

Exercise 7.6

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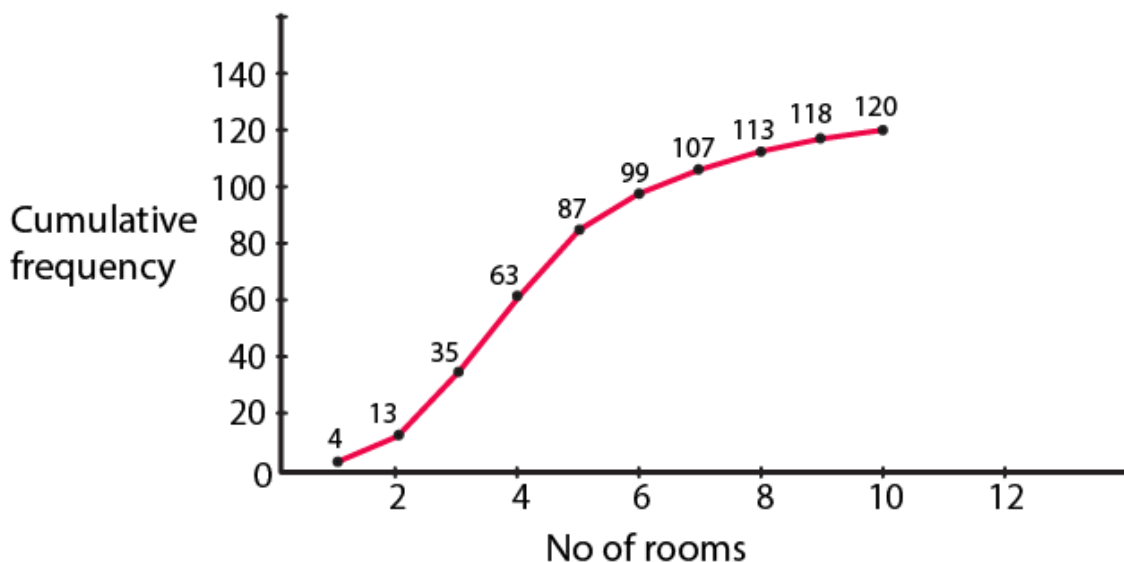
1. Draw an ogive by less than the method for the following data:

No. of rooms	1	2	3	4	5	6	7	8	9	10
No. of houses	4	9	22	28	24	12	8	6	5	2

Solution:

No. of rooms	No. of houses	Cumulative Frequency
Less than or equal to 1	4	4
Less than or equal to 2	9	13
Less than or equal to 3	22	35
Less than or equal to 4	28	63
Less than or equal to 5	24	87
Less than or equal to 6	12	99
Less than or equal to 7	8	107
Less than or equal to 8	6	113
Less than or equal to 9	5	118
Less than or equal to 10	2	120

It's required to plot the points (1, 4), (2, 13), (3, 35), (4, 63), (5, 87), (6, 99), (7, 107), (8, 113), (9, 118), (10, 120), by taking upper class limit over the x-axis and cumulative frequency over the y-axis.



