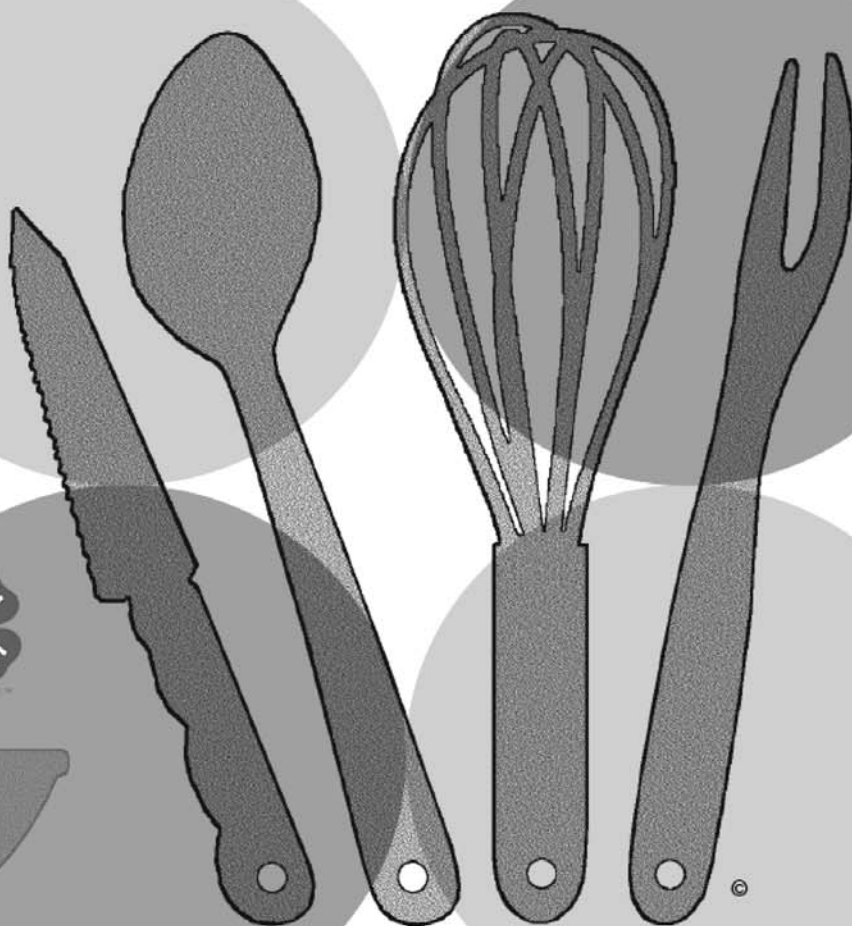
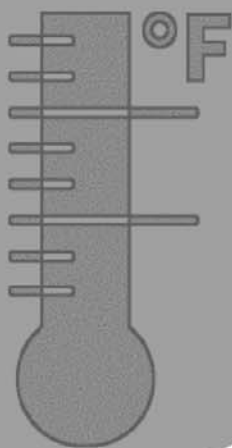


# *4-H Cooking 301*

ME0122



UNIVERSITY OF ILLINOIS  
**EXTENSION**

College of Agricultural, Consumer and Environmental Sciences



# ACKNOWLEDGEMENTS

Written by:

Madonna Weese, Ed. D., Extension Specialist 4-H Youth Development

Shirley Camp, MS, RD, Nutrition and Wellness Educator

Barbara Farner, MS, Nutrition and Wellness Educator

Jananne Finck, MS, RD, Nutrition and Wellness Educator

Terri Myers, MA, Project Assistant

Kelly Pool, MPA, Youth Development Educator

Paula Robinson, MS, Macoupin County Extension Director

Carol Schlitt, MS, CFCS, Nutrition and Wellness Educator

Sarah Todd, MS, RD, Nutrition and Wellness Educator

Graphic Design: Paula Wheeler, [www.WheelerArts.com](http://www.WheelerArts.com)

Illustrations with copyright symbol: QuickArt © Wheeler Arts

All the recipes in this book were tested by University of Illinois Extension Nutrition and Wellness Educators.



# TABLE OF CONTENTS

A Note to Project Helpers .....	4
Project Planning .....	5
Project Record .....	6
What Do You Know? .....	7
Food Safety .....	8
Outdoor Cooking .....	10
Party Planning .....	13
Party Planning Checklist .....	15
Party Planning: Make a List and Check It Twice .....	16
Party Planning Timeline .....	17
Slow Cookers .....	19
<b>Grain Group .....</b>	<b>21</b>
Introduction to Yeast Breads .....	21
Experiment with Flour .....	33
Experiment with Kneading .....	35
Experiment with Yeast .....	37
Experiment with Butter .....	62
<b>Vegetable and Fruit Groups .....</b>	<b>65</b>
<b>Meat Group .....</b>	<b>84</b>
<b>Milk Group .....</b>	<b>101</b>
Experiment with Cheese .....	104
<b>Desserts .....</b>	<b>108</b>
Introduction to Cakes .....	108
<b>Equipment .....</b>	<b>123</b>
<b>Glossary .....</b>	<b>124</b>
<b>Recipe Index .....</b>	<b>126</b>



# A NOTE TO PROJECT HELPERS



The *4-H Cooking 301* project builds on the skills young people learned in the beginning level *4-H Cooking 101* project and *4-H Cooking 201*. Members should complete those projects before beginning *4-H Cooking 301*. This project provides an in-depth exploration of outdoor cooking, party planning, cooking with slow cookers, and making yeast breads and shortened cakes.

After completing the first two 4-H Cooking projects, the 4-H member can begin to work more independently on this project. Even so, you still have a very important role as the Project Helper. You can continue to guide, assist, and mentor the young person in the project as he/she needs your help, but you can also encourage the confidence that develops as he/she completes tasks on his/her own. While working on this project youth can begin an in-depth exploration of cooking techniques and learn how to express cooking and baking as an art.

The project book is organized into sections by the MyPyramid Food Groups. At the beginning of each section, background information is provided to help the young person learn more about the science behind food preparation, the nutritional contribution of each food group, or some basic information about preparing foods in the food group. Recipes are included for each food group. The recipes help the young person learn and apply the background information included in each section. Some of these skills will be used when preparing recipes from other food groups. For example, members learn to prepare meats on a charcoal or gas grill. They also prepare vegetables on the grill. Any of these grilling recipes could be used for the party planning portion of the project. This allows youth to practice and build their skills in some basic food preparation techniques. It also helps them understand that food preparation skills can be used in many different ways. This builds their confidence and expands the repertoire of foods they can prepare.

Learning by doing is the best way to learn food preparation skills. Young people will learn important life skills that they will use as they grow and become independent, responsible adults. Instead of always telling the youth the right answer or the correct way to do something, ask the young person what he/she thinks and allow the youth to learn from trial and error. With support from you as a caring person, he/she will remember these lessons and the impact that you had on his/her life.

As you work with the young person on this foods project, remember to focus on the positive. If the youth doesn't do things quite the way you would, compliment on what is done well rather than criticizing. If something doesn't turn out quite right, use it as a learning opportunity to find out what the youth might do differently next time. Your positive feedback and encouragement as the Project Helper is important to the youth.



# PROJECT PLANNING

Welcome to *4-H Cooking 301*. This project builds on many of the skills you learned in the beginning level *4-H Cooking 101* project and *4-H Cooking 201*. You should complete both of those projects before beginning *4-H Cooking 301*. The project is divided into sections based on MyPyramid Food Groups. The skills and knowledge you learn and practice in one section may be applied in other sections. This will help you to expand your food preparation skills and techniques.

We suggest that you work for two or three years to complete the project. That will give you an opportunity to spend more time learning about some of the topics, such as yeast breads, shortened cakes, slow cookers, grilled foods, and party planning. Each year you could focus on one or two of these food preparation areas. You have over 70 different recipes to choose from and several learning activities to complete as part of the project.

It is important to have a Project Helper to guide you through the things you will learn in this project. Your helper can be a parent, grandparent, club leader, or another adult or older youth who has a lot of experience in food preparation and safety. Show the person your project book and ask if he/she would be willing to help you with the project. Ask your helper to complete the following information:

My Project Helper \_\_\_\_\_

Phone number \_\_\_\_\_ E-mail address \_\_\_\_\_

## For each year of the *4-H Cooking 301* project, you should:

- Prepare 2 to 3 dishes from **each** of the recipe sections: Fruit Group and Vegetable Group, Grain Group, Meat and Beans Group, Milk Group, and Desserts (10 to 15 dishes total)
- Demonstrate your knowledge on cooking or baking techniques. Give 3 to 5 “How To” demonstrations to your helper, leader, or club. Suggested topic areas include yeast breads, shortened cakes, slow cookers, grilled foods, and party planning.
- Complete 1 or 2 food science experiments.
- Complete at least one community service project such as, planning and hosting a holiday party for children in need or baking cakes or cupcakes for a homeless shelter.



[illegible]

# WHAT DO YOU KNOW?

Welcome to *4-H Cooking 301*! In this project, you will build on many of the skills that you learned in *4-H Cooking 101* and *201*. You should complete both of those projects before beginning this one. It may take two or three years for you to complete all of the activities in this project.

Following is a list of the skills you will learn in *4-H Cooking 301*. Before you start working on the project, read through the list of skills and rate yourself on how much you know now. Then at the end of each project year, rate what you know after completing the activities. Use the following rating scale:

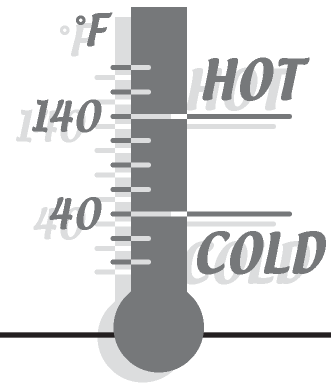
Begin each statement with the phrase, "I know..." then circle 1 = not at all; 2 = a little; 3 = a lot

I know...	Before	After
Why FAT TOM is important for food safety	1 2 3	1 2 3
Important practices for outdoor cooking fire safety	1 2 3	1 2 3
How to keep food safe when cooking outdoors	1 2 3	1 2 3
How to plan a successful party	1 2 3	1 2 3
How to plan food preparation for a party and other meals	1 2 3	1 2 3
How to keep food safe when using a slow cooker	1 2 3	1 2 3
Different methods for making yeast breads	1 2 3	1 2 3
How to determine if yeast dough is ready to be shaped	1 2 3	1 2 3
How to shape dough into loaves, rolls, rings, or braids	1 2 3	1 2 3
How to evaluate yeast breads and rolls for quality	1 2 3	1 2 3
Different grains used for breakfast foods	1 2 3	1 2 3
Why fiber is important in your diet	1 2 3	1 2 3
How and why different flour affects yeast bread	1 2 3	1 2 3
How kneading affects yeast bread	1 2 3	1 2 3
How sugar and salt affect yeast growth and yeast bread	1 2 3	1 2 3
Different salad greens that can be used for salads	1 2 3	1 2 3
How to grill meats, vegetables, and fruit	1 2 3	1 2 3
How to use marinades to tenderize meat and add flavor	1 2 3	1 2 3
How to purchase, store, and prepare fish	1 2 3	1 2 3
Sources of saturated fats and <i>trans</i> fats	1 2 3	1 2 3
How saturated fats and <i>trans</i> fats affect health	1 2 3	1 2 3
How partially hydrogenated fats are made and why	1 2 3	1 2 3
How to make butter and flavored spreads	1 2 3	1 2 3
How to cream ingredients	1 2 3	1 2 3
How to beat eggs whites and check for stiff peaks	1 2 3	1 2 3
How to test cakes for doneness	1 2 3	1 2 3
How to evaluate a cake for quality	1 2 3	1 2 3
How to troubleshoot problems with cakes	1 2 3	1 2 3
How gluten affects different baked goods	1 2 3	1 2 3





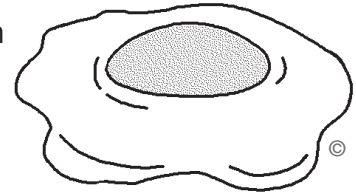
# FOOD SAFETY



As you learned in *4-H Cooking 101* and *201*, you must practice good food safety habits when preparing food. Bacteria can grow and multiply in food and cause foodborne illnesses. You may have learned in science class that bacteria need certain conditions to grow and multiply. An easy way to remember those conditions is using the phrase **"FAT TOM."** The phrase helps you remember the first letter of the conditions bacteria need to grow — **F**ood, **A**cid, **T**ime, **T**emperature, **O**xygen, and **M**oisture. That spells FAT TOM. Let's find out how each of these conditions contributes to the growth of bacteria.

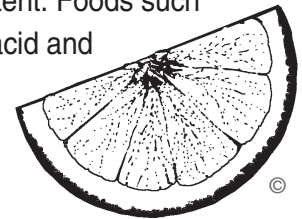
## "F" is for Food

Bacteria feed off the substances in food and that allows them to grow. Bacteria especially like foods that contain protein, such as meat, milk, eggs, and fish.



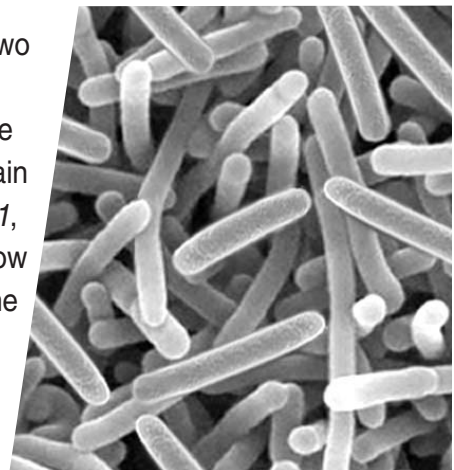
## "A" is for Acid

Bacteria can't grow in an environment that has a high acid content. Foods such as fresh fruits — especially citrus fruit, and fruit juices contain acid and prevent the growth of bacteria. Vinegar is acidic and is used to preserve foods such as, pickles, salad dressings, mayonnaise, and ketchup.



## "T" is for Time

Bacteria reproduce by dividing — one becomes two; two become four; and so on. Foods many contain a small amount of bacteria, but not enough to cause foodborne illness. But when low acid and high protein foods remain in the Food Safety Danger Zone (see *4-H Cooking 201*, page 11 for more information) the bacteria begin to grow rapidly. If food remains in the Food Safety Danger Zone for more than two hours, the bacteria may multiply to unsafe levels and cause foodborne illness for anyone who eats the food.





## “T” is for Temperature

As you learned in 4-H Cooking 201, bacteria grow and reproduce quickly between the temperatures of 40 and 140 degrees F — the Food Safety Danger Zone. Limit the time foods are stored at these temperatures. Keep foods refrigerated until time to prepare. Cool and refrigerate leftover foods quickly.

### Danger Zone



## “O” is for Oxygen

Like us, most bacteria need oxygen to survive. Canning removes oxygen from foods and preserves them. That is why canned foods — whether in cans or glass jars — can be stored at room temperature.

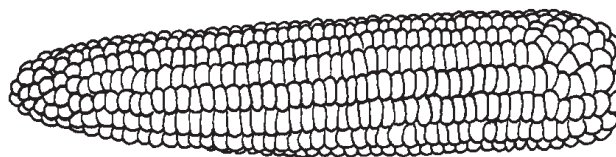
Some microorganisms do grow only in the absence of oxygen. **Botulism** — a rare type of foodborne illness — is caused by bacteria that grow without oxygen.

When canning food at home, follow recommended methods to prevent the growth of dangerous bacteria.

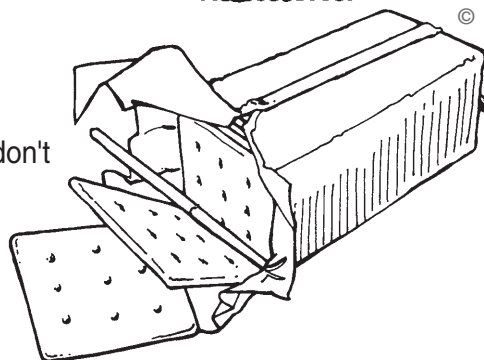


## “M” is for Moisture

Bacteria need water to grow. Foods that contain lots of water, such as fresh vegetables, provide the moisture bacteria need to grow.



Bacteria can't grow in foods such as dry noodles, flours, candies, and crackers that don't contain much moisture.



# OUTDOOR COOKING



Outdoor cooking is a fun way to liven up a special occasion, a picnic with friends, or a simple family meal. Cooking and eating outdoors can be relaxing and allow others to join in the preparations. Just be careful to practice what you learned in *4-H Cooking 101* and *201* about food safety. You should also practice fire safety around the grill, no matter what type you are using.

## Outdoor Cooking Fire Safety

- **Never** use charcoal for indoor cooking. The fire gives off carbon monoxide gas, which can cause sickness and possibly death if the gas accumulates in an enclosed space.
- **Never** squirt liquid starter fluid on a burning fire. The stream of liquid from the can may catch on fire and cause the can to explode.
- **Never** use gasoline to start a fire. Gasoline gives off fumes that can unexpectedly burst into flames.
- Keep the grill at least ten feet away from the house or other flammable materials.
- Place the grill on a level area to prevent it from tipping over and spilling the food and fire.
- Use long handled tongs or other cooking utensils to keep from burning your hands and arms.
- Wait until the coals from the fire are cool before disposing of them. Hot coals can continue to burn and cause fires.

## Outdoor Cooking Food Safety

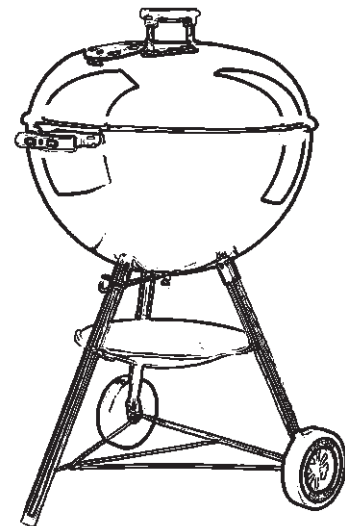
- Make your own sanitizer by mixing one tablespoon of bleach in a gallon of water. Use this sanitizing mixture to clean the food preparation area, tables, etc.
- Keep cold foods cold. Fill a cooler with ice and place cold foods on the ice to keep cold until time to serve. Have a separate cooler of ice for beverages. Place coolers in a shady or cool location.
- Prepare cold dishes and chill thoroughly before adding to the cooler.
- Leave the meat in the cooler until it is ready to be cooked.
- Wash and sanitize cutting boards and equipment after cutting or handling meat.

- Wash your hands with soap and water after handling uncooked meats.
- Thaw and marinate foods in the refrigerator. Use a non-metal container for marinades. Do not marinate for more than 24 hours to prevent food from becoming mushy.
- Do not reuse meat marinade. If desired, save some marinade for a sauce or **basting** before adding it to the meat.
- Keep juices from uncooked meat from coming into contact with cooked meat or ready-to-eat food. Use a clean plate for cooked meats.
- Use a thermometer to be sure meat is fully cooked. (See *4-H Cooking 201* page 10 for cooking temperatures).
- Clean the grill grates after each use. Place the grates in a tub of warm, soapy water and allow them to soak to loosen any grease or food. Wash, rinse, and return to grill.
- Discard any perishable food that has been out of refrigeration for more than two hours. For temperatures above 90 degrees F, one hour is the limit.

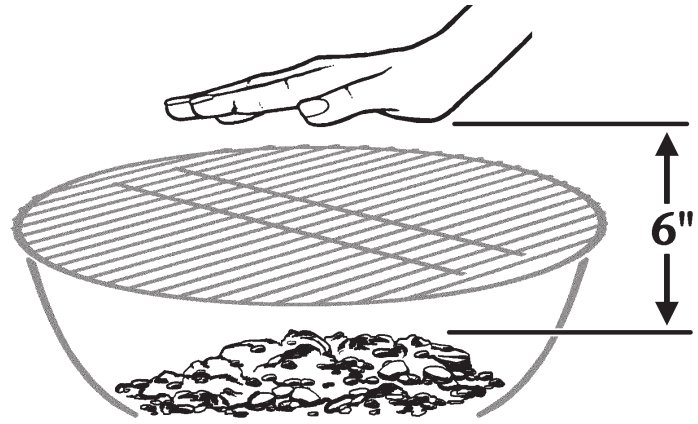
## Grill Safety

### Charcoal Grills

- Clean the grill and remove any ashes or grease. Place it in a well-ventilated area.
- Line the **firebox** with foil.
- Pile the charcoal briquettes in the shape of a pyramid.
- Saturate the briquettes with charcoal lighter fluid and let it soak in for about 30 seconds. Note: the fluid used to ignite the charcoal may cause an off flavor in food prepared on the grill. You may choose to use a starter box or “chimney” to light the charcoal since these do not use lighter fluid. Check the manufacturer's directions.
- Use a long match or grill lighter to light charcoal from the bottom of the pyramid.
- Wait until the flames go out and the coals turn light gray before cooking (about 15-20 minutes).
- Use a long handled utensil to spread the coals evenly in the firebox.
- Don't spray additional starter fluid onto lighted coals. The flame could travel up the stream of flammable liquid and cause an explosion.
- Use long handled tongs to add or turn food.
- Keep a spray bottle filled with water close by while you're cooking. Use a quick spray at the base of the flame to put out any flare-ups. If the flames continue, close the lid of the grill immediately.



- To estimate the temperature of your grill, hold your hand, palm side down, about six inches above the coals. Time how long it takes before the temperature becomes too hot and you must remove your hand. If you can only hold your hand over coals for



**Two** seconds — it's hot, about 375 degrees F or more.

**Three** seconds — it's medium-hot, about 350 to 375 degrees F.

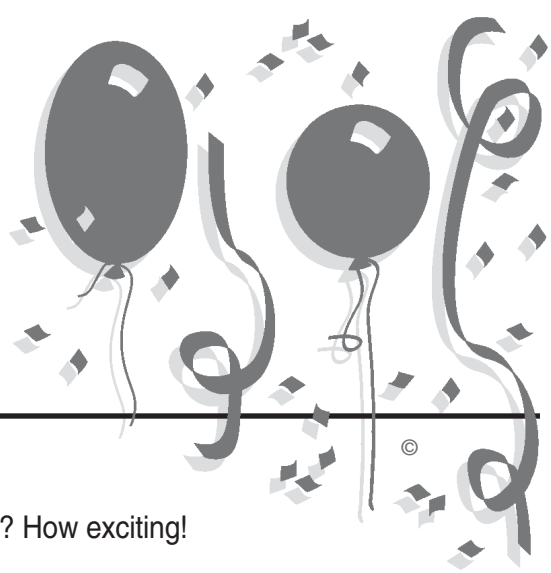
**Four** seconds — it's medium, about 300 to 350 degrees F.

**Five** seconds — it's low, about 200 to 300 degrees F.


### Tips for Successful Grilling

- When lighting gas grills, leave the grill lid open to avoid “explosions” from gas fumes.
- The grill should be hot before adding food. For a charcoal grill, the coals should be grayish-white.
- Keep a spray bottle filled with water available to put out flare-ups.
- Spray cooking grates with nonstick cooking spray before lighting the fire to prevent food from sticking.
- Cook at lower temperatures to produce juicier meats.
- Marinate food to add flavor, tenderize meat, and maintain the food's juiciness.







# PARTY PLANNING




Are you ready to host a party — maybe even your first party? How exciting!

You'll find several helpful recipes in this manual that are especially for parties or other social gatherings. Those recipes are marked with this symbol . The recipes use the food preparation skills you learned in *4-H Cooking* projects so they will be easy for you to prepare. You can do most of the work yourself or with the help of family or friends. One of the most important steps to a successful party is planning so everything goes smoothly. Are you ready to get started?

## Planning: Keys to a Successful Party

-  **1 Ask permission before you begin** — have the approval and support of your family before you do anything!
-  **2 Start small** — remember how you first learned to prepare food? You tried simple things first and then tried more recipes as you developed skills and confidence. Plan parties the same way. Start with a small gathering of family or close friends and then add people and food as your skills and confidence grow.
-  **3 Select a date** — find a date that works for you, your family, and guests. Avoid dates that conflict with other events such as, sports events, holidays, or school activities. Select a date that allows you time to prepare for the party and clean up afterwards.
-  **4 Select a theme** — a theme helps coordinate decorations, invitations, games, and food.
-  **5 Decide on rules for the party** — talk with your family to decide what time the party will begin and end, behavior expectations of guests, party activities that are permitted, etc. Make sure you know what your family expects from you and your guests.
-  **6 Set a budget** — talk with your family to decide how much money you can spend on food, decorations, invitations, games, etc. Watch for sales and specials on food, invitations, and party decorations to stretch your budget dollars.



**Plan a menu** — refer to the recipes in this book that are marked with this symbol . When selecting your menu for the party, keep these things in mind:

- Select recipes that you have prepared before and turned out well. You need extra time to understand and follow an unfamiliar recipe and it may not turn out as planned.
- Select a variety of foods to prepare. Refer to *4-H Cooking 201* pages 89 to 91 for information on planning for variety in meals.
- Select some foods that can be prepared in advance. This cuts down on your work the day of the party.



**Plan party activities** — decide what you will do as guests arrive, when you will serve food, what party games and music you will play, and when to open gifts (if appropriate).



**Send invitations** — mail party invitations about two weeks in advance. Although many times party invitations are handed out at school, it is best to mail the invitations to avoid hurt feelings. Ask guests to RSVP, which is French for “respond please.” This asks guests to tell you if they are planning to attend or not.



**Purchase food and decorations** — allow time for purchasing the things you need. By planning your menu several weeks in advance, you can watch for sales.



**Make a schedule** — plan dates and times for cleaning, decorating, cooking, baking, and completing last minute preparations. Then stick to your schedule so when it's time, you can enjoy your party. You'll have more fun and so will your guests. Use the following Party Planning Checklist and Party Planning Timeline to plan the details.

# Party Planning Checklist

Use this guide to simplify your party planning.

Make a copy of the guide and complete each section.

Date: \_\_\_\_\_ Time: \_\_\_\_\_ Place: \_\_\_\_\_ Theme: \_\_\_\_\_

## Guest List

_____	_____	_____
_____	_____	_____
_____	_____	_____

## CHECKLIST

		Need	Have			Need	Have
<b>Invitations</b>				<b>Tableware</b>			
✓ Addresses		<input type="checkbox"/>	<input type="checkbox"/>	✓ Table covers		<input type="checkbox"/>	<input type="checkbox"/>
✓ Stamps		<input type="checkbox"/>	<input type="checkbox"/>	✓ Plates		<input type="checkbox"/>	<input type="checkbox"/>
<b>Decorations</b>				✓ Napkins		<input type="checkbox"/>	<input type="checkbox"/>
✓ Candles		<input type="checkbox"/>	<input type="checkbox"/>	✓ Cutlery		<input type="checkbox"/>	<input type="checkbox"/>
✓ Balloons		<input type="checkbox"/>	<input type="checkbox"/>	✓ Cups and glasses		<input type="checkbox"/>	<input type="checkbox"/>
✓ Streamers		<input type="checkbox"/>	<input type="checkbox"/>	✓ Centerpiece		<input type="checkbox"/>	<input type="checkbox"/>
✓ Banner or yard sign		<input type="checkbox"/>	<input type="checkbox"/>	✓ Serving bowls		<input type="checkbox"/>	<input type="checkbox"/>
✓ Guest book		<input type="checkbox"/>	<input type="checkbox"/>	✓ Containers for leftovers		<input type="checkbox"/>	<input type="checkbox"/>
<b>Menu</b>				<b>Goodie Bags</b>			
✓ _____		<input type="checkbox"/>	<input type="checkbox"/>	✓ Noisemakers		<input type="checkbox"/>	<input type="checkbox"/>
✓ _____		<input type="checkbox"/>	<input type="checkbox"/>	✓ Candy		<input type="checkbox"/>	<input type="checkbox"/>
✓ _____		<input type="checkbox"/>	<input type="checkbox"/>	✓ Other items		<input type="checkbox"/>	<input type="checkbox"/>
✓ _____		<input type="checkbox"/>	<input type="checkbox"/>	<b>Activities</b>			
<b>Cake</b>				✓ Supplies		<input type="checkbox"/>	<input type="checkbox"/>
✓ Deposit/Full Payment		<input type="checkbox"/>	<input type="checkbox"/>	✓ Props		<input type="checkbox"/>	<input type="checkbox"/>
✓ Delivery/Pick up time		<input type="checkbox"/>	<input type="checkbox"/>	✓ Prizes		<input type="checkbox"/>	<input type="checkbox"/>
✓ Make it myself		<input type="checkbox"/>	<input type="checkbox"/>	<b>Don't Forget</b>			
✓ Candles		<input type="checkbox"/>	<input type="checkbox"/>	✓ Camera/Camcorder		<input type="checkbox"/>	<input type="checkbox"/>
<b>Party Helpers</b>				✓ Paper towels/wet naps		<input type="checkbox"/>	<input type="checkbox"/>
✓ Parents and family		<input type="checkbox"/>	<input type="checkbox"/>	✓ First-aid kit/bandages		<input type="checkbox"/>	<input type="checkbox"/>
✓ Friends		<input type="checkbox"/>	<input type="checkbox"/>	✓ Trash bags		<input type="checkbox"/>	<input type="checkbox"/>





## Planning: Make a List and Check It Twice

Hosting a party is lots of fun, but it's also lots of work! It's easy to forget some of the things that need to be done. Planning food preparation and other tasks, helps ensure that you and the food are ready on time. The extra time you put into planning helps you avoid stress and worry when hosting a party.

Get ready to make lists! Making lists and schedules helps you to plan your work and to check off tasks as you complete them. This is essential to successful party planning — and daily meal planning. Following your lists means all your food is served as planned. Hot foods will be hot; cold foods will be cold; and baked goods will be moist and fresh. Let's get started making those lists.

1. After you plan the menu, prepare a list of everything you need for each recipe. Check off any items you already have.
2. Prepare a shopping list.
3. Prepare a list of all the things you need to do for preparing food, baking, cleaning, shopping, decorating, setting the table, and getting yourself ready.
4. Read over the recipes to determine preparation and cooking times.
5. Decide what recipes to make in advance and store for the day of the party. This includes foods that can be baked, frozen, or refrigerated and stored. Decide how far ahead of time you can make these foods.
6. Decide which ingredients can be prepared in advance. For example, washing, cutting, slicing, or dicing vegetables; preparing dips, salad dressing, or flavored spreads; making beverages; measuring ingredients; or baking the cake.
7. Decide what food preparation steps need to be done just before serving the food.
8. Make a timetable to prepare for the party. Copy the timetable on the following page and fill in the information. Count back from the time the party starts and determine when to begin preparing each recipe, allowing time for preparation, cooking or baking, and cooling (if needed). While some foods are cooking or baking, you can complete other tasks. This is **multi-tasking** and it saves preparation time.
9. Add to the timetable times for decorating, setting the table, and getting yourself ready. You don't have to wait until the last minute to do these things.
10. Follow the timetable and check off tasks as completed. That way, everything is done on time and you're not stressed — everyone enjoys the party, including you!



Make a copy of this timeline and complete each section. As you add each item from your to-do list, use arrows to show the time needed to complete each task. An example is provided.


[illegible]

[illegible]

# SLOW COOKERS

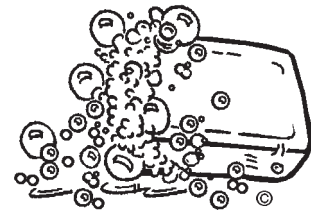


Today's families are busier than ever with sports, extra curricular activities, work schedules, and homework. It can be hard to find time to eat a meal, let alone prepare one. It's easy to fall into the trap of eating lots of fast foods. Fast foods are often loaded with extra calories, fat, and salt that most people don't need in their diets. **Slow cookers** help you prepare a quick and nutritious meal to have ready at the end of the school or work day. Foods that take a long time to cook can cook while your family is busy or away from home. Many slow cooker recipes take little time and are very easy to prepare. Plus, foods that are cooked in slow cookers are more nutritious because vitamins and minerals aren't lost in the cooking process.

Slow cookers are convenient to use and save time when preparing meals. They also help save money. By eating meals prepared in the slow cooker at home, families save the higher cost of restaurant and fast food meals. Instead of paying more for convenience foods at the grocery store, family meals can be prepared "from scratch" with fresh or seasonal fruits and vegetables or with ingredients that you already have. Slow cookers are good for cooking less-tender cuts of meat that cost less. Slow cooking tenderizes the meat and develops the flavor of foods.

## Slow Cooker Food Safety

**Cleanliness** — You learned in *4-H Cooking 101* and *201* that the important first step in food safety is cleanliness. Begin with clean equipment, utensils, and work area. Wash your hands with soap and warm water for at least 20 seconds before preparing food and as needed while preparing food.



**Keep cold foods cold** — Keep **perishable foods** refrigerated until you begin preparing the food. The slow cooker may take several hours to reach temperatures that destroy bacteria. Keeping food refrigerated prevents bacteria from multiplying rapidly at room temperature and during the first few hours of cooking.

**Avoid cross-contamination** — Many people like to prepare the ingredients for a slow cooker meal the night before so they can put the food on to cook as they leave for the day. If you prepare meat and vegetables in advance, store them separately in the refrigerator to avoid cross-contamination (See *4-H Cooking 201* pages 9 and 55 for information on cross-contamination).



