Class → 01 Date: 23.09.23

Frequency Distribution:

Representation either in a graphical or tabular format that displays the number of observations within a given interval. (number of observations for each possible value)

Example: 3, 0, 1, 4, 4, 1, 2, 0, 2, 2, 0, 2, 0, 1, 3, 1, 2, 1, 1, 3

number/observation	Frequency
0	4
1	6
2	5
3	3
4	2

(Frequency Distn Table)

Types of Frequency Distribution:

1) Ungrouped Frequency distn => 12, 14, 20, 29, 59 ---

2) Grouped Frequency distn =>

✓	✓
5-10	
12-20	
25-30	

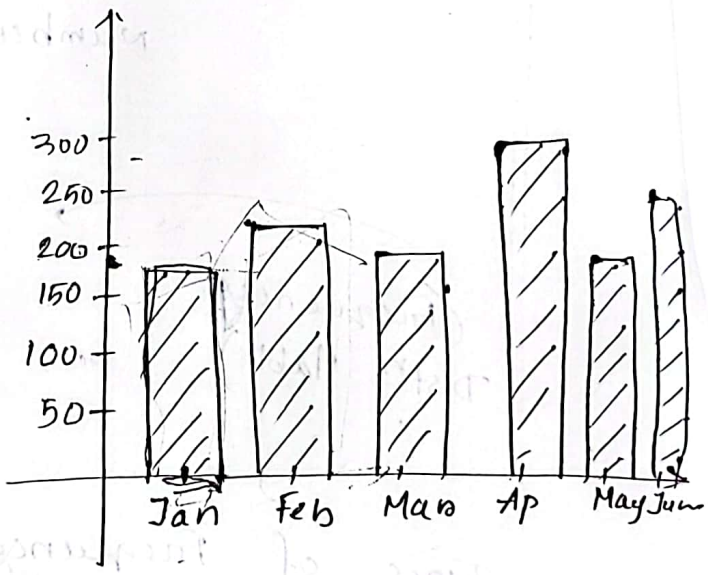
→ displays the frequency of each individual data.

* Frequency Distribution Graphs:

1) Bar graph:

Represents categorical data with rectangular bars with heights or lengths proportional to the values that they represent.
can be plotted horizontally or vertically.

Month	Sales
Jan	170
Feb	215
Mar	200
April	235
May	190
June	250



2) Pie chart:

Displays data in a circular graph.
The entire pie represents 100 percent of a whole and slice represents portions of the whole.

Sample → Test score

Frequency → Num of students

Circle

A

B

C

D

E

1st portion ← 6 → 6×7 = 42

2nd ← 23 → 23×7 = 161

3rd ← 14 → 14×7 = 98

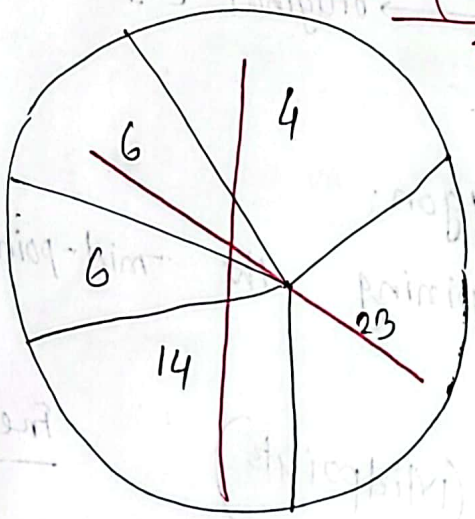
4th ← 6 → 6×7 = 42

5th ← 4 → 4×7 = 28

53

Total circle area = 360°

$\frac{360^\circ}{53} = 6.79 \approx 7$



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

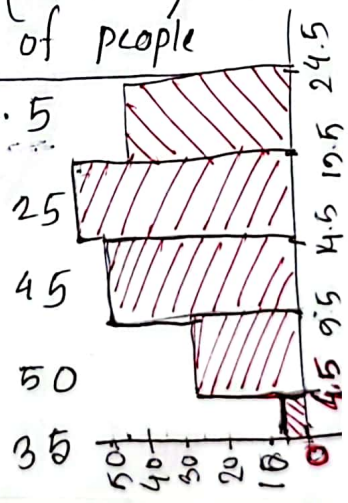
3 Histogram:

Graphical representation of data using rectangular bars of different heights.