2. The marks scored by 750 students in an examination are given in the form of a frequency distribution table:

Marks	No. of Students
600 – 640	16

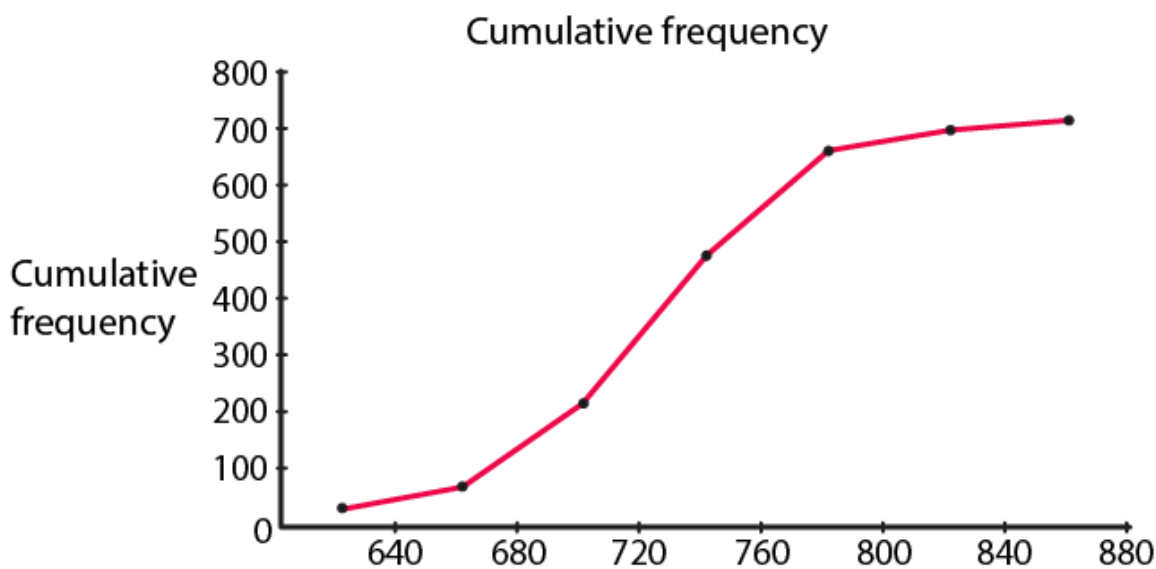
640 – 680	45
680 – 720	156
720 – 760	284
760 – 800	172
800 – 840	59
840 – 880	18

Prepare a cumulative frequency distribution table by less than method and draw an ogive.

Solution:

Marks	No. of Students	Marks Less than	Cumulative Frequency
600 – 640	16	640	16
640 – 680	45	680	61
680 – 720	156	720	217
720 – 760	284	760	501
760 – 800	172	800	673
800 – 840	59	840	732
840 – 880	18	880	750

Plot the points (640, 16), (680, 61), (720, 217), (760, 501), (800, 673), (840, 732), (880, 750) by taking upper class limit over the x-axis and cumulative frequency over the y-axis.



3. Draw an Ogive to represent the following frequency distribution:

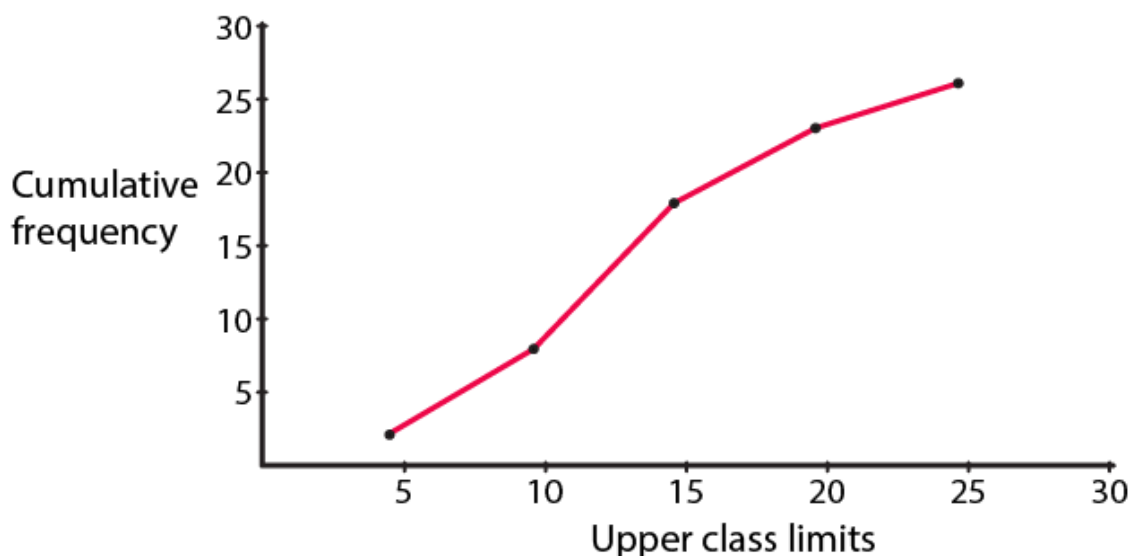
Class-interval	0 – 4	5 – 9	10 – 14	15 – 19	20 – 24
No. of students	2	6	10	5	3

Solution:

Since the given frequency distribution is not continuous we will have to first make it continuous and then prepare the cumulative frequency:

Class-interval	No. of Students	Less than	Cumulative frequency
0.5 – 4.5	2	4.5	2
4.5 – 9.5	6	9.5	8
9.5 – 14.5	10	14.5	18
14.5 – 19.5	5	19.5	23
19.5 – 24.5	3	24.5	26

Plot the points (4.5, 2), (9.5, 8), (14.5, 18), (19.5, 23), (24.5, 26) by taking the upper class limit over the x-axis and cumulative frequency over the y-axis.



