1. **Following data gives the number of children in 40 families :**

   1, 2, 6, 5, 1, 3, 2, 6, 2, 3, 4, 2, 0, 4, 4, 3, 2, 2, 0, 0, 1, 2, 2, 4, 4, 3, 2, 1, 0, 5, 1, 2, 4, 3, 4, 1, 1, 6, 2, 2. Represent it in the form of a frequency distribution.

Solution:

Below is given a frequency distribution of the given data.

No. of Children	Tally-Marks	Frequency
0	IIII	4
1	𝍸 II	7
2	𝍸 𝍸 II	12
3	𝍸	5
4	𝍸 II	7
5	II	2
6	III	3

2. **The weekly wages (in rupees) of 30 workers in a factory are given below :**

   630, 635, 690, 610, 635, 636, 639, 645, 698, 690, 620, 660, 632, 633, 655, 645, 604, 608, 612, 640, 685, 635, 636, 678, 640, 668, 690, 606, 640, 690. Represent the data in the form of a frequency distribution with class size 10.

Solution:

From the given data, Lowest data = 604 and Largest data = 698

∴ Range of data = 698 − 604 = 94

Frequency distribution of the given data is as follows:

Class Interval	Tally-Marks	Frequency
600 - 610	III	3
610 - 620	II	2
620 - 630	I	1
630 - 640	𝍸 IIII	9
640 - 650	𝍸	5
650 - 660	I	1
660 - 670	II	2
670 - 680	I	1
680 - 690	I	1
690 - 700	𝍸	5
Total		**30**

3. Convert the following frequency distribution to exclusive form : Use this table to find :

Class Interval	Frequency
30 - 34	7
35 - 39	9
40 - 44	13
45 - 49	6
50 - 54	3
55 - 59	10

(i) The true class limits of the fourth class interval.

(ii) The class boundaries of the fifth class interval.

(iii) The class mark of the third class interval.

(iv) The class size of the sixth class interval.

Solution:

Frequency distribution to exclusive form of the given frequency distribution is as follows:

Class Interval	Frequency
29.5 - 34.5	7
34.5 - 39.5	9
39.5 - 44.5	13
44.5 - 49.5	6
49.5 - 54.5	3
54.5 - 59.5	10

(i) The true class limits of the fourth class interval is $44.5 - 49.5$.

(ii) The class boundaries of the fifth class interval is $49.5 - 54.5$.

(iii) The class mark of the third class interval $\frac{39.5 + 44.5}{2} = \frac{84}{2} = 42$

(iv) The class size of the sixth class interval $= 59.5 - 54.5 = 5$

4. Find the actual lower class limits and upper class limits of the classes: 10 - 19, 20 - 29, 30 - 39 and 40 - 49.

Solution:

Classes are 10 - 19, 20 - 29, 30 - 39 and 40 - 49.

Difference between upper limit of one class and lower limit of next class $=1$

$\therefore$ Adjustment of factor $= \frac{1}{2} = 0.5$

Subtracting the adjustment factor from the lower limits and adding it to all the upper limits.

Thus, classes become, 9.5 - 19.5, 19.5 - 29.5, 29.5 - 39.5 and 39.5 - 49.5.

Hence, actual lower limits are 9.5, 19.5, 29.5 and 39.5 and actual upper limits are 19.5, 29.5, 29.5 and 49.5.

5. Construct a frequency distribution table from the following cumulative frequency distribution :

(i)

Class Interval	Cumulative Frequency
10-19	8
20-29	19
30-39	23
40-49	30

(ii)

Class Interval	Cumulative Frequency
5-10	18
10-15	30
15-20	46
20-25	73
25-30	90

Solution:

(i) Frequency Distribution Table is as follows :

Class Interval	Cumulative Frequency	Frequency f
10-19	8	8
20-29	19	$19-8=11$
30-39	23	$23-19=4$
40-49	30	$30-23=7$
	Total	30

(ii) Frequency Distribution Table is as follows :

Class Interval	Cumulative Frequency	Frequency f
5-10	18	18
10-15	30	$30-18=12$
15-20	46	$46-30=16$
20-25	73	$73-46=27$
25-30	90	$90-73=17$
	Total	90

6. Construct the frequency distribution table from the following cumulative frequency table :

(i) State the number of students in the age group 10-13.

(ii) State the age group which has the least number of students.

Ages	Number of Students
Below 4	0
Below 7	85
Below 10	140
Below 13	243
Below 16	300

Solution:

Since, there is no students below age of 4 years, hence starting the classes from lower limits as 4.

(i) Number of students in the age group 10-13 = 103.

(ii) Age group which has the least number of students is 7-10.

Ages	No. of Students	Frequency f
4 - 7	85	85
7 - 10	140	$140-85=55$
10 - 13	243	$243-140=103$
13 - 16	300	$300-243=57$
	Total	300

7. Fill in the blanks in the following table.

Class Interval	Frequency	Cumulative Frequency
25 - 34	...	15
35 - 44	...	28
45 - 54	21	...
55 - 64	16	...
65 - 74	...	73
75 - 84	12	...