**Thaw ingredients first** — Thaw meat or poultry before cooking in a slow cooker. Follow the directions on the package if you are using a frozen, packaged slow cooker meal.

**Use the right amount of food** — Fill the slow cooker at least half-full with food, but no more than two-thirds full.

## Tips for Slow Cooking Success

**Put vegetables in first** — Vegetables cook slower than meat and poultry in a slow cooker. Layer the vegetables in the slow cooker on the bottom and around the sides.

**Layer meat on top of vegetables** — Meat can be left whole or cut into smaller pieces.

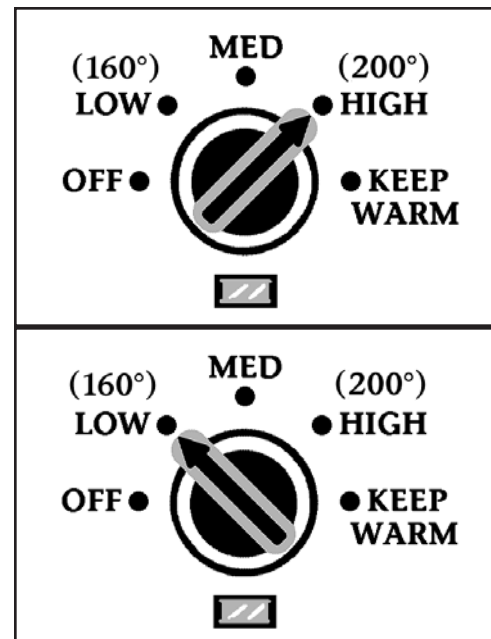
**Cover the food with liquid** — Choose from a variety of liquids, such as broth, water, or barbecue sauce.

**Keep the lid on the slow cooker** — The temperature drops each time you open the slow cooker and slows the cooking process. Only remove the lid to stir the food or check for doneness.

## Slow Cooker Settings

Most cookers have two or more temperature settings. Depending on the setting you use, cooking times will vary. Foods will cook faster on high than on the low setting. For all-day cooking or for less tender cuts of meat use the low setting.

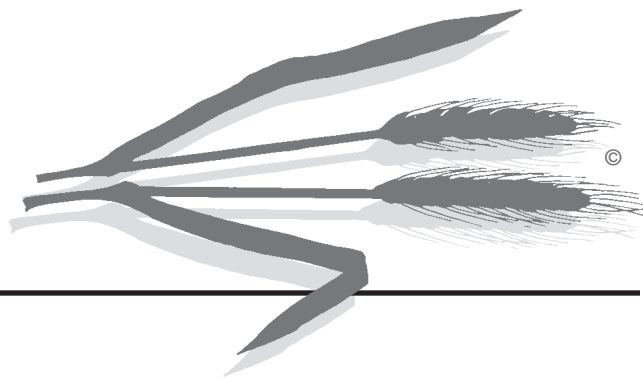
If possible, turn the slow cooker on the highest setting for the first hour of cooking time and then turn it to low or the setting called for in your recipe. It's safe to cook foods on low the entire cooking time.



## What to Do with Leftovers

Store leftovers in shallow, covered containers and refrigerate within two hours after cooking is finished. Do not reheat leftovers in a slow cooker. Reheat cooked food on the stove, in a microwave, or in a conventional oven until it reaches 165 degrees F. Then place the hot food in a preheated slow cooker to keep it hot for serving.

# GRAIN GROUP



## Yeast Breads

Some people won't try making yeast breads because they think the breads are too difficult to make or that the dough won't rise properly. When you understand and follow some basic techniques for making bread, it's really quite simple and enjoyable. Why not try your hand at making yeast breads! You should have the basic ingredients in your kitchen — flour, liquid, and yeast. Recipes usually add sugar, fat, and salt to give the bread more flavor and improve the texture.

**Flour** is the base for yeast breads. It contains a form of protein called **gluten**. When flour is mixed with liquid, such as milk or water, the gluten becomes rubbery or elastic. The more the dough is mixed or kneaded, the stronger the gluten becomes. A high gluten flour is best for making yeast breads. Strong, elastic gluten strands help trap the gases and moisture produced by the yeast during rising and baking. The gases cause the dough to expand or rise and produce the typical texture of a yeast bread — also known as the **crumb**.

Several types of flour may be used in making yeast breads. You are probably most familiar with wheat flour. Wheat flour can be combined with flours made from other grains, such as, rye, corn, oats, or rice.

**Enriched all-purpose flour** is the most common and most versatile white flour available. All-purpose flour is made by removing the bran (the outer layers) and germ of the wheat grain and grinding the remaining endosperm. Then the flour is enriched with vitamins and minerals. This flour is usually bleached to give it a very white color. The bleaching is not harmful. You can use unbleached all-purpose flour in place of bleached all-purpose flour. All-purpose flour is used to make most bread.

**Bread flour** has more gluten-forming protein than all-purpose flour. It produces bread that has a higher **volume** because it contains more stretchy gluten.

**Whole wheat or graham flour** is ground from the entire kernel of wheat. The presence of the bran and germ gives it a light brown color and makes it coarser and denser than white flour. The bran and germ also dilute the gluten content somewhat, so



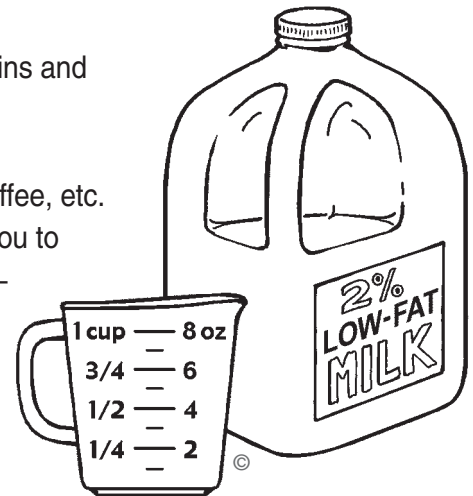
it is more difficult to make light textured bread using all whole wheat flour. Because of this, whole grain flours are usually combined with bread or all-purpose flour to make a better crumb.

Whole wheat flour contains the germ of the grain, which adds a small amount of fat to the flour. The fat in whole wheat flour may cause it to spoil, or become **rancid**, if it is stored in a warm place for a long time. Whole wheat flour is best stored in the refrigerator or freezer.

## Liquids

Liquids are added to the yeast dough to moisten the gluten proteins and dissolve ingredients such as salt and sugar.

Several liquids including, milk, fruit juices, water, potato water, coffee, etc. are used in yeast dough. Some recipes for yeast bread instruct you to **scald** the milk. Scalding — heating the milk until it almost boils — changes some of the proteins in milk and makes the yeast bread softer. In the past, milk was scalded to destroy the bacteria in unpasteurized milk. Using pasteurized milk makes scalding unnecessary.



## Yeast

Yeast provides the rising, or **leavening**, power for yeast breads. Yeast is a mass of tiny plants that can only be seen with a microscope. Yeast doesn't grow when it is kept dry and cool. However, it grows rapidly when moisture, carbohydrates or sugar, and correct temperature are present.

When adding liquid ingredients to yeast to make it grow, it is important to use a food thermometer to check the temperature of the liquids. Too high a temperature will kill the yeast plants. Too low a temperature will slow or stop growth. Either way, the bread will not rise properly. Ideally, yeast should be dissolved in water that is about 100 degrees F (about body temperature). The dough should rise in a place where the temperature is about 80 degrees F. As it grows, the yeast consumes the carbohydrates and/or sugar and produces carbon dioxide and alcohol. The carbon dioxide becomes trapped in the gluten strands of the dough, causing the dough to rise and producing the light, porous texture of yeast breads.

### *Types of yeast*

**Active dry yeast** is granulated and does not need to be refrigerated. It works best when dissolved in water (100 to 110 degrees F) prior to mixing. It can be purchased in strips of three 1/4-ounce packets, which don't require measuring.



**Rapid Rise, Quick-Rise, and Instant yeast** cause bread to rise about twice as fast as active dry yeast. Mix this yeast with other dry ingredients before adding the liquids. It can be used in all yeast bread recipes and substituted for active dry yeast. This yeast is available in strips of three 1/4-ounce packets and 4-ounce jars. Substitute 2 1/4 teaspoons of bulk yeast for one 1/4-ounce packet of yeast.

**Bread Machine yeast** is a fast-acting yeast designed for use in bread machines. Mix it directly with other dry ingredients before adding the liquids. It can be used in all yeast bread recipes and is available in 4-ounce jars. Substitute 2 1/2 teaspoons of bulk yeast for one 1/4-ounce packet of yeast.

**Compressed yeast or cake yeast** is a mixture of starch and yeast that keeps for about three weeks in the refrigerator. While many older bread recipes call for this type of yeast, it is no longer available in most grocery stores. Substitute one 1/4-ounce package active dry yeast for one cake (.06 oz) compressed fresh yeast.

## Salt

Salt is an important ingredient in yeast bread. Salt adds flavor and it affects how quickly the yeast rises, and that affects the texture of the bread. Salt slows the growth of the yeast and helps produce a fine texture. Yeast breads made without salt, or with a reduced amount of salt, have a coarse texture. Bread made without salt may rise too much and fall.



## Mixing Yeast Dough

Most recipes call for an exact amount of liquid, but list an approximate amount of flour. That is because the amount of liquid absorbed by the flour varies depending on the variety of wheat used to make the flour, how the flour was milled, how long the flour was stored, and other factors. When mixing dough, gradually add the flour until the dough no longer sticks to your hands or the kneading surface.

There are several ways to make yeast breads. You can use any of the following methods to make the dough for loaves, rolls, tea rings, or braids.

### Methods

**Conventional or straight dough method** — Add the yeast to warm water (100 to 110 degrees F) and stir until it dissolves in the liquid. Then add the salt, sugar, fat, and part of the flour. Mix the batter and allow it to rise until it is light and **spongy** — small bubbles form on the surface of the batter. Add the remaining flour and mix well. **Turn the dough out** — use a spoon or spatula to push the ball of dough out of the bowl — onto a lightly floured surface and knead the dough. Use the conventional method when making sweet dough and whole-grain dough.



**Rapid-mix method** — Mix the undissolved dry yeast with part of the flour and other dry ingredients. Add the hot liquid (120 to 130 degrees F) and fat. Beat the mixture until it is smooth. Then add the remaining flour to the dough and mix.

**Cool rise method** — Use the conventional method to mix the dough, but use more yeast and salt. Knead the dough and shape it. No rising is necessary before shaping the dough. Then refrigerate the dough for 2 to 24 hours before baking.

**Batter method** — Mix the dough, but do not knead it. The dough will be thinner and stickier. Pour or drop the dough into a baking pan rather than shaping it. The bread has a coarser texture than kneaded dough and often has an uneven shape.

**Dough hook or food processor** — Use the dough hook attachment on a heavy-duty mixer or food processor to make yeast breads. The dough hook and food processor can knead dough very quickly, usually in a couple of minutes. Most food processors can only handle one loaf at a time and cannot be used to make large batches of dough. After mixing the dough with a dough hook or food processor, allow the dough to rise.

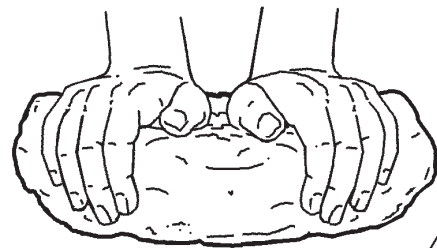
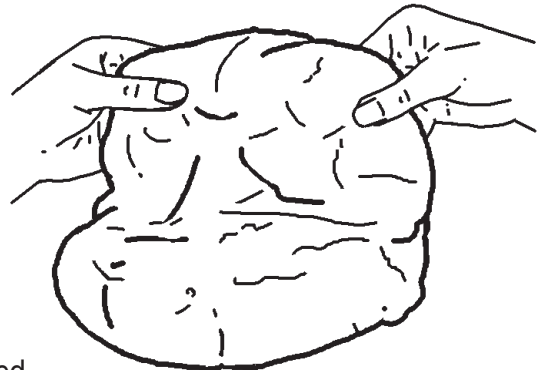
**Bread machine** — use the setting for dough. Combine all the ingredients in the bread pan and set the machine to mix and knead the dough. After the first rise, which takes about 80 to 90 minutes, shape the dough into loaves or rolls.

## Kneading Dough

**Kneading** the yeast bread dough stretches the gluten and makes the gluten strands elastic. Well-kneaded bread has a dome shape, a soft and silky texture, and fine, uniform grain. Bread that was not kneaded enough has a coarse, irregular texture.

To knead the dough, place it on a lightly floured surface and flatten it slightly with floured hands. Then pick up the farthest edge of the dough and fold it over on top of the nearest edge.

After folding the dough, lightly push down and forward with the heels of your hands. Give the dough a quarter turn and repeat the process. Continue this for about 10 minutes. Add a little extra flour to the dough if it sticks during kneading. Only use enough flour to prevent the dough from sticking. Using too much flour will cause the bread to be heavy and have a dense texture.



The dough is kneaded enough when:

- 1) it feels springy and elastic; 2) **blisters** (pockets of gas) form on the surface of dough,
- 3) it has a smooth satiny surface; 4) and it does not stick to the surface or your hands.

## Letting Dough Rise

For most methods after the dough is kneaded, allow it to rise in a bowl before shaping the loaves or rolls. The rising time is affected by the type of dough, the temperature of the dough and the room, and the amount of humidity in the air.

For rising, place the dough in a large mixing bowl lightly coated with oil or nonstick cooking spray. Then lightly coat the top of the dough with oil or nonstick cooking spray. Cover the bowl with a damp, clean dishtowel or plastic wrap. The cover prevents a dry skin from forming on the surface of the dough. If a dry skin forms on the dough, it keeps the dough from stretching so it doesn't rise properly. When the dough is kneaded, streaks of the dry skin remain in the dough and affect the texture of the baked bread.

Place the dough in a warm place (about 80 degrees F) that is free from drafts. One good way to raise yeast dough is to place the bowl of dough in an unheated oven, then set a large pan of hot water under the bowl on the oven's lower rack. Let the dough rise until doubled in size. To check to see if the dough has raised enough, use the finger test. Push two fingertips about 1/2" into the dough. When you remove your fingers, the dents should remain if the dough is ready.

You can also use a microwave oven for raising bread dough.

First, check the owner's manual or cookbook that came with your microwave oven to find out whether raising dough in your oven is recommended. If it is recommended, while kneading your dough, place 3 cups water in a 4-cup microwave-safe measuring cup. Heat the water on high for 6 1/2 to 8 1/2 minutes or until the water boils. Move the measuring cup to the back of oven. Lightly coat a microwave-safe mixing bowl with nonstick cooking spray (For more information on testing for microwave-safe dishes, see *4-H Cooking 101*, page 19.) Place the kneaded dough in the prepared bowl and lightly coat the dough with the nonstick cooking spray. Cover the bowl with waxed paper and place in the microwave oven with the hot water. **Heat dough and water on low (10% power)** for 13 to 15 minutes or until dough has doubled in size. Punch down dough and shape into loaves or rolls.



Place the shaped dough in microwave-safe dishes. If you are using metal baking sheets or muffin cups, you cannot use the microwave for this step. Return the dough to the microwave oven with the hot water. Cover the dish with waxed paper. **Heat on low** for 6 to 8 minutes, or until dough has doubled in size.



## Resting Dough

Some recipes call for resting the dough between mixing and kneading, and again between rising and shaping. You can add this step with any yeast bread recipe. Resting makes kneading and shaping easier. Allow the dough to rest for about 10 minutes.

Resting the dough also helps prevent adding too much flour to the dough. While the dough is resting, the gluten begins to develop and the flour absorbs some of the liquid. Breads made from whole-grain flours especially need a rest period since these flours typically have less gluten forming protein.

## Shaping Dough

After the dough has completed rising, punch it firmly to release the gas that has collected. Recipes call for you to “**punch down the dough**.” Remove the dough from the bowl. Then divide the dough and shape it into the number of loaves or rolls you are making. Place the dough on a lightly floured surface, cover the dough, and let it rest for 10 minutes.

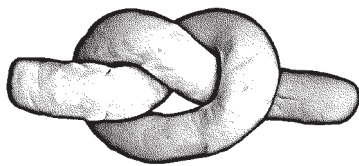
You may use plain, whole wheat, refrigerator, or sweet dough for any of the following rolls or loaves.

## Shaping Loaves of Bread

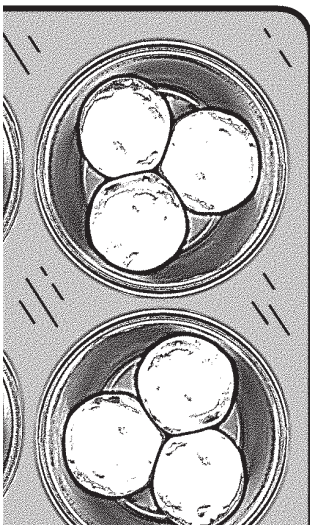
Follow these steps to create uniform loaves of bread.

- Roll the dough with a rolling pin into a 10” x 6” rectangle, forcing out the gas bubbles.
- Roll the dough up tightly, beginning with the narrow end.
- Seal the edges by pinching them into the roll.
- Seal the ends by pinching them into the roll.
- Place the loaf, with the seam side down, in the center of a baking pan lightly coated with nonstick cooking spray.
- Cover the bread with a damp, clean dishtowel while it is rising. Let the bread rise until doubled in size.

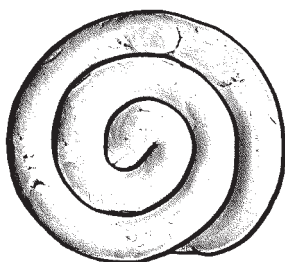
## Shaping Rolls



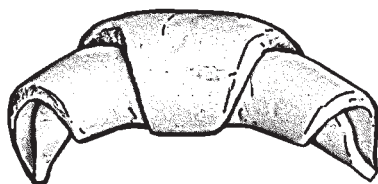
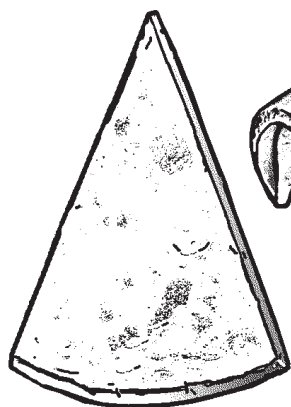
**Bowknots** — Divide dough to form individual rolls. Shape each piece into a 9-inch rope by rolling the dough between your hands. Twist (as if tying a shoelace) to make a bowknot. Place at least one inch apart on baking sheet lightly coated with nonstick cooking spray.



**Cloverleaf rolls** — Form three 1-inch balls of dough and place in muffin tin lightly coated with nonstick cooking spray.

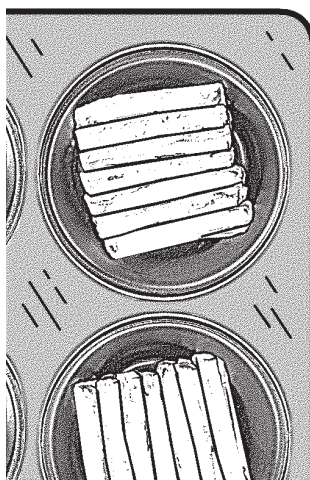
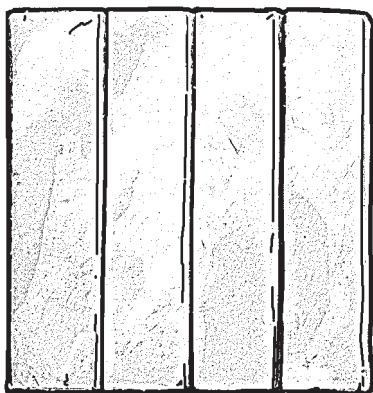


**Coils** — Divide dough to form individual rolls. Shape each piece into a 9-inch rope by rolling the dough between your hands. Hold one end of dough and loosely wind dough around itself; tuck end underneath. Place at least one inch apart on baking sheet lightly coated with nonstick cooking spray.



**Crescents** — Roll dough into a 12-inch circle, 1/4-inch thick. Lightly brush with butter or margarine, if desired. Cut into 12 pie-shaped pieces.

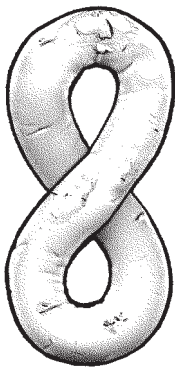
Beginning with wide edge of dough, roll tightly. Curve rolls slightly to form crescents. Place crescents at least one inch apart on baking sheet lightly coated with nonstick cooking spray.



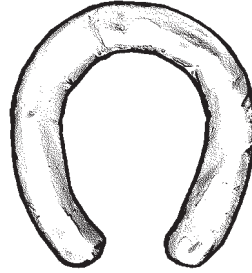
**Fan-Tans** — Roll dough into a rectangle 1/4-inch thick. Lightly brush with butter or margarine, if desired. Cut into 2-inch wide strips and stack evenly on top of each other. Cut at one-inch intervals with knife. Place cut side down in muffin tin lightly coated with nonstick cooking spray.



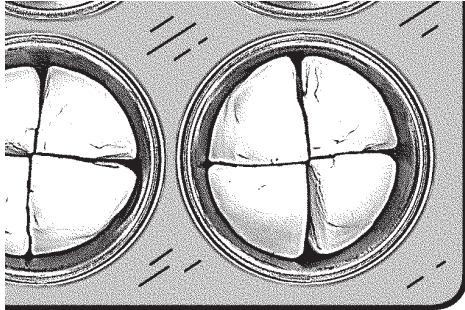




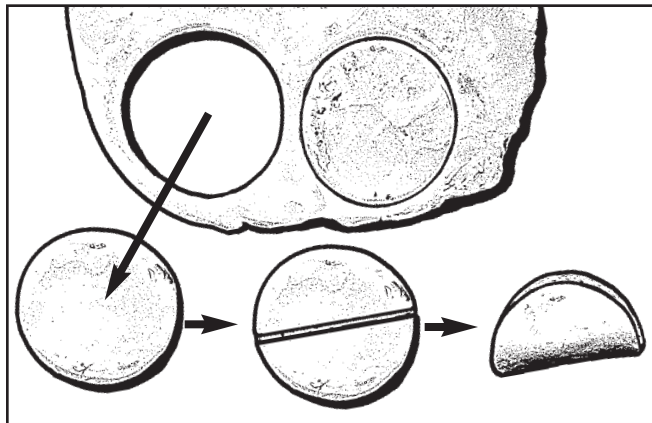
**Figure eights** — Divide dough to form individual rolls. Shape each piece into a 9-inch rope by rolling dough between your hands. Shape rope into a figure eight and seal ends. Place at least one inch apart on baking sheet lightly coated with nonstick cooking spray.



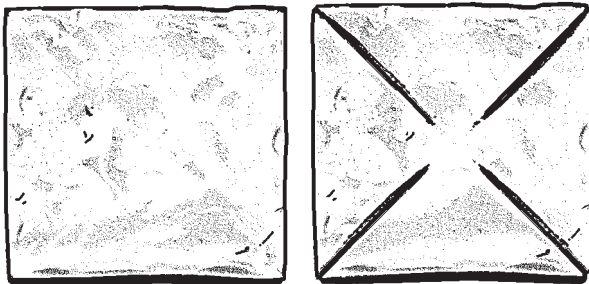
**Horseshoes** — Divide dough to form individual rolls. Shape each piece into a 9-inch rope by rolling dough between your hands. Curve to form a horseshoe. Place at least one inch apart on baking sheet lightly coated with nonstick cooking spray.



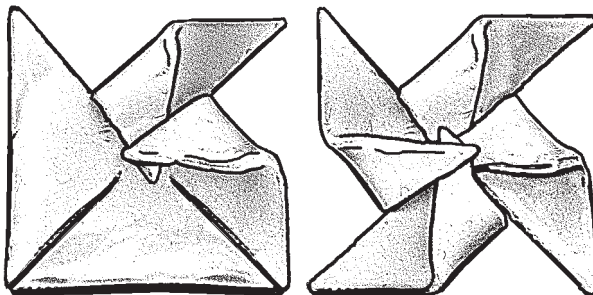
**Lucky clovers** — Divide dough into individual rolls. Place rolls into muffin tins lightly coated with nonstick cooking spray. Using kitchen scissors, cut each roll into quarters.



**Parker House rolls** — Roll dough on lightly floured surface to 3/8-inch thickness. Cut with 2 1/2-inch biscuit cutter. Make indentation across each circle of dough with the back of a table knife. Lightly brush one-half of the circle with melted butter or margarine. Fold in half, so edges just meet and press edges together. Place rolls about 1/2 inch apart on baking sheet lightly coated with nonstick cooking spray.

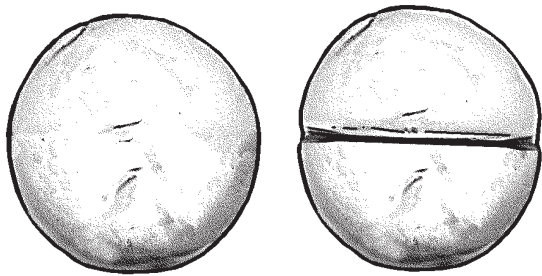


**Pinwheels** — Roll dough into a square 3/8-inch thick. Cut into 3" x 3" squares. Cut squares diagonally at each corner to about 1/2 inch from center. Place small amount of butter or jelly in center, if desired.

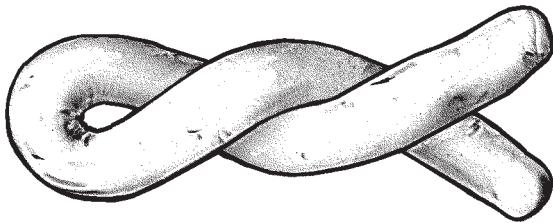


In rotation, bring the same point of each corner to the center of each square.

Pinch points to seal. Place at least one inch apart on baking sheet lightly coated with nonstick cooking spray.



**Twin rolls** — Shape each roll and place on baking sheet lightly coated with nonstick cooking spray. Use knife lightly coated with cooking spray to cut part way through the center of each roll.



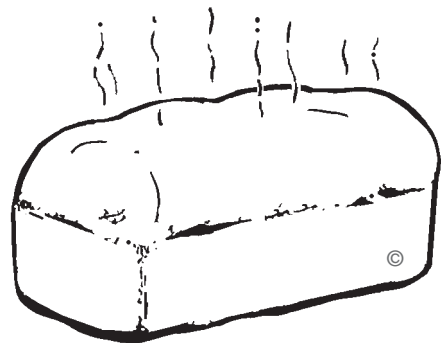
**Twists** — Divide dough into individual rolls. Shape into a 9-inch rope by rolling dough between your hands. Fold in half and twist. Place at least one inch apart on baking sheet lightly coated with nonstick cooking spray.

## Baking Yeast Breads

During baking, the dough releases carbon dioxide gas, the yeast is destroyed, and the alcohol produced during rising evaporates. Bake loaves of bread at 375 to 425 degrees F. Baking temperatures that are too low allow the yeast to continue to rise, resulting in bread with a coarse texture. When the temperature is too high, the outside of the bread will burn before the inside is done.

There is often a sudden increase in the volume of yeast dough during the first 10 to 12 minutes of baking. This sudden increase — called **oven spring** — is caused by gases that expand when heated and the continuing action of the yeast. When the dough reaches 140 degrees F, the yeast is destroyed.

Bread is done when the crust is golden-brown and the loaf has a hollow sound when tapped on the top crust. The loaf pulls away slightly from the sides of the pan and usually drops out of the pan without help. Remove the bread from the baking pans immediately to prevent the crust from getting soggy. Cool the uncovered loaves on wire cooling racks.





## Evaluating Yeast Breads — How Did You Do?

Evaluate your bread when it is done baking. How did you do? Bread making is like an art — the more you do it, the better you become. Keep practicing!

- ✓ **Appearance** The bread should have...
  - \_\_\_ An evenly rounded top
  - \_\_\_ A symmetrical, well-shaped, uniform size
  - \_\_\_ A smooth, tender crust
  - \_\_\_ Good volume
  - \_\_\_ A uniform golden-brown color
  - \_\_\_ No streaks
- ✓ **Texture** The bread should be...
  - \_\_\_ Free from large air bubbles
  - \_\_\_ Moderately fine and even-grained
  - \_\_\_ Soft and free of crumbliness
- ✓ **Crumb** The bread should be...
  - \_\_\_ Moist and silky
  - \_\_\_ Tender to the touch
  - \_\_\_ Elastic in quality
- ✓ **Flavor** The bread should have...
  - \_\_\_ A pleasing, well-baked flavor
  - \_\_\_ A nutlike or wheaty taste

## Evaluating Yeast Rolls — How Did You Do?

- ✓ **Appearance** The rolls should be...
  - \_\_\_ Attractively shaped, plump, and all the same size
  - \_\_\_ Golden-brown and a bit lighter on the sides than on top
- ✓ **Texture** \_\_\_ The rolls should have crisp, tender, and thin crusts
- ✓ **Crumb** The rolls should be...
  - \_\_\_ Soft and slightly moist
  - \_\_\_ Tender so they tear or break easily
  - \_\_\_ Even, with all air cells about the same size
- ✓ **Flavor** \_\_\_ The rolls should have a pleasant, nutty flavor

## Troubleshooting Problems

Problem	Reason
Uneven shape	Improper shaping Too much or too little dough for pan
Crust is burned	Baking time was too long Oven temperature was too high
Pale crust	Baking time was too short Oven temperature was too low Too much salt Too much sugar
Cracked crust	Improper kneading Rising period was too short Cooled too quickly
Coarse texture	Rising period was too long Oven temperature was too low or too high Poor quality flour Insufficient kneading
Heavy	Poor quality flour Improper rising Yeast was partially destroyed
Crumbly	Flour with low gluten content Dough too stiff
Yeasty flavor	Rising period was too long Temperature during rising was too high
Sour flavor	Rising period too long Oven temperature was too low Baking time was too short



## Storing Yeast Breads and Dough

When bread is thoroughly cooled, place it in a plastic bag and store at room temperature. Bread gets stale more quickly when it is refrigerated. However, in humid weather, bread may mold after a few days at room temperature. It should be refrigerated or frozen if not used within a few days.

For long storage, wrap the cooled bread in aluminum foil, heavy-duty freezer wrap, or freezer bags, and freeze. Bread keeps for about three months stored at 0 degrees F. After three months, the bread begins to lose some of its eating quality.

You can also store yeast bread dough in the freezer. After the dough has risen in the bowl, punch it down, wrap it loosely in a freezer bag, and seal tightly. The dough may expand a bit before it freezes. You should check the dough after a few hours in the freezer to make sure the bag didn't split due to the expanding dough. Freeze the dough at 0 degrees F for up to two weeks. To use, defrost the dough overnight in its original freezer bag in the refrigerator. After defrosting the dough, unwrap it, knead out any air, and shape into loaves or rolls. Allow the dough to rise and then bake as usual.

You can also store yeast dough in the refrigerator. Prepare the dough as usual to the point of shaping. Lightly coat the top of the dough with nonstick cooking spray and cover the dough to prevent a dry crust from forming on the top. The dough will keep one to two days in the refrigerator, though it may need to be punched down occasionally. Allow the dough to reach room temperature before shaping it into loaves or rolls.

## Equipment for Making Yeast Breads

Typically, you will use the same equipment for most yeast bread recipes. Gather the following equipment before you begin preparing the recipe.

- Mixing bowls, large and small
- Measuring cups and spoons
- Instant read food thermometer
- Rolling pin
- Bread pans
- Baking sheets
- Mixing spoons
- Rubber scraper
- Spatula
- Knife
- Nonstick cooking spray





# EXPERIMENT WITH FLOUR

After making some loaves of bread, try this food science experiment and explain the results. If you need help understanding the results, refer back to the Yeast Breads section beginning on page 21. Your Project Helper can help you understand the results too.

**Purpose:** To determine how different flours affect the taste, texture, and volume of yeast breads.

## Materials Needed

Ingredients and equipment to prepare one recipe of Basic Bread and variations with different flours such as, wheat, rye, bread flour, etc.

## Procedure

1. Prepare Basic Bread recipe as directed (refer to page 41).
2. Prepare at least two variations of the recipe substituting whole wheat, rye, bread, or other flour for one-half of the all-purpose flour.
3. When completely cooled, compare the loaves of bread and record what you observe.

- What do you observe about the volume of each loaf of bread?

---

---

---

---

- Use a bread knife to slice each loaf in two. What do you observe about the texture of each loaf?

---

---

---

---



- Taste each loaf. Do you taste any differences between the loaves? \_\_\_\_\_  
Explain.

---

---

---

- What effect, if any, does the type of flour have on the volume of bread?

---

---

---

- What effect, if any, does the type of flour have on the texture of bread?

---

---

---

- What effect, if any, does the type of flour have on the taste of bread?

---

---

---

- Which loaf of bread do you prefer? \_\_\_\_\_  
Why?

---

---

---

- How will you apply this information when making bread in the future?

---

---

---





# EXPERIMENT WITH KNEADING



Many home bakers enjoy kneading dough because it can be very relaxing. Whether you enjoy it or not, kneading is an important part of making yeast breads. Do you know why? This food science experiment will help you understand how kneading affects yeast breads. If you need help understanding the results, refer to the Yeast Breads section beginning on page 21 or ask your Project Helper for help.

