

# **BEEF UNIT AND LAB PLANS**

**Compiled by the Utah Beef Council  
for Family and Consumer  
Science Class Instruction**

# OVERVIEW

As the American lifestyle becomes ever more hectic and fast paced, an increasing number of families spend the majority of their food dollars to eat out. As a result, many youth in America no longer learn the art of cookery at home on a regular basis. In particular, beef cookery has suffered because as youth see the large variety of beef cuts in the store and hear of various cooking methods they tend to steer away from beef thinking it is hard to prepare or that it takes all day to cook.

High school students, females in particular, are becoming extremely weight conscious and often overlook the guidelines of variety and balance for a healthy diet. Many search for that one “good” food that will provide all the nutrients they need with minimal calories, or the one “bad” food they can eliminate to be thin. An ever-increasing trend is for teens to go on diets that totally eliminate certain foods, particularly red meat. Many teens are surprised to learn that beef and poultry are nearly equal in cholesterol content, and that many cuts of beef are actually lower in fat and calories than some cuts of poultry. Cutting down on saturated fat and cholesterol is much easier now that beef is 20 percent leaner than it was just 14 years ago. In fact, there are 29 cuts of beef that meet government guidelines for lean. Twelve of the 29 lean beef cuts have, on average, only one more gram of saturated fat than a skinless chicken breast per 3-ounce serving. Yet, beef’s leanest cuts have eight times more vitamin B<sub>12</sub>, six times more zinc and three times more iron than a skinless chicken breast.

Foods in the newly revised MyPyramid are organized into food groups because each group contributes important nutrients, but no one group contributes all of the needed nutrients. Beef is a very nutrient dense food supplying significant amounts of protein, zinc, and especially iron, which is commonly deficient in the diets of teenage girls. Food selections should be nutrient dense foods that are low in calories, but high in nutrients. Naturally nutrient-rich beef fits into that profile. Small amounts of lean meats are good for maintaining adequate amounts of iron, zinc and B vitamins.

In response to the lack of accurate information many students have about beef, the Utah Beef Council has compiled a Beef Unit and Lab Plan. **This Beef Unit is unique in that it is designed so each group of students will perform different activities and then share what they have learned with the rest of the class. This method of design increases the flexibility of the lab plan for different classroom needs, increases the amount of learning in one class period, and reduces the amount of money spent on any one cut of beef.**

Through use of the Beef Unit and Lab Plan students will learn:

- Proper beef cookery methods for various cuts of beef
- Preparation methods for quick and tasty beef recipes (to fit into today’s fast-paced lifestyle)
- How to identify and select lean cuts of beef
- Factors affecting beef tenderness
- How to calculate cost per serving to get the best buy for their dollar
- Basic meat food safety rules

The Beef Unit and Lab Plan contains:

- **Instructor’s Guide** - To assist teachers in lab preparation and discussion information
- **10 Lab Plans** - Complete outlines for beef cookery activities, including beef cookery reference sheets
- **Beef Unit Evaluation Worksheet** - To assist students in summarizing their lab experiences

Because this is a revised lab plan and may contain new information and recipes, we recommend that you take time to read through the lab completely before implementing it. You can use as many or as few of the labs as you would like. Please note that various labs may be used together to demonstrate the differences between dry and moist heat cooking methods (i.e., Labs 1-2, Labs 4-6 and Labs 7-8). All labs may be duplicated for classroom use.

**Please contact the Utah Beef Council if you have any questions about the Beef Unit and Lab Plan (150 S 600 E #10B, SLC, Utah 84102, 801/355-0063).** The last page of this manual lists additional resources about beef that are available through the National Cattlemen’s Beef Association or the Utah Beef Council for Family and Consumer Science teachers.

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## OBJECTIVES

Depending on the activities selected students will:

- **Identify** proper cooking methods for various cuts of beef
- **Apply** proper cooking methods for various cuts of beef through hands-on experience
- **Prepare** meat in each lab in a quick, tasty and unique recipe
- **Evaluate** factors that affect beef tenderness
- **Practice** using pre-cooked beef roast in a recipe with a microwave oven
- **Apply** different beef cooking methods
- **Calculate** cost per serving of beef

## MATERIALS REQUIRED FOR LABS AND LAB PREPARATION

Purchase the meat cuts required for each lab. The list below contains other materials required for the labs. Please select from the list below according to individual labs being used. A detailed list of needed materials and supplies is included on each lab sheet.

- meat thermometers
- non-stick pans/skillets
- toothpicks for tasting
- tape or stickers to label finished products
- plastic bags for marinating
- broiling pan
- aluminum foil
- oil or pan spray

Some of the labs may have to be started before class. Please read all preparation instructions before selecting the lab to verify total preparation and cooking time. For the cost per serving lab, the instructor will need to collect a variety of supermarket ads for beef. Also, copies will need to be made of the appropriate reference sheets included with several of the labs in this packet.

