

IG - Maths

0580

Statistics

Exercise

Paper - 2.

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Q1 Six students revise for a test.

The scatter diagram shows the time, in hours, each student spent revising and their marks in the test.

(a) The data for two more students is shown in the table.

Time (Hours)	4.5	6.5
Mark	33	35

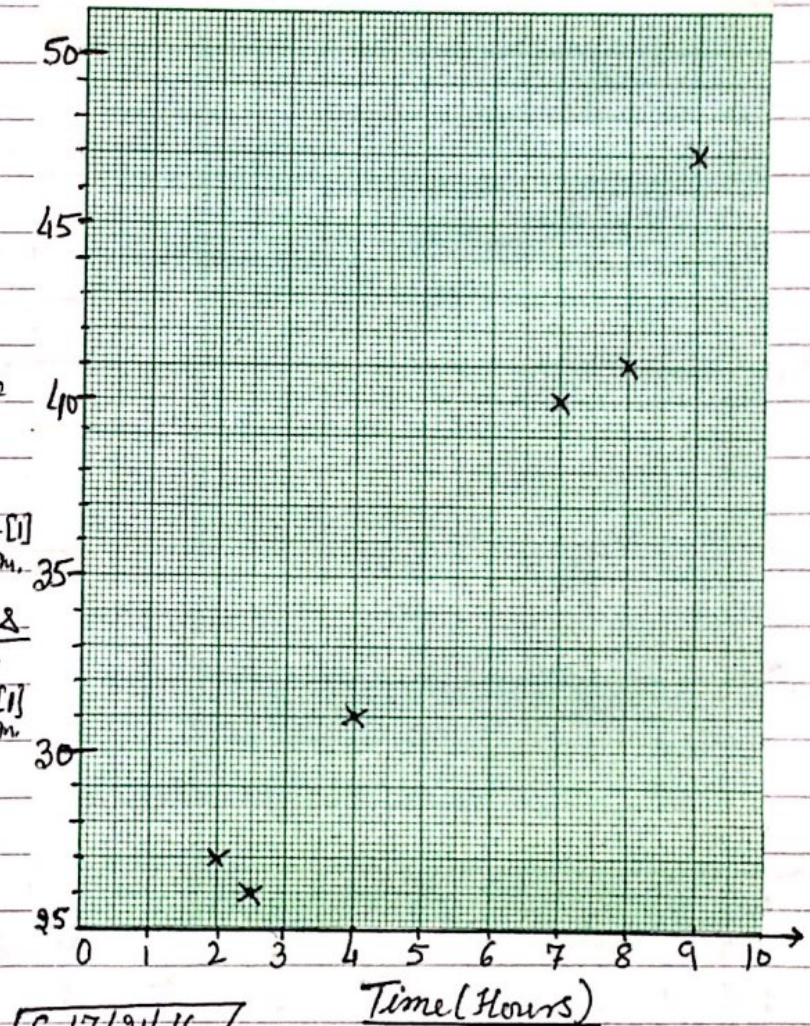
Plot these two points on the scatter diagram. --- [1]

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

(c) Draw a line of best fit on the scatter diagram. --- [1]

(d) Another student spent 5.5 hours revising.

Estimate a mark for this student. --- [1]



S-17/21/16

Q2 Amber's mean marks on five tests is 80. Her marks on four of these tests are 68, 81, 74 and 89.

Work out her marks on the fifth test.

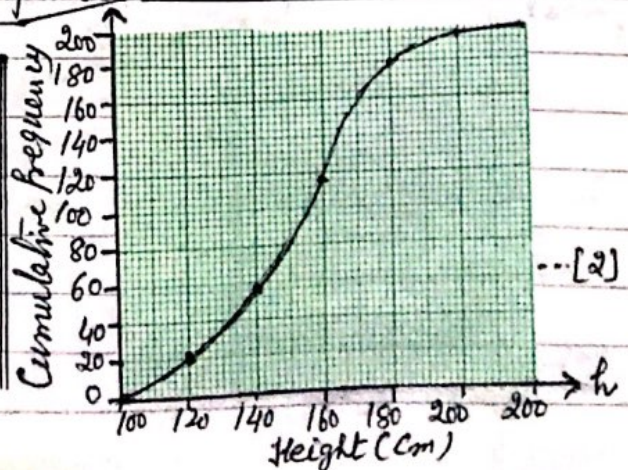
W-17/21/24

--- [2]

Q3 Simon records the heights, h cm, of 200 sunflowers in his garden. The cumulative frequency diagram shows this information.

