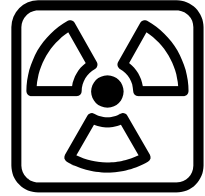


Radioactive Decay of Cadium

Name: _____ Per: _____ Seat #: _____

Procedure:

1. Place 50 atoms of cadium (pieces of candy) in the cup
2. Cover the cup and gently shake for 10 seconds.
3. Gently pour out candy.
4. Count the number of pieces with the print side up. These atoms have "decayed".
5. Record this number in the data table.
6. Return **only** the pieces with the print side down to the cup.
7. Consume the "decayed" atoms.
8. Gently shake the sealed bag for 10 seconds.
9. Continue shaking, counting, and consuming until all the atoms have decayed.
10. Record your data on the overhead.
11. Graph the class data and answer the conclusion questions.



Data:

Personal Data:

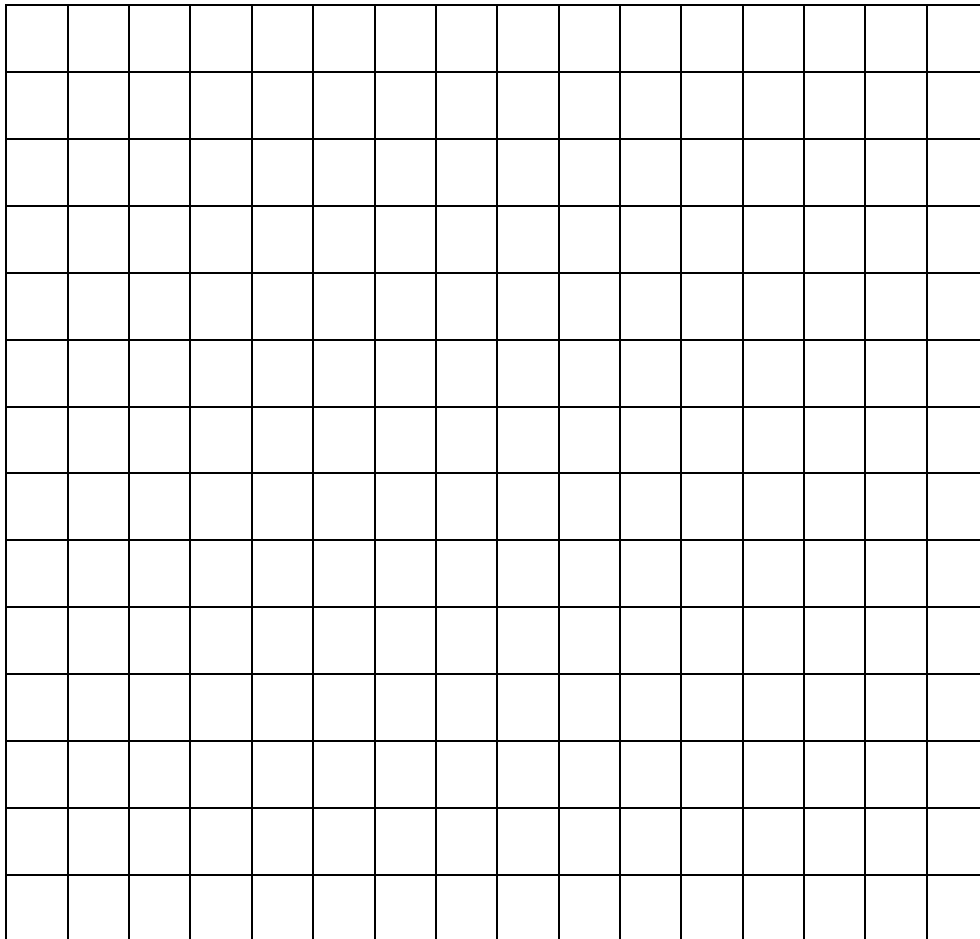
Half-life	Total Time	# of Decayed Atoms	# of Undecayed Atoms
0	0 sec	0	50
1			
2			
3			
4			
5			
6			
7			

Total Class Data:

Half-life	Total Time	Total # of Undecayed Atoms
0		
1		
2		
3		
4		
5		
6		
7		

Graph of Class Data:

Number of undecayed atoms



Conclusion Questions:

Time elapsed

Please answer the following questions on a piece of binder paper.

- 1) Define half-life.
- 2) Can you predict when an individual “candium” atom will decay?
- 3) Is your graph of the class data a straight line? What does the shape of the line tell you about how a radioisotope decays?
- 4) Would the shape of your graph change if you started with more pieces of candy? Why or why not? Would the data points change? Why or why not?
- 5) In the experiment what was the half-life of the element candium? Would your half life change if you started with more or less pieces of candy? Why or why not?
- 6) At the end of 2 half-lives what fraction of the atoms had not decayed?
- 7) If you allowed 3 minutes between each trial instead of 10 seconds, how long would the half-life be?
- 8) The half-life of sulfur-38 is 2.87 hours. After 8.61 hours, what percent of the original radiation is left?
- 9) Iron-59 is used in medicine to diagnose blood circulation disorders. The half-life of iron-59 is 44.5 days. How much of a 2.000 mg sample will remain after 133.5 days?
- 10) Germanium-66 has a half-life of 2.5 hours. You have 35 grams of the radioactive material. After 16 days how much radioactive material remains?