More information for the Fractals Lab

L-systems

F Move forward one step while drawing a line

f Move forward one step without drawing a line

+ Turn counterclockwise by a specified angle q

– Turn clockwise by a specified angle q

Example: Koch curve

Axiom: **S** = **F**.

Production rules:

F → **F – F + + F – F**

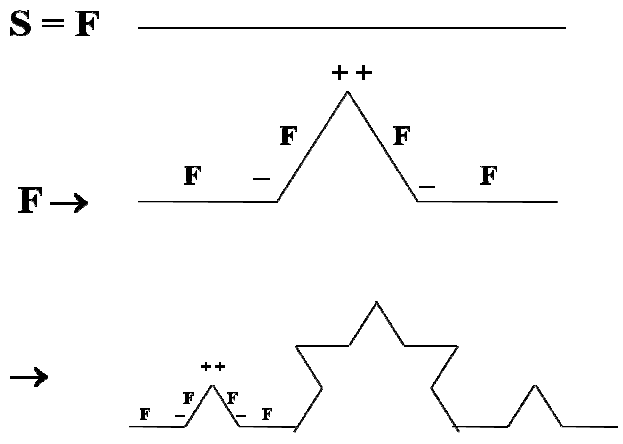
+ → **+**

– → **–**

Set q to 60 degrees.

At each iteration, shrink step size by 1/3.

Here is how this L-system generates the Koch curve:



Netlogo version of L-System

F = **“ahead len”**

f = **“skip len”**

– = **l** [letter “l” for left]

+ = **r** [letter “r” for right]

to kochSetup: creates a single turtle and places it on the screen heading right. Sets “len” to 55.

to kochCurve

```
  ask turtles [set new? false pd]   ;; All existing turtles set their “new?” state to “false” and put their pen down.
  t ahead len l 60 t ahead len r 120 t ahead len l 60 t ahead len r 120  ;; t creates new turtle at current location
  set len (len / 3)   ;; next time around the lines will be 1/3 shorter
  d  ;; all non-new turtles die
end
```