

## Krug Chemistry – Deep Run Daily Planning Guide

Date of Lesson: Q3 Day 7 – Mole Ratios Stoichiometry

Topic /Big Questions: ([Question Stems](#) & [Question Creation Chart](#))

- What is a chemistry mole?
- How do chemists convert units into moles?
- How many (atoms, liters, or grams) are in a mole?
- How do chemists convert liters into grams? Or vice versa?
- How do chemists convert atoms into grams? Or vice versa?

### State SOL

CH. 4

### Unpacking the Standards ([Video explanation shown at 3:18](#))

CH.4 The student will investigate and understand that molar relationships compare and predict chemical quantities. Key ideas include

- a) Avogadro's principle is the basis for molar relationships; and
- b) stoichiometry mathematically describes quantities in chemical composition and in chemical reactions.

**Visible Learning (For the three items with asterisks\*, think from a student perspective. Use simple language)**

**\*What am I learning today?** A mole is a unit of measurement used to indicate the ratio of reactants and products. The number of atoms (or molecules) in a mole is  $6.022 \times 10^{23}$ . At STP 22.4 L of gas are present in a mole. The average atomic mass on the periodic table is accepted as the number of grams in a mole of that element. Chemists use dimensional analysis to convert between units.

**\*Why is it important?** In order for chemical equations to be useful, there needs to be a way to measure the quantities of reactants and products. Stoichiometry involves quantitative relationships in a balanced equation which are based on mole ratios.

**\*How will I know I've learned it?** I will recognize the pattern in the dimensional analysis equation in order to convert between units of moles, liters, grams, atoms, and molecules.

### Differentiation strategies:

Roadmap to Stoichiometry

Stoichiometry Formula Guide

Mole Ratio Stoichiometry Notes

Mole Ratio Stoichiometry Homework

**Accommodations and/or modifications are being met for students with IEP's/504's.**

Small group activities; frequent checks for understanding; materials available on Schoology

**Daily Plan/Sequence of Instruction:**

Teacher check **Two Step Stoichiometry Homework** for completion and go over the problems on the board. Students will refer to the laminated copy of the **Roadmap to Stoichiometry**. (Digital copies are also available on Schoology.) Teacher will also show students how to access the **Stoichiometry Formula Guide** on Schoology.

Next Teacher will remind students how mole ratios are used in chemical equations. Teacher will explain that chemists do not actually measure moles in the lab. Chemists measure volume in liters and mass in grams. So it is necessary to convert units of one substance into moles and use a mole ratio to relate the two different substances.

Next Teacher will do one or two problems from each section of the **Mole Ratio Stoichiometry Notes** to demonstrate the dimensional analysis pattern. Students will be encouraged to do the other problems on their own for practice. Teacher will offer assistance as needed. Toward the end of class, teacher will pass out the **Mole Ratio Stoichiometry Homework** due for a completion grade at the beginning of the next class.

**Assessments (List all [formative](#)/[summative](#) assessments used to check for understanding during this lesson. Summative assessments may occur during a different class period.):**

Mole Ratio Stoichiometry Homework – (summative)

After assessing today's lesson are you and your students comfortable moving forward with your next objective?

**Yes** - students scored 80% or higher on the Mole Ratio Stoichiometry Homework

**No**, remediation required to proceed – tutoring will be available during One Lunch