**Purpose:** To determine how kneading affects the texture, volume, and taste of yeast breads.

## Materials Needed

Ingredients and equipment to prepare one recipe of Basic Bread, 3 small mixing bowls, nonstick cooking spray, 3 clean and damp dishtowels, 3 small baking pans

## Procedure

1. Prepare Basic Bread recipe as directed (refer to page 41), but before kneading bread, divide it into 3 equal portions.
2. Lightly coat 3 small mixing bowls with nonstick cooking spray. Label bowls #1 through #3.
3. In bowl #1, place one portion of unkneaded dough. Lightly coat dough with nonstick cooking spray, cover bowl with dishtowel, and set in warm place until dough has doubled in size.
4. Knead one portion of dough for 4 minutes. Place dough in bowl #2. Lightly coat dough with nonstick cooking spray, cover bowl with dishtowel, and set in warm place until dough has doubled in size.
5. Knead last portion of dough for 10 minutes. Place dough in bowl #3. Lightly coat dough with nonstick cooking spray, cover bowl with dishtowel, and set in warm place until dough has doubled in size.
6. When each portion of dough has doubled in size, follow directions in Basic Bread recipe for shaping, rising, and baking bread. Remove loaf from baking pan, place on cooking rack, and label with #1, #2, or #3.
7. When completely cooled, compare the three loaves of bread and record what you observe.
  - What do you observe about the volume of each loaf of bread?

---

---

---

- Use a bread knife to slice each loaf in two. What do you observe about the texture of each loaf?

---

---

---

- Taste each loaf. Do you taste any differences between the loaves?

---

---

---

- What effect, if any, does kneading have on the volume of bread?

---

---

---

- What effect, if any, does kneading have on the texture of bread?

---

---

---

- What effect, if any, does kneading have on the taste of bread?

---

---

---

- How will you apply this information when making bread in the future?

---

---

---







# EXPERIMENT WITH YEAST

After reading about the bread making process, try these food science experiments and explain the results for each experiment. If you need help understanding the results of an experiment, refer to the Yeast Breads section beginning on page 21. Your Project Helper can help you understand the results too.

## Experiment 1

**Purpose:** To determine the effects of temperature on yeast growth

### Materials Needed

Small funnel, yeast, sugar, water, 4 clean bottles with narrow tops, food thermometer, balloons, pencil, and paper (Note: if you don't have a small funnel, roll a plain piece of paper into the shape of a funnel. Place the narrow end into the bottle.)

### Procedure

1. Use the funnel and pour 1 teaspoon of yeast and 1 teaspoon of sugar into each bottle.
2. Label the bottles #1 through #4.
3. Add 2 tablespoons water to each bottle as follows.



Note: rather than heating the small amount of water needed, you may want to heat about 1/2 cup of water to 105 degrees F to 115 degrees F in the microwave. After measuring out the needed 2 tablespoons, return remaining water to microwave and heat to boiling.

- Bottle #1 — water heated to 105 degrees F to 115 degrees F
- Bottle #2 — boiling water
- Bottle #3 — cold water
- Bottle #4 — cold water

4. Cover the bottles with balloons and shake gently to mix the ingredients.



5. Leave bottles #1, #2, and #3 at room temperature.
6. Place bottle #4 in the refrigerator.
7. Let bottles stand for 30 minutes. As the yeast begins to grow, it consumes the sugar and releases carbon dioxide and alcohol. The balloons will expand as the carbon dioxide is released. Observe the formation of carbon dioxide in each bottle and answer the following questions.

- What do you observe about each bottle and balloon?

---

---

---

- What caused the differences you see, if any?

---

---

---

- What effect does temperature have on yeast?

---

---

---

- How will you apply this information when using yeast in recipes?

---

---

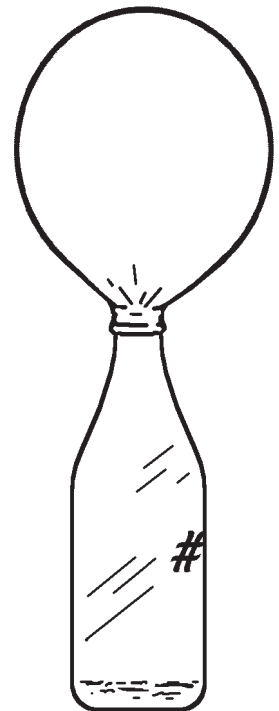
---

---

---

---

---



## Experiment 2

**Purpose:** To determine the effects of sugar and salt on yeast growth

### Materials Needed

Yeast, flour, water, sugar, salt, 3 cups, pencil, paper, and measuring spoons

### Procedure

1. In each cup, place 1 teaspoon of yeast and 2 tablespoons flour; stir. Add 1 tablespoon water to each cup and mix thoroughly.
2. Label the cups #1 through #3.
3. Add 1 tablespoon sugar to cup #2 and mix thoroughly.
4. Add 1 tablespoon sugar and 1 teaspoon salt to cup #3 and mix thoroughly.
5. Let all three cups sit at room temperature for 20 minutes. Compare the mixture in the cups and record what you observe.



- What do you observe about the mixture in each cup?

---

---

---

- What caused the differences you see, if any?

---

---

---

- What effects do sugar and salt have on yeast?

---

---

---

- How will you apply this information when using yeast in recipes?

---

---

---



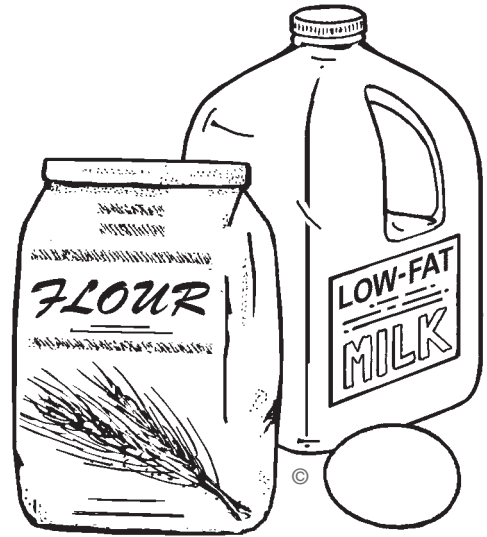
## Yeast Bread Recipes

### Basic Dinner Rolls

*Yield: 24 rolls*

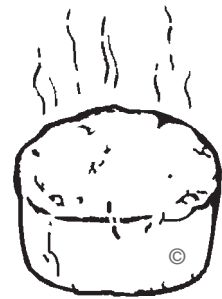
#### Ingredients

- 1/4 cup sugar
- 1 teaspoon salt
- 1 package yeast
- 1 cup milk, heated to 100 to 110 degrees F
- 1/4 cup water, heated to 100 to 110 degrees F
- 1/4 cup butter or margarine
- 1 egg, lightly beaten
- 3 to 4 cups all-purpose flour



#### Order of Work

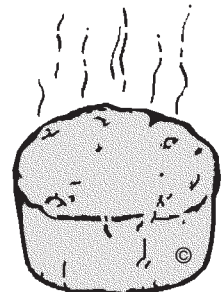
1. Put sugar, salt, and yeast in large mixing bowl. Mix well.
2. Place milk, water, and butter or margarine in microwave-safe bowl. Heat liquids in microwave for 1 to 2 minutes. Remove from microwave and check temperature with food thermometer.
3. Add warm liquids to dry ingredients in mixing bowl and mix well. Let stand for 5 minutes.
4. Add egg and beat until smooth.
5. Add 2 cups of flour to mixture and beat until smooth. Gradually add additional flour until dough is stiff enough to handle.
6. Turn dough out onto a lightly floured surface. Knead dough until it is elastic and does not stick to surface or hands, about 10 minutes.
7. Place dough in a large mixing bowl lightly coated with nonstick cooking spray. Coat top of dough with nonstick cooking spray and cover the bowl with a damp, clean dishtowel. Leave bowl in warm place until dough has doubled in size.
8. Lightly coat baking sheet or muffin pan with nonstick cooking spray.
9. Punch down dough and then form dough into desired shape. Place rolls on prepared baking sheet or in muffin pan. Cover and let rise until doubled in size.
10. Bake rolls at 400 to 425 degrees F until golden brown, 10 to 12 minutes.



**Nutrition Facts per Roll:** 96 calories, 3 g fat, 120 mg sodium, 16 g carbohydrates, 1 g fiber, 3 g protein, 17 mg calcium

#### Variation

**Whole wheat Rolls** — Substitute whole wheat flour for half of the all-purpose flour.

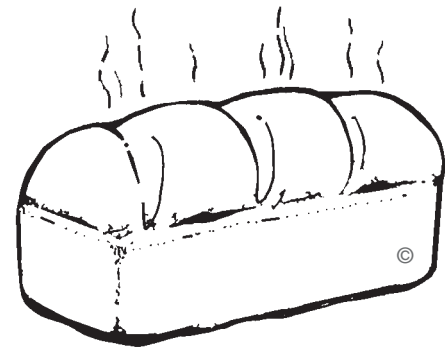


# Basic Bread

*Yield: 1 loaf, 20 slices*

## Ingredients

- 1 1/4 cups water, heated to 100 to 110 degrees F
- 1 package yeast
- 1 tablespoon sugar
- 1 teaspoon salt
- 1 tablespoon vegetable oil
- 3 to 4 cups all-purpose or bread flour



## Order of Work

1. Place water in microwave-safe bowl and heat in microwave for 1 to 2 minutes. Remove from microwave and check temperature with food thermometer.
2. Pour warm water into large mixing bowl and sprinkle yeast over water. Stir in sugar and allow mixture to stand 1 to 2 minutes. Add salt and oil.
3. Add 2 cups flour to mixture. Stir until smooth. Add enough flour to make dough that is soft, but stiff enough to handle.
4. Turn dough out onto a lightly floured surface and knead until dough is smooth, elastic, and does not stick to surface or hands, about 8 to 10 minutes.
5. Place dough in a mixing bowl lightly coated with nonstick cooking spray. Coat top of dough with nonstick cooking spray. Cover the bowl with a damp, clean dishtowel and let dough rise until doubled in size.
6. Lightly coat a 9" x 5" loaf pan with nonstick cooking spray.
7. Punch down dough, turn out on a floured surface, and shape into a loaf. Place in prepared loaf pan. Cover and let rise until doubled in size.
8. Bake at 400 degrees F for 30 to 40 minutes. Bread is done when the crust is golden-brown and the loaf has a hollow sound when tapped on the top crust.
9. Cool bread in pan for about 5 minutes; remove from pan and cool to room temperature on cooling racks.

**Nutrition Facts per Slice:** 95 calories, 1 g fat, 117 mg sodium, 18 g carbohydrates, 1 g fiber, 3 g protein, 4 mg calcium

## Variations

**Two Loaves** — Double all ingredients except yeast. Divide dough into two pieces; shape into two loaves.

**Whole Wheat Bread** — Substitute whole wheat flour for half of the all-purpose flour. For best quality, use half whole wheat and half bread flour.

**Rye Bread** — Substitute rye flour for half of the all-purpose flour. For best quality, use half rye flour and half bread flour.

**Milk as the Liquid** — Heat milk in microwave to 100 to 110 degrees F. Combine yeast with warm milk before adding salt and oil.



# Basic Sweet Dough

*Yield: 24 rolls*

## Ingredients

- 1/2 cup sugar
- 2 teaspoons salt
- 2 packages yeast
- 1 cup milk, heated to  
100 to 110 degrees F
- 1/2 cup water, heated to  
100 to 110 degrees F
- 1/4 cup oil or melted butter
- 2 eggs
- 1 teaspoon grated lemon rind,  
if desired
- 5 cups all-purpose flour,  
approximately



## Order of Work

1. Put sugar, salt, and yeast in mixing bowl. Mix well.
2. Place milk and water in microwave-safe bowl. Heat in microwave for 1 to 2 minutes. Remove from microwave and check temperature with food thermometer. Pour warm liquids over ingredients in mixing bowl and stir well. Allow mixture to stand 1 to 2 minutes.
3. Add oil or butter, eggs, and lemon rind to mixture. Beat until smooth.
4. Add 2 cups of flour to mixture and beat until smooth.
5. Add enough flour to make dough that is soft, but stiff enough to handle.
6. Turn dough out onto a lightly floured surface and knead until dough is smooth, elastic, and does not stick to surface or hands, about 8 to 10 minutes.
7. Place dough in a mixing bowl lightly coated with nonstick cooking spray. Spray top of dough with nonstick cooking spray and cover with damp, clean dishtowel. Let rise in a warm place until doubled in size, about 1 hour.
8. Punch dough down and let stand 10 minutes.
9. Form dough into desired shape. Place rolls on prepared baking sheet or in muffin pan. Cover and let rise until doubled in size.
10. Bake at 350 degrees F for 30 minutes for coffeecakes, 25 minutes for pan rolls, or 20 minutes for individual rolls.

**Nutrition Facts per Roll:** 135 calories, 3 g fat, 206 mg sodium, 3 g carbohydrates, 1 g fiber, 4 g protein, 18 mg calcium

# Cinnamon Rolls

*Yield: 24 rolls*

## Ingredients

- 1 prepared basic sweet dough recipe
- 1/2 cup butter or margarine, melted
- 1 cup sugar
- 1 1/2 tablespoons cinnamon
- 2/3 cup raisins, if desired
- 1 prepared basic icing recipe, if desired



## Order of Work

1. Lightly coat two muffin pans or two 9" x 13" baking pans with nonstick cooking spray.
2. Divide the sweet dough in half. Roll out each half into a 1/2-inch thick rectangle, about 12" x 12."
3. Brush each rectangle lightly with melted butter or margarine. In a small bowl, mix together sugar and cinnamon. Sprinkle about half of sugar-cinnamon mixture over each half of dough. Top each half with 1/3 cup raisins, if desired.
4. Roll up each half like a jellyroll to form a 12-inch roll. Seal edges firmly.
5. Cut each roll into 1-inch slices. Place each slice cut side up in prepared muffin pans or baking pan so that slices are about 1 inch apart. If using 9" x 13" baking pans, place 12 rolls in each pan.
6. Cover with damp, clean dishtowel and let rise until doubled in size.
7. Bake at 375 degrees F for about 25 minutes, or until golden brown.  
Top with basic icing if desired (recipe follows).

**Nutrition Facts per Roll with Icing and Raisins:** 257 calories, 11g fat, 262 mg sodium, 38 g carbohydrates, 1 g fiber, 4 g protein, 28 mg calcium

**Nutrition Facts per Roll, no Icing or Raisins:** 224 calories, 11 g fat, 261 mg sodium, 29 g carbohydrates, 1 g fiber, 4 g protein, 25 mg calcium

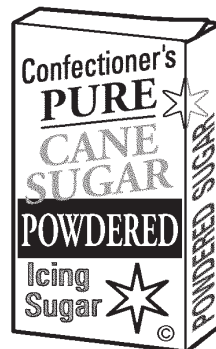


# Basic Icing

*Yield: 24 servings*

## Ingredients

- 1 cup sifted powdered sugar
- 1 tablespoon milk
- 1/4 teaspoon vanilla



## Order of Work

In small mixing bowl, combine ingredients and beat until smooth. Spread on cooled rolls.

**Nutrition Facts per Serving:** 22 calories, less than 1 g fat, less than 1 mg sodium, 6 g carbohydrates, 0 g fiber, less than 1 g protein, 1 mg calcium



# Cinnamon Twists

*Yield: 12 rolls*

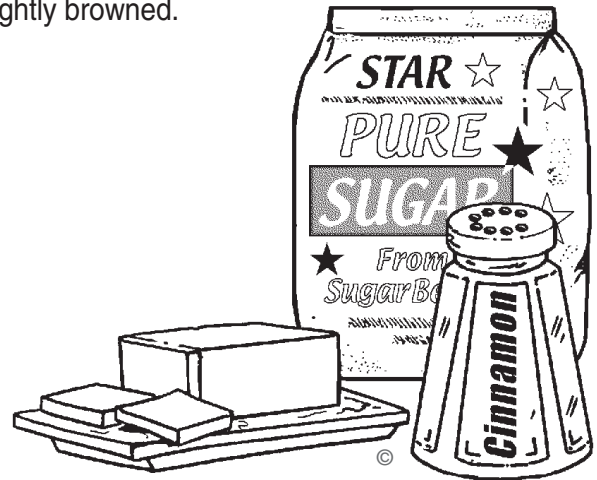
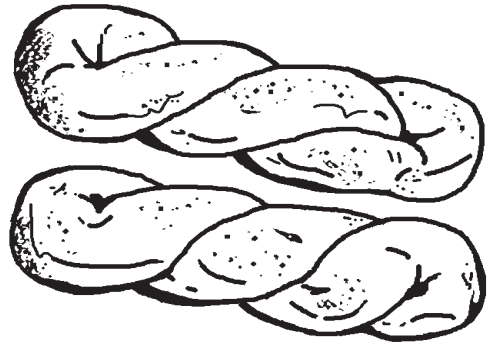
## Ingredients

1/2 prepared sweet dough recipe  
 1/4 cup butter, melted  
 1/2 cup sugar  
 2 teaspoons cinnamon

## Order of Work

1. Lightly coat baking sheet with nonstick cooking spray.
2. Roll prepared dough into a square about 12" x 12."
3. Brush dough with melted butter. Mix sugar and cinnamon in a small mixing bowl. Sprinkle center third of dough with 3 tablespoons of sugar-cinnamon mixture. Fold one third of dough over center third. Sprinkle with 3 tablespoons of the sugar-cinnamon mixture. Fold remaining third of dough over the two layers.
4. Cut roll into 1-inch strips. Hold each end of a strip and twist tightly in opposite directions. Firmly press ends together.
5. Place on prepared baking sheet about 2 inches apart. Brush top with melted butter and sprinkle with sugar-cinnamon mixture.
6. Cover. Let rise in warm place until doubled in size.
7. Bake at 350 degrees F about 25 minutes or until lightly browned.
8. Top with basic icing if desired.

**Nutrition Facts per Roll:** 180 calories, 7 g fat, 240 mg sodium, 29 g carbohydrates, 1 g fiber, 4 g protein, 26 mg calcium





# Swedish Tea Ring

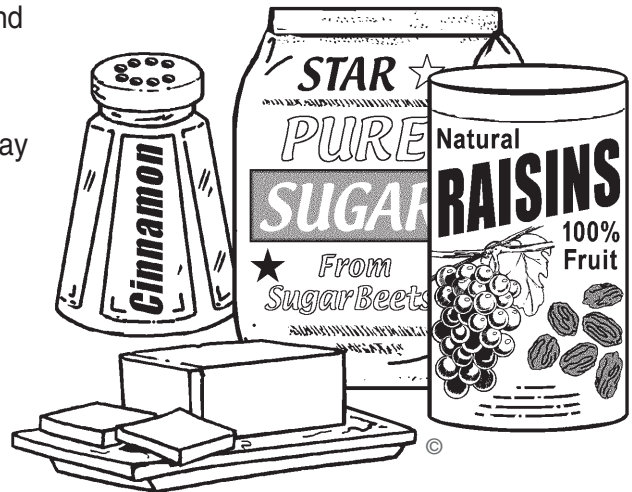
*Yield: 12 servings*

## Ingredients

- 1/2 prepared sweet dough recipe
- 3/4 cup sugar
- 2 teaspoon cinnamon
- 1/2 cup melted butter
- 1/3 cup raisins
- 1 prepared basic icing recipe

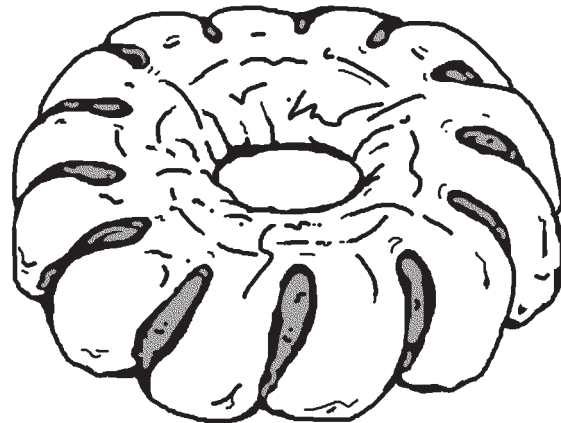
## Order of Work

1. Lightly coat a 12" x 17" baking sheet with nonstick cooking spray.
2. Roll out dough to a 12" x 18" rectangle about 1/2-inch thick.
3. Brush lightly with melted butter. In a small bowl, mix together sugar and cinnamon. Sprinkle sugar-cinnamon mixture and raisins evenly over the dough.
4. Roll up like a jellyroll starting with one of the long edges, forming an 18-inch roll.
5. Place roll on prepared baking sheet with sealed edge down.
6. Form rolled dough into a circle. Join the ends and seal.
7. With a sharp knife or scissors (coated with nonstick cooking spray), make cuts 2/3 of the way through the ring at one-inch intervals.
8. Turn each section to the side.
9. Cover with damp, clean dishtowel and let rise until doubled in size.
10. Bake at 375 degrees F for about 25 minutes or until golden brown.
11. Top with basic icing.



### **Nutrition Facts per Slice with Icing and Raisins:**

286 calories, 11 g fat, 262 mg sodium, 46 g carbohydrates,  
1 g fiber, 4 g protein, 28 mg calcium

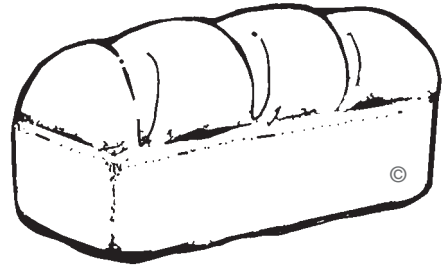


# White Batter Bread

*Yield: 1 loaf, 20 slices*

## Ingredients

4 to 4 1/2 cups flour  
3 tablespoons sugar  
1 tablespoon salt  
2 packages yeast  
1 cup milk, heated to 120 to 130 degrees F  
1 cup water, heated to 120 to 130 degrees F  
2 tablespoons margarine



## Order of Work

1. In a large mixing large bowl, thoroughly mix 1 1/2 cups flour, sugar, salt, and yeast.
2. Combine milk, water, and margarine in a microwave-safe bowl. Heat in microwave for 1 to 2 minutes. Remove from microwave and check temperature with food thermometer.
3. Gradually add the warm liquid ingredients to dry ingredients and beat 2 minutes at medium-speed of electric mixer, scraping bowl occasionally.
4. Add 1 cup flour, or enough to make a thick batter. Beat at high-speed 2 minutes, scraping bowl occasionally. Stir in enough additional flour to make a stiff batter. Beat until well blended.
5. Cover with a damp, clean dishtowel. Let rise in warm place, free from drafts, until doubled in size, about 40 minutes.
6. Lightly coat a 9" x 5" x 3" loaf pan with nonstick cooking spray.
7. Stir batter down. Beat vigorously, about 30 seconds. Turn into prepared loaf pan.
8. Bake at 375 degrees F for 40 to 50 minutes. Bread is done when the crust is golden brown and the loaf has a hollow sound when tapped on the top crust. Remove from pan and cool on wire rack.

**Nutrition Facts per Slice:** 112 calories, 2 g fat, 370 mg sodium, 21 g carbohydrates, 1 g fiber, 3 g protein, 19 mg calcium

## Variations

**Herb Batter Bread** — Combine 1/4 teaspoon dried basil, 1/4 teaspoon dried oregano, and 1/4 teaspoon dried thyme with the flour, sugar, salt, and yeast. Then proceed with recipe as directed.

**Cheese Bread** — Add 1 cup grated sharp Cheddar cheese along with last addition of flour.



# Pizza

*Yield: 2 12-inch pizzas (each pizza = 4 slices, total 8 slices)*

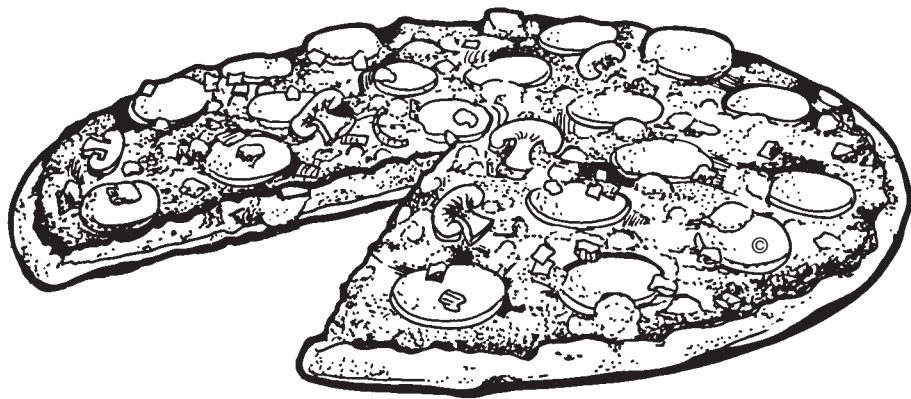
## Ingredients

- 1 prepared basic bread recipe, or variation
- 1 jar (8 oz.) pizza sauce
- 16 ounces mozzarella cheese, shredded
- Prepared sausage, ham, pepperoni, or hamburger, if desired
- Vegetables, diced or sliced, if desired

## Order of Work

1. Prepare the one-loaf, basic bread recipe (or a variation) to make two 12-inch pizza crusts. Mix the dough as directed; knead lightly. Let rise about 30 minutes.
2. Lightly coat pizza pans with nonstick cooking spray.
3. Punch down dough and roll it out to fit pizza pans. Place dough on prepared pizza pans.
4. For a soft crust, lightly coat the dough with pizza sauce. Sprinkle one-half of the cheese over each pizza. Add other toppings as desired. Bake pizza at 450 degrees F for about 15 minutes or until cheese is lightly browned and bubbly.
5. If a crisp crust is preferred, bake the crust for 7 minutes at 450 degrees F. Remove the pre-baked pizza crusts from the oven and then lightly coat with pizza sauce. Add other toppings as desired. Sprinkle one-half of the cheese over each pizza. Return the pizza to the oven and bake until the cheese is lightly browned and bubbly.

**Nutrition Facts per Slice without Meat or Vegetables:** 416 calories, 15 g fat, 819 mg sodium, 50 g carbohydrates, 3 g fiber, 22 g protein, 411 mg calcium

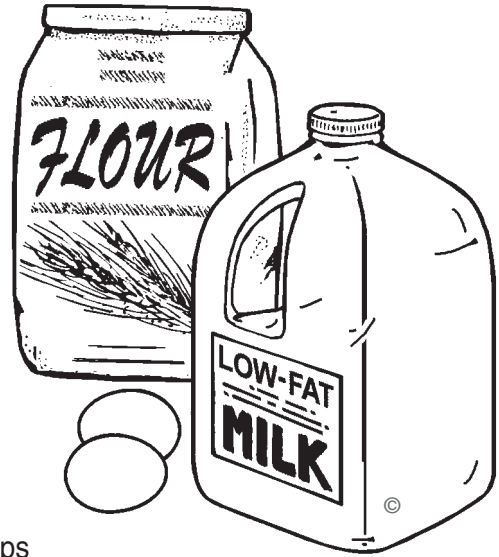


# Soft Pretzels

*Yield: 14 pretzels*

## Ingredients

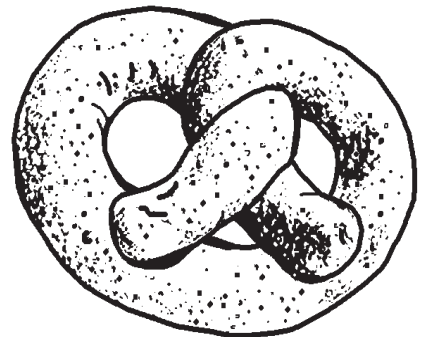
4 to 4 1/2 cups all-purpose flour  
 2 tablespoons sugar  
 1 package dry active yeast  
 1 1/2 teaspoons salt  
 1 cup low-fat milk  
 1/2 cup water  
 2 tablespoons vegetable oil  
 2 eggs, lightly beaten  
 Poppy seed, sesame seed, coarse salt,  
 or grated Parmesan cheese



## Order of Work

1. Preheat oven to 350 degrees F. In large bowl, combine 2 cups flour, sugar, undissolved yeast, and salt.
2. Heat milk, water, and oil until very warm (120 to 130 degrees F).
3. Stir milk mixture into flour mixture until well combined.
4. Add enough of the remaining flour to make a soft dough.
5. Knead on floured surface until smooth and elastic, about 4 to 6 minutes.
6. Cover; let rest on floured surface 10 minutes.
7. Divide dough into 14 equal pieces.
8. Roll each piece into a 20-inch rope.
9. Cover; let rest 5 to 10 minutes until risen slightly.
10. Shape into pretzels by curving ends of each rope to make a circle; cross ends at top. Twist ends once and lay over bottom of circle.
11. Place pretzels on two greased baking sheets.
12. Brush with beaten eggs. Bake for 15 minutes.
13. Remove from oven; brush again with eggs and sprinkle with poppy seeds, sesame seeds, coarse salt, or grated cheese.
14. Return to oven and bake for 15 minutes or until lightly browned.  
 Remove pretzels from baking sheet, let cool on racks.

**Nutrition Facts per Pretzel:** 175 calories, 4 g fat, 270 mg sodium, 29 g carbohydrates, 1 g fiber, 5 g protein, 47 mg calcium

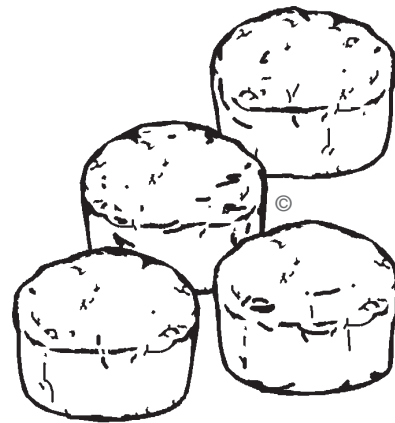


# Refrigerator Rolls

*Yield: 30 rolls*

## Ingredients

- 1/2 cup sugar
- 2 teaspoons salt
- 2 packages yeast
- 1 1/2 cups milk, heated to 100 to 110 degrees F
- 1/3 cup water, heated to 100 to 110 degrees F
- 1/4 cup butter or margarine
- 1 egg
- 5 1/2 cups all-purpose flour, approximately

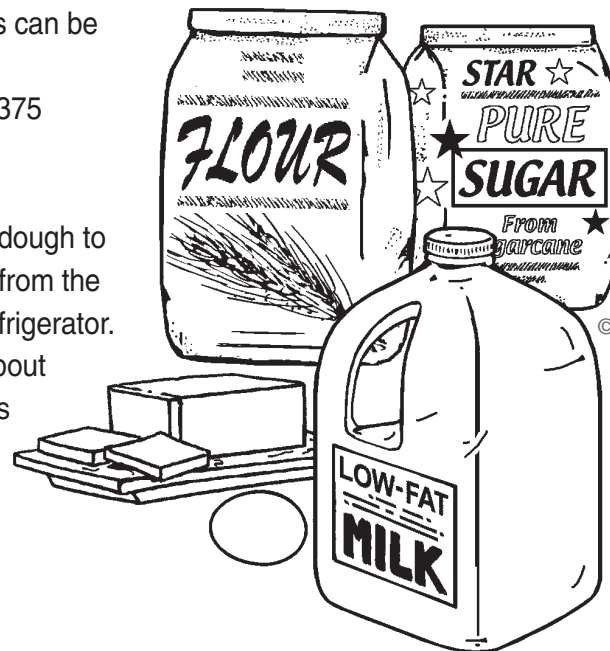


## Order of Work

1. Add sugar, salt, and yeast to mixing bowl. Stir until blended.
2. Place milk, water, and butter or margarine in microwave-safe bowl. Heat in microwave for 1 to 2 minutes. Remove from microwave and check temperature with food thermometer.
3. Add warm liquids to mixing bowl and stir well. Let stand for 1 to 2 minutes.
4. Add egg and beat until smooth.
5. Add 2 cups of flour to mixture and beat until smooth. Gradually add enough flour to make dough that is soft, but stiff enough to handle.
6. Turn dough out onto a lightly floured surface. Knead until smooth and elastic, about 8 to 10 minutes.
7. Place in mixing bowl lightly coated with nonstick cooking spray. Spray top of dough lightly with nonstick cooking spray. Cover and refrigerate. Dough may be kept refrigerated for up to 2 days.
8. Punch down dough. Let it stand at room temperature for about one hour. Shape into rolls. If desired, rolls can be refrigerated at this point to bake later.
9. Let rolls rise until doubled in size. Bake rolls at 375 degrees F for 20 minutes or until golden brown.

If you only want to use a portion of the refrigerated dough to make rolls, remove the amount of dough you need from the refrigerator. Immediately return unused dough to refrigerator. Let dough for rolls stand at room temperature for about an hour. Then shape into rolls. Let rise, and bake as directed above.

**Nutrition Facts per Roll:** 113 calories, 2 g fat, 176 mg sodium, 20 g carbohydrates, 1 g fiber, 3 g protein, 19 mg calcium



## Automatic Bread Machines

A bread machine takes much of the work out of making bread, but allows you to enjoy the fresh flavor of homemade bread. All you do is measure the ingredients and start the machine. Within hours, you have a loaf of freshly baked bread.

Follow these five steps to make bread successfully using a bread machine:

1. Know your bread machine and how it works.
2. Understand your recipe before you begin.
3. Use fresh, high-quality ingredients.
4. Measure ingredients precisely using appropriate measuring equipment.
5. Organize ingredients in order of use and recheck to ensure you added all of the ingredients.

