

Unit 1

Manage Resources to Promote Good Health

Practical Problem:

How do I manage all of my resources to improve and maintain good health?

Missouri Family and Consumer Sciences Competencies:

- (D-1) Demonstrate the ability to plan and prepare healthful meals and snacks using available resources (e.g., time, money, personal energy, skills)
- (D-2) Identify safety and sanitation practices.
- (D-3) Compare ways to select, store, prepare, and serve food for optimum nutrition.

Enabling Objectives for Competency Mastery:

1. Demonstrate menu planning knowledge and skills that utilize various nutrition guidelines such as MyPyramid.
2. Demonstrate food preparation techniques to reduce overall fat and calories for healthful meals and snacks.
3. Compare various types of resources such as time, money, talent, and natural resources.
4. Recognize and describe practices for kitchen safety, food handling, and proper sanitation.
5. Compare options with fresh, frozen, canned, and prepackaged food for optimum nutrition.

Teacher Background Information

Rationale

While nutrition knowledge is important for making healthful decisions, resource management skills are equally important. It takes time to plan healthful meals, shop for ingredients and prepare foods. Millions of people eat out every day because they don't feel they have time to prepare meals at home.

The National Restaurant Association reported in 2003 that Missouri had 12,745 eating and drinking establishments, and the organization projected that Missouri sales in 2005 would exceed \$7 billion. The average American adult eats out approximately 4.2 times per week.

Budgeting is a key management skill as consumers must make buying decisions regarding convenience foods, quality of foods, and availability of foods in season, and costs of eating out. Some foods, such as fresh fruits, are more expensive when they are *not* in season. Oddly, these fruits cost more when they are not at their peak for flavor or

nutrient content. Good consumers must know the availability of foods in season, and know other options for nutritious foods such as canned foods or frozen foods. Comparison shopping helps determine which brand or package size is the most economical.

Kitchen safety issues such as food handling and storage also affect resource management. Foods that are handled improperly or stored improperly are wasted. A good buy at the grocery saves nothing if it must be thrown out with the trash. Simple storage and handling techniques will pay a high dividend in the long run.

Two government agencies, the Food and Drug Administration (FDA) and the U.S. Department of Agriculture (USDA) monitor food products to ensure safety. The FDA conducts tests, sets standards, and enforces laws regulating food quality and processing. FDA inspectors make regular inspections to see that the laws are being followed. The USDA regulates and inspects meats and poultry during slaughter and processing.

Although consumers rely heavily on these and other government agencies to protect the food supply, food safety is everyone's responsibility. The greatest threats to food safety - bacteria and viruses - are the hazards over which the consumer has the greatest control.

Individuals should apply Hazard Analysis Critical Control Point (HACCP) principles to prevent food borne illnesses at home. Critical consumer control points for food safety are found in the home and the supermarket. These two areas provide opportunities for foods to become exposed or contaminated.

The United States Centers for Disease Control report the following food handling factors that most commonly lead to food borne disease (in order of occurrence):

1. Improper holding temperatures
2. Poor personal hygiene
3. Inadequate cooking
4. Contaminated equipment
5. Food obtained from an unsafe source

Many people who have diarrhea, vomiting, an upset stomach, fever, or cramps may think they suffer from the flu. Some may be suffering from food borne illness instead. Most food borne illness can be prevented by handling foods properly.

Web Resources for Teachers

The National Restaurant Association provides downloadable information for eating out sensibly including links to Dine Out Smart, and information on food safety.

<http://www.restaurant.org/foodsafety/index.cfm>

The National Restaurant Association provides teaching materials and posters for National Food Safety Month in September. <http://www.nraef.org/nfsem/>

Science and Our Food Supply

Producer: **National Science Teachers Association**
1840 Wilson Boulevard

Arlington, VA 22201-3000

Telephone: 703.243.7100

Format: **Curriculum includes videocassette, teacher's guide, reference guide**

Date Produced: 2001

Description: **This curriculum, sponsored jointly by the National Science Teachers Association and the Food and Drug Administration, comes complete with separate guides for middle level and high school science teachers, and includes an interactive video. It includes varied activities that are easy to incorporate into all curriculums and insider interviews with real-life scientists. Development was guided by the National Science Education Standards .**

