PHYSICS IN MOTION
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Unit 7D
Half Life
Modeling Radioactive Decay Lab

Name:

Date:

In today's activity, you will be modeling radioactive decay by using materials that have a 50% probability of being one one side or another. Your teacher will provide these materials.

Materials:

- 50% probability particles
- Graph paper

Procedure:

Count the total number of particles with which you begin. This will be your starting mass. You will shake your sample to disturb your particles and remove all of the particles that are either upside down or rightside up- your choice. Shake your sample to disturb the particles, and remove all of the particles that are either upside down or rightside up -- your choice. Be sure to count how many particles you are removing.

Repeat this process four more times, removing all of your decayed particles each time. Once you have completed your procedure five times, you should make three line graphs:

- Non-Decayed Particles vs. Half-Lives
- Decayed Particles vs. Half-Lives
- A graph of both Non-Decayed Particles AND Decayed Particles vs. Half-Lives

Questions to consider:

1. Define the term half-life.

   _____

   _____

2. What happened to the number of non-decayed particles after each half-life occurred?

   _____

3. Describe the shape of your non-decayed particles vs. half-life graph. What does this indicate about how radioactive decay occurs?

   _____

   _____

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Modeling Radioactive Decay

Rate of Decay

Non-Decayed Particles (number) vs **Half-Lives**

(Y-axis: 0 to 100, X-axis: 0 to 5)

Rate of Decay

Decayed Particles (number) vs **Half-Lives**

(Y-axis: 0 to 100, X-axis: 0 to 5)

Rate of Decay

Non-Decayed Particles (number) vs **Half-Lives**

(Y-axis: 0 to 100, X-axis: 0 to 5)

— Non-Decayed Particles
— Decayed Particles