South Dakota State University Extension

Cloverbud Corner

Items Needed for Lesson:

- Ice Breaker
  - Different Containers of different Measurements
  - Water
  - Optional- Food Coloring
- Measuring
  - Liquid measuring cups
  - Measuring spoons
  - Dry ingredient measuring cups
  - Water
  - Dry ingredient such as flour or sugar
  - Plastic spoon
  - Plastic butter knife
- Bread in a Bag
  - Gallon resealable bags
  - Measuring cups
  - Liquid Measuring cup
  - Measuring spoons
  - -Plastic spoons
  - Plastic knives
  - Tape
  - All-purpose flour (2 cups per youth)
  - Quick rising yeast packets (1 pkg. per youth)
  - Sugar (3 tbsp per youth)
  - Nonfat dry milk (1 tbsp per youth)
  - Salt (1 tsp per youth)
  - Whole wheat flour (1 cup per youth)
  - Print out Appendix 1 to label each station
  - Print out Appendix 2 for each student
- STEM Activity
  - Clear, empty plastic pop bottle or water bottle
  - 2 Tbsp dry yeast
  - 1 Tbsp sugar
  - 2-3 Tbsp lukewarm water
  - Balloon
  - Bowl full of lukewarm water
  - Small funnel

Measuring Foods Lesson

Introduction

We are going to become kitchen scientists as we learn how to measure ingredients and discover how yeast works! First, we'll practice using measuring cups and spoons correctly to make sure our ingredients are just right. Then we'll put our skills to work by making "bread in a bag," mixing and kneading the dough with our own hands. To see the science in action, we'll also experiment with yeast and sugar to blow up a balloon, learning how tiny yeast organisms create gas that helps bread rise. Get ready to measure, mix, and explore the tasty science behind baking!

Ice Breakers - Which Holds More?

Help children understand the concept of capacity (how much something can hold) while practicing predicting and observing.

Materials

- 2–3 different clear containers (cups, bowls, jars, water bottles)
- A pitcher of water (or rice if you prefer less mess)
- Towel or tray for spills
- Optional: food coloring to make the water easier to see

Instructions

1. **Make a Prediction:** Hold up two containers.
   a. Ask: :Which one do you think holds more?", "Why do you think that?", "Does taller always mean it holds more?"
   b. Have students vote by: Raising hands, moving to stand by the container they choose, or thumbs up for container A, hands on head for container B. This gets them moving and engaged!
2. **Test It:** Slowly pour water into one container until it is full. Then pour that same water into the other container. Let them watch carefully.
   a. Ask: "What do you notice?", "Was your guess correct?", "Did the shape trick us?"
3. **Try Again (Add a Twist!):** Now compare: A tall skinny cup vs. a short wide bowl, a clear cup vs. a colorful one (sometimes color tricks them!)
   a. Ask: "Does skinny mean it holds less?", "What should we look at besides height?"
4. **Teach the Key Word:** Introduce the word capacity.
   a. Say: "Capacity means how much something can hold." Have them repeat: "Capacity means how much something can hold!"

Time for Each Part of the Lesson

Ice Breaker - 10 minutes

Career Connections - 5 Minutes

Measuring - 20 Minutes

Bread in a Bag - 25 Minutes

STEM Activity - 20 Minutes

Community Service Project - Bake and Take Day

Have your club host a bake and take day and deliver baked goods to nursing homes and supporting businesses in your community.

Career Connections

- **Food Science Technician** – Works with food production, food research and quality control.
- **Chef/Head Cook** – Direct and may participate in the preparation, seasoning, and cooking of salads, soups, fish, meats, vegetables, desserts, or other foods. May plan price menu items, order supplies, and keep records and accounts.
- **Baker** – Mix and bake ingredients to produce breads, rolls, cookies, cakes, pies, pastries, or other baked goods.
- **Dietitian** – Experts in the use of food and nutrition to promote health and manage disease. They plan and conduct food service and nutritional programs to help lead healthy lives

Activity - Measuring

Lesson Objectives

- Learn how to measure solids and liquids
- Recognize commonly used measuring tools
- Learn the importance of accurately measuring

Materials

- Liquid measuring cups
- Measuring spoons
- Dry ingredient measuring cups
- Water
- Dry ingredient such as flour or sugar
- Plastic spoon
- Plastic butter knife

Lesson

Ask the youth:

- What is the difference between measuring a liquid and a solid?
- Why is it important that we measure our ingredients correctly?

It is time to get cooking! When it comes time to making a recipe, we want to make sure that we are measuring our ingredients correctly to get the best outcome. Not only does the type of measuring cups matter when it comes to baking, but the way you measure the ingredients also matters. For example: when making cookies you will pack brown sugar, but you will not pack your flour.

How to measure liquids: (demonstrate and allow for youth to practice)

- Place clear liquid measuring cup on a flat surface like a counter.
- Begin to pour liquids such as milk or water into the measuring cup while being eye level with your measuring cup. Being eye level with the cup will ensure the correct amount was poured.
- If too little was poured add more, if too much was poured, pour some out to get the correct amount.
- If measuring small amounts of liquids, use measuring spoons.