- **Note: Make sure that the students know how to correctly use the meat thermometers!**
- Insert thermometer deeply into beef so that the tip of the thermometer is in the thickest portion of the meat, not resting in fat or bone.
- For roasts, determine if the thermometer is oven-safe and can be kept in a roast during cooking, or if it is a quick-read thermometer, which can be used for ground beef, steaks, or roasts and **SHOULD NOT** remain in meat while cooking.

## STEP 1 - TEACHER INTRODUCTION AND DISCUSSION ABOUT BEEF

### General Introduction to Beef Cuts

- Show students, using the enclosed *Retail Cuts of Beef* guide, different cuts of beef and what part of the animal they come from.
- Point out that the cooking methods for each cut are listed below the name of each cut.
- Identify the **six leanest cuts of beef**. They include: **Top Round, Eye of Round, Round Tip, Top Loin, Tenderloin and Top Sirloin**.
- Orally quiz the students by naming various cuts and have them give appropriate cooking methods.
- Have students identify the leanest cuts of beef from those purchased for labs or on the meat guide handout.

### Meat Food Safety Guidelines

Using the following list of meat food safety rules, discuss the importance of using proper food handling to prevent any food contamination.

- Be sure to keep hot foods hot and cold foods cold.
- Keep your kitchen work area and utensils clean.
- Wash hands with hot, soapy water before AND after handling fresh meat.
- Avoid cross-contamination of raw foods with cooked foods; wash hands after handling one type of food before handling another food.
- Use separate cutting surfaces for raw and cooked meat.
- Cook ground beef burgers to an internal temperature of 160° F, or until the middle is light gray and the juices run clear.
- After meat is cooked, do not keep it at room temperature for more than two hours. (Promptly refrigerate leftovers)
- Serve food with clean plates and utensils. (Do not use the same spatula for raw and cooked meat.)
- ALWAYS follow rules of personal hygiene, especially after bathroom use and after diapering infants.

## STEP 2 - LAB ASSIGNMENTS

- Students may participate in any of the following labs. The teacher can determine what combination of labs will be appropriate for each class and the number of students for each lab. (See Table of Contents for a list of labs and topics.)
- For best results plan labs so that final products will be done at about the same time.
- **Emphasize that each student should read their assigned lab and ask any questions they may have BEFORE beginning their lab.**

## STEP 3 - LAB EVALUATIONS AND DISCUSSION

- The Beef Lab Evaluation Worksheet is provided to assist you in evaluating student learning.
- Note to teachers: Because some labs take considerably less time to complete than others, you may want to taste, discuss and evaluate periodically throughout the class period.

# DISCUSSION OUTLINE FOR LABS 1-2: BROILING

## OBJECTIVES FOR EACH LAB

### Lab 1

- **Apply** principles of cooking beef using the broiling method
- **Make** a simple honey mustard sauce to give flavor variety to beef

### Lab 2

- **Apply** proper procedures for marinating beef
- **Apply** principles of cooking beef using the broiling method
- **Discover** how effective an acid (lime juice) can be for tenderizing a cut of beef

## LABS 1-2 COMBINED OBJECTIVES

At the conclusion of the labs and discussion students will be able to:

- **Apply** proper techniques for marinating beef and discuss how marinating affects tenderness
- **Analyze** factors that influence tenderness in beef
- **Compare** the difference in tenderness between the marinated and non-marinated beef

## EVALUATION

Have the students taste various samples from Labs 1-2 and complete the appropriate sections of the enclosed Beef Unit and Lab Evaluation Worksheet

## DISCUSSION

### What influences the tenderness of beef?

- Meat tenderness is affected by how much the muscle within each meat cut was used in the animal prior to cutting. Those muscles on the animal that are more active, such as the shoulder and top of the legs, are less tender. Those muscles on the animal that are used less, such as the loin, are more tender.
- As a general rule, cuts from the rib and loin are tender cuts and are best cooked by *dry* heat methods such as roasting, broiling and grilling. Less tender cuts such as round and chuck cuts should usually be prepared using *moist heat* cooking methods such as braising or cooking in liquid. However, there are some exceptions to this general rule. For example, a top round steak is relatively tender and thus should be prepared using a dry heat method.
- When heat is applied to meat two general changes occur:
  - 1) Muscle fibers become more tough.
  - 2) Connective tissue becomes tender.During heating, peptide chains composed of amino acids (the basic components of proteins) unfold (denaturation) and then reunite in a new form (coagulation); the end result of that process is shrinkage, moisture and fat loss and toughening of the muscle fiber.
- The USDA beef grade also plays a role in beef tenderness. The three top USDA grades of beef are *Prime*, *Choice* and *Select*. Beef cuts graded *Select* are leaner than cuts that are *Choice* or *Prime*, and are generally less tender. These cuts can be made more tender and juicy by using marinades, tenderizer or cooking to a lower degree of doneness (medium rare or medium) to maintain juices. If a well degree of cooking is desired *Choice* or *Prime* cuts are recommended.
- The key to having flavorful beef without extra fat and calories, is to choose cuts that have small amounts of fat cover (located around the edge of cuts) and just enough marbling (small flecks of fat throughout the muscle) to give the juiciness and flavor you find acceptable.