(a) Find the number of these sunflowers that a height of more than 160 cm.

(Continued →)



--- [2]

(Continued →)

Q3 (b) Sue records the heights, h cm, of 200 sunflowers in her garden. The cumulative frequency table shows this information.

Height (h cm)	Cumulative frequency.
$h \leq 100$	0
$h \leq 110$	20
$h \leq 120$	48
$h \leq 130$	100
$h \leq 140$	140
$h \leq 150$	172
$h \leq 160$	188
$h \leq 170$	200

On the grid above, draw another cumulative frequency diagram to show this information. --- [3]

(c) Work out the difference between the median heights of Simon's sunflowers and Sue's sunflowers. --- [2]

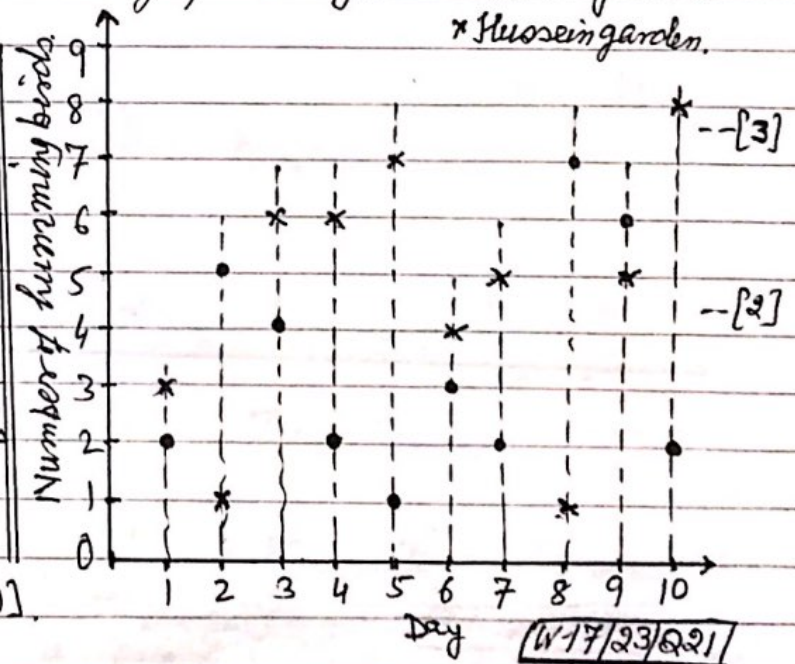
[W-17/21/Q22] --- [2]

Q4 The diagram shows the numbers of hummingbirds seen by Ali and Hussein in their garden each day for 10 days.

(a) Calculate the mean number of hummingbirds seen in Ali's garden each day.

(b) Work out the median number of hummingbirds seen in Hussein's garden each day.

(c) On one of these days there were 4 times as many hummingbirds seen in Hussein's garden as in Ali's garden, which day was this day? --- [1]



[W-17/23/Q21]

Q5 Raj measures the height, h cm, of 70 plants. The table shows the information.

Height (h cm)	$10 < h \leq 20$	$20 < h \leq 40$	$40 < h \leq 50$	$50 < h \leq 60$	$60 < h \leq 90$
Frequency	7	15	27	13	8

Calculate an estimate of the mean height of the plants. --- [4]

*Q6 Shehruz plays four games of golf.

His four scores have a mean of 75, a mode of 78 and a median of 77.

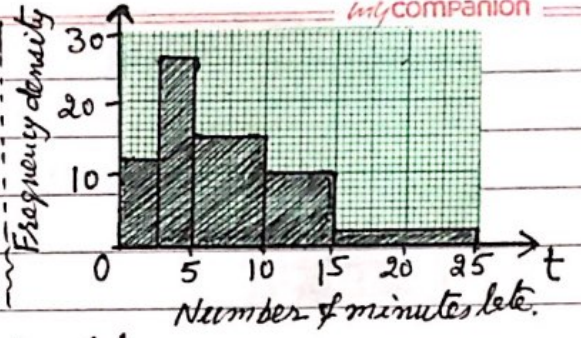
Work out his four scores.

