

## Radioactivity and Half-lives Lab

<b>WHAT TO TURN IN:</b>	<b>Data Table</b>	<b>Graph</b>	<b>Questions #1-3</b>
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Purpose: To simulate the chemical conversion of a reactant over time and to graph the data and relate it to radioactive decay and half-lives.

Materials: penny, graph paper, pencil, paper ruler.

### Procedure

1. Flip a penny 100 times and record in your data table the total number of heads that result.
2. In trial #2 flip the penny the same number of times that you had heads in trial #1.
3. Record the resulting number of heads.
4. In trial #3 flip the penny the same number of times as you had heads in trial #2.
5. Continue until you obtain no more heads.

### DATA TABLE

Trial #	Number of flips	Number of heads
1	100	
2		
3		
4		
5		
6		

Trials continue until you obtain no more heads.

### GRAPH

Use graph paper to plot the trial number on the x-axis versus the number of flips on the y-axis. Draw a smooth line through the points. Remember that graphs must be titled, the axes must be properly labeled and the intervals must have even spacing.

**QUESTIONS**— Use your experimental data to respond to the following:

1. Examine your graph. Is the rate of the number of heads produced over time linear or non-linear? Is the rate constant over time, or does it change?
2. Why does each trial reduce the number of heads by approximately one-half?
3. A half life is the time required for one half of the atoms of a radioisotope to emit radiation and to decay to products. What value represents one half-life for the process of flipping coins?