4. The monthly profits (in Rs) of 100 shops are distributed as follows:

Profit per shop	No of shops:
0 – 50	12
50 – 100	18
100 – 150	27
150 – 200	20
200 – 250	17
250 – 300	6

Draw the frequency polygon for it.

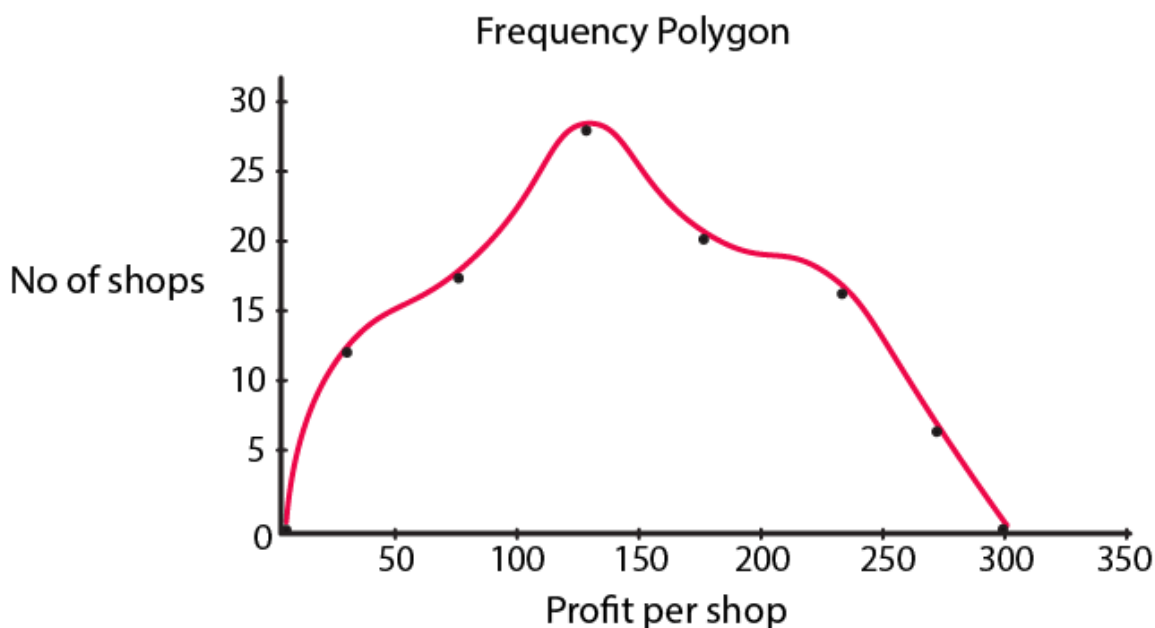
Solution:

Doing for the less than method, we have

Profit per shop	Mid-value	No of shops:
Less than 0	0	0
Less than 0 – 50	25	12
Less than 50 – 100	75	18

Less than 100 – 150	125	27
Less than 150 – 200	175	20
Less than 200 – 250	225	17
Less than 250 – 300	275	6
Above 300	300	0

By plotting the respectively coordinates we can get the frequency polygon.



5. The following distribution gives the daily income of 50 workers of a factory:

Daily income (in Rs):	No of workers:
100 – 120	12
120 – 140	14
140 – 160	8
160 – 180	6
180 – 200	10

Convert the above distribution to a 'less than' type cumulative frequency distribution and draw its ogive.

Solution:

Firstly, we prepare the cumulative frequency table by less than method as given below:

Daily income	Cumulative frequency
Less than 120	12
Less than 140	26
Less than 160	34
Less than 180	40
Less than 200	50

Now we mark on x-axis upper class limit, y-axis cumulative frequencies. Thus we plot the point (120, 12), (140, 26), (160, 34), (180, 40), (200, 50).

