

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

## Moles of Chalk Lab

Weigh a piece of ordinary chalk and write your name on the blackboard. Weigh the chalk again, and determine the number of moles of calcium carbonate that were used.

*Weight of chalk before writing your name:* \_\_\_\_\_

*Weight of chalk after writing your name:* \_\_\_\_\_

*Grams of chalk required to write your name:* \_\_\_\_\_

Calculations (be complete!):

*I needed \_\_\_\_\_ moles of calcium carbonate to write my name on the blackboard.*

# Moles of Chalk Lab – Teacher Materials

## Materials:

- One piece of chalk for each student (these can be reused from class to class)
- As many balances as you can find

## Doing the lab:

Students really enjoy this lab because it's easy to do and easy to conceptualize what's going on. There's not really much to doing the lab, as the instructions are listed on the student handout page.

Grading this lab is pretty easy – if I were you, I would just check to make sure that the students put the weights of the chalk before and after writing their names in the appropriate blanks (including units). To grade whether they got it right or not, I'd just check to see if the final answer was right – if it is and they've shown some work, it's probably safe to assume that they know what they're doing. If they get the wrong answer, go back and check their work to assign partial credit. If they get the right answer but don't show their work, give no credit for their answer, whether it's right or wrong!

Because the molar mass of calcium carbonate is 100. g/mol, the number of moles of calcium carbonate will be equal to the mass of chalk used to write their names divided by 100. For example, if it took 0.500 grams of chalk to write their name, the number of moles of calcium carbonate used would be  $0.500 \text{ g} / 100. \text{ g/mol} = 0.00500 \text{ mol}$ . As you might imagine, answers will vary depending on how hard the student writes, the length of their name, etc.

## Modifications:

- Many classrooms use dry-erase boards rather than chalkboards. If this is true where you live, you may want to try using “sidewalk chalk” and have them write their name on the pavement outside. Sure, it sounds a little childish, but kids seem to really enjoy it.
- A bad modification to this lab is to extend it so students calculate the number of “molecules” of calcium carbonate as well as the number of moles. Ionic compounds don't exist as discrete molecules, making this modification scientifically invalid.