



CP precision capability  $\frac{USL - LSL}{6\sigma}$   
 CPK process capability  $\text{Min}(CPU, CPL)$   
 where  $CPU = \frac{USL - \bar{x}}{3\sigma}$   $CPL = \frac{\bar{x} - LSL}{3\sigma}$

Note: In statistics mode, all function keys are available except those used for base-n calculations.

Ex. 9: Enter the following data {2, 5, 5, 5, 5, 9, 9, and 9} and calculate  $\Sigma x$ ,  $\Sigma x^2$ ,  $n$ ,  $\bar{x}$ ,  $S$ ,  $CP$ , and  $CPK$ , where  $USL$  value = 12 and  $LSL$  value = 2.

In STAT mode	[2ndF] [STAT]	DEG STAT	0.00
Enter all data	[DATA] 2	DEG STAT	2.
	[DATA] 5	DEG STAT	5.
	[DATA] 5	DEG STAT	5.
	[DATA] 5	DEG STAT	5.
	[DATA] 5	DEG STAT	5.
	[DATA] 9	DEG STAT	9.
	[DATA] 9	DEG STAT	9.
	[DATA] 9	DEG STAT	9.
[ENTER]	DEG STAT	0.00	
$\bar{x} = ?$	[ $\bar{x}$ ]	DEG STAT	6.13
$n = ?$	[n]	DEG STAT	8.00
$S = ?$	[S]	DEG STAT	2.59
$\Sigma x = ?$	[2ndF] [ $\Sigma x$ ]	DEG STAT	49.00
$\Sigma x^2 = ?$	[2ndF] [ $\Sigma x^2$ ]	DEG STAT	347.00
$\sigma = ?$	[2ndF] [ $\sigma$ ]	DEG STAT	2.42 $\sigma$
$CP = ?$	[2ndF] [CP] 12	DEG STAT	12. $CP$ $USL$
	[ENTER] 2	DEG STAT	2. $CP$ $LSL$
	[ENTER]	DEG STAT	0.69 $CP$
$CPK = ?$	[2ndF] [CPK]	DEG STAT	12.00 $CPK$ $USL$
	[ENTER]	DEG STAT	2.00 $CPK$ $LSL$
	[ENTER]	DEG STAT	0.57 $CPK$

Note: The calculator retains the data you have entered until you exit statistics mode. The data is retained even if you turn off the calculator or it automatically turns off.

### Viewing Statistics Data

Press [DATA] or [ENTER] in edit (ED) mode to view the statistics data you have entered. (If you press [DATA] the item number of the data appears briefly before the value.)

Ex.10: View the data entered in Ex. 9.

#### Method 1

- Press [2ndF] [EDIT] to enter edit mode.
- Press [DATA] once to view the first data item.

DEG ED STAT	dAtA 1	1.5 seconds →	DEG ED STAT	2.00
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- Continue pressing [DATA] to display each data item. You will see data 2, 5.00, data 3, 5.00, data 4, 5.00, data 5, 5.00, data 6, 9.00, data 7, 9.00, data 8, 9.00 in sequence.

#### Method 2

- Press [ENTER] once to view the first data item.  
DEG ED STAT 2.00
- Continue pressing [ENTER] to display each data item. You will see 5.00, 5.00, 5.00, 5.00, 9.00, 9.00, 9.00 in sequence.

### Adding a Data Item

Ex. 11: To add a 9th data item, of value 10, to the Ex. 9 dataset:

- Press [DATA] 10  
DEG ED STAT 10.

The calculator updates the statistics as you enter data. You can then recall the statistics to get:  $\bar{x} = 6.56$ ,  $n = 9.00$ ,  $S = 2.74$ ,  $\Sigma x = 59.00$ ,  $\Sigma x^2 = 447.00$  and  $\sigma = 2.59$ .

### Editing Statistics Data

Ex.12: Change the value of data item 1 in Ex. 9 from 2 to 3.

#### Method 1

- Press 2 [2ndF] [DEL] 3

#### Method 2

- Press [2ndF] [EDIT]  
DEG ED STAT 0.00
- Display 2 by pressing [DATA] or [ENTER]  
DEG ED STAT 2.00
- Enter 3 to overwrite 2.  
DEG ED STAT 3.
- Press [ENTER] to make the change.
- Press [2ndF] [EDIT] to exit edit mode.

Ex.13: Based on Ex.9, delete the first data entry (of value 2).

#### Method 1

- Press 2 [2ndF] [DEL] to delete 2.

#### Method 2

- Press [2ndF] [EDIT]  
DEG ED STAT 0.00
- Display 2 by pressing [DATA] or [ENTER].  
DEG ED STAT 2.00
- Press [2ndF] [DEL]  
DEG ED STAT 5.00
- Press [2ndF] [EDIT] to exit edit mode.

### Delete Error

If you try to delete a value that is not in the dataset, **dEL Error** appears. (Existing data is not affected.)

Ex.14: Delete 7 from the dataset in Ex.9.

- Press 7 [2ndF] [DEL]  
DEG STAT dEL Error
- Press any key to clear the message.  
DEG STAT 0.00

Ex.15: Delete 5 × 5 from the dataset in Ex.9.

- Press 5 [×] 5 [2ndF] [DEL]  
DEG STAT dEL Error
- Press any key to clear the message.  
DEG STAT 0.00

### Weighted Data Entry Method

Instead of entering each data item individually, you can enter the value and the number of occurrences of that value (up to 255). The data from Ex.9 can be entered as follows:

Value	Number of occurrences	Alternative method
2	1	[DATA] 2
5	4	[DATA] 5 [×] 4
9	3	[DATA] 9 [×] 3

where item 1 = 2, items 2 to 5 = 5, and items 6 to 8 = 9.

### Error Conditions

The indicator **FULL** appears when any of the following conditions occur. Further data entry is not possible. Press any key to clear the indicator. Providing that you remain in statistics mode, previously entered data entries are unaffected.

- You attempt to enter more than 80 data items.
- The number of occurrences of any particular data value is greater than 255
- The product of the number of data items and the number of occurrences is greater than 20400.



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