There is no space between the rectangular bars.

C.I	Age groups (C.I.)
0 - 4.5	0 - 4
4.5 - 9.5	5 - 9
9.5 - 14.5	10 - 14
14.5 - 19.5	15 - 19
19.5 - 24.5	20 - 24

Num of people (Frequency)

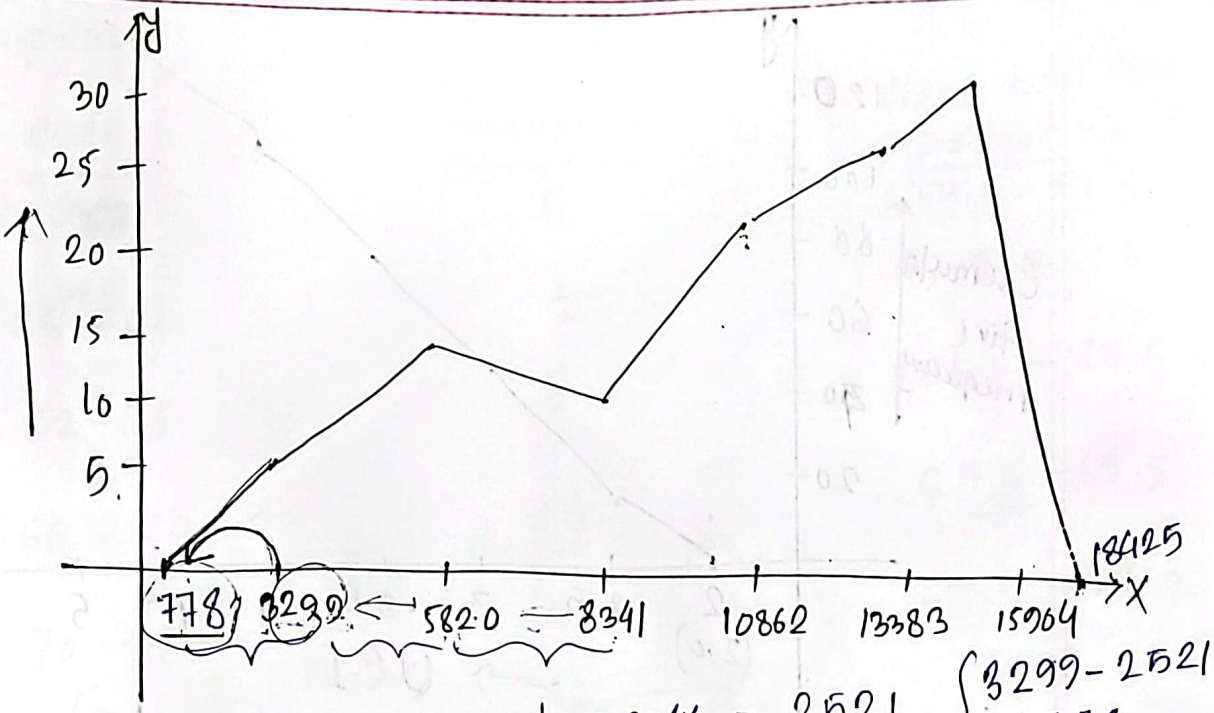


98
42
42
28
161

4 Frequency Polygon:

drawn by joining the mid-points of the bars.

