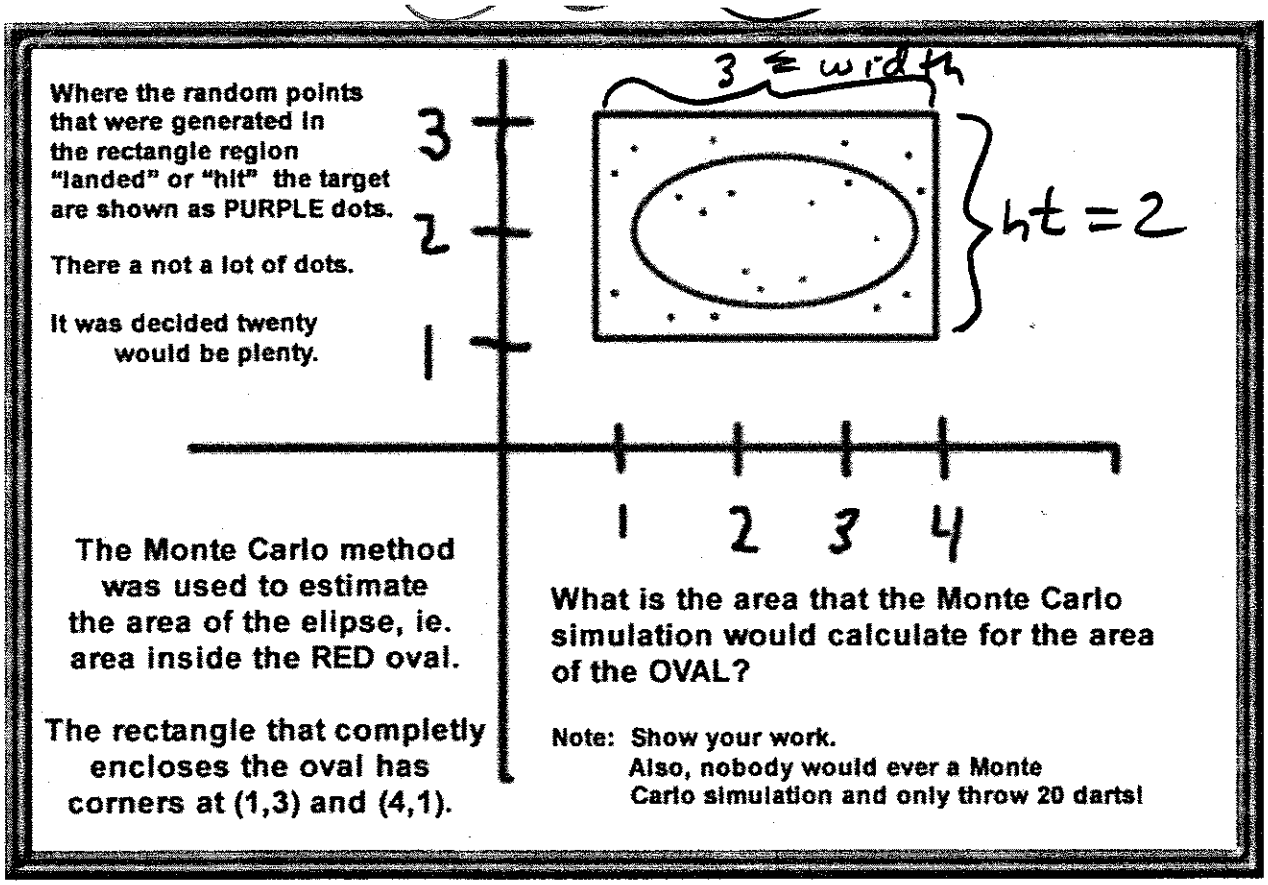
Quiz two – Spring 2011
Part of study guide for final exam



1. Calculate the area of the circle and show your work and process of arriving at your result. There were a total of 20 darts thrown at the target.

