

### *Math-in-CTE Lesson Plan*

<b>Lesson Title: Recipe Conversion</b>	<b>Lesson Number: 8</b>
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Occupational Area: Culinary Arts

CTE Concept(s): Demonstrate a working knowledge of the elements of standardized recipes and recipe conversion.

Math Concepts: Apply ratio and proportion in problem solving situations.

Lesson Objective:	Given a standardized recipe, be able to increase the yield of the recipe by converting measurement units to greater amounts.
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Supplies Needed:	ACF Task Grid; Text: <i>On Cooking</i> ; Workbook: <i>Kitchen Math</i> ; Worksheet and Overhead Transparency: R:5; Hand held calculators; catered picnic menu.
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<b>THE "7 ELEMENTS"</b>	<b>TEACHER NOTES (and answer key)</b>
<p><b>1. Introduce the CTE lesson.</b></p> <p><b>Say:</b> We’ve committed to catering a picnic for 250 people...Corn bread is on the menu. Our text has a recipe that yields cornbread portions for 12 people. We will need to calculate the amount of ingredients required to increase the yield of our recipe to 250.</p> <p><b>Ask:</b> How do we go about increasing the number of portions our recipe will yield?</p>	<p>Students are already familiar with measurement equivalencies and culinary practice for preparing a standard cornbread recipe.</p> <p><b>Some students will probably answer,</b> “Guess!”</p> <p><b>The response should be:</b> “We need to be more accurate than simply guessing.”</p>
<p><b>2. Assess students’ math awareness as it relates to the CTE lesson.</b></p> <p>Find a method for increasing the recipe to the desired yield.</p> <p><b>Ask:</b></p> <p>1. How can we find a number which we can multiply times the amount of each ingredient to increase our yield?</p>	<p>The instructor will establish the exact number of portions the recipe should yield.</p> <p><b>Correct Answers:</b></p> <p>1. Divide the intended number of portions by the number of portions yielded by the standard recipe.</p>

<p>2. What do we call that important number?  <b>Say:</b> Let’s review the calculator method of finding the Conversion Factor.</p>	<p>2. Conversion factor.  <b>Comments:</b>                  If students use their calculator and find the correct answer for the conversion factor. ( <b>20.8 or 21</b> ) ask the student how she arrived at the answer with her calculator.                  Reinforce the calculator keystrokes:  <b>250 ÷ 12 = 20.8333</b></p>
<p>3. <b>Work through the math example <i>embedded</i> in the CTE lesson.</b>  <b>Say:</b> Look at the corn bread recipe. It’s on page 286 of the <i>On Cooking</i> book.  <b>Use overhead to work thru the example.</b></p> <ol style="list-style-type: none"> <li>1. List the recipe ingredient amounts and units.</li> <li>2. Clearly identify the standard amount yielded in the text.</li> <li>3. Calculate and record the conversion factor.</li> <li>4. Multiply the conversion factor times the amount of each ingredient</li> <li>5. List the new ingredient amounts expressed in lowest term equivalency units.</li> <li>6.</li> </ol>	<p><b>Presentation comments:</b>                  Insert a times sign and the conversion factor onto the overhead transparency to the right of the ingredient amounts.                  Ask the students to participate in the calculations of the increased yields.                  Provide the students with a worksheet or encourage them to develop their own chart as a graphic organizer.                  Discuss importance of maintaining exact quantities.</p>
<p>4. <b>Work through <i>related, contextual math-in-CTE</i> examples.</b>                  Turn to page 268 in <i>On Cooking</i> and each person will extend the recipe to yield 250 portions. We’ll then compare answers.</p>	<p>Allow students to work through the problems, and circulate throughout the room to help where needed.</p>

<p><b>5. Work through <i>traditional math</i> examples.</b></p> <p><b>Say:</b> Let’s look at using conversion factors that would apply outside of culinary arts.</p> <p><b>Present the Problem:</b></p> <p>In the rear of your home, your father would like to plant new grass in a 25 ft by 40 ft area that used to hold an above-ground swimming pool. A 10 pound bag of grass seed covers 200 square feet. How many 50 pound bags of grass seed will be required to seed the area on which the pool used to stand?</p> <ol style="list-style-type: none"> <li>1. Calculate the area of the lawn to be seeded.</li> <li>2. Find the conversion factor.</li> <li>3. Multiply the standard pounds (10) times the conversion factor.</li> <li>4. Find the number of pounds of seed required.</li> <li>5. Find the number of 50 pound bags.</li> </ol>	<p><b>Problem Steps</b></p> <ol style="list-style-type: none"> <li>1. 25 ft .x 40 ft. = 1000 square ft.</li> <li>2. 1000 sq. ft. ÷ 200 sq.ft. = Conversion Factor = 5</li> <li>3. 10 pounds x 5 = pounds required</li> <li>4. 50 pounds</li> <li>5. 1 bag</li> </ol>
<p><b>7. Students demonstrate their understanding.</b></p> <p><b>Say:</b> Now we’re going to go back to our catered picnic menu. I’m going to divide you into groups and you’ll take a recipe from the picnic menu and except now we’re going to plan for 150 portions.</p>	<p>Students will be given the standardized recipes for the picnic menu components.</p> <p>Each group should consist of students with varying ability levels.</p> <p>This assignment gets handed in as small group assignment and graded.</p>
<p><b>8. Formal assessment.</b></p> <ol style="list-style-type: none"> <li>1. Evaluate group practice problems.</li> <li>2. Give a quiz with four recipe yield problems and one out of context problem.</li> </ol>	<p>Students may use calculators for quiz.</p> <p>Students may choose to go to leaning support.</p>

**Adaptations for special needs students.**

**Teacher Notes:**

Cooperative learning groups. Graphic organizer (chart calculations)	Help students create calculation chart.
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**Math Standards and Assessment Anchors addressed with this lesson.**

M11A.2.1 Apply ratio and proportion in problem solving situations.

**References.**

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**Author(s):**

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