[M-16/22/Q16]

[S-16/22/Q11]

--- [3]

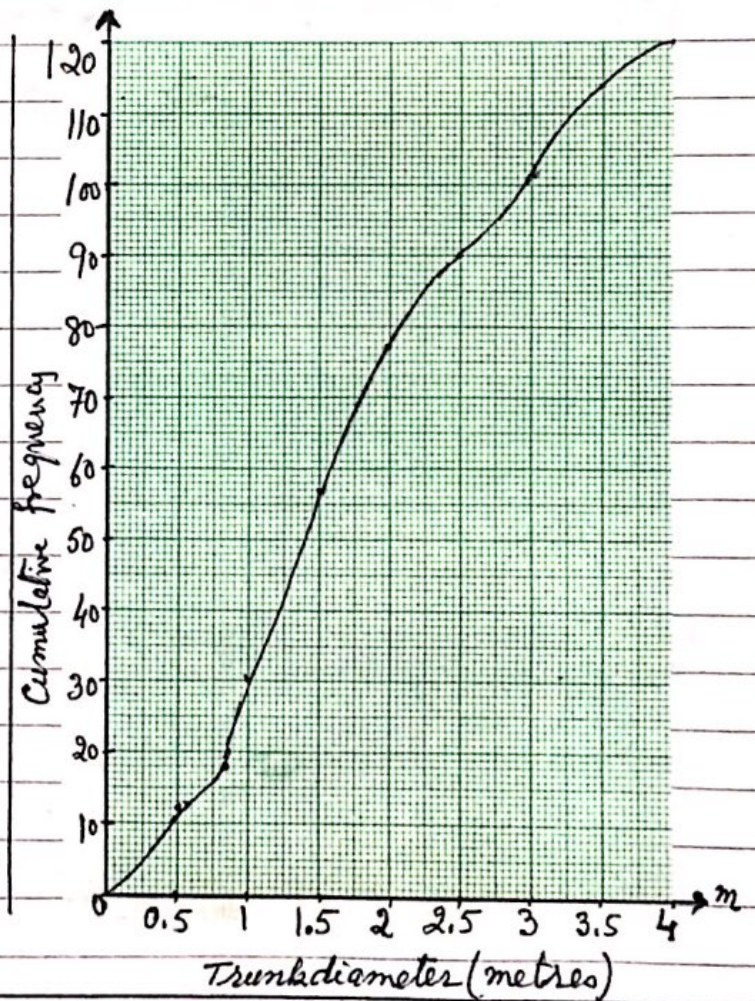
Q7 Deborah records the number of minutes late, t , for trains arriving at a station. The histogram shows this information.



- (a) Find the number of trains that Deborah recorded. --- [2]
- (b) Calculate the percentage of the trains recorded that arrived more than 10 minutes late. --- [2]

5-16/22/Q20

Q8 The cumulative frequency diagram shows information about the trunk diameters, in metres, of 120 trees.



Find,

- (a) the inter-quartile range --- [2]
- (b) the 95th percentile. --- [2]
- (c) the number of trees with a trunk diameter greater than 3 metres. --- [2]

5-16/23/Q22

Q9 James is an animal doctor.

The table shows some information about the cats he saw in one week.

Day	Monday	Tuesday	Wednesday	Thursday	Friday
Number of cats seen	2	4	1	3	2
Mean Mass of a cat (kg)	1.9	0.9	2.1	1.8	2

One of the cats James saw had a mass of 4kg. On which day did he see this cat? --- [2]

W-16/23/Q6

Q10 The table shows some information about the mass, m grams, for 200 bananas.

Mass (m grams)	$90 < m \leq 110$	$110 < m \leq 120$	$120 < m \leq 125$	$125 < m \leq 140$
Frequency	40	70	60	30
Height of column in histogram (cm)			6	

Complete the table.