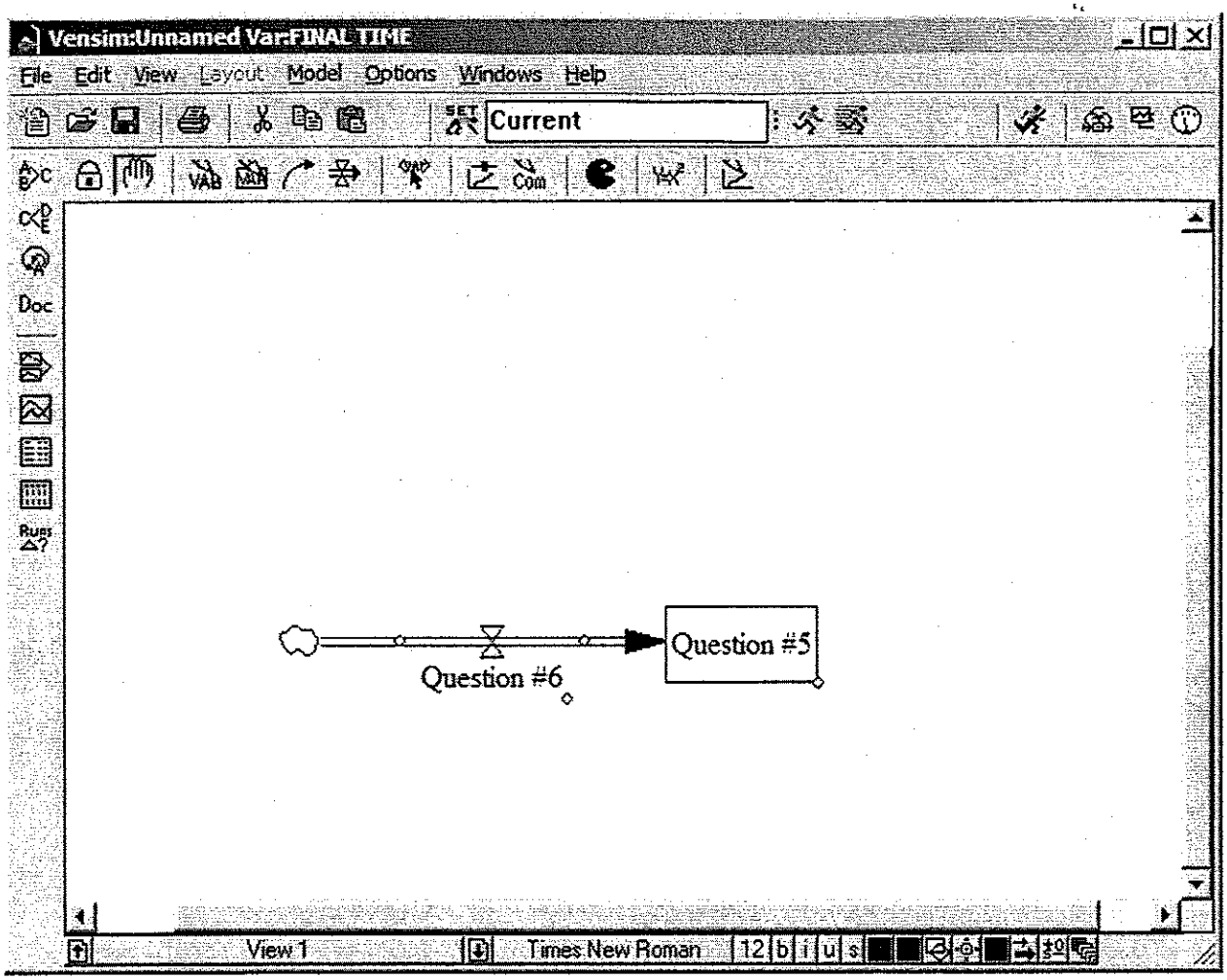
9 darts in circle
20 darts total
ratio of $\frac{9}{20}$
area of rect. is 6 units

