

<p>Growth:</p> $y = a(1 + r)^x$	<p>Decay:</p> $y = a(1 - r)^x$	<p>a = initial amount before measuring growth/decay</p> <p>r = growth/decay rate (often a percent)</p> <p>x = number of time intervals that have passed</p>
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This activity will demonstrate the process of exponential growth and decay.

Start: Pour the M&Ms onto a paper towel. Count the number of M&Ms.

Experiment 1 - Growth:

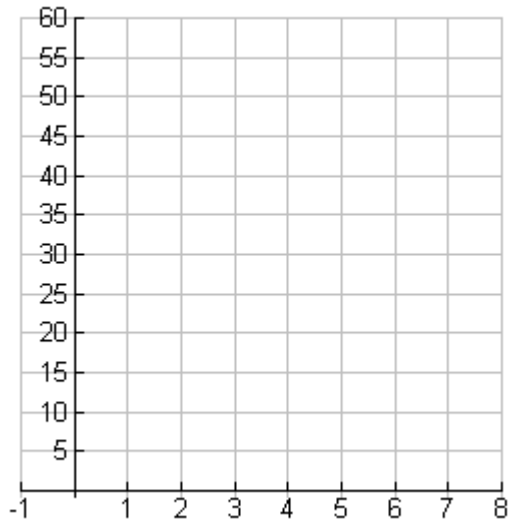
1. Do not eat the manipulatives during this part of the experiment.
2. Place 4 M&Ms back in the tub (or a paper cup). Shake and toss. Count the number of M&Ms that show the **M** up. Return the 4 M&Ms to the tub, along with one M&M for every **M** that was showing. Record in the table the total number of M&Ms after each toss. Repeat the process for 7 tosses.

Toss	M&Ms
1	4
2	4 + <input type="checkbox"/>
3	
4	
5	
6	
7	

3. Plot the data in a scatter plot. Label axes.
4. Using the formulas at the top of the page, write an equation that represents this part of the experiment and plot your equation on the same graph.

Equation: _____

5. Compare the graphs of the scatter plot and the equation.



Experiment 2 - Decay:

- Record the number of M&Ms in the tub or paper cup as Toss 1.
- Return the M&Ms to the tub (or paper cup), shake and toss. Count the number of M&Ms that show the **M** up. Eat the M&Ms that do not show the **M**. Return the M&Ms that show the **M** to the tub. Record in the table the total number of M&Ms in the tub after each toss. Repeat the process for until only one M&M remains.

Toss	M&Ms
1	<input type="checkbox"/>
2	
3	
4	
5	
6	
7	

- Plot the data in a scatter plot.
- Using the formulas at the top of the page, write an equation that represents this part of the experiment and plot your equation on the same graph.

Equation: _____

- Compare the graphs of the scatter plot and the equation.

