After completing the formation of the frequency distribution table by compressing the large amount of information and displaying it in a way that is easy to deal with in the statement of the most frequently repeated values, the least frequently repeated, the results can be displayed graphically. The most important forms of graphic representation of frequency distribution tables are:

A. Frequency histogram: It is a set of adjacent rectangles with the same width representing the equal length of the categories, but with different lengths, where the length of each rectangle is proportional to the frequency of the

category it represents.

B. Frequency polygon: It is a closed polygon when it starts and ends from the horizontal axis and breaks at the points that

represent a repetition. Thus, it is a straight line that connects the points that represent the repetitions.

C. Frequency curve: It is similar to a polygon except that the connection between the points that frequency the repetitions is curved and not straight, so it appears in a way that does not have any breaking points, but rather its deviations are smooth.

Cumulative frequency curve: It is a curve that represents the cumulative frequency (ascending and descending) and its lines meet at the end of the categories, while in the frequency curve they meet at the centers of the categories.

Example:

You have a table showing the frequencies of the number of hours a student spends studying in the university library. Draw the frequency histogram, the frequency polygon, the frequency curve, and also the ascending and descending frequency curve.

class	frequency
10−14	8
15−19	28
20−24	27
25−29	12
30−34	4
35−39	1

Sol/

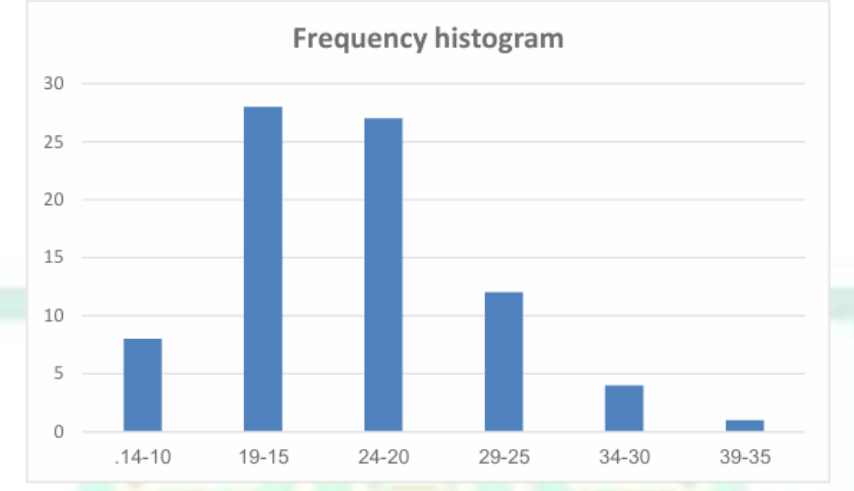
We find the class center and the ascending and descending cumulative frequency.