Most bread machines have a delay start/timed-bake feature. This feature is standard on most bread machines and allows you to load the ingredients when convenient and delay the start of the bread making process. The amount of timed delay varies depending on the bread machine. Fourteen hours is the maximum delay. **To prevent food safety problems do not use the delayed start with recipes that call for milk, eggs, or other perishable ingredients. Do not allow perishable ingredients to sit at room temperature for more than 2 hours.**

### Adding Ingredients to a Bread Machine

It is important that you add ingredients to the bread machine in a specific order. Follow the instructions for your bread machine for best results. There are two methods for adding ingredients to the bread machine — dry ingredients first or wet ingredients first. If the machine calls for dry ingredients first, add the yeast first and then the other dry ingredients. Add the liquids last.

If the machine calls for wet ingredients first or if you are using a timed-bake feature, add the wet ingredients to the pan first and the yeast last. This prevents the yeast from being activated until the ingredients are mixed.

**Bread flour** is often used in bread machines because it has more gluten-forming protein than all-purpose flour. Some bread machine recipes call for added gluten flour, especially recipes that use whole wheat flour or flour made from other grains to ensure a good texture. **Gluten flour** is available in one-pound packages at most grocery stores. It is usually found with the other flours.



# Bread Machine Honey & Wheat Rolls

*Yield: 12 rolls*

## Ingredients

1 cup water  
1/4 cup honey  
1 egg  
2 cups bread flour  
1 cup whole wheat flour  
1 teaspoon salt  
2 teaspoons yeast

## Order of Work

1. Follow instructions for the dough setting on your bread machine.
2. Remove dough from bread machine when the dough cycle is complete.
3. Shape rolls as desired. Place in baking pan lightly coated with nonstick cooking spray.
4. Cover with damp, clean dishtowel. Let rise until doubled in size.
5. Bake 350 degrees F for 15 to 20 minutes or until golden brown.

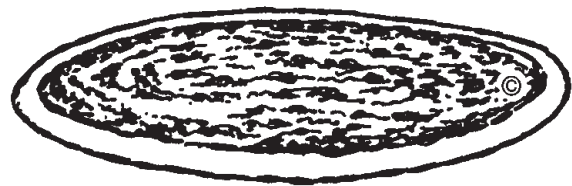
**Nutrition Facts per Roll:** 147 calories, 1 g fat, 202 mg sodium, 30 g carbohydrates, 2 g fiber, 5 g protein, 10 mg calcium

# Bread Machine Pizza Crust

*Yield: 1 pizza, about 12 slices*

## Ingredients

1 cup water  
2 tablespoons oil  
3/4 teaspoon salt  
3 cups bread flour  
1 tablespoon cornmeal  
2 teaspoons yeast



## Order of Work

1. Follow instructions for the dough setting on your bread machine.
2. Remove dough from bread machine when the dough cycle is complete.
3. Lightly coat 12-inch or 14-inch pizza pan with nonstick cooking spray. Spread dough on pizza pan. Top as desired.
4. Bake at 450 degrees F for about 15 minutes.

**Nutrition Facts per Slice:** 149 calories, 3 g fat, 147 mg sodium, 26 g carbohydrates, 1 g fiber, 4 g protein, 6 mg calcium



# Bread Machine Millet Bread

*Yield: one 1 1/2-pound loaf, about 24 slices*

## Ingredients

1 cup water  
2 tablespoons oil  
1/4 cup honey  
1 1/2 cups bread flour  
1 tablespoon gluten flour  
3/4 cup whole wheat flour  
1/3 cup millet  
1/3 cup corn meal  
1 teaspoon salt  
1 3/4 teaspoons yeast

## Order of Work

1. Place ingredients in the pan according to the instructions for the bread machine.
2. Select basic bread cycle.
3. When cycle is complete, remove bread pan from machine.
4. Remove bread from pan and cool on a wire rack.

**Nutrition Facts per Slice:** 80 calories, 3 g fat, 98 mg sodium, 15 g carbohydrates, 1 g fiber, 2 g protein, 3 mg calcium

### Millet

**Millet** — a cereal grass used mainly as birdseed in this country — is a staple for almost one third of the world's population particularly in Asia and Africa.

**Millet** is rich in protein and can be prepared like rice and used as a hot cereal. Millet adds crunch to this bread.



## Breakfast Grains

You have probably heard the saying that breakfast is the most important meal of the day. Have you ever wondered if that is true? It is! Eating breakfast recharges your brain and your body after many hours of not eating. Studies show that kids who skip breakfast are tardy and absent from school more often than kids who eat breakfast on a regular basis.

Some people skip breakfast to lose weight, but the skipped meal is more likely to cause weight gain. Studies show that overweight children, teens, and adults are less likely to eat breakfast. Breakfast skippers tend to eat more food than usual at the next meal or nibble on high-calorie snacks.

Breakfast should provide about one-third of your day's calories and include many of the food groups from MyPyramid. One of the most popular food groups at breakfast is the Grain group. Let's look at the types of grains that are used in breakfast foods.

Grains are seeds from cereal plants, which are members of the grass family. There are many different types of grains. Here are some grains and grain products you might like to try.

**Barley** is a small, nut-flavored grain that is often used in soups. Rolled or flaked barley is used like oats and added to cereals. Pearl barley is processed to remove more layers to make it less chewy. This process also removes much of the fiber from the grain.

**Buckwheat** is used to make buckwheat pancakes. Many high-fiber foods we eat for breakfast contain buckwheat. Kasha is roasted cracked or whole buckwheat.

**Bulgur** is made from whole wheat kernels that have been steamed, dried, and crushed. It is often used in spaghetti sauces, chili, and veggie burgers, but can also be eaten as a breakfast cereal.

**Cream of Wheat**, also called Farina, is made from ground wheat.

**Grits** are a Native American food that are also a favorite food in the southern United States. Grits are made from small broken grains of corn.



**Oats** are a flavorful grain that is often used in cereals. They also add texture to breads, cookies, and other baked goods. Oats do not lose their nutritional value when they are rolled, cut, or ground because the bran and germ stay on the kernel. Listed below are the different types of oats you can purchase:

**Steel-cut** — hulled, roasted oats are cut between steel blades.

**Old-Fashioned** — hulled grain is steamed and rolled into flat flakes.

**Quick-Cooking** — old-fashioned oats are finely cut to reduce cooking time.

**Instant** — oats are partially cooked and rolled very thin.

**Oat bran** — is the outer layer of the grain, which is found in rolled and steel-cut oats. It can also be added to foods to provide additional fiber.



**Rye** is used in breakfast cereals and crackers. Rolled rye can be substituted for rolled oats in cereals and casseroles.

## Fiber

Fiber is the part of food that our bodies use to help keep food moving through the digestive system. Fiber is found in many types of foods — whole grain breads and cereals, fruits, and vegetables.

It is recommended that you eat at least 3 ounces of whole grain cereals, breads, crackers, pasta, or brown rice every day. An active youth who consumes 2000 calories a day should eat about 28 grams of fiber. Foods that contain three grams or more of fiber per serving are good sources of fiber — that includes most whole grain foods. Look at the Nutrition Facts Label on the food package to see how much fiber a food contains. Fiber is listed on the food label under Carbohydrates.

There are two types of fiber: soluble and insoluble. Soluble fiber dissolves in water. Insoluble fiber does not dissolve in water, but it does hold on to water and that helps digestion and prevents constipation.

The type of fiber determines the texture of the food. Insoluble fiber produces the tough, chewy feel of popcorn, apple skin, or nuts. Other foods that contain insoluble fiber are wheat bran, whole grain foods (breads, cereals, rice, and pasta), seeds, and some vegetables.

Soluble fiber increases the rate at which food passes through the digestive system. Some researchers believe this helps control cholesterol and glucose levels in the blood. Good sources of soluble fiber include oats, barley, dried beans and peas (legumes), and some vegetables and fruits.

## Ingredients Label

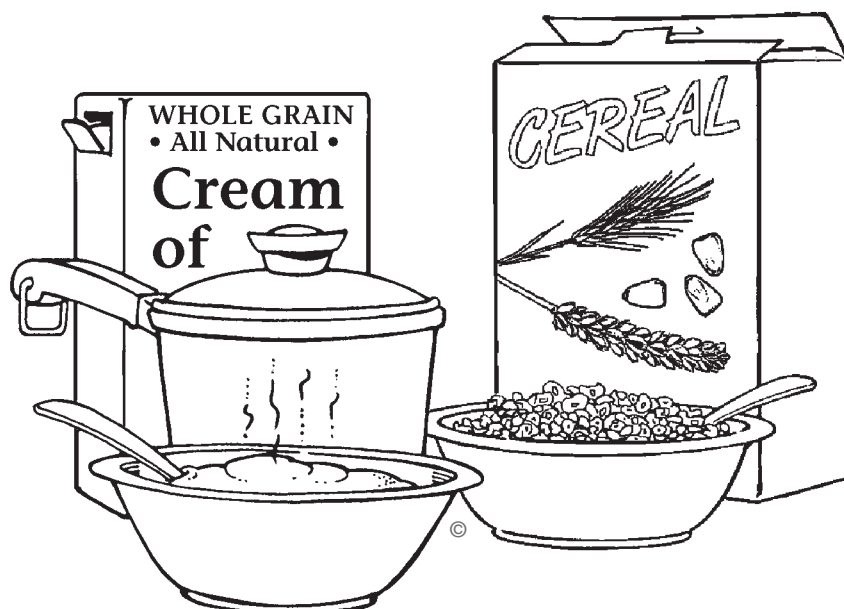
Including whole grain foods in your diet helps you eat the daily recommended amount of fiber. Read the ingredient list on the food label to determine if a food contains a whole grain. The ingredients are listed in order by amount. When an ingredient is listed first on the ingredient label that means that there is more of that ingredient in the food than any of the other ingredients. Try to choose foods that list a whole grain as the first ingredient.

Many people believe that you can identify whole grain breads and baked goods by their color. They assume that the brown color comes from whole grains. That may not be true! Many manufacturers add coloring to breads and other foods to give the look of whole grain. Don't be fooled by the color — read the label!

### INGREDIENTS

Whole wheat flour, water, brown sugar, yeast, wheat gluten, soybean and/or canola oil, salt

The sample label shows whole wheat flour as the first ingredient. That means whole grain flour is the highest amount of ingredients in this food. Check the ingredient lists on your cereal boxes to see if they contain the whole grains and fiber your body needs.



# Baked Oatmeal

*Yield: 8 servings*

Of the whole grains, oatmeal is probably the most commonly used. This recipe is a tasty and convenient way to serve oatmeal. Serve hot or cold. Ingredients like dried fruit and nuts add additional fiber to the recipe.

## Ingredients

- 2 cups uncooked oats  
(old-fashioned or quick-cooking oats)
- 1/2 cup packed brown sugar
- 1/3 cup dried fruit (raisins, cranberries,  
cherries, or other)
- 1/4 cup chopped nuts
- 1 teaspoon baking powder
- 1 1/2 cups milk
- 1/2 cup applesauce
- 2 tablespoons oil or melted butter
- 1 egg

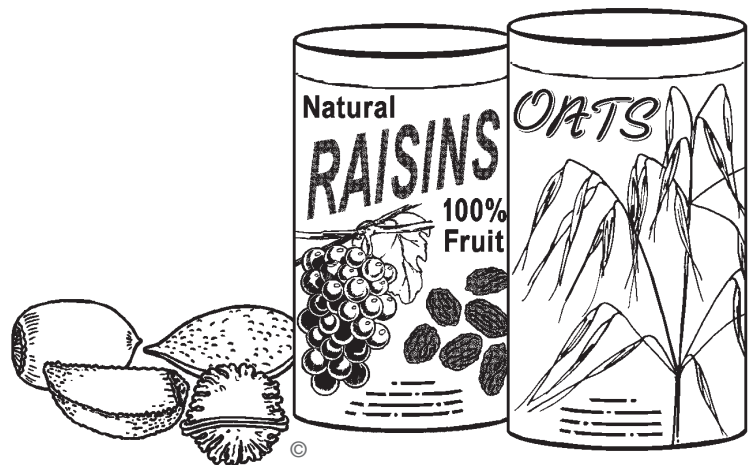
## Equipment

- Nonstick cooking spray
- 8" x 8" baking dish
- Mixing bowls
- Measuring cups and spoons
- Mixing spoon

## Order of Work

1. Preheat oven to 375 degrees F. Lightly coat baking dish with nonstick cooking spray.
2. In mixing bowl, combine oats, brown sugar, dried fruit, nuts, and baking powder.
3. In a separate bowl, combine milk, applesauce, oil or melted butter, and egg.
4. Add milk mixture to oat mixture and mix thoroughly.
5. Pour mixture into prepared baking dish.
6. Bake for 20 minutes or until golden brown on top. Serve warm or cold.

**Nutrition Facts per Serving:** 247 calories, 9 g fat, 110 mg sodium, 37 g carbohydrates, 3 g fiber, 6 g protein, 97 mg calcium



# Waffles

*Yield: 14 4-inch square waffles*

## Ingredients

2 cups all-purpose flour  
1/2 teaspoon salt  
4 teaspoons baking powder  
1 tablespoon sugar  
2 eggs  
2 cups low-fat milk  
6 tablespoons vegetable oil

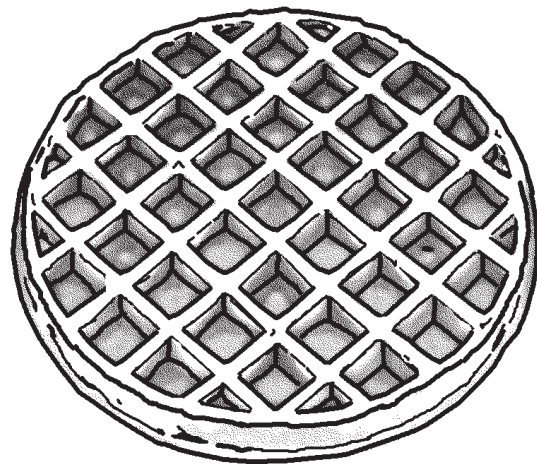
## Equipment

Small bowl  
Mixing bowl  
Whisk or fork  
Measuring cups and spoons  
Mixing spoon  
Waffle iron  
Fork

## Order of Work

1. Measure and mix flour, salt, baking powder, and sugar in small bowl.
2. Put eggs in mixing bowl and beat slightly with whisk or fork. Add milk and oil and stir.
3. Add the flour mixture to the egg mixture and beat until smooth.
4. Preheat waffle iron; follow instructions provided with waffle iron.
5. Pour mixture into middle of waffle iron. Spread to cover surface. Close cover.
6. Bake until steaming stops. Open iron and carefully lift waffle with a clean fork.
7. Serve hot with desired topping — butter and syrup, fruit sauce, or chopped fruit.

**Nutrition Facts per Waffle:** 149 calories, 8 g fat, 271 mg sodium, 17 g carbohydrates, 1 g fiber, 4 g protein, 82 mg calcium



# Homemade Granola

*Yield: 18 1/3-cup servings*

## Ingredients

3 cups uncooked oats  
(old-fashioned or quick-cooking oats)  
1 cup wheat germ  
1/2 cup flaked coconut  
1/2 cup shelled sunflower seeds  
1 cup coarsely chopped nuts  
(walnuts, pecans, almonds)  
1/4 cup vegetable oil  
1/4 cup honey  
2 teaspoons vanilla or almond extract

## Equipment

Mixing bowls, large and small  
Measuring cups and spoons  
Mixing spoons  
15" x 10" x 1" baking pan  
Airtight container or plastic storage bag

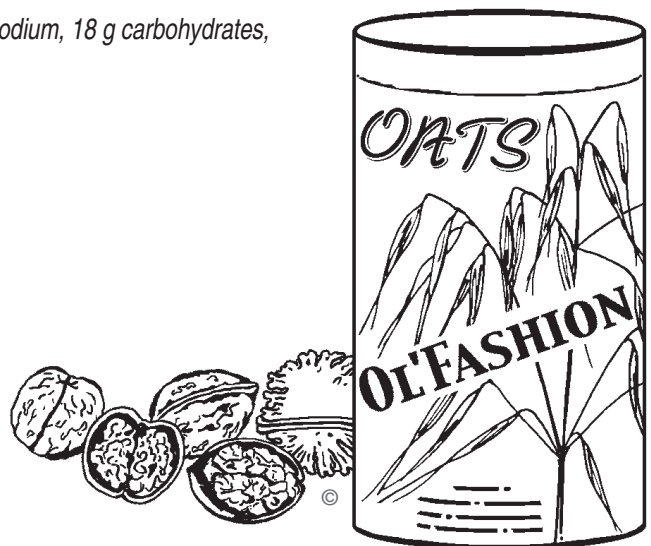
## Note

Use old-fashioned oats to provide more fiber, texture, and taste.

## Order of Work

1. Preheat oven to 275 degrees F.
2. In a large bowl, place oats, wheat germ, coconut, sunflower seeds, and nuts. Mix well.
3. In a separate bowl, mix together oil, honey, and vanilla or almond extract. Pour over oat mixture and stir until evenly mixed.
4. Spread mixture on baking pan. Bake for 1 hour stirring every 15 minutes.
5. Cool and break up lumps. Store in airtight container or plastic bag. If desired, add favorite dried fruit after baking.

**Nutrition Facts per Serving:** 198 calories, 12 g fat, 21 mg sodium, 18 g carbohydrates, 3 g fiber, 5 g protein, 10 mg calcium





# Carol's Breakfast Cookies

*Yield: 24 cookies*

These cookies freeze very well. You can package them individually, pull one out the night before, place in the fridge to defrost, and then slightly warm in the microwave for a great breakfast on the go!

## Ingredients

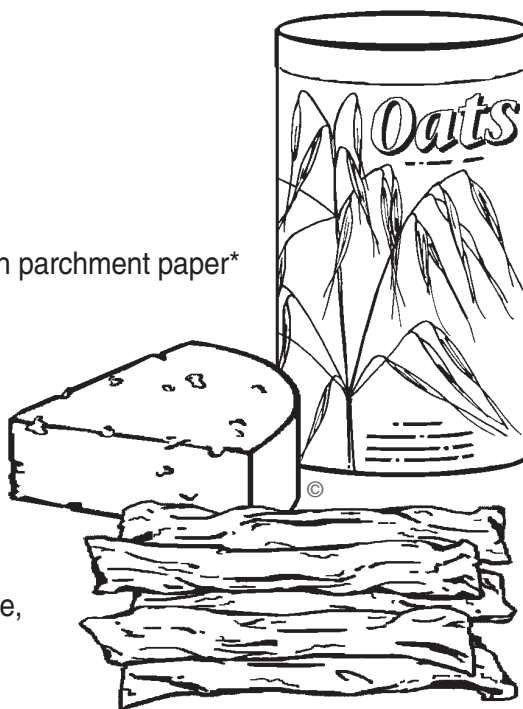
1/2 cup unsalted butter  
 1/2 cup sugar  
 2 tablespoons packed brown sugar  
 1 egg  
 1/2 teaspoon vanilla  
 1/2 teaspoon baking soda  
 1/4 teaspoon salt  
 1/2 teaspoon cinnamon  
 1 cup + 2 tablespoons all-purpose flour  
 5 strips crisp bacon, crumbled  
 1/2 cup raisins  
 2 cups shredded cheddar cheese  
 1/4 cup walnuts, chopped  
 1 cup uncooked oats

## Equipment

Baking sheet  
 Parchment paper\* or  
 nonstick cooking spray  
 Mixer  
 Large and small mixing bowls  
 Mixing spoon  
 Turner  
 Cooling rack

## Order of Work

1. Preheat oven to 350 degrees F. Line a baking sheet with parchment paper\* or lightly coat with nonstick cooking spray.
2. Using a mixer, cream together butter, sugar, and brown sugar. Beat in egg and vanilla.
3. In small mixing bowl, combine baking soda, salt, cinnamon, and flour.
4. Add flour mixture to butter mixture and mix until thoroughly combined. The mixture will be very thick.
5. Use mixing spoon to stir in bacon pieces, raisins, cheese, walnuts, and oats, stirring well after each addition.
6. Shape dough into balls the size of a ping-pong ball. Flatten slightly and place on prepared baking sheet.
7. Bake for 10 to 12 minutes, until golden brown. Let rest on baking sheet 5 minutes before removing to cooling rack. Store in refrigerator in airtight container.



**Nutrition Facts per Cookie:** 144 calories, 8 g fat, 129 mg sodium, 14 g carbohydrates, 1 g fiber, 4 g protein, 72 mg calcium

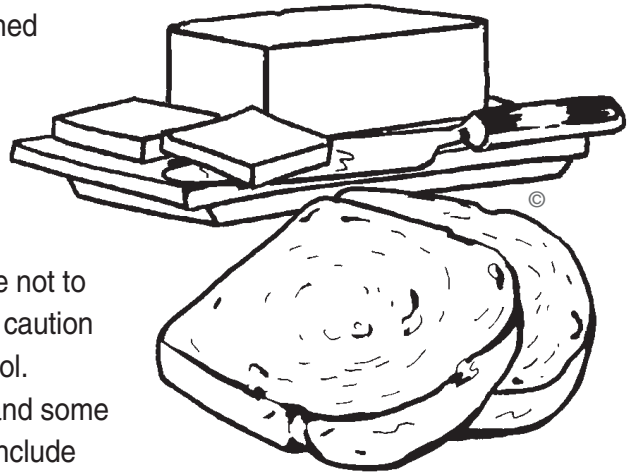
\* Parchment paper is a heavy, silicone-lined paper used in cooking and baking to keep foods from sticking. You can find it in most grocery stores in the section with food wraps and storage bags.





## Bread 'n Butter

As part of *4-H Cooking 301*, hopefully you have learned a great deal about making yeast bread after trying several of the yeast bread recipes. The smell of freshly baked bread is hard to resist eating, especially if topped with butter.



For many years, some health experts advised people not to eat butter or to watch the amount eaten. They urged caution because butter contains **saturated fat** and cholesterol. Saturated fat is found mostly in foods from animals and some plants. Foods from plants that contain saturated fat include coconut, coconut oil, palm oil, and cocoa butter. Eating saturated fats can cause high blood cholesterol. High cholesterol levels increase the risks for heart problems and strokes. To avoid these health problems, health experts encouraged people to replace butter in their diets with margarine. Margarine is made from vegetable oils so it contains less saturated fat and no cholesterol. Substituting margarine was thought to lower our risk of health problems. New research shows the **trans fats** in margarine increase the risk of developing heart disease, stroke, and type 2 diabetes (American Heart Association, 2009).

*Trans* fats are created when hydrogen is added to liquid vegetable oils to make them solid. For example, hydrogen is added to corn oil to make margarine. The process of adding hydrogen to oils to make them solid is called **hydrogenation**. That is why these fats are listed as “**partially hydrogenated oils**” on the package ingredients label. Many manufacturers are trying to reduce or eliminate the amounts of *trans* fats in their products.

*Trans* fats are found in many foods — especially in fried foods like French fries and doughnuts. It is also found in piecrusts, biscuits, pizza dough, cookies, and crackers. By reading the Nutrition Facts Label on the package, you can determine the amount of trans fats in each serving of food. If the ingredient list on packages includes “partially hydrogenated oils” — that tells you the food contains *trans* fats.

Does this mean you shouldn't eat butter or margarine on homemade bread fresh from the oven? No, it doesn't. You can still eat food with a small amount of fat as part of a healthy diet. Just remember to balance the amount of calories you eat with the amount of calories your body needs to maintain a healthy weight. Use butter in moderation to cut down on the amount of saturated fat in your diet.

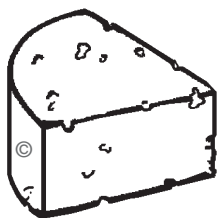
Try serving bread with a dipping oil made from olive oil and seasonings. Pour olive oil into a shallow bowl and sprinkle with freshly-ground pepper, salt, and Parmesan cheese. It's good and good for you!

## Flavored Spreads

You can mix many ingredients with butter or margarine to add extra flavor and serve it in an attractive way. Flavored spreads are served with breads, breakfast foods, meats, veggies....well, just about anything. You can make your own flavored spreads using ingredients you especially enjoy, such as blueberries, strawberries, or citrus juice.

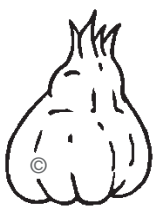
### Order of Work

1. Allow butter or margarine to soften slightly at room temperature.
2. Use a mixer set on medium speed to mix the butter or margarine until it is creamy.
3. Add ingredients listed in recipe. Mix at high-speed until butter is fluffy.
4. Choose one of the following ways to prepare the flavored spread for serving:
  - Spoon the spread into a serving dish and chill.
  - Spoon the spread in a butter mold and chill. When ready to serve, flip butter mold onto serving plate. Lay a warm cloth over top of butter mold until spread softens slightly and slips out of butter mold.
  - Spoon spread onto wax paper and form into a log shape. Wrap log in wax paper and chill. Slice for serving.
  - Spoon spread into a shallow pan, chill, and when it is firm, use miniature cookie cutters to make different shapes.
  - Use a small scoop to form spread into small single-serving balls. Place on serving plate and chill.



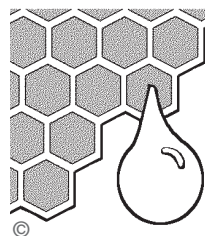
#### **Cheddar Cheese Spread —**

blend 1/2 cup softened butter or margarine, 3/4 cup shredded cheddar cheese, 1/4 cup chopped fresh parsley, 1 teaspoon paprika, 1/2 teaspoon garlic powder



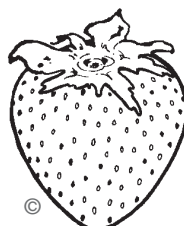
#### **Garlic & Chive Spread —**

blend 1/2 cup softened butter or margarine, 1 teaspoon minced garlic, and 1 tablespoon finely chopped chives (Add more garlic for a bolder garlic flavor.)



#### **Honey Spread —**

blend 1/2 cup softened butter or margarine, 2 tablespoons honey, 1/4 teaspoon cinnamon, 1/4 teaspoon vanilla



#### **Strawberry Spread —**

blend 1/2 cup softened butter or margarine, 1/4 cup powdered sugar, and 1/4 cup strawberry preserves (or other favorite fruit preserves)

### Measuring Butter or Margarine

Not all recipes are consistent in how they list the amount of butter or margarine needed. If you know these simple equivalents, you'll always know just how much to use.

2 cups = 4 sticks = 1 pound = 32 tablespoons  
 1 cup = 2 sticks = 1/2 pound = 16 tablespoons  
 1/2 cup = 1 stick = 1/4 pound = 8 tablespoons  
 1/4 cup = 1/2 stick = 1/8 pound = 4 tablespoons

# EXPERIMENT WITH BUTTER



Making butter was a fun chore for young people when more families lived on small farms and kept dairy cows to provide milk for the family. The rich cream from the fresh milk was removed and then churned to make butter. Children enjoyed cranking the butter churn used to make the cream into butter.

Making butter at home is still a fun project, even if you don't have cows to provide the fresh milk. You can use whipping cream, which has a high fat content, to make homemade butter. Let's experiment!

**Ingredients:** 2 cups whipping cream (available at grocery stores in the dairy section), 1/4 teaspoon salt, yellow food coloring (optional)

**Equipment needed:** measuring cups and spoons, mixer, beaters, mixing bowl, rubber spatula, colander, storage container

## Procedure

1. Pour whipping cream into mixing bowl and let it sit for about 15 to 20 minutes to reach room temperature.
2. To prevent the cream from splattering during mixing, you may want to make a cover for the mixing bowl from a paper plate. Cut into the center of the plate and then cut a circle just large enough to fit around the stems of the beaters. Slide the cover around the beaters and rest the outer edge of the plate on the rim of the mixing bowl.
3. Set the mixer to a high speed and beat the cream until it is light and creamy in color and the liquid separates. This will take about 8 to 10 minutes. Place the cream mixture in a colander to drain off liquids. Gently rinse the butter mixture with cold water. Return butter mixture to mixing bowl.
4. Use the rubber spatula to press the butter and remove remaining liquids — a combination of water and buttermilk. Drain well.
5. Add salt to the butter and a drop of yellow food coloring, if desired. Mix to combine.
6. Spoon the butter into a measuring cup. Press the butter firmly into the measuring cup to remove any air pockets. Record the amount of butter you made:

---

7. Place the butter in a serving dish and refrigerate until thoroughly chilled.
8. Spread butter on crackers or bread for tasting and answer the following questions.

- Did you enjoy making your own butter? \_\_\_\_\_ Why or why not?

---



---



---

- How did the taste of the homemade butter compare to purchased butter?

---



---



---

- Compare the cost of the ingredients to make butter to the cost of purchasing the same amount of butter. Record those amounts and costs:

---



---



---

Is it less expensive to make or purchase butter? \_\_\_\_\_

- Normally, fat does not mix well with other liquids — think about making salad dressing. You have to stir or shake it before each use to mix the oil and vinegar. Why do you think the fat and buttermilk stayed together in the whipping cream?

---



---



---

- What do you think caused the fat and buttermilk to separate? Why?

---



---



---

You may not be able to answer the last two questions without a little more information. The fat in cream is in very tiny pieces that are surrounded with a protein coat — much like the candy coating on pieces of chocolate. The protein coating is an emulsifier. An **emulsifier** keeps the fat dissolved in the liquid milk or cream. When the cream is beaten or shaken, the protein coat is broken. The fat comes together and separates from the liquid.



## Teaching Others How to Make Butter

Making butter is a fun activity to teach to others. You can do this same experiment with a group of children, younger 4-H members in your 4-H club, or after-school groups.

Following are some suggestions on how to do this.

**Supplies needed per person:** 1 small food container with lid, 1/4 cup of whipping cream, 1 disposable bowl and cup, 1 spoon, paper towel, salt, crackers, 1 disposable knife

### Procedure

1. Gather supplies. Make sure you have supplies for each person.
2. Pour 1/4 cup whipping cream into each container. Tightly attach the lids.
3. Before distributing containers to children, explain that you are making butter from the cream we get from milk. Encourage children to hold the container with both hands while they are shaking them to avoid spills.
4. Distribute the containers. Instruct the children to shake them as fast as they can while holding them in both hands. You might want to play music while the children are doing this so they can shake to a fast beat. Caution the children that they have to shake the container for 5 minutes.
5. When the butter begins to form small balls in the cream, tell the children what is happening. They are making butter!
6. Instruct the children to drain the buttermilk into the cup. Then instruct them to put the butter pieces in their bowl and press the butter with the spoon against the side of the bowl to work out all the liquid. Drain the extra buttermilk into the cup. Spoon the butter into a ball.
7. Tell the children to spoon the balls of butter onto the paper towel to dry. Sprinkle lightly with salt. Spread on crackers and enjoy!



# VEGETABLE AND FRUIT GROUPS

## Salad Greens

You have learned from your 4-H foods and nutrition projects, and health classes at school, that you should be eating fruits and vegetables as part of a healthy diet. Salads are a great way to add a variety of fruits and vegetables to your diet, but you need to think beyond iceberg lettuce, a couple slices of carrots, and ranch dressing. Start with a mixture of fresh salad greens that are available year round at the grocery store or in season at local farmer's markets. You can add a variety of vegetables to the salad greens, such as peas, corn, soybeans (also known as **edamame**), or canned beans. Try adding fruit too. Strawberry or apple slices, blueberries, pineapple chunks, and orange sections (canned or fresh) bring a yummy sweetness to salads. Top off the salad with a sprinkling of chopped nuts, sunflower seeds, or your favorite shredded cheese for some added protein. When you pair salads with a low-fat dressing, salads can help you maintain a healthy weight.

Salad greens are a good source of vitamin A, vitamin C, and other nutrients. Generally, red and dark green leafy vegetables are higher in nutrients than light-colored greens. These veggies also provide your body with fiber, are low in calories and sodium (salt), and do not contain cholesterol — a waxy substance in blood that may lead to health problems. Including salad greens in your diet can help promote good health now and in your future.

## Food Safety for Salad Greens

- Keep greens in plastic bags and refrigerate within two hours of purchasing.
- Place salad greens in plastic bags when purchased to keep them separate from other foods, especially raw meat or poultry.
- Wash salad greens just before using. Run cold water over leaves to remove any dirt or sand. After washing, blot dry with paper towels or use a **salad spinner** to remove excess water.
- Pre-cut, bagged salad greens often are prewashed and the packages are labeled “prewashed.” These greens can be used without additional washing.
- Use salad greens within one week of purchase.
- Remove any damaged or wilted leaves before use.





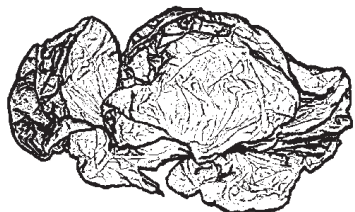
## Types of Salad Greens

"Mix and match" salad greens to add color, texture, flavor, eye appeal, and nutrition to salads. If you haven't eaten some of the salad greens before and you're not sure you will like them, start by adding a small amount to your salads. The flavor may pleasantly surprise you. You can also purchase bags of mixed salad greens that are ready to use.

Use the following descriptions to identify the wide selection of salad greens you find at grocery stores or in a salad mix. How many have you tried?



