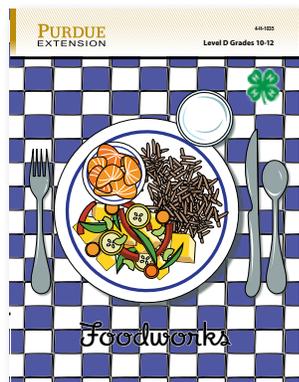
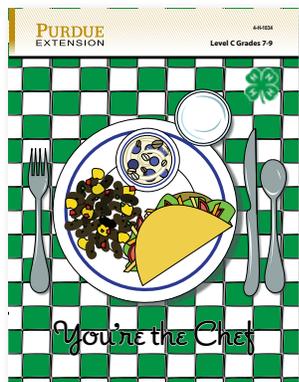
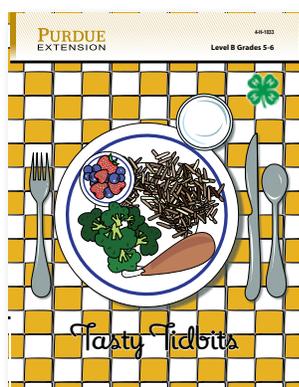
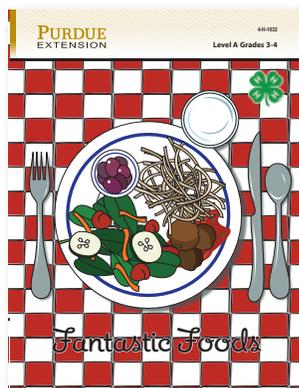




Project Helper Guide

Note to Project Helper



Congratulations on having a young person ask you to be his or her helper. Your role as a project helper is very important to the young person's total educational experience. Not only will you provide encouragement and recognition; you will also be the key person with whom the young person shares each of the experiences in this 4-H activity guide.

The Foods curriculum series is designed to help youth have fun in the kitchen as they learn basic food preparation skills, prepare different foods, do fun experiments, and go on fact-finding missions. These educational materials have been created with a focus on healthy food selection, smart food purchasing, food safety and science, food preparation, food preservation, and careers in the food industry. The design emphasizes teaching young people the importance of balance with their food choices as they are building healthy food habits that will carry them to adulthood.

Food is meant to be enjoyed, but it is also important to find a balance of regularly making healthy choices and occasionally indulging in a treat. The recipes that are included were developed with this concept in mind. Youth learn to prepare recipes that encourage increased fruit, vegetable, low-fat dairy, lean protein, and whole grain consumption. They will also be challenged to increase the nutritional value of recipes by making healthy ingredient choices.

Five pieces are available in the Foods curriculum. There are four activity guides—Fantastic Foods, Tasty Tidbits, You're the Chef, and Foodworks. These guides have been designed to be developmentally appropriate for grades 3–4, 5–6, 7–9, and 10–12, respectively, but may be used by youth in any grade based on their skills and expertise. The fifth piece, the Project Helper Guide, provides you with additional background and tips on helping youth through the activities in their guide. The Project Helper Guide is available online as a free downloadable item.

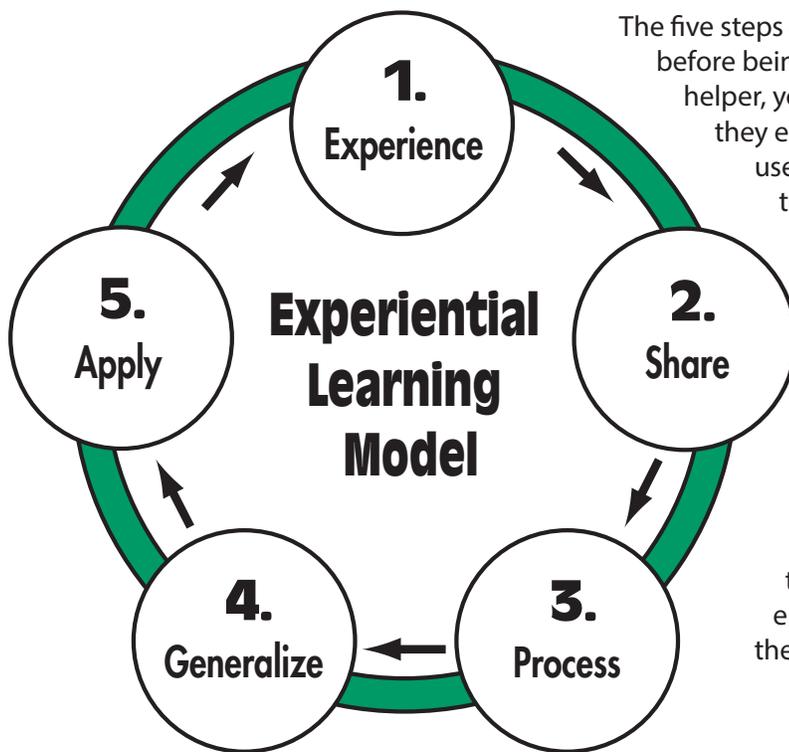
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The Experiential Learning Model

Learning by doing is one of the main reasons 4-H has been so widely recognized and respected in the field of informal education. It engages the learner, encouraging him/her to think more, work hard, and ultimately learn more thoroughly than with traditional teaching methods. The Indiana 4-H Foods curriculum follows a model known as the experiential learning process. Experiential learning is more than just doing activities. It involves discussing the activity, drawing conclusions from the activity, and applying them to the real world.

The experiential model and its five steps are used in each activity in this guide as a means to help youth gain the most from the learning experiences.



The five steps encourage youth to try to do the activity before being told or shown how (experience). As the helper, you will want to help the youth describe what they experience and their reaction (share). You can use the questions listed in the activity to help the youth:

- Discuss what was most important about what they did (process);
- Relate the life skill practiced to their own everyday experiences (generalize); and
- Share how they will use the life skill and project skill in other parts of their lives (apply).

Activities in the youth manuals are designed to help the 4-H members work through the entire experiential learning process as they do the activity and record their answers.

Pfeiffer, J.W., & Jones, J.E., "Reference Guide to Handbooks and Annuals"
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How Experiential Learning Works

Do

1. *Experience* – Begin with a concrete experience. This can be an individual or group activity that involves “doing something.”

Reflect

2. *Share* – Next get the group or individual to talk about what they experienced when they were doing the activity. Share reactions and observations. Talk freely.

Sharing questions:

What did you do?

What happened?

How did you feel to...?

What was the most difficult? Easiest?

3. *Process* – Discuss how questions are created by the activity. Processing questions (use information generated from sharing questions):
What problems or issues seemed to occur over and over?
What similar experience(s) have you had?

Apply

4. *Generalize* – Find general trends or common lesson in the experience. Identify the important points that apply to the real world.

Generalizing questions:

What did you learn about yourself through this activity?

What did you learn about making decisions (or other life skills)?

How do the major themes or ideas relate to real life and not just the activity?

How did you go about making your decision?

5. *Apply* – Talk about how the new information can be applied to everyday life or sometime in the future.

Applying questions:

How can you apply what you learned to a new situation?

How will the issues raised by this activity be useful in the future?

How will you act differently in the future as a result of this activity?

Interactive Demonstrations

An interactive demonstration is a fun way for youth to share what they have learned with others. The key is getting the audience involved in doing what they are doing, not just showing them. Youth can give an interactive demonstration at a 4-H club meeting or anywhere a lot of people gather, like their school or a county or state fair.

Youth can choose almost any topic in the Foods curriculum or another topic of interest to them. Here are some questions to ask them when they are choosing a topic:

- Is it something that can be done in three to five minutes?
- Is it something other people might like to learn about?
- Is there something hands-on for the audience to do?
- Can the supplies for the hands-on activity be used over and over again, or do they have to be replaced every time? Having to replace them adds to the cost.

A demonstration should last about three to five minutes, and youth need to be able to do it over and over again with different people. They should have a conversation with the people they are demonstrating to. Their goal is to involve the audience. Youth can do this by having audience members do what they are doing, play a game, answer questions, or do a hands-on activity. Some example: how to use a measuring up or measuring spoon, or how to find things on a Nutrition Facts label.



The Foods Curriculum Format

The content of the 4-H Foods curriculum has a much broader focus than skills related to food preparation. Each of the four activity guides includes a series of lessons that focus on these six areas.

- Healthy food selection
- Smart food purchasing
- Food safety and science
- Food preparation
- Food preservation
- Careers in the food industry

The lessons are consistently taught around MyPlate, the USDA's guidelines for healthy eating. Recipes are designed to increase consumption of fruits, vegetables, low-fat dairy, lean protein, and whole grains in accordance with MyPlate recommendations.

At the upper left of each lesson, a green Recipe Box identifies the project skill and a life skill for that activity. *Project skills* are what the youth are learning to do. *Life skills* are broader abilities that can help them successfully live a productive and satisfying life. The Foods curriculum targets the following life skills, grouped into the four H's in the clover—Head, Heart, Hands, and Health:

Head

Using scientific methods
Processing information
Understanding systems
Managing time and resources
Practicing creativity
Making decisions
Planning and organizing
Understanding where food comes from

Heart

Communicating

Hands

Mastering technology
Completing a task

Health

Making healthy lifestyle choices
Preventing illness

Each lesson also includes a list of supplies/ingredients, background information, steps to complete the activity, and Kitchen Talk—questions that allow youth to reflect on what they've learned. To the right of some lessons are Extra Bites of additional information that complement the instruction or suggest variations of the activity.

Recipes focus on balancing health food choices with occasional treats and reflect appropriate portion size. A Nutrition Facts label is included for each recipe. Youth are challenged to increase recipes' nutritional value by adding or deleting ingredients. High school-aged students learn to adjust recipes for special dietary restrictions.

We hope this bright and consistent approach helps 4-H members enjoy learning about foods, and encourages them to balance their food choices with an active lifestyle.

NOTE: See pages 14-17 for a list of targeted life skills and project skills for each activity by curriculum level.

