

Name\_\_\_\_\_

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## ***Lab: Radioactive Decay of Candium***

Radioactive decay processes occur in accordance with first order kinetics. This simulation provides a simple example of the rate at which a radioactive isotope decays.

### **Materials**

M&M™ or Skittle candy pieces  
resealable bag or cup  
graph paper

### **Procedure**

1. Place 50 atoms of candium (pieces of candy) in the bag.
2. Seal the bag and gently shake for 10 seconds.
3. Gently pour out candy.
4. Count the number of pieces with the print side up—and record the data. These atoms have "decayed".
5. Return only the pieces with the print side down to the bag. Reseal the bag.
6. Consume the "decayed atoms".
7. Gently shake the sealed bag for 10 seconds.
8. Continue shaking, counting, and consuming until all the atoms have decayed. (The Undecayed amount will decrease from 50, the Decayed amount will increase from 0. Notice each line will always add up to 50.)
9. Graph the number of Decayed and Undecayed atoms vs. time.

### **Data and Observations:**

Half-life	Total Time	# of Undecayed Atoms	# of Decayed Atoms (Print Side Up)
0	0 seconds	50	0
1	10 seconds		
2			
3			
4			
5			
6			
7			
8			

**Questions:**

- 1. Define half-life?**
  
  
  
  
  
  
  
  
  
  
- 2. In the experiment, what was the half-life of the element Candium (how many seconds each time)?**
  
  
  
  
  
  
  
  
  
  
- 3. At the end of two half-lives, how many of the atoms had not decayed?**
  
  
  
  
  
  
  
  
  
  
- 4. Describe the shape of the curve drawn in step 9.**