

Isotopes of “Pennium”

Pre-lab Questions: (leave room for answers)

- 1) What do the pennies represent in this investigation?
- 2) What do the different masses of the pennies represent?
- 3) What information do you need to calculate the average atomic mass for an element?

Procedures:

- 1) Remove pennies from the baggie and make sure that you have twenty pennies. Record the number of the bag.
- 2) Record the combined mass of all twenty pennies.
- 3) Find the mass of each penny separately. In the data table, record the year the penny was minted and the mass to the nearest 0.02 gram.
- 4) Return the pennies to their bag and return the pennies and the balance to your teacher

Data:

Number of the bag of Pennies _____

Combined Mass of pennies (to the nearest 0.02 gram) _____

Penny	Year	Mass (grams)
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		
11		
12		

13		
14		
15		
16		
17		
18		
19		
20		

Calculations:

- 1) Inspect your data carefully. Determine the number of isotopes of “pennium” that are present. (An isotope must have a difference in mass of at least 0.2 grams)
- 2) Calculate the relative abundance of each isotope in your sample.
- 3) Calculate the average atomic mass of each isotope.
- 4) Using the relative abundance in #2 and the average atomic mass in #3, calculate the atomic mass of “pennium”.

Critical thinking:

- 1) Was the mass of 20 pennies equal to 20 times the mass of one penny? Explain.
- 2) In what year(s) did the mass of pennium change? How could you tell?

Conclusion: What did you learn?

Why do the pennies make a good substitute for atoms?
Problems?
Improvements?