## MARINADES

- A marinade contains some form of weak acid (lemon juice, tomatoes, wine, vinegar, yogurt), in combination with seasoning and herbs, which tenderizes the meat surfaces by breaking down muscle fibers.
- Penetration is only 1/4 inch and thus contributes more to flavor than to tenderness.
- Because a marinade is acidic, marinating should not be done in a metal container. Use a plastic bag or a glass utility dish. The beef should fit snugly but lie flat.
- Always marinate in the refrigerator; **never at room temperature**.
- Allow 1/4 to 1/2 cup of marinade for each 1-2 pounds of beef.
- Marinades may be cooked or uncooked. Cooked marinades add the most flavor and are recommended when marinating for more than 12 hours.
- Cooked marinades should be completely cooled before adding to beef.
- Turn beef occasionally during marinating so that all sides are equally exposed to the marinade.
- Beef must be marinated at least **6 hours** for **tenderizing** effect to take place. Marinating longer than 24 hours causes the meat fibers on the surface to break down, resulting in a “mushy” texture.
- For **flavor**, marinate **15 minutes** or as long as 2 hours.
- If you want to brush on marinade during grilling, reserve some marinade at the beginning. (**Never use a marinade that has had raw beef in it to brush on cooked beef**) Marinades that have a high sugar content, or contain other ingredients which might burn easily, should be brushed on during the last 20 minutes of grilling.
- Marinade may also be served as a sauce with the grilled meat. Again, reserve some from the beginning.
- Left over marinade (that has been used with raw beef) should be discarded. **Never reuse a marinade!**
- Do not salt meat before cooking. Meat will lose moisture and become dry.

## OTHER TENDERIZING METHODS

- Tenderizers such as papain, from the papaya; bromelin, from pineapple; and ficin, from figs contain natural tenderizing enzymes. These are available as powders or in seasoning compounds. Care must be taken to avoid over-tenderizing the meat (by using too much or by allowing the meat to remain too long at the temperature optimal for enzyme activity). Individual steaks may also be sprayed or dipped in an enzyme solution, but use on thick cuts such as roasts is ineffective because these enzymes only penetrate about 1/4 inch into the meat surface.
- Another method of tenderizing is to break or cut the muscle fibers and the connective tissue. This can be done by grinding, chopping, pounding or with the use of a special instrument which pierces the meat with multiple, thin needles.

# LAB 1 - OVEN BROILING/GRILLING

**TOTAL LAB TIME:** 30-40 minutes

**APPROXIMATE PREP TIME:** 10 minutes

**APPROXIMATE COOK TIME:** 20-30 minutes

## LAB OBJECTIVES

- **Apply** principles of cooking beef using the broiling method
- **Learn** how to make a simple honey mustard sauce to give flavor variety to beef

## MATERIALS

- Tender steak cut (Tenderloin, Rib eye, T-bone, Sirloin; 3/4" to 1" thick)
- Broiling pan, meat thermometer and aluminum foil
- *Cookery Time Chart*
- Masking tape or stickers for labels
- Ingredients for recipe below

1. Combine the following ingredients:

1/3 cup Dijon mustard (regular mustard may be used)

1 Tbsp dried parsley

1 Tbsp water

1/8 tsp black pepper

1/2 Tbsp honey

1 Tbsp cider vinegar

1/4 tsp hot pepper sauce

2. Brush sauce on one side of steak.

3. Turn oven to broil setting.

4. Place steak on rack of broiler pan (unbrushed side down). Place pan in oven on top oven rack. For steaks 3/4 to 1-inch thick, position the pan so surface of meat is 2 to 3 inches from the heat. Place thicker cuts 3 to 6 inches away from the heat.

5. Broil until top side is brown. Then turn, brush other side with sauce and brown. Total cooking time is approximately 15-30 minutes. (See *Cookery Time Chart* regarding broiling times for other steak cuts and their thickness)

6. Test doneness with a meat thermometer. Internal temperature should be 145° F for medium-rare, 160° F for medium and 170° F for well done.

7. Remove from oven when steak reaches correct temperature. Cover with aluminum foil until ready for tasting. Using tape or stickers, make a label that says "Lab 1 - Oven Broiling/Grilling." Cut into bite size pieces just prior to tasting.

## LAB 2 - OVEN BROILING WITH MARINADE

**NOTE:** This lab will need to be started before class or on the previous day to allow enough time for meat to marinate!

