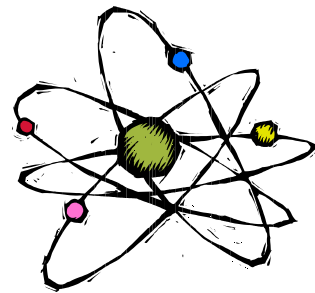


Half Life Lab

LP: _____ Date _____



Objectives:

- To define the terms half life and radioactive decay
- To determine the rate of radioactive decay
- To create line graphs from collected data
- To compare data

Materials:

- Shoeboxes
- Pennies
- Graph paper
- Clock or stop watch
- Colored pencils and rulers

Procedure:

1. Place **50** atoms (pennies) into the shoebox
2. Place lid on box and shake for **10** seconds
3. Remove lid and take out the **decayed** atoms (represented by “**tails up**”)
4. Count the number of **undecayed** atoms (represented by “**heads up**”) left in the box
5. Enter the number of **decayed** and **undecayed** atoms into Table 1.
6. Repeat steps 2-5 until all the atoms have decayed
7. Create a line graph to represent your data in Table 1. (# atoms vs. time)
8. Repeat the experiment again, this time choose an amount of pennies between 25 and 100, and a time frame between 5 and 45 seconds.
9. Let me know what your choice is, ***no other lab group may do the same combination***
10. Enter you data into Table 2
11. Create a line graph to represent your data in Table 2
12. Post Graph #2 up in the classroom and compare your results to the other lab groups

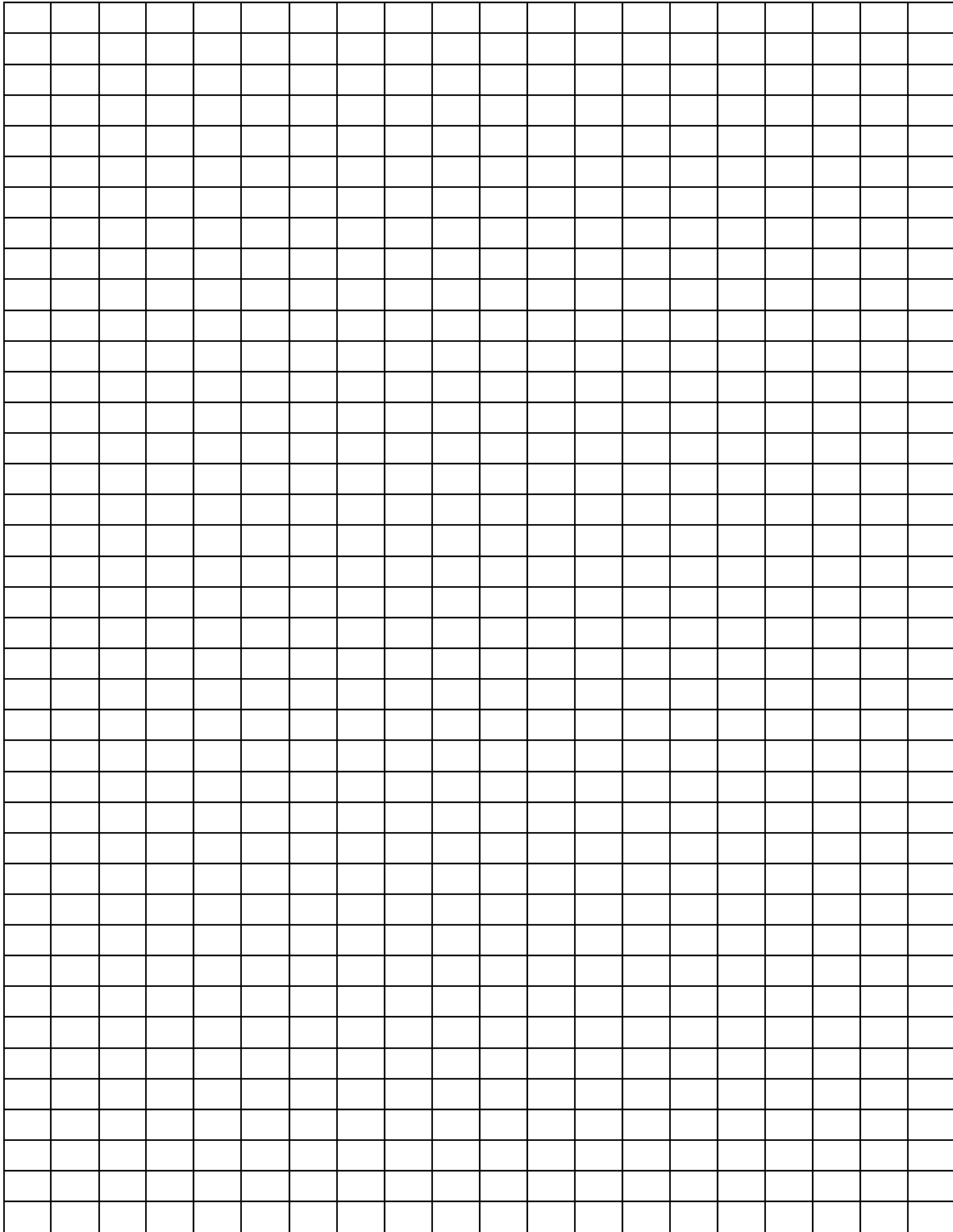
Table 1: 50 atoms and 10 seconds

Table 2: ____ atoms and ____ seconds

Half Life	Time (sec)	Undecayed atoms	Decayed atoms	Half Life	Time (sec)	Undecayed atoms	Decayed atoms
1	0	50	0	1	0		0
2	10			2			
3	20			3			
4	30			4			
5	40			5			
6	50			6			
7	60			7			
8	70			8			
9	80			9			
10	90			10			
11	100			11			
12	110			12			
13	120			13			
14	130			14			
15	140			15			