$6 \cdot \frac{9}{20} = 2.7$ units

OK

Height = 2 = 3 − 1 = 2
width = 3 = 4 − 1 = 3
area = 2 · 3 = 6

Monte Carlo concepts



2. What is Question #5 called in System Dynamics Modeling book and/or Vensim?

ok Stock or Box variable

3. What is the term for Question #6 (again, see the above screen snapshot)?

ok rate or flow

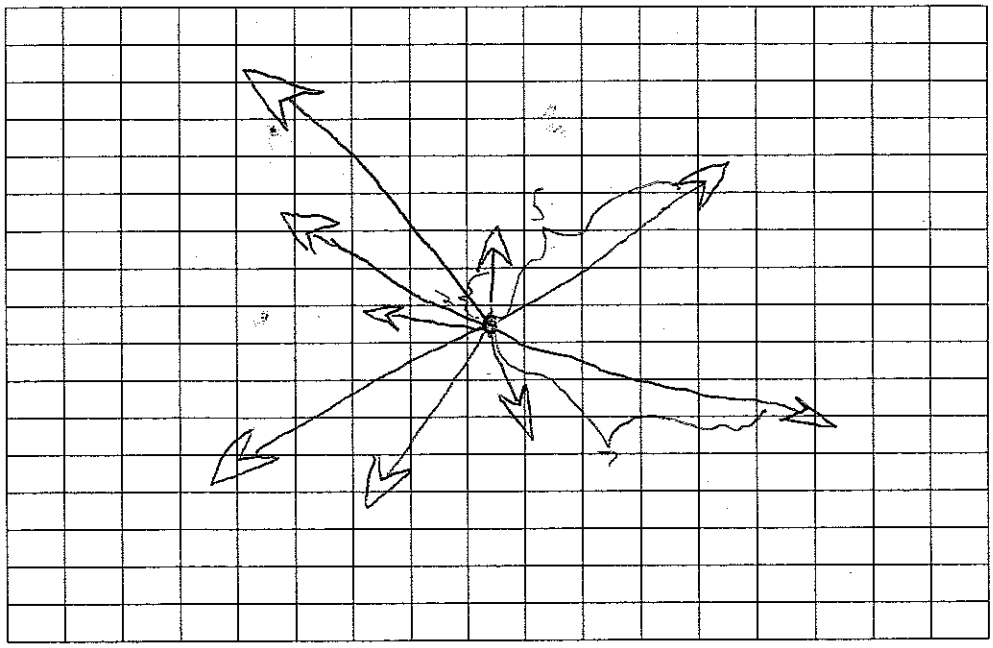
4. Ease In Ease Out – see the board.

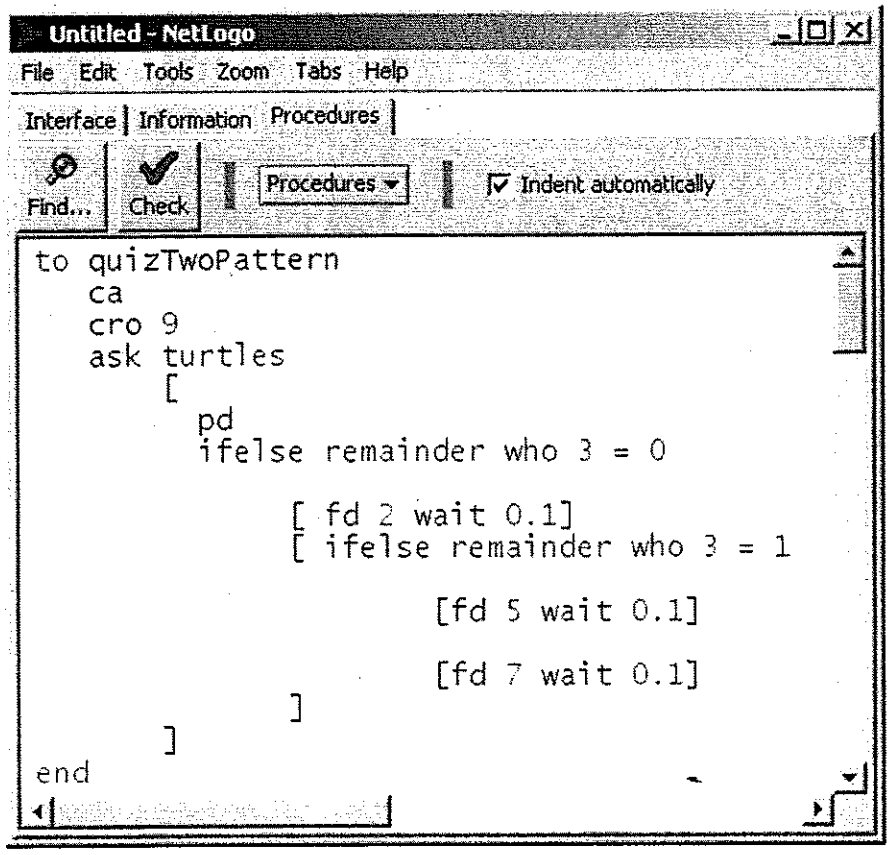
ok If we ease out, the ball is moving faster at the beginning, therefore it will be closer to (B)