**TOTAL TIME:** 20-30 minutes **AFTER** meat has been marinated

**APPROXIMATE PREP TIME:** At least six hours for tenderizing to take place

**APPROXIMATE COOK TIME:** 20-30 minutes

### LAB OBJECTIVES

- **Apply** proper procedures for marinating beef
- **Apply** principles of cooking beef using the broiling method
- **Discover** how effective an acid (lime juice) can be for tenderizing a cut of beef

### MATERIALS

- Tender steak cut (Tenderloin, Rib eye, T-bone, Sirloin; 3/4" to 1" thick)
- Large sealable plastic bag
- *Cookery Time Chart*
- Masking tape or stickers for labels
- Broiling pan, meat thermometer and aluminum foil
- Ingredients for marinade recipe below

### SAVORY BEEF MARINADE

1/4 cup steak sauce	2 Tbsp fresh lime juice
2 Tbsp packed brown sugar	1/4 tsp ground red pepper

1. Combine steak sauce, brown sugar, lime juice and red pepper and mix well. Reserve 2 Tbsp of marinade
2. Place steaks in sealable plastic bag; add remaining marinade, close bag securely and turn to coat steaks.
3. Marinate in refrigerator for at least six hours, but no longer than 24 hours.
4. Prior to broiling, brush reserved marinade on one side of steak.
5. Turn oven to broil setting.
6. Place steak on broiler pan. Place pan on top oven rack. For steaks 3/4" to 1" thick, position the pan so surface of meat is 2 to 3 inches from the heat. Place thicker cuts 3 to 6 inches away from heat.
7. Broil until top-side is brown. Then turn and brush other side with marinade and brown. Total cooking time is approximately 15-30 minutes. (See *Cookery Time Chart* for broiling times for other cuts and thickness of steaks)
8. Test doneness with a meat thermometer. Internal temperature should be 145° F for medium rare, 160° F for medium and 170° F for well done.
9. Remove from oven when steak reaches correct temperature. Cover with aluminum foil until ready for tasting. Using tape or stickers make a label that says "Lab 2 - Oven Broiling with Marinade." Cut into bite size pieces just prior to tasting.

# DISCUSSION OUTLINE FOR LAB 3: MICROWAVE COOKING

## OBJECTIVES FOR LAB

- **Apply** correct procedures on how to prepare meals using a microwave oven and fully-cooked beef products
- **Evaluate** differences in the final product of beef cooked in a microwave oven and beef cooked in a conventional oven
- **Evaluate** the advantages and any disadvantages of using a microwave to cook beef
- **Option:** Teacher may want to have an additional lab in which a fresh roast is cooked in the microwave. This could be done to help the students understand the undesirable flavor and texture changes that occur in meat when cooked in a microwave. This type of cooking is not recommended for fresh cuts of beef.

**NOTE TO TEACHER:** You may want to combine this lab with another lab that uses a conventional oven to cook a roast. This would allow students to evaluate differences between a microwaved product and roast cooked in a conventional oven.

## EVALUATION

- Have students taste the sample from Lab 4 and then complete the appropriate section of the Beef Unit and Lab Evaluation Worksheet.

## DISCUSSION

- Discuss what types of beef products are acceptable for use in a microwave (fully-cooked beef entrees and beef meals).
- Discuss why it is not recommended that fresh cuts of beef be cooked in the microwave (undesirable changes in texture, color, etc.).
- Discuss the acceptability of products made for the microwave (taste, color and texture).
- Discuss advantages of microwave cooking (time, ease of preparation, etc.) and any possible disadvantages such as cost.

## LAB 3 - MICROWAVE COOKING A BEEF POT PIE

**TOTAL TIME:** 20-30 minutes

**APPROXIMATE COOK TIME:** 20-25 minutes

**APPROXIMATE PREP TIME:** 5 minutes

### LAB OBJECTIVES

- **Apply** correct procedures for cooking beef in a microwave oven
- **Evaluate** differences in the final product of beef cooked in a microwave oven and beef cooked in a conventional oven

### MATERIALS

- One package fully-cooked beef pot roast with gravy
- One package vegetable medley (fresh/frozen)
- One can buttermilk biscuits
- Masking tape or stickers for labels
- One oven/microwave safe dish
- Plastic wrap and aluminum foil

1. Heat vegetables in covered oven/microwave safe dish for the recommended cooking time.
2. Open pot roast cooking bag and slice unheated pot roast into one-inch cubes.
3. Mix pot roast with gravy and cooked vegetables and stir thoroughly. Cover dish, and return to microwave. Heat on high for approximately five minutes. (Cooking times may vary depending on microwave oven used.)
4. When meat and vegetables are heated through, open can of buttermilk biscuits and place single layer of biscuits over the pot roast and vegetable mixture.
5. Place in pre-heated 375° F oven for approximately ten minutes, or until biscuits are golden brown.
6. Keep covered with aluminum foil until ready for tasting. Using tape or stickers, make a label that says, "Lab 3 - Microwave Cooking Beef Pot Pie."

