Names: _____ _____

M&Ms Lab (Exponential Growth and Decay)

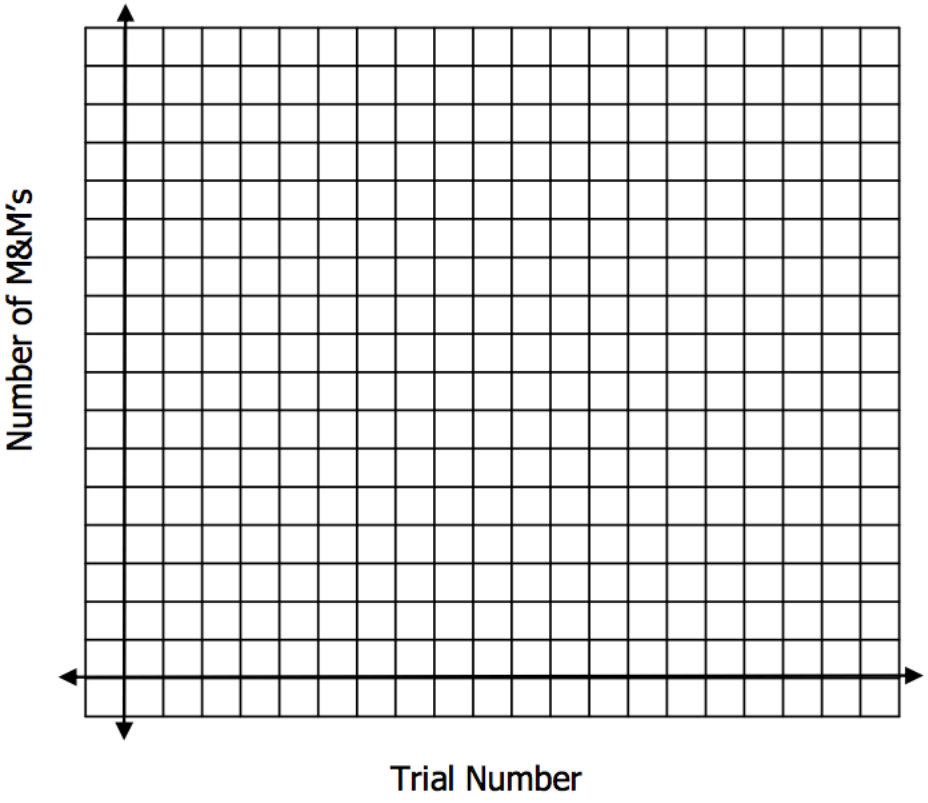
DO NOT EAT the M&Ms until you are done collecting all the data!

Exponential Growth Procedure:

1. Place 2 M&Ms in a cup. This is trial number 0.
2. Shake the cup and dump the M&Ms on the plate/work surface.
   FOR EVERY M&M THAT HAS THE "M" SHOWING, ADD ANOTHER M&M TO YOUR CUP AND THEN RECORD THE NEW POPULATION (If 2 M&Ms land face up, add 2 more M&Ms to the cup).
3. Repeat Step 2 until you are done with 14 trials **OR** you run out of M&Ms.

Trial #	0	1	2	3	4	5	6	7	8	9	10	11	12	13
# of M&Ms	2													

4. Graph your data (scatterplot). The x-axis should represent the trial number and the y-axis should represent the number of M&Ms/cancer cells.



Names: _____ _____

Exponential Decay Procedure:

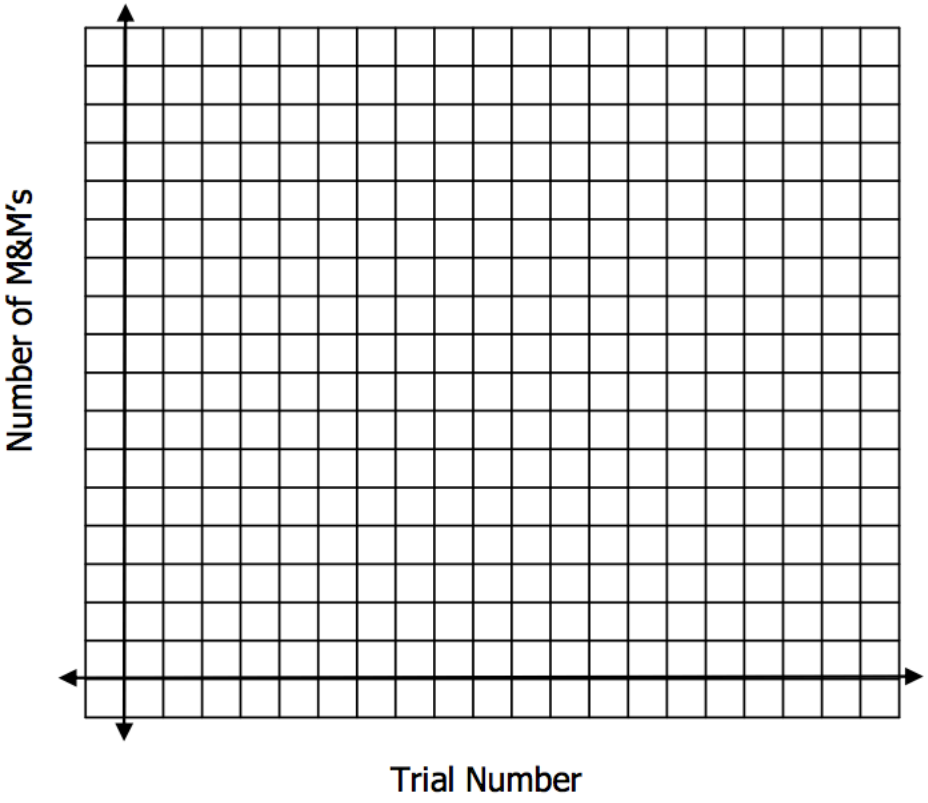
5. Count the number of M&Ms that you have. Record this number under Trial 0.

6. This time, when you shake the cup and dump out the M&Ms, remove the M&Ms that are face-up. Record the M&M population.

7. Continue the process until you fill in the table **OR** when your M&M/bacteria population gets below 2. DO NOT RECORD 0 as your answer.

Trial #	0	1	2	3	4	5	6	7	8	9	10
# of M&Ms (cancer cells)											

8. Graph your data (scatterplot). The x-axis should represent the trial number and the y-axis should represent the number of M&Ms/cancer cells.



Names: _____ _____

Follow up question for part 1. Growth Procedure

9. What is the y-intercept in the graph in section 1 (#8)? What does the y-intercept represent in the context of the problem?

10. Will the graph ever cross the x-axis ? Why or why not?

11. After you shook the cup and before you emptied them out on the plate/work surface, what percentage of M&Ms did you expect to land with the M facing up? **EXPLAIN YOUR REASONING.**

12.Previously we learned Geometric Sequences and how to find the common ratio. Calculate the ratio from trial 0 to trial 1, then trial 1 to trail 2 and so forth. Then find the average of these ratios.

13. Now write a recursive and explict equation to match your data.

14. Find f(3) and f(11) using your one of your equations. How do these values compare to the data you recorded?

Follow up question for part 2. Decay Procedure

15. What is the y-intercept in the graph in section 1 (#4)? What does the y-intercept represent in the context of the problem?

16. Will the graph ever cross the x-axis ? Why or why not?

17. Previously we learned Geometric Sequences and how to find the common ratio. Calculate the ratio from trial 0 to trial 1, then trial 1 to trail 2 and so forth. Then find the average of these ratios.

18. Now write a recursive and explict equation to match your data.