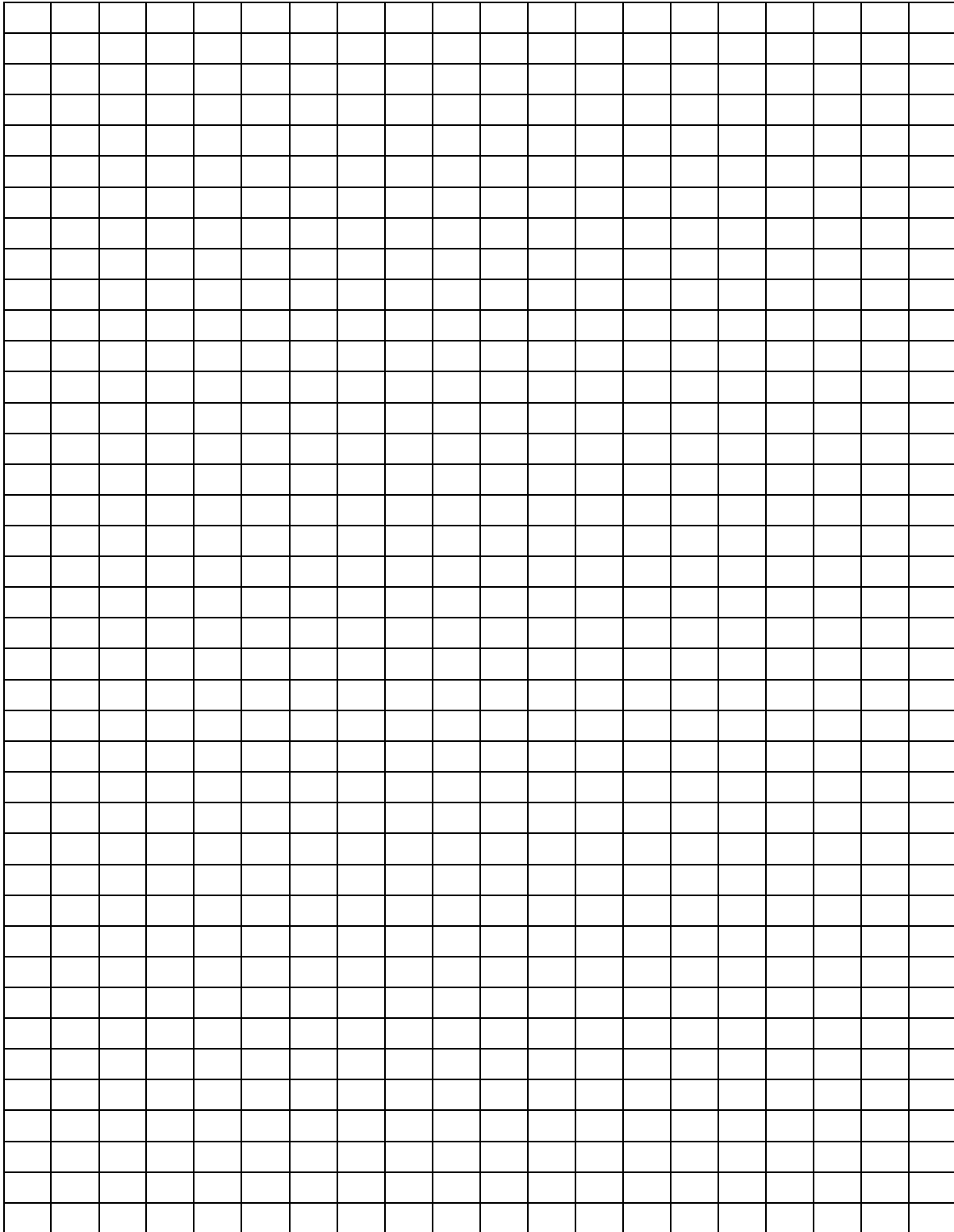


Figure 1: Graph of 50 atoms and 10 seconds



Names _____ HR _____

Figure 2: Graph of _____ atoms and _____ seconds



Analysis and Results:

1. Define the term **half-life**:

2. What does it mean when we say an atom has “**decayed**”?

3. For **Table 2**, at the end of **each** half-life, at approximately what percentage are the atoms decaying? _____

4. Compare Graph # 1 to Graph # 2. Give at least 3 example of how they are similar and 3 examples of how they are different.

5. Compare your Graph # 2 to the graphs made by the other lab groups. Do you notice any patterns or trends? **Explain** using the terms: half-life, decay, undecayed, atoms, and time.

6. Does the amount of time you shake the box affect the outcome? _____ Do the number of atoms you start with affect the outcome? _____

Explain: _____

7. How do scientists use radioactive decay to date fossils and artifacts?

Conclusion: 2-3 sentences on what you learned:

