

Krug Chemistry – Deep Run Daily Planning Guide

Date of Lesson: Q1 Day 2 – SGMs and Unit 1 Notes

Topic /Big Questions: (Question Stems & Question Creation Chart) <ul style="list-style-type: none">• What prior knowledge of chemistry concepts do students have?• Why do chemists use metric units?• What is a standardized unit?• What are significant figures?• What is the difference between accuracy and precision?	
State SOL CH.1 a – c; and g	Unpacking the Standards (Video explanation shown at 3:18) <ul style="list-style-type: none">a) designated laboratory techniques;b) safe use of chemicals and equipment;c) proper response to emergency situations;g) mathematical manipulations including SI units, scientific notation,
Visible Learning (For the three items with asterisks*, think from a student perspective. Use simple language)	
*What am I learning today? The International System of Units is the modern form of the metric system, and is the most widely used standardized system of measurement. Accuracy is how close data is to the true value. Precision is how close data points are to each other.	
*Why is it important? Understanding metric units and how to use them will allow students to do chemistry calculations. Using standardized units allows chemists to communicate in a global community.	
*How will I know I've learned it? Students will practice significant figures and will identify data as accurate or precise.	
Differentiation strategies: SGM 1 – SOL Simulation (30 question multiple choice) SGM 2 – Cornerstone Assessment TED ED Video - https://www.youtube.com/watch?v=7bUVjJWA6Vw “Why the metric system matters” Media Presentation - Unit 1 Measurement and Data Analysis PowerPoint & Guided Notes Modeling Instruction – “Lend Me a Hand” whiteboard activity	

Daily Plan/Sequence of Instruction:

SGMs – At the beginning of class, the students will take the SGM Pre-Tests. The Cornerstone Assessment is on paper and requires free responses. The SOL Simulation is composed of 30 multiple choices questions.

TED ED VIDEO – Show “Why the metric system matters” (<https://www.youtube.com/watch?v=7bUVjJWA6Vw>)

Discuss why United States continues to use English units and what it would cost to convert to metric units.

Media Presentation - Teacher will show the **Unit 1 Measurements and Data Analysis PowerPoint**. Since students may or may not have a lab notebook yet, this set of notes will be guided fill-in-the blank style. Teacher will explain that chemists follow the International System of Units Metric System. It is important for students to understand that units are based on a scale of 10's. Most common units for chemistry are kilo, centi, milli, and the base. Base units are grams, liters, meters, and joules. Teacher will explain rules for significant figures and how to use scientific notation.

Modeling Instruction – Teacher will ask students groups to use a hand from one of their group members to measure the length and width of their white boards. Students will then use this information to calculate the area of their white board. Students will go to front of room to display whiteboards. Teacher will point out that all white boards are about the same size, yet every group recorded different values. Teacher will ask guided questions to investigate why values are different and how measurements can be more precise in the future. Teacher will ask questions relating to identifying uncertainty in measurement. (See Teacher Reflection below.)

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

Priority seating, access to all materials on Schoology, frequent checks for understanding; small group testing

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

SGM 1 – SOL Simulation (formative)

SGM 2 – Cornerstone (formative)

Whiteboard Activities (formative)

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

Yes - Students participated and understand the reason for standard units, accuracy, and precision

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

Teacher Reflection: Students will get values anywhere from 9 to 25 for the area of their whiteboards depending on whether or not they spread out their fingers or measured pinky to thumb or finger tips to wrist. Most students will either just put a number or add the unit “hands”. The actual unit is supposed to be “hands squared”. It is difficult for students to know when to use powers: hand, hands squared, or hands cubed. Explain that the powers refer to the direction of each measurement. So if you measure in one direction (length) or (x-axis), the unit is just hands or hands¹. If you measure in two directions (length and width) or (x-axis and y-axis), then the unit is hands squared or hands². If you measure in three directions (length, width, and height) or (x-axis, y-axis, and z-axis), then the unit is hands cubed or hands³.