Everyone Needs Nutrients

Nutrients are the special substances that your body gets from the food you eat. Your body needs many different nutrients, because each nutrient does a certain job for your body. You need a lot of some nutrients and not as much of others. Your body is an amazing machine that knows how to handle all the nutrients you give it.

There are five important food groups: fruits, vegetables, grain, protein, and dairy. Each of these food groups contains a different set of nutrients. When you eat foods from every food group every day, you are sure to get all the nutrients your body needs.

Good sources of Vitamin A:

sweet potatoes, carrots, spinach, kale and other dark green leafy vegetables, and winter squash.

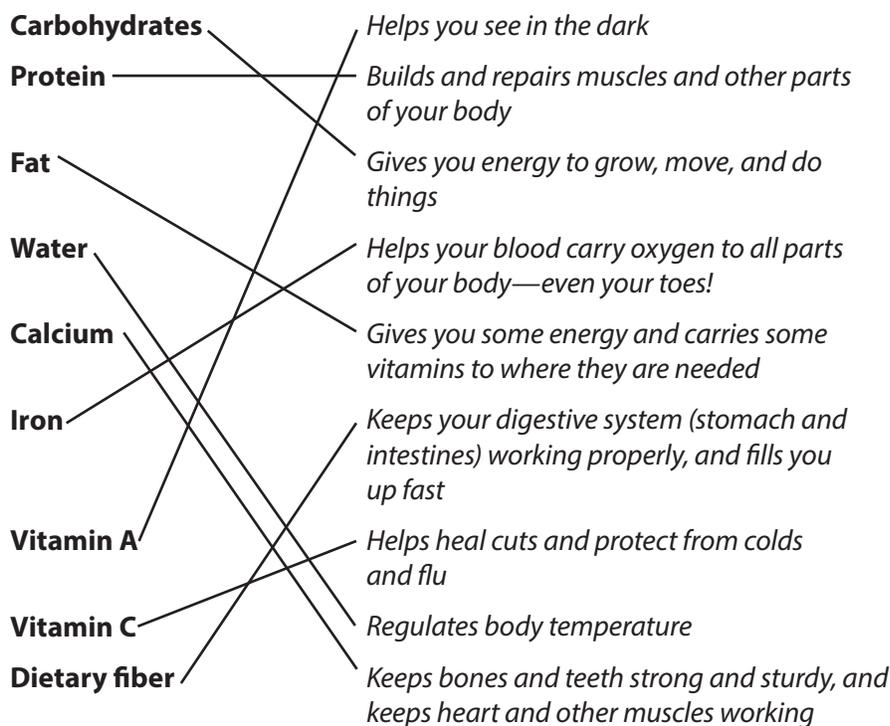
Good sources of Vitamin C:

bell peppers, broccoli, Brussels sprouts, strawberries, pineapple, oranges, kiwi-fruit, cantaloupe, and cauliflower.

Good sources of calcium:

dairy products including milk, yogurt, and cheese; dark green leafy vegetables; and salmon.

Draw a line between each nutrient and the job it does.



Nutrients: How do I get them?

How do you know what foods to eat to get all the nutrients your body needs to stay healthy? There's an easy way to check. Use MyPlate as a guide when choosing foods at meal times. Make half your plate fruits and veggies, choose a lean protein and a whole grain, and add a glass of milk or cup of yogurt, and you'll be on your way to a healthy life. How would you fill MyPlate at breakfast, lunch, and dinner to make sure you get all the nutrients you need?

You can also log on to www.ChooseMyPlate.gov, where you can develop your very own MyPlate recommendations and eat the suggested amounts of each food group every day. On this website, you can also keep track of your food intake and exercise!

Carbohydrates – Fuel your brain and muscles and give you energy to do things

Vitamin A – Helps you see in the dark

Protein – Builds and repairs muscles and other parts of your body

Fat – Gives you some energy and carries some vitamins to where they are needed

Dietary Fiber – Keeps your digestive tract working properly

Calcium – Keeps bones and teeth strong and sturdy, and your heart and other muscles working

Iron – Helps your blood carry oxygen to all parts of your body— even your toes!

Vitamin C – Helps heal cuts and protects from colds and flu

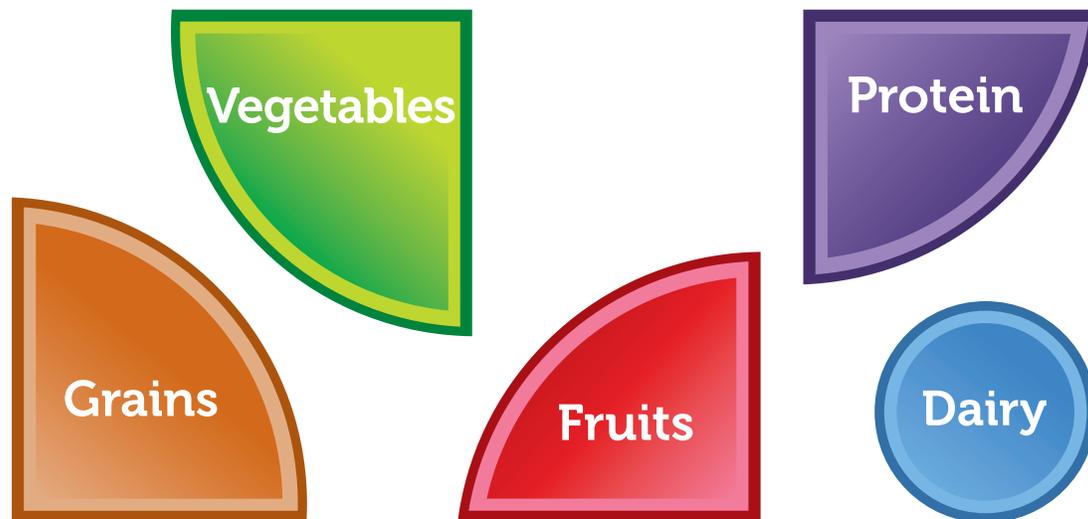


Putting MyPlate Together

MyPlate uses the five food groups as building blocks for a healthy diet. Before you eat, think about what goes on your plate or in your cup or bowl. Use the five food group shapes to build your healthy plate.



Choose **MyPlate**.gov



SERVING UP MyPlate



Fruits: Fuel Up With Fruits at Meals or Snacks

Pears, watermelon, plums, raisins, berries, and applesauce (without extra sugar) are just a few of the great choices. Make sure your fruit juice is 100% juice.



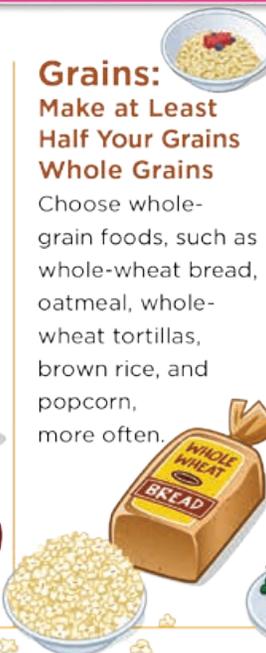
Vegetables: Color Your Plate With Great-Tasting Veggies

Try to eat more dark-green, red, and orange vegetables, and beans and peas.



Grains: Make at Least Half Your Grains Whole Grains

Choose whole-grain foods, such as whole-wheat bread, oatmeal, whole-wheat tortillas, brown rice, and popcorn, more often.



Protein: Vary Your Protein Foods

Try fish, shellfish, beans, and peas more often. Some tasty ways include a bean burrito, hummus, veggie chili, fish taco, shrimp stir-fry, or grilled salmon.



Dairy: Get Your Calcium-Rich Foods

Choose fat-free or low-fat milk, yogurt, and cheese at meals or snacks. Dairy foods contain calcium for strong bones and healthy teeth.



Keep on Moving!

Kids need at least 60 minutes of physical activity every day. Whether that's running, biking, tossing a ball, or playing tag, every little bit counts. So, run around at recess, jump rope with friends, ride your scooter, or play a sport. It all adds up!



Know Your "Sometimes" Foods

Look out for foods with added sugars or solid fats, such as candy, cake, cookies, chips, ice cream, soda, fruit punch, lemonade, hot dogs, and bacon. They fill you up so that you don't have room for the foods that help you eat smart and play hard. Enjoy these every once in a while, not every day.



Serving Up MyPlate — Grades 3 & 4
U.S. Department of Agriculture • Food and Nutrition Service • September 2012 • FNS-445

<http://teammnutrition.usda.gov>



Curriculum Scope and Sequence

Level A Fantastic Foods

Food Safety and Science

- a. Examining Germs
- b. Danger Zone
- c. Fuzzies on My Bread

Healthy Food Selection

- a. Mama Mia Pizza
- b. Bone Up on Calcium
- c. Fruit Kabobs
- d. Snackin' Power

Food Preparation

- a. Pancakes, Anyone?
- b. Classic Chocolate Chip Cookies
- c. Fruit in Muffins
- d. Micro Stuffed Potatoes

Smart Food Purchasing

- a. Decoding the Nutrition Facts Label
- b. Juice or Fruit Drink
- c. Making Brownie Cents
- d. Tune Into Advertising

Food Preservation

- a. You Be the Judge
- b. Frosty Freezer Fruit
- c. Fruit Granita
- d. Saving Leftovers

Careers and the Food Industry

- a. Farm to Table
- b. Eating in Season
- c. Food Industry Careers

Level B Tasty Tidbits

Food Safety and Science

- a. Food Safety 101
- b. Green Fuzzy Stuff
- c. Reheating Leftovers
- b. Make Your Own Yogurt

Healthy Food Selection

- a. The Gritty on Grains
- b. Here Come the Fruits and Veggies
- c. Where are the SOFAs?
- d. Fit It In!