Cost: **Free**

How To Order: **Order from NSTA web site**

(<http://www.nsta.org/programs/sst/fda/currintro.htm>)

NAL Call Number: **Kit no. 397**

Web Address: <http://www.nsta.org/>

[Epicurious](#) — *Bon Appetit* & *Gourmet* recipes, food dictionary, much more
[The Food Network](#) — celebrity chefs, 12,000 recipes from Food Network shows
[SOAR](#) — Searchable Online Archive of Recipes has 67,000+ recipes
[RestaurantBeast](#) — Search recipes and add your own

[PBS's cooking shows](#) — Julia Child and other master chefs
[Sally's Place](#) — culinary site for consumers has good info on international cuisine
[Culinary Connection](#) — 73,000 recipes

[FoodWeb.com](#) — great links to cooking schools, recipe sites, F & B manufacturers
[Recipe Link](#) — well-organized guide to 10,000+ cooking and recipe links
[Vegetarian Resource Group](#) — Recipes, nutrition, cookbooks

References:

<http://www.restaurant.org/> National Restaurant Association. Accessed 1/04/05.
Cooking at Home with The Culinary Institute of America (2003). Weldon Owen, Inc.: San Francisco, CA.

<http://www.foodsafety.gov/~fsg/fsgaway.html> Food Safety

Instructional Strategies

1. **Demonstrate menu planning knowledge and skills that utilize various nutrition guidelines such as MyPyramid. (Competency D-1)**
 - a) Practice using MyPyramid to choose foods and develop a meal that is nutritious and healthy for you. Use Activity Sheet #1: **Daily Food Plan** to plan one day's menu based on the food groups from MyPyramid.
 - b) Use Activity Sheet #2: **Developing a Meal Plan** to practice planning and selecting foods for a meal. Each menu should reflect the Dietary Guidelines for Americans, 2005 and the food items should complement each other for an attractive, appealing menu.

- c) Use Activity Sheet #3: **Weekly Menu Plan** to develop a menu for a full week. Evaluate your menu plan for the week based on the recommendations in the Dietary Guidelines for Americans, 2005 and MyPyramid.
 - d) Divide class into food lab groups. Each group select one menu created from Instructional Strategy 1(b). Use Activity Sheet #4: **Meal Preparation Schedule** and Activity Sheet #5: **Grocery List** to plan and prepare the menu. Each lab group should evaluate the other lab groups' menus based on nutritional quality, eye appeal, and taste appeal.
- 2. Demonstrate food preparation techniques to reduce overall fat and calories for healthful meals and snacks. (Competency D-1)**
- a) Hand out Fact Sheet #1: **Ways to Lower the Fat Content of Foods**. Review each technique listed. Using the menu developed in Instructional Strategy 1(a), revise the menu using at least one of the techniques suggested.
 - b) Review the food preparation techniques included in Fact Sheet #2: **Cooking Methods Influence Fat Content**. Create a Venn diagram to compare dry-heat cooking methods with moist-heat cooking methods. Discuss the common characteristics and the differences among these cooking techniques.
 - c) Use Activity Sheet #6: **Comparing Dry-heat and Moist-heat Cooking Techniques** to list each cooking method described in Fact Sheet #2: **Cooking Methods Influence Fat Content**. Within each box, list several common foods that are prepared using this cooking method. Use two different colors of highlighters to indicate which foods are typically considered lower in fat and which foods are typically considered to be higher in fat content.
- 3. Compare various types of resources such as time, money, and talent. (Competency D-1)**
- a) Use colored chalk or markers to create a mind map listing resources that every person has to plan and prepare meals. Brainstorm as many suggestions as possible such as time, money, talent, availability of a food, etc. On the mind map, list how each resource influences our food decisions.
 - b) Planning and preparing nutritious meals takes time and energy. Alternatives might include eating out, purchasing prepared meals, using technology to reduce the normal amount of time and energy needed, using convenience foods to reduce time and energy, or simplifying the work. Develop one meal plan for an evening meal. Then list alternatives that could be used to reduce the time and energy needed to prepare the meal.
 - c) Divide the class into five groups. Each group will create a menu and shopping list based on the financial and dietary restrictions of a family using the case studies from Activity Sheet #7: **Managing a Family Food Budget**.
- 4. Recognize and describe practices for kitchen safety, food handling, and proper sanitation. (Competency D-2)**
- a) Define important vocabulary words related to food safety such as "pathogens," "food-borne illness," "bacteria," "microorganism," and "virus." Create a K-W-L Chart with information students already know, and information they want to learn about how each of these terms affects food safety.

