***Honors Physical Science -- How many chalk moles is my face?***

Name:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

*Prelab*

1. What is a mole?
2. How many grams is 1 mole of calcium?
3. What is the chemical formula for calcium carbonate?

*Purpose*: In this activity you will determine how many moles of chalk it takes to draw a picture—your self portait!

*Hypothesis*: Make a prediction first!
How many moles will it take? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
How many grams? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

|  |
| --- |
| Mass of chalk (g) |
| Before |
| After |

*Data*:

1. Choose a piece of chalk. Find its mass in grams using the electronic balance. Record the mass in your data table.
2. On colored paper or on the chalkboard, draw a picture (self-portrait, or something else appropriate if you’d like). Make sure to use a good amount of chalk in your picture.
3. Find the mass of the piece of chalk again and record in the table.

*Analysis*:

1. How many grams of chalk were used in the portrait?
2. The chemical composition of chalk is CaCO3, using your periodic table, determine the molar masses of each element. What is the total molecular weight of chalk? Don't’ forget units!
Ca \_\_\_\_\_\_\_\_\_\_\_ C \_\_\_\_\_\_\_\_\_\_\_\_ O3 \_\_\_\_\_\_\_\_\_\_\_\_
Molar mass CaCO3 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
3. Using the mass to mole conversation ratio for CaCO3, calculate the number of moles in the chalk you used. Show your work.
4. Given the number of moles you used, how many CaCO3 particles are in your drawing?
5. If there are 44 grams of sugar (C12H22O11) in the cola you drink, how many sugar molecules is that? (HINT: first calculate the molar mass, then convert to number of molecules)