Lesson Plan: Pizza Pi - A Slice of History and Math

Materials Needed

- **For Research:** Computer or tablet with internet access, or books on food history. Pen and paper or a digital document.
- **For Math:** The provided pizza recipe, calculator (optional), pen and paper.
- **For Cooking:**
  - All-purpose flour
  - Instant yeast
  - Sugar
  - Salt
  - Warm water
  - Olive oil
  - Toppings of choice (tomato sauce, cheese, pepperoni, vegetables, etc.)
  - Baking sheet or pizza stone
  - Mixing bowl, measuring cups, measuring spoons
  - Oven

Learning Objectives

By the end of this lesson, you will be able to:

1. Investigate and explain at least two key facts about the history of pizza.
2. Accurately scale a recipe's ingredients by using fractions and multiplication.
3. Follow a multi-step procedure to create a finished product.
4. Describe how math and history connect to everyday activities like cooking.

Lesson Plan

Part 1: Introduction (15 minutes)

Hook & Objectives

Educator says: "What if I told you that one of the most famous foods in the world started out as a super cheap, simple meal for poor workers in Italy? And that a queen is responsible for making it famous? Today, we're not just going to make pizza; we're going to become pizza experts. We're going on a mission to uncover its secret history, master the math that makes a perfect crust, and then, of course, eat our delicious creation. By the end of this, you'll be able to explain where pizza came from and use fractions to scale any recipe you want."

Initial Discussion

Educator asks: "What do you already know about pizza? Where do you think it comes from? What's your favorite kind?"

This activates prior knowledge and gets Dain engaged in the topic from the start.

Part 2: Body (60-75 minutes)

Activity 1: The Historical Investigation (I do, We do, You do)

Time: 20 minutes

I do (Model): "To be a true pizza expert, we need to know its story. I'm going to find one quick fact. A quick search tells me that the ancient Greeks and Romans had flatbreads with toppings, which were early ancestors of pizza. Your turn to dig deeper."

We do (Guided Practice): "Let's find the answer to one question together. Our first mission is: **'What is the story behind the Margherita pizza?'** We can search for 'history of margherita pizza' and see what comes up. Look, it mentions Queen Margherita of Savoy and the colors of the Italian flag. That's a great clue."

You do (Independent Practice): "Now you're the lead investigator. Your mission is to find the answers to these two questions. Write down your findings."

- **Question 1:** Where is the modern pizza said to have been invented? (Hint: It's a city in Italy).
- **Question 2:** How did pizza become so popular in the United States? (Hint: It involves soldiers and the end of a major war).

Formative Assessment (Check for Understanding): After the research time, have a quick chat. "Alright, Agent Dain, report your findings. What did you uncover about the history of pizza?"

Activity 2: The Mathematical Recipe (I do, We do, You do)

Time: 15 minutes

I do (Model): "Okay, history is covered. Now for the math. Most recipes are just a list of ratios. If you change one ingredient, you have to change them all. Here's a basic pizza dough recipe that makes ONE 12-inch pizza."

> **Original Recipe (makes 1 pizza):**
> - 2 ½ cups all-purpose flour
> - 1 teaspoon instant yeast
> - 1 teaspoon sugar
> - ¾ teaspoon salt
> - 1 cup warm water
> - 2 tablespoons olive oil

"But who only wants one pizza? That’s not enough. Let's say we want to make **two** pizzas. To do that, we need to multiply every single ingredient by 2. For example, the sugar is 1 teaspoon. 1 x 2 = 2 teaspoons. Easy enough."

We do (Guided Practice): "Let's do a trickier one together. The recipe calls for ¾ teaspoon of salt. How do we multiply that by 2? We can think of it as ¾ + ¾, which equals 6/4. How can we simplify that? It becomes 1 and 2/4, which is 1 ½ teaspoons. So, for two pizzas, we need 1 ½ teaspoons of salt. Now let's try the flour. It calls for 2 ½ cups. How do we double that?" (Work through the calculation together:

2 ½ x 2 = 5 cups).

You do (Independent Practice): "Your turn. On your paper, create a new recipe list titled 'Recipe for 2 Pizzas'. Calculate the correct amounts for ALL the remaining ingredients. Write it down clearly so we can use it in the kitchen. I'll check your numbers before we start cooking."

Formative Assessment (Check for Understanding): Review Dain's adjusted recipe list. Offer corrections and feedback on the calculations before moving to the kitchen. This ensures success in the next stage.

Activity 3: The Cooking Lab (You do)

Time: 30-40 minutes (including baking)

Educator says: "You've researched the history and calculated the new recipe. Now it's time to be the chef. You have your instructions—your scaled-up recipe. Follow the steps to create your pizzas. I'm here as your assistant chef if you need any help."

Steps for Dain to follow:

1. Combine dry ingredients (flour, yeast, sugar, salt) in a large bowl.
2. Mix wet ingredients (water, olive oil) into the dry ingredients until a dough forms.
3. Knead the dough on a lightly floured surface for 5-7 minutes until smooth.
4. Let the dough rest for about 10 minutes.
5. Preheat the oven to 425°F (220°C).
6. Divide the dough, shape it into pizza crusts, and place on a baking sheet.
7. Add sauce, cheese, and your favorite toppings.
8. Bake for 12-15 minutes, or until the crust is golden and the cheese is bubbly.

Part 3: Conclusion (10 minutes)

Recap & Reflection

Educator says: (While the pizza is baking or cooling) "Let's recap our mission. What was the most interesting fact you learned about pizza's history today?"

"How did we use math? What would have happened to our dough if we had messed up the fraction for the salt or the yeast?"

"Think about it—we just used history and math to make lunch. Where else might you secretly be using 'academic' skills in everyday life?"

Summative Assessment

The primary assessment is the final product and the discussion. Success is:

1. A successfully created pizza based on the scaled-up recipe.
2. Dain being able to verbally explain one historical fact he learned.
3. Dain being able to verbally explain how he adjusted one of the recipe's ingredients using math.

Success looks like: "This pizza is awesome! We made it by doubling the recipe, so instead of ¾

teaspoon of salt, we used 1 ½ teaspoons. I also learned that pizza got popular in the US after soldiers came back from Italy in World War II."

Differentiation & Extension

- **Scaffolding for Struggling Learners:**
  - Provide specific websites or a short article for the history research.
  - Use visual aids for the fractions, like drawing out measuring cups or a pie chart.
  - Provide a pre-printed worksheet with the recipe on one side and blank spaces on the other for the new calculations.
- **Extension for Advanced Learners:**
  - **Cost Analysis:** Calculate the total cost of the homemade pizza and determine the cost per slice. Compare this to the cost of a delivery pizza.
  - **Baking Percentages:** Introduce the concept of a "baker's percentage," where all ingredients are calculated as a percentage of the total flour weight. Have Dain convert the recipe to percentages.
  - **Creative Writing:** Have Dain write a short story or a "news report" from the perspective of someone trying pizza for the first time in 1890s Naples.