

Chapter 5 / Example 7

Calculating mean and standard deviation

It is expected that a GDC will be used to calculate the population standard deviation and variance.

A group of 40 students were asked how many times they visited the dentist in the last year.

Their responses were:

3, 0, 2, 5, 7, 6, 8, 0, 4, 1, 6, 3, 0, 5, 6, 5, 3, 6, 2, 7, 6, 0, 4, 4, 6, 6, 5, 7, 0, 1, 2, 5, 8, 0, 4, 3, 4, 6, 7, 5.

Calculate the mean and standard deviation for this data.

The data can be summarized in a frequency table

x	0	1	2	3	4	5	6	7	8
f	6	2	3	4	5	7	8	3	2

Press **[stat]** 1:Edit and press **[enter]** **[format]**

Type 0, 1, 2, 3, etc. in the first column.

Press **[enter]** or **[↓]** after each number to move to the next cell.

L1	L2	L3	L4	L5	1
0					
1					
2					
3					
4					
5					
6					
7					
8					

L1(10)=					

Press **[→]** to move to the next column.

Enter the frequencies of each of the number of visits in the second column.

L1	L2	L3	L4	L5	2
0	6				
1	2				
2	3				
3	4				
4	5				
5	7				
6	8				
7	3				
8	2				

L2(10)=					

To calculate an estimate of the mean and standard deviation of the number of visits represented in the table

Press **[stat]** and **[→]** to access the CALC menu.

Select 1:1-Var Stats and press **[enter]**.

Enter L₂ as the FreqList by pressing **[2nd]** **[2]** **[L2]**.

Navigate to Calculate and press **[enter]**.

1-Var Stats	
List:L1	
FreqList:L2	
Calculate	

The results show that the mean (\bar{x}) is 4.

So the average number of visits to the dentist is 4.

For the standard deviation, it is important to select the population standard deviation, $\sigma_x = 2.39$.

1-Var Stats	
$\bar{x}=4$	
$\Sigma x=160$	
$\Sigma x^2=868$	
$Sx=2.417882099$	
$\sigma x=2.387467277$	
$n=40$	
$\min X=0$	
$\downarrow Q1=2$	

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To calculate the variance press $\boxed{2\text{nd}}$ $\boxed{\text{quit}}$ to enter the home screen.

Press $\boxed{\text{vars}}$ 5:Statistics...

The statistics that you calculated earlier are all stored as variables.

Press 4: σx and then press $\boxed{x^2}$ and press $\boxed{\text{enter}}$.

The variance is 5.7.

$$\sigma x^2 \dots 5.7$$