

Group Members: _____

1. What is the 'Butterfly Effect'?
 - (a) The result of throwing butter so that it flies across the room.
 - (b) The ability of butterflies to avoid bad weather.
 - (c) The idea that small uncertainties in the weather can quickly grow to become very large.
 - (d) The fact that tornados are actually made up of millions of butterflies.
2. Give one example of a fractal in nature _____.
3. Give one example of chaos in nature _____.
4. What happens if you do an experiment with the magnetic pendulum twice and try to start from the exact same initial position each time?
 - (a) The pendulum does the exact same motion each time.
 - (b) The pendulum motion is very different each time.
5. The motion of the Lorenz water wheel is chaotic?
 - (a) True
 - (b) False

Run the java applet for the von Koch curve for 8 iterations.
6. Use the mouse to zoom in on a particular part of the curve. Does the basic pattern seem to be repeating itself?
 - (a) True
 - (b) False
7. The dimension of the von Koch curve is:
 - (a) infinite
 - (b) 1
 - (c) ≈ 1.3
 - (d) 2
8. The von Koch curve is a fractal:
 - (a) True
 - (b) False

9. The total length of the von Koch curve is:
- (a) infinite
 - (b) 1
 - (c) ≈ 1.3
 - (d) 2
10. Run the case of the 'exploder' using the game of life java applet. This will give a pattern that continues to move forever. Now try this again but remove the yellow square in the lower left corner before starting (just click on this square). What happens?
- (a) The entire screen becomes filled with living cells.
 - (b) All of the living cells disappear.
 - (c) The pattern continues moving forever.
 - (d) The patterns goes for a while but then stops with 4 surviving cells.
11. Run the case of the 'Gosper glider gun'. This will give a very interesting pattern. Now try this again but remove the group of 4 cells on the far left. What happens?
- (a) The entire screen becomes filled with living cells.
 - (b) All of the living cells disappear.
 - (c) The pattern continues moving forever.
 - (d) The patterns goes for a while but then stops with a few surviving cells.
12. Start from an initial condition where you spell 'VT' (use the mouse to select the cells). Run this case, what happens? Describe your result in a sentence or two.

Have a great rest of your day!