

Name(s): \_\_\_\_\_  
\_\_\_\_\_Section: \_\_\_\_\_  
Date: \_\_\_\_\_

## In Search of Cosmic Rays

### Activity 1: Hess' Balloon Ride

#### Investigation Question:

*Do the background radiation particles appear to be coming from the Earth, or somewhere else?*

**Table 1: Counter Data Table**

Altitude (m)	Rate (hits/sec)	Test Time (sec)

#### ***Lab Procedure***

1. Using the orange/yellow arrows on the balloon panel, you can change the altitude of the balloon, up to 30,000 meters. Choose an altitude to start from, and stop the balloon using the central round button.
2. Using your Geiger counter, take a reading on the number of particles in the atmosphere at that altitude.

#### **To take a reading with the Geiger counter:**

1. Click on the "Start Counting" button. This will collect data.

2. Click on the "Stop Counting" button. This will stop data collection.

3. Click on the "Record Data" button. This adds your collected data to the data table.

It is up to you, the experimentalist, to decide how long to let the counter collect data before you record it. *Suggestion: wait until the rate becomes stable.*

3. Stop the balloon and record data as many times as is needed to get a true understanding of the relationship between the particle detection rate and the altitude.

4. When you feel you have collected enough data, click on "**Plot Data.**" If you feel you need more points on your graph, hide the plot using the button under the graph and collect more data.

5. Draw and label the graph in your notebook.

### ***Analysis Questions***

1. What were your predictions about the relationship between particle counts and altitude changes? Were you right?

2. What happens to the particle count as altitude changes?

3. By looking at the data, what can you hypothesize about the source of the particles? Is it coming from Earth, or somewhere else?

4. What happened to your counts when you took several readings at one altitude?

5. What was the average amount of time that you had to count particles in order to get a smooth line on your graph?