- b) Investigate the number of deaths each year from food-related illnesses. Develop a chart to compare various data such as comparing Missouri to surrounding states, or comparing the number of deaths in Missouri from different food-related illnesses. Two resources to aid your investigation are: <http://www.cdc.gov/ncidod/eid/vol5no5/mead.htm> and http://www.cdc.gov/ncidod/diseases/list_foodborne.htm
- c) Access food safety resources at <http://www.foodsafety.gov/~fsg/fsgaway.html> Divide the class into groups of three to five students to investigate food handling safety tips for various situations such as how to safely handle take-out food, food safety advice when camping or hiking, traveling with food, safety concerns with brown bag lunches, etc. Develop a poster or brochure to explain food handling safety issues. Take turns sharing the information with whole class.

Teacher Note: FOOD RISKS: PERCEPTION VS REALITY-- A Program to Promote Food Risk Awareness and Understanding. This program presents important food safety information to high school students and encourages critical thinking skills! Eight lessons and student quizzes are provided on various aspects of food safety. Prepared by the U.S. Food and Drug Administration and The International Food Information Council Foundation, 1993
<http://www.cfsan.fda.gov/~dms/risk-toc.html>

For more information on cooking to proper temperatures and additional resources, click here:
<http://www.foodsafety.gov/~fsg/cookit.html>

- d) Hand out Fact Sheet #3: **Food Safety: Read the Label**. Look in your shelves and refrigerator at home to see how many products you can identify with shelf-life dating information. Make a list of each food item and the type of dating used.
- e) FCCLA Activity. Develop an educational campaign to celebrate National Food Safety month in September. Use the FCCLA Planning Process to select and organize your campaign. Choose print media, electronic media, or broadcast media for your campaign.
- f) Hand out copies of Fact Sheet #4(a) & (b): **The Most Common Food Borne Diseases and Using the "HACCP" Approach for Safety**. Divide the class into groups to prepare brochures or newsletters for consumers to explain the importance of proper food handling at home.
- g) Identify food safety concerns for special populations such as pregnant women, people with chronic illnesses, senior citizens. Create a graphic organizer to compare these special populations.

Questions for Discussion/Formative Assessment

- *What food safety concerns affect all of these groups?*
- *How can you help to ensure these groups are protected?*

Teacher Note: The Partnership for Food Safety Education provides resources for consumers and educators on vital food safety issues. The Fight BAC!® campaign, developed in conjunction with the President's National Food Safety Initiative, is focused on safe food handling. Four simple steps will fight food-borne bacteria and reduce the risk of food-borne illness.
<http://www.fightbac.org/main.cfm>

- h) Research food irradiation as one means to ensure food safety.
<http://www.fsis.usda.gov/Frame/FrameRedirect.asp?main=http://www.fsis.usda.gov/OA/educator/educator8-2.htm> provides a 53-page report with facts about food irradiation. Another source for information on irradiated foods is available from the Iowa State University Extension Service at
<http://www.fsis.usda.gov/Frame/FrameRedirect.asp?main=http://www.fsis.usda.gov/OA/educator/educator8-2.htm>

Questions for Discussion/Formative Assessment

- *What are the benefits of food irradiation?*
- *How does this process work?*
- *How does irradiation affect spoilage of foods?*
- *How does irradiation compare to a safety process such as pasteurization?*
- *What is the affect of irradiation on nutrient content of foods?*
- *How does food irradiation affect the price of food items?*
- *How are irradiated food items identified for the consumer?*
- *Is there a government agency responsible for monitoring this process? If so, who?*

- i) Use magnetic sheets with adhesive backing to design and produce refrigerator magnets with recommendations for safe handling of fresh produce. Use computer art, drawings, or photos clipped from magazines to illustrate the magnet.

