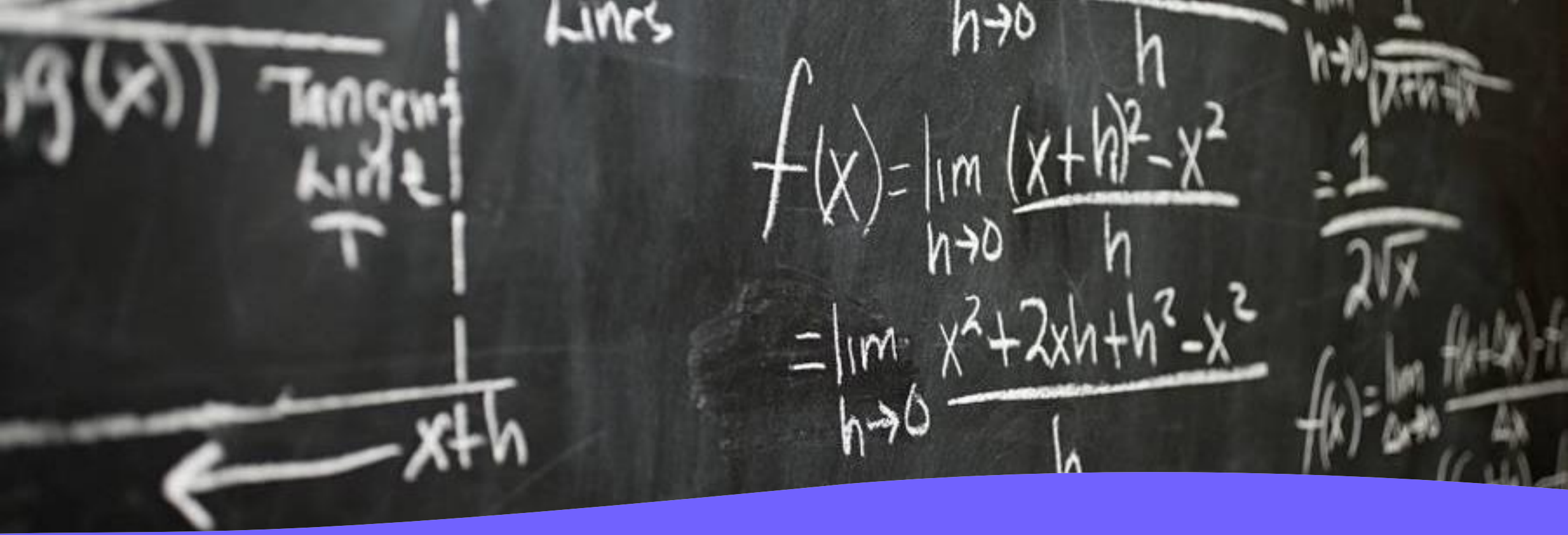

Problems on Mean, Median, Mode

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Agenda

Formula

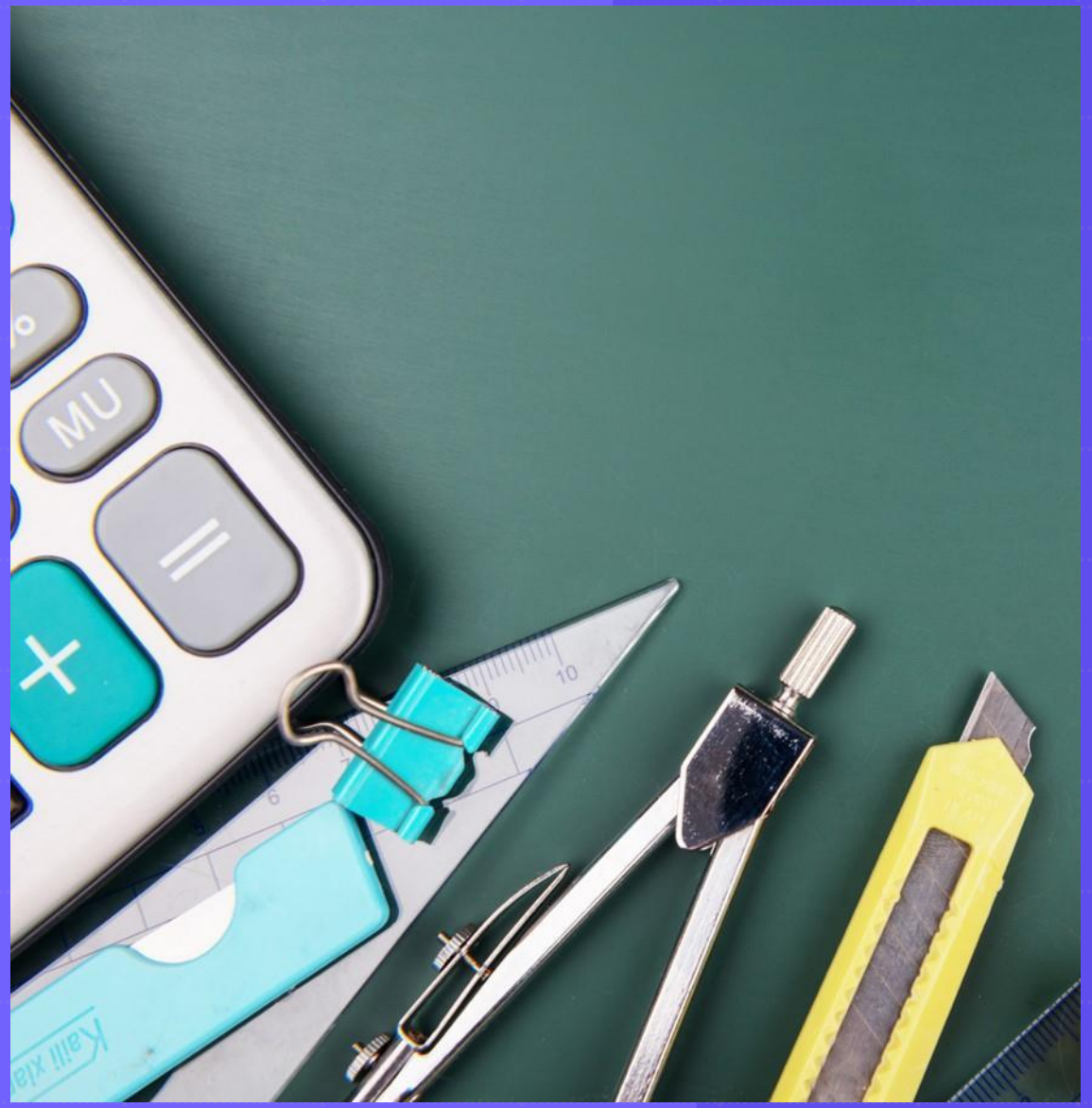
Example – Problem on Mean

Example – Problem on Median

Example – Problem on Mode

Formula – To calculate Mean for Grouped data

$$Mean = \bar{X} = \frac{\sum f.x}{\sum f}$$



Example Problem (Mean)

Calculate the mean for the given data:

No. of Defective Bulbs	No. of boxes (f)	Class mark (x)	f.x
0-2	3	1	3
2-4	4	3	12
4-6	5	5	25
6-8	3	7	21
8-10	1	9	9
Total	$\sum$ (f) =16		$\sum$ (f.x) = 70

