

Arithmetic Mean - (5).Calculation of 'Corrected' Arithmetic Mean

Sometime, in the calculation of Arithmetic mean, some items or value are wrongly written. Accordingly, the mean value goes wrong. But such mean value can be corrected, as illustrated below,

$$\bar{x} = \frac{\sum x (\text{Wrong}) + (\text{Correct value}) - \text{Incorrect value}}{N}$$

Illustration

Mean marks obtained by 100 students are estimated to be 40. Later on it is found that one value was read as 83 instead of 53. find out correct mean.

Solⁿ.

$$\bar{x} = \frac{\sum x}{N}$$

$$\sum x = \bar{x} N$$

given $\bar{x} = 40$, $N = 100$,

$$40 = \frac{\Sigma x}{100}$$

$$\Sigma x = 40 \times 100 = 4000 \text{ (wrong).}$$

$$\text{Correct value} = 53$$

$$\text{Incorrect value} = 83.$$

Correct Mean

$$\bar{x} = \frac{4000 + 53 - 83}{100} = \frac{3970}{100}$$

Thus Corrected Mean = 39.70.

→ Finding the Missing Value.

If mean of the series is known, but one value is missing, the missing value may be found using the following formula.

$$\bar{x} = \frac{x_1 + x_2 + x_3 + \dots + x_n}{N}$$

Illustration →

Suppose mean of a series of 5 items is 30, four values are 10, 15, 30, and 35 respectively. find

the missing 5th value of the series.

Soln

Assume 5th value as x_5

$$\bar{x} = \frac{x_1 + x_2 + x_3 + x_4 + x_5}{N}$$

given, $x_1 = 10$, $x_2 = 15$, $x_3 = 30$
 $x_4 = 35$ $x_5 = ?$

$$\bar{x} = 30, N = 5$$

$$30 = \frac{10 + 15 + 30 + 35 + x_5}{5}$$

$$30 = \frac{90 + x_5}{5}$$

$$150 = 90 + x_5$$

$$\therefore x_5 = 150 - 90 = 60$$

hence the value of 5th

item = 60

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