Teacher Note: <http://www.fightbac.org/main.cfm>
The Partnership for Food Safety Education provides resources for consumers and educators on vital food safety issues. The Fight BAC!® campaign, developed in conjunction with the President's National Food Safety Initiative, is focused on safe food handling. Four simple steps will fight food-borne bacteria and reduce the risk of food-borne illness.

5. Compare options with fresh, frozen, dried, canned, and prepackaged foods for optimum nutrition. (Competencies D-1, D-3)

- a) Compare the unit prices of fresh, frozen, dried, canned, and prepackaged foods such as strawberries, potatoes, green beans, artichokes, pineapple, or tomatoes. Assign each student one food item to investigate. Visit the grocery store to collect

the data or use online sources. Create a comparison chart for all foods to determine which foods are less expensive in which form.

- b) Using the same food items from the previous instructional strategy, compare the changes in nutrient values when the method of preservation changes.

Questions for Discussion/Formative Assessment

- *What factors influence the price of fresh foods?*
- *Why is the nutrient value different for fresh strawberries and frozen strawberries?*
- *What other differences might you notice among fresh, frozen, canned, or dried foods?*

- c) Compare the nutrient values and calories for selected dishes that can be prepared or purchased as a convenience item. Use online recipe sources or printed recipes that include the nutrient values for the dish. Compare the recipes to the food labels for the convenience foods. Examples might include a cheese pizza or burrito compared to frozen cheese pizza or burrito, spaghetti made from scratch versus canned spaghetti, or chicken pot pie.

Questions for Discussion/Formative Assessment

- *How is our society influenced by convenience foods? For example, if you were going to prepare spaghetti, would you make fresh pasta or use dried pasta? Would you use fresh tomatoes to make the sauce, or use canned tomato sauce that you season? Would your dish be made from scratch if you used dried pasta or canned spaghetti sauce?*
- *If you were making a pie with fresh apples, but you used a frozen pie crust, would your pie be made from scratch or convenience? What if you made the pie crust, but used canned pie filling from the grocery store?*
- *What factors make a food item a “convenience” food?*

Summative Assessments

Paper and Pencil

1. After practicing how to plan a nutritious meal in Instructional Strategy 1(a), use Activity Sheet #1: **Daily Food Plan** as a quiz to evaluate student mastery. (Competency D-1)
2. After students have completed Activity Sheet #6: **Comparing Dry-Heat and Moist-Heat Cooking Techniques**, and discussed the possible food choices for each cooking technique, hand out a new copy of the Activity Sheet to use as a quiz. This time students should only list food items that are considered lower in fat. (Competency D-1)

3. Write an article for the school newspaper that discusses ways to manage resources to provide nutritious meals. Offer at least five suggestions for using resources to provide nutritious meals, and explain at least five resources that all individuals have to manage. (Competency D-1)
4. Write a three to five page research paper discussing food irradiation and food safety. Include facts about irradiation, benefits and draw-backs of using the process, and current uses for food irradiation. List at least three credible sources for your research. (Competency D-2)

Classroom Experiences

1. Work in pairs to select one cooking method from Fact Sheet #2: **Cooking Methods Influence Fat Content** and prepare presentation for the class to illustrate this cooking technique. Use PowerPoint to present information for using this cooking method. (Competencies D-1, D-2, D-3)
2. Work in food lab groups to prepare a recipe from scratch and compare the item to the same convenience food. Evaluate the nutrition density of each food item, the flavor, the cost, and the time required to make the item. (Competencies D-1, D-2, D-3)
3. Work in food lab groups to compare food storage options. Select one food item to compare and prepare the food from fresh, frozen, dried, canned and any other storage methods that are commonly used. Use a taste test evaluation to compare the prepared foods. Also, prepare a cost analysis chart to compare the costs of each food storage option. (Competencies D-1, D-2, D-3)

Fact Sheet #1

Ways to Lower the Fat Content of Foods

- ◇ Use cooking spray in place of liquid cooking oil to grease pans.
- ◇ Use nonstick cookware.
- ◇ Steam, broil, grill, or bake food to avoid the fat used for sautéing and frying.
- ◇ Rely on chicken and beef stock, wine, and water to moisten and baste foods while they cook, instead of additional oil or butter.
- ◇ Use herbs and spices to flavor foods, instead of additional butter or cream.
- ◇ Learn about fat-cutting techniques such as replacing whole eggs with egg whites and using applesauce and puréed prunes in baked products in place of some of the butter.
- ◇ Skin poultry before or after cooking.
- ◇ Use water-packed tuna instead of the oil-packed version.
- ◇ Use ground turkey breast instead of ground beef.
- ◇ Trim meat and poultry of external fat before cooking.
- ◇ Substitute flavorful fat-free spreads such as jams, jellies, chutneys, or mustards for butter or margarine.

