

Find the standard deviation,  $s$ , of sample data summarized in the frequency distribution table below by using the formula below, where  $x$  represents the class midpoint,  $f$  represents the class frequency, and  $n$  represents the total number of sample values. Also, compare the computed standard deviation to the standard deviation obtained from the original list of data values, 11.1.

$$s = \sqrt{\frac{n[\sum(f \cdot x^2)] - [\sum(f \cdot x)]^2}{n(n-1)}}$$

Interval	30-36	37-43	44-50	51-57	58-64	65-71	72-78
Frequency	2	2	4	4	8	32	36

$x$	$f$	$f \cdot x^2$	$f \cdot x$
33	2	$2 \cdot 33^2 = 2178$	66
40	2	$2 \cdot 40^2 = 3200$	80
47	4	$4 \cdot 47^2 = 8836$	188
54	4	$4 \cdot 54^2 = 11664$	216
61	8	$8 \cdot 61^2 = 29768$	488
68	32	$32 \cdot 68^2 = 147968$	2176
75	36	$36 \cdot 75^2 = 202500$	2700
$n = 88$		$\Sigma(f \cdot x^2) = 406114$	$\Sigma(f \cdot x) = 5914$

$$s = \sqrt{\frac{(88(406114) - (5914)^2)}{(88(87))}}$$

$\square (88 \times 406114 - 5914^2) \div (88 \times 87) \text{ ENTER}$

$s = 9.98$

L1	L2	L3	L4	L5	2
33	2				
40	2				
47	4				
54	4				
61	8				
68	32				
75	36				

L2(8)=

1-Var Stats L1,L2

1-Var Stats

$\bar{x} = 67.20454545$   
 $\Sigma x = 5914$   
 $\Sigma x^2 = 406114$   
 $Sx = 9.980623861$   
 $\sigma x = 9.923753747$   
 $n = 88$   
 $\text{min} X = 33$   
 $Q1 = 68$