

Chapter

17

17

List Function

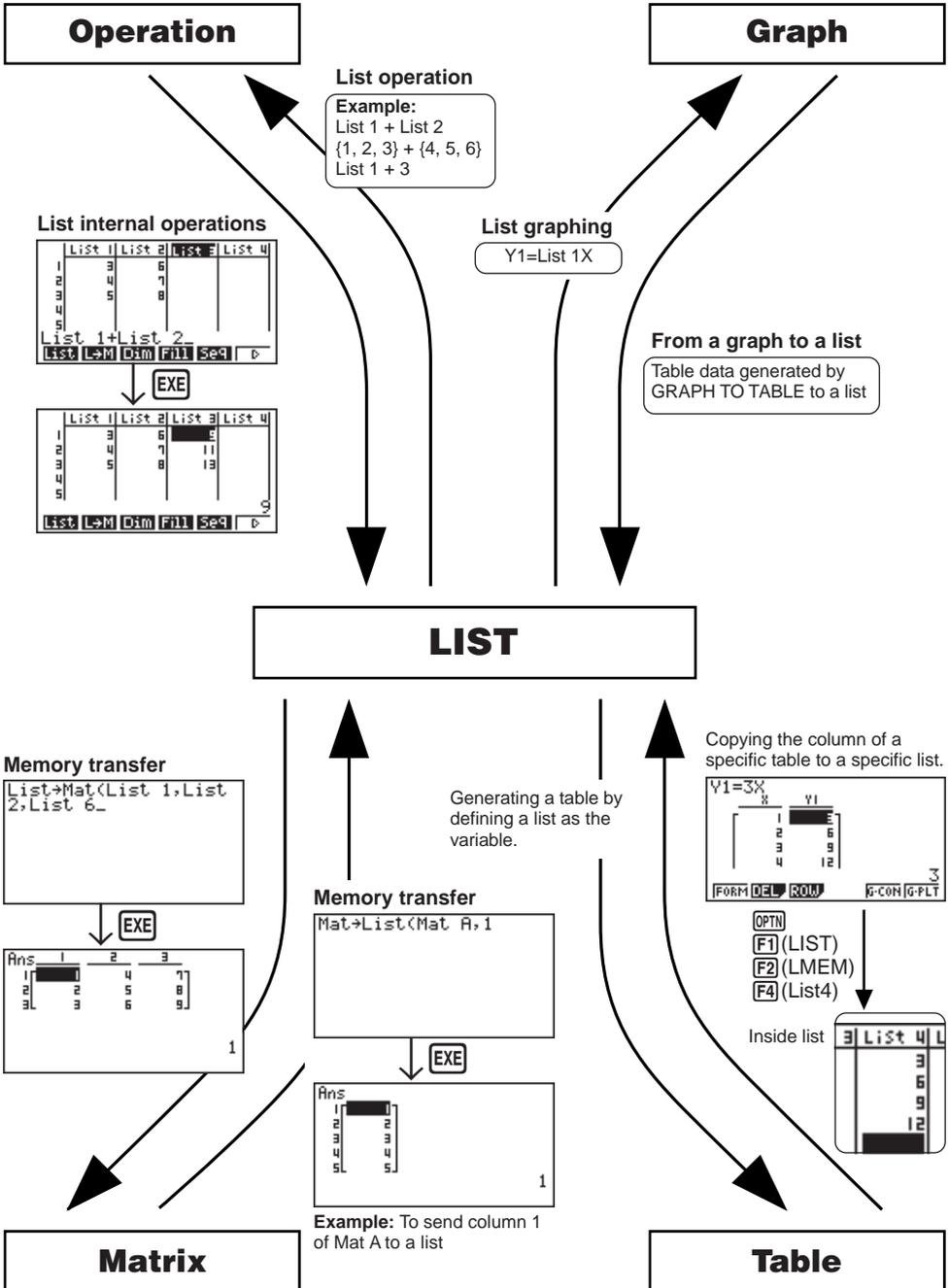
A list is a kind of container that you can use to store multiple data items.

This calculator lets you store up to six lists in a single file, and you can store up to six files in memory. Stored lists can be used in arithmetic, statistical, and matrix calculations, and for graphing.