Food Preparation

- a. Baking Better Batters
- b. Twisting Tasty Pretzels
- c. Easy Cheesy Lasagna
- d. Biscuits—Savory and Sweet

Smart Food Purchasing

- a. How Much Is It?
- b. What's in a Name?
- c. Check 'Em Out!
- d. Make Your Own!

Food Preservation

- a. Frozen Cookies
- b. Pizza Freeze
- c. Going Bananas
- d. Freezer Breakfast
- e. Who Needs Blanching?

Careers and the Food Industry

- a. A Career in Food Science
- b. Colors and Reactions
- c. Taste Testing

Level C You're the Chef

Food Safety and Science

- a. Slow Them Down
- b. Spoilers or Helpers?
- c. Emulsions

Healthy Food Selection

- a. MyPlate and the SuperTracker
- b. Fit is In!
- c. Get the Facts on Fads
- d. Lean On!

Food Preparation

- a. Getting a Meal Together
- b. Knead Some Dough
- c. Breadsticks for a Crowd!
- d. Whole Meal Deal
- e. Do a Stir-fry

Smart Food Purchasing

- a. Crazy Casseroles
- b. Slow, Moist, and Tender
- c. Don't Throw it Out!
- d. A Five-pound Deal

Food Preservation

- a. Intro to Canning
- b. Zesty Sala
- c. Jiffy Jam
- d. Pucker Up Pickle Relish

Careers and the Food Industry

- a. Food Photojournalism
- b. Food Stylist
- c. Recipe Developer

Level D Foodworks

Food Safety and Science

- a. Oh, No!—the Power's Out
- b. Turkey Safety
- c. Marinade Madness

Healthy Food Selection

- a. Infant and Toddler Nutrition
- b. Cooking with Kids
- c. Senior Nutrition

Food Preparation

- a. Meat Loaf Mania
- b. Oven-baked Fish
- c. Sizzling Chicken
- d. Intro to Perfect Pies
- e. All-American Apple Pie

Smart Food Purchasing

- a. Planning Ahead
- b. Divide in Two
- c. Food Budgets
- d. Food Insecurity

Food Preservation

- a. Intro to Canning
- b. Pressure Canning Green Beans
- c. Jam Jamboree
- d. Make Your Own Fruit Leather

Careers and the Food Industry

- a. Careers in Dietetics
- b. Planning a Catered Event
- c. Plant-based Diets

Targeted Project/Life Skills

Level A Fantastic Foods

Activity

Life Skill

Project Skill

Food Safety and Science

Examining Germs

Processing Information

Learning about germs

Danger Zone

Practicing creativity

Identifying food safety issues

Fuzzies on My Bread

Using scientific methods

Understanding how food spoils

Bone Up on Calcium

Using scientific methods

Discovering the importance of calcium for bone strength

Food Preparation

Mama Mia Pizza

Practicing creativity

Making a breakfast food

Fruit Kabobs

Making healthy lifestyle choices

Creating fruit kabobs

Snackin' Power

Making healthy lifestyle choices

Making granola bars

Classic Chocolate Chip Cookies

Processing information

Making cookies

Fruit in Muffins

Using scientific methods

Making muffins

Micro Stuffed Potatoes

Mastering technology

Microwaving potatoes

Smart Food Purchasing

Pancakes, Anyone?

Managing resources

Making pancakes

Decoding the Nutrition Facts Label

Processing information

Reading and understanding basic components of the Nutrition Facts label

Juice or Fruit Drink

Processing information

Reading and understanding basic components of the Nutrition Facts label and ingredient list

Making Brownie Cents

Managing resources

Comparing costs

Tune into Advertising

Communicating

Recognizing and understanding marketing messages

Eating in Season

Making decisions

Identifying foods that grow in your area and their seasons

Food Preservation

You Be the Judge

Making decisions

Checking freezer packaging material

Frosty Freezer Fruit

Preserving produce

Freezing berries

Fruit Granita

Using scientific methods

Making fruit granita

Saving Leftovers

Using scientific methods

Freezing leftovers

Careers and the Food Industry

Farm to Table

Understanding where food comes from

Making a food handler chain mobile

Food Industry Careers

Making decisions

Learning about careers in the food industry

Level B Tasty Tidbits Activity	Life Skill	Project Skill
Healthy Food Selection		
The Gritty on Grains	Processing Information	Making whole wheat muffins
Here Come the Veggies!	Making healthy lifestyle choices	Making fruit and vegetable salads
Where are the SOFAS?	Making healthy lifestyle choices	Altering the fat and sugar content of foods
Fit It In!	Making healthy decisions	Fitting fast food into your life
Food Safety and Science		
Food Safety 101	Preventing illness	Understanding food safety methods
Green Fuzzy Stuff	Using scientific methods	Storing fruit
Reheating Leftovers	Preventing illness	Reheating leftover foods
Make Your Own Yogurt	Understanding good bacteria	Making yogurt
Colors and Reactions	Using scientific methods	Experimenting with pigments of vegetables
Food Preparation		
Easy Cheesy Lasagna	Managing resources	Making a main dish in the oven
Biscuits—Savory and Sweet	Making healthy substitutions	Making biscuits
Smart Food Purchasing		
How Much Is It?	Managing resources	Determining if quantity purchasing is a better deal
What's in a Name?	Making decisions	Comparing costs of different brand-name foods
Check 'Em Out	Managing resources	Comparing costs of convenience foods
Make Your Own!	Managing resources	Making instant oatmeal packets
Food Preservation		
Frozen Cookies	Managing resources	Freezing batter or baked goods
Pizza Freeze	Practicing creativity	Freezing pizza
Going Bananas	Managing resources	Freezing and drying bananas
Freezer Breakfasts	Planning ahead	Freezing breakfast sandwiches
Who Needs Blanching?	Mastering technology	Preparing vegetables for freezing
Careers and the Food Industry		
Taste Testing	Making decisions	Evaluating cottage cheese
Food Industry Careers	Making decisions	Identifying careers in the food industry

Targeted Project/Life Skills

Level C You're the Chef! Activity	Life Skill	Project Skill
Healthy Food Selections		
MyPlate and the SuperTracker	Using technology	Tracking activity and food intake
Fit is In!	Making healthy lifestyle choices	Incorporating daily physical activity
Get the Facts on Fads	Making healthy lifestyle choices	Evaluating fad diets
Food Safety and Science		
Slow Them Down	Using scientific methods	Demonstrating the action of preservatives
Spoilers or Helpers	Processing information	Understanding the action of yeast
Emulsions	Using scientific methods	Making an emulsion
Food Preparation		
Lean On!	Making healthy substitutions	Making a low-fat dip
Knead Some Dough	Processing information	Making fresh bread
Breadsticks for a Crowd	Completing a task	Making breadsticks
Whole Meal Deal	Planning and organizing	Making an oven-baked chicken
Do a Stir-fry	Using technology	Stir-frying vegetables in a skillet
Smart Food Purchasing		
Check 'Em Out	Managing resources	Cooking less tender cuts of meat
Slow, Moist, and Tender	Managing resources	Comparing costs of different brand-name foods
Don't Throw it Out!	Managing resources	Using overripe fruit to make a banana bread
A Five-pound Deal	Managing resources	Dividing family packs of ground meat
Food Preservation		
Intro to Canning	Mastering technology	Learning to preserve food
Zesty Salsa	Mastering technology	Canning salsa in a boiling water canner
Jiffy Jam	Managing resources	Making strawberry freezer jam
Pucker Up Pickle Relish	Mastering technology	Making and canning pickle relish
Who Needs Blanching?	Mastering technology	Preparing vegetables for freezing
Careers and the Food Industry		
Food Photojournalism	Making decisions	Writing about and photographing food
Food Stylist	Making decisions	Creating a visually appealing photo
Recipe Developer	Making decisions	Developing new recipes

Level D Foodworks Activity	Life Skill	Project Skill
Healthy Food Selections		
Plant-based Diets	Processing information	Making a meat-free meal
Food Safety and Science		
Oh, No!—the Power’s Out	Planning ahead	Learning what to do when the refrigerator and freezer stop
Turkey Safety	Mastering technology	Cooking a turkey
Intro to Canning	Preventing illness	Canning and food safety
Food Preparation		
Cooking with Kids	Exercising leadership	Conducting a food preparation activity for young children
Senior Nutrition	Community service	Meal planning and preparation
Marinade Madness	Using scientific methods	Marinating meat
Meatloaf Mania	Planning and organizing	Making meatloaf
Oven-baked Fish	Completing a task	Baking fish
Sizzling Chicken	Mastering technology	Making oven-roasted chicken and vegetables
Intro to Perfect Pies	Planning and organizing	Learning to make piecrust
All-American Apple Pie	Mastering technology	Making a double-crust pie
Smart Food Purchasing		
Planning Ahead	Managing resources	Family and meal planning
Divide in Two	Managing resources	Scaling recipes
Food Budgets	Making decisions	Budget-based meal planning
Food Insecurity	Giving to others	Understanding food insecurity
Food Preservation		
Pressure Canning Green Beans	Mastering technology	Canning snap beans
Jam Jamboree	Managing resources	Making jam with added pectin
Make Your Own Fruit Leather	Managing resources	Drying fruit
Careers and the Food Industry		
Careers in Dietetics	Making decisions	Learning about careers in dietetics
Health-minded Catering	Planning and organizing	Planning a meal for people with health concerns

Healthy Food Selection

Background information

The federal government's food icon, MyPlate, was designed to remind and help consumers make healthier food choices. MyPlate is a new-generation icon intended to prompt consumers to think about building a healthy plate at mealtimes and seek more information to do so by visiting ChooseMyPlate.gov. The MyPlate icon emphasizes the fruit, vegetable, grains, protein foods, and dairy groups. MiPlato was launched in 2011 as the Spanish-language version of MyPlate.

ChooseMyPlate.gov provides practical information to individuals, health professionals, nutrition educators, and the food industry. It helps consumers build healthier diets with resources and tools for dietary assessment, nutrition education, and other user-friendly nutrition information. As Americans are becoming overweight and obese at epidemic rates, online resources and tools can empower people to make healthier food choices for themselves, their families, and their children.