# DISCUSSION OUTLINE FOR LABS 4-8

## OBJECTIVES FOR EACH LAB

Lab 4 - **Apply** proper procedures for braising

Lab 5 - **Apply** the pan frying method

Lab 6 - **Apply** the pan broiling method

**Evaluate** the difference between pan frying and pan broiling

Lab 7 - **Apply** the dry roasting method

Lab 8 - **Apply** proper procedures for pot roasting (moist heat)

## LABS 4-8 COMBINED OBJECTIVES

At the conclusion of the labs and discussion students will be able to:

- **Analyze** one moist heat cooking method and two beef cuts for which this cooking method is appropriate
- **Analyze** one dry heat cooking method and two beef cuts for which this cooking method is appropriate
- **Evaluate** the difference between pan broiling, pan frying and braising, and recognize which ones are a healthier preparation method
- **Evaluate** the difference between dry roasting and pot roasting and identify which cuts of beef are appropriate for each method and recognize why

## EVALUATION

- Have students taste the various samples from Labs 4-8 and then complete the appropriate areas of the Beef Unit and Lab Evaluation Worksheet

## DISCUSSION

- Discuss procedures used for various cooking methods. **You may wish to use the *Cookery Methods Reference Sheet***. Explain the difference between moist and dry heat methods.
- The tenderizing effect of moist heat on connective tissue results from the conversion of collagen, a type of connective tissue, to gelatin. The extent to which these changes occur in a piece of meat depends on time and temperature of cooking.
- For muscles or cuts of meat with a considerable amount of collagen-containing connective tissue (i.e. beef chuck), **the toughening of the fibers is of less importance to tenderness than gelatinization of collagen**. When heat is applied, the collagen is transformed into a water-soluble gel and the muscle softens. Maximum connective tissue softening is achieved using moist heat, a low temperature and a relatively long cooking period.
- Cuts of meat such as rib or loin steaks, which contain small amounts of connective tissue, are most tender when cooked rapidly, with dry heat and at a higher temperature. These cuts are also more tender when cooked to medium rare rather than at the well done stage because toughening of muscle fibers is minimized.
- Point out differences of pan broiling and pan frying. Because pan broiling removes fat and does not add fat during cooking, it is a low-fat preparation method.

# LAB 4: MOIST HEAT COOKING/BRAISING

**NOTE:** Depending on length of class period, this lab will need to be started before class.

**TOTAL TIME:** 75-110 minutes or up to 185 minutes if chuck roast is used

**APPROXIMATE PREP TIME:** 5 minutes

**APPROXIMATE COOK TIME:** 75-105 minutes

## LAB OBJECTIVE

- **Apply** proper procedures for braising (a method that helps tenderize a less tender cut of beef)

## MATERIALS

- One round steak, chuck shoulder steak (3/4" to 1" thick), or chuck roast (2.5 to 4 pounds)
- Braising pan, meat thermometer and oil or pan spray
- Braising liquid (broth, water or tomato juice)
- Masking tape or stickers for labels
- *Cookery Time Chart*
- Salt and pepper

1. Brown meat slowly on all sides in a heavy pan in just enough oil to prevent the meat from sticking (or use pan spray). Drain drippings into a container. **DO NOT PUT DRIPPINGS DOWN THE DRAIN!** Season meat with salt and pepper.
2. Add a small amount of liquid (as little as two tablespoons may be used; however 1/4 to 1/2 cups is recommended, such as broth, water or tomato juice).
3. Cover tightly.
4. Simmer at low heat until meat is tender; about 1-1/4 to 1-3/4 hours for steaks and 2-3 hours for roast. Cook to internal temperature of 145° F for medium rare, 160° F for medium and 170° F for well done.
5. Cover with aluminum foil. Cut into bite size pieces just prior to tasting. Using tape or stickers, make a label that says, "Lab 5 - Braising."

## LAB 5: PAN FRYING

**TOTAL TIME:** 20-30 minutes

**TOTAL PREP TIME:** 10-20 minutes

**TOTAL COOK TIME:** 8-10 minutes

### LAB OBJECTIVES

- **Apply** the pan frying method and prepare Easy Beef Diane recipe
- **Evaluate** the difference between the meat that has been pan fried and the meat that has been pan broiled in Lab 6.

### MATERIALS

- Sirloin, top round, eye of round or round tip steak (3/4" to 1" thick)
- Large, heavy skillet
- Ingredients for recipe below
- Masking tape or stickers for labels
- Aluminum foil

### EASY BEEF DIANE

4 beef steaks (sirloin, top round, eye round, etc.)

3 Tbsp Worcestershire sauce (separated)

1/4 tsp pepper

1 Tbsp butter or margarine

2 tsp grated lemon rind

2 Tbsp fresh lemon juice

1 tsp Dijon-style mustard

Salt and pepper

1. Lightly brush both sides of steaks with 2 Tbsp Worcestershire sauce. Sprinkle both sides of steaks with salt and pepper.
2. Heat butter or margarine and lemon rind in large, heavy skillet over medium-high heat until hot.
3. Add steaks; pan fry 8-10 minutes, turning once. Remove steaks to warm platter, keep warm.
4. Reduce heat to medium. Add lemon juice, 1 Tbsp Worcestershire sauce and mustard to skillet. Cook, scraping up brown meat bits, until sauce is blended.
5. Carve steaks into 1/4-inch thick slices. Pour sauce over steaks. Cover with foil and label as "Lab 5 - Pan Frying." Compare with pan broiled steaks in Lab 6.