Observation (Midpoints)	Frequency (midpoints)
3299	5
5820	15
8341	10
10862	20
13383	25
15904	30

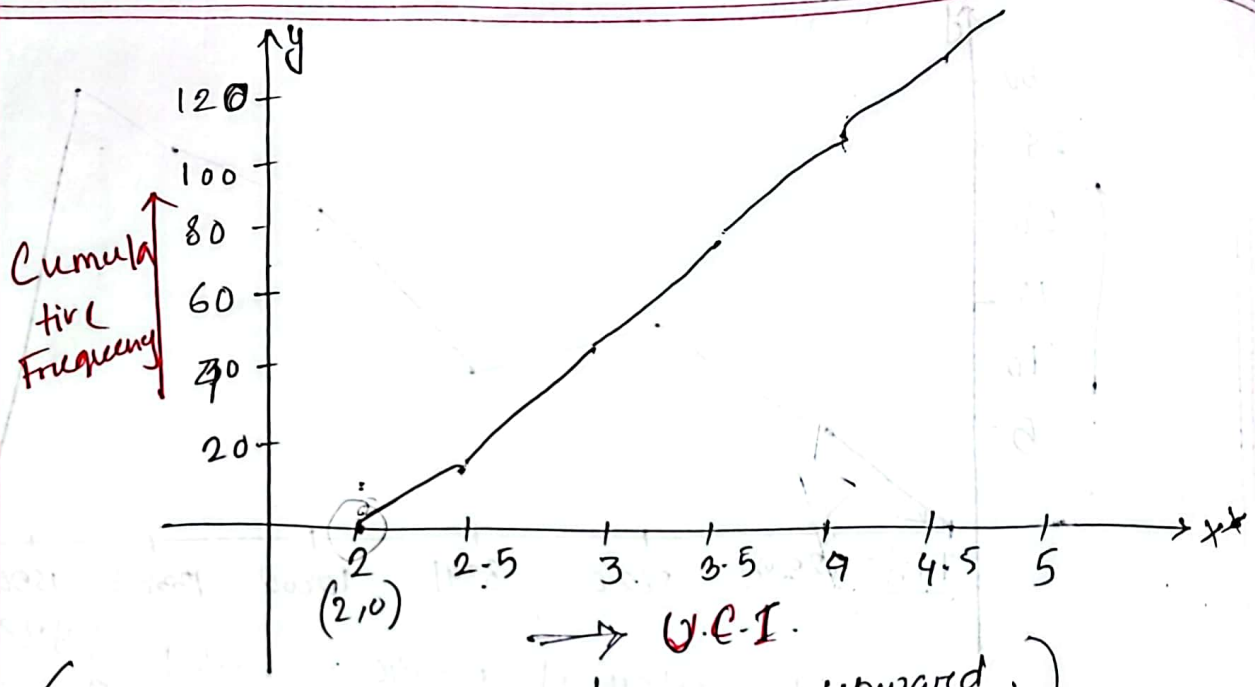


Each interval range = 2521 { 3299 − 2521 = 778 ; 15904 + 2521 = 18425

Cumulative Frequency Polygon (Ogive Curve):

Representing cumulative frequency data on a graph is the most efficient way to understand data and derive results.

Weight	Upper C.I.	Frequency	Cum. Frequency
2 - 2.5	2.5	12	12
2.5 - 3.0	3.0	22	34
3.0 - 3.5	3.5	33	67
3.5 - 4.0	4.0	27	94
4 - 4.5	4.5	18	112
4.5 - 5.0	5.0	8	120



(Ogive curve is always upward.)

Question:

Class Interval	Frequency
54 - 57	5
58 - 61	5
62 - 65	9
66 - 69	14
70 - 73	7

a) Draw Histogram. From this table.

