ✓
   4·4 ✓
   0·8 ✓
2. Mode ✓
3. (a) 32 ✓
   (b) Positive ✓
4. (a) (i) 5
   (ii) 2·4 to 2·6
   (b) 26, 74
5. Positive
6. (a) 10
   (b) 4
7. (a) (i) 4
   (ii) 3·2
   (b) 27
8. 15 and 22.
9. (a) 140 000.
   (b) Points correctly plotted at (40, 80) and (80, 150)
   (c) Correct ruled line of best fit.
   (d) 80 000 to 110 000.
10. Negative.
11. (a) (i) 20 (ii) 14 (iii) 280
    (b) $2 \times 20 = 20\left[1 + \frac{2}{100}\right]^{14}$
12. 

13. (a) 25
    (b) 12
    (c) 5
14.

10	7			
11	4	6	8	
12	0	4	7	9
13	0	2		

15. Median is greater for Electro company, so Tom is wrong because is Cheaper or IQR is greater for Sparla company so Tom is right Sparla is more varied.