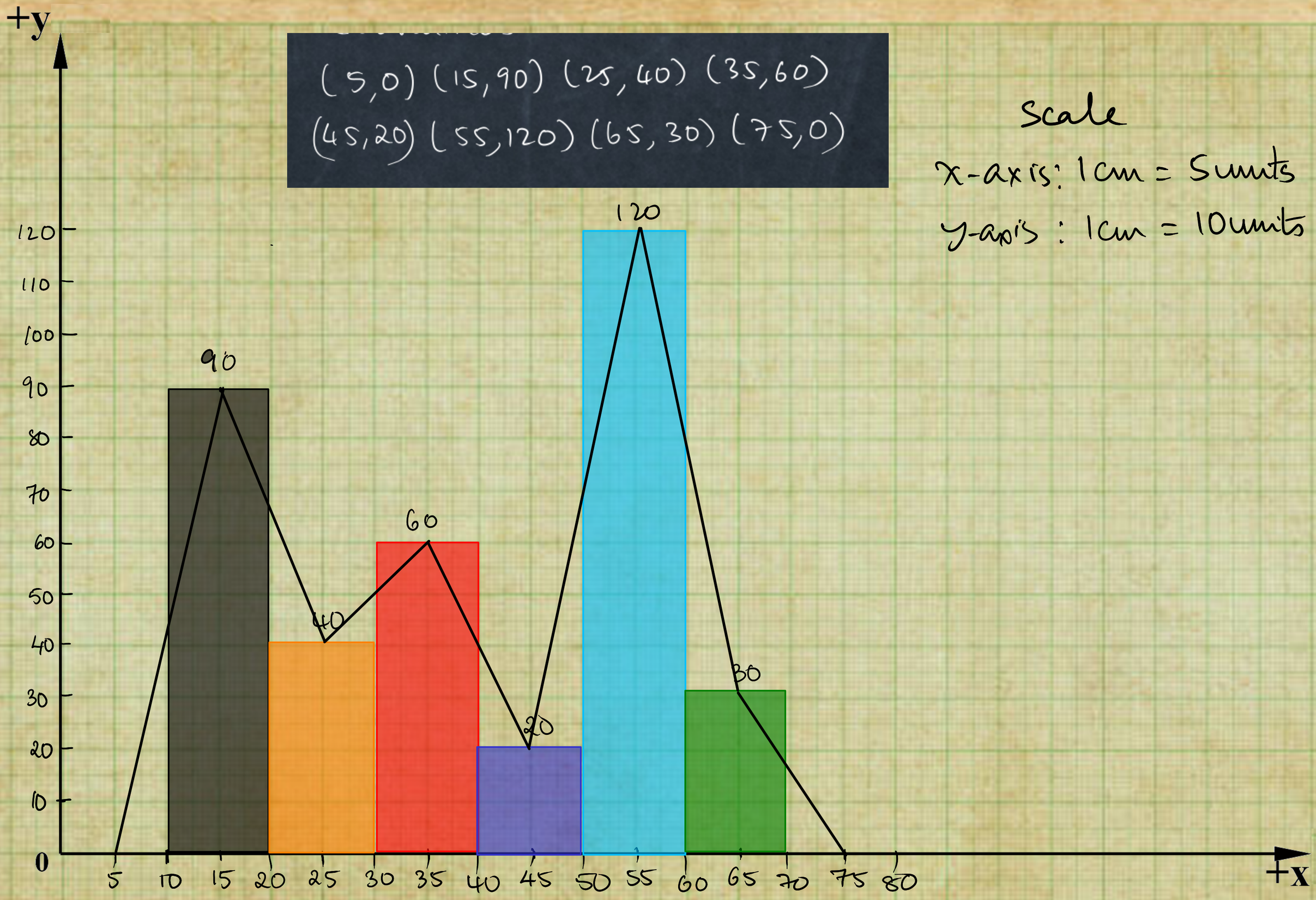
(5,0) (15,90) (25,40) (35,60)
(45,20) (55,120) (65,30) (75,0)