$$\text{Class Center} = (\max of\ class + \min\ of\ class)/2$$

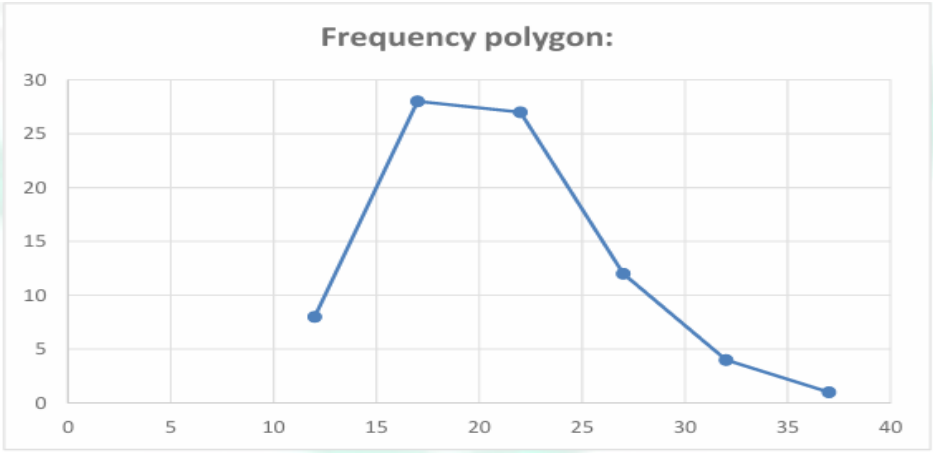
class	frequency	class center

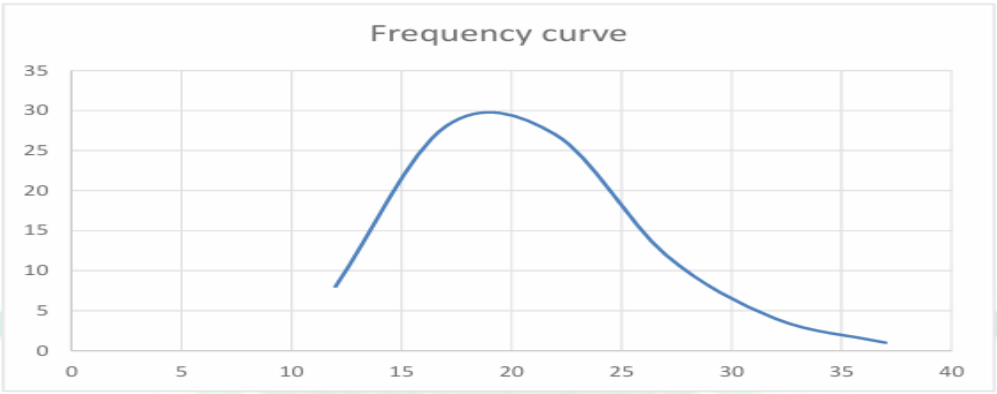
10−14	8	12
15−19	28	17
20−24	27	22
25−29	12	27
30−34	4	32
35−39	1	37

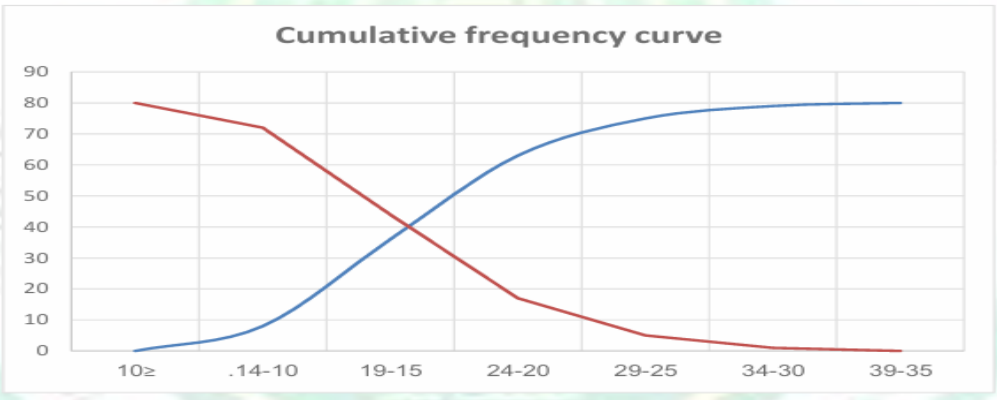
class	frequency	Ascending cumulative frequency	descending cumulative frequency
≤10	0	0	80
10−14	8	8	72
15−19	28	36	44
20−24	27	63	17
25−29	12	75	5
30−34	4	79	1
35−39	1	80	0

