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Mean of n items is \bar{x} . If these n items are successively increased by $2, 2^2, 2^3, \dots, 2^n$, then the new mean is.

$$\text{Mean} = \frac{\sum x_i}{n} = \bar{x}$$

$$\begin{aligned} \therefore \sum_{i=1}^n x_i + 2^i &= \sum x_i + \sum_{i=1}^n 2^i \\ &= \sum x_i + 2(2^n - 1). \end{aligned}$$

$$\begin{aligned} \text{new Mean} &= \frac{\sum x_i}{n} + \frac{2(2^n - 1)}{n} \\ &= \bar{x} + \frac{2^{n+1}}{n} - \frac{2}{n}. \end{aligned}$$

Difficulty \rightarrow medium