Periodic Table Hopscotch Laboratory: Dr. Leslie Pierce

Students' Guide

Goals

- Visualize the concept of the mole
- Gain experience in calculating grams and moles

The Activity

In this activity, you will visualize the concept of the mole using a mole of chalk as a model. You will practice calculations of moles and grams, and end up with a better understanding of what a mole is and how chemists use it.

Materials for Each Group

- Data book and pencil
- A chunk of chalk
- Semi-analytical balance
- Electronic balance, if available
- A table of atomic masses
- A calculator

SAFETY

No special safety considerations are required.

Instructions

1. Take a chunk of chalk and measure its mass on the balance: _____

2. Go outside and draw something on the sidewalk.

3. Go back in class and weigh the unused chalk: _____

4. Based on the initial mass of the chalk and the mass at the end, calculate how many grams of chalk you left out on the sidewalk:_____

5. Write down the molecular formula of the chalk: _____

6. Get the masses of the atoms: _____

7. Calculate the chalk's molar mass: _____

8. Using this data, calculate:

    a. How many moles of chalk did you leave on the sidewalk? _____

    b. How many molecules of chalk did you leave on the sidewalk?_____

    c. How many atoms of calcium did you use? _____

    d. How many atoms of carbon did you use? _____

    e. How many atoms of oxygen did you use? _____

Summary

How much does a mole of chalk weigh? _____

How many grams did you leave outside? _____

Is it (circle the correct answer):

      1. less than a mole

      2. equal to a mole

      3. more than a mole

Define a mole, and explain its importance: _____

_____

_____

_____

_____

_____