

LAB EXERCISE 9 - HALF-LIFE EXERCISE

Name:	Course ID:
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Objective: What is HALFLIFE of a radioactive element?

- I. Get into groups!
- II. Materials: a coin or 100 M&Ms, paper, graph paper (lot's of patience)
- III. Your group needs to flip the coin 100 times or use 100 M&Ms! Count all heads (MM) and tails you are getting from the 100 flips! Write down under Time 1. Assign:  
 Heads (MM) = Parent Material  
 Tails = Daughter Products  
**KEEP COUNT IN THE FOLLOWING TABLE!**



Time	Parent Material	Daughter Products	Cumulative Daughter Products
<b>0</b>	<b>100</b>	<b>0</b>	<b>0</b>
<b>1</b>			
<b>2</b>			
<b>3</b>			
<b>4</b>			
<b>5</b>			
<b>6</b>			
<b>7</b>			

- IV. Flip the coin or MM's again but only for the number of Parent Material under Time 1. Again count heads (Parent) and tails (Daughter)!  
**KEEP COUNT IN THE TABLE! Write results under TIME 2!**
- V. Flip the coin again or MM's but only for the number of Parent in TIME 2 . Again count heads and tails!  
**KEEP COUNT IN THE TABLE! Call this TIME 3!**
- VI. Continue flipping the coins or MM's as many times as you have parents from the previous run. Keep count of heads (Parent) and tails (Daughter)!  
**CONTINUE TO KEEP COUNT IN THE TABLE! Proceed with TIME 4 and then 5, 6, and so forth!**
- VII. Graph the results for both parent and daughter products (ON GRAPH PAPER).  
X-Axis is "Time" column (time 0, time 1, time 2, etc.)  
Y-Axis is "Parent Material" column (starting with 100) and "Cumulative Daughter Products" column (starting with 0)

1. What is the general shape of your graphs? Describe!
2. Compare your graph with the graphs of three other groups in the class! Is there a difference? Why or Why not? Explain!
3. If each time on the x-axis represented 1000 years, could you calculate the age of a material that contained 25% parent material and 75% daughter products? Explain how you would do that!
4. This exercise was designed to help you in the understanding of "radioactive half-life". How would you define the principle of "radioactive half-life!" in one short paragraph?