**Arugula** has a peppery, but pleasant flavor.



**Bibb or Boston lettuce** has tender, rounded leaves with a mild, buttery flavor.



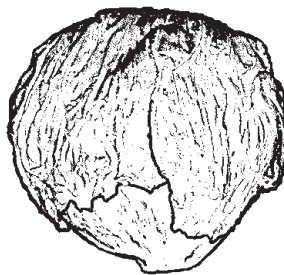
**Curly endive** has yellow-green, frilly leaves and a somewhat bitter taste. It is often added to a salad green mixture.



**Escarole** is a broad-leaved endive. The taste varies from mild in the light green leaves, to bitter in the dark green leaves.



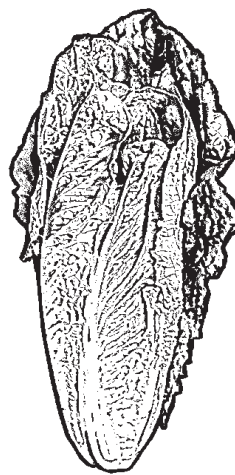
**Green or red leaf lettuce** forms a loose bunch and has a mild flavor. It is more perishable than head lettuce and has a shorter shelf life.



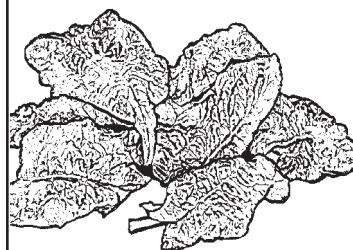
**Iceberg lettuce** is crisp and has a sweet flavor. It stays fresh longer than leaf lettuce.



**Radicchio** has dark red leaves with white veins that form into a small, cabbage-like head. It has a bittersweet taste.



**Romaine lettuce** has long, firm leaves and is used to make Caesar salads.



**Spinach** is used alone or mixed with other salad greens. Some types of spinach have wrinkled, curly leaves.



# Spinach/Strawberry Salad with Poppy Seed Dressing

*Yield: 10 1-cup servings*

## Ingredients

- 1 package (10 oz.) fresh spinach
- 1 quart fresh strawberries or
  - 1 can (11 oz.) mandarin oranges,  
drained
- 1/2 cup walnut pieces
- 1/4 cup honey
- 2 tablespoons sesame seeds
- 1 tablespoon poppy seeds
- 1 1/2 teaspoons minced onion
- 1/4 teaspoon Worcestershire sauce
- 1/4 teaspoon paprika
- 1/4 cup vegetable oil
- 1/4 cup cider vinegar

## Equipment

- Colander
- 9" x 13" dish or salad bowl
- Knife
- Cutting board
- Measuring cups and spoons
- Blender
- Salad tongs

## Order of Work

1. Wash and trim spinach. Spread over the bottom of dish or place in a salad bowl.
2. Cut strawberries lengthwise and spread over spinach or add drained mandarin oranges. Sprinkle walnuts over the fruit.
3. Mix honey, sesame seeds, poppy seeds, onion, Worcestershire sauce, and paprika in a blender. Blend until frothy.
4. With the blender running, add the vegetable oil and vinegar. Pour dressing over salad. Toss to mix. Serve immediately.

**Nutrition Facts per Serving:** 155 calories, 11 g fat, 13 mg sodium, 14 g carbohydrates, 3 g fiber, 2 g protein, 94 mg calcium



# Spinach & Bacon Salad

*Yield: 6 2/3-cup servings*

## Ingredients

3 slices bacon, cut in 1/2-inch pieces  
2 tablespoon flour  
1 tablespoon sugar  
1 teaspoon salt  
2 tablespoon bacon drippings  
3/4 cup water  
1/4 cup vinegar  
1 package (10 oz.) fresh spinach,  
coarsely chopped

## Equipment

Knife  
Cutting board  
Skillet  
Paper towels  
Measuring cups and spoons  
Mixing spoon  
Serving bowl  
Salad tongs

## Order of Work

1. Fry bacon pieces in skillet until crisp. Drain bacon and save drippings.
2. In skillet, thoroughly blend flour, sugar, salt, and 2 tablespoons bacon drippings. Stir in water and vinegar. Stirring constantly, cook over medium heat until thickened, about 5 minutes.
3. Place spinach in serving bowl. Pour hot dressing over spinach. Add bacon. Toss to mix. Serve warm.

**Nutrient Facts per Serving:** 127 calories, 10 g fat,  
7 g carbohydrates, 3 g fiber, 4 g protein, 512 mg sodium



# 7-Layer Salad

*Yield: 10 servings*

## Ingredients

- 1/2 head iceberg lettuce
- 1 small head romaine lettuce
- 1/2 cup chopped red onion
- 1/2 cup chopped celery
- 1/2 cup chopped green pepper
- 1 package (10 oz.) frozen peas, thawed and drained
- 3/4 cup low or nonfat salad dressing
- 1/4 cup low or nonfat yogurt
- 2 tablespoons sugar
- 2 tablespoons grated Parmesan cheese
- 1/4 cup imitation bacon bits or well-drained chopped, cooked bacon

## Equipment

- Cutting board
- Knife
- Large serving bowl
- Small mixing bowl
- Mixing spoon
- Measuring cups and spoons
- Salad tongs

## Order of Work

1. Chop lettuces; place in the bottom of serving bowl.
2. Top with a layer of onion, celery, pepper and peas.
3. Combine salad dressing, yogurt, and sugar; spread evenly over peas. Sprinkle cheese and bacon bits over all. Cover and refrigerate at least 8 hours.
4. Toss just before serving.

**Nutritional Facts per Serving:** 130 calories, 7 g fat, 10 mg cholesterol, 12 g carbohydrates, 280 mg sodium



## Salad Dressings

It's easy and convenient to grab a bottle of purchased salad dressing to top your salad, but homemade dressings add exciting flavors to salads. These salad dressings are quick and easy to prepare. Adding homemade dressing makes your salads extra special.

### Ranch Dressing

*Yield: 20 2-tablespoon servings*

#### Ingredients

- 1 1/3 cups buttermilk
- 2/3 cup mayonnaise
- 2/3 cup sour cream
- 1 teaspoon garlic powder
- 1 teaspoon onion powder
- 2 teaspoons fresh chives, chopped
- 2 teaspoons fresh dill, chopped
- 2 teaspoons fresh parsley, chopped
- 1 teaspoon salt
- 1/4 teaspoon pepper

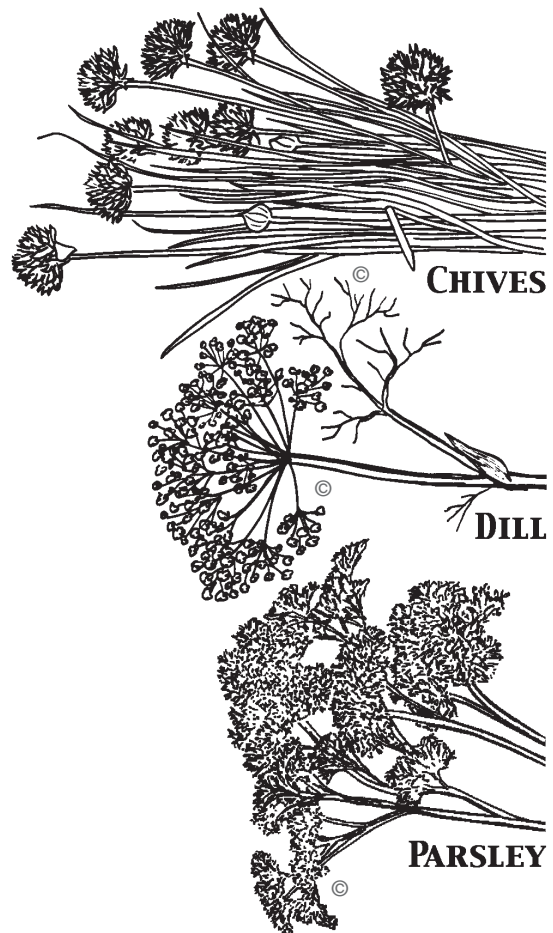
#### Equipment

- Mixing bowl
- Measuring cups and spoons
- Whisk
- Knife
- Cutting board

#### Order of Work

1. Add buttermilk, mayonnaise, and sour cream to mixing bowl. Mix until smooth.
2. Add garlic powder, onion powder, chives, dill, parsley, salt, and pepper to mayonnaise mixture. Whisk until blended.
3. Cover and refrigerate at least 30 minutes before serving. Stir well before serving.

**Nutrition Facts per Serving:** 79 calories, 7 g fat, 173 mg sodium, 1 g carbohydrates, less than 1 g fiber



## Basic Vinaigrette

*Yield: 10 2-tablespoon servings*

### Ingredients

3/4 cup extra virgin olive oil  
1/2 cup red wine vinegar  
2 crushed garlic cloves  
1 teaspoon dried Italian seasoning  
1/2 teaspoon sugar  
1/2 teaspoon salt  
Freshly ground black pepper, to taste

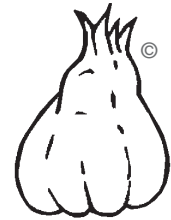
### Equipment

Measuring cups and spoons  
Cutting board  
Knife  
Jar with tight fitting lid

### Order of Work

1. Place olive oil, vinegar, garlic, Italian seasoning, sugar, salt, and pepper in jar. Place lid on jar and turn until lid fits securely. Shake jar briskly until contents are mixed.
2. Refrigerate until ready to serve. Shake well before serving.

**Nutrition Facts per Serving:** 150 calories, 17 g fat, 115 mg sodium, 0 g carbohydrates, less than 1 g fiber



**GARLIC**

## Honey Mustard Salad Dressing

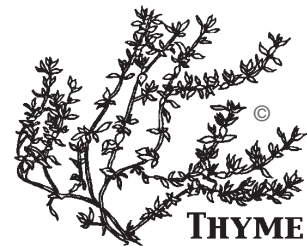
*Yield: 6 2-tablespoon servings*

### Ingredients

4 teaspoons Dijon mustard  
1/4 cup vinegar  
1 teaspoon honey  
1 teaspoon dried thyme, if desired  
or 2 teaspoons chopped fresh thyme  
1/2 teaspoon pepper  
2 cloves garlic, crushed or minced  
1/2 cup olive oil or canola oil

### Equipment

Measuring cups and spoons  
Small mixing bowl  
Whisk



**THYME**

### Order of Work

1. Add mustard, vinegar, honey, thyme (if desired), pepper, and garlic to mixing bowl. Whisk until blended.
2. Whisking continuously, add the oil in a slow, thin stream. Whisk until well blended.
3. Refrigerate until ready to use. Shake before using.

**Nutrition Facts per Serving:** 178 calories, 19 g fat, 82 mg sodium, 2 g carbohydrates, less than 1 g fiber



# Creamy Cole Slaw

*Yield: 8 servings*

## Ingredients

3/4 cup mayonnaise  
3 tablespoons sugar  
1 1/2 tablespoons white wine vinegar  
1/3 cup oil  
1/8 teaspoon onion powder  
1/8 teaspoon dry mustard  
1/8 teaspoon celery salt  
1 dash pepper  
1 tablespoon lemon juice  
1/2 cup half-and-half  
1/4 teaspoon salt  
4 cups cabbage, finely shredded

## Equipment

Small bowl  
Measuring cups and spoons  
Mixing spoon  
Large serving bowl

## Order of Work

1. Add mayonnaise, sugar, vinegar, and oil to small mixing bowl. Mix until blended. Add onion powder, dry mustard, celery salt, pepper, lemon juice, half-and-half, and salt. Stir until smooth. Set aside.
2. Place shredded cabbage in large serving bowl.
3. Pour dressing over shredded cabbage and toss until cabbage is coated.
4. Cover and refrigerate. Mix before serving.

**Nutrition Facts per Serving:** 276 calories, 28 g fat, 214 mg sodium, 7 g carbohydrates, 1 g fiber, 1 g protein, 34 mg calcium





# Broccoli & Cauliflower Salad

*Yield: 12 1/2-cup servings*

## Ingredient

1 bunch broccoli, flowerets only  
 1 head cauliflower, flowerets only  
 1 cup green pepper, chopped  
 1/2 cup celery, chopped  
 1 cup onion, diced  
 1 cup seedless grapes, cut in half  
 1 cup raisins  
 5 strips bacon, fried, crumbled

## Dressing

1/4 cup vinegar  
 1/2 cup sugar  
 1/2 cup sour cream  
 1/2 cup mayonnaise  
 1/4 cup almonds

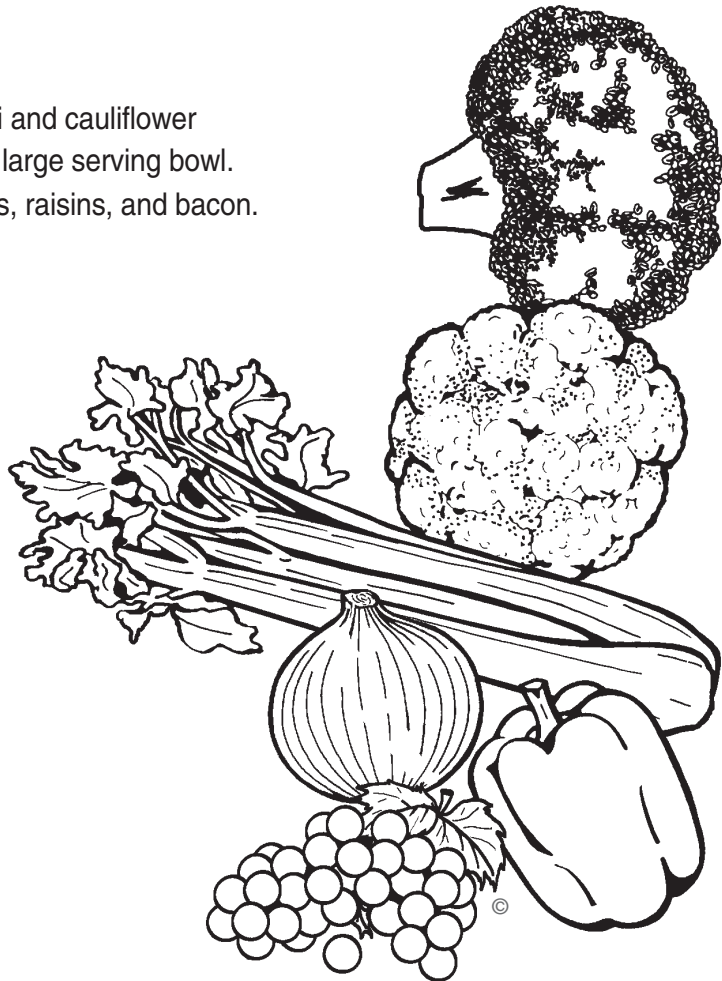
## Equipment

Knife  
 Cutting board  
 Large serving bowl  
 Measuring cups  
 Mixing spoons  
 Small bowl  
 Rubber spatula

## Order of Work

1. Wash all vegetables. Break the broccoli and cauliflower flowerets into bite-size pieces. Place in large serving bowl.
2. Add green pepper, celery, onion, grapes, raisins, and bacon. Toss gently to mix.
3. Place vinegar, sugar, sour cream, and mayonnaise in a small bowl. Stir until well blended.
4. Add dressing to vegetable mixture and stir gently until well mixed. Cover and refrigerate for at least 4 hours.
5. Add almonds just before serving.

**Nutrition Facts per Serving:** 140 calories,  
 6 g fat, 10 g cholesterol, 18 g carbohydrates,  
 150 mg sodium, 3 g fiber





## Confetti Bean Salsa

*Yield: 6 servings*

### Ingredients

- 1 can (15 oz.) red or black beans
- 1 can (11 oz.) corn
- 1 cup salsa
- 1/4 cup green chilies, chopped, optional
- 1/4 cup green pepper, chopped, optional

### Equipment

- Colander
- Serving bowl
- Measuring cups and spoons
- Mixing spoon
- Knife
- Cutting board

### Order of Work

1. Drain and rinse beans. Add to serving bowl. Drain corn and add to serving bowl.
2. Add salsa, chilies, and green pepper. Mix well.
3. Serve with corn chips, tacos, grilled chicken, or roasted pork.

**Nutrition Facts per Serving:** 115 calories, less than 1 g fat, 425 mg sodium, 22 g carbohydrates, 6 g fiber, 5 g protein, 26 mg calcium



## Fresh Asparagus, Tomato, & Feta Salad

*Yield: 5 servings*

### Ingredients

- 1/2 cup vinegar
- 1 tablespoon sugar
- 1 teaspoon salt
- 3 tablespoons olive oil
- 3/4 pound asparagus, cut into 1-inch pieces, cooked and drained
- 4 ounces feta cheese, crumbled
- 1 cup tomato, diced
- 1 green onion, diced
- 2 tablespoons cilantro, chopped

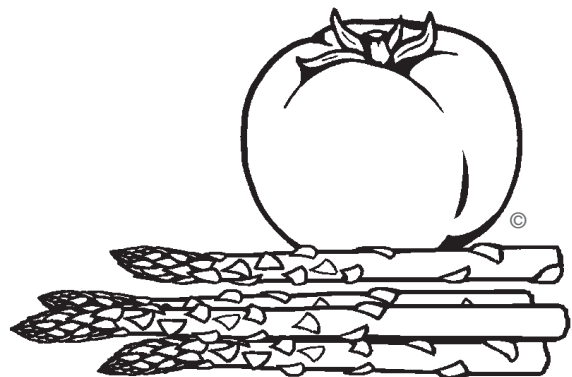
### Equipment

- Serving bowl
- Measuring cups and spoons
- Whisk
- Knife
- Cutting board
- Salad tongs

### Order of Work

1. Place vinegar, sugar, salt, and olive oil in serving bowl. Whisk until well blended.
2. Add asparagus, feta, tomato, green onion, and cilantro to bowl with dressing. Toss to coat.
3. Cover and refrigerate for 1 hour before serving.

**Nutrition Facts per Serving:** 160 calories, 13 g fat, 10 mg cholesterol, 7 g carbohydrates, 760 mg sodium, 2 g fiber



# Grilled Vegetable Kabobs

*Yield: 6 kabobs*

## Ingredients

- 2 large green peppers, cut into 1-inch pieces
- 2 medium onions, quartered,  
separated into sections
- 4 small zucchini, cut into 1-inch pieces
- 4 small yellow squash, cut into 1-inch pieces
- 12 whole mushrooms
- 1 bottle (16 oz.) Italian salad dressing

## Equipment

- Knife
- Cutting board
- Non-metal mixing bowl
- Mixing spoon
- Colander
- Charcoal, gas, or electric grill
- Metal or wooden skewers
- Pastry brush
- Small bowl

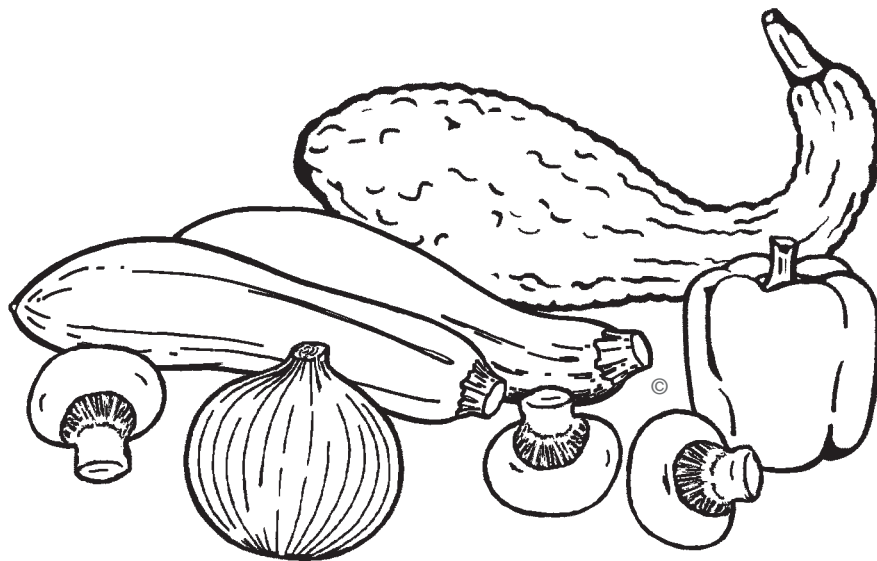


## Order of Work

Soak wooden skewers in water for 15 minutes before using to prevent them from burning.

1. Place prepared vegetables in mixing bowl. Pour Italian salad dressing over vegetables and toss.
2. Marinate vegetables in the refrigerator for 1 hour.
3. Prepare grill and light coals or gas, or turn on electric grill.
4. Drain vegetables and discard marinade. Thread vegetables alternately on skewers.
5. Grill kabobs 15 to 20 minutes, turning to brown on all sides. Use additional Italian salad dressing to brush over kabobs while cooking.

**Nutrition Facts per Kabob:** 95 calories, 3 g fat, 170 mg sodium, 14 g carbohydrates, 4 g fiber, 4 g protein, 48 mg calcium



# Marinated Vegetables

*Yield: 16 1/2-cup servings*

## Ingredients

1 cup fresh or frozen asparagus, sliced  
 1 cup fresh green beans, whole  
 1/4 cup water  
 1 cup fresh mushrooms, sliced  
 2 cups fresh cauliflower or broccoli  
 1 cup bell pepper, sliced in strips  
 1/2 cup pitted ripe olives  
 1 can (8 oz.) artichoke hearts,  
 drained and quartered

## Dressing

1/3 cup cider vinegar  
 1/3 cup olive oil  
 2 teaspoons dried oregano  
 2 teaspoons dried parsley  
 2 teaspoons sugar  
 3 garlic cloves, minced  
 1/4 teaspoon pepper

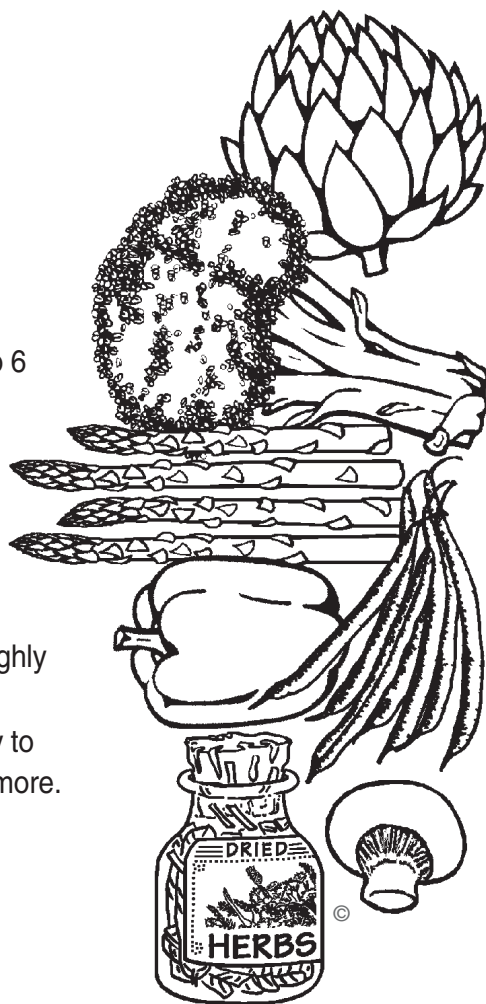
## Equipment

Knife  
 Cutting board  
 Microwave-safe dish with lid  
 Measuring cups and spoons  
 Colander  
 Large serving bowl  
 Small bowl  
 Whisk or fork  
 Salad tongs

## Order of Work

1. Wash and trim fresh vegetables.
2. Place asparagus and green beans in microwave-safe dish; add water and cover. Partially cook by microwaving for 5 to 6 minutes until barely tender. Plunge vegetables into ice water to stop cooking; drain well.
3. In serving bowl, combine the asparagus, green beans, mushrooms, cauliflower or broccoli, peppers, olives, and artichokes.
4. In small bowl, combine the vinegar, oil, oregano, parsley, sugar, garlic, and pepper to make the dressing. Mix thoroughly with whisk.
5. Pour vinaigrette over the vegetable mixture and toss gently to coat. Cover and marinate in the refrigerator for 4 hours or more.

**Nutrition Facts per Serving:** 110 calories, 5 g fat, 81 mg sodium, 12 g carbohydrates, 3 g fiber, 4 g protein, 29 mg calcium



# Grilled Potatoes

*Yield: 4 servings*



## Ingredients

3 pounds potatoes, peeled, cut into quarters  
 1 cup green onions, thinly sliced  
 4 tablespoons oil  
 4 tablespoons grated Parmesan cheese  
 3 tablespoons chopped fresh parsley,  
 or 1 1/2 tablespoons dried  
 2 tablespoons chopped fresh oregano  
 or 1 tablespoon dried  
 3 cloves garlic, minced  
 Salt and pepper, to taste

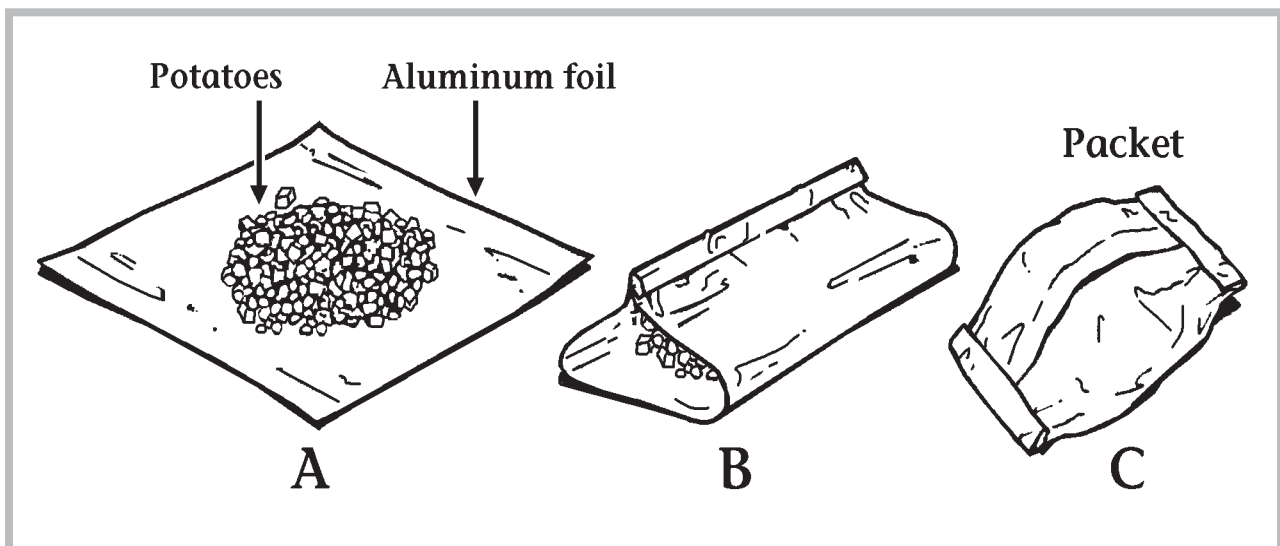
## Equipment

Knife  
 Cutting board  
 Large saucepan  
 Colander  
 Charcoal or gas grill  
 Mixing bowl  
 Measuring spoons  
 Mixing spoon  
 Aluminum foil

## Order of Work

1. Place potatoes in large saucepan and cover with water. Cook over high heat until water boils; reduce heat to a simmer. Cook potatoes until tender. Drain potatoes and cool.
2. While potatoes are cooking, prepare grill and light coals or gas.
3. Place cooled potatoes in mixing bowl; add oil and toss. Add onions, Parmesan cheese, parsley, oregano, garlic, salt, and pepper. Mix well.
4. Place potatoes on large piece of aluminum foil. Bring long sides of foil together over food. Fold down edges, leaving room for package to expand as it heats. Fold up short ends of foil; squeeze ends tightly to seal.
5. Place foil packets on grill over medium heat. Cook for 15 to 20 minutes or until onions are tender. Remove from grill and serve potatoes in foil packet.

**Nutrition Facts per Serving:** 408 calories, 17 g fat, 288 mg sodium, 56 g carbohydrates, 8 g fiber, 9 g protein, 138 mg calcium



## Grilled Corn

*Yield: 4 servings*



### Ingredients

1/2 cup butter or margarine, melted  
2 tablespoons dried onion or chives  
2 tablespoons dried parsley flakes  
8 ears of fresh corn

### Equipment

Charcoal or gas grill  
Measuring cups and spoons  
Small mixing bowl  
Aluminum foil  
Pastry brush

### Order of Work

1. Prepare grill and light coals or gas.
2. Combine butter or margarine with onion or chives and parsley.
3. Prepare rectangles of aluminum foil to fit each ear of corn.
4. Place one ear of corn on each piece of foil. Pour or brush on butter mixture. Wrap the foil securely around the corn.
5. Place on grill and cook 40 minutes or until tender, turning frequently.

**Nutrition Facts per Serving:** 284 calories, 24 g fat, 180 mg sodium, 18 g carbohydrates, 3 g fiber, 3 g protein, 20 mg calcium

## Slow Cooker Vegetable Medley

*Yield: 12 1/2-cup servings*

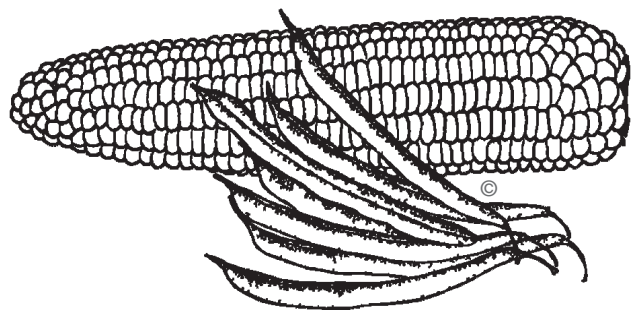


### Ingredients

2 cups frozen green beans, or  
1 can (15 oz.) green beans, drained  
2 cups frozen whole kernel corn, or  
1 can (15 oz.) whole kernel corn, drained  
1/2 cup carrots, cut in 3-inch strips  
1/2 cup celery, thinly sliced  
1/2 cup onion, chopped  
1/2 cup green pepper, diced  
2 cups tomato juice  
1 teaspoon salt  
Pepper, to taste  
3 tablespoons quick cooking tapioca  
1 tablespoon sugar  
2 tablespoons butter or margarine

### Equipment

Slow cooker  
Measuring cups and spoons  
Knife  
Cutting board  
Mixing spoon



### Order of Work

1. Add all ingredients to slow cooker. Mix well.
2. Cover and cook on low 7 to 9 hours or on high 3 to 4 hours.

**Nutrition Facts per Serving:** 112 calories, 2 g fat, 451 mg sodium, 19 g carbohydrates, 4 g fiber, 4 g protein, 19 mg calcium

## Slow Cooker Potato Soup

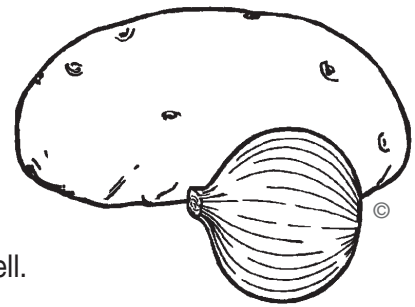
*Yield: 12 1-cup servings*

### Ingredients

6 large potatoes, peeled and cubed  
4 cups water  
2 cups onion, chopped  
1 1/2 teaspoons salt  
1 cup carrots, peeled and sliced  
Pepper, to taste  
1/2 cup celery, sliced  
2 tablespoons butter or margarine  
4 chicken bouillon cubes  
1 tablespoon parsley flakes  
1 can (13 oz.) evaporated milk  
Chopped chives, for garnish

### Equipment

Slow cooker  
Measuring cups and spoons  
Knife  
Cutting board  
Vegetable peeler  
Mixing spoon



### Order of Work

1. Add all ingredients to slow cooker, except milk and chives. Mix well.
2. Cover and cook on low for 10 to 12 hours or on high 3 to 4 hours.
3. Stir in milk during the last hour of cooking. Serve topped with chives.

**Nutrition Facts per Serving:** 133 calories, 4 g fat, 741 mg sodium, 20 g carbohydrates, 3 g fiber, 4 g protein, 113 mg calcium

## Slow Cooker Scalloped Corn

*Yield: 8 1/2-cup servings*

### Ingredients

2 eggs, beaten  
1/2 cup light sour cream  
1/4 cup melted butter or margarine  
1/2 cup finely chopped onion, or  
2 tablespoons dried chopped onion  
1 can (14 oz.) whole kernel corn, drained  
1 can (14 oz.) creamed corn  
1 small box or 1 1/2 cups cornbread mix

### Equipment

Mixing bowl  
Measuring cups and spoons  
Knife  
Cutting board  
Mixing spoon  
Slow cooker  
Nonstick cooking spray



### Order of Work

1. Place all ingredients in mixing bowl and mix thoroughly.
2. Lightly coat the slow cooker with nonstick cooking spray. Spoon corn mixture into slow cooker.
3. Cover and cook on high for 2 to 2 1/2 hours.