[W-16/23/Q22] --- [4]

Q11 7 9 20 3 9

(a) A number is removed from this list and the median and range, do not change. Write down this number. [S-15/22/Q4] --- [1]

(b) An extra number is included in the original list and the mode does not change. Write down a possible value for this number. --- [1]

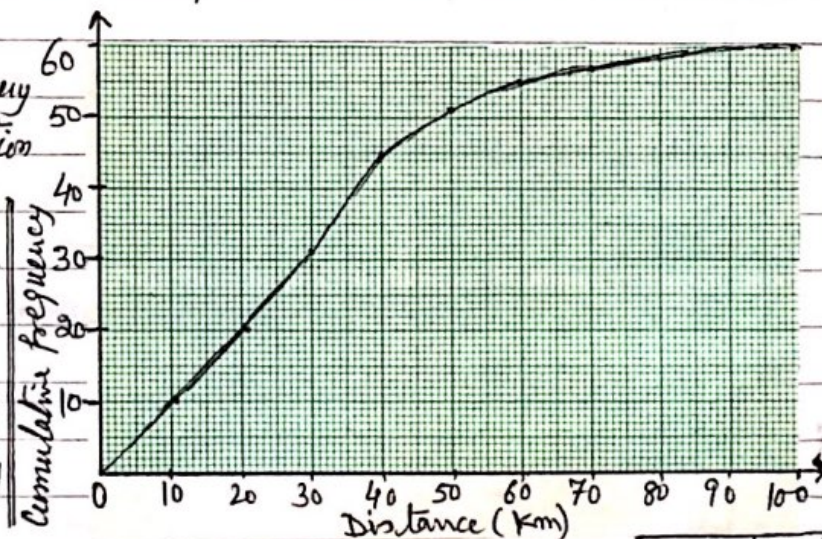
Q12 The cumulative frequency diagram shows information about the distances travelled, in kilometres, by 60 people.

Find.

(a) the 80th percentile. --- [2]

(b) the inter-quartile range. --- [2]

(c) the number of people who travelled more than 60 km. --- [2]



[S-15/22/Q22]

Q13

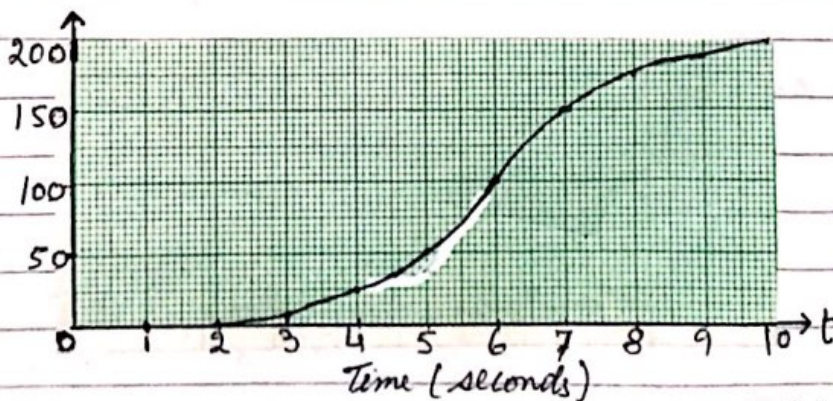
Cumulative frequency

200 students take a reaction time test. The cumulative frequency diagram shows the results. Find.

(a) the median

(b) the inter-quartile range

(c) the number of students with a reaction time of more than 4 seconds. --- [2]



[S-15/23/Q17]

Q14 Jim scores the following marks in 8 tests.

His mean mark is 7.5. 7, 8, 8, y, 6, 9, 10, 5

Calculate the value of y.

W-15/21/Q5 ---[2]

Q15 The table shows information about the numbers of pets owned by 24 students.

Number of pets	0	1	2	3	4	5	6
Frequency	1	2	3	5	7	3	3

(a) Calculate the mean number pets.

---[3]

(b) Jennifer joins the group of 24 students.

W-15/22/Q22

When the information for Jennifer is added to the table, the new mean is 3.44. Calculate the number of pets that Jennifer has.