MyPlate illustrates the five food groups that are the building blocks for a healthy diet using a familiar image—a place setting for a meal. Before you eat, think about what goes on your plate or in your cup or bowl.

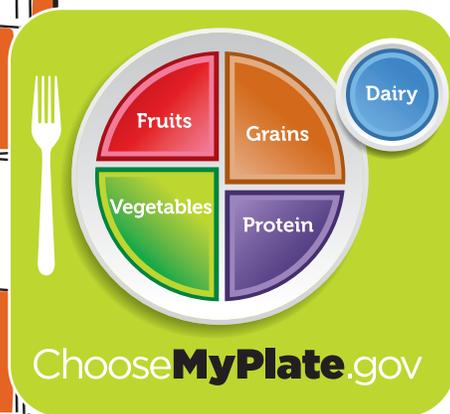
The USDA Center for Nutrition Policy & Promotion (CNPP) developed and maintains MyPlate, MiPlato, and ChooseMyPlate.gov.

MyPlate Icon

- MyPlate is part of a larger communications initiative based on 2010 Dietary Guidelines for Americans to help consumers make better food choices.
- Designed to remind Americans to eat healthfully; it is not intended to change consumer behavior alone.
- Illustrates the five food groups using a familiar mealtime visual, a place setting.

ChooseMyPlate.gov

- Practical information and tips to help Americans build healthier diets.
- Features selected messages to help consumers focus on key behaviors. Selected messages include:
 - Balancing calories
 - Enjoy your food, but eat less.
 - Avoid oversized portions.
 - Foods to increase
 - Make half your plate fruits and vegetables.
 - Make at least half your grains whole grains.
 - Switch to fat-free or low-fat (1%) milk.
 - Foods to reduce
 - Compare sodium in foods like soup, bread, and frozen meals—and choose foods with lower numbers.
 - Drink water instead of sugary drinks.



Physical activity is Important

Children and adolescents (6-17 years) should do 60 minutes or more of physical activity every day. Most of it should be either moderate or vigorous-intensity aerobic physical activity; vigorous-intensity activities should be included at least three days a week. As part of their 60 or more minutes of daily physical activity, children and adolescents should include muscle-strengthening activities like climbing at least three days a week, and bone-strengthening activities like jumping at least three days a week. Children and adolescents are often active in short bursts rather than for sustained periods of time, and these bursts can add up to meet physical activity needs. Physical activities for children and adolescents should be developmentally appropriate, fun, and varied.

Adults (18 to 64 years) should do at least two-and-a-half hours of aerobic physical activity at a moderate level weekly or one-and-a-quarter hours of aerobic physical activity at a vigorous level weekly. Being active five or more hours each week can provide even more health benefits. Spreading aerobic activity out over at least three days a week is best. Each activity should be done for at least 10 minutes at a time. Adults should also do strengthening activities like push-ups, sit-ups, and lifting weights at least two days a week.

SuperTracker <https://www.supertracker.usda.gov/>

High school students increasingly control the decisions that influence their health and wellness. The behaviors they learn throughout childhood and young adulthood carry on into their adult lives. Teens who are overweight or obese are more likely to be overweight and obese as adults, putting them at risk for chronic diseases such as hypertension, heart disease, and diabetes. While decisions to choose a healthy lifestyle are ultimately up to each individual, you may have the opportunity to influence teens by giving them information to make knowledgeable and responsible choices.

SuperTracker can help you plan, analyze, and track your diet and physical activity; find out what and how much to eat; track foods, physical activity, and weight; and personalize with goal setting, virtual coaching, and journaling.

HEALTHY BEHAVIOR OUTCOMES

- Eat the appropriate amounts from each food group every day.
- Eat a variety of foods within each food group every day.
- Eat fruits and vegetables every day.
- Choose to eat whole-grain products and fat-free or low-fat milk or milk products.
- Eat a variety of foods from the protein foods group each week.
- Limit foods and beverages high in added sugars, solid fat, and sodium.
- Eat healthy snacks.
- Prepare food in healthful ways.
- Balance caloric intake with caloric expenditure.
- Follow an eating plan for healthy growth and development.
- Support others to eat healthfully.

Smart Food Purchasing

Background information

Decoding the Nutrition Facts label

As we grocery shop or pick out foods to eat from the pantry, we look at the front of the box or package to see the name of the food. The front of the package might also give us some more details about the food to help us decide whether to purchase or eat it. How often do you turn the package around to see what's on the back?

The federal government requires food companies to include a Nutrition Facts label somewhere on the food's packaging. Often this label is found on the back or side of a package. The Nutrition Facts label tells us what is inside the food and the ingredients used to make it. The label is a tool to help us make food choices. The Nutrition Facts label provides the following information:

Serving Size: This is a certain amount of food, like 1 cup of cereal or 5 crackers. The label tells you how many nutrients are in that amount of food.

Servings per Container: This is the number of servings in the package. A cereal box might contain 10 one-cup servings of cereal for a total of 10 cups.

Calories: Calories tell you how much energy your body will get from one serving of the food. Energy comes from carbohydrates, protein, and fat.

Total Fat: This number tells you how much fat is in a serving. The amounts are listed in grams (g). Fat is important in growth and development, but you don't want to eat too much of it.

Cholesterol and Sodium: These numbers tell you how much cholesterol and sodium are in a serving. The amounts are listed in milligrams (mg). They are included on the label because some people have to limit the amount of cholesterol and sodium they eat.

Carbohydrates: Carbohydrates are your body's primary source of energy. The body breaks carbohydrates down into sugar and fiber.

Protein: Protein is important for muscle growth and development, and is another energy source for the body.

Vitamins A, C, D, and E: These numbers list the amount of certain vitamins in a serving. Usually each is listed as percent daily value.

Calcium and Iron: These numbers list the amount of calcium and iron in a serving. Like vitamins, these are also listed as percent daily value.

Leftover magic

It may be helpful to establish a household rule to put leftovers directly into the freezer. That way they do not go into the refrigerator, where they can become forgotten and fertile territory for microbial growth. Some other ideas for dealing with leftovers:

- Become an expert on menu management so there are no leftovers.
- Eat leftovers from a main meal, such as supper, for lunch the next day.
- Designate one night a week for a “smorgasbord.” Thaw a variety of leftovers, line up the family, and let them choose what they want on their plate; then warm in the microwave.
- Freeze TV dinner trays or microwave plates with leftovers to provide instant meals for later use.
- Intentionally plan for leftovers (planovers), because you have a variety of recipes that use this item as an ingredient. For example, leftover ham can be packaged in portions specifically for future meals: ham slices go in one package, smaller pieces are saved for casserole, and the bone is kept for soup.
- Become a leftover wizard, and transform a leftover into a completely new dish! For example, if you look at a muffin recipes in a cookbook, you’ll notice that many ingredients are interchangeable. Leftover hot cereals and fruits, as well as some vegetables, can be used in muffins, pancakes, waffles, and cakes.

Purchasing fruits

Most fresh fruits remain at their best for only a short period of time—three to five days. Berries and ripe bananas are at their peak for only one or two days. Fruits are best if locally grown and at their seasonal peak. When choosing fruit, don’t squeeze or pinch it. This can bruise the fruit and make it spoil. When fruits are ripe, they should smell sweet and have the aroma of the fruit.

You know what most fruits should look like when you want to buy them, such as good color and no bruises. Here’s a few you might not know:

Cantaloupes should be heavy for their size. The “netting” on their skin should be thick and raised.

Oranges should be firm and heavy. Choose navel oranges for eating, and Valencia and temple oranges for juice. A green color doesn’t affect the taste.

Pineapples should feel heavy and have a distinctive, rich pineapple aroma at their base. They do not ripen after harvest, so buy them ripe.

Pears, peaches, mangoes, and bananas are harvested underripe and are often sold that way.

Continues next page

Smart Food Purchasing (continued)

Most fruits should be stored in the refrigerator. Bananas should be stored at room temperature because the skins turn brown if they are refrigerated.

Many fruits are picked and shipped green. To ripen fruits such as peaches, pears, nectarines, tomatoes, avocados, and bananas at home, place them in a brown paper bag and fold the top down to close it. Putting more than one piece of fruit in the bag speeds ripening. A plastic bag does not have the same effect; it traps moisture, which promotes decay rather than ripening. A brown paper bag “breathes” and allows moisture to escape.

Purchasing vegetables

Shopping for vegetables can be frustrating if you don’t know what you’re looking for. All fresh vegetables are perishable and deteriorate quickly. Green onions should have small bulb ends with firm green tops. Broccoli, Brussels sprouts, cabbage, and cauliflower heads should be firm, have a bright color, and be free of yellowing spots and softness.

Purchasing meat

Meat accounts for a large part of the dollars spent in a grocery store. We build most menus around meats. Once we decide what the meat dish is going to be, it’s easy to select the foods that will accompany it. It pays to follow good consumer practices when you make your selections at the meat department and to properly store and prepare all types and cuts of meat. It is recommended that you freeze or cook meat within 48 hours after you buy it.

When you buy meat, you should know about:

- The various cuts of meat.
- The different grades of meat, especially beef. Pork is rarely graded because it is fairly uniform in tenderness.

Prime, Choice, and Select grades contain the same nutrients, but Prime cuts of meat usually have more marbling and are more tender; they cost more, too. Marbling refers to the flecks and streaks of fat distributed through the lean portion of meat. It contributes to the meat’s juiciness, flavor, and tenderness.

What’s the cost?

The best way to figure the value of purchased meat is on the basis of cost per serving, not cost per pound. This is because the number of servings that can be obtained from one pound depends on the amount of bone and fat waste.

Leftover meat can be incorporated in sandwich spreads, salads, soups, casseroles, stir-fry combinations, and other dishes in which complementary ingredients act as extenders.