**Nutrition Facts per Serving:** 293 calories, 13 g fat, 678 mg sodium, 39 g carbohydrates, 4 g fiber, 6 g protein, 58 mg calcium





# Ice Cream or Pancake Fruit Topping

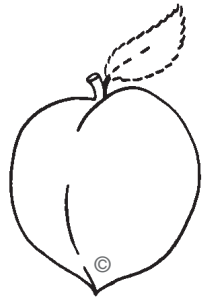
*Yield: 6 servings*

## Ingredients

2 cups canned peaches, pears,  
or apricots, with juice  
3 tablespoons light corn syrup  
1/4 teaspoon vanilla  
1 teaspoon cinnamon, allspice, or nutmeg  
1 cup raisins, optional  
4 teaspoons cornstarch  
2 tablespoons water

## Equipment

Colander  
Mixing bowl  
Medium saucepan  
Knife  
Cutting board  
Measuring cups and spoons  
Mixing spoon  
Small bowl



## Order of Work

1. Drain juice from fruit; pour juice into saucepan.
2. Cut fruit into bite-size pieces.
3. Add fruit, corn syrup, vanilla, and cinnamon, allspice, or nutmeg to juice in saucepan; stir. Add raisins, if desired.
4. In small bowl, mix cornstarch with water and stir until smooth. Add to fruit and mix well.
5. Stirring constantly, heat fruit over medium heat until mixture boils and thickens. Remove from heat.
6. Serve warm over ice cream, unfrosted cake, pancakes, waffles, or French toast. Sauce may also be served over cooked pork or cooked ham.

**Nutrition Facts per Serving with Raisins:** 172 calories, less than 1 g fat, 26 mg sodium, 44 g carbohydrates, 2 g fiber, 1 g protein, 18 mg calcium

# Fruit Smoothie

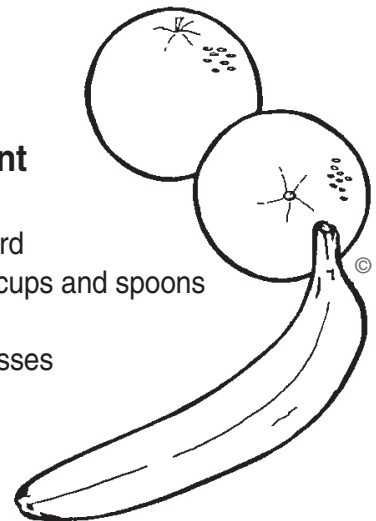
*Yield: 3 servings*

## Ingredients

1 medium banana, sliced  
2 oranges cut into bite-size pieces  
1 peach, peeled and diced,  
or 1/2 cup canned peaches  
1/2 cup plain low-fat yogurt or milk  
1 tablespoon sugar  
1/4 teaspoon vanilla extract  
3 ice cubes

## Equipment

Knife  
Cutting board  
Measuring cups and spoons  
Blender  
Serving glasses



## Order of Work

1. Place fruit, yogurt or milk, sugar, vanilla, and ice cubes in blender container.
2. Cover and blend on high until mixture is smooth and creamy.
3. Pour into serving glasses and serve immediately. Garnish with fresh fruit, if desired.

**Nutrition Facts per Serving:** 136 calories, 1 g fat, 31 mg sodium, 31 g carbohydrates, 4 g fiber, 4 g protein, 126 mg calcium



## Skillet Fruit

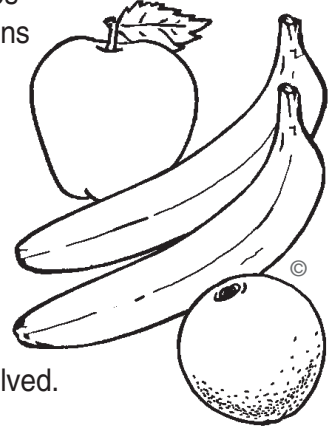
*Yield: 6 servings*

### Ingredients

1/4 cup orange or apple juice or water  
 2 tablespoons brown sugar  
 1 teaspoon grated lemon peel, optional  
 2 tablespoons margarine  
 3 to 4 cups fruit, sliced (apples, bananas, blueberries, oranges, peaches, pears, etc.)  
 1/2 teaspoon cinnamon  
 1/4 teaspoon nutmeg

### Equipment

Large skillet  
 Measuring cups  
 and spoons  
 Mixing spoon



### Order of Work

1. In a skillet, blend fruit juice or water, brown sugar, and lemon peel.
2. Add margarine. Heat and stir until margarine is melted and sugar is dissolved.
3. Add fruit, cinnamon, and nutmeg; heat thoroughly.
4. Serve warm on biscuits, French toast, pancakes, warmed flour tortillas, hot cereal, or ice cream.

**Nutrition Facts per Serving:** 97 calories, 4 g fat, 46 mg sodium, 16 g carbohydrates, 2 g fiber, 1 g protein, 13 mg calcium

## Frozen Fruit Salad

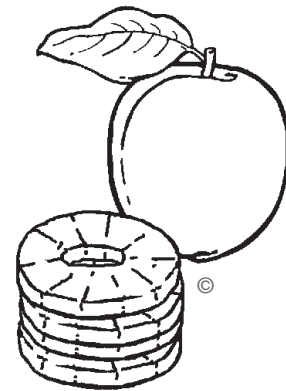
*Yield: 15 servings*

### Ingredients

2/3 cup evaporated milk  
 2 cups unsweetened applesauce  
 2 ripe bananas, mashed  
 2 teaspoons lemon juice  
 1 can (8 oz.) crushed pineapple, drained  
 1 cup finely diced fruit (berries, grapes, peaches, or plums)  
 1/4 cup honey or corn syrup

### Equipment

Mixing bowls, small and large  
 Measuring cups and spoons  
 Electric mixer  
 Mixing spoon  
 Knife  
 Cutting board  
 13" x 9" pan



### Order of Work

1. Pour milk into small mixing bowl. Place in freezer just until ice crystals begin to form around the edges. Beat with electric mixer until fluffy.
2. In another bowl, combine applesauce, banana, lemon juice, pineapple, diced fruit, and honey or corn syrup.
3. Fold whipped milk into fruit mixture.
4. Pour into pan. Freeze until firm. Place in refrigerator about 1/2 hour before serving.

**Nutrition Facts per Serving:** 73 calories, 1 g fat, 12 mg sodium, 16 g carbohydrates, 1 g fiber, 1 g protein, 34 mg calcium

# Banana Pineapple Slush

*Yield: 18 1-cup servings*

## Ingredients

6 cups water  
1 cup sugar  
1 1/2 cups orange juice  
5 ripe medium bananas  
1/2 cup lemon juice  
1 can (46 oz.) pineapple juice  
Lemon-lime flavored soft drink

## Equipment

Large Saucepan  
Measuring cups  
Mixing spoon  
Blender  
Large shallow container  
Glasses for serving

## Order of Work

1. Combine water and sugar in saucepan. Bring to boil, stirring occasionally. Cool.
2. Combine orange juice and bananas in a blender container; blend until smooth.
3. Combine sugar syrup, banana mixture, lemon juice, and pineapple juice.
4. Pour into a large shallow container and freeze until firm.
5. Remove from freezer about one hour before serving. Thaw at room temperature. Mixture should still be partially frozen and slushy when served.
6. Place slushy mixture in glasses. Add small amount of soft drink to provide a drinkable consistency.

**Nutrition Facts per Serving:** 120 calories, less than 1 g fat, 10 mg sodium, 31 g carbohydrates, 1 g fiber, 1 g protein, 17 mg calcium

# Fruit Sparkle

*Yield: 12 servings*

## Ingredients

4 cups orange juice  
4 cups pineapple juice  
2 cups cranberry juice cocktail  
1 sliced orange, optional  
2 cups crushed ice  
2 cups club soda

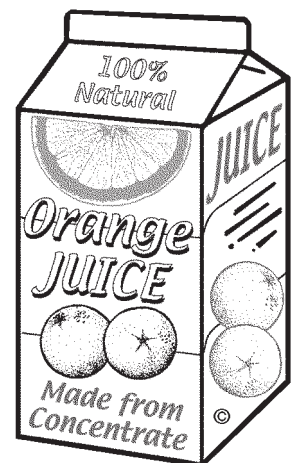
## Equipment

Large mixing bowl or punch bowl  
Knife  
Cutting board

## Order of Work

1. Combine juices in a large bowl.
2. Add orange slices, if desired.
3. Place in refrigerator until ready to serve.
4. Just before serving, mix in ice and club soda and serve.

**Nutrition Facts per Serving:** 104 calories, less than 1 g fat, 3 mg sodium, 25 g carbohydrates, less than 1 g fiber, 1 g protein, 19 mg calcium



## Grilled Fruit on Skewers

*Yield: 8 servings*

### Ingredients

- 1 orange, peeled and cut in 8 chunks
- 1 banana, peeled and cut in 1-inch pieces
- 1 peach or nectarine, peeled, cut into chunks
- 1 cup pineapple chunks, drained
- 1 cup orange juice
- 4 mint leaves, optional
- 2 tablespoons honey
- 2 tablespoon shredded coconut

### Equipment

- Knife
- Cutting board
- Colander
- Mixing bowls, large and small
- Mixing spoons
- Measuring cups and spoons
- Skewers



### Order of Work

1. Rinse orange, banana, and peach with cold water. Peel fruit and cut into chunks.
2. Combine with pineapple in mixing bowl. Set aside.
3. Mix orange juice, honey, mint, and coconut in small bowl. Pour over fruit and stir to coat well. Cover and marinate at least 2 hours in refrigerator.
4. Drain fruit. Put on skewers and grill 10 to 15 minutes, until fruit is hot and lightly browned. Serve immediately.

**Nutrition Facts per Serving:** 80 calories, 1 g fat, 1 mg sodium, 19 g carbohydrates, 2 g fiber, 1 g protein, 18 mg calcium

## Slow Cooked Apples

*Yield: 12 1/2-cup servings*

### Ingredients

- 2 pounds or 6 medium cooking apples
- 1 teaspoon cinnamon
- 1/2 cup raisins
- 1/2 cup orange juice
- 1/3 cup sugar

### Equipment

- Knife
- Cutting board
- Slow cooker
- Mixing bowl
- Measuring cups and spoons
- Mixing spoon



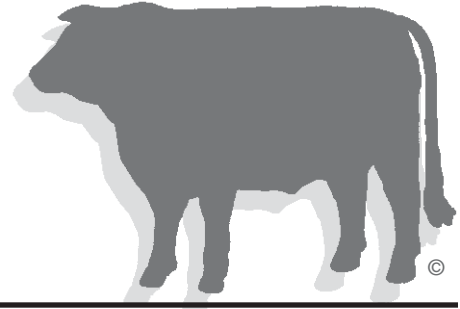
### Order of Work

1. Wash, peel, and core apples. Cut into thick slices or chunks. Place prepared apples in a slow cooker.
2. In a small mixing bowl, combine cinnamon, raisins, orange juice, and sugar. Pour mixture over apples. Stir to coat apples.
3. Cover and cook on low for 1 to 2 hours or until apples are tender.

**Nutrition Facts per Serving:** 78 calories, less than 1 g fat, 2 mg sodium, 21 g carbohydrates, 2 g fiber, 1 g protein, 11 mg calcium



# MEAT GROUP



## Grilling Recipes

### Grilled Burgers

*Yield: 4 burgers*



#### Ingredients

1 pound lean ground beef  
Salt and pepper, to taste  
Hamburger buns

#### Equipment

Charcoal, gas, or electric grill  
Nonstick cooking spray  
1 sheet wax paper, 12" x 12"  
Plates  
Metal spatula  
Meat thermometer

#### Order of Work

1. Lightly coat the grill cooking grates with nonstick cooking spray.
2. Light grill and preheat to hot temperature (see pages 10 to 12 for information).
3. Place sheet of wax paper on countertop.
4. Divide ground beef into four equal portions. Lay one portion on the wax paper. Form beef into a burger, 1-inch thick by 5 inches in diameter. Sprinkle with salt and pepper, if desired. Place burger on a plate. Repeat shaping process with remaining portions.
5. Place burgers on hot grill and close the lid. Cook 2 to 3 minutes.
6. Use a metal spatula to gently lift a burger. If it easily lifts from the grate, flip it over. If not, continue grilling until it lifts easily.
7. After flipping the burgers, close the lid and continue grilling for another 2 to 3 minutes. Check the burgers again to make sure they easily lift from the grate and flip them. Cook an additional 2 to 3 minutes.
8. Remove one or two burgers from the grill and place on a clean plate. Use a meat thermometer to check for doneness. The thermometer should read at least 160 degrees F. If not, return the burger(s) to the grill to continue cooking for 2 to 3 minutes. Test again. Serve burgers on hamburger buns with assorted condiments.

**Nutrition Facts per Burger:** 130 calories, 5 g fat, 210 mg sodium, less than 1 g carbohydrates, less than 1 g fiber, 22 g protein, 1 mg calcium

# Grilled Meal in a Packet

*Yield: 4 servings*

You can add or substitute other vegetables such as green beans, squash, mushrooms, or celery.



## Ingredients

1 pound ground beef  
4 cups potatoes, sliced  
2 cups carrots, sliced  
1/2 cup onion, sliced  
1/2 cup green pepper, chopped  
Salt and pepper to taste

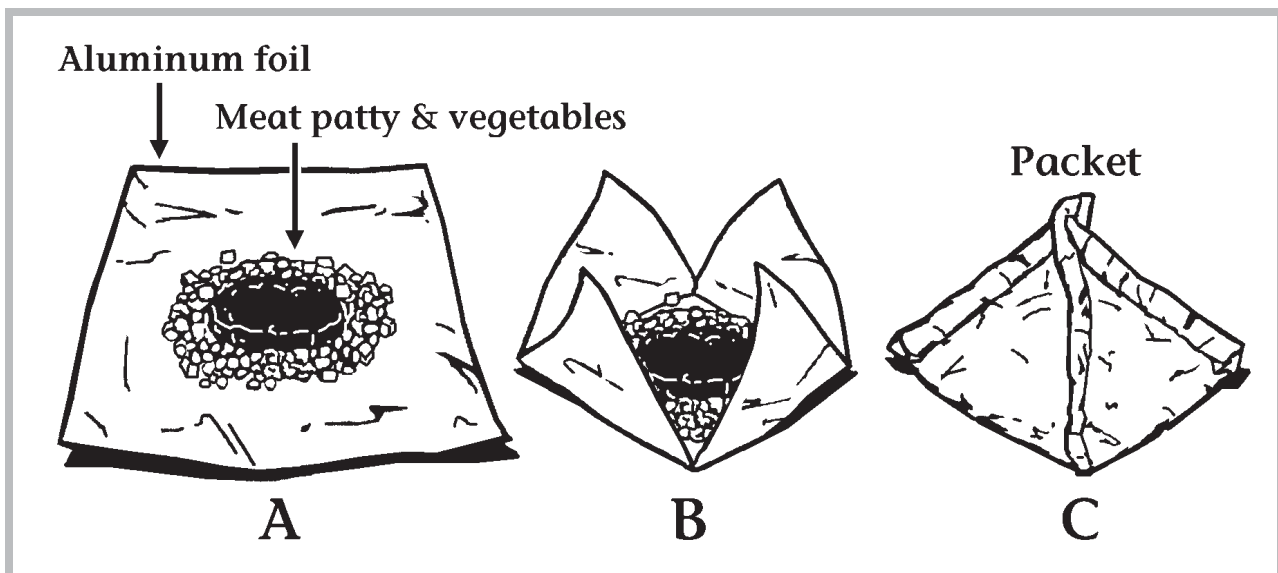
## Equipment

Charcoal or gas grill  
4 sheets aluminum foil, 18" x 18"  
Knife  
Cutting board  
Measuring cups

## Order of Work

1. Light grill and preheat to medium-hot temperature (see pages 10 to 12 for information).
2. Divide ground beef into four equal pieces and form into patties.
3. Place each meat patty on a square of aluminum foil. Equally divide prepared vegetables and place around meat patties; sprinkle with salt and pepper.
4. Pull the four corners of the foil up to form a pyramid shape. Fold edges together in locked folds, allowing room for package to expand as it heats.
5. Place foil packets on medium-hot grill and cook until hamburger is done and temperature reaches 160 degrees F on a food thermometer, about 45 to 60 minutes. Check after 45 minutes for doneness.
6. Serve meal in foil packets.

**Nutrition Facts per Serving:** 447 calories, 5 g fat, 417 mg sodium, 72 g carbohydrates, 9 g fiber, 31 g protein, 65 mg calcium



# Grilled Marinated Chicken Breasts

*Yield: 4 servings*



Choose from a variety of marinades (refer to pages 88 and 89) to add flavor to boneless chicken breasts and keep them juicy while grilling.

## Ingredients

Marinade, select from recipes provided  
4 boneless chicken breasts

## Equipment

Non-metal container  
Charcoal, gas, or electric grill  
Nonstick cooking spray  
Tongs  
Plate  
Meat thermometer

## Order of Work

1. Select and prepare marinade from the recipes provided.
2. Marinate chicken breasts in refrigerator in a non-metal container for 30 minutes to 4 hours.
3. Lightly coat the cooking grate with nonstick cooking spray. Preheat grill to hot temperature.
4. Use tongs to remove chicken from marinade and place on hot grill. Grill 3 to 5 minutes.
5. Flip the chicken breast. Close the lid and continue grilling for an additional 3 to 5 minutes.
6. Check the chicken breast to make sure it is not burning and flip again.
7. Remove one or two chicken breasts from the grill and place on a clean plate. Use the meat thermometer to check for doneness. The thermometer should read at least 165 degrees F. If not, return the chicken to the grill to continue cooking for 2 to 3 minutes. Test again. Serve chicken while it is hot.

**Nutrition Facts per Serving:** 160 calories, 4 g fat, 68 mg sodium, less than 1 g carbohydrates, 0 g fiber, 29 g protein, 14 mg calcium



# Pocketburgers

*Yield: 4 burgers*



## Ingredients

- 1 pound ground beef
- 4 tablespoons cheese, grated
- 4 tablespoons barbecue sauce
- 4 tablespoons onion, chopped
- 4 hamburger buns

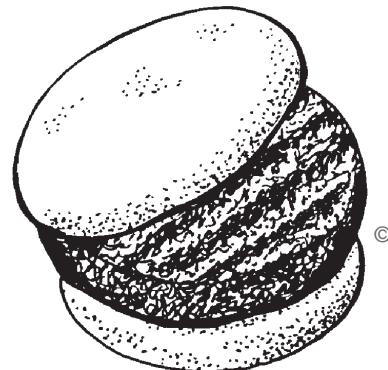
## Equipment

- Charcoal, gas, or electric grill
- Nonstick cooking spray
- Wax paper
- Measuring spoons
- Knife
- Cutting board
- Metal spatula
- Meat thermometer
- Plate

## Order of Work

1. Lightly coat the grill cooking grates with nonstick cooking spray.
2. Light charcoal or gas grill or turn on electric grill. Preheat to hot temperature (see page 12 for information).
3. Place sheet of wax paper on hard surface.
4. Divide ground beef into eight equal portions. Lay on wax paper. Form each portion into a patty 1/4-inch thick. In center of 4 of the patties, place a tablespoon of cheese, barbecue sauce, and onion.
5. Place second patty over top of the first one and press the edges of both patties together to seal.
6. Place burger on hot grill and close the lid. Cook 2 to 3 minutes.
7. Use a metal spatula to gently lift a burger. If it easily lifts from the grate, flip it over. If not, continue grilling until it lifts easily.
8. After flipping the burgers, close the lid and continue grilling for another 2 to 3 minutes. Check the burgers again to make sure they easily lift from the grate and flip them. Cook an additional 2 to 3 minutes.
9. Remove one burger from the grill and place it on a clean plate. Use the meat thermometer to check for doneness. The thermometer should read at least 160 degrees F. If not, return the burger to the grill to continue cooking for 2 to 3 minutes. Test again.
10. Serve burgers on hamburger buns.

**Nutrition Facts per Burger with Bun:** 316 calories, 9 g fat, 541 mg sodium, 28 g carbohydrates, 1 g fiber, 30 g protein, 152 mg calcium





# Marinades



## To Prepare Marinades

Combine all ingredients in a large non-metal bowl or sealable plastic bag. Add chicken, pork, or veal and marinate in the refrigerator 30 minutes to 4 hours, turning meat at least once. Discard any remaining marinade — do not reuse.

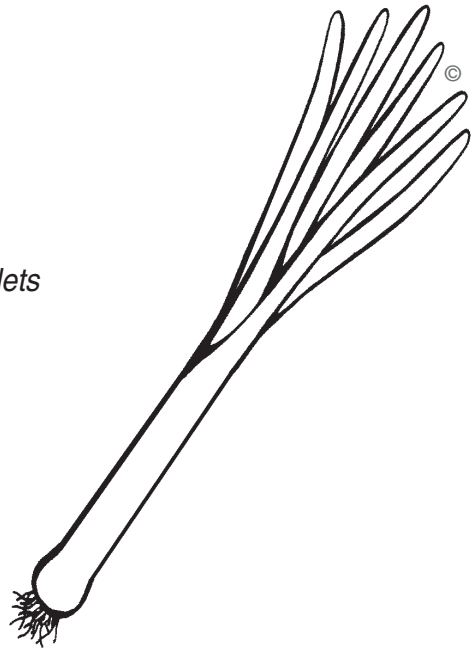
Marinate strips/cubes of meat for 2 hours; chops or ribs for 3 hours; and steaks for 4 hours. Marinate in the refrigerator and turn meat occasionally.

## Asian Marinade

*Yield: marinade for 4 chicken breasts, pork chops, or veal cutlets*

### Ingredients

- 1/2 cup soy sauce
- 1/4 cup water
- 1 tablespoon brown sugar
- 1/2 cup green onions, chopped
- 1 teaspoon ginger
- 1/4 teaspoon garlic salt
- 1/2 teaspoon pepper

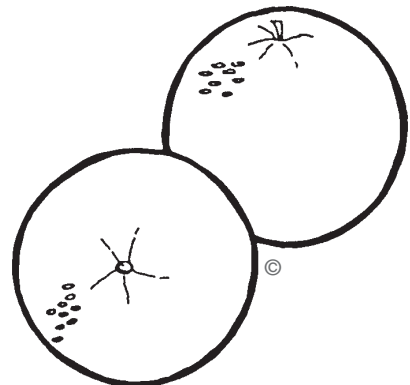


## Orange Marinade

*Yield: marinade for 4-6 chicken breasts, pork chops, or veal cutlets*

### Ingredients

- 1 can (6 oz.) frozen unsweetened orange juice concentrate, thawed
- 1/4 cup lemon juice
- 2 tablespoons orange peel, grated
- 1/2 teaspoon garlic powder



## Mexicali Marinade

*Yield: marinade for 4 to 6 chicken breasts, pork chops, or veal cutlets*

### Ingredients

1/3 cup oil  
2 cloves garlic, crushed  
1/3 cup apple juice  
1 teaspoon chili powder  
1 teaspoon sugar  
1/3 cup cider vinegar  
1 teaspoon salt  
1/4 teaspoon pepper



### Order of Work

In a small saucepan, heat oil and cook garlic 2 to 3 minutes. Stir in remaining ingredients and heat through, stirring until smooth. Cool in refrigerator.

## Marinated Lemon Thyme Chicken

*Yield: 4 servings*

### Ingredients

2 tablespoons oil  
1 tablespoon lemon juice  
1 tablespoon chopped fresh thyme,  
or 1 teaspoon dried  
2 cloves garlic, minced  
4 chicken pieces, skin removed

### Equipment

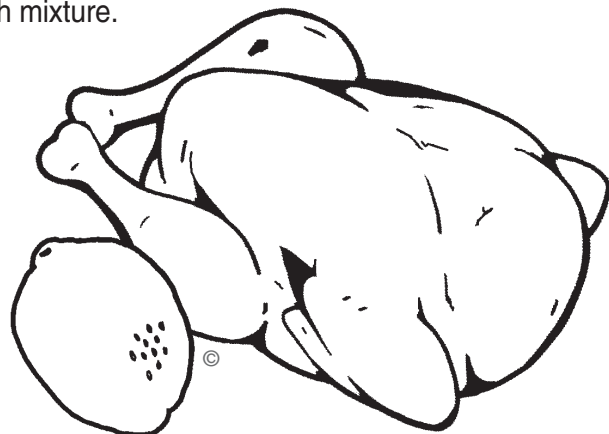
Small mixing bowl  
Measuring spoons  
Shallow container  
Charcoal, gas, or electric grill



### Order of Work

1. In a small mixing bowl, combine oil, lemon juice, thyme, and garlic.
2. Place chicken in shallow container and cover with mixture.
3. Refrigerate for 30 minutes.
4. Preheat grill or broiler.
5. Cook chicken until tender and juices are clear and internal temperature reaches at least 165 degrees F on a food thermometer.

**Nutrition Facts per Serving:** 226 calories, 11 g fat, 68 mg sodium, 1 g carbohydrates, less than 1 g fiber, 29 g protein, 19 mg calcium

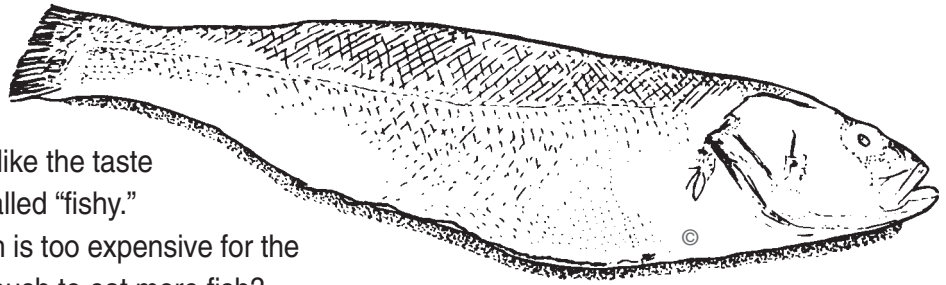


## Fish

Most Americans do not eat enough fish in their diet.

There are many reasons for that. Some people don't like the taste or smell — which may be called “fishy.”

Sometimes buying fresh fish is too expensive for the family budget. So, why the push to eat more fish?



Fish is very good for your health. It is naturally low in fat and is a good source of Omega-3 fatty acids — which may protect you from heart disease. Eating fish can also help you maintain a healthy weight. Although fish can be expensive and fresh fish may be difficult to find in some areas, it is a very healthy and tasty addition to the diet.

There are ways to avoid the “fishy” smell and taste. Follow the steps outlined below to prepare fish that you and your family will enjoy.

### Purchasing and Storing Fish

Start by buying fresh fish. If you don't have much experience selecting and preparing fresh fish, it is not difficult to learn how with a little practice. Fresh whole fish should appear firm and the eyes should be shiny. Fillets should be firm and moist. Fresh fish should never smell “fishy.” After purchase, refrigerate fish immediately, placing fillets or whole fish on ice (crushed or cubes) in a large container and cover loosely with plastic wrap. Store fish in the coldest part of the refrigerator.

Frozen fish should be thawed in the refrigerator. To thaw quickly, place the unwrapped fish in a leak-proof plastic bag and immerse in a large container of cold water. Change the water, adding cold water, every 30 minutes until fish is flexible. Cook immediately if possible.

Follow the recommended storage times on the following chart when storing fish in your refrigerator or freezer. Fresh fish spoils quickly.

### Cooking with Fish

Fish is a very delicate food and should never be overcooked. A change in color, from grayish white to solid white indicates doneness. Cook until temperature reaches 145 degrees F when measured with a food thermometer (for more information on food thermometers, see *4-H Cooking 201* pages 9 and 10). White liquid coming from the fish is a sign of overcooking; remove immediately from the heat if this happens.

### Recommended Storage Time for Fish

	Refrigerator (40° F)	Freezer (0° F)
<b>Fish</b>		
Lean fish (cod, flounder, haddock, sole)	1 to 2 days	6 months
Fatty fish (bluefish, mackerel, salmon)	1 to 2 days	2 to 3 months
Cooked fish	3 to 4 days	4 to 6 months
Smoked fish	14 days or date on package	2 months in package
<b>Shellfish</b>		
Shrimp, scallops, crayfish, squid, oysters, shucked clams, mussels, crab, lobster	1 to 2 days	3 to 6 months
Cooked shellfish	3 to 4 days	3 months

Source: Food Safety — USDA and FDA. <http://www.foodsafety.gov/~fsg/f01chart.html>

#### Poaching fish

Poaching fish in simmering liquid on top of the stove or in the oven is an ideal way to prepare fish for people who usually don't like to eat fish. The poaching liquid absorbs most of the fish taste, leaving a mild and moist dish.

1. Use a shallow frying pan wide enough to hold fish so that the pieces do not overlap.
2. Barely cover the fish with a liquid, such as water seasoned with salt, herbs or spices.
3. Put a lid on the pan and simmer the fish 5 to 10 minutes or until the fish flakes with a fork or reaches a temperature of 145 degrees F when measured with a food thermometer.
4. Serve poached fish as a main course, in casseroles, or chilled and flaked in cold dishes.

#### Steaming fish

1. Use a steam cooker or deep pan with a tight cover and a rack to keep the fish from touching the water. You may add the seasonings to the water.
2. Heat the water to a boil. Then place the fish on the rack and put the lid on the pan. Cook for 5 to 10 minutes or until the fish flakes with a fork or temperature reaches 145 degrees F when measured with a food thermometer.
3. Serve the same way you would serve poached fish.



### Oven-Frying Fish

This method produces results similar to fried fish, but it is not really a frying process. Fish cooked by this method does not require turning. The coating and high temperature seals in the juices and produces a crisp, brown crust. This is good method to use when serving a large group.

1. Dip serving sized portions of fish in milk and coat with cereal crumbs or seasoned dry breadcrumbs.
2. Place fish on a lightly oiled cookie sheet. Drizzle melted butter or margarine over fish.
3. Bake at 500 degrees F for 10 to 12 minutes or until fish flakes easily with a fork or reaches a temperature of 145 degrees F when measured with a food thermometer.

### Pan-frying fish

1. Heat about 1/8-inch oil in a frying pan.
2. Arrange fish in a single layer, leaving room between pieces.
3. Fry at moderate temperature on first side until light brown. Turn carefully, scraping under each piece and continue cooking on the other side until brown. Total cooking time is about 8 to 10 minutes. Drain on paper towels.

## Oven Poached Fish

*Yield: 4 servings*

### Ingredients

1 pound fresh or frozen fish fillets  
 1/2 cup skim milk  
 1/4 cup seasoned breadcrumbs  
 Pepper  
 1 tablespoon grated Parmesan cheese

### Equipment

Baking dish  
 Nonstick cooking spray  
 Paper towels  
 Measuring cups and spoons



### Order of Work

1. Preheat oven to 400 degrees F. Lightly coat baking dish with nonstick cooking spray.
2. Rinse fish fillets and pat dry with paper towels. Put fish in single layer in baking dish.
3. Pour skim milk over fish fillets. Sprinkle breadcrumbs on the tops of fillets and season with pepper.
4. Sprinkle Parmesan cheese on tops of the fillets. Spray lightly with nonstick cooking spray.
5. Bake for 15 minutes or until fish is white and hot to the touch in the thickest part of the fillet. Do not overcook, since fish will be dry and not as tasty. Fish is done when it flakes with a fork and the internal temperature reaches 145 degrees F on a food thermometer.

**Nutrition Facts per Serving:** 136 calories, 2 g fat, 225 mg sodium, 6 g carbohydrates, less than 1 g fiber, 23 g protein, 85 mg calcium

## Oven Baked Fish

*Yield: 8 4-ounce servings*

### Ingredients

2 pounds fish fillets  
1/2 cup low-fat (light) mayonnaise  
2 tablespoons red onion, minced  
1 teaspoon dried dill weed

### Equipment

Large, shallow baking dish  
Nonstick cooking spray  
Paper towels  
Small mixing bowl

### Order of Work

1. Preheat oven to 400 degrees F. Lightly coat baking dish with nonstick cooking spray.
2. Wash fillets with cold water and pat dry with paper towel.
3. Lay fish fillets in the prepared dish.
4. In a small bowl, combine mayonnaise, red onion, and dill weed. Spread mixture evenly over fish fillets.
5. Bake uncovered for 15 to 20 minutes or until fish flakes easily with fork.

**Nutrition Facts per Serving:** 144 calories, 6 g fat, 181 mg sodium, 2 g carbohydrates, less than 1 g fiber, 20 g protein, 22 mg calcium

## Tex-Mex Fish Fillets

*Yield: 6 servings*

### Ingredients

1/2 cup onion, sliced  
1 cup picante sauce or salsa  
1 1/2 pounds white fish fillets  
1 cup Monterey Jack cheese, shredded

### Equipment

2-quart baking dish with lid  
Nonstick cooking spray  
Measuring cups  
Food thermometer

### Order of Work

1. Lightly coat baking dish with nonstick cooking spray.
2. Separate onion slices and place across bottom of baking dish.
3. Cover and cook in microwave 1 to 1 1/2 minutes on high.
4. Lay fillets on top of onions. Cover with picante sauce or salsa.
5. Cover and cook 3 1/2 to 4 minutes on high.
6. Uncover and sprinkle with cheese. Cover dish.
7. Cook 1 to 2 minutes on high. Fish should be white in color and reach a temperature of 145 degrees F when measured with a food thermometer. Add additional cooking time as needed to reach temperature.
8. Let stand 5 minutes.