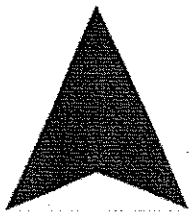
↖ slower at the end too

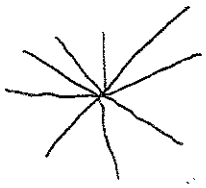
2. Show what the output of the NetLogo **QuestionTwoPattern** procedure would look like after the following procedure has finished. *Again, each square you see represents on PATCH of the NetLogo grid, with the center patch being in the usual place, the center square. For your convenience, I have marked the center square with the letter C for Center.*

   Fill in the Grid with what the output would look like. Show your answer by drawing the turtles and output they leave in the GRID here.





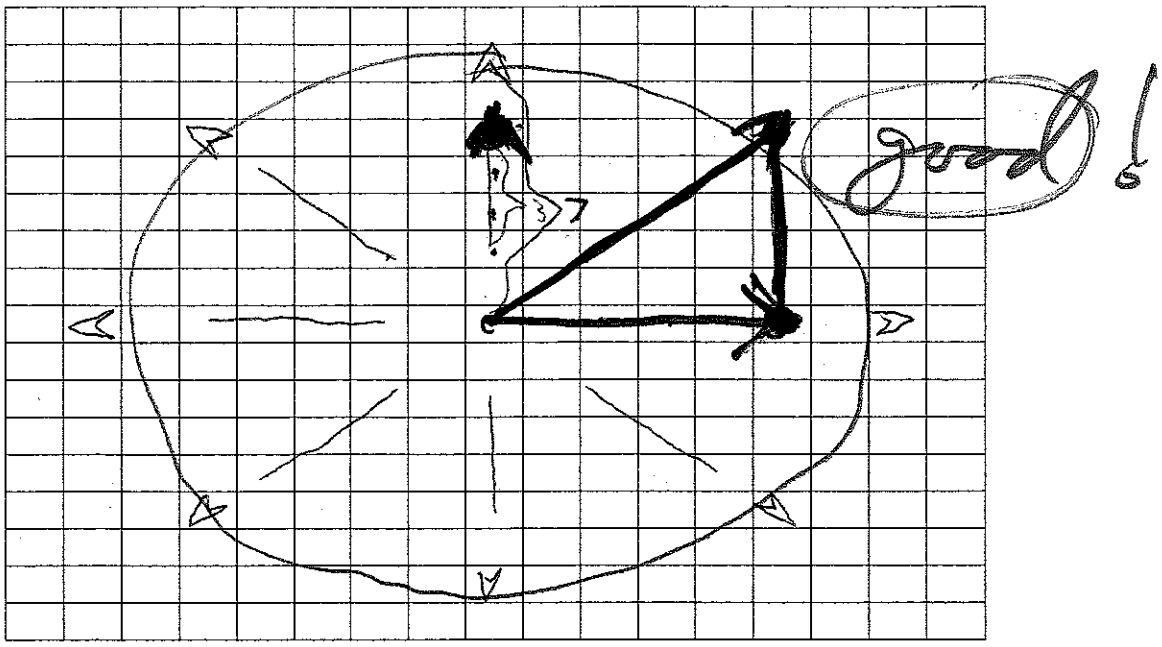




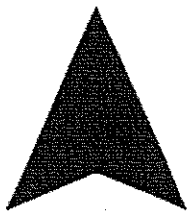
Again, use scratch paper <u>FIRST</u>, if you need to and then fill in this sheet's GRID with your answer.

