

Let P denote the proportion of Bad Oranges in given data.

$$\text{Then } P = \frac{65}{500} = 0.13 \quad q = 1 - P = 0.87$$

$$\text{S.D} = \sqrt{\frac{Pq}{n}} = \sqrt{\frac{0.13 \times 0.87}{500}} = 0.015$$

Probable limit of Bad Oranges in consignment:

$$\begin{aligned} P \pm 2\sqrt{\frac{Pq}{n}} &= 0.13 \pm 2(0.015) \\ &= 0.085 \text{ to } 0.175 \\ &= 8.5\% \text{ to } 17.5\% \end{aligned}$$

Hence, Probable percentage of Bad Oranges in consignment is 8.5% to 17.5%.