Question: Find the standard deviation of the distribution 12, 6, 7, 3, 15, 10, 18, 5.

Solution:

1) Mean value $\bar{x} = \frac{12+6+7+3+15+10+18+5}{8} = \frac{19}{2} = 9.5$

2) $\bar{\sigma}$ - standard deviation.

$\bar{\sigma}^2 = \frac{1}{8}((12-9.5)^2 + (6-9.5)^2 + (7-9.5)^2 + (3-9.5)^2 + (15-9.5)^2 + (10-9.5)^2 + (18-9.5)^2 + (5-9.5)^2) = \frac{1}{8}(2.5^2 + 3.5^2 + 2.5^2 + 6.5^2 + 5.5^2 + 0.5^2 + 8.5^2 + 4.5^2) = \frac{1}{8}(6.25 + 12.25 + 6.25 + 42.25 + 30.25 + 0.25 + 72.25 + 20.25) = \frac{1}{8} * 190 = \frac{95}{4}.$

$\bar{\sigma} = \sqrt{\frac{95}{4}} = \frac{\sqrt{95}}{2}.$

Answer: $\bar{\sigma} = \frac{\sqrt{95}}{2} = 4.8734.$