# LAB 6: PAN BROILING

**TOTAL TIME:** 20-25 minutes

**APPROXIMATE PREP TIME:** 5 minutes

**APPROXIMATE COOK TIME:** 10-15 minutes

## LAB OBJECTIVES

- **Apply** the pan broiling method
- **Evaluate** the difference between the meat that has been pan broiled and the meat that is pan fried in Lab 5

## MATERIALS

- 2 chuck top blade steaks (3/4" to 1" thick)
- Non-stick skillet
- Aluminum foil
- Masking tape or stickers for labels
- Ingredients for recipe below

## FRUIT GLAZED TOP BLADE STEAKS

2 chuck top blade steaks

1/2 cup beef broth

1/2 cup juice (match with preserves..grape juice for blackberry and raspberry preserves or apricot nectar/apple juice for apricot and peach preserves)

1/4 cup preserves ("More Fruit" or "100 % Fruit," etc.) blackberry, raspberry, apricot or peach

1 Tbsp cornstarch

2 Tbsp cold water

1. Place beef in a preheated skillet.
2. Use medium, to medium-low heat and turn occasionally.
3. When steaks are cooked to desired doneness, remove from heat and place on platter.
4. Add beef broth and juice to skillet. Stir with drippings left in pan.
5. Add preserves and heat through.
6. In small bowl, mix cornstarch and water. Add to mixture in pan. Heat until mixture thickens. Serve over steaks.
7. Cover with foil and label as "Lab 6 - Pan Broiling." Compare with meat that was pan fried in Lab 5.

# LAB 7: OVEN ROASTING (DRY)

**NOTE:** Depending on class length and type of roast chosen, this lab may need to be started before class

**TOTAL TIME:** 50-125 minutes

**APPROXIMATE PREP TIME:** 5 minutes

**APPROXIMATE COOK TIME:** 45-120 minutes

## LAB OBJECTIVES

- **Apply** the dry roasting method
- **Evaluate** the difference between dry roasting and pot roasting

## MATERIALS

- One 2-4 pound oven roast (Tenderloin, Tri-Tip or Rib eye - *small end*)
- Shallow roasting pan, roasting rack, carving board
- Meat thermometer, aluminum foil, masking tape or stickers
- Ingredients for seasoning below

## THREE-PEPPER BEEF ROAST

2 pound roast	1/2 tsp garlic powder
1 tsp dried oregano, crushed	1/2 tsp ground black pepper
1 tsp sweet paprika	1/2 tsp onion powder
1 tsp salt	1/4 tsp ground red pepper
1 tsp dried thyme, crushed	1/4 tsp ground white pepper

1. Heat oven to 425° F.
2. In small bowl, combine seasoning ingredients.
3. Press mixed seasoning evenly over the surface of beef roast.
4. Place roast on rack, in shallow roasting pan. Insert ovenproof meat thermometer so tip is centered in the thickest part of beef. Do not add water or cover.
5. Roast in 425° F oven 45 to 50 minutes for medium doneness.
6. Remove roast when thermometer registers 150°-155° F. Transfer roast to carving board, tent loosely with foil.
7. Let stand 7-10 minutes (temperature will continue to rise approximately 10° F to reach 160° F for medium doneness).
8. Carve roast into slices and cover with foil until ready for tasting. Label as "Lab 7 - Dry Roasting." Compare this roast with the one cooked in Lab 8.

## LAB 8: POT ROASTING (MOIST)

**NOTE:** Depending on class length, this lab may need to be started before class.

**TOTAL TIME:** 2-1/4 to 3-1/2 hours

**APPROXIMATE PREP TIME:** 10 minutes

**APPROXIMATE COOK TIME:** 2-3 hours

### LAB OBJECTIVES

- **Apply** the pot roasting method using moist heat
- **Evaluate** the difference between pot roasting and dry roasting

### MATERIALS

- One 2-1/2 to 4 pound roast (Chuck Pot Roast or Brisket, *fresh*)
- Heavy pan with tight-fitting lid
- Aluminum foil and masking tape or stickers for labels
- Ingredients for recipe below

### BRAISED POT ROAST

2 pounds beef chuck roast

2 Tbsp cooking oil or pan spray

1-1/2 cups water

1 package dry onion soup mix

1. Slowly brown beef in oil or pan spray in heavy pan.
2. Pour off drippings.
3. In a small bowl, combine water and onion soup mix.
4. Pour soup mix over beef.
5. Cover tightly\* and simmer gently over LOW heat on stove top or in 325° F oven until fork tender (approximately 2 hours).
6. Remove roast and carve for tasting. Cover with foil. Using tape or stickers, label as “Lab 8 - Pot Roasting.” Compare this roast with the one cooked in Lab 7.