Solution:

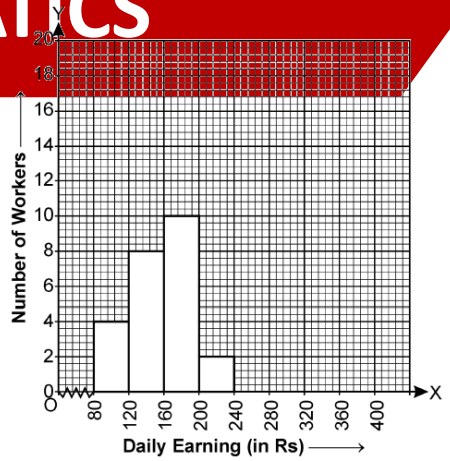
Class Interval	Frequency	Cumulative Frequency
25 - 34	15	15
35 - 44	$28-15=13$	28
45 - 54	21	$28+21=49$
55 - 64	16	$49+16=65$
65 - 74	$73-65=8$	73
75 - 84	12	$73+12=85$

8. Construct a histogram for the following frequency distribution :

Daily earning (in Rs.)	80-120	120-160	160-200	200-240
Number of Workers	4	8	10	2

Solution:

Taking daily earnings (in Rs.) along x axis and number of workers along y axis. Below is given a histogram of the given data. Scale 1 cm = 2 workers.

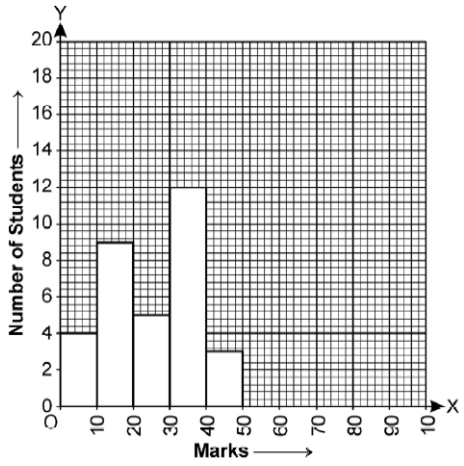


9. Draw a histogram for the following frequency distribution :

Marks	0 - 10	10 - 20	20 - 30	30 - 40	40 - 50
No. of students	4	9	5	12	3

Solution:

Taking marks along x-axis and number of students along y-axis. Below is given the histogram of the given data. Scale 1 cm = 2 students.

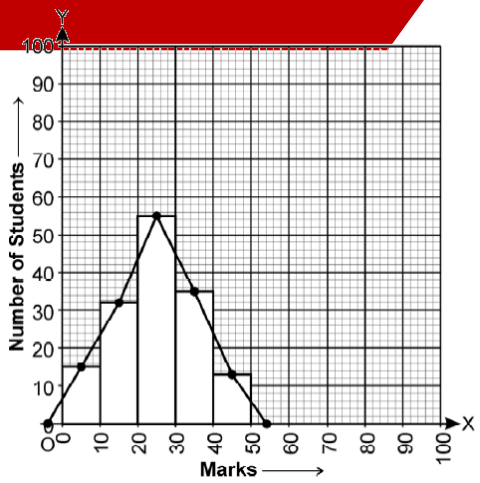


10. The following table shows the marks obtained by the students of a class in an examination. Draw a frequency polygon.

Marks	0 - 10	10 - 20	20 - 30	30 - 40	40 - 50
No. of Students	15	32	55	35	13

Solution:

Taking marks along x-axis and number of students, along y-axis. First we draw a histogram and then by joining the mid-points of consecutive rectangle, we will get a frequency polygon. Scale: 1 cm = 10 students.



11. Each of the 25 students in a class was given a home assignment comprising 10 questions in mathematics. The data given below, show the number of questions solved and submitted by individual students on the next day.

1, 4, 5, 6, 0, 9, 3, 2, 3, 4, 6, 4, 5, 2, 7, 5, 2, 2, 3, 5, 1, 0, 7, 6, 3.

(i) Taking classes as 0-2, 2-4, 4-6 ... etc., make a frequency table for the above distribution.

(ii) Draw frequency polygon to represent the given data.

Solution:

(i) Frequency distribution table for the above data is as follows:

Class Interval	Tally Marks	Frequency
0-2	IIII	4
2-4	~~IIII~~ III	8
4-6	~~IIII~~ II	7
6-8	~~IIII~~	5
8-10	I	1
	Total	25

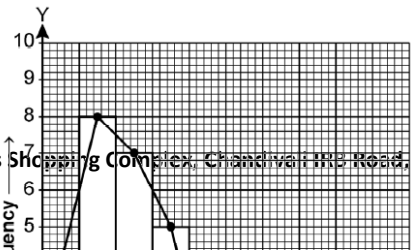
(ii) To draw frequency polygon :

(a) Draw the histogram for the given data by taking class intervals along x-axis and frequency along y-axis.

(b) Mark the mid-point of top of each rectangle of histogram.

(c) Mark the mid-point of immediately higher class interval (i.e. 10-12) with frequency zero.

(d) Join the consecutive mid-points marked by straight lines. Also, join the mid-point of immediately lower class with frequency zero to midpoint of rectangle for 0-2. Required frequency polygon is as follow.



MATHEMATICS

SpeedLabs
Assisted Practice | Expert Guidance | Personalized Insights
An Innovative Learning Methodology by IITians.