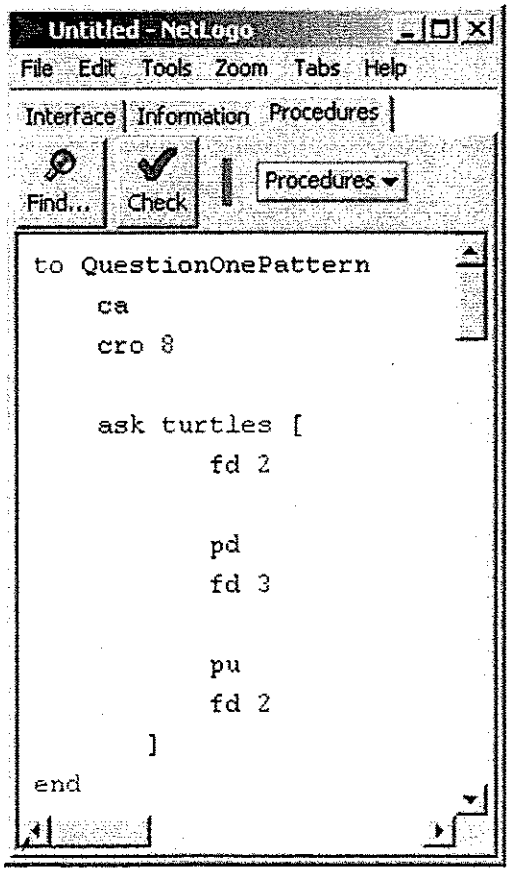
Wednesday, April 06, 2011

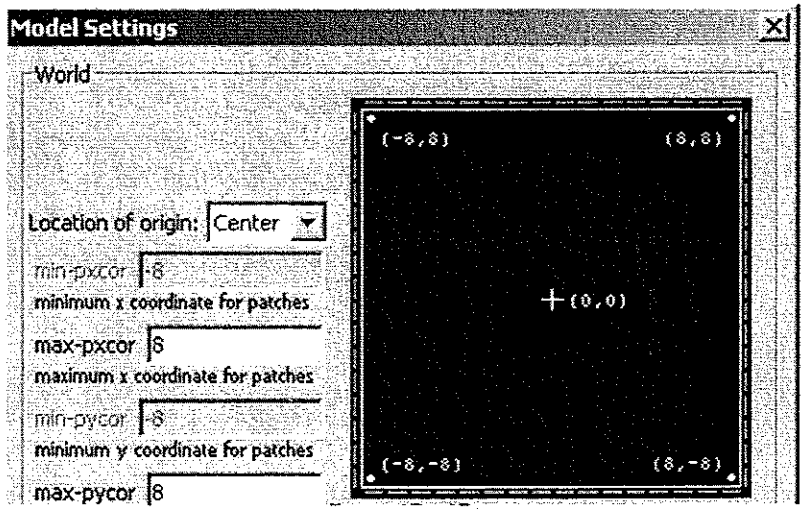
1. Show what the output of the NetLogo program would look like after the following procedure has finished. Each square you see represents on PATCH of the NetLogo grid, with the center patch being in the usual place, the center square. For your convenience, I have marked the center square with the letter C for Center. Fill in the Grid with what the output would look like. Show your answer by drawing the turtles and output they leave in the GRID here.



