

Statistics Exercise 3

Question 1

The following number of goals was scored by a team in a series of 10 matches:

2, 3, 4, 5, 0, 1, 3, 3, 4, 3

Find the mean, median and mode of these scores.

Solution:

$$\begin{aligned}\text{Mean} &= (\text{Sum of all 10 matches}) / 10 \\ &= (2+3+4+5+0+1+3+3+4+3) / 10 \\ &= 2.8\end{aligned}$$

Median:

We need to arrange the goals in increasing order

0,1,2,3,3,3,3,4,4,5

Since the number of terms is 10 (even)

$$\begin{aligned}\text{Median} &= \frac{\left(\frac{n}{2}\right)\text{observation} + \left(\frac{n}{2} + 1\right)\text{Observation}}{2} \\ \text{Median} &= \frac{(5)\text{observation} + (6)\text{Observation}}{2} \\ \text{Median} &= \frac{3+3}{2} = 3\end{aligned}$$

Mode:

We need to arrange the goals in increasing order

0,1,2,3,3,3,3,4,4,5

Since 3 occurs becomes maximum times. It is the mode

2. In a mathematics test given to 15 students, the following marks (out of 100) are recorded:

41, 39, 48, 52, 46, 62, 54, 40, 96, 52, 98, 40, 42, 52, 60

Find the mean, median and mode of this data.

Solution:

$$\begin{aligned}\text{Mean} &= (\text{Sum of all 15 students}) / 15 \\ &= (41+39+48+52+46+62+54+40+96+52+98+40+42+52+60) / 10 \\ &= 54.8\end{aligned}$$

Median:

We need to arrange the data in increasing order

39, 40, 40, 41, 42, 46, 48, 52, 52, 52, 54, 60, 62, 96, 98
Since the number of terms is 15 (odd)

$$\text{Median} = (n+1)/2 = 8 \text{ term} = 52$$

Mode:

52 occurs maximum times. So mode is 52

3. The following observations have been arranged in ascending order. If the median of the data is 63, find the value of x .

29, 32, 48, 50, x , $x + 2$, 72, 78, 84, 95

Solution:

The number of term is even

So

$$\text{Median} = \frac{\left(\frac{n}{2}\right)\text{observation} + \left(\frac{n}{2} + 1\right)\text{Observation}}{2}$$

$$\text{Median} = \frac{(5)\text{observation} + (6)\text{Observation}}{2}$$

$$\text{Median} = \frac{x+x+2}{2} = 63$$

$$2x+2=126$$

$$x=62$$

4. Find the mode of 14, 25, 14, 28, 18, 17, 18, 14, 23, 22, 14, 18.

Solution:

14 occurs maximum time, so mode is 14

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5. Find the mean salary of 60 workers of a factory from the following table

Salary(in Rs)	Number of Workers
3000	16
4000	12
5000	10
6000	8
7000	6
8000	4
9000	3
10000	1
Total	60

Solution

x	f	fx
3000	16	48000
4000	12	48000
5000	10	50000
6000	8	48000
7000	6	42000
8000	4	32000
9000	3	27000
10000	1	10000
sum	60	305000

$$\text{Mean} = \frac{fx}{f} = \frac{305000}{60} = 5083.33$$