

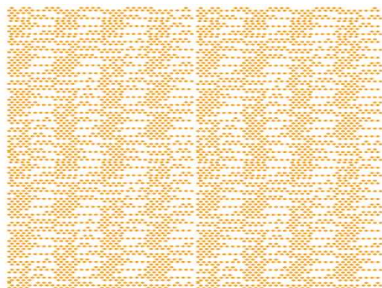
# Random Walk Art.

*This resource was written by Derek Smith with the support of CASIO New Zealand. It may be freely distributed but remains the intellectual property of the author and CASIO.*

Select RUN (press 1) or PRGM (press B) from the Main Menu or by using the arrow keys to highlight and then press EXE.

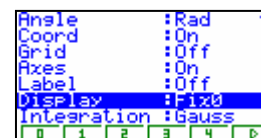


Inspired by art produced by Simon Morris, see: <http://www.physicsroom.org.nz/publications/2005/morris/> His work can also be seen at The New Dowse Art Gallery situated in Lower Hutt, Wellington. He designed the panels that cover the front of the Gallery. Based on random dot patterns that he has then placed on the panels.

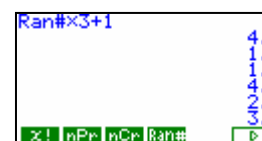
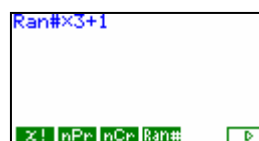


Pictures courtesy of the Education Officer, 2007.

Change the mode to Fix 0 in **RUN** mode, this will round the random number to either 0 or 1.  
Enter  $\text{Ran}\#\times 3+1$  [This will generate a value of either a 1, 2, 3 or 4.]



The first time you press **EXE** determines the direction that you are to travel in. 1 North, 2 East, 3 South and 4 West, the next time you press **EXE** determines the distance that you are to travel in that direction i.e. 1, 2, 3 or 4 unit lengths.



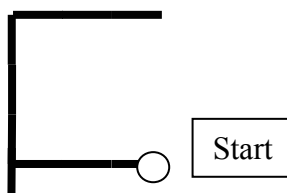
Start in the middle of a page of quad paper.

Repeat 10 times, i.e.10 pairs of random numbers generated (1, 2, 3 or 4).

## Example 1:

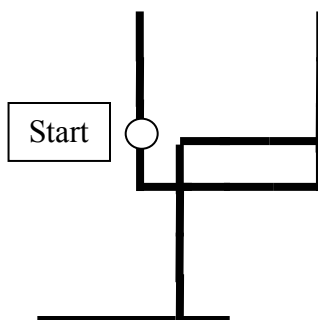
Direction	4	4	4	3	1	2	4	2	2	2
Distance	1	1	1	1	4	1	1	1	1	2

Scale: Unit lengths



## Example 2:

Direction	1	3	2	1	3	4	3	3	2	4
Distance	3	4	4	4	3	3	2	2	1	4



**Alternatives:**

Enter  $Ran\# \times 7 + 1$ , this will generate a value of either 1, 2, 3, 4, 5, 6, 7 or 8 [representing N, NE, E, SE, S, SW, W, NW.] Generate more pairs of random numbers to create your **Random Walk Art**.

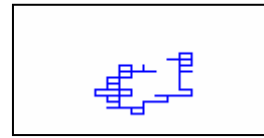
You can write a program that will do the Random Art Walk too.

```

RAND WK
ViewWindow 0,63,0,0,47,0,0
0→A~Z<␣
31→X<␣
23→Y<␣
?→S<␣
Plot X,Y<␣
Lbl 0<␣
Ran#→R<␣
R<.5⇒Goto 1<␣
R̄.5⇒Goto 2<␣
Lbl 1<␣
R<.25⇒Goto 3<␣
X+.5→X<␣
Plot X,Y<␣
Line<␣
S-1→S<␣
S=0⇒Goto 5<␣
Goto 0<␣
Lbl 2<␣
R̄.75⇒Goto 4<␣
Y+.5→Y<␣
Plot X,Y<␣
Line<␣
S-1→S<␣
S=0⇒Goto 5<␣
Goto 0<␣
Lbl 3<␣
X-.5→X<␣
Plot X,Y<␣
Line<␣
S-1→S<␣
S=0⇒Goto 5<␣
Goto 0<␣
Lbl 4<␣
Y-.5→Y<␣
Plot X,Y<␣
Line<␣
S-1→S<␣
S=0⇒Goto 5<␣
Goto 0<␣
Lbl 5