Fact Sheet #2

Cooking Methods Affect Fat Content

There are two basic methods for cooking meats: **dry heat** and **moist heat**.

Dry-heat methods cook food either by direct, radiant heat, like the heat of a grill, or by indirect heat contained in a closed environment, such as an oven. No water or broth is added to the food during cooking. Dry-heat cooking methods may use fats or oils as a cooking aid, or it can be done without added fats or oils.

If fats or oils are added when using a dry-heat method such as grilling, broiling, and roasting, it is for flavor only. These cooking methods produce a flavorful exterior and a moist interior.

Fats or oils are needed when using dry-heat cooking methods such as sautéing, stir-frying, pan-frying, and deep-frying. Although each method relies on fats or oils as a cooking medium, the amount varies greatly among these techniques. These methods are all relatively quick, use high heat, and are best used with small pieces of tender food.

Moist-heat methods cook food using a liquid or steam. A complete meal can be prepared in one pot. Moist-heat cooking methods include steaming, poaching, boiling/simmering, braising, and stewing.

Poaching and steaming produce delicate flavors because no browning occurs. When braising or stewing, foods are first seared to create a browned exterior. The amount of liquid used in any moist-heat cooking methods varies greatly from a few teaspoons to a few quarts.

Fact Sheet #3

Food Safety: Read the Label

Food labels and packaging are excellent sources of information about food and guides for food safety. The primary source of food safety information is the shelf-life of the package, which can be presented in many different ways. Examples include:

- ⊗ The "sell by" date -- this is the last day the product can be sold. It allows time for the product to be stored and used at home.
- ⊗ The use by or "best if used by" date -- this is the freshness date; product may be safe after this date but will probably not be at peak quality.
- ⊗ The "do not use after" or expiration date -- this is the last date the product should be used.
- ⊗ Other food safety information that can also be found on the label includes:
 - ⊗ If the food is graded or inspected. Eggs and fresh meat have a grade shield or inspection mark on the package to signify their safety and quality.
 - ⊗ How the food should be stored or prepared.
 - ⊗ The lot number of the package. Manufacturers place batch identification numbers on food packages. If there is a problem with a batch of food, news reports will advise people to return products with a certain number.
- ⊗ One will also find the following on a food package:
 - ⊗ The quantity of the contents by weight or volume or count.
 - ⊗ The ingredients, listed in decreasing order. In other words, the ingredient present in the greatest amount is listed first.
 - ⊗ The form of the food, such as sliced, whole, or chunk.
 - ⊗ The nutritive value of the food.
 - ⊗ Anti-tampering devices. These will reveal whether the container's original closing has been broken. It could be a plastic seal around the outside of a container or a safety button on the lid of a jar. If the seal is broken or the button is up, don't buy and don't use the product.
- ⊗ The name and address of the manufacturer or packer of the food.

Fact Sheet #4(a)

The most common foodborne diseases

Foodborne disease is caused by consuming contaminated foods or beverages. Many different disease-causing microbes, or pathogens, can contaminate foods, so there are many different foodborne infections. More than 250 different foodborne diseases have been described. Here is a list of the most common foodborne diseases. The most commonly recognized foodborne infections are those caused by the bacteria [Campylobacter](#), [Salmonella](#), and [E. coli O157:H7](#), and by a group of viruses called calicivirus, also known as the [Norwalk](#) and Norwalk-like viruses.

[Campylobacter](#) is a bacterial pathogen that causes fever, diarrhea, and abdominal cramps. It is the most commonly identified bacterial cause of diarrheal illness in the world. These bacteria live in the intestines of healthy birds, and most raw poultry meat has *Campylobacter* on it. Eating undercooked chicken or other food that has been contaminated with juices dripping from raw chicken is the most frequent source of this infection.