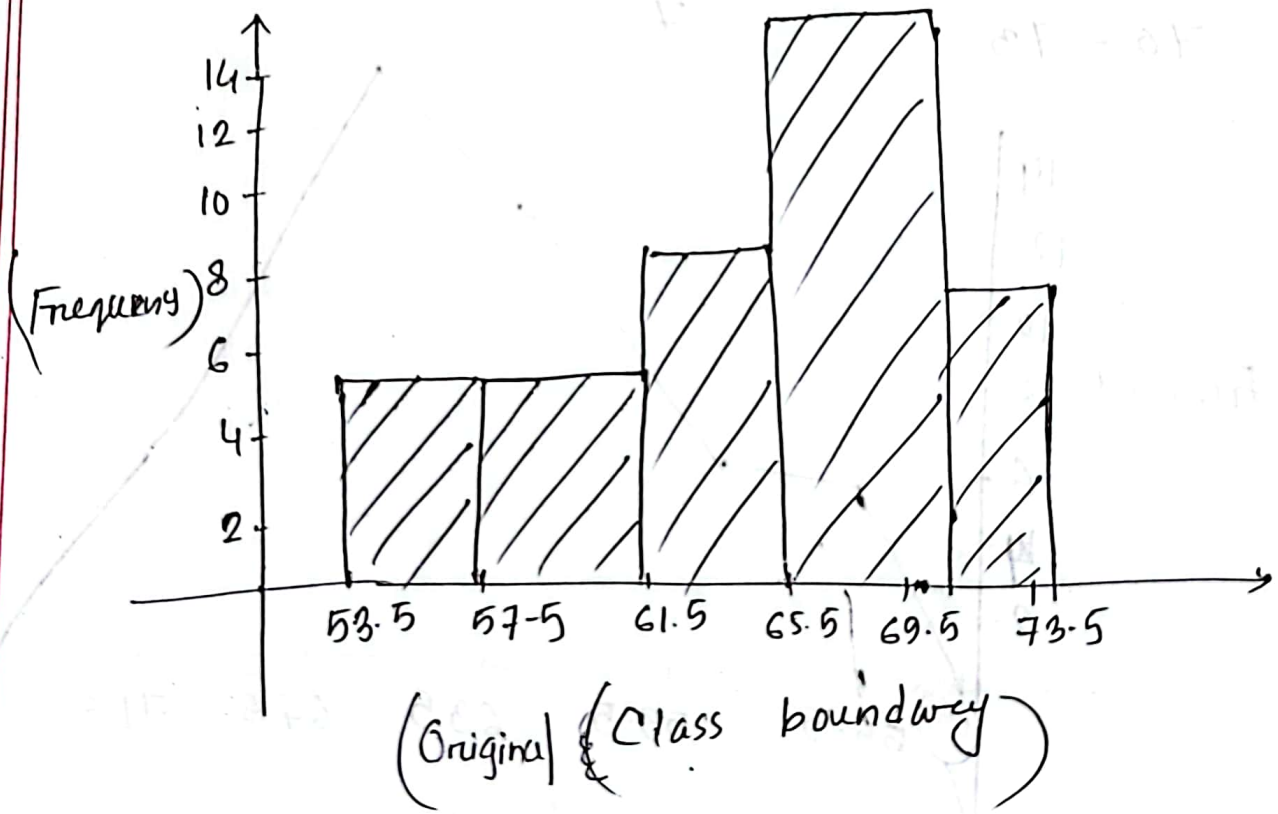
b) Show Frequency polygon and ogive curve.

Soln:

$\frac{53+54}{2} = 53.5$ $\frac{57+58}{2} = 57.5$

Histogram:

