

Name: _____ Per: _____ Date: _____

Isotopes of Candium

Background: Good news! The Galactic Times Science Section reports that research scientists on the planet Candy have discovered a new element. They have decided to call it candium and have chosen the symbol Cy. Careful measurements determined that Candium has 119 protons! Candium was also found to have three isotopes named Candy Cornium, Swish Fishium and Skittlium. Your research team has been chosen to measure the atomic weight of candium and prepare the new cell for the newest edition of this year's Galactic Periodic Table.

Objectives: To analyze the isotopes of the element Candium.

To calculate the average atomic mass for a sample of Candium

Materials: Sample of candium (**DO NOT EAT UNTIL THE MEASURING PART IS OVER**)

Digital Balance

Safety: When handled correctly, candium has no known safety hazards. Candium samples should always be placed in a paper cup for all weighings, or stored on a piece of clean paper to avoid any contact with the laboratory bench surface or the balance.

Pre lab questions:

1. Define Isotope : _____
2. The discovery of isotopes led to the discovery of which part in the atom? _____
3. Are the following atoms of the same element? _____ Explain your answer.
3 protons, 3 neutrons, 3 electrons
3 protons, 4 neutrons, 3 electrons

Calculations:

Average mass: $\frac{\text{Mass of sample}}{\text{Number of pieces of candy}}$

Relative abundance $\frac{\text{number of pieces of one type of candium}}{\text{Total number of pieces of candium}} \times 100$

Procedure:

Separate your candium into three samples: (Candy Cornium, Swish Fishium and Skittlium)

1. Count the number of each type of "isotope", and list in your data table
2. Take the mass of each collection of isotopes (be careful not to let the candium touch the balance, since you want to eat it later) and record in data table.

Data Table I

	Swish Fishium	Skittlium	Candy Cornium	Totals add # for all isotopes
A) number of pieces				
B) mass (all pieces)				
C) average mass for this isotope (= B/A)				
D.) relative abundance (decimal) = $(A/\text{total pieces})$				
E.) relative abundance (%) (= $(D) \times 100\%$)				

Data Table II

Put your sample back together; gather some additional information eating while you calculate.

	avg. mass (C)	abundance (D)	mass X abundance (C x D)
Swedish Fishium			
Skittlium			
Candy Cornium			
		Total (average atomic mass)	

Post lab questions:

1. Use the information in the background and in table 2 to create a “Tile” for the periodic table. What would you use for the average atomic mass?

2. Does your average mass match the average for one of your isotopes? If so, which one? Explain.
3. Which isotope is the heaviest? _____ Which isotope is the lightest? _____
4. The three types of candy “isotopes” were selected because they have certain characteristics in common: They are small, colorful and good to eat. If they were truly “isotopes” (not candy), they would have other characteristics in common. What would these be? _____