Purchasing poultry

When purchasing poultry, look for the USDA Inspection Label and Grade. All poultry must be inspected to make sure it is healthy and slaughtered under sanitary conditions. Grade A is the grade usually found in grocery stores.

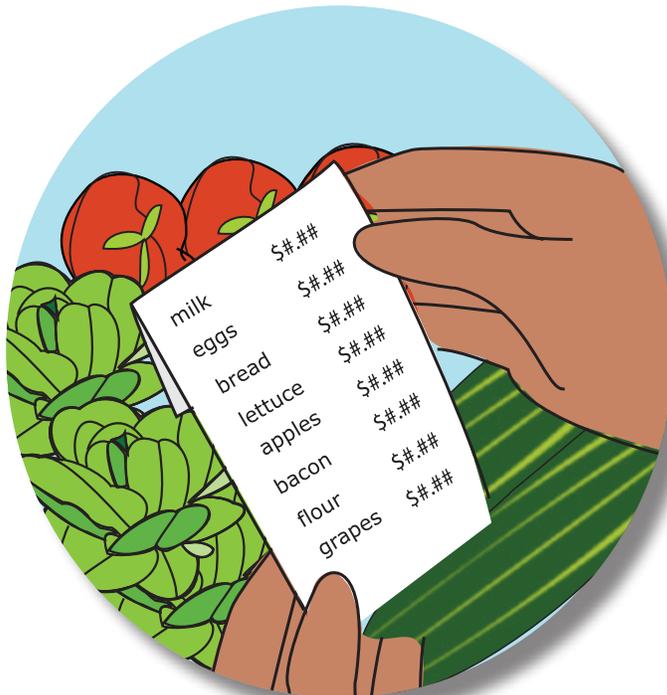
Frozen poultry should be:

- Solid to the touch.
- Free of ice crystals.
- Sold in a tightly sealed package.

All poultry should be free of skin tears and bruises and have a fresh odor. Fresh uncooked chicken should be firm and moist with a creamy yellow skin color. Skin color may vary, but it is not a factor in quality or freshness. Chicken comes ready to cook in a variety of ways, including whole, halved, quartered, in serving pieces, and in boneless cuts.

Turkey should have the same qualities, with a white skin. Turkey can be purchased fresh or frozen in a variety of ways, including whole, in parts, steaks, cutlets, and processed in smoked and cured forms.

Choose poultry based on the cooking method you are planning to use. With any method, use slow, even heat for tender, juicy, evenly done poultry. Cook to well done, but do not overcook. High temperatures or overcooking may result in tough, dry meat.



Food Safety and Science

FOOD SAFETY DURING FOOD PREPARATION

Cooking clean is the best way to make sure bacteria are not getting into the food you're preparing. Bacteria are easily transmitted. Cooking clean means the cook, working space, equipment, utensils, and food are clean.

Tips to keep the cook clean

- Wash hands with soap and warm water before starting any food preparation.
- Keep hands away from nose, hair, and mouth, because these are places where bacteria grow.
- Tie back long hair to keep it out of the face and the food.
- Do not sneeze or cough into food. Use a tissue and wash hands again.
- Wear clean aprons or clothes so dirt does not come in contact with food.
- Do not wipe dirty hands on an apron. Wash them to avoid spreading germs.

Good and bad bacteria are everywhere. They are on your hands, under your fingernails, in the folds of your skin, in your nose and throat, and even on your hair. Bacteria are easily transferred to food from dirty hands, aprons, utensils, and counters.

By washing your hands properly, you can keep harmful bacteria out of food. Hands should be washed:

- before handling food.
- after handling raw foods.
- after eating or drinking.
- after handling garbage or dirty plates.
- after handling dirty utensils, objects or equipment.
- after using the restroom.
- after touching your nose, mouth, hair, and skin.
- after playing with pets.

To properly wash hands:

- Use warm soapy water. Soap helps lift dirt and grime, and warm water dissolves dirt faster than cold water.
- Wash hands for at least 20 seconds. You can count out one-thousand-one, one-thousand-two and so on, or sing Happy Birthday two times in your head while washing.

Pay attention to:

- your fingernail cuticles and the area under your nails.
- the area between your fingers.
- the edge of your palm.

These are the areas that we miss most often when washing our hands!

Tips to keep the work area, equipment, and utensils clean

- Wash utensils and cutting boards between each use.
- Wash kitchen towels, sponges, and cloths often. Dirty ones spread dirt. Paper towels are convenient, sanitary, and allow easy cleanup.
- Clean and wash food preparation areas like countertops and tables, utensils, and equipment after use. Use detergent and hot water; rinse in very hot water. A dishwasher sanitizes what it washes because the water is so hot.

Tips to keep the food clean

- Wash fresh fruits and vegetables under running water before using them.
- Wipe dirt from the tops of cans, boxes, and bottles before opening them. Dust or dirt can drop into the food or get onto the cook's hands. Use a rubber spatula to scrape bowls and pots, not a finger or the side of your hand.

Cross-contamination occurs when harmful substances or microorganisms are transferred from one food product to another. This can happen by touching food without properly washing your hands; by letting juices from raw meat get on other food, or by preparing food on a dirty countertop. Cross-contamination is easy to prevent. Here are some easy steps to stop it.

- Wash hands before working with food.
- Use different cutting boards for meat, vegetables, and fruit. You can use colored cutting boards to create a color-coding system.
- After working with raw foods, clean the workspace with hot soapy water before getting out a different type of food.

Foodborne illness

The Centers for Disease Control (CDC) estimates that each year roughly 1 in 6 Americans (or 48 million people) get sick from foodborne diseases; 128,000 are hospitalized, and 3,000 die. Estimating illnesses, hospitalizations, and deaths for various types of diseases is an important public health practice. The bacteria that cause foodborne illnesses if foods are not properly stored, cooked, or handled are microscopic organisms.

Depending on the type of foodborne illness, symptoms can appear from 30 minutes to two weeks after eating bad food, but generally appear within 4 to 48 hours. People can overlook foodborne illness, thinking it's a cold or the flu. Symptoms include, but are not limited to, nausea, headache, abdominal cramps, fever, vomiting, and diarrhea.

Bacteria are present in most foods, and there is usually no danger until they multiply into quantities large enough to cause illness. The smartest way to handle bacteria is to practice safe food habits to discourage them from growing. Bacteria grow under specific conditions of warm temperatures, time, and moisture. Temperatures between 41°F and 140°F allow for the fastest bacterial growth. Refrigeration does not stop bacteria and mold from growing; it only slows them down. Optimum refrigerator temperatures are 32°F to 38°F.

Thawing foods

Frozen raw meat and poultry should never be thawed at room temperature. This means you shouldn't set something out on the counter in the morning that you are going to eat that evening. The best way to thaw frozen meats is to put them on the bottom shelf in the refrigerator 24-48 hours before cooking. You can also thaw frozen meats in the microwave on a low-power or defrost setting.

Food Preparation

Background information

Baking cakes

There are basically two categories of cakes:

- shortening types
- foam or sponge types

Shortening-type cakes contain shortening, margarine, or butter along with flour, eggs, a liquid, and a leavening agent, such as baking powder or soda. Shortening cakes are the basic white, yellow, chocolate, and pound cakes. A good shortening-type cake has:

- a uniform shape
- a slightly rounded and smooth top
- a fine grained, velvety, even texture (not crumbly)
- an evenly browned crust
- a tender crust
- a tender, slightly moist crumb
- a pleasant, sweet flavor

Foam-type cakes depend on the air beaten into egg whites for lightness. Examples are angel food, sponge, and chiffon.

Angel food cakes depend entirely on beaten egg whites to rise. No leavening agents such as baking powder or soda are used. Angel food cakes also have no added shortening or egg yolks so are excellent choices for those concerned with weight control or heart disease.

Sponge cakes use both egg whites and yolks and, sometimes, additional leavening agents. A sponge cake has no added fat, which would break down the foam the beaten eggs in the batter creates. A jelly roll is an example of a sponge cake.

Chiffon cakes combine the lightness of foam-type cakes and the richness of shortening-type cakes. These cakes contain egg yolks, leavening agents, and vegetable oil.

Yeast dough

Bread making is a skill learned best with a reliable recipe and lots of practice. It can lead to wonderful homemade breads and rolls instead of store-bought ones. Many people who make bread as a hobby enjoy the pleasant aromas freshly baked loaf of bread provides.

The two basic yeast doughs are batter and kneaded.

Batter breads are really a shortcut way to make breads; they require no kneading. Kneaded breads require more time and energy than batter breads. However, before shaping and baking, both types of yeast dough must rise, which allows the yeast to activate.

Batter dough

- The flour is beaten into the dough with an electric mixer instead of being kneaded.

- Batter dough is stickier because less flour is used.
- The batter is spread in a pan instead of shaped into loaves or rolls.
- There is usually only one rising time.
- Batter dough results in breads with a coarser texture and pebbled surface.

Kneaded dough

- The shape is symmetrical and well-proportioned with a rounded, smooth top.
- The crust is an even golden brown, slightly darker on top than on sides and bottom.
- The crust is tender, smooth, crisp, and free from cracks.
- Size is large but not airy in proportion to weight.
- Inside color is creamy white and free from streaks.
- Texture is tender, soft, slightly moist, not crumbly or doughy.
- Flavor is pleasing with a mild yeast overtone.

Keys to successful yeast breads

Dissolve the yeast in warm tap water (90° to 115°F, should feel warm and comfortable). The temperature has to be 120°F, which feels hot, before it begins to kill yeast. Use a candy thermometer to check “hotness” the first time you make bread.

Knead the dough for the time specified in a recipe.

Let the dough rise in a warm place (80°–85°F). Dough should be in a greased bowl large enough for it to double in size. Turn dough to coat with grease so the surface of the dough does not dry out (crusting). Cover with plastic wrap and a clean cloth towel to prevent drying out.

Punch down the dough after rising to remove large air bubbles.

Let the dough rest for 10 to 15 minutes to relax it, if recipe indicates to do so.