**Nutrition Facts per Serving:** 212 calories, 10 g fat, 458 mg sodium, 5 g carbohydrates, 1 g fiber, 26 g protein, 38 mg calcium



# Salmon Cakes

*Yield: 8 salmon cakes*

## Ingredients

- 1 can (14.75 oz.) salmon, drained and flaked
- 1/2 cup saltine cracker crumbs
- 2 eggs, beaten
- 1/2 teaspoon paprika

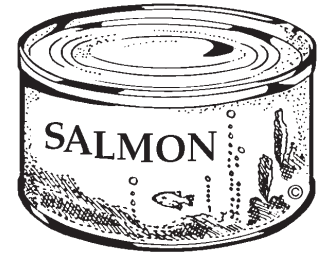
## Equipment

- Large mixing bowl
- Measuring cups and spoons
- Nonstick skillet
- Nonstick cooking spray or oil
- Turner

## Order of Work

1. Mix salmon, cracker crumbs, eggs, and paprika in a large mixing bowl.
2. Form into cakes, using 1/4 cup for each salmon cake.
3. Place in skillet coated with small amount of oil or cooking spray, cook until golden brown on both sides.

**Nutrition Facts per Cake:** 108 calories, 4 g fat, 273 mg sodium, 3 g carbohydrates, less than 1 g fiber, 14 g protein, 153 mg calcium



# Chicken & Fruit Salad

*Yield: 4 servings*

## Ingredients

- 2 cups cooked chicken, chopped
- 1/2 cup celery, chopped
- 1/4 cup raisins, optional
- 2 cups diced fresh or canned fruit (apples, pineapple, grapes, plums, oranges)
- 1 teaspoon lemon juice
- 1/2 cup mayonnaise or mayonnaise-type salad dressing
- 1 teaspoon curry powder, optional

## Equipment

- Mixing bowls, large and small
- Measuring cups and spoons
- Mixing spoon



## Order of Work

1. Combine chicken, celery, raisins, and fruit in large bowl.
2. In small bowl, stir together lemon juice, mayonnaise, and curry powder.
3. Fold dressing into salad ingredients. Chill thoroughly.
4. Serve over salad greens or on bread or crackers.

**Nutrition Facts per Serving with Raisins:** 387 calories, 25 g fat, 223 mg sodium, 18 g carbohydrates, 2 g fiber, 23 g protein, 28 mg calcium





## Slow Cooker Recipes

### Slow Cooker Party Crab Spread

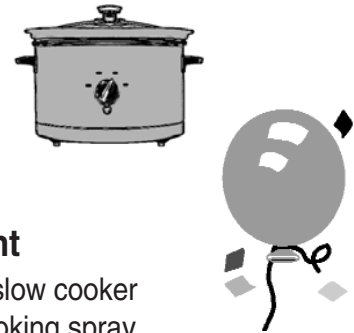
*Yield: 1 1/2 cups dip or 24 1-tablespoon servings*

#### Ingredients

1 cup flake-style imitation crab meat  
 1/2 cup grated Parmesan cheese  
 1 tablespoon lemon juice  
 1/4 cup green onions, sliced  
 1 can (14 oz.) artichoke hearts,  
     drained, chopped  
 1 package (8 oz.) 1/3 less fat cream  
     cheese, cubed  
 Cocktail rye bread slices

#### Equipment

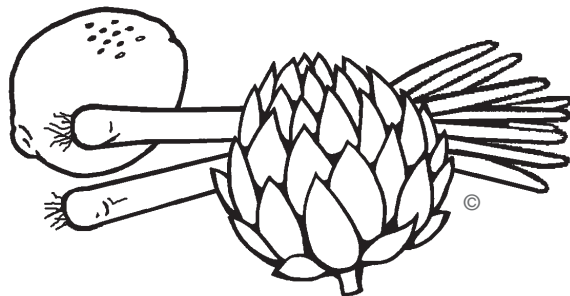
1 1/2 quart slow cooker  
 Nonstick cooking spray  
 Mixing spoon  
 Rubber spatula



#### Order of Work

1. Spray slow cooker with cooking spray.
2. Place crab meat, Parmesan cheese, lemon juice, green onions, artichoke hearts, and cream cheese in slow cooker. Stir to mix ingredients. Scrape sides of slow cooker with rubber spatula to prevent food from scorching.
3. Cover and cook on low heat for one hour.
4. Stir until cheese is smooth. Scrape sides of slow cooker with rubber spatula.
5. Serve with bread slices. Spread will keep on low setting up to 3 hours while it is being served. Stir occasionally to keep the cheese creamy.

**Nutrition Facts per Serving** (based on 1 tablespoon spread and 1 slice of cocktail rye bread): 65 calories, 2 g fat, 187 mg sodium, 7 g carbohydrates, 1 g fiber, 4 g protein, 49 mg calcium



# Slow Cooker Pulled Beef Sandwiches

*Yield: 12 sandwiches*



## Ingredients

3 pounds beef roast  
1 cup water  
1 bottle (14 oz.) barbecue sauce  
1 tablespoon brown sugar  
1 tablespoon lemon juice or cider vinegar  
1 cup onion, chopped  
12 hamburger buns or sandwich rolls

## Equipment

Slow cooker  
2 forks  
Mixing bowl  
Measuring cups and spoons  
Knife  
Cutting board  
Mixing spoon  
Rubber spatula

## Order of Work

1. Place the roast in the slow cooker and add water to the crock. Cover with lid and cook on low for 10 hours or on high for 5 to 6 hours.
2. Remove the roast and shred the meat using two forks.
3. Remove any liquid in the slow cooker. Return shredded meat to slow cooker.
4. Add barbeque sauce, brown sugar, lemon juice or cider vinegar, and chopped onion to slow cooker. Stir until ingredients are well mixed. Scrape sides of slow cooker with rubber spatula so sauce does not scorch.
5. Cook on high for 1 hour or until meat is heated thoroughly. Serve on buns or rolls.

**Nutrition Facts per Sandwich:** 338 calories, 7 g fat, 662 mg sodium, 37 g carbohydrates, 2 g fiber, 30 g protein, 94 mg calcium



# Slow Cooker Pork Barbecue Sandwiches

*Yield: 8 sandwiches*

## Ingredients

2 pound pork roast  
1 cup water  
1 cup ketchup  
2 tablespoons brown sugar  
2 teaspoons instant minced onion  
1 teaspoon garlic powder  
1/2 teaspoon pepper  
2 teaspoons prepared mustard  
2 teaspoons Worcestershire sauce  
8 hamburger buns or sandwich rolls

## Equipment

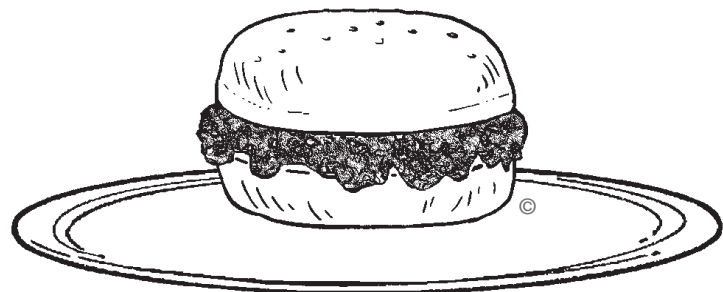
Slow cooker  
2 forks  
Mixing bowl  
Measuring cups and spoons  
Mixing spoon  
Small saucepan



## Order of Work

1. Place the roast in the slow cooker. Add water and cover with lid; cook on low for 10 hours or on high for 5 to 6 hours.
2. Remove the roast and shred the meat using two forks.
3. Remove any liquid in the slow cooker. Return shredded meat to slow cooker.
4. Combine ketchup, brown sugar, onion, garlic powder, pepper, mustard, and Worcestershire sauce in saucepan; mix well. Cook over low heat for 5 to 10 minutes until thoroughly heated.
5. Pour over shredded meat. Cook on high for one hour or until meat is heated thoroughly. Serve on buns or rolls.

**Nutrition Facts per Sandwich:** 312 calories, 6 g fat, 625 mg sodium, 33 g carbohydrates, 1 g fiber, 30 g protein, 92 mg calcium



## Slow Cooker Spicy Pecans

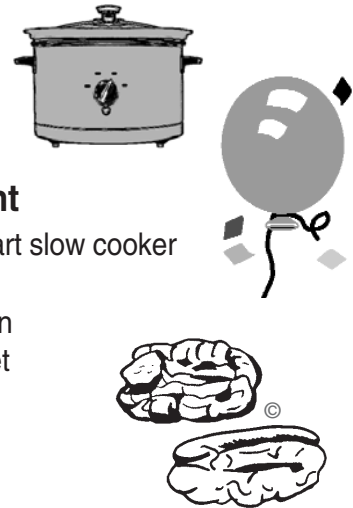
*Yield: 4 cups or 16 1/4-cup servings*

### Ingredients

- 4 cups pecan halves
- 1/4 cup butter or margarine, melted
- 2 tablespoons soy sauce
- 1 teaspoon five-spice powder
- 1/2 teaspoon garlic powder
- 1/2 teaspoon ground ginger
- 1/4 teaspoon ground red pepper

### Equipment

- 3 1/2 - 4 quart slow cooker
- Mixing bowl
- Mixing spoon
- Baking sheet



### Order of Work

1. Combine the pecans, melted butter, soy sauce, and spices in the mixing bowl. Stir until nuts are coated with mixture.
2. Pour pecans into slow cooker. Cover and cook on low heat setting for two hours.
3. Stir and turn to high heat setting. Cover with lid and continue cooking for 30 minutes.
4. Pour pecans onto baking sheet and spread with mixing spoon to cool.

**Nutrition Facts per Serving:** 241 calories, 24 g fat, 185 mg sodium, 4 g carbohydrates, 2 g fiber, 3 g protein, 3 mg calcium

## Slow Cooker Cashew Chicken

*Yield: 6 servings*

### Ingredients

- 6 boneless, skinless chicken breasts
- 1 cup green onion, chopped
- 1 cup mushrooms, sliced
- 1 cup celery, sliced
- 1 can (10 3/4 oz.) cream soup, mushroom or chicken
- 1 tablespoon soy sauce
- 1 cup cashews

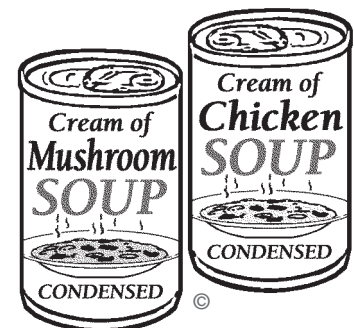
### Equipment

- Slow cooker
- Knife
- Cutting board
- Measuring cups and spoons



### Order of Work

1. Place chicken breasts in bottom of slow cooker. Add onion, mushrooms, and celery.
2. Pour soup and soy sauce over vegetables.
3. Cover and cook on low for 6 hours or on high for 4 hours.
4. Top each serving with cashews.



**Nutrition Facts per Serving:** 326 calories, 15 g fat, 838 mg sodium, 14 g carbohydrates, 2 g fiber, 33 g protein, 55 mg calcium

# Slow Cooker Chicken Stew

*Yield: 12 1-cup servings*

## Ingredients

2 pounds boneless, skinless chicken breasts, cut into 1-inch cubes  
 1 1/2 cups onions, sliced  
 1 cup baby carrots or 2 large carrots, cut into 1-inch slices  
 3 medium potatoes, cut into 1-inch cubes  
 3 1/2 cups chicken broth  
 1 teaspoon celery seed  
 1 teaspoon dried thyme  
 1/2 teaspoon black pepper or seasoned pepper mix  
 Salt to taste  
 1 cup frozen corn, thawed  
 8 ounces mushrooms, sliced  
 1 cup frozen peas, thawed

## Equipment

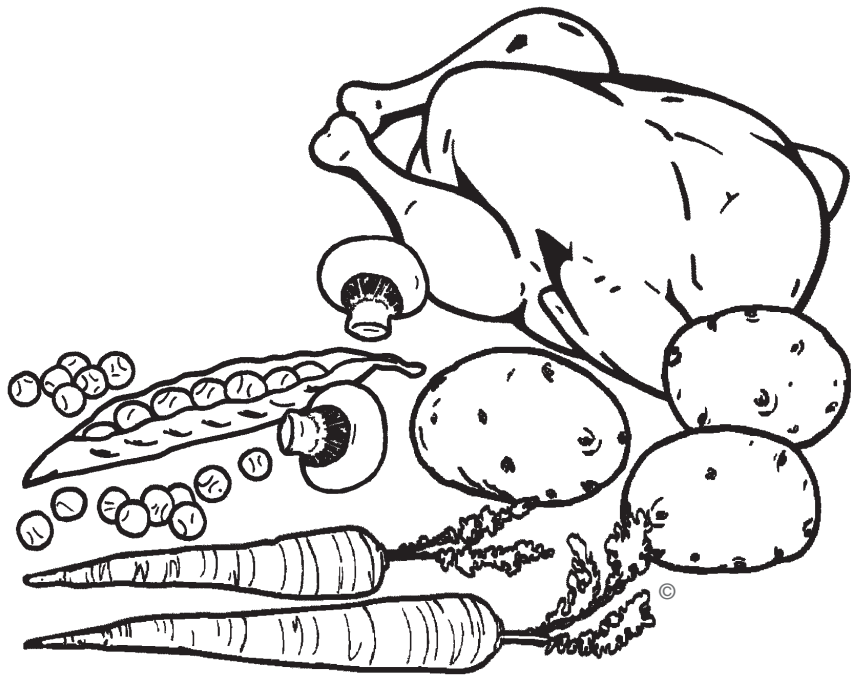
Knife  
 Cutting board  
 Measuring cups and spoons  
 Slow cooker  
 Mixing spoon



## Order of Work

1. Combine all ingredients, except peas, in the slow cooker; stir well.
2. Cover and cook on low 6 to 8 hours, until chicken is done and vegetables are tender; stir in peas the last 30 minutes.

**Nutrition Facts per Serving:** 170 calories, 2 g fat, 352 mg sodium, 17 g carbohydrates, 3 g fiber, 21 g protein, 30 mg calcium



# Slow Cooker Sweet & Sour Sausage Balls

*Yield: 32 2-ounce servings*



## Ingredients

- 2 pounds sausage
- 1 teaspoon oil
- 1/2 cup brown sugar
- 1 tablespoon soy sauce
- 1 tablespoon lemon juice
- 1 can (15 oz.) chunk pineapple
- 1 1/4 cup ketchup

## Equipment

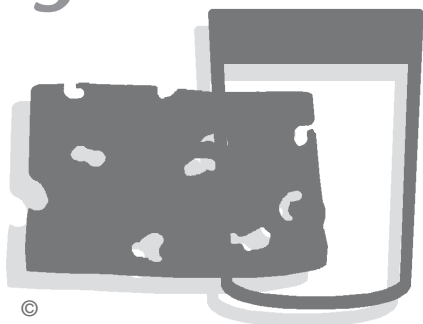
- Mixing bowl
- Plate
- Nonstick skillet
- Tongs
- Slow cooker
- Small mixing bowl
- Mixing spoon
- Measuring cups and spoons

## Order of Work

1. Place sausage in mixing bowl. Roll pieces of sausage in your hands to form balls about the size of a walnut. Place meatballs on plate.
2. Add oil to skillet and place over medium-high heat. Spread oil evenly over the surface of skillet. When the oil is hot, add meatballs.
3. Cook over medium-high heat, turning occasionally with tongs, until meatballs are brown on all sides. Place meatballs in slow cooker.
4. Combine brown sugar, soy sauce, lemon juice, pineapple, and ketchup in bowl. Pour over meatballs. Cover and cook on high for 4 hours or until meatballs test done with a meat thermometer (160 degrees F).

**Nutrition Facts per Serving:** 77 calories, 2 g fat, 493 mg sodium, 9 g carbohydrates, less than 1 g fiber, 5 g protein, 8 mg calcium





# MILK GROUP

## Cheese

Cheese is a favorite food of many young people and they eat it just about anyway it is prepared — melted, sprinkled, crumbled, squeezed, added to food, or eaten by itself. For that reason, it's a great food to include on party menus.

Cheese is made from milk, usually cow, goat, or sheep's milk. Most of the cheese produced in the United States is made from cow's milk — whole, reduced-fat, low-fat, or nonfat milk. Cheese is aged, or **ripened**, to give it more flavor. As cheeses age, they become harder and more crumbly, and have a stronger taste. Aged cheese is usually labeled mild, medium, or sharp. Sharp cheese has a bold flavor.

### Ripened — or Not

**Soft unripened cheese** — is not aged and must be eaten soon after it is made. It can be made with low-fat or nonfat milk to reduce the fat content. This type of cheese includes cottage cheese, ricotta, Feta, and cream cheese.

**Semi-soft ripened cheese** — is allowed to ripen slightly. Semi-soft cheese includes Monterey Jack, Blue, and Brick.

**Hard-ripened cheese** — is low in moisture and excellent for grating. Hard cheese includes Parmesan, Cheddar, Swiss, and Edam.

**Pasteurized processed cheese** — is a blend of fresh and aged cheese that is melted and shredded, or shaped into slices or blocks. It is convenient to use because it melts easily and blends well with other foods. American cheese is a processed cheese.

**Pasteurized processed cheese food** — contains less cheese and less fat than processed cheese, but it has extra milk added. Processed cheese food is used for dipping, melting, or spreading. It is available in jars, cans, or packages and can be stored at room temperature. Nacho cheese is a processed cheese food.





## Cheese Tips

- Store cheese in its original package. After cutting, wrap it tightly in plastic wrap to hold in the moisture.
- For best flavor, bring cheese to room temperature before serving it.
- Shred or dice cheese for faster melting.
- Melt or heat cheese at a low temperature to keep it from becoming rubbery or stringy.
- Add shredded cheese to white sauce after the sauce is completely cooked. The white sauce will not thicken if the cheese is added too soon.
- Harder cheeses keep longer than soft, moist ones.
- Cheese can be frozen, but freezing changes the taste and texture.
- The hard outer rind on some cheeses, like aged Swiss, is not meant to be eaten.

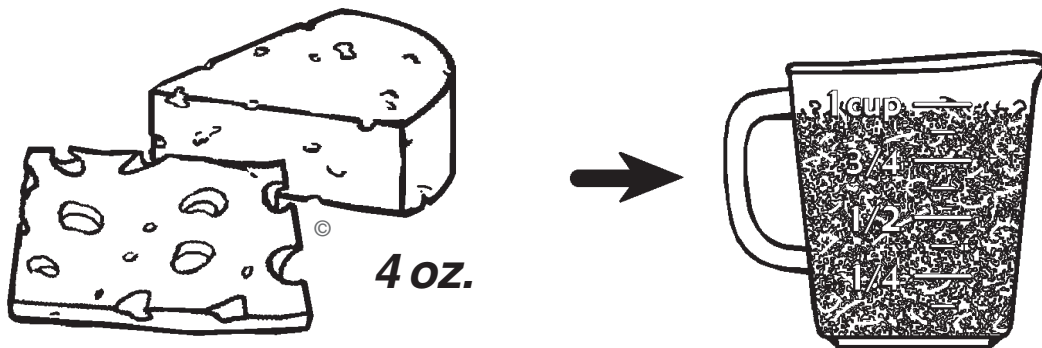
### Measuring Cheese

Use the following equivalents.

8 ounces = 2 cups shredded cheese

4 ounces = 1 cup shredded cheese

1 ounce = 1/4 cup shredded cheese



## Where to Start?

There are so many cheeses to choose from, it's hard to know where to start when learning about the different types. Following is a list of cheeses that are readily available at most grocery stores. Select a few cheeses that you haven't tried before to sample at a cheese tasting (see next page). Enjoy!

Types of Cheese	Characteristics	
<b>Soft</b>		
Brie (bree)	Creamy yellow interior	Thin, white, edible crust
Camembert (KAM-ehm-beh)	Creamy yellow interior	Thin, white, edible crust
Cream Cheese	Smooth, spreadable	May be flavored
Feta (FET-tah)	Crumbly	Salty, pickled flavor
Neufchatel (noo-sha-TEL)	Spreads easily	Reduced-fat cream cheese
Ricotta (ri-COT-tah)	Soft and spoonable	Looks like cottage cheese
<b>Semi-soft</b>		
Blue	White with blue streaks	Tangy and pungent taste
Brick	Yellow to white	Flavor changes with age
Monterey Jack	Creamy white cheese	Bold nutty flavor
Muenster	Orange exterior and white interior	Spicy or tangy taste
<b>Semi-hard</b>		
Baby Swiss	Sweet and creamy texture	Nutty, buttery flavor
Edam (EE-dam)	Red-paraffin coating	Mild nutty flavor
Gouda (GOO-dah)	Red-paraffin coating	Flavor changes with age
Mozzarella	Called "pizza cheese"	Mild, delicate flavor
Provolone (proh-vah-LOH-nee)	Round or pear shaped	Mild, smoky flavor
<b>Hard</b>		
Cheddar	Orange or white interior	Mild to sharp
Colby	Light yellow to orange	Mild flavor
Colby Jack	Blend of Monterey Jack and Colby	Mild, nutty flavor
Swiss	Firm texture with small to large holes	Nutty flavor
<b>Very Hard</b>		
Parmesan (PAR-mah-zahn)	Hard and easy to grate	Robust flavor
Romano (ro-MAH-noh)	Hard and easy to grate	Sharp, salty flavor
<b>Specialty</b>		
Pasteurized Processed Cheese	Blend of cheeses that are processed using heat	Mild flavor popular with young people



# EXPERIMENT WITH CHEESE



A cheese tasting is a fun way to sample new cheeses. You can invite some friends and make it a party. Start with two to three new cheeses. Include one favorite cheese for comparison. List the cheeses you will taste and record your findings in the table below.

About 30 minutes before the cheese tasting, remove the cheeses from the refrigerator. Place half of each cheese on a serving tray. Return remaining cheese to the refrigerator until time for tasting. This will allow you to compare the flavors of cold and room temperature cheese.

Type of Cheese	Flavor	Comments
	Room temperature:	
	Cold:	
	Room temperature:	
	Cold:	
	Room temperature:	
	Cold:	
	Room temperature:	
	Cold:	

Did the temperature of the cheese affect the flavor of the cheese? \_\_\_\_\_

If so, how?

---

---

---

How did the flavor of the new cheeses compare to your favorite cheese?

---

---

---

Which cheese did you prefer? \_\_\_\_\_

How might you serve this cheese in the future?

---

---

---

What did you learn about trying new foods?

---

---

---



## Fruit & Cheese Ball

*Yield: 12 servings*

### Ingredients

1 package (8 oz.) cream cheese, softened  
 1 cup shredded cheddar cheese  
 1/4 teaspoon cinnamon  
 3/4 cup dried fruit, finely chopped  
     (apples, figs, dates, raisins)  
 1/3 cup nuts, finely chopped  
 Crackers

### Equipment

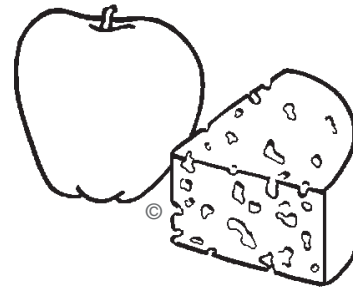
Large mixing bowl  
 Measuring cups and spoons  
 Mixing spoon  
 Knife  
 Cutting board



### Order of Work

1. In large bowl, mix cream cheese, cheddar cheese, and cinnamon until well blended.
2. Stir in dried fruit.
3. Shape mixture into ball.
4. Roll in chopped nuts.
5. Wrap cheese ball in plastic wrap and refrigerate until firm.
6. Serve with crackers.
7. Store in refrigerator up to 2 weeks.

**Nutrition Facts per Serving:** 154 calories, 12 g fat, 183 mg sodium, 8 g carbohydrates, 1 g fiber, 4 g protein, 82 mg calcium



## Orange Smoothie

*Yield: 4 servings*

### Ingredients

1 1/2 cups skim milk  
 1 can (6 oz.) orange juice concentrate,  
     softened  
 1 1/2 cups water  
 1 1/2 teaspoons vanilla extract

### Equipment

Measuring cups and spoons  
 Blender

### Order of Work

1. Blend all ingredients together in a blender.
2. Serve immediately or freeze.

**Nutrition Facts per Serving:** 155 calories, less than 1 g fat, 59 mg sodium, 32 g carbohydrates, 1 g fiber, 5 g protein, 157 mg calcium



## Slow Cooker Cheesy Pizza Dip

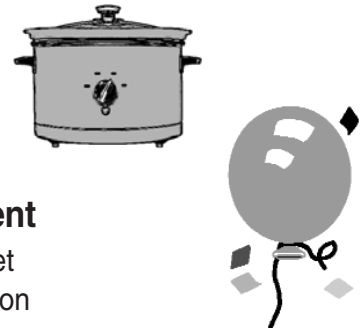
*Yield: 18 1/4-cup servings*

### Ingredients

1 pound ground beef  
2 cans (16 oz.) pizza sauce with cheese  
8 ounces cheddar cheese, shredded  
8 ounces mozzarella cheese, shredded  
1 teaspoon oregano  
1 tablespoon cornstarch  
Tortilla chips or French bread

### Equipment

Large skillet  
Mixing spoon  
Colander  
Glass or metal container  
Slow cooker  
Rubber spatula



### Order of Work

1. Place ground beef in skillet. Stir meat and break it apart while it is cooking. Cook until meat is lightly browned and thoroughly cooked. Remove skillet from heat.
2. Place colander over a glass or metal container to catch drippings. Pour cooked meat into the colander to drain.
3. Pour cooked beef into slow cooker.
4. Add pizza sauce, cheddar cheese, mozzarella cheese, oregano, and cornstarch. Mix thoroughly. Scrap sides of slow cooker with rubber spatula to prevent food from scorching.
5. Cover and cook on low heat setting for one hour. Stir until cheese is smooth.
6. Scrape sides of slow cooker with rubber spatula.
7. Dip can remain on low setting up to 3 hours while it is being served. Stir occasionally to keep the cheese creamy. Serve with tortilla chips or French bread chunks.

**Nutrition Facts per Serving:** 104 calories, 5 g fat, 407 mg sodium, 6 g carbohydrates, 1 g fiber, 8 g protein, 108 mg calcium

## Lemon Velvet Smoothie

*Yield: 6 servings*

### Ingredients

8 ounces low-fat lemon yogurt  
1 can (8 oz.) orange juice concentrate  
2 1/2 cups low-fat milk  
1 teaspoon vanilla extract

### Equipment

Measuring cups  
and spoons  
Blender



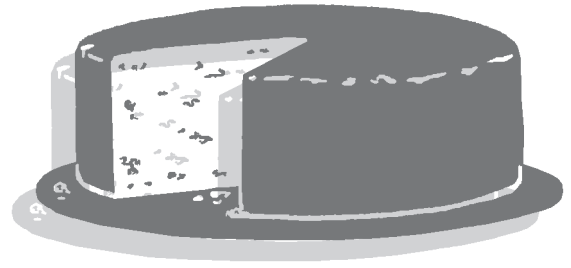
### Order of Work

1. Blend all ingredients together in a blender.
2. Serve immediately or freeze.

**Nutrition Facts per Serving:** 175 calories, 2 g fat, 80 mg sodium, 32 g carbohydrates, less than 1 g fiber, 6 g protein, 206 mg calcium



# DESSERTS



## Cakes

If you're in a hurry to prepare a dessert, cake mixes are quick and easy to use and produce a cake with a good flavor. But cakes made from a mix cannot compare to the taste and texture of a cake made from “scratch.” A homemade cake makes any occasion special because of the time and effort the baker puts into making the cake and the superior taste of the cake.

Don't let cake baking intimidate you! There are basically two kinds of cake — **shortened cakes** and **foam cakes**. Once you know and use the right ingredients and techniques for making each type of cake, you can make unlimited variations.

Moist, flavorful **shortened cakes** use fat for flavor and texture. Most shortened cake recipes begin by beating the fat with sugar to create air bubbles — a cooking technique called **creaming**. Adding leaveners, such as baking powder or baking soda, causes air bubbles to form during baking, producing a light crumb. The cake recipes in this manual are shortened cakes.

**Foam cakes** usually contain small amounts of fat and little or no leaveners. Air is whipped into eggs, egg whites, or a combination of the two to create the leavening for foam cakes, producing a spongy texture. Foam cakes, such as angel food cakes, are often paired with fruit toppings and creamy fillings to add extra flavor and texture. You'll learn more about foam cakes in *4-H Cooking 401*.

In *4-H Cooking 301* you will learn and practice techniques to make moist, light shortened cakes. Once you understand why each step is important, you can easily master the process. Let's start with the ingredients.

## Accurate Measurements

Accurately measuring ingredients is one of the most important steps in making good cakes. The difference between a moist, tender cake and a dry, coarse cake is often a matter of correct measurements. Use the proper techniques and equipment to measure ingredients. (For more information on how to measure ingredients see *4-H Cooking 101* pages 22 to 25.)



## All-purpose or Cake Flour?

The type of flour used to make the cake will affect its texture. Flour contains protein. When the protein comes in contact with water and heat, it produces **gluten**. Gluten makes the dough or batter strong and elastic to capture the gases and moisture released during baking. That causes the baked product to rise. (For more information on gluten see Yeast Breads on page 21.) Different types of flour contain various amounts of protein. Typically when baking cakes, you should use a flour with a low protein content, such as cake flour. Using a different type of flour than what is called for in a recipe will give different results for cakes or other baked goods.

**All-purpose flour** has a 10 to 12% protein content and is made from a blend of hard and soft wheat flours. It can be bleached or unbleached. When using all-purpose flour to make cakes, after adding the flour, mix the batter just enough to blend in the flour. Because of the higher protein content of the flour, over-mixing causes more gluten to form and that produces a cake with a coarse texture.

**Cake flour** is used to make cakes with a fine-grained, tender texture — also known as the **crumb**. Cake flour has a 6 to 8% protein content and is made from soft wheat flour. After adding flour to the cake batter, mix just enough to blend in the flour.

### To Substitute All-purpose Flour for Cake Flour

Use 3/4 cup sifted, bleached all-purpose flour plus 2 tablespoons cornstarch as substitute for 1 cup cake flour.

Whisk to blend completely before adding to the cake batter.

## To Sift or Not to Sift?

Flour is sometimes labeled pre-sifted. This means that the flour was sifted before packaging, but the flour compacts again during shipping and handling and may need sifting again. If the recipe calls for “1 cup sifted flour,” sift the flour before measuring. However, if the recipe calls for “1 cup flour, sifted,” sift the flour after measuring.

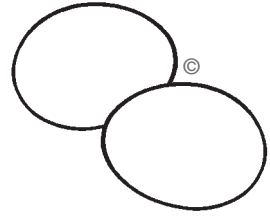
## Leavening Agents

Shortened cake recipes will use baking powder, baking soda, or a combination of the two as leavening agents. (For more information on leavening agents see *4-H Cooking 201* page 46.) The other ingredients you use determine whether baking powder is used alone or combined with baking soda. If the recipe uses an acidic ingredient, such as buttermilk or sour cream, typically the recipe will use baking soda to balance the acidic ingredients.



## Eggs

Eggs add flavor and color to cake and they hold the cake together when it is baked. When adding whole eggs to creamed butter and sugar, add eggs one at a time and beat well after adding each egg. Some cake recipes call for you to beat the egg whites until stiff and then fold them into the batter. Each method incorporates more air into the batter and produces a lighter cake.



About 30 to 45 minutes before you need them, remove from the refrigerator the number of eggs listed in the cake recipe. This allows the eggs to reach room temperature. Room temperature eggs beat more quickly and incorporate more air than cold eggs. If the recipe calls for egg whites, separate the eggs while they are cold. Cold eggs separate more easily. Then allow the egg whites to reach room temperature. Remember to practice food safety and don't leave the eggs at room temperature for more than two hours.

## Beating Egg Whites

When a recipe calls for beating egg whites to form **stiff peaks**, separate the eggs while they are cold and then allow the whites to come to room temperature. Be careful not to get any yolk in the egg whites. The smallest amount of egg yolk, water, or fat can prevent the whites from forming peaks. The yolks can be saved for another purpose. Place egg whites in a stainless steel or glass mixing bowl. The bowl and beaters should be completely clean and dry. Use the mixer to beat the egg whites slowly until they are foamy. Increase the speed and beat eggs until they become firm. Test the eggs frequently to determine if stiff peaks form. To test the eggs, lift the beaters straight up from the egg whites. Small peaks should form on top of the egg whites and remain in place. When the bowl is tilted, the egg mixture should not slide around. Overbeating will cause the eggs to clump together and become dry.

Gently fold the beaten egg whites into the cake batter. Do not stir or beat the mixture to prevent losing the volume.

## Baking Pans

For the best results, use the pan size called for in the recipe. To check the width of a pan, measure across the top from inside edge to inside edge. Shiny metal pans work best for baking cakes. They reflect heat away, producing a tender, lighter-colored crust. Dark nonstick baking pans or glass baking dishes absorb more heat. If you use these pans, reduce the baking temperature by 25 degrees.

## Preparing the Baking Pans

To prepare the baking pan, lightly coat the bottom of the pan with nonstick cooking spray. Cakes will rise better if the sides of the pan are not coated. Layer cakes can be removed from the pan more easily if you cut a piece of wax paper to fit the bottom of the pan. To prepare the wax paper, set the baking

pan on top of the wax paper. Trace around the bottom of the baking pan with a pencil or pen. Cut along the marked line and then place the wax paper in the bottom of the baking pan. Lightly coat the top of the wax paper with nonstick cooking spray. After baking, immediately remove the wax paper from the bottom of the cake when it is turned onto a cooling rack to prevent the paper from sticking to the cake.

