

Mathematics: The Language of STEM

Cookie Addition Extension Lesson 3

Mr. Wall

CONTENT AND TASK DECISIONS

Grade Level(s): 2nd

Description of the Task: Students will use the information from the prior two lessons to make no bake cookies in this lesson. They will need to use their problem solving skills to create the best tasting no-bake cookies using the ingredients provided. They will have a budget of 10 dollars to create their cookies. They can experiment with different amounts of ingredients and different combinations so long as they do not go over ten dollars.

Indiana Mathematics Content Standards: 2.CA.2: Solve real-world problems involving addition and subtraction within 100 in situations of adding to, taking from, putting together, taking apart, and comparing, with unknowns in all parts of the addition or subtraction problem (e.g., by using drawings and equations with a symbol for the unknown number to represent the problem). Use estimation to decide whether answers are reasonable in addition problems.

Indiana Mathematics Process Standards: PS.1: Make sense of problems and persevere in solving them.

Mathematics Content Goals: Students will use single digit addition skills and adding different amounts of money. They will begin to understand the concept of creating a simple recipe and using the proper proportions.

Language Objectives: Explain the terms add to, take away, and compare when referring numbers in a recipe. Review different types of money including coins, bills, and making change.

Materials: sugar, milk, butter, cocoa, peanut butter, vanilla, hot plate, spoon, wax paper, baking sheet, and fake money

THE LESSON

Before:

- **Activate prior knowledge**
 - Ask, “Who can explain yesterday’s story problem involving 36 cookies?”
 - “What did you learn from the story problem about cookies?”
- **Be sure the problem is understood**
 - Review the problem from yesterday: Mr. Wall had 36 cookies. Some were chocolate chip, some were sugar, and some were shortcake cookies.
 - Add new information to the problem. “Today, you will create your own real cookies from several different ingredients. You will be given the first ingredients including sugar, milk, butter, and cocoa. Then you will need to choose how much to add to the mixture from the following ingredients: peanut butter, vanilla, and oatmeal.”
 - “There are a few rules pertaining to making the cookies
 - Each spoon of peanut butter costs 1.00.

- Each drop of vanilla costs 1.00
 - Each spoon of oatmeal costs 1.00
- “Your challenge is to create cookies that taste the best. Our panel of experts will be first graders. You need to record the amounts of each ingredient you stir into your cookie batter.”
- **Establish clear expectations**
 - Each student will work with a partner to create their cookies.
 - They will use mathematics notebooks to write which ingredients they would like to use to make their no bake cookies.
 - Then the student will come to the teacher with the correct amount of money and receive their ingredients and a bowl to mix their ingredients.
 - If students have money left over, they may create another batch of cookies to try to improve their recipe.

During:

- **Let go**
 - As students work walk around the room and observe student progress.
 - Ask probing questions like “What do you think the peanut butter adds to the recipe? How much do you think will be an appropriate amount?”
 - What do you think oatmeal adds to the recipe? How much do you think will be an appropriate amount?
 - After you have tried your first recipe is there anything you would do differently?
- **Listen actively**
 - Engage with each partner and have them explain their thinking behind the choice of ingredients. Why did you choose to use that much a particular ingredient? What math do you see all around you after this experiment?
- **Provide worthwhile extensions.**
 - With the remaining time and money, students can make another batch of no bake cookies and choose which one they should enter into the no bake competition.

After:

- **Promote a mathematical community of learners**
 - Invite first grade students to the classroom, and have the students display their cookies with the recipe.
 - The first graders will judge the cookies based on best taste and best looking cookie.
- **Listen actively without evaluation**
 - Allow time once students have finished their explanations, to elicit feedback from the first grade judges.
- **Make connections**
 - How often have you seen math like this at the grocery store, at home in the kitchen, or at school? Emphasize the way math is all around you.

ASSESSMENT

On a notecard, at the end of the lesson, students will explain what they learned about story problems and mathematics strategies from today’s lesson. Collect and assess what new strategies students have acquired and which ones still seem to be lacking.