Scale

x-axis: 1cm = 5units

y-axis : 1cm = 10units



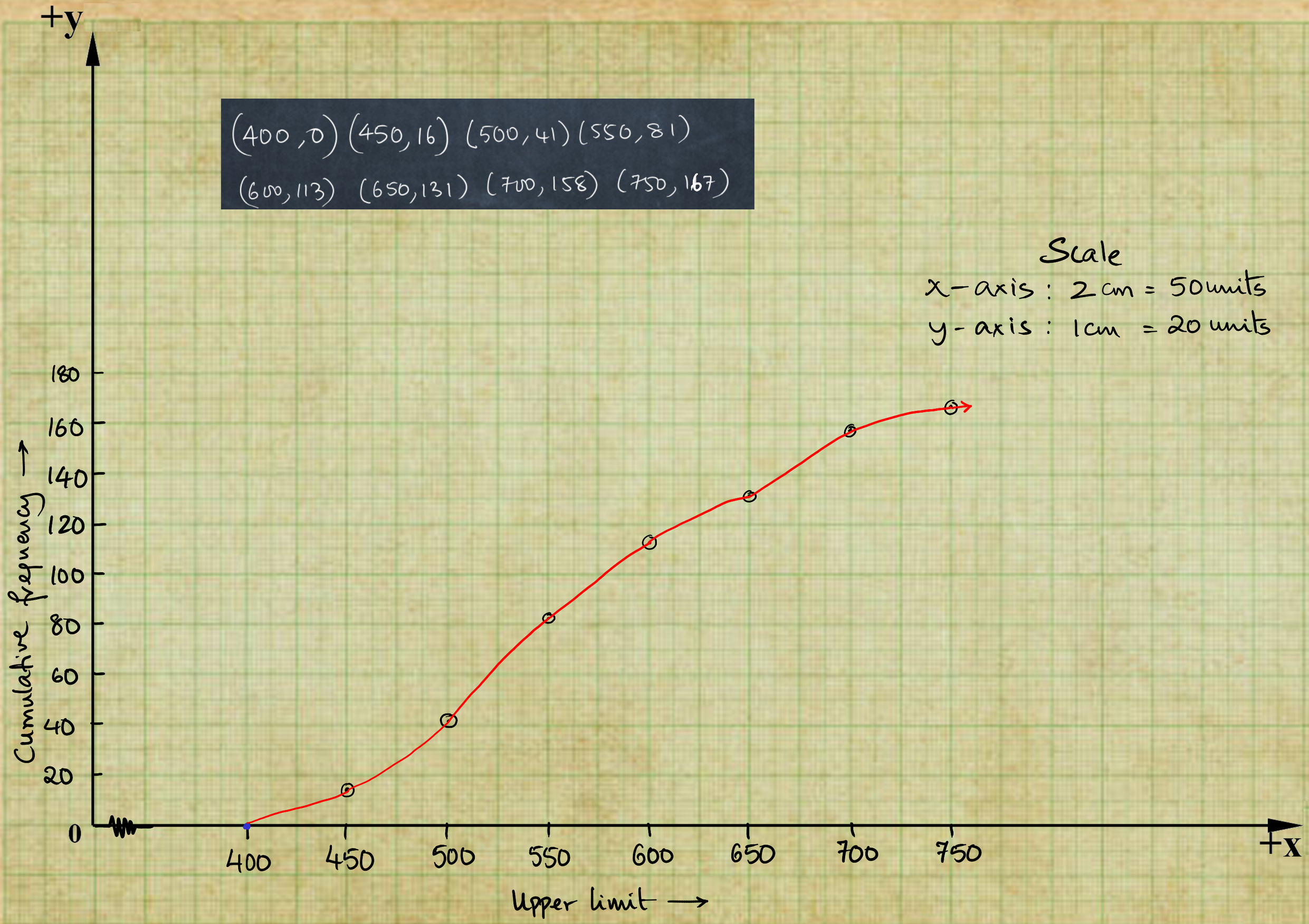
(400, 0) (450, 16) (500, 41) (550, 81)

(600, 113) (650, 131) (700, 158) (750, 167)

Scale

x-axis : 2 cm = 50 units

y-axis : 1 cm = 20 units



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Methods to Calculate Mean ($\bar{x}$)

① $\bar{x} = \frac{\sum x_i}{n}$ — x_i is variate → Used only when frequency is not given

② Direct Method (when x_i & f_i are small)

$$\bar{x} = \frac{\sum f_i x_i}{\sum f_i}$$

f_i – frequency
x_i – variate

③ Assumed Mean Method (when x_i, f_i are large) → (Short Cut or Deviation Method)

$$\bar{x} = a + \frac{\sum f_i d_i}{\sum f_i}$$

$d_i = x_i - a$
$a \rightarrow$ assumed mean

④ Step Deviation Method (when f_i & x_i are large)

$$\bar{x} = a + c\left(\frac{\sum f_i u_i}{\sum f_i}\right)$$

a – assumed mean
c – size of class Interval
$u_i = \frac{d_i}{c} = \frac{x_i - a}{c}$

Note: All methods (2-4) give same result

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Q.25. The following table gives marks scored by students in an examination :

Marks	Less than 5	Less than 10	Less than 15	Less than 20	Less than 25	Less than 30	Less than 35	Less than 40
Number of students	3	10	25	49	65	73	78	80

Calculate the mean marks correct to 2 decimal places.