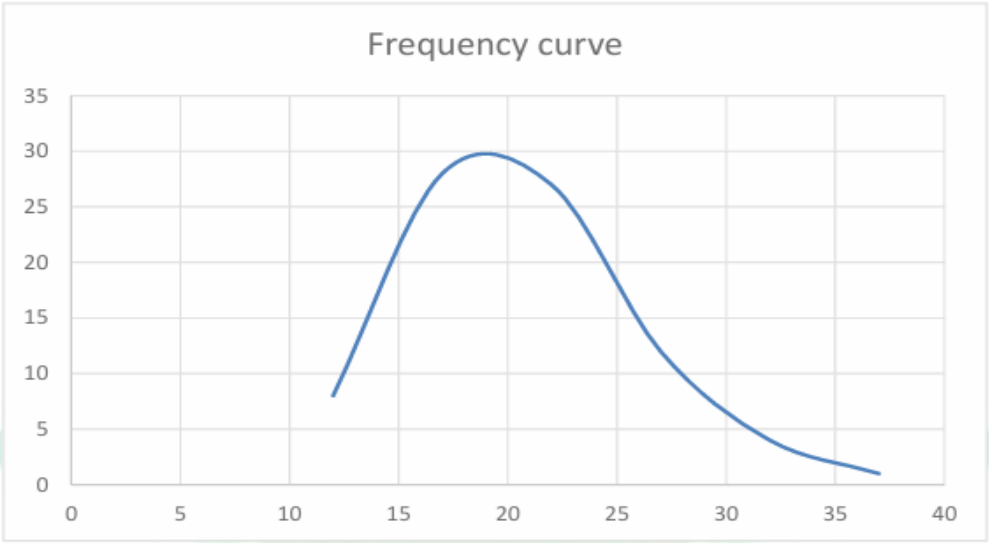


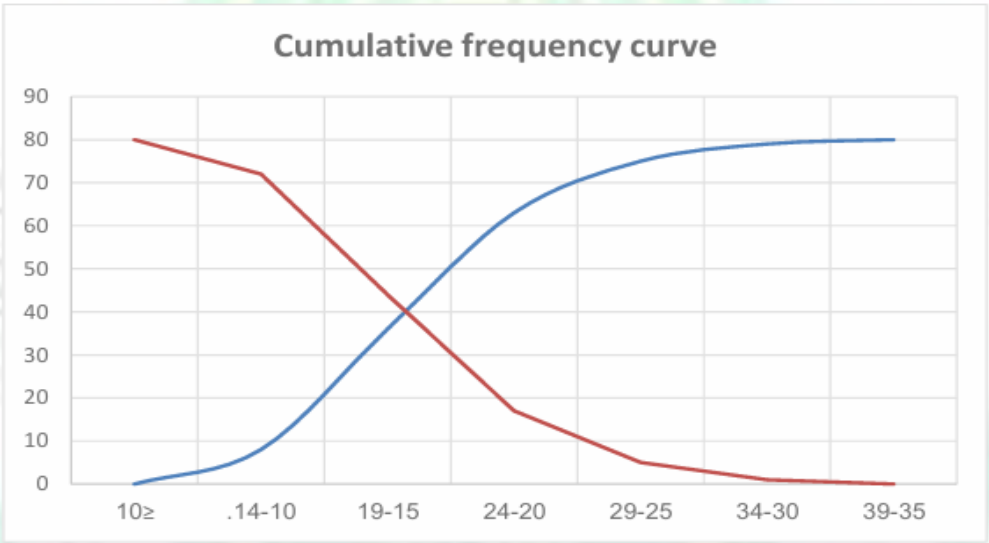
Frequency polygon and the frequency polygon for a specific frequency distribution We use the class centers to determine the points for the frequency of each class, then these points are connected after determining them all with straight lines, so we have a shape consisting of straight lines instead of rectangles as is the case in the frequency histogram. To draw a frequency polygon for the displayed data, we extract the class centers, then determine their location on the horizontal axis (X), then we start by determining the first point, which consists of the intersection of the column erected on the horizontal axis at the center of the smallest class, which is (10-14) and its value is (12), with the column erected on the vertical axis (y) at the frequency of this class, which is (8), and so we do the same process for all classes, then we connect each point to the next point with a straight line, so we have the frequency polygon


Frequency polygon:
30
25
20
15
10
5
0
0
5
10
15
20
25
30
35
40


Frequency curve
35
30
25
20
15
10
5
0
0
5
10
15
20
25
30
35
40


Cumulative frequency curve
90
80
70
60
50
40
30
20
10
0
10≥
.14-10
19-15
24-20
29-25
34-30
39-35





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H.W/

Draw the frequency histogram, the frequency polygon, the frequency curve, and also the ascending and descending frequency curve.

class	frequency
67-78	3
79-90	5
91-102	8
103-114	9
115-126	5