In Class Exercises (ICE) - 2/16/01

In this ICE, you'll examine the relationship between "rate" and "continuous rate" of growth, to learn how these are different, and how the two different ideas of growth are related.

An activity[1] is described in Figure 1 below.

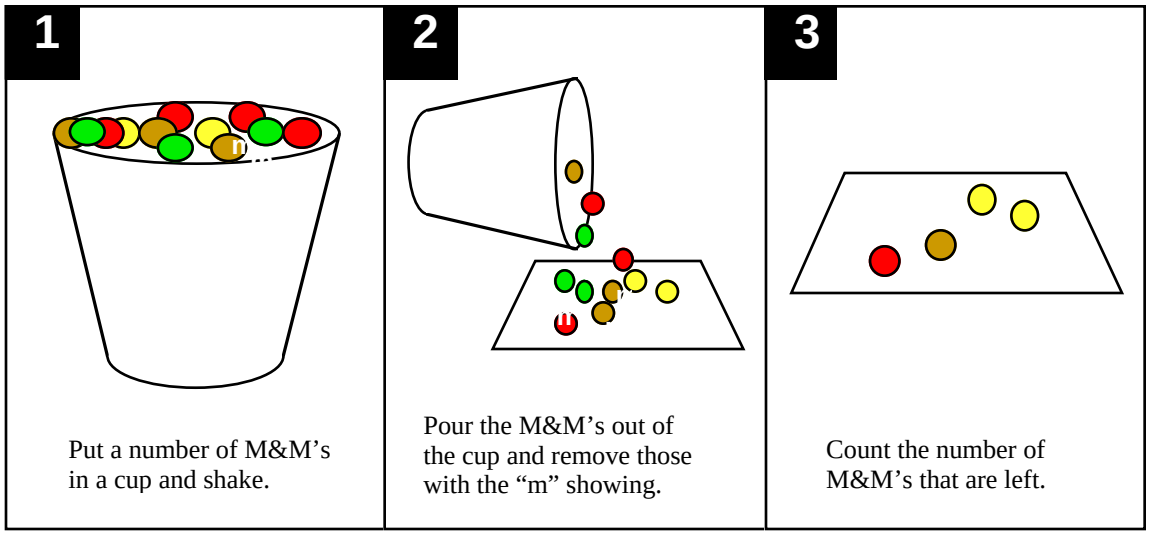

Figure 1: Description of activity.

- ***Analyze what is happening to the numbers of M&M's during the activity. Find a formula that will give the number of M&M's that remain each time the experiment is repeated.***

- ***Get some M&M's in a cup. Count the number of M&M's in your cup - this will be the initial value for your formula. Use your formula to predict how many M&M's will be left each time the experiment is repeated, and note your results in the table on the next page. When you have finished predicting, actually do the experiment and see if your formula is doing a good job of predicting the number of M&M's remaining.***

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[1] Adapted from an activity by Jerry Staniszewski of Hinsdale Central High School, Hinsdale IL. The activity can be found at: www.ti.com/calc/docs/act/stan5.htm

Trial	***Prediction for number of M&M's remaining***	***Actual number of M&M's remaining***
0		
1		
2		
3		
4		
5		

Table 1: Note your predictions and results here.

- ***Formulate a differential equation that could be used to describe what's happening in the activity. (You could assume that the experiment is repeated every minute to get an estimate of the change in time here.)***

- ***Solve the differential equation to find a formula for the number of M&M's as a function of time. Does this formula agree with the one you found earlier?***

- ***Take the first formula that you came up with by analyzing the activity. Convert this formula to the*** $N(t) = N_0 e^{kt}$ ***format for an exponential function. Find a differential equation that*** $N(t)$ ***is a solution of the differential equation. How does this new differential equation differ from the one you found earlier?***