

Computer Lab With a Computer for Every Student

Content: Unit Conversion (English to SI), Dimensional Analysis Setup Method.

Objectives:

1. Differences between English measurements (inches, pounds, etc.) and metric measurements (meters, grams).
2. Have an understanding of what metric measurements mean in comparison to common objects.
3. Be able to convert within the metric system (cm to km, g to kg, etc).
4. Use the dimensional analysis setup to convert to a final unit and cancel out intermediate units.

Materials and Aids:

Smart Board

Posters:

<http://www.glogster.com/laurelschmitz/stoichiometry-cheat-sheet/g-6lm5m2l5r0i9vb77qrrula0>
<http://www.csgnetwork.com/converttable.html>

Videos:

<http://www.youtube.com/watch?v=SYn5UJ76h1Y>

Procedure:

A. Introduction

-Have the students take a basic quiz using Google Forms. The quiz would test their current knowledge on measurements for recognizable objects based on their weight, length, density, etc in English and SI units. Students could judge how well they understand the relationship between English and SI units. (Example: picture of paperclip, how many grams? how many pounds?)

B. Development

- Explain the importance of converting units in science.
- Show how incorrectly converting a unit can lead to large errors (accidentally using grams instead of kilograms within a problem). Example: NASA
- Use a smart board to show the set up for dimensional analysis and “lecture” to the students about the process of unit conversions.
- Show how to cross off the same units in the numerator and denominator to eliminate them from the problem.
- Have them each watch a video of unit conversions.

C. Practice

- Each student should use Google Docs to make their own “cheat sheet” of conversion factors based on the website above. The “cheat sheet” can only be as big as an index card and can be used on the test and all problems.
- Worksheet form Merlot on computer, do the problems on own paper and turn in.

D. Independent Practice

- Students can use a classroom Google Doc to create their own unit conversion problems and share them with the rest of the class.
- The students can work on the problems that their classmates posted for practice.
- The incentive to working on the problems is that some good problems may be chosen for the test.

E. Accommodations (Differentiated Instruction)

- Have a UDL book made for at home/review resource. Also allows students with disabilities get multiple ways of learning the materials.

F. Checking for Understanding

- Have students complete the Google Form they did in the beginning to see how understanding has changed/improved.

Classroom With Only Five Computers

Content: Unit Conversion (English to SI), Dimensional Analysis Setup Method.

Objectives:

1. Differences between English measurements (inches, pounds, etc.) and metric measurements (meters, grams).
2. Have an understanding of what metric measurements mean in comparison to common objects.
3. Be able to convert within the metric system (cm to km, g to kg, etc).
4. Use the dimensional analysis setup to convert to a final unit and cancel out intermediate units.

Materials and Aids:

Smart Board

Posters:

<http://www.glogster.com/laurelschmitz/stoichiometry-cheat-sheet/g-6lm5m2l5r0i9vb77qrrula0>

<http://www.csgnetwork.com/converttable.html>

Videos:

<http://www.youtube.com/watch?v=SYn5UJ76h1Y>

Procedure:

A. Introduction

- Have the students get into small groups and take turns using the computers to take a quiz using Google Forms testing their current knowledge on measurements for recognizable objects based on their weight, length, density, etc in English and SI units. This quiz would help the students judge how well they understand the relationship between English and SI units.

(Example: picture of paperclip, how many grams? how many pounds?)

B. Development

- Explain the importance of converting units in science.
- Show how incorrectly converting a unit can lead to large errors (accidentally using grams instead of kilograms within a problem). Example: NASA
- Use a smart board to show the set up for dimensional analysis and “lecture” to the students about the process of unit conversions.
- Show how to cross off the same units in the numerator and denominator to eliminate them from the problem.
- Watch a video of unit conversions in the front.

C. Practice

- Five groups of five students should use Google Docs to make a group “cheat sheet” of conversion factors based on the website above. The “cheat sheet” can only be as big as an index card and can be used on the test and all problems.
- Worksheet from Merlot on computer, do the problems with the group on their own paper so they can look back at the examples while studying later.

D. Independent Practice

- Students can create their own unit conversion problems and share them with the rest of the class by writing them on the smart board for their classmates to copy down.
- The students can work on the problems that their classmates posted for practice.
- The incentive to working on the problems is that some good problems may be chosen for the test.

E. Accommodations (Differentiated Instruction)

- Have a UDL book made for at home/review resource. Also allows students with disabilities get multiple ways of learning the materials.

F. Checking for Understanding

- Switch up the groups and have each group of students complete the Google Form they did in the beginning to see how understanding has changed/improved.

Classroom With Only One Computer

Content: Unit Conversion (English to SI), Dimensional Analysis Setup Method.

Objectives:

1. Differences between English measurements (inches, pounds, etc.) and metric measurements (meters, grams).
2. Have an understanding of what metric measurements mean in comparison to common objects.

3. Be able to convert within the metric system (cm to km, g to kg, etc).
4. Use the dimensional analysis setup to convert to a final unit and cancel out intermediate units.

Materials and Aids:

Smart Board

Posters:

<http://www.glogster.com/laurelschmitz/stoichiometry-cheat-sheet/g-6lm5m2l5r0i9vb77qrrula0>
<http://www.csgnetwork.com/converttable.html>

Videos:

<http://www.youtube.com/watch?v=SYn5UJ76h1Y>

Procedure:

A. Introduction

-Use a powerpoint to display quiz questions to the class, testing their current knowledge on measurements for recognizable objects based on their weight, length, density, etc in English and SI units. Students would respond to each of the questions on a piece of paper. This quiz would help the students judge how well they understand the relationship between English and SI units. (Example: picture of paperclip, how many grams? how many pounds?)

B. Development

- Explain the importance of converting units in science.
- Show how incorrectly converting a unit can lead to large errors (accidentally using grams instead of kilograms within a problem). Example: NASA
- Use a smart board to show the set up for dimensional analysis and “lecture” to the students about the process of unit conversions.
- Show how to cross off the same units in the numerator and denominator to eliminate them from the problem.
- Watch a video of unit conversions in the front.

C. Practice

- Show the website above projected in the front and have each student make a group “cheat sheet” of conversion factors on an index card and can be used on the test and all problems.
- Project a worksheet from Merlot, and have students do the problems on their own with their own paper.

D. Independent Practice

- Students can create their own unit conversion problems and share them with the rest of the class by writing them on the white board for their classmates to copy down.
- The students can work on the problems that their classmates posted for practice.
- The incentive to working on the problems is that some good problems may be chosen for the test.

E. Accommodations (Differentiated Instruction)

-Have a UDL book made for at home/review resource. Also allows students with disabilities get multiple ways of learning the materials.

F. Checking for Understanding

-Have students complete the quiz they did in the beginning to see how understanding has changed/improved.