[Salmonella](#) is also a bacterium that is widespread in the intestines of birds, reptiles and mammals. It can spread to humans via a variety of different foods of animal origin. The illness it causes, salmonellosis, typically includes fever, diarrhea and abdominal cramps. In persons with poor underlying health or weakened immune systems, it can invade the bloodstream and cause life-threatening infections.

[E. coli O157:H7](#) is a bacterial pathogen that has a reservoir in cattle and other similar animals. Human illness typically follows consumption of food or water that has been contaminated with microscopic amounts of cow feces. The illness it causes is often a severe and bloody diarrhea and painful abdominal cramps, without much fever. In 3% to 5% of cases, a complication called hemolytic uremic syndrome (HUS) can occur several weeks after the initial symptoms. This severe complication includes temporary anemia, profuse bleeding, and kidney failure.

[Calicivirus, or Norwalk-like virus](#) is an extremely common cause of foodborne illness, though it is rarely diagnosed, because the laboratory test is not widely available. It causes an acute gastrointestinal illness, usually with more vomiting than diarrhea, which resolves within two days. Unlike many foodborne pathogens that have animal reservoirs, it is believed that Norwalk-like viruses spread primarily from one infected person to another. Infected kitchen workers can contaminate a salad or sandwich as they prepare it, if they have the virus on their hands. Infected fishermen have contaminated oysters as they harvested them.

Some common diseases are occasionally foodborne, even though they are usually transmitted by other routes. These include infections caused by [Shigella](#), [hepatitis A](#), and the parasites [Giardia lamblia](#) and [Cryptosporidia](#). Even strep throats have been transmitted occasionally through food.

In addition to disease caused by direct infection, some foodborne diseases are caused by the presence of a toxin in the food that was produced by a microbe in the food. For example, the bacterium *Staphylococcus aureus* can grow in some foods and produce a toxin that causes intense vomiting. The rare but deadly disease botulism occurs when the bacterium [Clostridium botulinum](#) grows and produces a powerful paralytic toxin in foods. These toxins can produce illness even if the microbes that produced them are no longer there.

United States Department of Agriculture Food Safety and Inspection Service. Centers for Disease Control, Division of Bacterial and Mycotic Diseases, Disease Information. January 2005.

For more information, visit www.cdc.gov/ncidod/dbmd/diseaseinfo/foodborneinfections_g.htm, or call the CDC public response hotline at (888) 246-2675

Fact Sheet #4(b)

Using the "HACCP" Approach for Kitchen Safety

The USDA's Food Safety and Inspection Service (FSIS) established rules for the meat and poultry industries to improve the safety of their products and to better protect the public health. However, consumers must share in the responsibility for safe food and safe food handling. Meat and poultry which are properly handled and cooked at home should be safe.

HACCP focuses on problem prevention. It involves taking a look at processes or food handling practices and identifying critical control points, or steps, where failure to take appropriate action is most likely to result in foodborne illness.

What Does HACCP Mean to the Consumer in the Home?

Recent surveys show that consumers are more aware these days of food safety issues. According to Bessie Berry, Manager of USDA's Meat and Poultry Hotline, "A recent Associated Press poll revealed that 89% of those surveyed said they follow the safety handling instructions on raw meat and poultry products. The safe handling instructions are really part of a HACCP approach which starts in the store and continues in the home." But do consumers really understand what hazards and critical control points are? As in the meat and poultry plants, potential hazards in the home can be divided into three categories:

1. biological (bacteria);
2. chemical (cleaning agents); and
3. physical (equipment).

This focus will be on the biological hazards, or foodborne bacteria, which can lead to illness if the food is mishandled, particularly for those more at risk -- the very young, the elderly and the immuno-compromised.

Certain processes or handling practices by consumers in the home have been identified as being essential or critical in preventing foodborne illness. These practices, which prevent or control the "dinner plate" microbial contamination associated with foodborne illness, are under the direct control of the consumer, from food acquisition through disposal.

They are purchasing, storing, pre-preparation, cooking, serving, and handling leftovers. Failure to take appropriate action at these critical points could result in foodborne illness.

