

Yummy Rolls

Using Science and Math

Bread making has been around for ages. Learn the basics of baking using this simple and delicious recipe.

Activity Challenge

Bake bread rolls to accompany a meal or to eat as a snack.

Preparation

Note: Adult supervision is required during baking.

1. Review the Materials Needed list and gather materials.
2. Line a baking sheet with a piece parchment paper.
3. Make the egg wash by mixing together 1 egg and 2 tablespoons of milk with a fork. Set to the side.

To Do

1. **Prepare the bread roll dough:** Add $\frac{1}{2}$ cup milk, $2\frac{1}{2}$ cups sugar, 1-teaspoon yeast, 1 egg, $1\frac{1}{4}$ tablespoons salt, $3\frac{1}{2}$ tablespoons butter, and $2\frac{1}{2}$ cups flour into a bowl. Stir until all ingredients are combined. Transfer the dough onto a clean surface and knead the dough for 10-12 minutes until the dough is soft and elastic.
2. **Divide and shape the dough:** Divide the dough into 15 equal pieces and roll each piece into small balls. Place the rolled dough on top of the parchment lined baking sheet.
3. **Proof the bread rolls:** Let the dough sit in a warm environment for 60 minutes or until they puff up and get doubled in size. Preheat oven to 375 degrees (Fahrenheit). After the dough is proofed, spread egg wash over the bread rolls as evenly as possible.
4. **Bake the bread rolls:** Carefully place baking sheet in oven. Bake the bread rolls for 17 – 20 minutes until golden brown (set a timer). Carefully remove the baking sheet from oven using oven mitts. Let the bread cool down for 5-10 minutes before tasting.

Observations

What is the best way to line up the rolls on the baking sheet? Why is proofing important to baking? How does the dough rise? How does heat alter the materials? Why does this happen?

Extensions

- Find other recipes to cook for your friends and family.
- Make a math word problem with the rolls or the ingredients list.
- Try the recipe again and adjust and add ingredients to customize a bread roll to your liking.

Materials Needed

- $2\frac{1}{2}$ cups of all purpose flour
- $\frac{1}{2}$ cup warm milk; 2 tablespoon milk
- 2 eggs
- $3\frac{1}{2}$ tablespoon butter
- 1 teaspoon dry yeast
- $2\frac{1}{2}$ tablespoon sugar
- $1\frac{1}{4}$ tablespoon salt
- Timer
- Measuring cups and spoons
- Fork
- Bowl
- Baking sheet
- Oven
- Oven mitt
- Parchment paper

Grade Range

3-5

6-8

Topics/Skills

Physical Science; Properties of Matter; Measurement; Arrays

Learning Standards

NGSS: [Physical Science](#)

CCSS: [Measurement and Data](#)

Duration

120 minutes

Prep Time

15 minutes

The Science behind the Activity

Substances, like eggs and yeast, react chemically when mixed with certain other substances. In a chemical process, the atoms that make up the original substances are regrouped into different molecules, and therefore, the new substances have different properties. For example, eggs added to flour and yeast help with rising by producing carbon dioxide gas, explained below. Bread dough made with egg will rise high because eggs are a leavening agent. A leavening agent is a substance that releases gas within baking products. Eggs release gas through the foam that they make by mixing. In addition, properties of matter can be altered through movement and temperatures. In baking bread, kneading is a method that bakers use to change the form of the dough. With kneading, millions of air bubbles are trapped and dispersed throughout the dough. This causes the yeast to metabolize and breakdown the starches and sugar that turns them into alcohol and carbon dioxide gas. The gas fills up the air bubbles further, which causes the bread to rise.