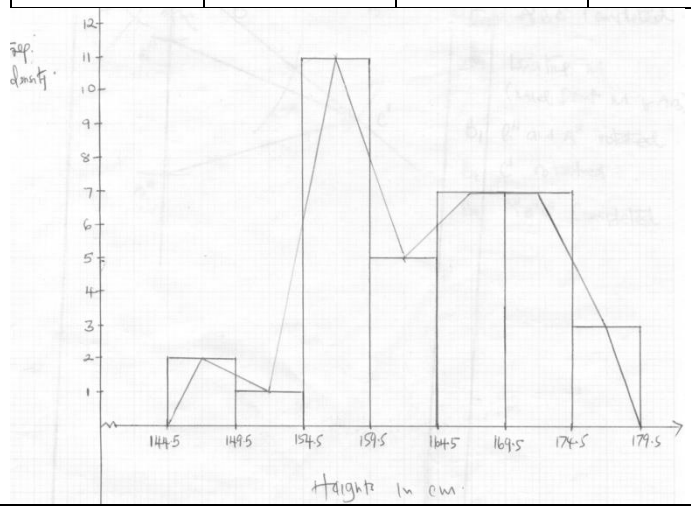
2. Representation of data

1.	(a) Class / Tally mark / Freq / Freq D 145-149 // 2 2 150-154 / 1 1 155-159 𝍸 𝍸 / 11 11 169-164 𝍸 5 5 165-169 𝍸 // 7 7 170-174 𝍸 // 7 7 175-179 /// 3 3  	**B1** **B1** **B1** **B1** **B1** **B1** **B1** **B1**	Classes Tally mark column Freq. column Freq density column (can be implied) Freq. density (y axis Height (x axis) Correct spacing as per scale Histogram drawn (bars) Joining mid point of the bars Joining mid point of first class to 144.5 Joining mid point of last class to 179.5
		10	

1.

Length	*Frequency*
11.5 ≤ x≤ 13.5	*6*
13.5 ≤ x≤ 15.5	*9*
15.5 ≤ x≤ 17.5	*6*
17.5 ≤ x≤ 23.5	*3*

2. *Food:* $^{40}/_{100}$ *x 360 = 144 °*

Transport: $^{10}/_{100}$ *x 360 = 36°*

Education: $^{20}/_{100}$ *x 360 = 72 °*

Clothing: $^{20}/_{100}$ *x 360 = 72 °*

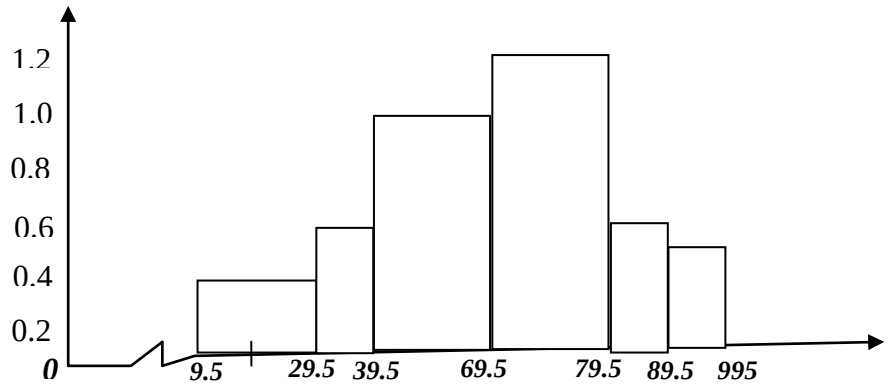
Rent: $^{10}/_{100}$ *x 360 = 36°*

3.

Class	*Tally*	*Frequency*	*Upper Limit*
10 – 29	𝍸 ///	*8*	*29.5 B_2 for*
30 – 39	//// /	*6*	*39.5 all tally*

40 – 69	//// //// //// //// //// ///	*28*	*69.5 B_2 all*
70 – 74	//// /	*6*	*74.5 - frequency*
75 - 89	//// ///	*8*	*89.5 - B_1*
90 – 99	////	*4*	*99.5 B_1*

Modal class 40 – 69 B1



S_1- scale
B_3- Au Histogram
B_2- any 4
B_1- any 3

4. *See the graph paper.*
For correct class boundaries

For correct class intervals.