less than	C.I.	cf.	f	x_i	$f_i x_i$
<5	0-5	3	3	2.5	7.5
<10	5-10	10	7	7.5	52.5
<15	10-15	25	15	12.5	187.5
<20	15-20	49	24	17.5	420
<25	20-25	65	16	22.5	360
<30	25-30	73	8	27.5	220
<35	30-35	78	5	32.5	162.5
<40	35-40	80	2	37.5	75
			$\Sigma f_i = 80$		$\Sigma f_i x_i = 1485$

$$\bar{x} = \frac{\Sigma f_i x_i}{\Sigma f_i}$$

$$\bar{x} = \frac{1485}{80}$$

$$\bar{x} = 18.56$$

Mean Marks = 18.56

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+y

200
190
180
170
160
150
140
120
100
90
80
60
40
20
0

188

$\frac{N}{2}$

46

Nb. of students →

Coordinates for Ogive

(0,0) (10,5) (20,16), (30,26)
(40,46), (50,74), (60,111), (70,151)
(80,180), (90,194) (100,200)

Median
= 57

10 20 30 40 50 60 70 80 90 100

+X

Marks →

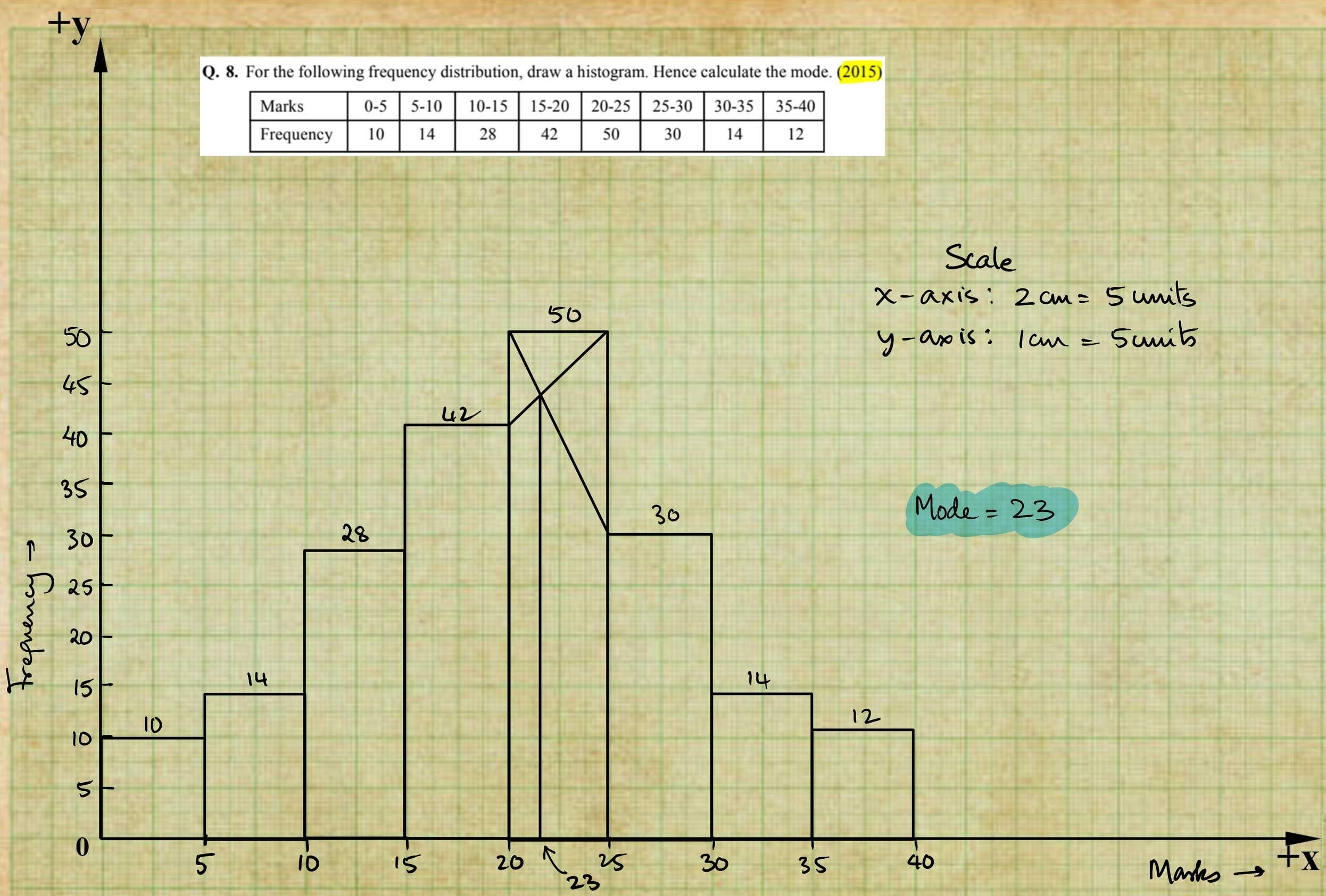
Q. 8. For the following frequency distribution, draw a histogram. Hence calculate the mode. (2015)

Marks	0-5	5-10	10-15	15-20	20-25	25-30	30-35	35-40
Frequency	10	14	28	42	50	30	14	12

Scale

x-axis: 2 cm = 5 units

y-axis: 1 cm = 5 units



Mode = 23