

VIDYA BHAWAN BALIKA VIDYA PITH

शक्तिउत्थानआश्रमलखीसरायबिहार

Class 11 commerce Sub. ECO/B Date 13.01.2021

Teacher name – Ajay Kumar Sharma

Ex 15.2 Class 11 Maths Question 3.

First 10 multiples of 3

Solution:

Here $x_i = 3, 6, 9, 12, 15, 18, 21, 27, 30,$

$$\sum x_i = 3 + 6 + 9 + 12 + 15 + 18 + 21 + 24 + 27 + 30 = 165$$

$$n = 10$$

$$\therefore \text{Mean } (\bar{x}) = \frac{165}{10} = 16.5$$

$$\begin{aligned} \sum x_i^2 &= (3)^2 + (6)^2 + (9)^2 + (12)^2 + (15)^2 + (18)^2 \\ &\quad + (21)^2 + (24)^2 + (27)^2 + (30)^2 \\ &= 9 + 36 + 81 + 144 + 225 + 324 + 441 + 576 + 729 + 900 \\ &= 3465 \end{aligned}$$

$$\begin{aligned} \therefore \text{Variance } (\sigma^2) &= \frac{n \sum x_i^2 - (\sum x_i)^2}{n^2} \\ &= \frac{10 \times 3465 - (165)^2}{(10)^2} \\ &= \frac{34650 - 27225}{100} = \frac{7425}{100} = 74.25 \end{aligned}$$

Ex 15.2 Class 11 Maths Question 4.

x_i	6	10	14	18	24	28	30
f_i	2	4	7	12	8	4	3

Solution:

x_i	f_i	$f_i x_i$	$(x_i - 19)$	$(x_i - 19)^2$	$f_i(x_i - 19)^2$
6	2	12	-13	169	338
10	4	40	-9	81	324
14	7	98	-5	25	175
18	12	216	-1	1	12
24	8	192	5	25	200
28	4	112	9	81	324
30	3	90	11	121	363
	40	760			1736

$$\text{Mean } (\bar{x}) = \frac{1}{N} \sum_{i=1}^n f_i x_i = \frac{1}{40} \times 760 = 19$$

$$\begin{aligned} \text{Variance } (\sigma^2) &= \frac{1}{N} \sum_{i=1}^n f_i (x_i - \bar{x})^2 \\ &= \frac{1}{40} \times 1736 = 43.4 \end{aligned}$$