```

**Examples:**

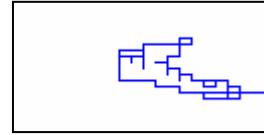


Screensnaps of the program are illustrated below.

```

=====RAND WK =====
ViewWindow -5,5,0,-5,
5,0e
0→A~Ze
0→Xe
0→Ye
100→Se
[TOF] [BTM] [SRC] [MENU] [SVBU]

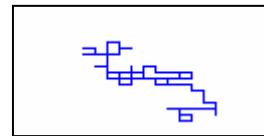
```



```

=====RAND WK =====
Plot X,Ye
Lbl 0e
Ran#→Re
R<.5⇒Goto 1e
R̄.5⇒Goto 2e
Lbl 1e

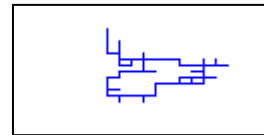
```



```

=====RAND WK =====
R<.25⇒Goto 3e
X+.5→Xe
Plot X,Ye
Linee
S-1→Se
S=0⇒Goto 5e
[TOF] [BTM] [SRC] [MENU] [SVBU]

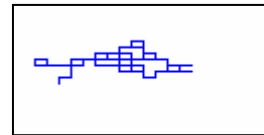
```



```

=====RAND WK =====
Goto 0e
Lbl 2e
R̄.75⇒Goto 4e
Y+.5→Ye
Plot X,Ye
Linee

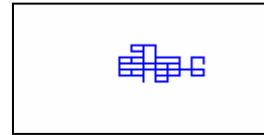
```



```

=====RAND WK =====
S-1→Se
S=0⇒Goto 5e
Goto 0e
Lbl 3e
X-.5→Xe
Plot X,Ye
[TOF] [BTM] [SRC] [MENU] [SVBU]

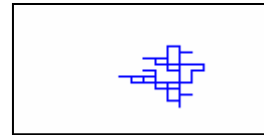
```



```

=====RAND WK =====
Linee
S-1→Se
S=0⇒Goto 5e
Goto 0e
Lbl 4e
Y-.5→Ye
[TOF] [BTM] [SRC] [MENU] [SVBU]

```



```

=====RAND WK =====
Plot X,Ye
Linee
S-1→Se
S=0⇒Goto 5e
Goto 0e
Lbl 5
[TOF] [BTM] [SRC] [MENU] [SVBU]

```

Program keys are accessed via PRGM [Shift] [VARs]

Diagram illustrating the sequence of calculator screens for the program, showing the key sequences used to access program keys:

- Screen 1: [COM] [CTL] [JUMP] [?] [F3] → **JUMP [F3]**
- Screen 2: [CLR] [DISP] [REL] [I/O] [F6] then [REL] [F3] → **[F6] then REL [F3]**
- Screen 3: [x!] [mPr] [nCr] [Ran#] [F6] → **[F6] then OPTN [F6] [F3]**
- Screen 4: [C] [ls] [Tan] [Norm] [Inv] [GRAPH] [F1] → **Plot and Line via SKETCH [Shift] [F4]**
- Screen 5: [PLOT] [LINE] [F6] [Vcrl] [H2t1] [F1] → **[F6] then [F1]**
- Screen 6: [Line] [FLine] [F2] → **[F6] then [F2]**