

## Average

① Arithmetic mean =  $\frac{\text{sum of obs}}{\text{tot no. of obs}}$

Ex: Suppose four obs are given  $\{50, 55, 70, 85\}$  ✓  
Find Am.

Ans.  $260/4 = 65$

Properties: a) if each observation is increased or decreased by  $x$ , then their average is also respectively increased or decreased by  $x$ .

b) If each of the given elements is multiplied <sup>or divided</sup> by  $x$ , then avg will also be multiplied <sup>or divided</sup> by  $x$ .

(c) Combined / Grand arithmetic mean of two set of observation is  $\bar{x} = \frac{n_1 \bar{x}_1 + n_2 \bar{x}_2}{n_1 + n_2}$ ;  $n_1 + n_2 = n$

② Geometric Mean (G.M) is  $n^{\text{th}}$  root of product of  $n$  members.

3 If  $x_1, x_2, \dots, x_n$  are 'n' elements, Then

$$G.M = \sqrt[n]{x_1 \cdot x_2 \cdot \dots \cdot x_n}$$

③ Median:

ex: 10, 15, 12, 3, 55, 65. What is the median?

④ Mode: The most frequently appearing value in set of observation.

⑤ Variance and Standard deviation 2

$$\text{Variance} = \frac{1}{n} \sum (x_i - \text{mean})^2$$

$$s-d = \sqrt{\text{Variance}}$$

Exercise:

① The average marks of three batches of students having 70, 80 and 50 students respectively are 60, 50 and 46. The avg marks of all 200 students taken together is

- (a) 51.5 (b) 52 (c) 52.5 (d) 53

② The set of numbers 5, 6, 7,  $m$ , 6, 7, 8,  $n$  has an arithmetic mean of 6 and mode of 7. Then  $m \times n = ?$

- (a) 18 (b) 35 (c) 28 (d) 14

$$\bar{x} = 6 \Rightarrow \frac{39 + mn}{8} = 6$$

$$\Rightarrow mn = 9 \quad \text{--- (1)}$$

if  $m = 3, n = 3$   
 $m \times n = 9$

③ If you change only one observation from a set of 10 observations, which of the following will definitely change?

- (a) Mean (b) Median (c) Mode (d) Std deviation

④ Of the three no.s, the avg of first and second is greater than the avg of the second and third by 20. What is the difference between first and third of three numbers?

- (a) 15 (b) 20 (c) 30 (d) 40

⑤ For a set of observations 1, 3, 5, 7 calculate variance.

- (a) 4 (b) 16 (c) 2 (d) 5

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Let  $a, b, c$  be three nos

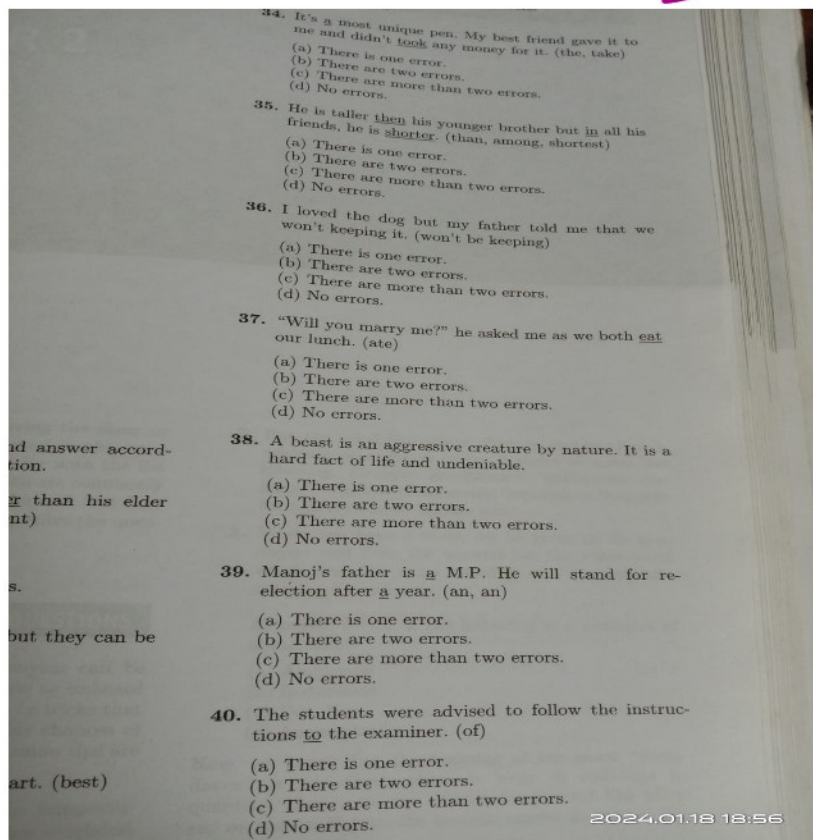
$$\bar{x}_1 = \frac{a+b}{2}$$

$$\bar{x}_2 = \frac{b+c}{2}$$

$$\begin{cases} \bar{x}_1 - \bar{x}_2 = 20 \\ \frac{a+b}{2} - \frac{b+c}{2} = 20 \end{cases}$$

$$\text{or, } a - c = 40$$

$$\text{or } \boxed{a - c = 40}$$



49. Ferocious  
(a) angry  
(c) shoot  
(b) punish  
(d) fierce 64.
50. Finesse  
(a) smooth  
(c) final  
(b) delicate skill  
(d) end 65.
51. Futile  
(a) fertile  
(c) worthy  
(b) useless  
(d) uncertainty 66
52. Gainsay  
(a) deny  
(c) profit  
(b) accept  
(d) advantage 67
53. Garnish  
(a) grand  
(c) spoil  
(b) smooth  
(d) decorate 6
54. Gaudy  
(a) flashy  
(c) ill-mannered  
(b) introvert  
(d) extrovert
55. Genesis  
(a) end  
(c) origin  
(b) abolishment  
(d) attack
56. Gibberish  
(a) nonsense  
(c) ethical  
(b) foreign  
(d) angry
57. Grandeur  
(a) big  
(c) path  
(b) impressiveness  
(d) unimpressive
58. Gruesome  
(a) long  
(c) exhausting  
(b) confused  
(d) horrible
59. Havoc  
(a) disorder  
(c) passion  
(b) order  
(d) anger
60. Hubris  
(a) chaos  
(c) arrogance  
(b) confused  
(d) crowd