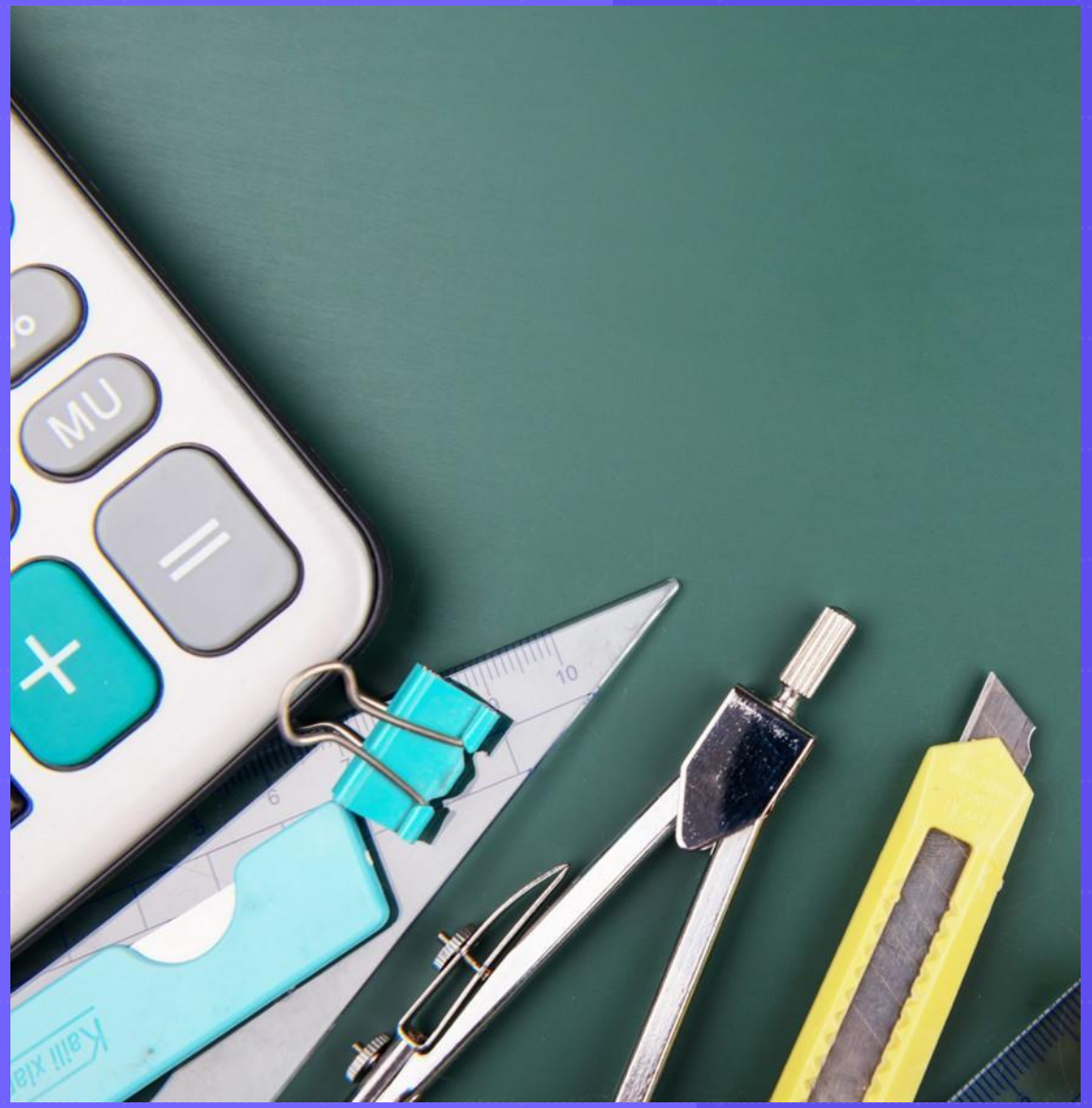
$$Mean = \bar{X} = \frac{\sum f.x}{\sum f}$$

Mean = 70/16 = 4.375 ≈ 4

Formula – To calculate Median for Grouped data

$$Median = L + \left[\frac{\frac{N}{2} - cf}{f}\right] h$$

L – Lower Limit
cf – cumulative frequency of previous class
f – frequency of median class
h – class width



Example Problem (Median)

Calculate the median for the given data:

Class Interval	Frequency (f)	Cumulative Frequency
0-10	5	5
10–20	10	15
20-30	12	27
30-40	15	42
40-50	18	60
Total	∑ (f) =60	

L – Lower Limit
cf – cumulative frequency of previous class
f – frequency of median class
h – class width

$$Median = L + \left[\frac{\frac{N}{2} - cf}{f}\right] h$$

Here N = 60
N/2 = 60/2 = 30
L = 30 , cf = 27 , f = 15 , h = 10

After applying the formula
Median =

Example 2 (Median)

Calculate the Median for the following:

