Activity: Unit Conversion Online Tutorial

FOR THE TEACHER

Summary
In this activity, students will interact with a web-based tutorial that uses a drag and drop interface in order to learn how to convert between units of measurement using dimensional analysis. The tutorial allows students to learn at their own pace, and also provides feedback while they are solving problems.

Grade Level
High School or Middle School

Objectives
By the end of this activity, students should be able to
- Convert between units of measurement using dimensional analysis
- Understand the purpose of using dimensional analysis for converting between units of measurement

Chemistry Topics
This activity supports students’ understanding of
- Quantitative Chemistry
- Dimensional Analysis

Time
Teacher Preparation: minimal
Lesson: 45 minutes

Materials
- Computer (must run on Windows), compatible with Adobe Flash
- Calculator
- Writing utensil
- Student Handout

Safety
- No specific safety precautions need to be observed for this activity.

Teacher Notes
For students to achieve the most during the tutorial session, the following conditions should be present:
- The class has already been introduced to the role of units and are familiar with basic metric and English units.
- Advanced students will often want to work through the website on their own. For students less confident in their math abilities, group them in pairs to facilitate discussion.
• Students should be required to write down solved problems and not just use the tutorial. The tutorial gives them feedback, but they must transfer the learning to pencil and paper. The attached worksheet prompts them to do this.

• I advise giving students the worksheet for one level and having them turn it in before moving on to the next level. This allows the teacher to monitor their progress.

FOR THE STUDENT

Lesson

Unit Conversion Online Tutorial

Procedure

1. Go to the following website:  http://joneslhs.weebly.com

2. Click on the Learn button on the left. Read the tutorial first.

3. When you think that you understand the idea, go back to the Main Menu and click on One Step Conversions.

One Step Conversions:

For problems 1, 2, and 3 write down what the completed problem looks like. Cancel the units that cancel. Circle the unit that doesn’t cancel. Write down the answer to the problem.

1. __________________________ = 

2. __________________________ = 

3. __________________________ = 

For problems 4-9, you can just write down the answer once you have solved it.
4. Calculated Answer:

5. Calculated Answer:

6. Calculated Answer:

7. Calculated Answer:

8. Calculated Answer:

9. Calculated Answer:

*For problem 10, solve it on paper here. Then type in the calculated answer to see if you are correct.

10. Solved problem and answer:

WHEN YOU ARE DONE, SHOW YOUR WORK TO YOUR INSTRUCTOR BEFORE MOVING ON TO A MORE CHALLENGING LEVEL.

**Multi-Step Conversions:**

For problems 1, 2, and 3 write down what the completed problem looks like. Cancel the units that cancel. Circle the unit that is the one left at the end. Write down the answer to the problem.

1. 

2. 

3.
For problems 4-9, you can just write down the answer once you have solved it.

4. Calculated Answer:

5. Calculated Answer:

6. Calculated Answer:

7. Calculated Answer:

8. Calculated Answer:

9. Calculated Answer:

*For problem 10, solve it on paper here. Then type in the calculated answer to see if you are correct.

10. Solved problem and answer:

WHEN YOU ARE DONE, SHOW YOUR WORK TO YOUR INSTRUCTOR BEFORE MOVING ON TO A MORE CHALLENGING LEVEL.

**Double Unit Conversions:**
Read the directions on the first problem to see how to get started. Work through the challenging problems recording your answer for each one. Don’t forget units!

1. Calculated Answer:

2. Calculated Answer:

3. Calculated Answer:

4. Calculated Answer:

5. Calculated Answer:
6. For problem 6, solve it on paper here. Then type in the calculated answer to see if you are correct.

**Cubed and Squared Conversions:**
Read the directions on the first problem to see how to get started. Work through the challenging problems recording your answer for each one. Don’t forget units!

1. Calculated Answer:
2. Calculated Answer:
3. Calculated Answer:
4. For problem 4, solve it on paper here. Then type in the calculated answer to see if you are correct.