\* Many roasting pans have slightly warped lids and do not fit tightly enough to prevent liquid loss. A tightly fitting layer of foil topped with roaster lid makes a better seal to roast with.

# DISCUSSION OUTLINE FOR LAB 9 - STIR FRYING

## OBJECTIVES

- **Apply** the stir frying method by preparing a simple recipe
- **Identify** which type of cooking method is used when stir frying
- **Properly identify** which types of beef cuts are suitable for the stir fry method of cooking

## EVALUATION

- Have students taste the sample from Lab 9 - Stir Frying, and complete the appropriate section of the Beef Unit and Lab Evaluation Worksheet.

## DISCUSSION

- Discuss the best cuts of beef to use when stir frying.
- Discuss why this method of cooking can be very healthy (this preparation method uses only a small amount of oil and generally includes a lot of vegetables).

# LAB 9 - STIR FRYING

**TOTAL TIME:** 30-35 minutes

**APPROXIMATE PREP TIME:** 20 minutes

**APPROXIMATE COOK TIME:** 10-15 minutes

## LAB OBJECTIVES

- **Apply** the stir frying method of cooking beef by preparing a simple stir fry recipe

## MATERIALS

- 1/2 pound steak for stir fry (Top Round, Top Sirloin, Round Tip or Flank Steak)
- Aluminum foil
- Nonstick pan or wok
- Masking tape or stickers for labels
- Ingredients for recipe below

## ORIENTAL BEEF AND BROCCOLI WITH NOODLES

- 1/2 pound round, sirloin or flank steak
- 1 cup water (separated)
- 2 tsp vegetable oil (separated) or pan spray
- 1 medium carrot (in thin diagonal slices)
- 1 package (3 oz.) Oriental flavor raman noodle soup
- 3/4 tsp cornstarch
- 2 cups fresh or frozen broccoli (about 1/4 pound)
- 1/2 tsp grated orange rind (optional)

1. Cut steak into 1/8-inch thick strips (partially freeze beef for easy slicing). Cut across the grain. Combine seasoning packet from raman noodles, 1/4 cup water and cornstarch. Pour over beef strips tossing to coat evenly.
2. Heat 1 tsp oil (or use pan spray) in large non-stick skillet or wok over medium-high heat until hot. Stir fry broccoli and carrots for one minute.
3. Break noodles into 4 pieces each, and add to skillet with remaining water (3/4 cup). Cover and simmer over low heat 3-5 minutes or until vegetables are tender and almost all liquid is absorbed, stirring occasionally to separate noodles. Transfer noodles and vegetables to warm plate.
4. Heat remaining oil (1 tsp) or use pan spray, in skillet over medium-high heat until hot. Remove beef from marinade. **DISCARD MARINADE.** Stir fry beef (half at a time) 1 to 2 minutes, or until no longer pink. Spoon beef and pan juices over noodles. Sprinkle with orange rind if desired.
5. Cover with foil until ready for tasting. Using tape or stickers, label as "Lab 9 - Stir Frying."

# DISCUSSION OUTLINE FOR LAB 10 - COST PER SERVING

## OBJECTIVE

At the conclusion of the lab and discussion, students will be able to:

- **Evaluate** the best buys of beef by **calculating** the cost per serving

## DISCUSSION

- Put a chart similar to the *Cost Per Serving Worksheet* on the board. Fill in the chart with information provided by the students.
- Have students identify cuts with low and high costs per serving. Ask students why they think some cuts are more expensive than others.
- Explain that many less tender cuts from the more exercised muscles of the steer cost less than tender cuts. Price differences may be due to supply and demand. People prefer tender cuts, but there are less of them on the steer. Also, prices may be seasonal. Roasts tend to be more expensive during winter months when people don't mind having their ovens on for long periods of time. Steaks and ground beef tend to be more expensive in the summer months when grilling is popular.
- Point out that some cuts, which cost less per pound, actually cost more per serving (cuts with more bone and fat). Cost per serving is a more accurate way of calculating the true cost of buying meat.
- Explain that cost per serving is variable, depending on whether beef is a "main course" item or one ingredient in a recipe (such as stir fry or fajita).

**JUST FOR FUN** - you may want to discuss a little bit of nutrition. Beef is a wonderful ingredient to include in mixed dishes to improve the amount of iron in a recipe that can be easily used by our bodies (and save money). The form of dietary iron in beef (heme iron) helps increase the absorption of iron from plant foods (non-heme iron). For example, more iron from the vegetables will be absorbed if you prepare stir fry with vegetables and beef, rather than preparing the vegetables alone!

## LAB 10 - COST PER SERVING

**TOTAL TIME:** Variable, depending on how many ads are used. Use this lab for students who finish their other labs early, or use it as a homework assignment.