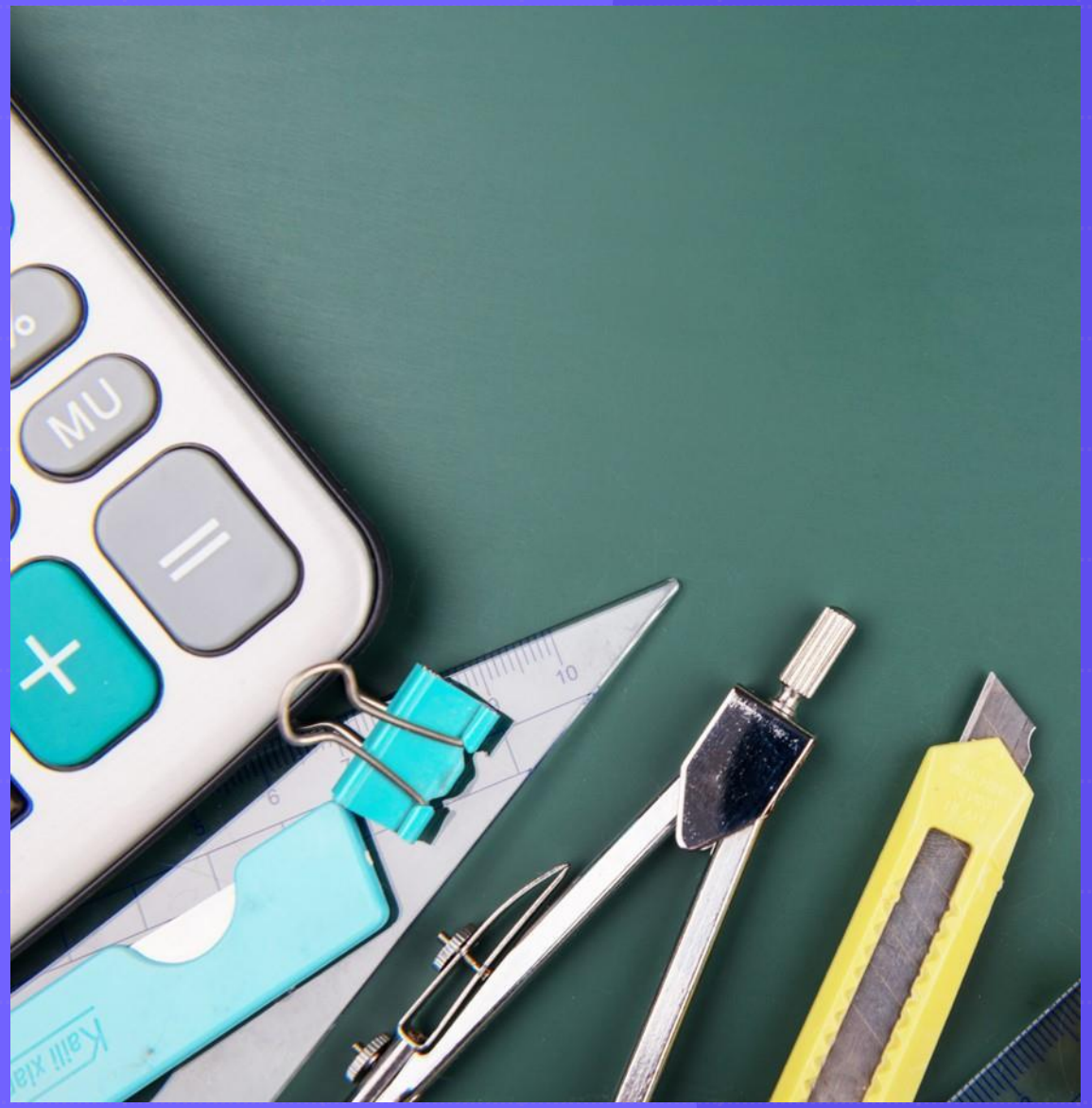
Class Interval	Frequency (f)	Cumulative Frequency
0-20	5	
20–40	8	
40-60	15	
60-80	16	
80-100	6	
Total	∑ (f) =	

$$Median = L + \left[\frac{\frac{N}{2} - cf}{f}\right] h$$

Formula – To calculate Mode for Grouped data

$$\text{Mode} = L + \left(\frac{f_1 - f_0}{2f_1 - f_0 - f_2}\right) h$$

L – Lower Limit
f_1 – value of modal class
f_0 – frequency of previous class
f_2 – frequency of next class
h – Class width



Example Problem (Mode)

Calculate the mode for the given data:

Marks	Frequency (f)
0-10	2
10–20	5
20-30	6
30-40	5
40-50	2

L – Lower Limit
f_1 – value of modal class
f_0 – frequency of previous class
f_2 – frequency of next class
h – Class width

$$\text{Mode} = L + \left(\frac{f_1 - f_0}{2f_1 - f_0 - f_2}\right) h$$

Here
L = 20, f_0 = 6, f_1 = 5, f_2 = 5,
h=10

After applying the formula
Mode = 25

Example 3 (Mode)

Calculate the mode for the following:

Class Interval	F-1equency (f)
3-4	1
4-5	7
5-6	28
6-7	78
7-8	84
8-9	45
9-10	28
10-11	7
11-12	2

$$\text{Mode} = L + \left(\frac{f_1 - f_0}{2f_1 - f_0 - f_2}\right) h$$