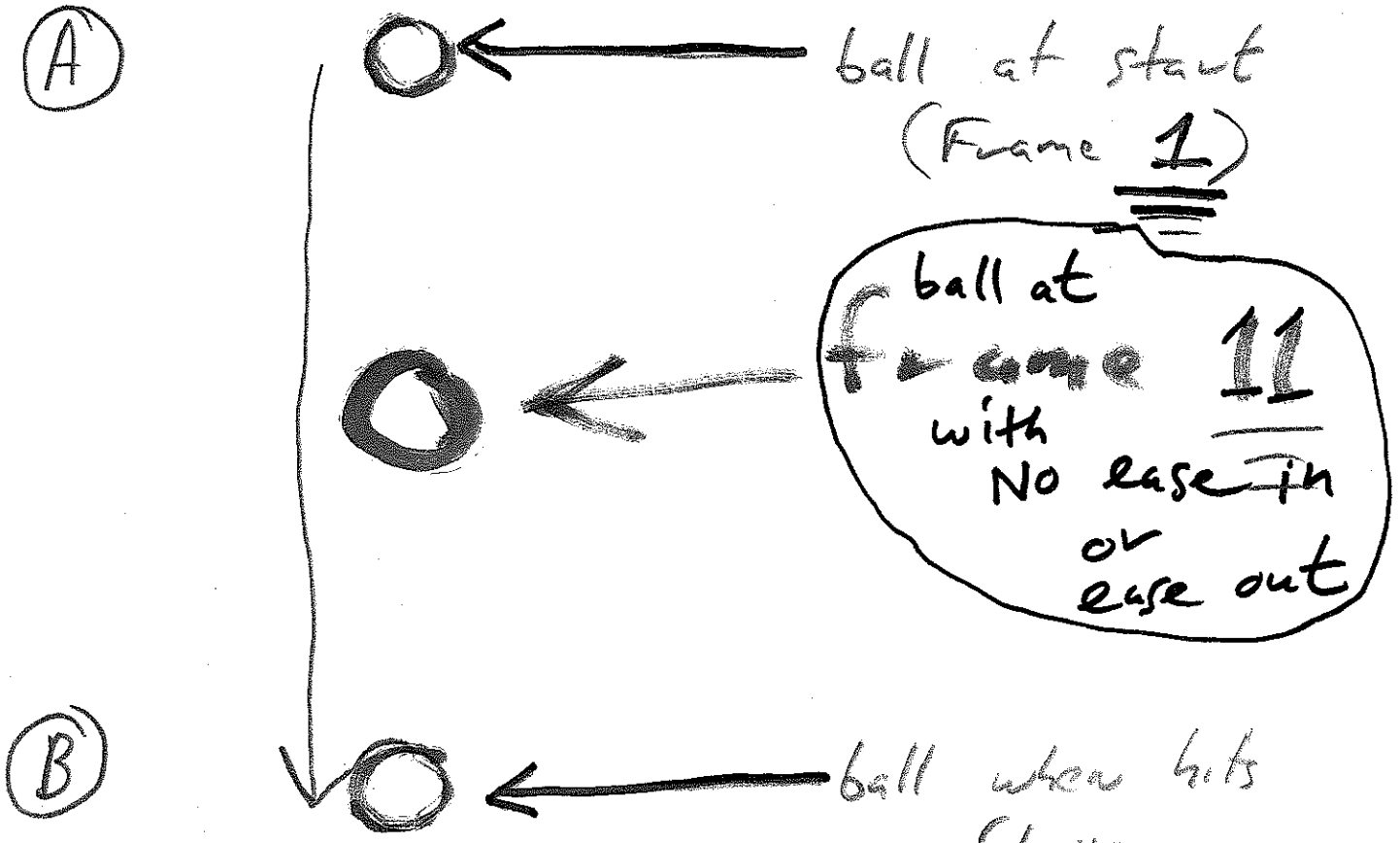
Here is the standard turtle shape you will use for this question. Be sure to clearly show what direction each of the turtles is facing when you draw what the output would look like.







4. Ease In Ease Out – see board or projector



The ball is at frame 11 here.

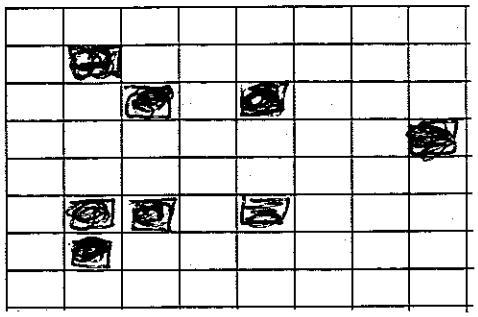
After we apply Ease Out to the ball, it will be closer to (A) or closer to (B)

Name _____

Game of LIFE – 64 cells grid.

