Lesson Plan By: Jeff Mendenhall
Lesson: Cooking with Math
Grade: 4th
Length: 25 minutes

Academic Standard:
4.2.4 Demonstrate mastery of the multiplication tables for numbers between 1 and 10 and of the corresponding division facts.
4.2.5 Use a standard algorithm to multiply numbers up to 100 by numbers up to 10, using relevant properties of the number system.
4.2.6 Use a standard algorithm to divide numbers up to 100 by numbers up to 10 without remainders, using relevant properties of the number system.

Objective(s):

- During the activity the student will multiply measurements in the recipe by either two or three with 80% accuracy.
- The student will show algorithm(s) used in each multiplication problem.
- The student will show algorithm(s) used in each division problem.

Assessment:

- The teacher will observe the students working as a group.
- The teacher will grade the group's work done on their worksheet.

Prep/Materials:

- Handout with a given recipe (brownies or cookies)

Intro/Motivation:
The teacher will begin the lesson with asking the students what a recipe is. A recipe is a list of different ingredients that come together to make something. The teacher will stress the importance of having the correct amount of each ingredient. Sometimes the amount may change depending on how many servings the cook has to make. Now the teacher will discuss multiplying and dividing and allow the students to practice.

Step-by-Step:

- The teacher will welcome the students and begin the lesson with the introduction above.
- The teacher will find background knowledge to make sure that all students know what a recipe consists of. (Bloom's: Knowledge)
- Together the class will practice multiplying and dividing facts by three.
- After a few minutes of practice the teacher will split the students into groups of four. (Gardner's: Interpersonal)
- The groups will have a recipe for either brownies or cookies. After each group has a handout the teacher will give the groups a scenario. The scenario will be that the groups are making the food items for a party. Directly before making the food they find out that either twice the people are coming to the party or half the people are. (Bloom's: Application) Recipes can be manipulated to make the facts more or less difficult.

- The groups will use computation skills to figure how to change their recipes in order to have enough food for everyone at the party. (Gardner's: Logical-Mathematical)

Closure:
To close the lesson the teacher will ask for a brownie and a cookie group to volunteer to share answers. The group will discuss why the performed the operations that they did.

Adaptations/Enrichment:
- The students can actually make the brownies and cookies.
- If a group finishes early they may figure out the opposite operation that they received. Ex: If a group that had to compute how to make two times the servings for brownies, then they will figure out how to make half the serving size.
- Students that struggle with math will be paired in groups with students that excel.

Brownies

- 8- 1 ounce squares of unsweetened chocolate
- 1 cup butter
- 5 eggs
- 3 cups sugar
- 1 tablespoon vanilla
- 2 cups flour
- 1 teaspoon salt
- 2 cups chopped pecans or walnuts, toasted

Just before you began making your world famous brownies you received a call from your friend stating that they invited some other people to the party. He tells you that in order to have enough brownies for everyone you need to make two times as many as you were planning on. Below write a recipe that shows how you will make two times the amount of brownies.

Chocolate Chip Cookies

- 2 cups all-purpose flour
- 1 teaspoon baking soda
- 1 teaspoon salt
- 1 cup (2 sticks) butter, softened
- 1 cup granulated sugar
- 1 cup packed brown sugar
- 1 teaspoon vanilla extract
- 2 large eggs
- 2 cups (12-oz. pkg.)
- 1 cup chopped nuts

Just before you began making your chocolate chip cookies you found out that some of your friends aren't going to make it to the party. You now realize that you only need to make half as many cookies as you previously thought. Below show how you will make half of the cookies you thought you previously needed for the party.