new text

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**Subject:-Business Math**

**Topic:-**
**Measures of**
**Dispersions**

$$N \cdot 4x^n \cdot N - (\Sigma fx)^2$$

**उदाहरण 32.** निम्न समंकों का मूल्य वर्ग रीति से प्रमाप विचलन तथा गुणांक ज्ञात करो :
Calculate standard deviation and its co-efficient of following data by Squares Method :

| मूल्य (Size) | 40 | 95 | 70 | 100 | 80 | 90 | 110 | 65 |
|---|---|---|---|---|---|---|---|---|

**हल**—वर्ग विधि से S.D. तथा इसके गुणांक की गणना (Calculation of S.D. and its Co-efficient by Squares Method) :

| X | 40 | 95 | 70 | 100 | 80 | 90 | 110 | 65 | $\Sigma X = 650, N = 8$ |
|---|---|---|---|---|---|---|---|---|---|
| $X^2$ | 1600 | 9025 | 4900 | 10000 | 6400 | 8100 | 12100 | 4225 | $\Sigma X^2 = 56350$ |

$$\text{माध्य} \ (\bar{X}) = \frac{\Sigma X}{N} = \frac{650}{8} = 81.25$$

(1)
$$S.D. = \sqrt{\frac{\Sigma X^2}{N} - \left(\frac{\Sigma X}{N}\right)^2}$$

$$= \sqrt{\frac{56350}{8} - \left(\frac{650}{8}\right)^2} = \sqrt{7043.75 - 6602.56} = 21.00$$

(2)
$$S.D. = \frac{1}{N} \sqrt{\Sigma X^2 \cdot N - (\Sigma X)^2}$$

$$= \frac{1}{8}\sqrt{56350 \times 8 - (650)^2}$$

$$= \frac{1}{8}\sqrt{450800 - 422500}$$

$$= \frac{1}{8}\sqrt{28300} = \frac{1}{8} \times 168.23 = 21.00$$

(3)
$$S.D. \text{ का गुणांक} = \frac{S.D.}{\bar{X}}$$

$$= \frac{21}{\phantom{00.00}} = 0.2585$$