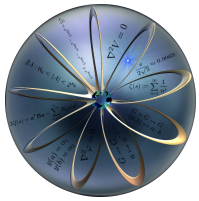

planetmath.org

Math for the people, by the people.

Game of Life

Canonical name	GameOfLife
Date of creation	2013-03-22 16:35:11
Last modified on	2013-03-22 16:35:11
Owner	PrimeFan (13766)
Last modified by	PrimeFan (13766)
Numerical id	5
Author	PrimeFan (13766)
Entry type	Definition
Classification	msc 91A99
Synonym	Conway's Game of Life

The *Game of Life* is a cellular automaton that models a population of living organisms living on a two-dimensional plane subdivided into squares. One cell may live in each square. John Horton Conway set down the rules of the game in *Scientific American*:

1. If a cell has less than two neighbors alive in any of the eight adjacent squares (those immediately above and below, left and right, and those that touch corners diagonally), it dies.

2. But if it has more than three live neighbors, it also dies.

3. Having two or three neighbors, a cell lives on to the next generation.

4. If an empty square has exactly three neighbors, a new cell is born there.

The rules are repeatedly applied, and one of two kinds of outcomes are possible: the entire population could die out, or the population settles into a periodic pattern that can go on infinitely.