Critical Point 1: Purchasing

- Purchase meat and poultry products last and keep packages of raw meat and poultry separate from other foods, particularly foods that will be eaten without further cooking. Consider using plastic bags to enclose individual packages of raw meat and poultry.
- Make sure meat and poultry products -- whether raw, pre-packaged, or from the deli -- are refrigerated when purchased.
- USDA strongly advises against purchasing fresh, pre-stuffed whole birds.

- Canned goods should be free of dents, cracks or bulging lids.
- Plan to drive directly home from the grocery store. You may want to take a cooler with ice for perishables. Always refrigerate perishable food within 2 hours. Refrigerate within 1 hour when the temperature is above 90 °F.

Critical Point 2: Home Storage

- Verify the temperature of your refrigerator and freezer with an appliance thermometer -- refrigerators should run at 40 °F or below; freezers at 0 °F. Most foodborne bacteria grow slowly at 40 °F, a safe refrigerator temperature. Freezer temperatures of 0 °F stop bacterial growth.
- At home, refrigerate or freeze meat and poultry immediately.
- To prevent raw juices from dripping on other foods in the refrigerator, use plastic bags or place meat and poultry on a plate.
- Wash hands with soap and water for 20 seconds before and after handling any raw meat, poultry, or seafood products.
- Store canned goods in a cool, clean dry place. Avoid extreme heat or cold which can be harmful to canned goods.
- Never store any foods directly under a sink and always keep foods off the floor and separate from cleaning supplies.

Critical Point 3: Pre-Preparation

- The importance of hand washing cannot be overemphasized. This simple practice is the most economical, yet often forgotten way to prevent contamination or cross-contamination.
- Wash hands (gloved or not) with soap and water for 20 seconds: before beginning preparation; after handling raw meat, poultry, seafood or eggs; after touching animals; after using the bathroom; after changing diapers; or after blowing the nose.
- Don't let juices from raw meat, poultry or seafood come in contact with cooked foods or foods that will be eaten raw, such as fruits or salad ingredients.
- Wash hands, counters, equipment, utensils, and cutting boards with soap and water immediately after use. Counters, equipment, utensils and cutting boards can be sanitized with a chlorine solution of 1 teaspoon liquid household bleach per quart of water. Let the solution stand on the board after washing, or follow the instructions on sanitizing products.
- Thaw in the refrigerator, Never On the Counter. It is also safe to thaw in cold water in an airtight plastic wrapper or bag, changing the water every 30 minutes till thawed. Or, thaw in the microwave and cook the product immediately.
- Marinate foods in the refrigerator, Never On the Counter.
- USDA recommends that if you choose to stuff whole poultry, it is critical that you use a meat thermometer to check the internal temperature of the stuffing. The internal temperature in the center of the stuffing should reach 165 °F before removing it from the oven. Lacking a meat thermometer, cook the stuffing outside the bird.

Critical Point 4: Pre-Cooking

- Always cook thoroughly. If harmful bacteria are present, only thorough cooking will destroy them; freezing or rinsing the foods in cold water is not sufficient to

destroy bacteria.

- Use a meat thermometer to determine if your meat or poultry or casserole has reached a safe internal temperature. Check the product in several spots to assure that a safe temperature has been reached and that harmful bacteria like *Salmonella* and certain strains of *E. coli* have been destroyed.
- Avoid interrupted cooking. Never refrigerate partially cooked products to later finish cooking on the grill or in the oven. Meat and poultry products must be cooked thoroughly the first time and then they may be refrigerated and safely reheated later.
- When microwaving foods, carefully follow manufacturers instructions. Use microwave-safe containers, cover, rotate, and allow for the standing time, which contributes to thorough cooking.

Critical Point 5: Serving:

- Wash hands with soap and water before serving or eating food.
- Serve cooked products on clean plates with clean utensils and clean hands. Never put cooked foods on a dish that has held raw products unless the dish is washed with soap and hot water.
- Hold hot foods above 140 °F and cold foods below 40 °F.
- Never leave foods, raw or cooked, at room temperature longer than 2 hours. On a hot day with temperatures above 90 °F, this decreases to 1 hour.

