Name _____ Date _____ Class _____

SMALL-SCALE LAB: The Atomic Mass of Candium

Laboratory Record Sheet Use with Section 4.3

PURPOSE

To analyze the isotopes of candium and to calculate its atomic mass.
To analyze the isotopes of a new element and to calculate its atomic mass.

MATERIALS

- sample of "candium"
- balance
- baggies/envelopes
- pencil
- paper
- various items (students will bring the items for those who forget dried beans and rice will be used)

PROCEDURE

Obtain a sample of "candium" that contains three different brands of round, coated candy. Treat each brand of candy as an isotope of candium. Separate the three isotopes into groups labeled A, B, and C, and measure the mass of each isotope. Count the number of atoms in each sample. Make a table similar to the one below to record your measured and calculated data.

	A	B	C	Totals
Total mass (grams)				
Number				
Average mass (grams)				
Relative abundance				
Percent abundance				
Relative mass				

Figure A

Name _____ Date _____ Class _____

ANALYSIS

Using the experimental data, record the answers to the following questions.

1. Calculate the average mass of each isotope by dividing its total mass by the number of particles of that isotope. Record your data in Figure A. (3 points)

2. Calculate the relative abundance of each isotope by dividing its number of particles by the total number of particles. (3 points)

3. Calculate the percent abundance of each isotope by multiplying the relative abundance from Step 2 by 100. (3 points)

4. Calculate the relative mass of each isotope by multiplying its relative abundance from Step 2 by its average mass. (3 points)

5. Calculate the weighted average mass of all candium particles by adding the relative masses. This weighted average mass is the atomic mass of candium. (3 points)

6. Explain the difference between percent abundance and relative abundance. What is the result when you total the individual percent abundances? The individual relative abundances? (10 points)

7. The percent abundance of each kind of candy tells you how many of each kind of candy there are in every 100 particles. What does relative abundance tell you? (5 points)

8. Compare the total values for rows 3 and 6 in the table. Explain why the totals differ and why the value in row 6 best represents atomic mass. (10 points)

9. Explain any differences between the atomic mass of your candium sample and that of your neighbor. Explain why the difference would be smaller if larger samples were used. (10 points)

YOU'RE THE CHEMIST(To be completed at the end of the chapter)

Design a new element and its isotopes. Your new element needs to have 4 isotopes. You will need to bring in the items for you r new element. You could use noodles, dried beans, rice, dried peas, Legos…

1. Pick materials for your new element (1point)
2. Decide on name for the new element (1 point)
3. Create the isotopes (5 points)
4. Create the answer key for element. What is its atomic mass? Show all work needed to get the answer, don't forget the data table (20 points).
5. Trade new elements with another group and find the atomic mass. Be sure to complete a data table and show all of your work. (10 points)