# MOLE CONVERSION LAB

Moles are a conversion unit used for comparing grams or atoms of an element or compound to grams or atoms of a different compound. The following “basic equation” can be used to calculate the number of atoms. Remove the last step and you can calculate the number of moles of a substance.

Grams given in problem

1 mole

6.02 x 1023 atoms or molecules

1

formula or molecular

mass in grams

1 mole

# PURPOSE

To calculate the number of moles and particles in various substances.

# MATERIALS

Electronic balance 50 ml beaker

Container of sucrose Container of sodium chloride

Weigh paper Pure copper penny (before 1982)

A piece of Zinc Cup or water

# PROCEDURES

1. Measure each of the following and record the mass of the sample (in grams) in the data table
2. Perform all calculations in the area provided on page 2 and circle your final answer. Show your work and be sure to put the answer into the proper units.
3. Fill in the rest of the data table with your answers from your calculations.

# DATA TABLE – Do calculations on the other page and then put your answers in the table

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Name of substance | Mass of sample (g) | Atomic or molecular mass  (Periodic table) | Number of moles | Number of atoms or molecules |
| 1 teaspoon of NaCl |  |  |  |  |
| 1 copper penny |  |  |  |  |
| 1 teaspoon of sucrose |  |  |  |  |
| A piece of zinc |  |  |  |  |
| 20 mL of water |  |  |  |  |

**CALCULATIONS**

1. Show calculations for the number of moles in each substance.

NaCl

Copper penny Sucrose (C12H22O11) Zinc

Water

1. Show calculations for the number of atoms or molecules of each substance NaCl

Copper penny Sucrose

Zinc Water

# LAB QUESTIONS – Answer in complete sentences.

1. Which substance had the highest molar mass (g/mol)? The lowest molar mass? Give the quantitative values in your answer.
2. The amount of iron (Fe) required per day for the average person is .015g. How many moles of iron should you eat in a day? SHOW YOUR WORK/CONVERSIONS
3. How many moles of sodium chloride would be present in a 10-pound bag of salt? SHOW YOUR WORK/CONVERSIONS
4. Can you swim in 1000 moles of water? Explain. SHOW YOUR WORK/CONVERSIONS

**FINAL SUMMARY AND CONCLUSIONS – Write at least one paragraph. Discuss the concepts this lab addresses and any SCIENTIFIC conclusions you made.**