Isotopes of "Centium"

Purpose: A new element has been discovered! Your job is to find the Average Atomic Mass of this element so it can be put on the periodic table! Two isotopes of this element are known. Pennies from different time periods will represent these isotopes. "Before-1982" and "After-1982"

Procedure: Collect your data in the table below, make calculations and answer conclusion questions.

Materials: Scale - 10 Atoms of "Centium" (Pennies)

Data:

	Total Number of Pennies	
	Mass of ALL Pennies	
	Average mass of pennies	
	Number of "Before-1982" Pennies	
	Mass of all "Before-1982" Pennies	
b	Average mass of "Before-1982" Pennies	
B	Fractional Abundance of "Before-1982" Pennies (Number of "B-1982" divided by total)	
	Number of "After-1982" Pennies	
	Mass of all "After-1982" Pennies	
a	Average mass of "After-1982" Pennies	
A	Fractional Abundance of "After-1982" Pennies (Number of "B-1982" divided by total)	
	Average Atomic Mass = A*a + B*b SHOW WORK BELOW!!!!!!!!!!	

Results and Conclusion :

Part 1: What is an Isotope?

1. What is the Average Atomic Mass of "Centium"? Show your work below

2. Each penny in our sample represents an atom of Centium. How many atoms do you have in your sample?

3. How many pretend elements does the sample of pennies represent? Explain. Hint look at the title of the lab.

4. How many isotopes of "Centium" do you have? Explain.

5. Write the hyphen notation for each isotope of Centium.

Part 2: Taking a Closer Look at Average Atomic Mass

1. Once you have calculated your average atomic mass write your value on the board and fill in the table below with data from your fellow chemists:

# of Before-1982 Pennies	# of After 1982 Pennies	Average Atomic Mass
0	10	
1	9	
2	8	
3	7	
4	6	
5	5	
6	4	
7	3	
8	2	
9	1	
10	0	

2. What trends do you see in the table as the

    a. Number of Before-1982 pennies increases

    b. Number of After-1982 pennies increases

    c. What does this tell us about the Average Atomic Mass?

3. Compare the average mass of all pennies to the average atomic mass. Explain what you notice.

4. What is the Average Atomic Mass of "Centium" if:

    a. There are 42 "Before 1982" Pennies and 58 "After 1982" Pennies 5. An analytical chemist found the Percent Abundance of each Isotope of Centium to be the following. "Before-1982 Penny" 28.477% "After-1982 Penny" 71.523%

    b. Get a taped stack of 10 Pennies. DO NOT OPEN IT!

    Using the data from the table you made to find the number of pre-1982 pennies and post 1982 pennies.

    (You must show your work for credit!)