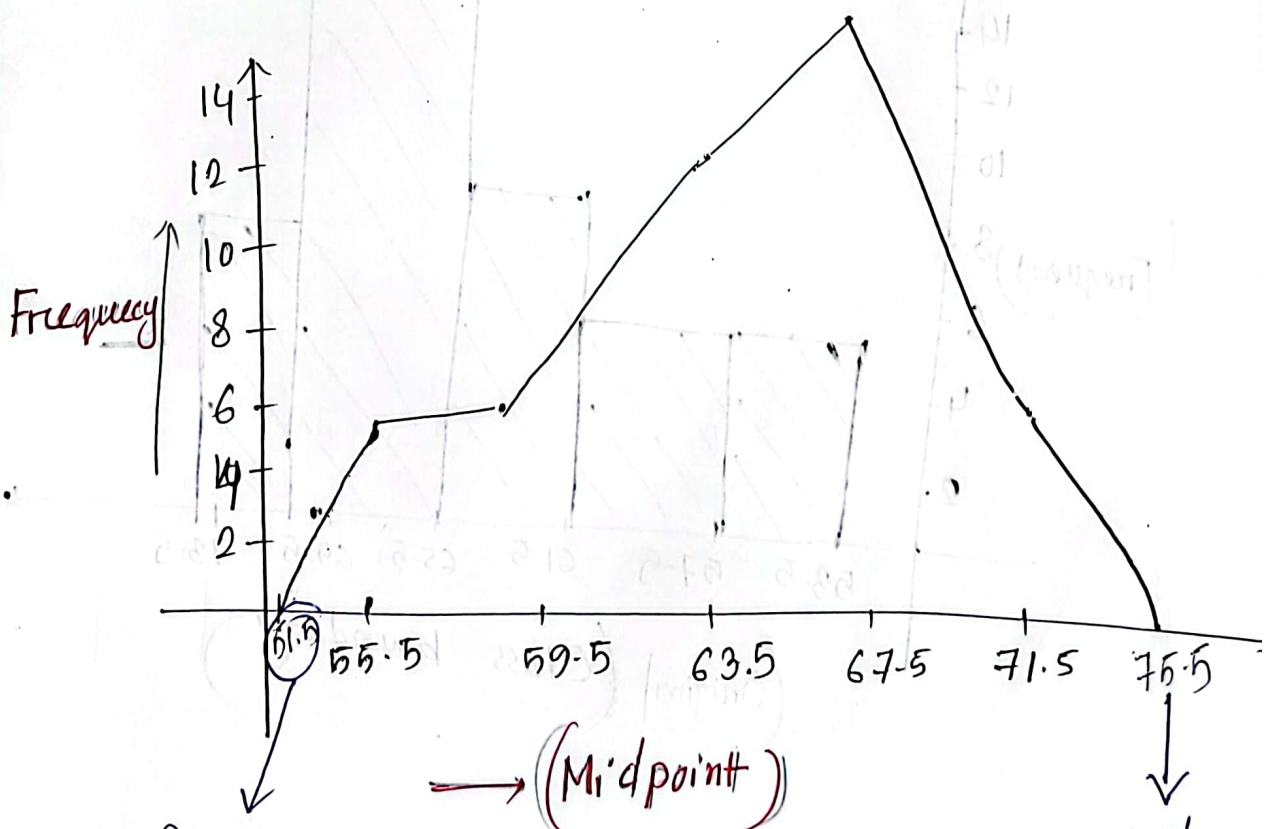
C. I.	Frequency	Class boundary (Original class)
54 - 57	5	53.5 - 57.5
58 - 61	5	57.5 - 61.5
62 - 65	9	61.5 - 65.5
66 - 69	14	65.5 - 69.5
70 - 73	7	69.5 - 73.5



↗ (Line graph of class Frequency plotted against class midpoint)

Frequency Polygon:

C.I.	Frequency	Mid point
54 - 57	5	55.5
58 - 61	5	59.5
62 - 65	9	63.5
66 - 69	14	67.5
70 - 73	7	71.5



Previous midpoint of 55.5

post midpoint of 71.5.

This graph starts with 51.5.