<i>Element number</i>	<i>Display range</i>	<i>Cell</i>	<i>Column</i>	<i>List name</i>			
	List 1	List 2	List 3	List 4	List 5	List 6	
1	56	1	107	3.5	4	0	
2	37	2	75	6	0	0	
3	21	4	122	2.1	0	0	
4	69	8	87	4.4	2	0	
5	40	16	298	3	0	0	
6	48	32	48	6.8	3	0	
7	93	64	338	2	9	0	
8	30	128	49	8.7	0	0	Row
	⋮	⋮	⋮	⋮	⋮	⋮	
	⋮	⋮	⋮	⋮	⋮	⋮	

- 17-1 List Operations
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List Data Linking



17-1 List Operations

Select the **LIST** icon in the Main Menu and enter the LIST Mode to input data into a list and to manipulate list data.

●To input values one-by-one

Use the cursor keys to move the highlighting to the list name or cell you want to select. Note that \blacktriangledown does not move the highlighting to a cell that does not contain a value.

	List 1	List 2	List 3	List 4
1	56	107	0	3.5
2	37	75	0	6
3	21	122	0	2.1
4	69	87	0	4.4
5	40	298	0	3

SRTA SRTD DEL DELN INS

The screen automatically scrolls when the highlighting is located at either edge of the screen.

The following example procedure is performed starting with the highlighting located at Cell 1 of List 1.

1. Input a value and press **EXE** to store it in the list.

3 **EXE**

	List 1	List 2	List 3	List 4
1	3			
2				
3				
4				
5				

2. The highlighting automatically moves down to the next cell for input.

- Note that you can also input the result of an expression in a cell. The following operation shows how to input the value 4 in the second cell and then input the result of $2 + 3$ in the next cell.

4 **EXE** **2** **+** **3** **EXE**

	List 1	List 2	List 3	List 4
1	3			
2	4			
3	5			
4				
5				

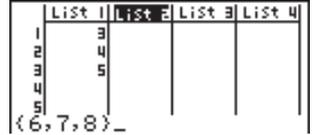
● **To batch input a series of values**

1. Use the cursor keys to move the highlighting to another list.



2. Press **SHIFT** **{**, and then input the values you want, pressing **▸** between each one. Press **SHIFT** **}** after inputting the final value.

SHIFT **{** **6** **▸** **7** **▸** **8** **SHIFT** **}**



3. Press **EXE** to store all of the values in your list.

EXE



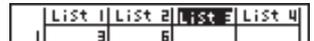
- Remember that a comma separates values, so you should not input a comma after the final value of the set you are inputting.

Right: {34, 53, 78}

Wrong: {34, 53, 78,}

You can also use list names inside of a mathematical expression to input values into another cell. The following example shows how to add the values in each row in List 1 and List 2, and input the result into List 3.

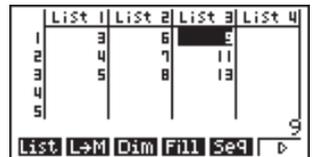
1. Use the cursor keys to move the highlighting to the name of the list where you want the calculation results to be input.



2. Press **OPTN** and input the expression.

OPTN **F1** (LIST) **F1** (List) **1** **+**

F1 (List) **2** **EXE**



17-2 Editing and Rearranging Lists

■ Editing List Values

● To change a cell value

Use  or  to move the highlighting to the cell whose value you want to change. Input the new value and press  to replace the old data with the new one.

● To delete a cell

1. Use the cursor keys to move the highlighting to the cell you want to delete.



	List 1	List 2	List 3	List 4
1	3	6	9	
2	4	7	11	
3	5	8	13	
4				
5				

4



2. Press  (DEL) to delete the selected cell and cause everything below it to be shifted up.

	List 1	List 2	List 3	List 4
1	3	6	9	
2	4	7	11	
3		8	13	
4				
5				

5



- Note that the above cell delete operation does not affect cells in other lists. If the data in the list whose cell you delete is somehow related to the data in neighboring lists, deleting a cell can cause related values to become misaligned.

● To delete all cells in a list

Use the following procedure to delete all the data in a list.

1. Use the cursor key to move the highlighting to any cell of the list whose data you want to delete.
2. Press  (DEL-A). The function menu changes to confirm whether you really want to delete all the cells in the list.
3. Press  (YES) to delete all the cells in the selected list or  (NO) to abort the delete operation without deleting anything.

