

Summary (descriptive) statistics

EXAMPLE 3.2. Length (mm) of two-spot ladybirds (*Adalia bipunctata*)

BOX 3.1. How to calculate a standard deviation and variance for normally distributed (parametric) data

In this section we explain how you can use Minitab to work out terms such as the **mean**, **median**, and **variance**. Our explanation is short, so unlike other chapters on this website we have not followed the section headings that are in the book. Read through the complete explanation and you will quickly locate the critical step to calculate any one (or more) of these summary statistics. The example we use is Example 3.2. We reproduce this here.

EXAMPLE 3.2. Length (mm) of two-spot ladybirds (*Adalia bipunctata*)

An investigator was interested in the length of two-spot ladybirds (*Adalia bipunctata*). In an observational investigation she measured the length (mm) of 50 ladybirds collected at random from a garden (Table 3.8).

Table 3.8. The length (mm) of 50 *Adalia bipunctata* sampled in a garden

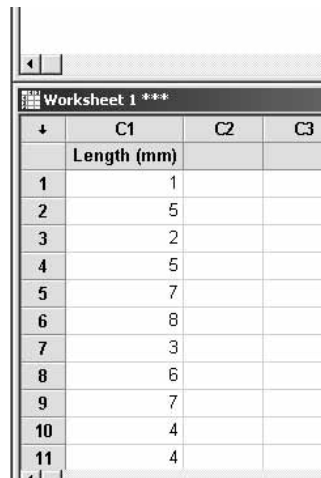
Length of <i>Adalia bipunctata</i> (x)									
1	5	2	5	7	8	3	6	7	4
4	5	6	4	5	5	7	5	3	5
4	5	1	7	9	2	6	5	6	3
3	6	8	6	4	6	6	8	5	6
7	4	8	9	5	4	3	4	2	5

Step 1. Get the data into the computer.

(i) Name the first column 'Length (mm)' by typing this into the space below the heading 'C1'. You will need to widen the column to accommodate the text, this can be done by dragging the boundary between C1 and C2.

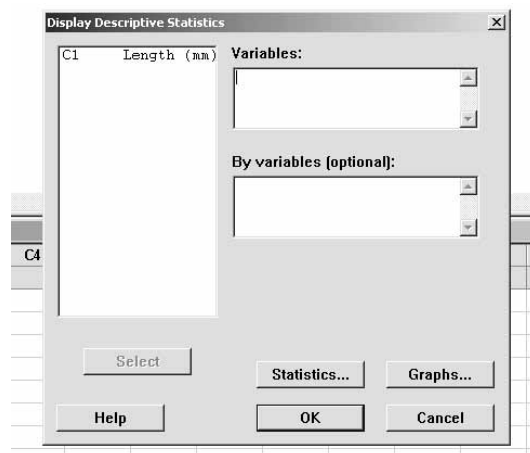
	C1	C2	C3
1	Length (mm)		
2			
3			

(ii) Type the lengths of the ladybirds into column 1.

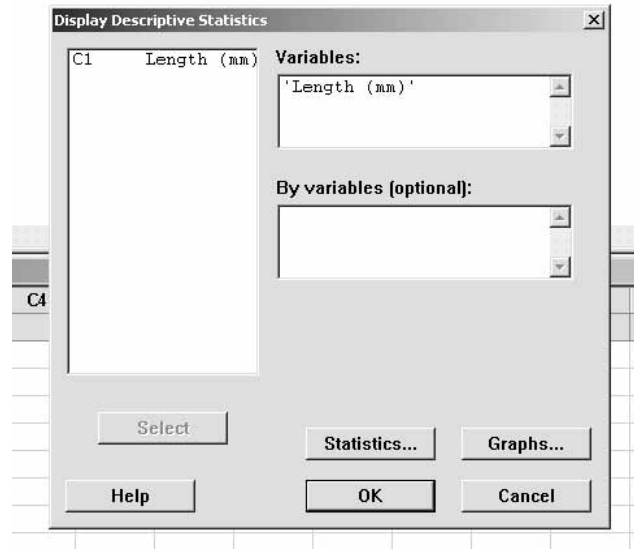


	C1	C2	C3
	Length (mm)		
1	1		
2	5		
3	2		
4	5		
5	7		
6	8		
7	3		
8	6		
9	7		
10	4		
11	4		

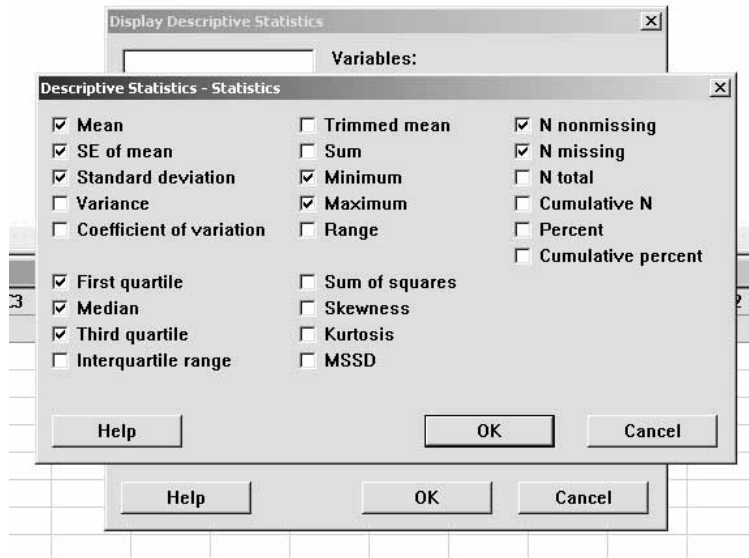
Step 2. (i) Go to the 'Stat' drop-down menu, select 'Basic Statistics' and 'Display Descriptive Statistics'. You will see another window:



(ii) Click on 'C1 Length (mm)' to highlight it, then click on 'Select' to transfer it to the 'Variables' area.



(iii) Click on 'Statistics', and you will see a window in which you can select the statistics you wish to calculate.



(iv) Make your selection, and click on 'OK'. Also click on 'OK' in the 'Display Descriptive Statistics' window. Your results will appear in the upper ('Session') window of the Minitab screen.

The screenshot shows the Minitab interface. The 'Session' window displays the following descriptive statistics for the variable 'Length (mm)':

Variable	Count	N	N*	CumN	Mean	SE Mean	TrMean	StDev	Variance
Length (mm)	50	50	0	50	5.080	0.274	5.091	1.936	3.749

Variable	CoefVar	Sum	Squares	Minimum	Q1	Median	Q3	Maximum
Length (mm)	38.11	254.000	1474.000	1.000	4.000	5.000	6.000	9.000

Variable	Range	IQR	Skewness	Kurtosis	MSSD
Length (mm)	8.000	2.000	-0.05	-0.29	3.449

The 'Worksheet 1 ***' window shows a data table with columns C1 through C9. The first row is labeled 'Length (mm)' and contains the values 1, 5, 2, and empty cells for the remaining columns.

	C1	C2	C3	C4	C5	C6	C7	C8	C9
Length (mm)	1								
1	5								
2	2								
3									

For this example the variance is 3.749 mm^2 and the **standard deviation** is 1.936 mm .