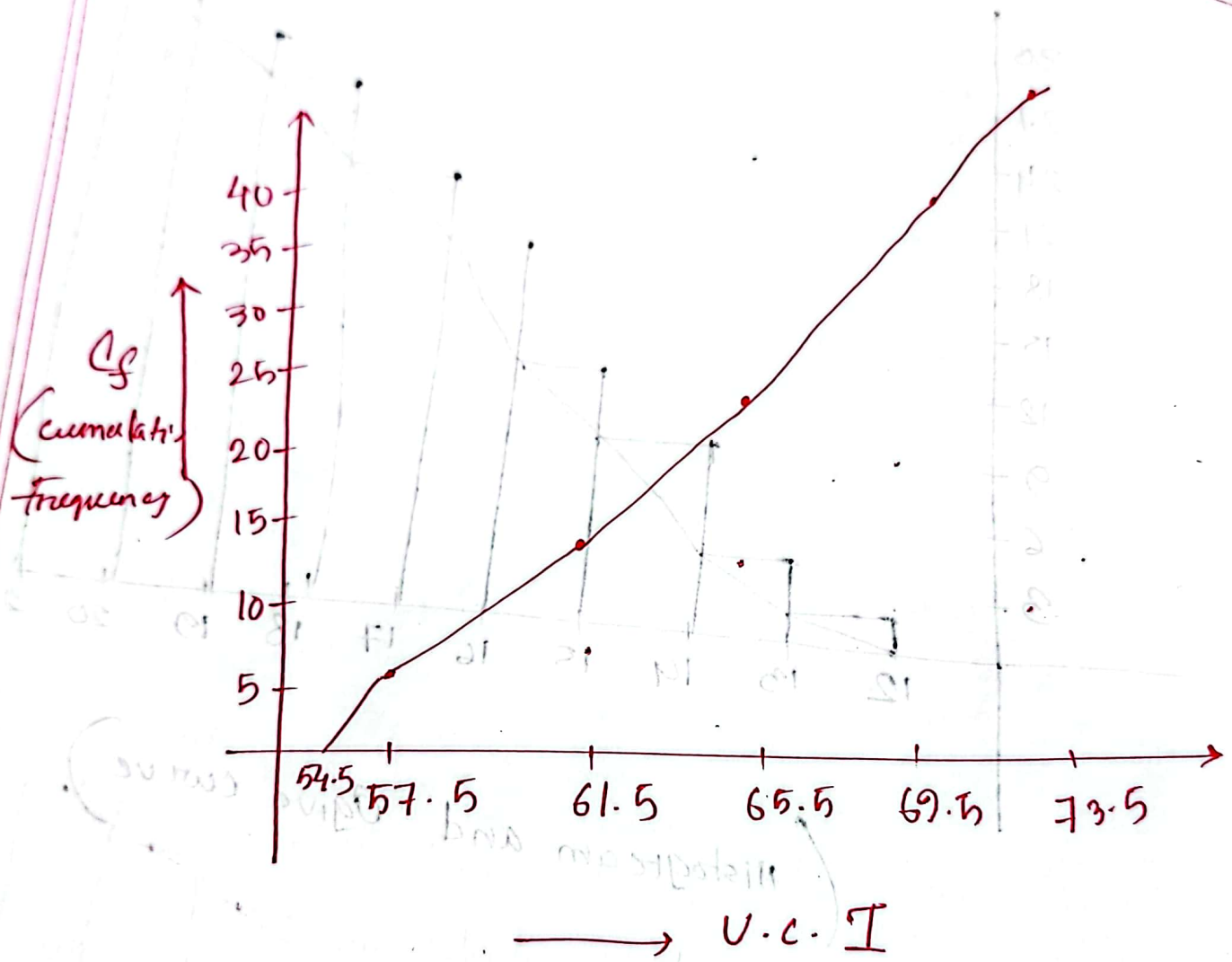
For Fre. Polygon, connect this two points with other midpoints.

ogive begins on the horizontal axis at the lower class boundary of the first class.

Ogive Curve:

O.C.I	C.I.	C.Upperbou	Frequency	Cumulative Frequency
54.5-57.5	54-57	57.5	5	5
57.5-61.5	58 - 61	61.5	5	10
61.5-65.5	62 - 65	65.5	9	19
65.5-69.5	66 - 69	69.5	14	33
69.5-73.5	70 - 73	73.5	7	40

40


40
35
30
25
20
15
10
5
cf
(cumulative frequency)
54.5
57.5
61.5
65.5
69.5
73.5
U.C.I

Problem:

