Student Sheet name _____

Title: How Many "Molecules" are in Your Name?

Objectives: To determine the number of "molecules" (really formula units) of chalk required to write your name on the blackboard. To create a small sample of chalk and use it to estimate the chalk needed a larger project.

Materials: chalk, balance, ruler

Procedure:

1. Watch the video clip showing an artist creating a large sidewalk project. Notice the size of her chalk sticks. Think about how many sticks of chalk may have been needed to create the project.
2. Obtain a piece of chalk from your instructor.
3. Record the mass of the chalk before writing your name on the blackboard.
4. Write your name on the blackboard (larger and more elaborate than usual!)
5. Record the mass of the chalk again, after writing your name on the board.

Prediction: How many grams of chalk will be needed to write your name?

Data Table

CHALK	MASS (grams)
Before ($m_{initial}$)	
After (m_{final})	
Chalk Used in Your Name ($m_{initial} - m_{final}$)	

6. Calculate the molar mass of chalk (calcium carbonate) $CaCO_3$.

7. Now that you know the mass of chalk needed to write your name, convert that mass to particles to determine how many units of chalk it took to write your name. SHOW YOUR WORK.

8. Mass your chalk again and draw a square 10 cm (decimeter) on each side and color it in. Remass your chalk and calculate how many grams of chalk were used. If the whale drawing in the video was 3 meters by 2 meters in size, how many grams of chalk were needed?

Chalk used in your 10 cm square ($m_{initial}$ - m_{final})	

9. If a stick of chalk has a mass of 20 grams, how many sticks of chalk would be needed?

10. What is another question you could ask using these procedures?