Math-in-CTE Lesson Plan Template

Lesson Title:	Just A Spoonful of Sugar	Lesson #	2
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Occupational Area:	Culinary Arts – Commercial Baking		
CTE Concept(s):	Equivalent measures		
	Efficiency		
	Productivity		
	Waste		
	Consistency		
Math Concepts:	Unit conversions, fractions,		
	of fractions), volume		
Lesson Objective:	Students are able to accurately convert between various volume measures.		
Supplies Needed:	-measuring cups and spoons		
	- water		
	-copies of the worksheets and and handouts, rubrics		
	-sugar (about a cups worth)		
	-ingredients for peanut butter		
	cookies, shortbread cookies,		
	and chocolate chip cookies		
	-sheet pans, mixers, bowls, et		
	for preparing cookies		

The "7 Elements"	Teacher Notes	
	(and answer key)	
"We have a molasses crinkle cookie recipe that makes 2 dozen cookies. We want 8 dozen cookies. What do you need to do?"	Have sugar, a tablespoon and a bowl ready. This is the hook to engage students- they don't like to waste time or get bored, and they also want to get good jobs so doing this more efficiently will make them faster	
Quadruple it	and more desirable employees. You can also remind them	
"So if the original recipe calls for 2 tablespoons of granulated sugar, how much sugar will you need for the quadrupled recipe?"	it will result a more accurate measurement, resulting in better product and less waste.	
8 tablespoons		
"Can someone measure out 8 tablespoons of sugar?"		
Volunteer measures sugar.		
"Is there a more efficient way to measure the sugar?"		
2. Assess students' math awareness as it relates to	Get students engaged!	
the CTE lesson.	"How can we make more efficient?"	
Get student ideas. Prompt students to suggest a larger equivalent measure. Have students determine the	"Why is it important to be more efficient?"	
correct equivalent measure by giving them a set of dry	"Have you ever heard time is money!"	
measuring cups.	"How can we make this not take forever?"	
"Which measuring cup is the best fit?"	"How can we make it so we don't have to sit here and scoop out <u>every single</u> tablespoon?" See CA 02 Just a Spoonful of Sugar HO1.	
"Estimate which measuring cup will hold all 8 tablespoons"		
The half cup		
"So how many tablespoons are in 1 cup?		
16		
"This is one of the basic 5 conversions for measures of volumes. The following terms are equivalent measures, in other words, you need to convert the units. The others are		
3 teaspoons = 1 tablespoon		
16 tablespoons = 1 cup		
2 cups = 1 pint		
2 pints = 1 quart		
4 quarts = 1 gallon		
3. Work through the math example <i>embedded</i> in the CTE lesson.	Give students CA_02_Just a Spoonful of Sugar_WS1.	
"Now each group will be assigned one question. Work together with your group to predict the equivalent volume measure for the example given."	how to divide groups, or you could allow students to choose their groups depending upon your class) Each group will be given one question where they will be given an amount in one unit, and asked to estimate the amount in another unit. Each group will record their estimation and explain their answer. After each group has made their estimates, they will test their prediction with water.	
"After I have checked your example, test your prediction using water and the appropriate measuring tools."		
"How did we do? Does anyone want to share their	measuring spoons and measuring cups. Review the four questions as a class and show mathematical steps for	

each.	
volume - the measure of the interior of a three- dimensional figure	
equivalent measure - two measures in different units that have equal volumes	
product – the result of multiplying two quantities	
simplest form - when the numerator (top number) and denominator (bottom number) of a fraction cannot be evenly divided by a number other than 1 (relatively prime)	
mixed number – a whole number and a fraction	
improper fraction – a fraction in which the numerator (top number) is greater than the denominator (bottom number)	
See CA_02_Just a Spoonful of Sugar_AS1.	
Give students CA_02_Just a Spoonful of Sugar_WS2.	
Give students a recipe that needs to have its units converted to a given unit. Have students show the steps for each conversion for each ingredient. Review the recipe and have students show their computations. Students can work in groups for this activity.	
Give students a recipe that needs to have its units converted. Have students decide on an appropriate unit to convert to and then have them show the steps for each conversion for each ingredient. Review the recipe and have students show their computations. In this lesson, we have asked the students to actually measure out the sample ingredients from the worksheet	
engagement as well as providing an opportunity for students to demonstrate proper measurement. You can omit this step if you choose. See CA_02_Just a Spoonful of Sugar_WS2.	
Give students CA_02_Just a Spoonful of Sugar_WS3.	
Start the class by having the students portion the cookie dough from yesterday and bake the cookies in the oven while the students are working on the traditional math worksheet.	
Then, go over the worksheet while the students sample their cookies.	

while we enjoy our cookies"	See CA_02_Just a Spoonful of Sugar_AS3.	
6. Students demonstrate their understanding. The formal assessment is next- this will probably fall on a different day due to time constraints.	Students will demonstrate their understanding by completing a performance assessment where they make chocolate chip cookies.	
"Now that you have had a chance to work in groups, you're going to practice on your own. I'm going to give each of you a different recipe for chocolate chip	Give students CA_02_Just a Spoonful of Sugar_WS4. (there are 4 slightly different versions of each recipe to minimize students cheating in close quarters)	
cookies. First, you have to convert the ingredients to the most appropriate unit. Then, do your mise en place for the cookies, then ask me to check your work. Be sure to write down how you figure out each unit! After you've had your mise en place and conversions checked, then you're going to bake your cookies."	Give each student a chocolate chip cookie recipe written with different (but equivalent) units. Students need to simplify the given amounts to an appropriate unit and rewrite the recipe. Then students need to prepare their mise en place for the recipe and have it checked by the instructor. Students need to be able to identify each ingredient and amount. After the check, students will complete the recipe using the method previously discussed, including mixing, portioning and baking the cookies.	
	Instructor will not correct their calculations of the conversions or the mise en place. Instead, instructor will allow students to mix up the dough and bake the cookies. This way, the class can have a discussion later on ingredient function if an ingredient is way off, it will affect the final products taste/appearance.	
	See CA_02_Just a Spoonful of Sugar_AS4.	
7. Formal assessment. "Now you have baked your cookies evaluate your	After students have baked their cookies, students will self- assess their work based on appearance and taste.	
work on the back of your recipe. What do you think of the appearance? What do you like/what would you change?"	Class can discuss results and in turn, potentially discuss ingredient function. (i.e. if the cookies spread too much, maybe the butter or flour was incorrectly calculated or	
"How about the taste? What do you like/what would you change?"	The instructor could also consider doing a blind taste test	
"If something didn't turn out like you hoped or expected, why do you think it turned out that way?"	of the all the students cookies to evaluate the taste and ap pearance.	
	Teacher will asses students on a grading rubric.	
	See CA_02_Just a Spoonful of Sugar_HO3.	