---[3]

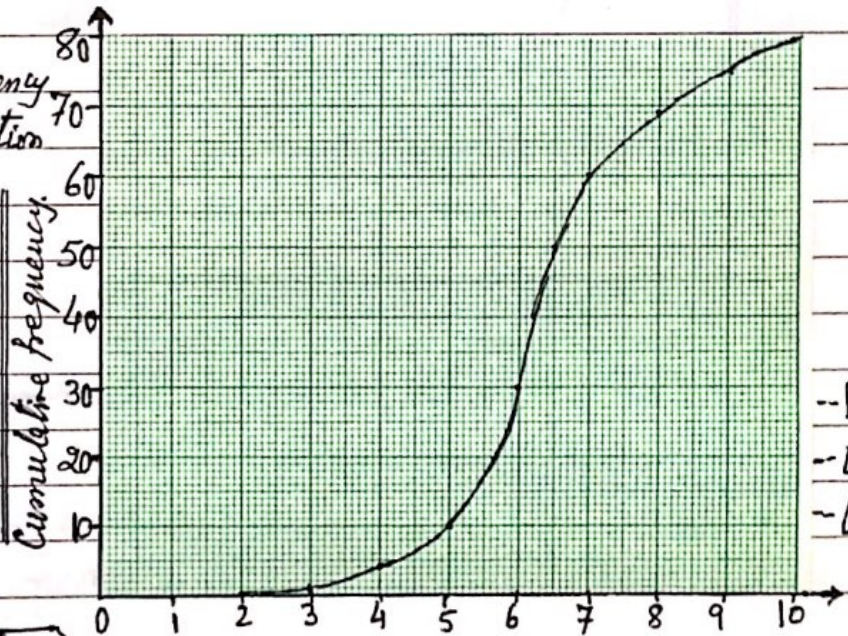
Q16 The cumulative frequency diagram shows information about the times, in minutes, taken by 80 students to complete a short test. Find

(a) the median

(b) 30th percentile.

(c) the number of students taking more than 5 minutes.

W-15/23/Q24



---[1]

---[2]

---[2]

Q17 A travel brochure has 72 holidays in four different countries. A pie chart shows this information.

(a) There are 24 holidays in Thailand.

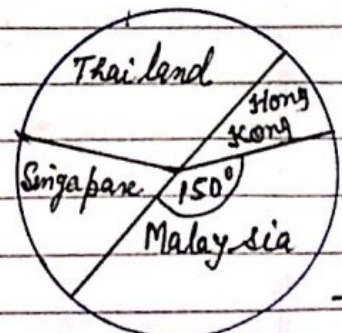
Show that the sector angle for Thailand is 120° .

---[2]

(b) The sector angle for Malaysia is 150° . The sector angle for Singapore is twice the sector angle for Hong Kong.

Calculate the number of holidays in Hong Kong.

---[3]



S-14/21/Q17

Q18 Michelle sells ice cream. The table shows how many of the different flavours she sells in one hour.

Flavour	Vanilla	Strawberry	Chocolate	Mango
Number Sold	6	8	9	7

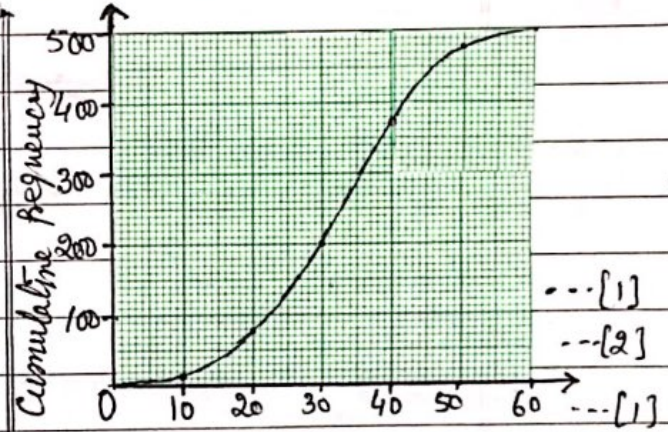
Michelle wants to show this information in a pie chart.

Calculate the sector angle for mango.

[S-14/23/Q2]

---[2]

Q19 Jenna draws a cumulative frequency diagram to show information about the scores of 500 people in a quiz. Use the diagram to find.



(a) the median score,

---[1]

(b) the inter-quartile range.

---[2]

(c) the 40th percentile.

