

Chapter 2 / **Example 2**

Measures of central tendency

The number of days of sunshine in Helsinki in January was recorded for a period of 35 years and the data is given in the frequency table:

- State the modal number of days of sunshine in January in Helsinki for the period.
- Calculate the mean number of days of sunshine in January in Helsinki for the period.
- Determine the median number of days of sunshine in January in Helsinki for the period.
- State a reason why the mode might not be the best average to use to be a fair representation of the number of days of sunshine in Helsinki.
- Comment on how a “day of sunshine” might be defined.

Number of days of sunshine	Number of years
3	1
4	2
5	1
6	2
7	7
8	5
9	9
10	8

Open a new document and add a Lists & Spreadsheet page.

Type 'days' in the first cell.

Type the numbers 3, 4, 5, ... 10 in the first column.

Press **enter** or **▼** after each number to move to the next cell.

A days	B	C	D
1	3		
2	4		
3	5		
4	6		
5	7		

Type 'years' in the cell to the right of 'age'.

Enter the frequencies (number of years) of each of the number of days in the second column.

Use the **▲ ▼ ► ◀** keys on the touchpad to navigate the spreadsheet.

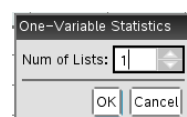
A days	B years	C	D
1	3	1	
2	4	2	
3	5	1	
4	6	2	
5	7	7	

The TI-Nspire CX will not find the mode of a set of data. The mode is simply the data item with the largest frequency. Hence the modal number of days is 9 as the frequency is 9.

To calculate an estimate of the mean of the ages represented in the table.

Press **menu** 4:Statistics | 1:Stat Calculations | 1:One-Variable Statistics...

Click the touchpad on OK or press **enter**.



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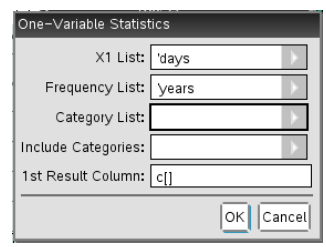
Open the drop down lists with **▶** and select using **▼** and **enter**.

Choose 'days' for X1 List and 'years' for Frequency List.

The next two choices remain empty.

The 1st Result Column can remain as c[] as this is the third column in the spreadsheet.

Press **enter** or use the touchpad to click OK.



The results show that the estimate of the mean (\bar{x}) is 7.94.

So, the mean number of days of sunshine is 7.94 days.

A	days	B	years	C	D
=					=OneVar(
1	3	1	Title		One-Va...
2	4	2	\bar{x}		7.94286
3	5	1	Σx		278.
4	6	2	Σx^2		2330.
5	7	7	$s_x := s_n - \dots$		1.89338
D2	=7.9428571428571				

Scrolling down shows further values.

The table of statistics shows that the median is 8.

So, the median number of days of sunshine is 8 days.

A	days	B	years	C	D
=					=OneVar(
8	10	8	MinX		3.
9			Q_1X		7.
10			MedianX...		8.
11			Q_3X		9.
12			MaxX		10.
D10	=8.				

Because there are 18 days with less sunshine than the mode but only 8 with more sunshine than the mode.

In January, there are 6 – 8 hours of daylight each day. A sunny day could be one where about half the day, say 3 hours, is sunny.