Shape the dough into a loaf or rolls.

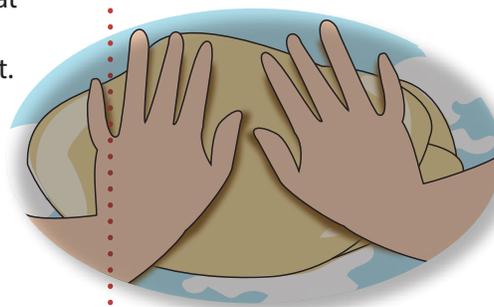
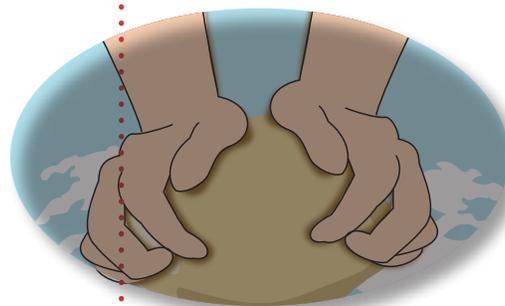
Let the dough rise a second time after shaping until it is doubled in size. It has risen enough when you push it lightly with a finger and an indentation remains.

Yeast dough baking tips

Bake bread in a preheated oven.

Use anodized aluminum, darkened metal, or glass loaf pans for bread with well-browned crusts. Dark pans tend to absorb more heat than shiny pans. Check the manufacturer’s instructions; many recommend reducing the oven temperature by 25°F.

If using pans with dark nonstick coatings, watch the bread carefully so it does not overbrown. Check if instructions for use include reducing oven temperatures by 25°F.



Continues next page

Food Preparation (continued)

Stagger loaf pans on a lower oven shelf so that they do not touch the sides of the oven or each other.

The top of each pan should be level with or slightly above the middle of the oven.

Bake to the minimum time the recipe suggests, then test for doneness. Loaves are done when they sound hollow when lightly tapped. Crust is not always an indicator of doneness. If excessive browning occurs before loaves sound hollow, cover with foil before they get too dark. If the oven heats unevenly, turn the pan around midway through baking.

Remove loaves from pans immediately so the sides of the bread remain crusty; place on wire racks away from drafts to cool.

Pies

Pie dough is a simple combination of flour, fat, salt, and a little liquid. It is one of five basic types of classic pastry, which include:

<i>Type of dough</i>	<i>Characteristics</i>
Mealy or short flake pastry	Produces a crisp but not flaky crust.
Medium flake pastry	The crust separates into flakes instead of breaking "clean" when a piece is broken off.
Long flake pastry	In between medium flake and a true puff pastry; an example is a tart.
Puff pastry	Pastry made in a leaf-like manner; a layer of flour is separated by a layer of butter, and the sequence is repeated.
Choux pastry	Rich mixture that expands into a "shell" three times its original size.

American piecrust is made with a medium flake pastry.

A good pie has these characteristics:

- Crust is evenly browned and golden brown around the edge, and somewhat lighter brown on the bottom.
- Crust is flaky and tender.
- Filling is firm, smooth, and adequately cooked.
- Flavor is well blended, with the filling characteristic for that kind of pie.
- It holds its shape when served.

Note: *Two of the most important steps when making piecrust are to use chilled ingredients and not to overblend.*

Baking pies

It is not necessary to grease pie plates or pans because of the amount of fat in pastry and crusts.

Never use a shiny pie pan; the pie will have a soggy bottom crust.

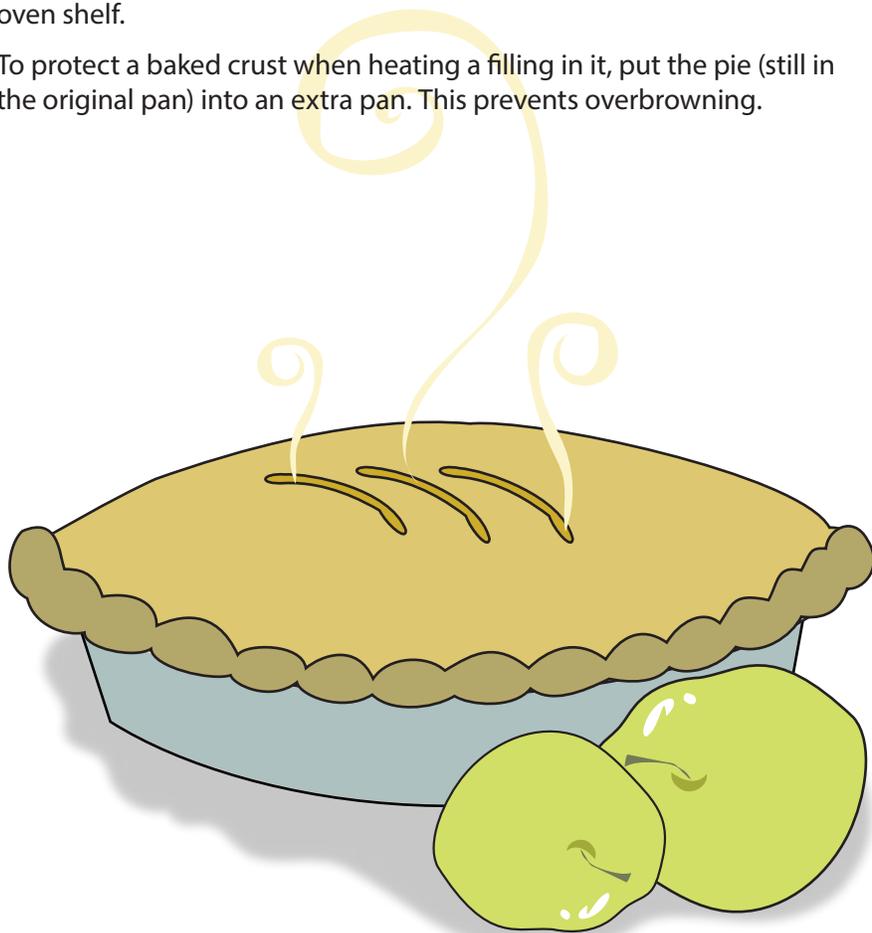
To keep the sides of an unfilled pie shell from shrinking, chill unbaked crust for 20 to 30 minutes and bake in a preheated oven set at 425° to 475°F.

Nonstick pie pans can cause pastry to shrink excessively when baking one-crust pie shells. Be sure pastry is securely hooked over the edge of a nonstick pan.

Do not place the pie pan on a baking sheet before placing it in the oven, unless the recipe indicates to do so. This disperses too much heat away from the bottom crust, which can result in a soggy, unevenly baked pie.

If the filling will be juicy, first brush the crust lightly with egg white or melted butter or shortening. This keeps the juices from soaking into the crust and making it soggy. Then sprinkle the lower crust with a mixture of sugar and flour before adding the fruit. Bake the filled pie on the lower oven shelf.

To protect a baked crust when heating a filling in it, put the pie (still in the original pan) into an extra pan. This prevents overbrowning.



Food Preservation

Background information

Freezing fruits and vegetables

Smaller quantities freeze faster than larger amounts, so limit the amount of food to be frozen. The maximum that can be added at one time is about 3 pounds of food per cubic foot of freezer capacity. Overloading the freezer results in food freezing at a slower rate, reducing its quality.

Freezer burn makes your food taste funny and often makes it look less appetizing. It happens because of too much air in the package, which dried out the food, or because the food wasn't sealed away from the dry air in the freezer. To protect food from freezer burn, use moisture and vapor resistant materials. Leave room for headspace for rigid freezer containers, because the food expands as it freezes. This is not necessary with freezer plastic bags, because they expand slightly as food freezes.

Fruits

In the two different packaging methods for freezing fruit, one uses sugar, and the other does not.

- Dry pack – best for firm fruits such as berries and rhubarb. This method is good for fruit intended for cooking and for fruit cocktails.
- Sugar pack – best for juicy fruits like peaches.

Decide which method to use based on personal preference and the intended use of the product. Most fruits have a better texture and flavor when packed in sugar. Fruit releases juice when it is thawed, so even if fruits are packed without sugar, there will be some liquid after they thaw.

Vegetables

Freeze as soon as possible after purchasing or harvesting to retain quality and nutrients.

Blanch (scald) or sauté all vegetables to stop enzymes that ripen them naturally, even in the freezer. These enzymes eventually diminish the flavor, color, and texture. Cool vegetables quickly to stop the cooking process.

Vegetables not recommended for canning:

Broccoli	Cauliflower	Parsnips
Brussels sprouts	Cucumbers	Rutabagas
Cabbage	Eggplant	Turnips

Vegetables not recommended for freezing:

Lettuce, cucumbers, and radishes do not freeze well because of their high moisture content.

Whole tomatoes, cabbage, and celery lose their texture as well, but they can be frozen if they will be used in cooking, such as in a soup or stew. Potatoes lose their texture and become grainy; add potatoes when the frozen product is being reheated.

Intro to Canning

Canning fruits and vegetables

Canning preserves the flavor of fruits and vegetables and allows you to store them for later use. When food is canned properly, prolonged heat processing destroys spoiling bacteria, yeasts, and mold. The highest quality of fruits and vegetables should be canned at their peak ripeness.

As a general rule, no more food should be canned than what can be used in one year. This is for safety and because some nutrients are lost during long storage periods.

Jars and lids

Use only jars made especially for home canning. Threaded regular and wide-mouth home canning jars with self-sealing lids are the best choice. Commercial pint- and quart-size mayonnaise or salad dressing jars are not recommended for canning at home.

Jars and the metal screw band that holds the lid onto the jar can be re-used many times. However, don't reuse the self-sealing lids; they may fail.

How-to methods

Canning is not recommended in the following equipment because it doesn't prevent all risks of spoilage.