● **To insert a new cell**

1. Use the cursor keys to move the highlighting to the location where you want to insert the new cell.

	List 1	List 2	List 3	List 4
1	3	6		
2	2	7		
3		8		
4				
5				

2. Press **[F5]** (INS) to insert a new cell, which contains a value of 0, causing everything below it to be shifted down.

	List 1	List 2	List 3	List 4
1	3	6		
2	0	7		
3	5	8		
4				
5				



- Note that the above cell insert operation does not affect cells in other lists. If the data in the list where you insert a cell is somehow related to the data in neighboring lists, inserting a cell can cause related values to become misaligned.

■ **Sorting List Values**

You can sort lists into either ascending or descending order. The highlighting can be located in any cell of the list.

● **To sort a single list**

Ascending order

1. While the lists are on the screen, press **[F1]** (SRT-A).

	List 1	List 2	List 3	List 4
1	3	9		
2	5	5		
3	4	7		
4				
5				

H? _
How Many Lists?(H)

2. The prompt “How Many Lists? (H)” appears to ask how many lists you want to sort. Here we will input 1 to indicate we want to sort only one list.

[1] **[EXE]**

L? _	Select List(L)
------	----------------

3. In response to the “Select List (L)” prompt, input the number of the list you want to sort. Here we will input 2 to specify sorting of List 2.

2 **EXE**

	List 1	List 2	List 3	List 4
1	3	5		
2	5	7		
3	4	9		
4				
5				

Descending order

Use the same procedure as that for the ascending order sort. The only difference is that you should press **F2** (SRT-D) in place of **F1** (SRT-A).

•To sort multiple lists

You can link multiple lists together for a sort so that all of their cells are rearranged in accordance with the sorting of a base list. The base list is sorted into either ascending order or descending order, while the cells of the linked lists are arranged so that the relative relationship of all the rows is maintained.

Ascending order

1. While the lists are on the screen, press **F1** (SRT-A).

	List 1	List 2	List 3	List 4
1	3	9		
2	5	5		
3	4	7		
4				
5				

H? - How Many Lists?(H)

2. The prompt “How Many Lists? (H)” appears to ask how many lists you want to sort. Here we will sort one base list linked to one other list, so we should input 2.

2 **EXE**

B? - Select Base List(B)

3. In response to the “Select Base List (B)” prompt, input the number of the list you want to sort into ascending order. Here we will specify List 1.

1 **EXE**

L? - Select Second List(L)

4. In response to the “Select Second List (L)” prompt, input the number of the list you want to link to the base list. Here we will specify List 2.

2 **EXE**

	List 1	List 2	List 3	List 4
1	3	9		
2	4	7		
3	5	5		
4				
5				

Descending order

Use the same procedure as that for the ascending order sort. The only difference is that you should press **F2** (SRT-D) in place of **F1** (SRT-A).

- You can sort up to six lists at one time.
- If you specify a list more than once for a single sort operation, an error occurs.
An error also occurs if lists specified for sorting do not have the same number of values (rows).

17-3 Manipulating List Data

List data can be used in arithmetic and function calculations. In addition, various list data manipulation functions makes manipulation of list data quick and easy.

You can use list data manipulation functions in the **RUN**, **STAT**, **MAT**, **LIST**, **TABLE**, **EQUA** and **PRGM Modes**.

■ Accessing the List Data Manipulation Function Menu

All of the following examples are performed after entering the **RUN Mode**.

Press **[OPTN]** and then **[F1]** (LIST) to display the list data manipulation menu, which contains the following items.

- {List}/{L→M}/{Dim}/{Fill}/{Seq}/{Min}/{Max}/{Mean}/{Med}/{Sum}/{Prod}/{Cuml}/{%}/{Δ}

Note that all closing parentheses at the end of the following operations can be omitted.

● To count the number of values [OPTN]-[LIST]-[Dim]

[OPTN] **[F1]** (LIST) **[F3]** (Dim) **[F1]** (List) <list number 1-6> **[EXE]**

- The number of cells that contain data in a list is called its “dimension.”

