

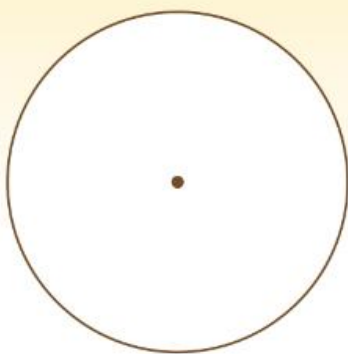
Question 1

The table below shows information about the hobbies of 30 students in their final year.

Hobbies	Number of Students	Angle [Working out]
Football	8	$\frac{8}{30} \times 360 = \frac{8}{5} \times 12 = 96$
Netball	11	$\frac{11}{30} \times 360 = 11 \times 12 = 132$
Cricket	4	$\frac{4}{30} \times 360 = 4 \times 12 = 48$
Tennis	7	$\frac{7}{30} \times 360 = 7 \times 12 = 84$

$$\text{Angle} = \frac{\text{Frequency}}{\text{Total}} \times 360$$

Draw an accurate pie chart to represent this information.



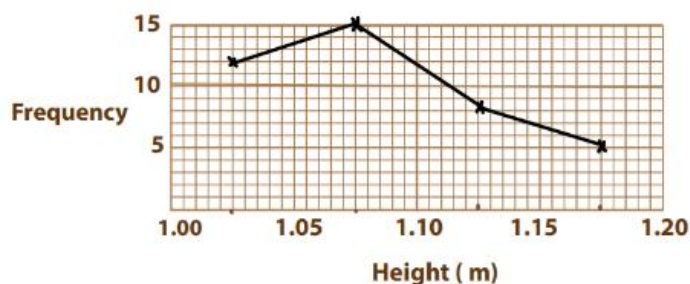
Question 2

The table below shows information about the heights of 40 primary school pupils.

Heights (m)	Frequency	Mid
$1.00 < h \leq 1.05$	12	1.025
$1.05 < h \leq 1.10$	15	1.075
$1.10 < h \leq 1.15$	8	1.125
$1.15 < h \leq 1.20$	5	1.175

STEP 1
Calculate
Mid Point

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



STEP 2:
Plot graph
(Line segments)

Question 3

The table below shows information about the shoe size's taken from a primary school class.

Shoe Size	Frequency	Σf
1	12	12
2	17	34
3	6	18
4	5	20
		<u>84</u>

STEP 1:
Type of Data?
Discrete

STEP 2
Add 'xf'
Column

Key
□ = Definition

a) Find the modal shoe size.

= Shoe size 2 [As 17 shows the most 'common' class]

b) Find the median shoe size.

$$= \left(\frac{N}{2}\right)^{\text{th}} \text{ value} = \frac{40}{2} = 20^{\text{th}} \text{ value} = \underline{\text{Shoe size 2}}$$

b) Find the mean shoe size.

$$= \frac{\Sigma xf}{N} = \frac{84}{40} = 2.1$$

STEP 3
Apply 'Mean'
Formula

= Shoe size 2

Question 4

The table below shows information about the time it took a class of pupils to complete a puzzle.

Time (minutes)	Frequency	Mid	Σf
$0 < x \leq 10$	6	5.5	33
$10 < x \leq 20$	13	15.5	201.5
$20 < x \leq 30$	12	25.5	306
$30 < x \leq 40$	9	35.5	229.5
	<u>40</u>		<u>770</u>

STEP 1:
Type of Data?
Continuous

STEP 2
Add 'Mid' and 'xf'
Columns.

a) Work out an estimate for the mean time.

STEP 3
Apply 'Mean'
Formula

$$= \frac{\Sigma xf}{N} = \frac{770}{40} = 19.25 \text{ (2dp)}$$

= 19 min 15 seconds

[Note:
 $0.25 \times 60 = 15 \text{ min}$]

b) Find the class interval that contains median.

$$= \left(\frac{N}{2}\right)^{\text{th}} \text{ value} = \left(\frac{40}{2}\right) = 20^{\text{th}} \text{ value}$$

= $20 < x \leq 30$

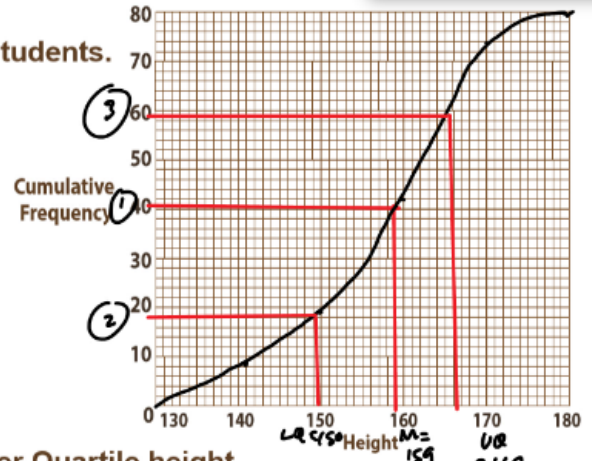
Question 5

The table below shows information about the heights of 80 students.

a) Draw a cumulative frequency graph from the table.