- Open kettle
- Conventional oven
- Microwave oven
- Dishwasher

Two types of equipment can be used to can foods:

- Boiling water canner
- Pressure canner

Your decision to process foods in a pressure canner or boiling water canner depends on how much acid a food has naturally. Foods with different acidity require different methods of heat processing to reach the temperatures that keep harmful bacteria and other microorganisms from growing. Low-acid foods must be processed in a pressure canner. This includes all fresh vegetables (except tomatoes), meats, poultry, soups, and stews.

Fruits are usually high in acid. High acidity prevents the growth of bacteria, molds, and yeasts that are in the air, water, and soil. Acid foods can be canned using a pressure canner, but boiling-water canners do the job just as well and are faster.

For food safety when tomatoes are processed in a boiling water canner, citric acid is added to acidify the tomatoes. Some varieties of tomatoes are not as acidic as others, so adding acid to all of them ensures acidity and safety.

Note: Only food preservation products made using USDA-approved or Ball Blue Book recipes are acceptable in the 4-H Foods project. Your family may have old recipes, but older recipes may not have been properly tested for appropriate processing times and temperatures, thus posing a health risk. The USDA website is at http://nchfp.uga.edu/publications/publications_usda.html.

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Intro to Canning (continued)

Hot packing

When you can food, you want to keep its high quality for a long time. The hot-packing method ensures this. It is the preferred pack style for foods processed in a boiling-water canner.

Hot packing means heating a raw food in hot water to boiling, allowing it to simmer for two to five minutes, and then filling the jars. This process helps to remove air from the food tissues. All food contains between 10 percent and 30 percent air. Removing this air during canning is important, or the air causes the food to discolor within two or three months of storage. Excess air also causes the food to “float” to the top of the jar.

Because of the discoloration that air causes, raw packing (filling the jars with uncooked food) is best for vegetables that are processing in a pressure canner.

Storage

Store jars in a clean, cool, dark, and dry place. Do not store canned foods near hot pipes or a range or furnace, or in direct sunlight or insulated places. Dampness may erode metal lids. Warmth can cause canned food to lose quality quickly.

Even if canned foods are accidentally frozen, they won't spoil unless the jar loses its seal. Check seals. Freezing softens the food in the jar.

Before using any canned food, always look at the lid and the food inside the jar.

- Do not taste food from a jar with a bulging or unsealed lid, or with any sign of a leak.
- Look at the food for rising air bubbles and an unnatural color.
- Notice any bad odor, spurting liquid, or cotton-like mold on top of the food or the underside of the lid. Bacteria and yeast produce gas that pressurizes the food, swells the lid, and loosens jar seals. Mold can be white, black, blue, or green.

Tips on care of a pressure canner

Handle canner lid gaskets carefully. Clean them according to the manufacturer's directions. Nicked or dried gaskets allow steam leaks during pressurization of canners. Keep gaskets clean between uses. Gaskets on older model canners may require a light coat of vegetable oil once per year. Gaskets on newer model canners are pre-lubricated and do not benefit from oiling. Check the manufacturer's instructions for clarification.

Lid safety fuses are thin metal inserts or rubber plugs. They are designed to relieve excessive pressure from the canner. Do not pick at or scratch fuses while cleaning lids. Use only canners that have the Underwriter's Laboratory (UL) approval to ensure their safety.

Replacement gauges and other parts for canners are often available at stores offering canning equipment or from canner manufacturers.

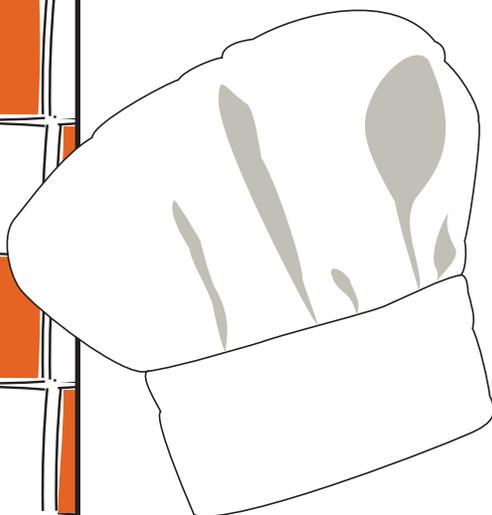


Careers and the Food Industry

THE FOOD INDUSTRY

The food industry is one of the largest in the United States. Its complex network spans the globe, because the food we eat comes from many different sources and is processed into many different forms. The food industry must keep up with continuing population growth and higher living standards. Consumer demand has improved the quantity, quality, variety, and safety of foods.

These are some of the reasons a career in foods is challenging, demanding, and ever-changing. The careers information in the 4-H Foods manuals is designed to help 4-H members become acquainted with the variety of careers in the industry. It offers activities and information to help them explore the professions, degree programs, and educational requirements.



Food industry careers (from Level A)

Extension educator

Enjoys teaching and helping people and families learn and improve their lives.

Schooling: High school, four years of college, master's degree.

Job: Teach people about healthy food choices, food preparation, food preservation, budgeting, and gardening; share activities that help people build new skills.

Workplaces: Land-grant universities and colleges across America, county Extension offices.

School foodservice specialist

Enjoys preparing food and working with students.

Schooling: High school, with some more training recommended.

Job: Prepare breakfast and lunch items, and serve them to students in a school cafeteria; understand food safety and keep food areas clean.

Workplaces: Schools with youth in kindergarten through high school.

Farmer

Enjoys working outdoors to operate a farm, including raising livestock and planting, growing, and harvesting crops.

Schooling: High school plus on-the-job-training or college.

Job: Raise and care for livestock, plant and harvest food products for humans and animals; must have good business knowledge and planning skills.

Workplaces: Family farms, ranches, or specialty farms or large farming businesses.

Family and consumer science teacher

Enjoys science, nutrition, and working with students.

Schooling: High school, four years of college, student teaching, pass a national test.

Job: Teach junior high or high school students about food preparation and preservation, general nutrition, and life skills such as cleaning and organization.

Workplaces: Junior high schools, high schools, and colleges/universities.

Chef

Enjoys being creative and cooking, and doesn't mind working long, hard hours.

Schooling: High school, with some more education like special training at cooking school or college recommended.

Job: Prepare food for customers or guests.

Workplaces: Restaurants, hospitals, schools, food companies, test kitchens, hotels.

Other food industry careers

Food scientists (see A Career in Food Science in Level B)

Food photojournalism (see Food Photojournalism in Level C)

Food promotion careers

Food photojournalists work with a variety of other professionals in the promotion of food. Some other food-promotion careers include:

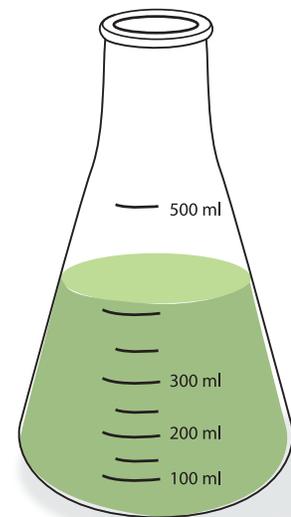
- Food stylists (see Food Stylist in Level C)
- Cookbook editor
- Test kitchen supervisor
- Recipe developer (see Recipe Developer in Level C)
- Registered Dietitian (see Careers in Dietetics in Level D)
- Home economist
- Chef

Registered Dietitians/Registered Dietitian Nutritionists (see Careers in Dietetics in Level D)

Careers in the food handler chain

About 70 percent of the money the consumer spends to buy food produced on a farm represents the costs of getting the food from the farm to the table. This requires people who specialize in assembling, inspecting, grading, storing, processing, packaging, distributing, and retailing, to name just a few. A chain is a good way to describe how the food handlers work together. To illustrate how this chain works, let's look at soybean oil, the most common among vegetable oils.

Soybeans are grown and harvested by farmers and then transported to a manufacturer, where they are cleaned, inspected, and processed. Factory workers, food technologists, and food scientists are involved in processing the soybeans into oil. Then the soybean oil is blended with other oils to make vegetable oil. It is packaged, labeled, and stored at a warehouse. Truck drivers deliver it to grocery stores. Grocery store managers ensure there is enough oil available for consumers. Finally, the consumer buys the oil and takes it home, where it is further processed as part of a meal.



Glossary

Acid: A substance that causes a sour taste; can also dissolve certain minerals.

Acid foods: Foods with enough natural acid, or with enough additional acid such as vinegar, to allow processing in a boiling water canner. Includes all fruits except figs; most tomatoes; fermented and pickled vegetables; relishes; and jams, jellies, and marmalades.

Additive: A chemical substance intentionally added to food (as during processing).

Bacteria: The single-celled organisms that live on, in, and around most living and nonliving things; usually can be seen only with a microscope, and millions of them would fit on the head of a pin.

Bar cookies: Cookies cut with a knife into small squares or rectangles.

Batter: Semi-liquid mixture of flour, egg, and liquid.

Blanching: Heating food, such as raw vegetables, for a certain length of time to stop the action of enzymes.

Boiling water canner: A large standard-sized lidded kettle with jar rack, designed for heat-processing seven quarts or eight to nine pints in boiling water.

Braise: A method for cooking less tender cuts of meat by browning, covering, and cooking meat in a small amount of liquid at a low temperature for a long period of time.

Calorie: A unit of measure that gives the energy value of food.

Canning: A method of preserving food in airtight, vacuum-sealed containers and heat processing sufficiently to enable storing the food at normal home temperatures.

Carbohydrates: Energy-providing nutrients.

Carbon dioxide: A colorless gas that helps make batter fluffy and rise during baking.

Chlorophyll: The green substance in plants that makes it possible for them to make food from carbon dioxide and water.

Chop: Cut into small pieces.

Citric acid: A form of acid that can be added to canned foods; increases the acidity of low-acid foods and may improve the flavor and color.

Complex carbohydrate: Nutrient that provides energy and fiber; starch.

Confectioner's sugar: Superfine sugar used for icings; also called powdered sugar.

Contaminate: To make something dangerous or dirty by adding something harmful or unwanted to it.