Example To enter the **RUN Mode** and count the number of values in List 1 (36, 16, 58, 46, 56)

[AC] **[OPTN]** **[F1]** (LIST) **[F3]** (Dim)
[F1] (List) **[1]** **[EXE]**

Dim List 1	5
------------	---

● To create a list or matrix by specifying the number of data [OPTN]-[LIST]-[Dim]

Use the following procedure to specify the number of data in the assignment statement and create a list.

<number of data n > **[→]** **[OPTN]** **[F1]** (LIST) **[F3]** (Dim) **[F1]** (List)
<list number 1-6> **[EXE]**

$n = 1 \sim 255$

Example To create five data items (each of which contains 0) in List 1

AC 5 → OPTN F1 (LIST) F3 (Dim)
 F1 (List) 1 EXE

	List 1	List 2	List 3	List 4
1	0			
2	0			
3	0			
4	0			
5	0			

Use the following procedure to specify the number of data rows and columns, and the matrix name in the assignment statement and create a matrix.

SHIFT { } <number of row m > ▾ <number of column n > SHIFT } →
 OPTN F1 (LIST) F3 (Dim) EXIT F2 (MAT) F1 (Mat) ALPHA <matrix name> EXE

$m, n = 1 \sim 255$, matrix name; A ~ Z

Example To create a 2-row \times 3-column matrix (each cell of which contains 0) in Matrix A

AC SHIFT { 2 ▾ 3 SHIFT } →
 OPTN F1 (LIST) F3 (Dim) EXIT
 F2 (MAT) F1 (Mat) ALPHA A EXE

	1	2	3
A	0	0	0
2L	0	0	0

• To replace all cell values with the same value [OPTN]-[LIST]-[Fill]

OPTN F1 (LIST) F4 (Fill) <value> ▾ F1 (List) <list number 1-6>) EXE

Example To replace all values in List 1 with 3

AC OPTN F1 (LIST) F4 (Fill)
 3 ▾ F1 (List) 1) EXE

Fill(3, List 1) Done

The following shows the new contents of List 1.

	List 1	List 2	List 3	List 4
1	3			
2	3			
3	3			
4	3			
5	3			

• To generate a sequence of numbers [OPTN]-[LIST]-[Seq]

OPTN F1 (LIST) F5 (Seq) <expression> ▾ <variable name> ▾ <start value> ▾ <end value> ▾ <pitch>) EXE

- The result of this operation is stored in ListAns Memory.

Example To input the number sequence 1^2 , 6^2 , 11^2 into a list

Use the following settings.

Variable: x Ending value: 11

Starting value: 1 Pitch: 5

AC OPTN F1 (LIST) F5 (Seq) X,0,T

x^2 \rightarrow X,0,T \rightarrow 1 \rightarrow 1 1 \rightarrow 5 \rightarrow EXE

Ans	
1	36
2	36
3	121

Specifying an ending value of 12, 13, 14, or 15 produces the same result as shown above, because all of them are less than the value produced by the next increment (16).

● **To find the minimum value in a list** [OPTN]-[LIST]-[Min]

OPTN F1 (LIST) F6 (\triangleright) F1 (Min) F6 (\triangleright) F6 (\triangleright) F1 (List) <list number 1-6>

\rightarrow EXE

Example To find the minimum value in List 1 (36, 16, 58, 46, 56)

AC OPTN F1 (LIST) F6 (\triangleright) F1 (Min)

F6 (\triangleright) F6 (\triangleright) F1 (List) 1 \rightarrow EXE

Min(List 1)	
16	

● **To find the maximum value in a list** [OPTN]-[LIST]-[Max]

Use the same procedure as when finding the minimum value (Min), except press F2 (Max) in place of F1 (Min).

● **To find which of two lists contains the smallest value** [OPTN]-[LIST]-[Min]

OPTN F1 (LIST) F6 (\triangleright) F1 (Min) F6 (\triangleright) F6 (\triangleright) F1 (List) <list number 1-6>

\rightarrow F1 (List) <list number 1-6> \rightarrow EXE

- The two lists must contain the same number of values. If they don't, an error occurs.
- The result of this operation is stored in ListAns Memory.

