

## Krug Chemistry – Deep Run Daily Planning Guide

Date of Lesson: Q3 Day 5 – One Step 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?

### [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

- Avogadro's principle is the basis for molar relationships; and
- 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.

**\*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

One Step Stoichiometry Notes

One Step 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 will ask students how many eggs are in a dozen? How many soda bottles are in a dozen? How many balloons are in a dozen? Etc. Teacher will discuss the fact that even though these substances are all different, a dozen always equals 12. Furthermore, eggs are solid, soda is liquid, and balloons are filled with gas. So chemists needed a unit that would relate to all types of matter. The unit is called a **MOLE** and it is used to explain the ratio of reactants and products in the chemical equation the same way a recipe lists how many cups of flour or sugar you need to make chocolate chip cookies. Teacher will show recipe for cookies and a chemical equation and discuss similarities and differences with the class.

Teacher will distribute a laminated copy of the **Roadmap to Stoichiometry** to each student. (Digital copies are also available on Schoology.) Teacher will also show students how to access the **Stoichiometry Formula Guide** on Schoology. Next Teacher will do one or two problems from each section of the **One Step 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 **One Step 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.):**

One Step 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 One Step Stoichiometry Homework

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