Critical Point 6: Handling Leftovers:

- Wash hands before and after handling leftovers. Use clean utensils and surfaces.
- Divide leftovers into small units and store in shallow containers for quick cooling. Refrigerate within 2 hours of cooking.
- Discard anything left out too long.
- Never taste a food to determine if it is safe.
- When reheating leftovers, reheat thoroughly to a temperature of 165 °F or until hot and steamy. Bring soups, sauces and gravies to a rolling boil.
- If in doubt, throw it out.

USDA Food Safety and Inspection Service
July 2002

**Competency D-1
Activity Sheet #1**

Name _____

Daily Food Plan

Food Group	Food Name and Amount
Breakfast	
Grains/Starches	
Vegetables	
Fruits	
Dairy	
Protein	
Fats/Sweets	
Beverages	
Snack	
Lunch	
Grains/Starches	
Vegetables	
Fruits	
Dairy	
Protein	
Fats/Sweets	
Beverages	
Snack	
Dinner	
Grains/Starches	
Vegetables	
Fruits	
Dairy	
Protein	
Fats/Sweets	
Beverages	
Snack	
Comments	

Competency D-1
Activity Sheet #3

Name _____

Weekly Menu Plan

	Breakfast	Lunch	Dinner	Snack
M O N D A Y				
T U E S D A Y				
W E D N E S D A Y				
F R I D A Y				
S A T U R D A Y				
S U N D A Y				

Competency D-1
Activity Sheet #4

Name _____

Meal Preparation Schedule

Task	Preparation Time	Cooking Time
<p>Cooking Set Up</p> <ul style="list-style-type: none"> • Assemble supplies • Set table • Organize supplies and ingredients • Other <p>_____</p> <p>_____</p> <p>_____</p>		
<p>Meal Preparation Step by Step</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p>		
<p>Serving Set Up</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p>		

Competency D-1 Activity Sheet #6

Name _____

Comparing Dry-Heat and Moist-Heat Cooking Techniques

List the correct cooking technique in the appropriate column below. Then name at least three foods that are commonly prepared using that cooking technique. Using two highlighters, highlight foods that are considered lower in fat in one color and foods that are considered higher in fat in another color.

Dry-Heat Cooking Methods

1. Cooking Method:

Common Foods Using This Method:

2. Cooking Method:

Common Foods Using This Method:

3. Cooking Method:

Common Foods Using This Method:

4. Cooking Method:

Common Foods Using This Method:

5. Cooking Method:

Common Foods Using This Method:

Moist-Heat Cooking Methods

6. Cooking Method:

Common Foods Using This Method:

7. Cooking Method:

Common Foods Using This Method:

8. Cooking Method:

Common Foods Using This Method:

9. Cooking Method:

Common Foods Using This Method:

10. Cooking Method:

Common Foods Using This Method:

Competency D-1
Activity Sheet #7

Name _____

Managing a Family Food Budget

Develop a one-week menu plan for one family described below. Use grocery ads from the newspaper or online sources to collect the prices for your food choices. Be sure to develop nutritious menu choices, but stay within the budget allowed.

The James Family. A family of four with \$100 a week to spend on groceries. The family is comprised of a single mom and three small children -- a 4-year-old girl, a 3-year-old boy, and a 4-week-old nursing baby. They follow a vegetarian diet.

The Martin Family. A family of four with \$175 a week to spend on groceries. Two members of the family are teenaged boys who like having friends over. Mom and Dad enjoy having their children's friends over throughout the week for supper, lunch, or late night snacks. The younger son was recently diagnosed with lactose intolerance.

The Michaels Family. A family of four including a grandmother, father, mother, and 5-year-old daughter. They can spend \$110 a week on groceries. Grandma has high cholesterol and is on a diet restricted to low-fat foods. Of course nobody wants to make Grandma feel different, so their meals conform to her diet.

The Carter Family. A family of five comprised of a mother, father, 13-year-old twins, and the mother's sister, who is in her first year of college. The family can spend \$120 a week on food. The twins' aunt chips in an additional \$30 a week for food.

The Casey Family. A family of three. The family includes a father and two teenaged sons. Both boys are active in athletics at school. This family has \$100 a week to spend on groceries.