Example To find whether List 1 (75, 16, 98, 46, 56) or List 2 (36, 89, 58, 72, 67) contains the smallest value

OPTN F1 (LIST) F6 (\triangleright) F1 (Min)

F6 (\triangleright) F6 (\triangleright) F1 (List) 1 \rightarrow

F1 (List) 2 \rightarrow EXE

Ans	
1	36
2	16
3	58
4	46
5	56

● **To find which of two lists contains the greatest value**

[OPTN]-[LIST]-[Max]

Use the same procedure as that for the smallest value, except press **F2** (Max) in place of **F1** (Min).

- The two lists must contain the same number of values. If they don't, an error occurs.

● **To calculate the mean of list values**

[OPTN]-[LIST]-[Mean]

[OPTN] **F1** (LIST) **F6** (▷) **F3** (Mean) **F6** (▷) **F6** (▷) **F1** (List) <list number 1-6>
↵ **EXE**

Example To calculate the mean of values in List 1 (36, 16, 58, 46, 56)

AC **OPTN** **F1** (LIST) **F6** (▷) **F3** (Mean) **F6** (▷) **F6** (▷) **F1** (List) **1** **↵** **EXE** Mean(List 1) 42.4

● **To calculate the mean of values of specified frequency**

[OPTN]-[LIST]-[Mean]

This procedure uses two lists: one that contains values and one that contains the number of occurrences of each value. The frequency of the data in Cell 1 of the first list is indicated by the value in Cell 1 of the second list, etc.

- The two lists must contain the same number of values. If they don't, an error occurs.

[OPTN] **F1** (LIST) **F6** (▷) **F3** (Mean) **F6** (▷) **F6** (▷) **F1** (List) <list number 1-6 (data)> **↵** **F1** (List) <list number 1-6 (frequency)> **↵** **EXE**

Example To calculate the mean of values in List 1 (36, 16, 58, 46, 56), whose frequency is indicated by List 2 (75, 89, 98, 72, 67)

AC **OPTN** **F1** (LIST) **F6** (▷) **F3** (Mean) **F6** (▷) **F6** (▷) **F1** (List) **1** **↵** **F1** (List) **2** **↵** **EXE** Mean(List 1, List 2) 42.07481297

● **To calculate the median of values in a list**

[OPTN]-[LIST]-[Med]

[OPTN] **F1** (LIST) **F6** (▷) **F4** (Med) **F6** (▷) **F6** (▷) **F1** (List) <list number 1-6>
↵ **EXE**

Example To calculate the median of values in List 1 (36, 16, 58, 46, 56)

AC **OPTN** **F1** (LIST) **F6** (▷) **F4** (Med) **F6** (▷) **F6** (▷) **F1** (List) **1** **↵** **EXE** Median(List 1) 46

● **To calculate the median of values of specified frequency** [OPTN]-[LIST]-[Med]

This procedure uses two lists: one that contains values and one that contains the number of occurrences of each value. The frequency of the data in Cell 1 of the first list is indicated by the value in Cell 1 of the second list, etc.

- The two lists must contain the same number of values. If they don't, an error occurs.

[OPTN] [F1] (LIST) [F6] (▷) [F4] (Med) [F6] (▷) [F6] (▷) [F1] (List) <list number 1-6 (data)> [↵] [F1] (List) <list number 1-6 (frequency)> [↵] [EXE]

Example To calculate the median of values in List 1 (36, 16, 58, 46, 56), whose frequency is indicated by List 2 (75, 89, 98, 72, 67)

[AC] [OPTN] [F1] (LIST) [F6] (▷) [F4] (Med) [F6] (▷) [F6] (▷) [F1] (List) [1] [↵] [F1] (List) [2] [↵] [EXE] Median(List 1, List 2) 46

● **To calculate the sum of values in a list** [OPTN]-[LIST]-[Sum]

[OPTN] [F1] (LIST) [F6] (▷) [F6] (▷) [F1] (Sum) [F6] (▷) [F1] (List) <list number 1-6> [EXE]

Example To calculate the sum of values in List 1 (36, 16, 58, 46, 56)

[AC] [OPTN] [F1] (LIST) [F6] (▷) [F6] (▷) [F1] (Sum) [F6] (▷) [F1] (List) [1] [EXE] Sum List 1 212

● **To calculate the sum of products** [OPTN]-[LIST]-[Prod]