How to measure solids: (demonstrate and allow youth to practice)

- Select the size or measuring cup needed according to the recipe.
- Use a spoon to scoop dry ingredient such as flour or sugar into the measuring cup.
- Hold the measuring cup over a bowl and use a flat edge such as a butter knife to scrape off the extra so that the dry ingredient is level with the top of the measuring cup.
- Use measuring spoons to measure small amount of dry ingredients.

Bonus Activity - Measuring Brown Sugar

Materials

- Brown Sugar
- Measuring Cups
- Kitchen Scale

Lesson

Ask the youth:

- What does it mean to pack something?
- What does it means to pack brown sugar?

Brown sugar needs to be packed due to moisture of the molasses. This moisture causes the brown sugar to clump forming air pockets. The best way to get an accurate measurement of the brown sugar is to pack it and eliminate any air pockets.

Ask the youth:

- How much does one cup of packed brown sugar weigh versus unpacked?

Demonstrate what 1 cup of brown sugar packed looks like versus not packed and weigh it.

Activity - Bread in a Bag

Materials

- Gallon resealable bags
- Measuring cups
- Liquid Measuring cup
- Measuring spoons
- Plastic spoons
- Plastic knives
- Tape
- All-purpose flour (2 cups per youth)
- Quick rising yeast packets (1 pkg. per youth)
- Sugar (3 tbsp per youth)
- Nonfat dry milk (1 tbsp per youth)
- Salt (1 tsp per youth)
- Whole wheat flour (1 cup per youth)
- Print out Appendix 1 to label each

Activity Set Up

- Make sure to have calculated the correct amount of dry ingredients needed for the number of youths participating.
- Print station signs (appendix 1).
- Make stations – make a station for each dry ingredient with the correct measuring spoon or cup.
- Provide each youth with a gallon sized resealable bag.
- Print out instruction cards to pass out at the end (appendix 2).

Steps for Making Bread in a Bag

- Stop at every station measuring out the correct amount of each ingredient adding it to your gallon resealable bag.
- Carefully squeeze the air out of the bag and zip it closed.
- Shake the bag to mix your ingredients.
- Grab an instruction card and tape it to each bag.

Activity - STEM

Blow Up a Balloon With Yeast Activity: (It may be beneficial to start this activity first to allow ample time for the yeast to inflate the balloon while doing another activity)

Materials

- Clear, empty plastic pop bottle or water bottle
- 2 Tbsp dry yeast
- 1 Tbsp sugar
- 2-3 Tbsp lukewarm water
- Balloon
- Bowl full of lukewarm water
- Small funnel

Lesson

Ask the youth:

- Does anyone know what yeast is?

Believe it or not yeast is a fungus kind of like a mushroom is! Within each one of these packets there are millions of yeasts waiting to be warmed and fed. Why does yeast want to be warm and what does yeast like to eat? For yeast to work its best it likes to be about 104 degrees Fahrenheit. How might we feel being 104 degrees Fahrenheit? While we might get terribly hot at 104 degrees and not want to do anything, yeast happily gets right to work. Now, what does yeast eat? Well just like us, yeast also has a sweet tooth and loves to eat sugar! When yeast eats sugar the gas carbon dioxide is released. This is what helps bread dough to rise and become fluffy. Knowing this information what can we predict will happen?

Experiment Instructions

1. Using the funnel pour the yeast into the plastic bottle.
2. Using the funnel add 1 Tbsp of sugar to the bottle.
3. Using the funnel add 2-3 Tbsp of water about 104 degrees Fahrenheit.
4. Place the neck of the balloon of the opening of the bottle.
5. Shake the bottle so that everything mixes and there are no clumps.
6. Leave the bottle sit for 20 minutes and slowly watch the balloon inflate.

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2 Cups All-Purpose Flour

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1 Package Yeast

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3 Tablespoons Sugar

1 Tablespoon
Non-Fat Dry Milk

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1 Teaspoon Salt

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1 Cup Whole Wheat Flour

Appendix 2 - Bread in a Bag Baking Instructions

Bread in a Bag Baking Instructions

You will need:
- 1 cup HOT water
- 2 tablespoons vegetable oil

Baking Directions
- Add hot water and oil into the bag.
- Reseal the bag and work the bag with your hands until the ingredients are well combined
- Knead the dough in the bag until the dough stiffens and begins to pull away from the bag (add extra all purpose flour if needed)
- Remove dough from bag and put on a floured cutting board and knead with your hands
- Knead for 2-4 minutes until smooth and elastic, cover dough in bowl and let rest for 10 minutes
- Use a rolling pin to roll dough into a 12x7 rectangle, place in a loaf pan that has been sprayed with nonstick spray
- Cover with plastic wrap and a kitchen towel. Put in a warm place for 20 minutes or until dough doubles in size.
- Bake in preheated oven at 375 degrees for 25 min. or until the top is golden brown and knife inserted into the middle comes out clean.

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