Relative Mass Lab

Purpose: Demonstrate the concepts of average atomic mass and relative mass through a model.

Materials: sample of pennies
centigram balance
sample of "agua moneda", P_2N

Procedure: For today 1 mole = 20

1. Find the mass of 1 penny. _____ g

2. What do you <u>calculate</u> to be the mass of 1 mole of pennies? _____ g

3. Measure the mass of one mole (20) of pennies. _____ g

4. Find the mass of 3 pennies minted before 1983 and 3 pennies minted 1983 or later.

	Before	After
Sample 1	_____	_____
Sample 2	_____	_____
Sample 3	_____	_____

These represent different _____ of the "element" penny.
(same element but the atoms have different masses.)

5. Divide the **molar mass** of penny (mass of one mole of pennies – step 3) by the number of pennies in a mole. That is the ***<u>average atomic mass</u>*** of the "element" penny: _____g

6. Find the mass of the **whole sample** of <u>agua moneda</u> (P_2N) _____ g

7. Perform electrolysis on your sample. [Separate the pennies from the nickels.]

8. Find the mass of **all of the pennies** in your sample.
From the mass, calculate how many pennies are in your sample (NO COUNTING)?
How many nickels were in your sample (NO COUNTING)?

Calculation of the number of pennies in the sample (Show how you set up the calculation)

mass of pennies _____g
number of pennies _____
number of nickels _____
(hint: Look at the formula of agua mondea)

moles of pennies _____
(write decimal fraction)

moles of nickels _____
(write decimal fraction)

9. <u>From the information already collected</u> in steps 6 & 8, what is the mass of the nickels in the sample of "agua moneda"? _____g
10. **From this data,** how much does one nickel mass? _____g

You have found the *relative mass* of the "element" nickel. You know its mass **relative to** the "element" penny. **The atomic masses of the elements in the periodic table are relative masses based on the element ^{12}C.**