[OPTN] [F1] (LIST) [F6] (▷) [F6] (▷) [F2] (Prod) [F6] (▷) [F1] (List) <list number 1-6> [EXE]

Example To calculate the sum of products for the values in List 1 (2, 3, 6, 5, 4)

[AC] [OPTN] [F1] (LIST) [F6] (▷) [F6] (▷) [F2] (Prod) [F6] (▷) [F1] (List) [1] [EXE] Prod List 1 720

● **To calculate the cumulative frequency of each value** [OPTN]-[LIST]-[Cum]

[OPTN] [F1] (LIST) [F6] (▷) [F6] (▷) [F3] (Cum) [F6] (▷) [F1] (List) <list number 1-6> [EXE]

- The result of this operation is stored in ListAns Memory.

Example To calculate the cumulative frequency of each value in List 1 (2, 3, 6, 5, 4)

AC OPTN F1 (LIST) F6 (▷) F6 (▷)

F3 (Cuml) F6 (▷) F1 (List) 1 EXE

$2+3=$	→	1	5
$2+3+6=$	→	3	11
$2+3+6+5=$	→	4	16
$2+3+6+5+4=$	→	5	20

Ans	
1	5
2	11
3	16
4	20

• To calculate the percentage represented by each value [OPTN]-[LIST]-[%]

OPTN F1 (LIST) F6 (▷) F6 (▷) F4 (%) F6 (▷) F1 (List) <list number 1-6> EXE

- The above operation calculates what percentage of the list total is represented by each value.
- The result of this operation is stored in ListAns Memory.

Example To calculate the percentage represented by each value in List 1 (2, 3, 6, 5, 4)

AC OPTN F1 (LIST) F6 (▷) F6 (▷)

F4 (%) F6 (▷) F1 (List) 1 EXE

$2/(2+3+6+5+4) \times 100 =$	→	1	11
$3/(2+3+6+5+4) \times 100 =$	→	2	15
$6/(2+3+6+5+4) \times 100 =$	→	3	30
$5/(2+3+6+5+4) \times 100 =$	→	4	25
$4/(2+3+6+5+4) \times 100 =$	→	5	20

Ans	
1	11
2	15
3	30
4	25
5	20

• To calculate the differences between neighboring data inside a list [OPTN]-[LIST]-[Δ]

OPTN F1 (LIST) F6 (▷) F6 (▷) F5 (Δ) F6 (▷) <list number 1-6> EXE

- The result of this operation is stored in ListAns memory.

Example To calculate the difference between the values in List 1 (1, 3, 8, 5, 4)

AC OPTN F1 (LIST) F6 (▷)

F6 (▷) F5 (Δ) 1 EXE

$3 - 1 =$	→	1	2
$8 - 3 =$	→	2	5
$5 - 8 =$	→	3	-3
$4 - 5 =$	→	4	-1

Ans	
1	2
2	5
3	-3
4	-1

- You can specify the location of the new list (List 1 through List 6) with a statement like: Δ List 1 \rightarrow List 2. You cannot specify another memory or ListAns as the destination of the Δ List operation. An error also occurs if you specify a Δ List as the destination of the results of another Δ List operation.
- The number of cells in the new list is one less than the number of cells in the original list.
- Note that an error occurs if you execute Δ List for a list that has no data or only one data item.

• **To transfer list contents to Matrix Answer Memory**

[OPTN]-[LIST]-[L \rightarrow M]

[OPTN] [F1] (LIST) [F2] (L \rightarrow M) [F1] (List) <list number 1-6> [v] [F1] (List) <list number 1-6> [v] [EXE]

- You can input the following as many times as necessary to specify more than one list in the above operation.

[v] <list number 1-6>

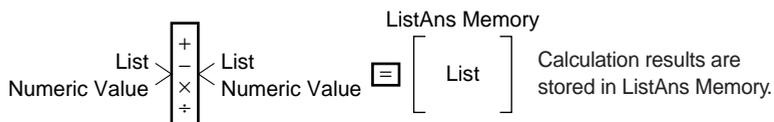
Example To transfer the contents of List 1 (2, 3, 6, 5, 4) and List 2 (11, 12, 13, 14, 15) to Matrix Answer Memory

[AC] [OPTN] [F1] (LIST) [F2] (L \rightarrow M)
 [F1] (List) [1] [v] [F1] (List) [2] [v] [EXE]

Ans	1	2
1	2	11
2	3	12
3	6	13
4	5	14
5	4	15

17-4 Arithmetic Calculations Using Lists

You can perform arithmetic calculations using two lists or one list and a numeric value.



