Name:	Date:			
Chemistry ~ Ms. Hart	Class:	Anions or Ca	ations	SCHOOL FOR CRIMINAL
<u>Lab #25:</u> Radioa	JUSTICE			

Purpose:

- 1. To determine the half-life of a radioactive isotope called Pennyium.
- 2. To draw an exponential decay curve.
- 3. To create an understanding of radioactive decay of elements with radioactive isotopes.

Background:

1. In this lab, the pennies represent ______

2. When a penny is facing upward (heads), it is removed because it has ______ and turned into a new kind of atom.

3. The time it takes to remove exactly 1/2 of the pennies is called the ______.

We will read this half-life from a graph that we draw.

Procedure:

Already done for you by Ms. Hart = Count out exactly 100 pennies and put them into a zip-top bag and
seal it. Record 100 pennies under time trial 0 on the data chart on the answer sheet.

- 1. Shake the bag.
- 2. Unzip the bag and pour out the pennies on your desk (don't let any fall!)
- 3. Remove all of the pennies where the head side is pointing up. Set them aside.
- 4. Count the remaining pennies and record that number under the next time trial on the data chart.

5. Repeat steps 2 - 5 until there are no pennies left in the bag. Record the number remaining in the bag each time you remove those with the letter pointing up.

Note:

- Never put pennies that you took out (heads up) back in the bag.
- If none of the pennies have the head side pointing up, record the same number twice.

Data:														
TIME (TRIAL)	0	1	2	3	4	5	6	7	8	9	10	11	12	13
NUMBER OF PENNIES IN BAG	100													

Observations: What do you notice happening as you work through your procedure? Make some comments below.

Data Graph:

- Choose an appropriate title, label the axis, choose an appropriate scale



Conclusion/Reflections:

- 1. Using your graph, determine how many times trials (estimate a decimal if you need to) it took to remove 50 pennies. This is your HALF-LIFE of Pennyium. ☺
- 2. How does this activity that uses Pennyium relate to actual radioactive isotopes?
- 3. Use **Table N** to report **TWO** radioisotopes of your choice and their half-lives.
- 4. What fraction of a radioactive sample remains after one half-life?
- 5. What fraction remains after two half-lives? Explain.
- 6. What fraction remains after three half-lives? Explain.