---[1]

(d) the number of people who scored 30 or less but more than 20.

---[1]

[S-14/23/Q20]

Q20 Cheryl recorded the midday temperatures in Seoul for one week in January.

Day	Mon	Tue	Wed	Thu	Fri	Sat	Sun
Temperature (°C)	-4	-5	-3	-11	-8	-3	-1

(a) Write down the mode.

[W-14/21/Q4]

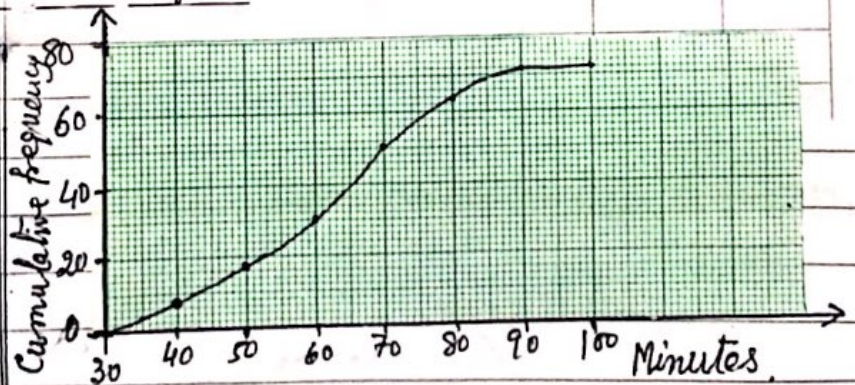
---[1]

(b) On how many days was the temperature lower than the mode?

---[1]

Q21 72 students are given homework one evening.

They are told to spend no more than 100 minutes completing their homework.



The cumulative frequency diagram shows the number of minutes they spend. (a) How many students spent more than 48 minutes completing

---[2]

their homework. (b) Find (i) the median

---[1]

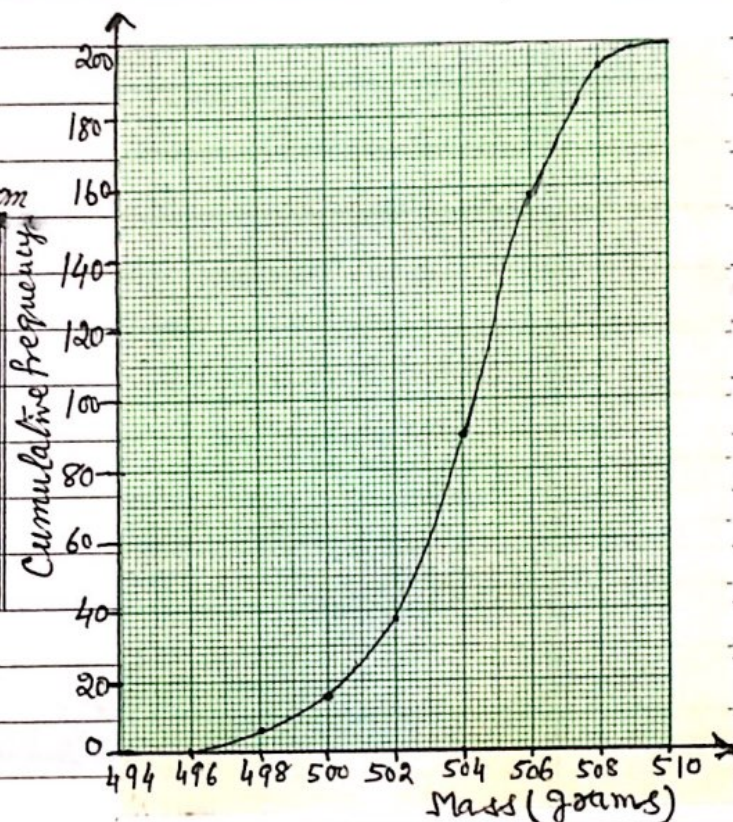
(ii) the inter-quartile range.

[W-14/22/Q18]

---[2]

Q22 The four sector angles in a pie chart are $2x^\circ$, $3x^\circ$, $4x^\circ$ and 90° .
Find the value of x . [W-14/23/Q4] --- [2]

Q23 The mass, m grams, of cornflakes in each of 200 boxes is recorded. The cumulative frequency diagram shows the results.