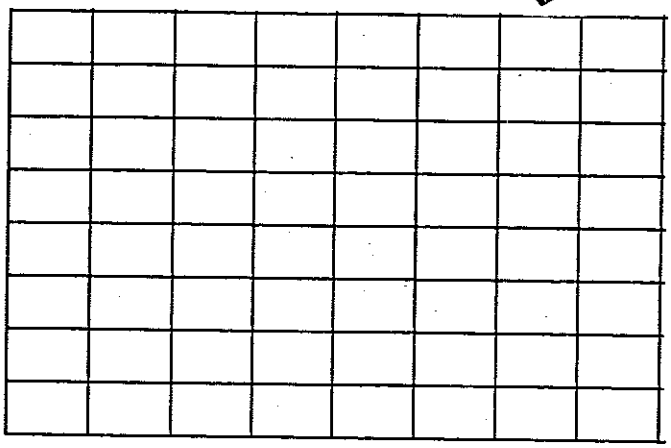
Rules are on your other test sheet.

(1)



Fill in Grid with (next generation) —

Dark cells are alive.

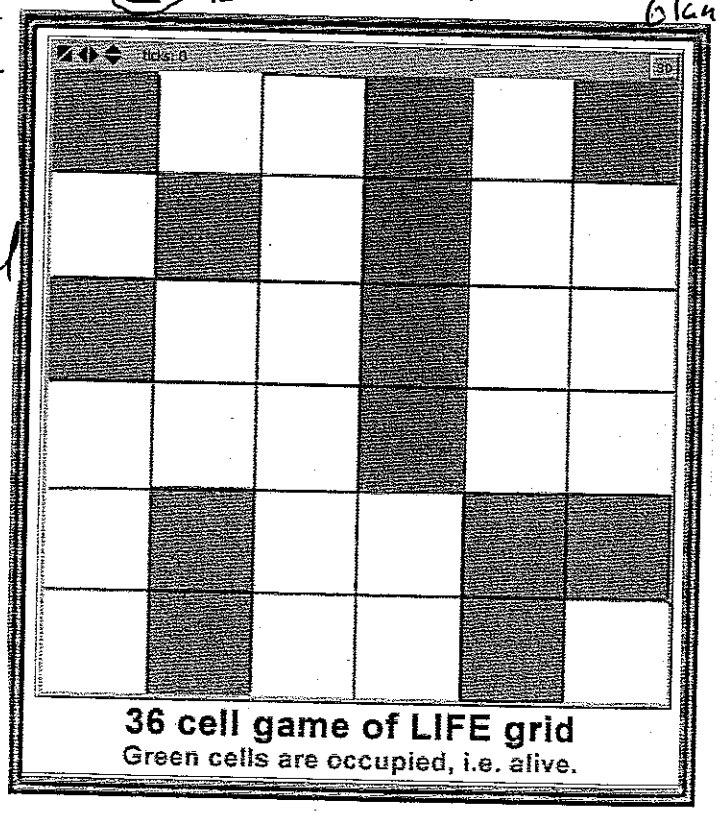


(2) Mark E if a currently dark GREEN cell dies and cell is empty.

Mark A on any white empty cell that is Alive) or Green next generation.

Leave all unchanged cells w/o E or A.

(2) E or A or leave blank.



36 cell game of LIFE grid

Green cells are occupied, i.e. alive.

John Conway's Game of Life

The Rules

The Game of Life was invented by John Conway (as you might have gathered). The game is played on a field of cells, each of which has eight neighbors (adjacent cells). A cell is either occupied (by an organism) or not. The rules for deriving a generation from the previous one are these:

Death

If an occupied cell has 0, 1, 4, 5, 6, 7, or 8 occupied neighbors, the organism dies (0, 1: of loneliness; 4 thru 8: of overcrowding).

Survival

If an occupied cell has two or three neighbors, the organism survives to the next generation.

Birth

If an unoccupied cell has three occupied neighbors, it becomes occupied.

Where You Can Find More

The original article describing the game can be found in the April 1970 issue of Scientific American, page 120.

A PostScript implementation, of all things. *Very cool!*

Here's a handy Google query.

See NetLogo Models for LIFE game Computer Science or Games category Cellular Automata