Statistics Part-2

Statistics: Part-2

Q1. The mean of the data given is 39.2. what is the missing frequency?

x	36	40	35	44
f	10	13	12	– y

a. 10 b. 12 c. 14 d. 15

$$\text{mean} = \frac{\sum f(x)}{\sum f}$$

$$\frac{39.2}{1} = \frac{36\times10 + 40\times13 + 35\times12 + 44\times y}{10+13+12+y}$$

$$72 = 4.8y \qquad y = 15$$

$$(39.2)\times(35+y) = 360+520+420+44y$$

$$1372 + 39.2y = 1300 + 44y$$

Statistics: Part-2

Q2. The median from the following data.

Class	0-10	10-20	20-30	30-40	40-50
Frequency	10	15	12	15	8

a. 24.366 b. 24.266 c. 24.133 d. 24.166

class	f	cf
0-10	10	10
10-20	15	25
20-30	12	37
30-40	15	52
40-50	8	60
	N = 60	

$$\text{median} = l + \frac{\left[\frac{N}{2} - C_f\right]}{f} \times h$$

$\frac{N}{2} = \frac{60}{2} = 30$

$l = 20$, $C_f = 25$, $f = 12$, $h = 10$

$$20 + \frac{(30-25)}{12} \times 10$$

$$20 + \frac{5}{12} \times 10$$

$$20 + 4.166$$

$$24.166$$

Statistics: Part-2

Q3.Calculate mean and median from the following data.

Marks	0-10	10-20	20-30	30-40	40-50	50-60	60-70	70-80
No. of (f) students	5	7	15	25	20	15	8	5
x	5	15	25	35	45	55	65	75
Σfx	25	105	375	875	900	825	520	375

$\Sigma f = 100$

$\text{mean} = \frac{\Sigma fx}{\Sigma f} \Rightarrow \frac{4000}{100} = 40$

Statistics: Part-2

Q4. what is the mean deviation from the median for the data given below

Data: 34, 46, 28, 48 ?

1\. 8 2. 5 3. 10 4. 15

median ⇒ 28, 34, 46, 48 ⇒ Even: 4

$\frac{34+46}{2} \Rightarrow \frac{80}{2} = 40$

$\text{mean} = \frac{12+6+6+8}{4} \Rightarrow \frac{32}{4} = 8$

Statistics: Part-2

Q6. What is the mean deviation of the data 8,9,12,15,16,20,24,30,32,34?

A.10.2 B.8 C.0 D.9.6

$\bar{x}$ = mean: $\frac{8+9+12+15+16+20+24+30+32+34}{10} = \frac{200}{10} = 20$

$\bar{x}$ = mean = 20

20 | 12

mean: $\frac{12+11+8+5+4+0+4+10+12+14}{10}$

$\frac{40+40}{10} = \frac{80}{10} = 8$

Statistics: Part-2

Q5. The mean of a set of data is 5. What will be the mean if ten is subtracted from each data ?

1. -5 2. 5 3. 10 4. -15

Basic

assume 5,5,5,5,5

mean: $\frac{5+5+5+5+5}{5}$

$\frac{5-10+5-10+5-10+5-10+5-10}{5}$

$\frac{25}{5} = 5$

$\frac{25-10\times5}{5}$

$\frac{25-50}{5} = -\frac{25}{5} = -5$

Total no: n

$5 = \frac{\text{Sum}}{n}$ ∴ Sum: $5n$

$\frac{5n-10n}{n}$

$\frac{-5n}{n} = -5$

Statistics: Part-2

Q7. With what value should the highest quantity in data 65,52,14,26,18,35,32,38 be replaced so that the mean and median become equal?

A. 51
B. 66
C. 64
D. 53

Median
14, 18, 26, 32, 35, 38, 52, 65

$\frac{32+35}{2} = \frac{67}{2} = 33.5$

mean = median

mean:

$\frac{14+18+26+32+35+38+52+53}{8}$

$\frac{215+53}{8}$

8) 268 (33.5
24
28
24
40

Statistics: Part-2

Q8. If mean of 29 observations is 33 and on adding one more observation in the new mean it becomes 34. what is the value of the 30th observation?

1. 55
2. 63
3. 68
4. 34

Average

Average: $\frac{\text{sum}}{\text{no}}$

$33 = \frac{\Sigma 29}{29}$

$\Sigma 29 = 33 \times 29$

$34 = \frac{\Sigma 29 + 30^{th}}{30}$

$34 \times 30 = 33 \times 29 + 30^{th}$

$1020 = 957 + 30^{th}$

$63 = 30^{th}$

9 90
33
957

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Statistics: Part-2

Q9 The index numbers of five commodities are 121,123,125,126,128 and the weight assigned to these are respectively 5,11,10,8,6.Then what is the weighted average index number?

Mean

1. 123.8
2. 125.2
3. 124.6
4. 124.2
5. 124.35

x	121	123	125	126	128
f	5	11	10	8	6

weighted avg index : $\frac{\sum f \cdot x}{\sum f}$ (mean)

123
123
1353

$$\Rightarrow \frac{605+1353+1250+1008+768}{40} = \frac{121\times5+123\times11+125\times10+126\times8+128\times6}{5+11+10+8+6}$$

$\frac{4974}{40}$ = 124.35 ✓

Statistics: Part-2

Q10. The mode of the following series is 36. find the missing frequency in it.

mean median

Marks	0-10	10-20	20-30	30-40	40-50	50-60	60-70
No. of students	8	10	X	16	12	6	7

10

f_0 f_1 f_2

mode: $l + \left[\frac{f_1 - f_0}{2f_1 - f_0 - f_2}\right] \times h$

$\frac{36-30}{1} = \frac{(16-x)}{(20-x)} \times 10$

$(6) \times (20-x) = (16-x)10$

$120 - 6x = 160 - 10x$

$160 - 120 = 10x - 6x$

$4x = 40$

$x = 10$

$36 = 30 + \left[\frac{16-x}{2\times16-x-12}\right] \times 10$