■ Error Messages

- A calculation involving two lists performs the operation between corresponding cells. Because of this, an error occurs if the two lists do not have the same number of values (which means they have different “dimensions”).
- An error occurs whenever an operation involving any two cells generates a mathematical error.

■ Inputting a List into a Calculation

There are two methods you can use to input a list into a calculation.

● To input a specific list by name

Example To input List 6

1. Press **OPTN** to display the first Operation Menu.
 - This is the function key menu that appears in the **RUN Mode** when you press **OPTN**.



2. Press **F1** (LIST) to display the List Data Manipulation Menu.



3. Press **F1** (List) to display the “List” command and input the number of the list you want to specify.

● To directly input a list of values

You can also directly input a list of values using **{**, **}**, and **▾**.

Example 1 To input the list: 56, 82, 64

$\boxed{\text{SHIFT}} \boxed{\{$ $\boxed{5}$ $\boxed{6}$ $\boxed{\rightarrow}$ $\boxed{8}$ $\boxed{2}$ $\boxed{\rightarrow}$ $\boxed{\}$ $\boxed{\text{SHIFT}} \boxed{\}$
 $\boxed{6}$ $\boxed{4}$ $\boxed{\text{SHIFT}} \boxed{\}$

$\{56, 82, 64\}_-$

Example 2 To multiply List 3 $\left(= \begin{bmatrix} 41 \\ 65 \\ 22 \end{bmatrix} \right)$ by the list $\begin{bmatrix} 6 \\ 0 \\ 4 \end{bmatrix}$

$\boxed{\text{OPTN}} \boxed{\text{F1}} \boxed{\text{(LIST)}} \boxed{\text{F1}} \boxed{\text{(List)}} \boxed{3}$ $\boxed{\times}$ $\boxed{\text{SHIFT}} \boxed{\{}$ $\boxed{6}$ $\boxed{\rightarrow}$ $\boxed{0}$ $\boxed{\rightarrow}$ $\boxed{4}$ $\boxed{\text{SHIFT}} \boxed{\}$ $\boxed{\text{EXE}}$

The resulting list $\begin{bmatrix} 246 \\ 0 \\ 88 \end{bmatrix}$ is stored in ListAns Memory.

●To assign the contents of one list to another list

Use $\boxed{\rightarrow}$ to assign the contents of one list to another list.

Example 1 To assign the contents of List 3 to List 1

$\boxed{\text{OPTN}} \boxed{\text{F1}} \boxed{\text{(LIST)}} \boxed{\text{F1}} \boxed{\text{(List)}} \boxed{3}$ $\boxed{\rightarrow}$ $\boxed{\text{F1}} \boxed{\text{(List)}} \boxed{1}$ $\boxed{\text{EXE}}$

In place of $\boxed{\text{F1}} \boxed{\text{(List)}} \boxed{3}$ operation in the above procedure, you could input $\boxed{\text{SHIFT}} \boxed{\{}$ $\boxed{4}$ $\boxed{1}$ $\boxed{\rightarrow}$ $\boxed{6}$ $\boxed{5}$ $\boxed{\rightarrow}$ $\boxed{2}$ $\boxed{2}$ $\boxed{\text{SHIFT}} \boxed{\}$.

Example 2 To assign the list in ListAns Memory to List 1

$\boxed{\text{OPTN}} \boxed{\text{F1}} \boxed{\text{(LIST)}} \boxed{\text{F1}} \boxed{\text{(List)}} \boxed{\text{SHIFT}} \boxed{\text{Ans}}$ $\boxed{\rightarrow}$ $\boxed{\text{F1}} \boxed{\text{(List)}} \boxed{1}$ $\boxed{\text{EXE}}$

●To input a single list cell value into a calculation

You can extract the value in a specific cell of a list and use it in a calculation. Specify the cell number by enclosing it between square brackets using the $\boxed{\{}$ and $\boxed{\}$ keys.