If the recipe calls for “dusting” the pans with flour, after lightly coating the bottom of the pan with cooking spray, add about 1 teaspoon of flour to the pan. Then rotate and shake the pan until the flour lightly covers the coated surfaces. To remove the excess flour, turn the pan over and tap the bottom and sides. Or you may use nonstick cooking spray that contains flour. Lightly coat the bottom of the baking pan with this cooking spray.

## Mixing Ingredients

The key to making light, tender cakes is to mix ingredients thoroughly and to add as much air to the mixture as possible. The first step that adds air to the cake batter is **creaming** or beating the butter and sugar. When a recipe calls for creaming butter until light and fluffy, the butter should be at room temperature in order to trap and hold air. If the butter is too cold or too warm, it won't hold air in the batter, resulting in a flat or dense cake.

Remove the butter from the refrigerator and allow about 30 to 45 minutes for it to reach room temperature. When the butter is soft enough to hold a light thumbprint, it's ready to use. Cutting the butter into pieces speeds up the process. Warming butter in a microwave is not recommended because the butter may melt or heat unevenly.

For best results when creaming the butter and sugar, use a hand or stand mixer. Begin by mixing the butter until it is smooth and creamy. Gradually add the sugar and beat until the mixture is light and fluffy. This important step adds air to the batter and that affects the texture and tenderness of the cake. Be patient — creaming the butter and sugar takes 3 to 4 minutes. The butter mixture will lighten in color and increase in volume.

When adding eggs to the creamed butter and sugar, add one at a time and mix completely before adding the next egg. Eggs add flavor to the cake and help the cake hold together when baked.

When mixing dry ingredients into the batter, be careful not to over-mix the batter. If using an electric mixer, mix just enough to blend the ingredients. Slow the mixer down to low speed and sprinkle in about one third of the dry ingredients. Mix the batter while adding about one third of the liquid. Continue alternately adding the dry and liquid ingredients until all are incorporated into a smooth batter.

Some recipes call for folding the dry ingredients into the batter because stirring can remove air from the batter. To fold, use an up-and-down lifting motion and thoroughly blend the dry ingredients into the batter. Folding helps add air to the batter.



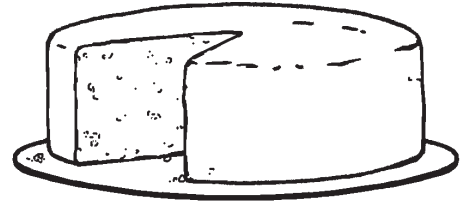
After mixing is complete, pour the batter into the prepared baking pans, distributing the batter equally between the pans. Before placing the pans in the preheated oven, hold each pan securely and firmly hit the bottom on the counter to remove any large air bubbles. Immediately place filled baking pans in preheated oven.

## Baking

Preheat the oven to the temperature called for in the recipe. Improper oven temperatures can cause poor quality in cakes. Place oven racks in the center of the oven, unless the recipe states differently. Allow 2 to 3 inches of space around each pan for the heat to circulate.

## Tests For Doneness

Cakes are done when: 1) the center of the top is not soft, but springs back when you touch it lightly with your finger; 2) a toothpick or metal cake tester inserted in the center of the cake comes out clean; 3) the cake shrinks slightly from the sides of the pan.

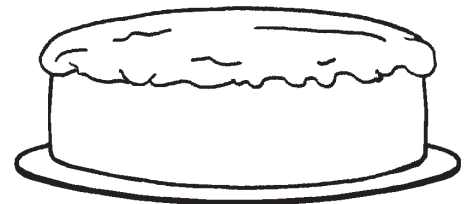


## Cooling

If cakes are left in the baking pans too long after they are removed from the oven, the crust becomes soggy. To properly cool cakes, place the baking pans on cooling racks when they are removed from the oven. For round cakes, allow them to cool in their pans for 10 minutes. Then gently run a knife around the edge of the pan, place the cooling rack over the top of the pan, and then flip the pan over onto the cooling rack. Tap gently on the bottom of the pan to completely remove the cake. If wax paper was used, immediately remove it from the bottom of the cake. Rectangular cakes, typically baked in 9" x 13" baking pans, can be cooled completely in the pan or cooled 10 minutes in the pan and then removed from the pan and placed on a cooling rack.

## Frosting

Frost cakes when they are completely cooled (unless the recipe states differently), or the frosting will melt and slide off the cake.



## Trouble Shooting Problems

Refer to this checklist to determine why a cake did not turn out as expected.

Problem	Reason
Cake has a coarse texture	Too much baking soda or baking powder Not enough liquid Butter and sugar not beaten together long enough (at least three to four minutes of beating) Oven temperature was too low
Cake is too dry	Too much flour or leavening Not enough shortening or sugar Cake was over-baked <ul style="list-style-type: none"> <li>• Oven temperature was too high</li> <li>• Baking time was too long</li> </ul>
Cake falls (center of cake sinks)	Cake was under-baked <ul style="list-style-type: none"> <li>• Oven temperature was too low</li> <li>• Baking time was too short</li> </ul> Liquid was over- or under-measured Pan was too small Cake was moved or jarred before sufficiently baked Old or expired baking powder was used
Cake is flat	Liquid was over- or under-measured Batter was under-mixed or extremely over-mixed Too large a pan was used Oven temperature was too low or too high
Cake has a peaked center	Batter was over-mixed Oven temperature was too high



## Trouble Shooting Problems, continued

Cake shrinks around the edges	Baking pans were greased too heavily Baking pans too close together in the oven Too little batter in the baking pan Batter was extremely over-mixed Liquid was under-measured Cake was over-baked <ul style="list-style-type: none"> <li>• Oven temperature was too high</li> </ul>
Cake is soggy	Cake was moved or jarred before sufficiently baked Cake was under-baked <ul style="list-style-type: none"> <li>• Oven temperature was too low</li> <li>• Baking time was too short</li> </ul> Old or expired baking powder was used
Cake has a sticky top crust	Cake was stored while still warm Liquid was over-measured Cake was under-baked Oven temperature was too low Baking time was too short Air humidity was too high
Cake has tunnels throughout	Oven temperature was too high Batter was under-mixed or extremely over-mixed
Cake has uneven browning	Uneven heat circulation in the oven Baking pans were too close together in the oven
Cake has uneven layers	Oven rack was not level Cake pans were warped or bent

# Rich White Cake

*Yield: 12 servings*

## Ingredients

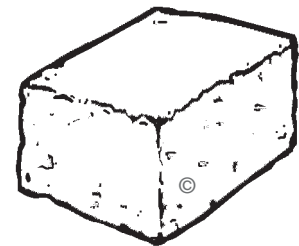
3/4 cup egg whites (about 6 egg whites)  
 1 teaspoon flour  
 3 cups sifted cake flour  
 1/2 teaspoon salt\*  
 3 teaspoons baking powder  
 3/4 cup unsalted butter\*  
 2 cups sugar  
 1 teaspoon vanilla  
 1 cup milk

## Equipment

Egg separator  
 Large, medium, and small mixing bowls  
 3 8-inch\*\* or 2 9-inch cake pans  
 or 9" x 13" baking pan  
 Nonstick cooking spray  
 Measuring cups and spoons  
 Sifter  
 Mixing spoon  
 Mixer  
 Rubber scraper  
 Toothpick or cake tester  
 Cooling rack(s)

## Order of Work

1. Separate eggs and place egg whites in medium mixing bowl. Save yolks for another use. Allow egg whites to reach room temperature.
2. Preheat oven to 350 degrees F. Lightly coat cake pan(s) with nonstick cooking spray. Add 1 teaspoon flour to pan. Rotate and shake pan until surfaces are coated with flour. Remove excess flour. (Or cover bottom of pans with wax paper instead of flouring pans.)
3. Lightly spoon cake flour into measuring cup; sift and then measure. Place flour in small mixing bowl. Add salt and baking powder to flour and mix well; set aside.
4. In large mixing bowl, use mixer to cream butter until soft; gradually add sugar, mixing until mixture is very light and fluffy, about 3 to 5 minutes. Add vanilla and continue creaming.
5. Add one-third of the sifted flour mixture and half of the milk, repeat until all of the flour and milk are used. After each addition of flour and milk, mix for 1 minute.
6. Thoroughly clean and dry mixer beaters. Beat egg whites until stiff peaks form. Egg whites should stand up in small peaks with the tip end rounded.
7. Carefully **fold** beaten whites into cake batter just until blended.
8. Pour batter into pan(s) and bake for 35 to 45 minutes for 8-inch or 9-inch pans; 50 minutes for 9" x 13" pan. Use toothpick or cake tester to test cake. Toothpick or cake tester should come out clean when inserted into center of cake.
9. Remove from oven and cool on rack for 15 minutes before removing from pan(s).
10. When completely cool, frost with favorite frosting or serve without frosting.



**Nutrition Facts per Serving:** 327 calories, 12 g fat, 270 mg sodium, 53 g carbohydrates, 1 g fiber, 5 g protein, 58 mg calcium

\*If desired, decrease salt to 1/4 teaspoon and use salted butter.

\*\*If using 3 8-inch pans, be sure there is enough room in the oven for air to circulate for even baking.





# Rich Chocolate Cake

*Yield: 12 servings*

## Ingredients

3 squares unsweetened chocolate, melted  
 1 teaspoon flour  
 3 cups sifted cake flour  
 1/2 teaspoon salt\*  
 3 teaspoons baking powder  
 1 1/4 cups unsalted butter\*  
 2 1/4 cups sugar  
 1 teaspoon vanilla  
 4 eggs  
 1 cup milk

## Equipment

Small pan or microwave-safe bowl  
 3 8-inch\*\* or 2 9-inch cake pans  
     or 9" x 13" baking pan  
 Nonstick cooking spray  
 Large and small mixing bowls  
 Measuring cups and spoons  
 Sifter  
 Mixing spoon  
 Mixer  
 Rubber scraper  
 Toothpick or cake tester  
 Cooling rack(s)

## Order of Work

1. Melt chocolate in small pan over low heat or in microwave (following directions on package) and cool to lukewarm.
2. Preheat oven to 350 degrees F. Lightly coat cake pan(s) with nonstick cooking spray. Add 1 teaspoon flour to pan. Rotate and shake pan until surfaces are coated with flour. Remove excess flour. (Or cover bottom of pans with wax paper instead of flouring pans.)
3. Lightly spoon cake flour into measuring cup; sift and then measure. Place flour in small mixing bowl. Add salt and baking powder to flour and mix well; set aside.
4. In large mixing bowl, use mixer to cream butter until soft; gradually add sugar, mixing until mixture is very light and fluffy, about 3 to 5 minutes. Add vanilla and continue creaming.
5. Add eggs one at a time and beat well after adding each egg.
6. Add cooled chocolate to creamed mixture.
7. Add one-third of the sifted flour mixture and half of the milk, repeat until all of the flour and milk are used. After each addition of flour and milk, mix for 1 minute.
8. Pour batter into pan(s) and bake for 40 to 45 minutes for 8-inch or 9-inch pans; 50 minutes for 9" x 13" pan. Use toothpick or cake tester to test cake. Toothpick or cake tester should come out clean when inserted into center of cake.
9. Remove from oven and cool on rack for 15 minutes before removing from pan(s).
10. When completely cool, frost with favorite frosting or serve without frosting.

**Nutrition Facts per Serving:** 434 calories, 26 g fat, 270 mg sodium,  
 54 g carbohydrates, 2 g fiber, 6 g protein, 70 mg calcium

\*If desired, decrease salt to 1/4 teaspoon and use salted butter.

\*\*If using 3 8-inch pans, be sure there is enough room in the oven for air to circulate for even baking.



# Chocolate Pudding Cake

Yield: 8 1/2-cup servings



## Ingredients

1 cup flour  
 1/2 cup sugar  
 1/2 cup pecans, coarsely chopped  
 1/4 cup unsweetened cocoa  
 2 teaspoons baking powder  
 1/2 teaspoon salt  
 1/2 cup milk  
 1/4 cup oil  
 1 teaspoon vanilla  
 1 cup boiling water  
 1/2 cup chocolate syrup  
 2 cups hot water

## Equipment

Mixing bowl  
 Measuring cups and spoons  
 Mixing spoon  
 1 1/2 quart baking dish  
 (must fit inside slow cooker)  
 Nonstick cooking spray  
 Small rack, foil ring, or  
 canning jar lids  
 Slow cooker  
 Aluminum foil, optional

## Order of Work

1. In a small mixing bowl, combine flour, sugar, pecans, cocoa, baking powder, and salt.
2. Stir in milk, oil, and vanilla.
3. Spray baking dish with nonstick cooking spray. Fill with batter.
4. In a measuring cup, mix boiling water with chocolate syrup. Pour over cake batter. Cover casserole container with foil, if desired.
5. Place a small rack, foil ring, or several canning jar lids in bottom of slow cooker crock. Add 2 cups of hot water to the container.
6. Place baking dish in the slow cooker. Cover and cook on high for 3 to 4 hours. Cake is done when crust springs back when lightly touched, or when toothpick inserted in center comes out clean. Serve warm with ice cream or whipped topping, if desired.



**Nutrition Facts per Serving:** 266 calories, 13 g fat, 303 mg sodium, 36 g carbohydrates, 2 g fiber, 4 g protein, 52 mg calcium



# Oatmeal Cake

*Yield: 16 servings*

## Ingredients

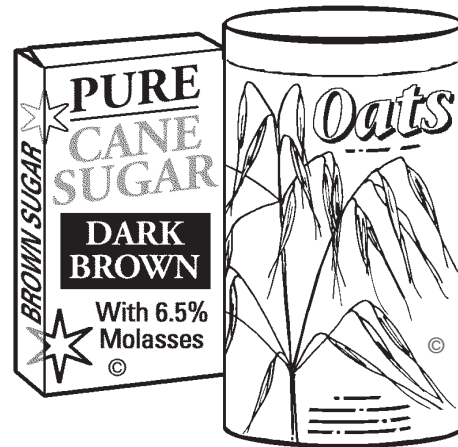
1 1/2 cups boiling water  
 1 cup oats  
 1 cup sugar  
 1 cup brown sugar, packed  
 1/2 cup butter or margarine  
 2 eggs  
 1 teaspoon vanilla  
 1 1/2 cups all-purpose flour  
 1 teaspoon baking soda  
 1 teaspoon baking powder  
 1 teaspoon nutmeg  
 1 teaspoon cinnamon  
 1/2 teaspoon salt

## Topping

3/4 cup brown sugar, packed  
 6 tablespoons butter or margarine  
 1/4 cup milk  
 1 cup shredded coconut  
 1/2 cup chopped nuts

## Equipment

9" x 13" baking pan  
 Nonstick cooking spray  
 Small bowl  
 Measuring cups and spoons  
 Mixing spoon  
 Mixer  
 Large and small mixing bowls  
 Rubber scraper  
 Toothpick or cake tester  
 Metal spatula  
 Cooling rack



## Order of Work

1. Preheat oven to 350 degrees F. Lightly coat baking pan with nonstick cooking spray.
2. In a small bowl, mix together boiling water and oats. Set aside.
3. Using a mixer and the large mixing bowl, cream together the sugars and butter or margarine.
4. Add eggs, one at a time and beat well after each. Add vanilla.
5. In small mixing bowl, combine the flour, baking soda, baking powder, nutmeg, cinnamon, and salt.
6. Add dry ingredients and prepared oats to mixture in large mixing bowl. Mix just until dry ingredients are combined. Pour into prepared baking pan.
7. Bake for 30 to 35 minutes or until a toothpick or metal cake tester inserted in the center of the cake comes out clean.
8. While cake is baking, prepare the topping by mixing all ingredients together in small mixing bowl.
9. Remove cake from oven and spread topping on cake.
10. Return cake to oven for 5 minutes. Topping may be heated by using the broiler. Turn the broiler on and place cake under it for 3 to 5 minutes or until frosting is slightly bubbly and toasted. Watch carefully as topping may burn easily. Remove from oven and place on cooling rack to cool.

**Nutrition Facts per Serving:** 343 calories, 16 g fat, 304 mg sodium, 54 g carbohydrates, 2 g fiber, 4 g protein, 39 mg calcium

# Carrot Cake

*Yield: 16 servings*

## Ingredients

2 cups flour  
2 cups sugar  
2 teaspoons baking soda  
2 teaspoon cinnamon  
1 teaspoon salt  
1 cup salad oil  
4 eggs  
3 cups carrots, shredded  
1 teaspoon vanilla  
1 cup nuts, chopped

## Equipment

9" x 13" baking pan or 2 8-inch  
or 9-inch round cake pans  
Nonstick cooking spray  
Measuring cups and spoons  
Large and medium mixing bowls  
Mixer  
Mixing spoon  
Spatula  
Cooling rack

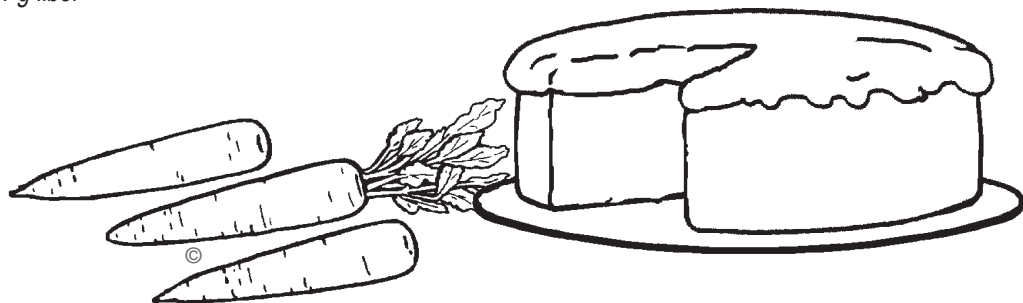
## Order of Work

1. Preheat oven to 350 degrees F. Lightly coat 9" x 13" baking pan or 2 8-inch or 9-inch round cake pans with nonstick cooking spray.
2. Combine flour, sugar, baking soda, cinnamon, and salt in medium bowl; mix well.
3. In large bowl add oil and beat in eggs, one at a time.
4. Gradually add flour mixture to egg mixture and beat until thoroughly mixed.
5. Add carrots, vanilla, and nuts; mix until thoroughly combined. Pour into prepared pans.
6. For 9" x 13" pan, bake 45 minutes or until toothpick inserted in middle comes out clean. For 8-inch or 9-inch round cake pans, bake 30 to 35 minutes or until toothpick inserted in middle comes out clean. Remove from oven and cool on wire rack. Frost cake with Cream Cheese Frosting and store in refrigerator.

## Variations

- Add 8 ounces of drained crushed pineapple with carrots.
- Substitute 3 cups shredded zucchini for shredded carrots. Add one teaspoon ground nutmeg.

**Nutrition Facts per Serving with Frosting:** 470 calories, 28 g fat, 365 mg sodium, 56 g carbohydrates, 1 g fiber



# Grandma's Apple Cake

*Yield: 16 servings*

This cake is more like a coffeecake and has a coarse texture. It's great when apples are in season!

## Ingredients

4 cups apples, peeled and diced  
2 cups sugar  
1/2 cup vegetable oil  
2 eggs, beaten  
2 cups flour  
2 teaspoons baking soda  
2 teaspoons cinnamon  
1/2 teaspoon salt  
2 teaspoons vanilla  
1 cup nuts, chopped  
Whipped topping, if desired

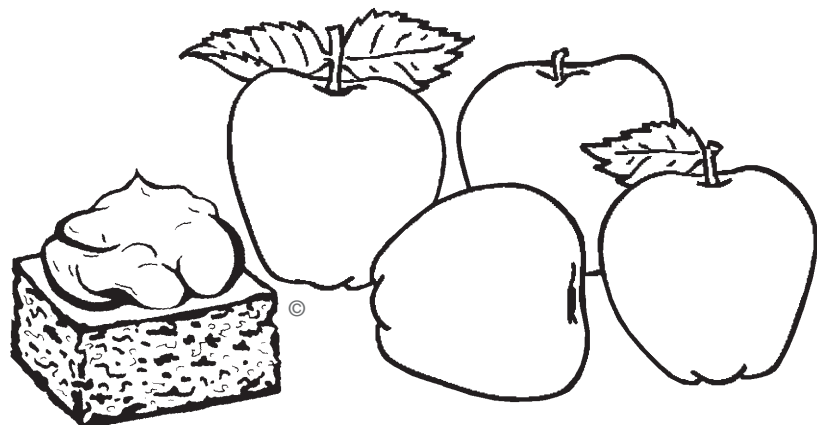
## Equipment

Knife  
Cutting board  
Large and small mixing bowls  
9" x 13" baking pan  
Nonstick cooking spray  
Measuring cups and spoons  
Mixing spoon  
Toothpick or cake tester  
Cooling rack

## Order of Work

1. Place peeled and diced apples in large mixing bowl and pour sugar over apples. Stir and let mixture stand 30 minutes.
2. Preheat oven to 350 degrees F. Lightly coat baking pan with nonstick cooking spray.
3. Add oil and eggs to apples and mix until well combined.
4. In small mixing bowl, mix flour, baking soda, cinnamon, and salt.
5. Add dry ingredients to apple mixture and mix just until dry ingredients are combined. Add vanilla and nuts; stir.
6. Pour batter into prepared pan. Bake for 30 to 40 minutes, until a toothpick or metal cake tester inserted in the center of the cake comes out clean. Place baking pan on cooling rack.
7. Serve cake with whipped topping if desired.

**Nutrition Facts per Serving:** 254 calories, 13 g fat, 239 mg sodium, 35 g carbohydrates, 2 g fiber, 3 g protein, 14 mg calcium



## Butter Cream Frosting

*Yield: 2 cups frosting (enough for a 9" x 13" cake, 2 round cake layers, or 24 cupcakes)*

### Ingredients

1/4 cup butter or margarine, softened  
3 cups powdered sugar  
1/8 teaspoon salt  
3 tablespoons milk  
1 teaspoon vanilla

### Equipment

Mixing bowl  
Mixer  
Measuring cups and spoons  
Mixing spoon  
Spatula

### Order of Work

1. Place butter or margarine in bowl and beat until creamy.
2. Add powdered sugar, salt, milk, and vanilla. Beat until mixture is smooth and creamy.
3. If frosting is too stiff to spread easily, add additional 2 to 3 teaspoons milk and beat. Spread over cooled cake.

**Nutrition Facts per Serving:** 77 calories, 2 g fat, 27 mg sodium, 15 g carbohydrates, 0 g fiber, less than 1 g protein, 3 mg calcium

### Variation

Chocolate Butter Cream Frosting — add 1/2 cup cocoa

## Chocolate Frosting

*Yield: 2 cups frosting (enough for a 9" x 13" cake, 2 round cake layers, or 24 cupcakes)*

### Ingredients

3 tablespoons butter or margarine  
3 1-ounce unsweetened  
baking chocolate blocks  
6 tablespoons milk  
1 teaspoon vanilla  
3 cups powdered sugar  
1/8 teaspoon salt

### Equipment

Saucepan  
Mixing spoon  
Measuring cups and spoons

### Order of Work

1. Melt butter and chocolate in a saucepan over very low heat. Cook, stirring constantly until chocolate is melted and mixture is smooth.
2. Add milk and vanilla and continue to stir until mixture is smooth again.
3. Remove from heat and stir in powdered sugar and salt. Beat until well blended.
4. Cool to room temperature. Spread frosting over cooled cake.

**Nutrition Facts per Serving:** 140 calories, 5 g fat, 40 mg sodium, 24 g carbohydrates, 0 g fiber



## Cream Cheese Frosting

*Yield: 2 cups frosting (enough for a 9" x 13" cake, 2 round cake layers, or 24 cupcakes)*

### Ingredients

- 1/4 cup butter, softened
- 8 ounces cream cheese, softened
- 1 teaspoon vanilla
- 3 cups powdered sugar

### Order of Work

1. Add butter, cream cheese, and vanilla to mixing bowl and beat until creamy.
2. Add powdered sugar and mix well. Spread on top of cooled cake.

**Nutrition Facts per Serving:** 160 calories, 8 g fat, 65 mg sodium, 33 g carbohydrates, 0 g fiber

## Caramel Frosting

*Yield: 12 servings*

This frosting pairs well with spice cake, applesauce cake, or other heavy cakes. It is also a great frosting for drop cookies.

### Ingredients

- 1/2 cup butter or margarine
- 1 cup brown sugar, packed
- 1/8 teaspoon salt
- 1/4 cup milk
- 3 cups powdered sugar, approximately
- 1/2 teaspoon vanilla

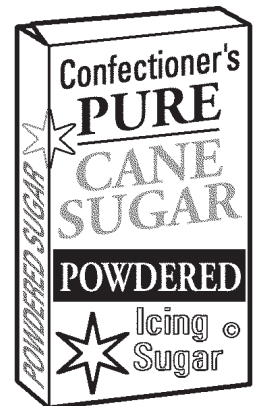
### Equipment

- Medium saucepan
- Measuring cups and spoons
- Mixing spoon
- Rubber scraper
- Food thermometer

### Order of Work

1. In saucepan, cook butter, brown sugar, salt, and milk until sugar is dissolved.
2. Cool slightly until temperature reaches 110 to 120 degrees F on a food thermometer.
3. Beat in enough powdered sugar to make frosting of good spreading consistency — about the same consistency as soft butter. Be careful not to add too much powdered sugar; the frosting will be too thick to spread.
4. Add vanilla and mix until smooth. Allow frosting to cool to room temperature.
5. Spread on cooled cake.

**Nutrition Facts per Serving:** 230 calories, 7 g fat, 85 mg sodium, 43 g carbohydrates, 0 g fiber, less than 1 g protein







# EQUIPMENT

**Bread knife** — knife with serrated blade that is ideal for cutting food with a crisp surface and soft interior.

**Cake tester** — a long thin wire inserted into the center of baked goods to test for doneness.

**Crock** — an earthenware pot used with slow cookers.

**Egg separator** — utensil with a rounded cup with two slits in the sides that allow the white of the egg to separate from the yolk.

**Parchment paper** — heavy, silicone-lined paper used in cooking and baking to keep foods from sticking.

**Salad spinner** — bowl with strainer insert and lid used to remove water from salad greens after washing.

**Skewers** — a thin metal or wooden stick used to hold pieces of food together.

**Slow cooker** — an electric cooker with an earthenware pot and a heating element that maintains a steady low temperature; used for simmering foods for several hours.

**Steam cooker** — an appliance used to steam foods without added fat using hot liquids, such as water or broth.



# GLOSSARY



**Basting** — brush or spoon a glaze, sauce, or drippings over a food as it cooks, to add flavor and to help keep the surface moist.

**Blisters** — pockets of gas that form on the surface of yeast bread dough during kneading.

**Botulism** — a rare type of foodborne illness.

**Creaming** — beating fat and sugar together until light and fluffy.

**Crumb** — the texture of baked goods.

**Edamame** — (pronounced ed-duh-MAH-may) green soybeans.

**Emulsifier** — substance that keeps fat dissolved in liquids.

**FAT TOM** — a phrase to help you remember the first letter of the conditions bacteria need to grow: **F**ood, **A**cid, **T**ime, **T**emperature, **O**xygen, and **M**oisture.

**Firebox** — the bottom portion of a gas or charcoal grill that contains the fire or charcoal.

**Fold** — combine ingredients by using a gentle circular motion.

**Gluten** — a protein in flour that makes dough or batter strong and elastic to capture the gases and moisture released during baking.

**Gluten flour** — flour with a high protein content; can be added to yeast bread dough made with other whole grain flours to produce bread with more volume and a finer crumb.

**Hydrogenation** — process of adding hydrogen to oils to make them solid.

**Kneading** — mix and work dough by folding, pressing, and stretching with the hands.

**Leavening** — an ingredient used to make breads, cookies, and cakes rise.

**Marinate** — allow food to stand in an oil and acid mixture to add flavor or tenderize.

**Multi-tasking** — working on two or more tasks at the same time.

**Oven spring** — a sudden increase in the volume of yeast dough during the first 10 to 12 minutes of baking.

**Partially hydrogenated oil** — fats that have hydrogen added to make them solid.

**Perishable Food** — foods that can spoil if not prepared, stored, or preserved properly.

**Punch down the dough** — after yeast dough has completed rising, punch dough firmly to release the gas that has collected.

**Rancid** — a bad taste or odor due to spoiled fats in food.

**Ripened** — cheese that is aged to give it more flavor.

**Saturated fat** — fat found mostly in foods from animals and some plants. Foods from plants that contain saturated fat include coconut oil, palm oil, and cocoa butter.

**Scald** — heat to a temperature just below boiling so that tiny bubbles form at the edge of the pan.

**Spongy** — small bubbles form on the surface of yeast mixture and produce a spongy appearance.

**Stiff peaks** — the peaks that form when beating egg whites; when beaters are lifted out of the egg whites, the peaks hold their shape and do not droop.

**Trans fats** — fats created when hydrogen is added to liquid vegetable oils to make them solid.

**Turn dough out** — use a spoon or spatula to push the ball of yeast dough out of the bowl.

**Volume** — the size or mass of baked goods.



# RECIPE INDEX



<b>Grain Group</b> .....	<b>21</b>	<b>Vegetable Group</b> .....	<b>65</b>
Baked Oatmeal .....	56	7-Layer Salad .....	69
Basic Bread .....	41	Basic Vinaigrette .....	71
Basic Dinner Rolls .....	40	Broccoli & Cauliflower Salad .....	73
Basic Icing .....	43	Confetti Bean Salsa .....	74
Basic Sweet Dough .....	42	Creamy Cole Slaw .....	72
Bread Machine Honey & Wheat Rolls .....	51	Fresh Asparagus, Tomato, & Feta Salad .....	74
Bread Machine Millet Bread .....	52	Grilled Corn .....	78
Bread Machine Pizza Crust .....	51	Grilled Potatoes .....	77
Carol's Breakfast Cookies .....	59	Grilled Vegetable Kabobs .....	75
Cheddar Cheese Spread .....	61	Honey Mustard Dressing .....	71
Cheese Bread .....	46	Marinated Vegetables .....	76
Cinnamon Twists .....	44	Ranch Dressing .....	70
Cinnamon Rolls .....	43	Slow Cooker Potato Soup .....	79
Garlic & Chive Spread .....	61	Slow Cooker Scalloped Corn .....	79
Herb Batter Bread .....	46	Slow Cooker Vegetable Medley .....	78
Homemade Granola .....	58	Spinach & Bacon Salad .....	68
Honey Spread .....	61	Spinach/Strawberry Salad with Poppy Seed Dressing .....	67
Pizza .....	47	<b>Fruit Group</b> .....	<b>80</b>
Refrigerator Rolls .....	49	Banana Pineapple Slush .....	82
Rye Bread .....	41	Frozen Fruit Salad .....	81
Soft Pretzels .....	48	Fruit Smoothie .....	80
Strawberry Spread .....	61	Fruit Sparkle .....	82
Swedish Tea Ring .....	45	Grilled Fruit on a Skewer .....	83
Waffles .....	57	Ice Cream or Pancake Fruit Topping .....	80
White Batter Bread .....	46	Skillet Fruit .....	81
Whole Wheat Bread .....	41	Slow Cooked Apples .....	83
Whole Wheat Rolls .....	40		

**Meat Group ..... 84**

Asian Marinade .....	88
Chicken & Fruit Salad .....	94
Grilled Burgers .....	84
Grilled Marinated Chicken Breasts .....	86
Grilled Meal in a Packet .....	85
Marinated Lemon Thyme Chicken .....	89
Mexicale Marinade .....	89
Orange Marinade .....	88
Oven Baked Fish .....	93
Oven Poached Fish .....	92
Pocketburgers .....	87
Salmon Cakes .....	94
Slow Cooker Cashew Chicken .....	98
Slow Cooker Chicken Stew .....	99
Slow Cooker Party Crab Spread .....	95
Slow Cooker Pork Barbeque Sandwiches .....	97
Slow Cooker Pulled Beef Sandwiches .....	96
Slow Cooker Spicy Pecans .....	98
Slow Cooker Sweet & Sour Sausage Balls .....	100
Tex Mex Fish Fillets .....	93

**Milk Group ..... 101**

Fruit & Cheese Ball .....	106
Lemon Velvet Smoothie .....	107
Orange Smoothie .....	106
Slow Cooker Cheesy Pizza Dip .....	107

**Desserts ..... 108**

Butter Cream Frosting .....	121
Carrot Cake .....	119
Carmel Frosting .....	122
Chocolate Butter Cream Frosting .....	121
Chocolate Frosting .....	121
Chocolate Pudding Cake .....	117
Cream Cheese Frosting .....	122
Grandma's Apple Cake .....	120
Oatmeal Cake .....	118
Rich Chocolate Cake .....	116
Rich White Cake .....	115





UNIVERSITY OF ILLINOIS  
EXTENSION



College of Agricultural, Consumer and Environmental Sciences

© Copyright 2009 University of Illinois Board of Trustees

University of Illinois College of Agricultural, Consumer and Environmental Sciences  
• United States Department of Agriculture • Local Extension Councils Cooperating

Urbana-Champaign, Illinois

ME0122

June 2009

Issued in furtherance of Cooperative Extension Work, Acts of May 8 and June 30, 1914, in cooperation with the U.S. Department of Agriculture, DENNIS R. CAMPION, Director, University of Illinois Extension. University of Illinois Extension provides equal opportunities in programs and employment. \*The 4-H Name and Emblem are Protected Under 18 U.S.C. 707.