**Exponential Growth and Decay of M & M’s**

Activity 1: Growth

1. Copy the chart below.

2. Start this experiment with 4 M & M’s in a plastic cup. Shake the cup and pour the M&M’s onto the table. Count the number of M & M’s that have an M showing. Add a new M&M for each one with an M showing. Repeat this 10 times.

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Trial # | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| # of M&M”S |  |  |  |  |  |  |  |  |  |  |  |

3. Make a Scatter Plot of the data

![[image]]()

4. Write an exponential function rule that could fit your data.

5. Predict how many M&M’s you would have after 20 tosses, 30 tosses, and 55 tosses.

Activity 2: Decay

1. Copy the chart below

2. Start this experiment with a cupful of M&M’s (approximately 80). Shake the cup and pour the M&M’s onto the table. Count the total number of M&M’s. Write this as the number for trial number 0. Remove all M&M’s that have an M showing. Record the total number of M&M’s remaining. Using the new total of M&M’s each time, repeat the procedure 10 times. Note: If the number of M&M’s reaches zero at any trial, the experiment is over at that time and you should not use the zero results as part of your data.

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| # of Trials | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| # of M&M’s |  |  |  |  |  |  |  |  |  |  |  |

3. Create a scatter plot of the data.

![[image]]()

4. Write an equation that could represent your data.

5. Assuming you start with 900 M&M’s, how many trials would you need before the experiment is over?