(a) Use the diagram to estimate the inter-quartile range. --- [2]

(b) Find the prob. that a box chosen at random has a mass of 500 grams or less. --- [2]

(c)

Mass (m grams)	$496 < m \leq 500$	$500 < m \leq 504$	$504 < m \leq 508$	$508 < m \leq 510$
Frequency	16	74	104	6

The data in this frequency table is to be shown in a histogram. Complete the frequency density table below. [W-14/23/Q7]

Mass (m grams)	$496 < m \leq 500$	$500 < m \leq 504$	$504 < m \leq 508$	$508 < m \leq 510$
Frequency density	4			

--- [2]

Q24 The owner of a small cafe records the average air temperature and the number of hot drinks he sells each day for a week.

Air temperature ($^\circ\text{C}$)	18	23	19	23	24	25	20
Number of hot drinks sold	12	8	13	10	9	7	12

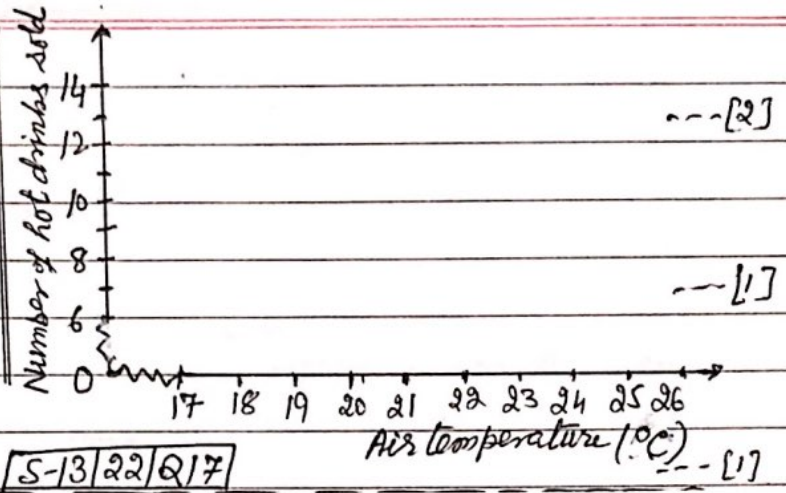
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Q24(a) On the grid, draw a scatter diagram to show this information.

(b) What type of correlation does your scatter diagram show?

(c) Draw a line of best fit on the grid.



Q25 The heights, in metres, of 200 trees in a park are measured.

Height (h m)	$2 < h \leq 6$	$6 < h \leq 10$	$10 < h \leq 13$	$13 < h \leq 17$	$17 < h \leq 19$	$19 < h \leq 20$
Frequency	23	47	45	38	32	15

(a) Find the interval which contains the median height. --- [1]

(b) Calculate an estimate of the mean height. [5-13/22/Q20] --- [4]

(c) Complete the cumulative frequency table for the information given in the table above.

Height (h m)	$2 < h \leq 6$	$h \leq 10$	$h \leq 13$	$h \leq 17$	$h \leq 19$	$h \leq 20$
Cumulative frequency	23					

Q26 Bruce plays a game of golf. His score for each of the 18 holes are shown below.

2 3 4 5 4 6 2 3 4

The information is to be shown in a pie chart.

Calculate the sector angle for the score of 4. [N-13/22/Q4] --- [2]

Q27 During one day 48 people visited a museum.

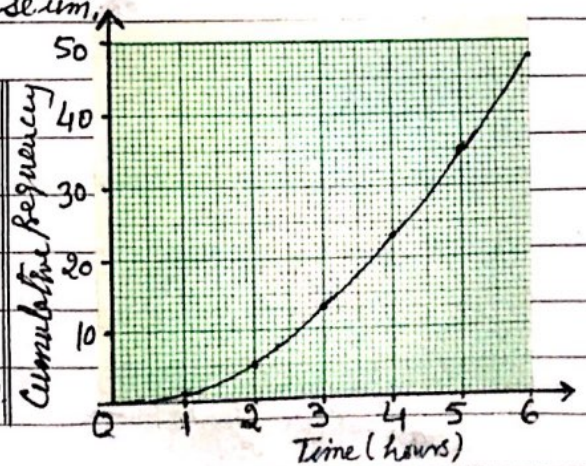
The length of time each person spent in the museum was recorded. The results are shown on the cumulative frequency diagram.

