Find the mean deviation of the distribution 12,6,7,3,15,10,18,5.
a. 4.97 b. 2.97 c. 4.25 d. 4.38

Solution

The mean deviation or average deviation is the arithmetic mean of the absolute deviations and is denoted by $D_{\bar{x}}$ ($\bar{x}$ - the mean of distribution).

$$D_{\bar{x}} = \frac{|x_1 - \bar{x}| + |x_2 - \bar{x}| + \cdots + |x_N - \bar{x}|}{N}$$

Or

$$D_{\bar{x}} = \frac{\sum_{i=1}^{N} |x_i - \bar{x}|}{N}.$$

So for our distribution the mean

$$\bar{x} = \frac{12 + 6 + 7 + 3 + 15 + 10 + 18 + 5}{8} = 9.5$$

And the mean deviation of the distribution

$$D_{\bar{x}} = \\ = \frac{|12 - 9.5| + |6 - 9.5| + |7 - 9.5| + |3 - 9.5| + |15 - 9.5| + |10 - 9.5| + |18 - 9.5| + |5 - 9.5|}{8}$$

$$D_{\bar{x}} = \frac{2.5 + 3.5 + 2.5 + 6.5 + 5.5 + 0.5 + 8.5 + 4.5}{8} = 4.25$$

Answer: c. 4.25.