Height (h cm)	Number of Students	cf
130 < h ≤ 140	8	8
140 < h ≤ 150	11	19
150 < h ≤ 160	23	42
160 < h ≤ 170	32	74
170 < h ≤ 180	6	80

$$N = 80$$



Find an estimate for the following :

b) Median height

(1)

$$\left(\frac{N}{2}\right)^{th} \text{ value} = \left(\frac{80}{2}\right)^{th} = 40^{th} = 159$$

(2)

c) Lower Quartile height

$$\left(\frac{N}{4}\right)^{th} \text{ value} = 20^{th} \text{ value} = 150$$

d) Upper Quartile height

(3)

$$\left(\frac{3N}{4}\right)^{th} \text{ value} = 60^{th} \text{ value} = 167$$

e) Interquartile range

$$UQ - LQ = 167 - 150 = 17$$

Question 6

The frequency table below shows the heights of 30 students.

Height (cm)	Frequency	F.D
120 < h ≤ 130	9	0.9
130 < h ≤ 135	3	0.6
135 < h ≤ 140	4	0.8
140 < h ≤ 160	14	0.7

a) On the grid, represent this information on a histogram.

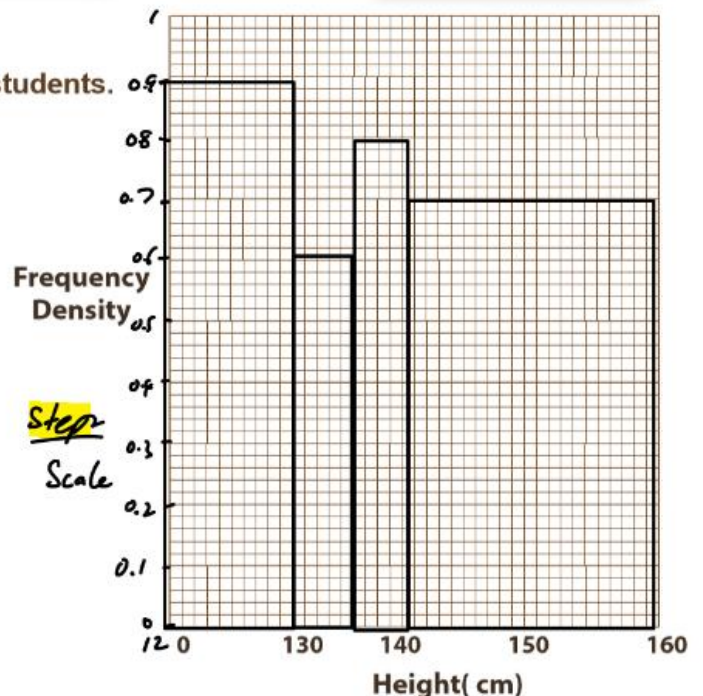
$$F.D = \frac{\text{Frequency}}{\text{class width}}$$

Step 1
F.D Column

Step 2
Scale

b) Work out an estimate for the fraction of students who have a height between 130 - 140 cm.

$$\frac{7}{20} +$$



Question 7

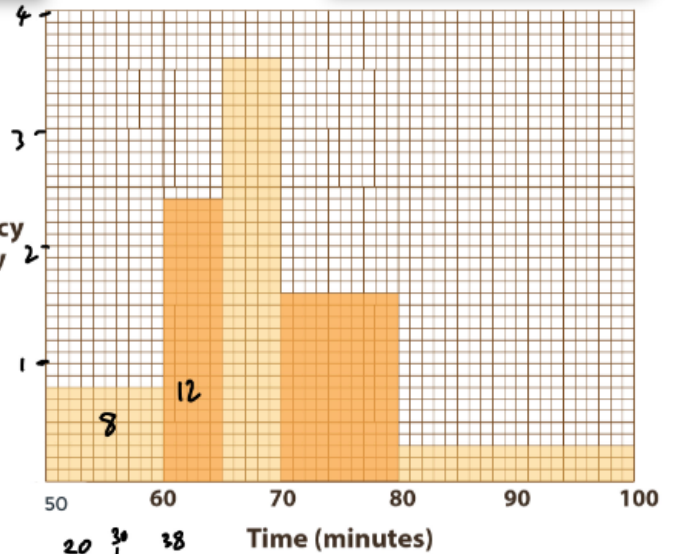
The histogram shows information about the time taken by athletes to complete a race (minutes)

- a) 8 athletes took 60 minutes or less to complete the race. Calculate the median.

Area of block = frequency

Time	Frequency	cf
50 < t ≤ 60	8	8
60 < t ≤ 65	12	20
65 < t ≤ 70	18	38
70 < t ≤ 80	16	54
t > 80	6	60

$$\text{Median} = \frac{N}{2} \text{ value} \\ = 30^{\text{th}} \text{ value}$$



$$\begin{aligned} & \text{Median} = \frac{N}{2} \text{ value} \\ & = 30^{\text{th}} \text{ value} \\ & \text{Area under curve} = 20 \quad \text{Area under curve} = 38 \\ & \text{Area under curve} = 10 \quad \text{Area under curve} = 18 \\ & = 65 + \frac{10}{18} \times 5 \\ & = 65 + 2.7 = 67.7 \end{aligned}$$