Cross-contamination: The mixing of cooked food with raw meat or its juices, allowing bacteria to be transferred from the raw food or its juices to the cooked food.

Cut across the grain: Cut perpendicular to meat fibers.

Cut in: To mix fat, such as shortening or butter, into a flour mixture using a pastry blender or two knives in a scissorlike way.

Decomposition: The process of being slowly broken down by natural processes, chemicals, etc.

Dehydrator: A machine specifically made to preserve food by removing water at a low temperature

Double boiler: Two pans with one sitting inside the other so that contents in the pan on top are heated by the boiling water in the pan on the bottom.

Drop cookies: Dough dropped by spoonfuls onto a pan for baking.

Dry pack: Fruit frozen with no sugar or liquid added.

Dutch oven: A large pot or kettle, usually made of cast iron, with a tight-fitting lid so steam cannot escape easily; used for moist-cooking methods such as stewing.

Enriched flour: Flour that has iron and certain B vitamins added back into it to match its nutrition before it was refined.

Enzyme: A special protein found in small amounts in all plants; promotes ripening in fruits and vegetables.

Fermentation: The process in which a substance breaks down into a simpler substance; microorganisms like yeast and bacteria usually play a role, creating bread, yogurt, and other foods.

Fiber: The part of a plant food that is not digestible.

Fold: To gently spoon or pour one mixture over another mixture in a bowl to prevent loss of air.

Foodborne illness: An illness caused by eating food that microorganisms have contaminated because the food was improperly stored, handled or cooled; usually causes vomiting and diarrhea. Also commonly called food poisoning.

Food handler chain: Includes a food's production, processing, marketing, and transportation.

Food industry: All business operations that are involved in getting the food produced in the farmer's field to the consumer's dinner plate.

Food processor: Someone who prepares and preserves food by canning, freezing, dehydrating, refining, and formulating food at a food company.

Food scientist: Someone who develops new food products that satisfy consumers' wants and needs.

Freezer tape: Special tape used in wrapping food packages that will be frozen.

Fruit browning: The darkening of light-colored fresh fruit caused by a reaction between the oxygen in air and enzymes in the fruit.

Gluten: A protein in flour that, when a dough is kneaded, helps hold in the gas bubbles formed by the leavening agent so the dough will rise.

Gram (g): A metric unit of measure equal to one thousandth of a kilogram.

Grease: To rub a dish or pan with butter, margarine, oil, or shortening so food does not stick.

Grease and flour: To grease a pan and then coat it with about a tablespoon of flour by shaking the pan, tilting it back and forth. Flour that does not stick is discarded.

Headspace: In home canning or freezing food products, the unfilled space between the food and the jar lid. This allows room for the food to expand as it is being processed and to form a vacuum as it cools and contracts.

Hot pack: Heating raw food in boiling water or steam and filling it hot into jars.

Ingredients: Food items in a recipe.

Insoluble: Can not be dissolved in a liquid.

Jam: Made from crushed or ground fruit, it tends to hold its shape but generally is less firm than jelly.

Jelly: A clear fruit juice product that is soft and somewhat elastic, yet firm enough to hold its shape when turned out of its container.

Knead: To work dough with hands by folding and pressing.

Lactic acid: Waste product of bacteria feeding on lactose in milk.

Lactose: A type of sugar found only in milk.

Low-acid foods: Foods that contain very little acid; acidity is too low to prevent the growth of the bacterium *Clostridium botulinum*. Jars of low-acid foods must be heat-processed in a pressure canner.

Microorganism: A tiny living thing that can be seen only with a microscope.

Milligram (mg): A metric unit of measure equal to one-thousandth of a gram.

Mince: To cut food into very fine pieces.

Moisture and vapor resistant: Prevents or slows the absorption of moisture; used to describe material used for freezing that does not let flavor escape.

Mold: A superficial, often woolly growth produced by a fungus, especially on damp or decaying organic matter or on living organisms.

Molded cookies: Cookies formed by hand into shapes that are sometimes flattened by a fork or the bottom of a glass.

Muffin pan: Cupcake pan.

Nutrients: Substances in food that are essential for good health.

Pasteurization: Heat-treating process to kill bacteria.

Packaging material: Containers and wraps used for freezing food to keep it from drying out and to preserve its value, flavor, texture, and color.

Pastry blender: A kitchen tool used to blend fat into flour; some cooks use two knives.

Continues next page

Glossary (continued)

Perishable: Likely to spoil or decay quickly if not eaten or used.

Pesticide: A chemical used to kill animals or insects that damage plants or crops.

Pickling: The practice of adding enough vinegar or lemon juice to a low-acid food to make it more acid; preserving food, especially cucumbers, in a solution of brine or vinegar, often with spices added.

Pigment: A substance that gives color to something else.

Preheat: Heat to the temperature that a recipe calls for before putting the food in to cook or bake; usually takes about 10 minutes.

Preserving: Freezing, canning, or drying food so it will not spoil.

Pressure canner: A specifically designed metal kettle with a lockable lid used for heat processing low-acid foods. These canners have jar racks, one or more safety devices, systems for exhausting air, and a way to measure or control pressure.

Processed food: Raw ingredients that are changed into food, and food that is changed into other forms, by physical or chemical means; examples include food that has been enriched, frozen, or freeze-dried.

Protein: Body-building nutrient.

Puree: A thick liquid made by crushing usually cooked food such as fruits or vegetables.

Raw pack: The practice of filling jars with raw, unheated food; acceptable for canning low-acid foods, but it results in rapid quality losses in acid foods that are heat processed in boiling water.

Rehydrate: To soak dehydrated (dried) foods to restore the water lost during drying.

Roll out: To flatten and spread dough with a rolling pin.

Sauté: To cook briefly in a small amount of fat in a skillet until soft and glossy.

Seasonal fruits and vegetables: Fruits and vegetables that are abundant at certain times of the year and generally lower in cost at that time.

Sensory evaluation: Evaluating a food by means of a taste panel to rate how a food looks, smells, taste, and feels in a tester's mouth.

Soluble: Can be dissolved in a liquid.

Starter culture: Fresh, plain whole milk yogurt containing live, active cultures of bacteria.

Sterilize: To clean (something) by destroying germs or bacteria.

Thaw: Defrost.

Unit price: The price of a food based on a unit of measure, such as ounces, pounds, quarts, or liters; the product's price divided by its unit of measure.

Vitamins and minerals: Vitamin, a natural substance usually found in foods that helps keep your body healthy; mineral, a substance (such as iron or zinc) that occurs naturally in certain foods and that is important for good health.

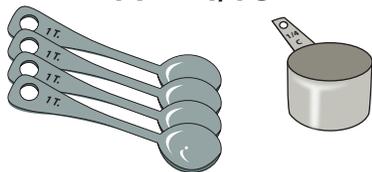
Measuring Math

For dry and liquid ingredients

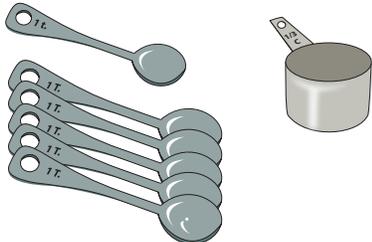
$3 \text{ t} = 1 \text{ T}$



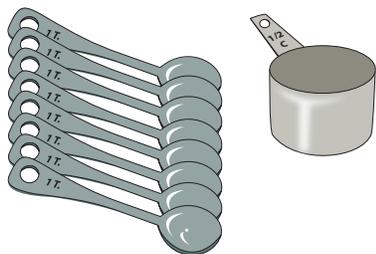
$4 \text{ T} = 1/4 \text{ c}$



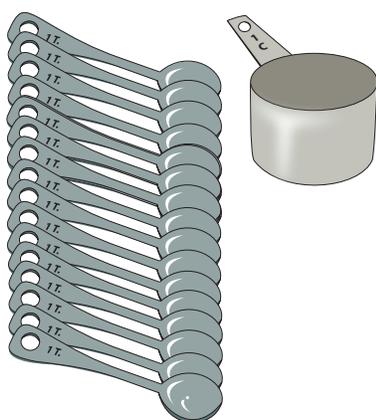
$1 \text{ t} + 5 \text{ T} = 1/3 \text{ c}$



$8 \text{ T} = 1/2 \text{ c}$

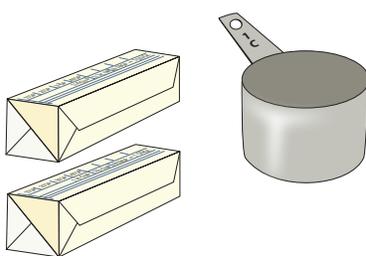


$16 \text{ T} = 1 \text{ c}$

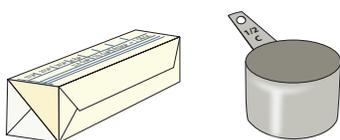


For margarine or butter

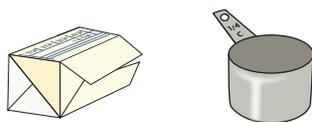
$2 \text{ sticks} = 1 \text{ cup}$



$1 \text{ stick} = 1/2 \text{ cup}$



$1/2 \text{ stick} = 1/4 \text{ cup}$

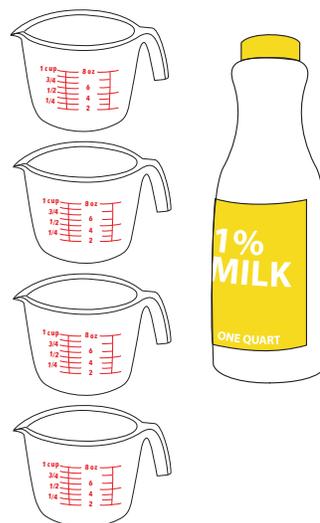


For liquids

$2 \text{ c} = 1 \text{ pint}$



$4 \text{ c} = 1 \text{ quart}$



$2 \text{ quarts} = 1/2 \text{ gallon}$

