M & M Lab Report!   Name: _____

                                        Date:_____ Algebra:_____

Materials: (per group)

        1 cup full of M&Ms   1 plastic baggie
        1 paper plate   1 calculator

Procedure:
        Step 1:   Answer all of the Hypothesis Questions.
        Step 2:   Choose ONE person in your group to gather all of the materials. Make sure you have everything.
        Step 3:   Count your number of M&Ms. Record the Total Number of M&Ms in the table below in the
                   Trial 0 column.
        Step 4:   Return all of the M&Ms to the cup.
        Step 5:   Give your cup of M&Ms a little shake.
        Step 6:   Pour out the M&Ms onto the plate.
        Step 7:   Remove all of the M&Ms that are face down (the M is not showing) and put them into the bag.
        Step 8:   Count the remaining number of M&Ms on the plate.
        Step 9:   Record the number or remaining M&Ms in the table below.
        Step10:   Return the remaining M&Ms to the cup.
        Step 11: Repeat Steps 5 to 10 until all of your M&Ms disappear.
        Step 12: Complete the Graph and Conclusion Questions.

Hypothesis Questions (3 points):
        1.   How many M&M's will be taken away each time?

        2.   After how many trials will you have zero M&M's left?

        3.   Will this experiment demonstrate exponential growth or decay?   Why?

Data/Observations (2 points):
Record the number of M&M's (A = amount) remaining for each trial. (For trial 0, fill in the number of M&M's before you begin the experiment.)

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

How far off was your guess?   Are you surprised by how many trials it took? Why do you think it took this many?

Graph (5 points): Graph the data you gathered. Make sure your graph has a title and labels on your axes. Also, be aware of the scale you use (should you count by 2s? by 5s? by 10s?) and connect your data points with a smooth curve.
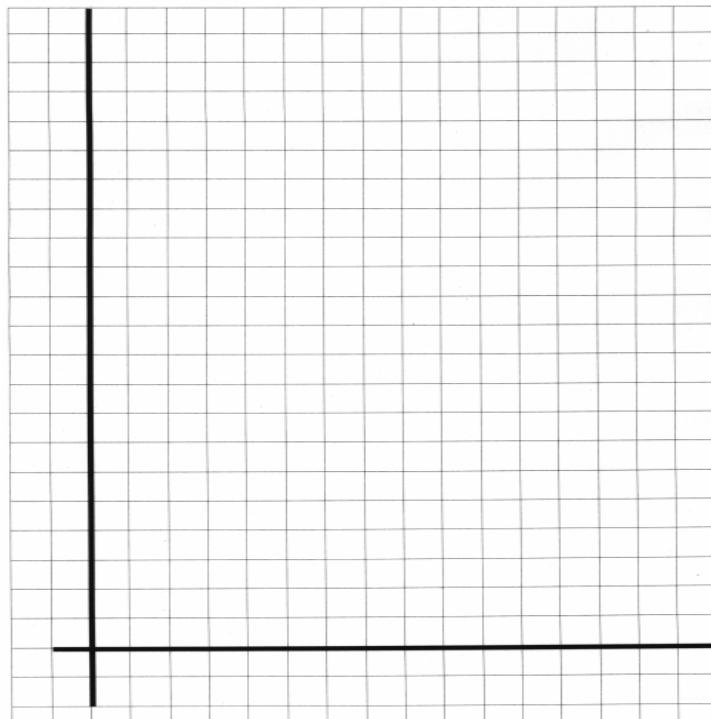
Conclusion (15 points): Answer these questions in complete sentences: (one word answers will NOT receive credit)

1. Does your graph show exponential growth or exponential decay? Why?

2. Write the formula we use for exponential growth and decay.

3. M&M's only have an M on one side; what is the probability that an M&M will land with the M facing up?
Can you express this probability as a decimal?   How can we use this probability in our formula?

4. Using your initial amount from trial 0, the rate (r = rate) you just found and t= the # of trials it took you to get to zero m&ms - write an equation that models the behavior of your M&M's.

5. What other material could you use to conduct this experiment and get similar results?

6. If we were to take away the M&Ms that were face up (the M is showing) instead of the ones that are face down, would the experiment change?   Why or why not?

Algebra 1   Name_____
6.9 Review   Date_____ Alg____

Simplify. Your answer should contain only positive exponents.

1) $\left(a^{-3}b^2\right)^{-1} \cdot 2ba^{-3}$

2) $\dfrac{\left(p^2q^2r^2\right)^4}{p^3q^{-4}}$

3) $\dfrac{-4yx^{-4}}{-3y^{-3} \cdot x^3y^0}$

4) $\left(\dfrac{2y^0z^{-2}}{2x^{-1}z^3}\right)^4$

5) The population of New York was 300,000 in 1800. The population increases by 2.1% each year. Following this model, what is the projected population for New York in 2010?

6) After taking medication, the concentration of medication in the bloodstream decreases by 20% each hour. If Charlotte takes 200 mg of the medication at 6:00 AM, how much remains in her bloodstream at 10:00 AM?

Simplify.

7) $\sqrt{128}$

8) $-\sqrt{27} + 3\sqrt{12}$

9) $\sqrt{20} \cdot 2\sqrt{5}$

10) $-2\sqrt{15}\left(-2\sqrt{6} + 4\right)$

11) $\dfrac{5\sqrt{4}}{5\sqrt{6}}$

12) $6\sqrt{18b^3}$