Moving Average

Plot a moving average graph which helps to understand how the results change over a specified period. The progress of sales and amounts of consumption and production can also be seen.

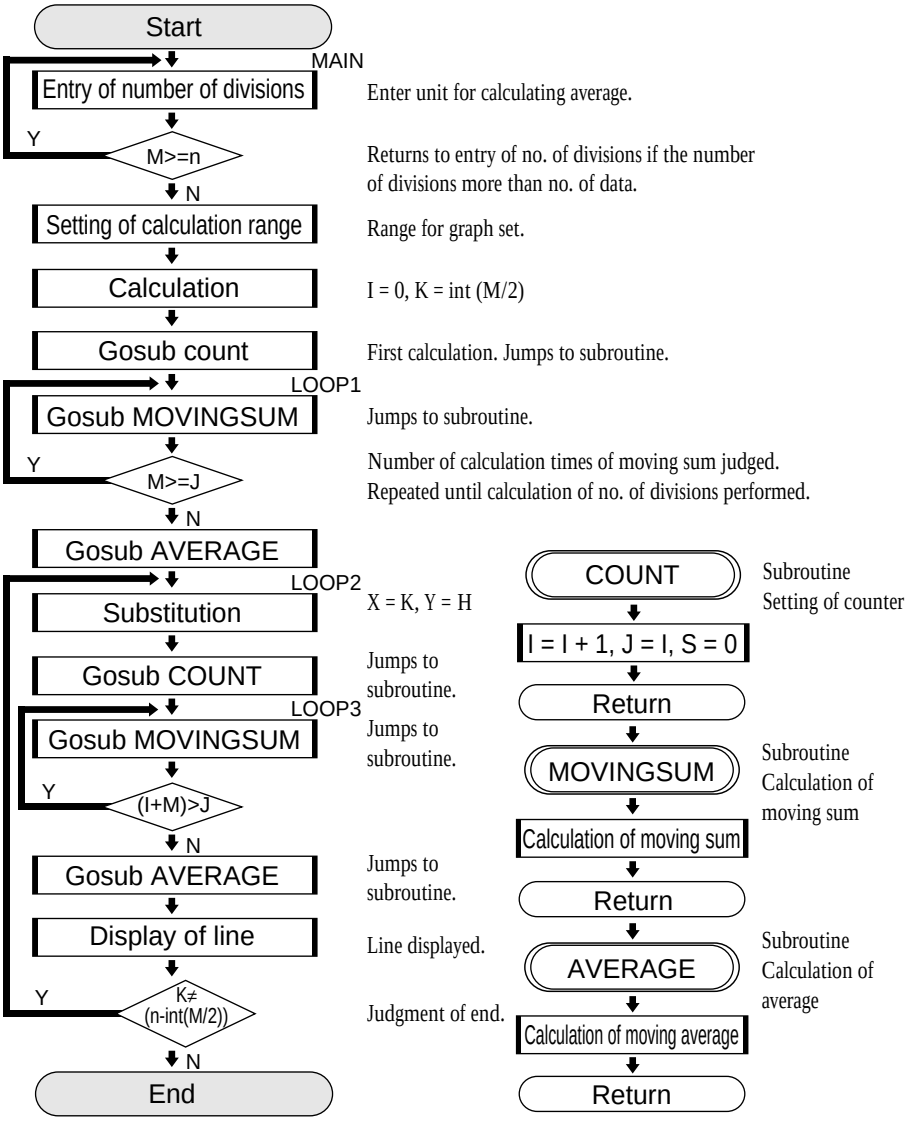
Calculation

$$H_i = \frac{X_{i-(M-1)/2} + \ldots + X_i + \ldots X_{i+(M-1)/2}}{M}$$

$$\left(I = 1 + \frac{M-1}{2}, 2 + \frac{M-1}{2}, \ldots, n + \frac{M-1}{2} \right)$$

H_i : moving average
M : number of divisions
X_i : data
n : number of data

FLOWCHART



PROGRAMME LIST

Title : MVIN AVG

```
Label MAIN
Print "Input DIVISION
Input D
D⇒M
1_Stats L1
If M≥n Goto MAIN
Rem RANGE
(xmax-xmin)/10⇒Yscl
0⇒Xmin
n⇒Xmax
1⇒Xscl
xmin⇒Ymin
xmax⇒Ymax
0⇒I
int (M/2)⇒K
Gosub COUNT
Label LOOP1
Gosub MOVINGSUM
If M≥J Goto LOOP1
Gosub AVERAGE
Label LOOP2
K⇒X
H⇒Y
Gosub COUNT
Label LOOP3
Gosub MOVINGSUM
If (I+M)>J Goto LOOP3
Gosub AVERAGE
Line (X, Y, K, H)
If K≠(n-int (M/2))Goto LOOP2
Wait
End
Label COUNT
I+1⇒I
I⇒J
0⇒S
Return
Label MOVINGSUM
S+L1(J)⇒S
J+1⇒J
Return
Label AVERAGE
S/M⇒H
K+1⇒K
Return
```

Parameters

name of parameter	content	name of parameter	content
H	moving average	S	moving sum
I	counter	X	starting point (x)
J	counter	Y	starting point (y)
K	counter	Yscl	scale of y-axis
M	number of divisions	B	input of number of divisions

Exercise

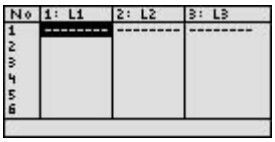
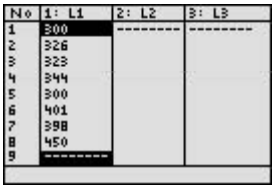
Find the moving average every three months (number of divisions: 3) from the following table of monthly sales.

Month	Jan.	Feb.	Mar.	Apr.	May.	Jun.	Jul.	Aug.
Sales[$]	300	326	323	344	300	401	398	450

On the graph, Xmax = 8, Ymin = 300, and Ymax = 450.

Set up condition: decimal point in Float Pt Mode.

[2nd F] [SET UP] [C] [1] [CL]

Step	Key Operation	Display
1 Enter statistical data into L1.	[STAT] [A] [ENTER]	
	[3] [0] [0] [ENTER] [3] [2] [6] [ENTER] [3] [2] [3] [ENTER] [3] [4] [4] [ENTER] [3] [0] [0] [ENTER] [4] [0] [1] [ENTER] [3] [9] [8] [ENTER] [4] [5] [0] [ENTER]	
2 Specify the programme mode. Select the title MVIN AVG.	[PRGM] [A]	
3 Enter the number of divisions(3).	[3] [ENTER]