Example To calculate the sine of the value stored in Cell 3 of List 2

$\boxed{\text{sin}}$ $\boxed{\text{OPTN}} \boxed{\text{F1}} \boxed{\text{(LIST)}} \boxed{\text{F1}} \boxed{\text{(List)}} \boxed{2}$ $\boxed{\text{SHIFT}} \boxed{\{}$ $\boxed{3}$ $\boxed{\text{SHIFT}} \boxed{\}$ $\boxed{\text{EXE}}$

●To input a value into a specific cell

You can input a value into a specific cell inside a list. When you do, the value that was previously stored in the cell is replaced with the new value you input.

Example To input the value 25 into Cell 2 of List 3

$\boxed{2}$ $\boxed{5}$ $\boxed{\rightarrow}$ $\boxed{\text{OPTN}} \boxed{\text{F1}} \boxed{\text{(LIST)}} \boxed{\text{F1}} \boxed{\text{(List)}} \boxed{3}$ $\boxed{\text{SHIFT}} \boxed{\{}$ $\boxed{2}$ $\boxed{\text{SHIFT}} \boxed{\}$ $\boxed{\text{EXE}}$

■ Recalling List Contents

Example To recall the contents of List 1

OPTN **F1** (LIST) **F1** (List) **1** **EXE**

- The above operation displays the contents of the list you specify and also stores them in ListAns Memory. You can then use the ListAns Memory contents in a calculation.

● To use list contents in ListAns Memory in a calculation

Example To multiply the list contents in ListAns Memory by 36

OPTN **F1** (LIST) **F1** (List) **SHIFT** **Ans** **X** **3** **6** **EXE**

- The operation **OPTN** **F1** (LIST) **F1** (List) **SHIFT** **Ans** recalls ListAns Memory contents.
- This operation replaces current ListAns Memory contents with the result of the above calculation.

■ Graphing a Function Using a List

When using the graphing functions of this calculator, you can input a function such as $Y1 = \text{List1} X$. If List 1 contains the values 1, 2, 3, this function will produce three graphs: $Y = X$, $Y = 2X$, $Y = 3X$.

There are certain limitations on using lists with graphing functions.

■ Inputting Scientific Calculations into a List

You can use the numeric table generation functions in the Table & Graph Menu to input values that result from certain scientific function calculations into a list. To do this, first generate a table and then use the list copy function to copy the values from the table to the list.

■ Performing Scientific Function Calculations Using a List

Lists can be used just as numeric values are in scientific function calculations. When the calculation produces a list as a result, the list is stored in ListAns Memory.

Example 1 To use List 3 $\left[\begin{array}{c} 41 \\ 65 \\ 22 \end{array} \right]$ to perform $\sin(\text{List } 3)$

Use radians as the angle unit.

sin **OPTN** **F1** (LIST) **F1** (List) **3** **EXE**



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The resulting list $\begin{bmatrix} -0.158 \\ 0.8268 \\ -8E-3 \end{bmatrix}$ is stored in ListAns Memory.

In place of the **F1** (List) **3** operation in the above procedure, you could input **SHIFT** **{** **4** **1** **↵** **6** **5** **↵** **2** **2** **SHIFT** **}**.

Example 2 To use List 1 $\begin{bmatrix} 1 \\ 2 \\ 3 \end{bmatrix}$ and List 2 $\begin{bmatrix} 4 \\ 5 \\ 6 \end{bmatrix}$ to perform List 1^{List 2}

List1 **∧** List2 **EXE**

This creates a list with the results of 1^4 , 2^5 , 3^6 .

The resulting list $\begin{bmatrix} 1 \\ 32 \\ 729 \end{bmatrix}$ is stored in ListAns Memory.

17-5 Switching Between List Files

You can store up to six lists (List 1 to List 6) in each file (File 1 to File 6). A simple operation lets you switch between list files.

●To switch between list files

In the Main Menu, select the **LIST** icon and enter the LIST Mode.

Press **SHIFT** **SETUP** to display the LIST Mode set up screen.

```
List File :File1
Angle    :Rad
Display  :Norm1

File1 File2 File3 File4 File5 File6
```

Press the function key to select the file you want.

Example To select File 3

F3 (File3)

```
List File :File3
```

EXIT

All subsequent list operations are applied to the lists contained in the file you select (List File3 in the above example).