Temperature (°C)	Frequency
12	1
13	2
14	6
15	2
16	6
17	3
18	6
19	1
20	2
21	1

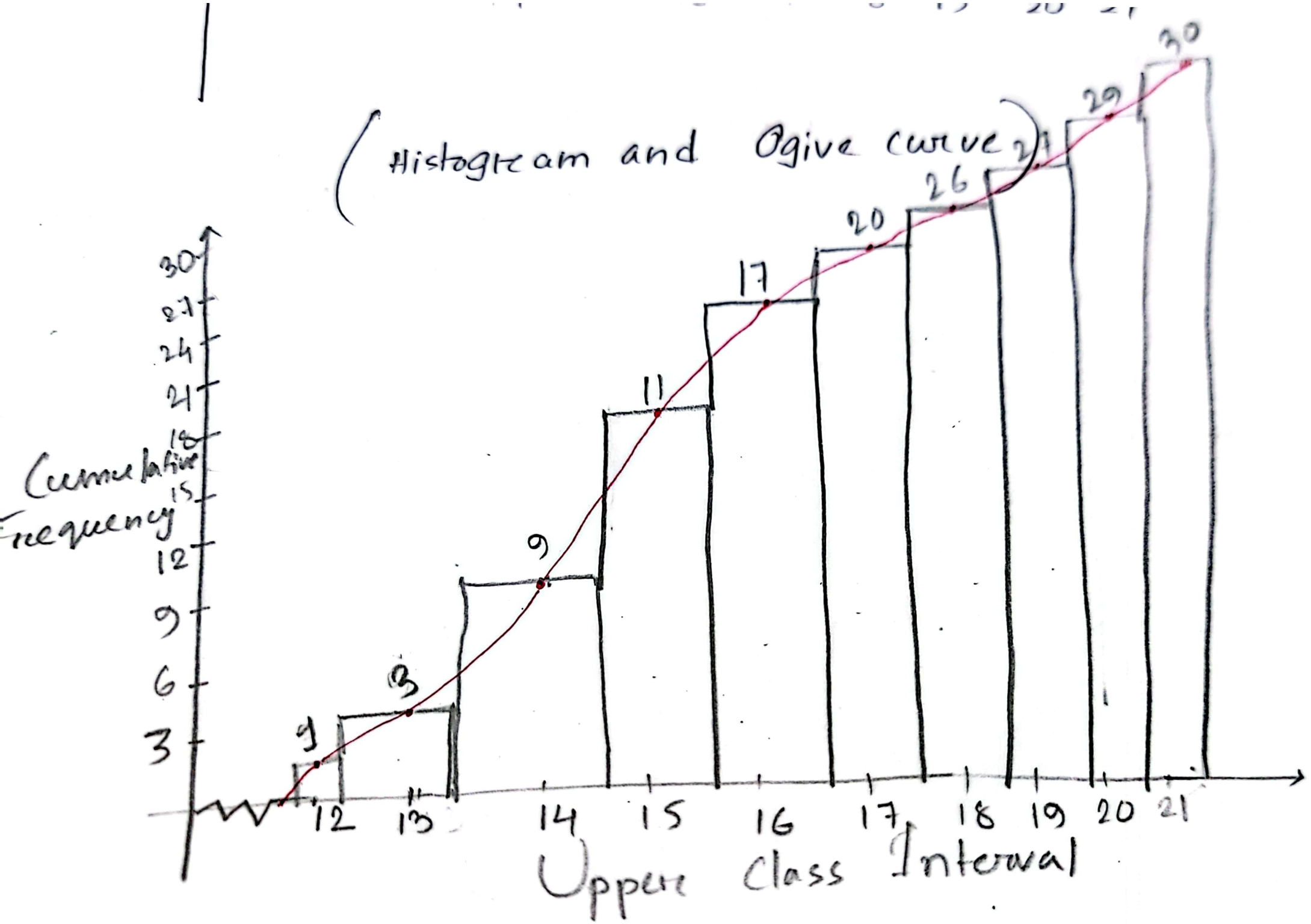
Draw a cumulative Frequency histogram and ~~polygon~~ ogive curve for the data, on the same plot.

Soln:

Temp(°C)	Frequency	Cum. Frequency
12	1	1
13	2	3
14	6	9
15	2	11
16	6	17
17	3	20
18	6	26
19	1	27
20	2	29
21	1	30

[Graph]

(Histogram and Ogive curve)



Name of Exam : Class Test / Mid-term / Final Date: .....

1) Histogram =>

X - axis → (original Class boundary)

Y - axis → (Frequency)

2) Frequency Polygon =>

X-axis (Midpoint → class boundary)

Y-axis (Frequency)

3) Cumulative Frequency polygon

X - axis (Upper original Class boundary)

Y - axis (Cumulative Frequency)