Work out (a) the median. --- [1]

(b) the 20th percentile --- [2]

(c) the inter-quartile range --- [2]

(d) the probability that a person chosen at random spends 2 hours or less in the museum. --- [2]

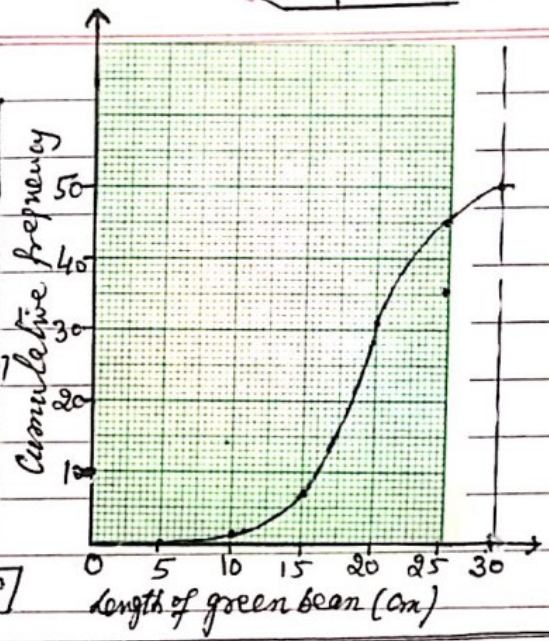


[W-13/22/Q20]

Q28 A gardener measured the lengths of 50 green beans from his garden. The results have been used to draw this cumulative frequency diagram. Work out.

- (a) the median. --- [1]
- (b) the number of beans that are longer than 26 cm. --- [2]
- (c) the inter-quartile range. --- [2]
- (d) the probability that a green bean chosen at random is more than 14 cm long. --- [2]

[W-13/23/Q18]



Answers

- | | |
|---|---|
| <p>Q1 (a) Points plotted (4.5, 33) and (6.5, 35)
 (b) Positive
 (c) correct ruled line
 (d) 33.5 to 37.5</p> <p>Q2 88</p> <p>Q3 (a) 80 to 84 (b) Correct curve
 (c) 26.</p> <p>Q4 (a) 3.4 (b) 5 (c) day-10</p> <p>Q5 44.1</p> <p>Q6 68, 76, 78, 78</p> <p>Q7 (a) 240 (b) 29.2</p> <p>Q8 (a) 1.5 (b) 3.5 (c) 18</p> <p>Q9 Thursday</p> <p>Q10 1, 3.5, 1</p> <p>Q11 7, any number except 3, 7 or 20</p> <p>Q12 (a) 44 (b) 24 (c) 5</p> <p>Q13 (a) 6 (b) 2 (c) 180</p> <p>Q14 7</p> <p>Q15 (a) 3.5 (b) 2</p> <p>Q16 (a) 6.2 (b) 5.8 (c) 70</p> | <p>Q17 (a) $\frac{24}{72} \times 360 = 120^\circ$ (b) 6</p> <p>Q18 84°</p> <p>Q19 (a) 34 (b) 16 (c) 30 (d) 120</p> <p>Q20 (a) -3 (b) 4</p> <p>Q21 (a) 56 (b) (i) 63 (ii) 22</p> <p>Q22 30°</p> <p>Q23 (a) 3.08 (b) $\frac{16}{200}$ (c) 18.5, 26, 3</p> <p>Q24 (a) 7 correct plots (b) negative
 (c) ruled line of best fit.</p> <p>Q25 (a) $10 < h \leq 13$ (b) 12.1
 (c) 70, 115, 153, 185, 200</p> <p>Q26 160°</p> <p>Q27 (a) 4.05 (b) 2.6 to 2.75
 (c) 2.05 to 2.25 (d) $\frac{5}{48}$</p> <p>Q28 (a) 19 to 19.1 (b) 3
 (c) 4.9 to 5.7
 (d) $\frac{45}{50}$</p> |
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