All frequency densities

Correct scale

All the bars drawn.

Top mid pts. Of bars indicated.

For the mid pts. Joint to make a polygon.

For correctly identifying the modal mark point.

For reading correctly the modal mark $\equiv 53.5 \pm 0.1$

5. (a)

Marks	*Frequency*
5-9	*20*
10-19	*50*
20-30	*40*
40-49	*30*

(b) Modal class is 10-19

(c)(i)

Class	*x*	*f*	*fx*	*Cf*
5-9	*7*	*20*	*140*	*20*
10-19	*14.5*	*50*	*725*	*70*
20-39	*29.5*	*40*	*1180*	*110*
40-49	*44.5*	*30*	*1335*	*140*
		ΣF = 140	*ΣFx =3380*	

$x = \frac{\Sigma fx}{\Sigma f} = \frac{3380}{140} = 24.14$

(ii) Median mark is at 70 + 71 = 70.5th position

$Median = 119.5 + \frac{(0.5)}{40} \times 20$

$= 19.5 + 0.25$

$= 19.75$

6. *Total No. of sessions*

= 8 + 7 + 4 + 3 = 22

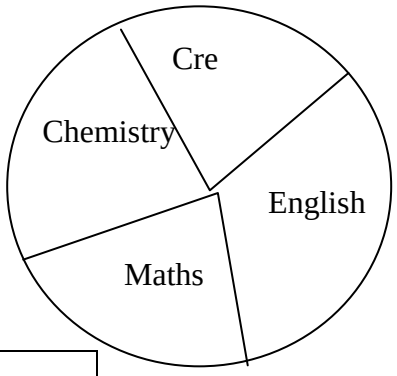
Angle for:

English = $^{8}/_{22} \times 360 = 130.9°$

Maths = $^{7}/_{22} \times 360 = 114.5°$

Chemistry = $^{4}/_{22} \times 360 = 65.5°$

CRE = $^{3}/_{22} \times 360 = 49.01°$



7. *180 – 189*

Class limits

class	*limits*	*f*	*cf*
149.5	*159.5*	*2*	*2*
159.5	*169.5*	*9*	*11*
169.5	*179.5*	*12*	*23*
179.5	*189.5*	*16*	*39*
189.5	*199.5*	*7*	*46*
199.5	*209.5*	*4*	*50*

Median = $^{50}/_{2} = 25$

$179.5 + \frac{25 - 23}{16} \times 10$

$= 179.5 + \frac{20}{16} = 180.75$

$179.5 + \frac{26 - 23}{16} \times 10$

$179.5 + \frac{30}{16} = 181.38$

$\frac{180.75 + 181.38}{}$

2

= 181.06

8. a) i) 145 – 153

ii) Median class

$(^{40 + 1}/_{2})^{th}$ value ∴ median class = 145 – 153

This is the 20.5^{th} value

The value also in the 145 – 153 class

b)

Class	x	f	fx
118- 126	122	3	366
127- 135	131	4	524
136 – 144	140 B1	10 B2	1400
145 – 153	149	12	1788
154 – 162	158	5	790
163 – 171	167	4	668
172 - 180	176	2	352
		Ef = 40	Efx = 5888

B2 for all values of fx correct and B1 for 4 values of fx and above orrect

Mean = $\frac{Efx}{Ef} = \frac{5888}{40} = 147.2mm$

Median $20^{th} = 144.5 + (^{11}/_{12} \times 9) = 152.75$

$21^{st} = 144.5 + (^{12}/_{12} \times 9) = 153.5$

Median = $\frac{152.75 + 153.5}{2} = 153.125$

(Alternatively one could work out the 20.5 value directly using median formula)