### LAB OBJECTIVE

- **Evaluate** the best buys of beef by calculating the cost per serving

### MATERIALS

- *Retail Cuts of Beef* Reference Sheet
- *Cookery Time Chart*
- *Cost Per Serving* Reference Sheet
- *Cost Per Serving Worksheets*
- A variety of store ads for beef

1. Fill in the *Cost Per Serving Worksheet* parts 1, 2 and 6 using information from a newspaper ad or actual beef label from the store.
2. Fill in parts 4 and 5 using the *Retail Cuts of Beef* Reference Sheet.
3. Fill in part 3 using the *Cookery Time Chart*.
4. Fill in part 7 by using information from the *Cost Per Serving* Reference Sheet.
5. Complete parts 8 and 9 by calculating the cost per serving and comparing the cost of the two cuts.

# COST PER SERVING

Chart A shows how many 3-oz servings per pound you can expect from each cut of beef. This chart will also help you decide how much beef to buy for the number of people you plan to serve. To determine the approximate cost per serving, simply divide the price per pound by the number of servings per pound the cut will provide. Chart B shows a few examples of cost per serving based on this formula.

**Here's an example of how to figure cost per serving for an arm pot roast. To figure cost per serving:**

1. Locate arm pot roast in Chart A..... Arm Pot Roast
2. Write down the servings per pound an arm pot roast will provide..... 2-servings/lb
3. Write down the price per pound from the package or ad..... \$2.30/lb
4. Divide the price per pound by the number of servings per pound (from #2 above).....  $\$2.30/2 = \$1.15$
5. W□ \$1.15/serving

## CHART A - SERVINGS PER POUND *(# of cooked servings 3 to 3-1/2 ounces)*

ROASTS		POT ROASTS	
Rib Eye Roast	3	Arm Pot Roast	2
Rib Roast	2	Blade Roast	2
Rump Roast	2	Bottom Round Roast	3
Rump Roast, Boneless	3	Cross Rib Pot Roast	2
Tip Roast	3	Eye Round Roast	3
Top Round Roast	3	Heel of Round	2
		Shoulder Pot Roast	2.5
BROILING STEAKS		BRAISED STEAKS	
Cubed Steak	4	Arm Steak	2
Flank Steak	4	Blade Steak	2
T-bone Steak	2	Flank Steak	3
Sirloin Steak	2.5	Round Steak	3
Rib Eye Steak	3	Tip Steak	3
Rib Steak, Boneless	2.5	OTHER CUTS	
Tenderloin Steak	3	Beef for Stew	4
Top Loin Steak	2	Brisket	3
Top Loin Steak, Boneless	2.5	Ground Beef	4

## CHART B - COST PER SERVING

Cost Per Pound	2 Servings/lb	2.5 Servings/lb	3 Servings/lb	3.5 Servings/lb	4 Servings/lb
\$1.29	\$.65	\$.52	\$.43	\$.37	\$.32
1.89	.95	.76	.63	.54	.47
2.29	1.15	.92	.76	.65	.57
3.29	1.65	1.32	1.10	.94	.82
4.29	2.15	1.72	1.43	1.23	1.07
5.29	2.65	2.12	1.76	1.51	1.32
8.29	4.15	3.32	2.76	2.37	2.07

## COST PER SERVING

**Directions:** Fill in this chart using information from the *Beef Made Easy Retail Beef Cuts Chart*, a newspaper ad or actual beef label from the store and your copy of the Cost Per Serving reference sheet.

Part	Information to find:	Name of Cut #1	Name of Cut #2
1	Primal Cut Name		
2	Weight and/or Thickness		
3	Approximate Cooking Time		
4	Recommended Cooking Method (moist or dry)		
5	Specific Cooking Method Used		
6	Price Per Pound		
7	Servings Per Pound		
8	Cost Per Serving (Price Per Pound/Servings Per Pound)		
9	Which cut is the better buy in terms of cost per serving? (check one)		

# BEEF UNIT AND LAB EVALUATION WORKSHEET

## Labs 1-2 Broiling/Marinating

Lab #	Cut of Beef	Preparation Method	Appearance	Tenderness Rank
1		Broiled		
2		Broiled/Marinated ___ hours		

### QUESTIONS

1. List three tender cuts of beef. Why are these cuts tender?

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2. List three less tender cuts. Why are these cuts less tender?

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3. List the six leanest cuts of beef.

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4. What are some common food acids used for marinades? What is the acid in the savory marinade used in Lab 2?

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5. Why does pounding, grinding or chopping tenderize meat?

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6. Name two of the three enzymes used for tenderizing and where they come from.

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### Lab 3: Microwaving

Cut of Beef	Cooking Method	Flavor/Taste	Appearance	Tenderness Rank 1 to 5 5 = very tender 1 = tough
Pot Roast	Microwave			

#### QUESTIONS

1. How is meat cooked in a microwave oven different than meat cooked in a conventional oven?

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2. What are some advantages of using beef that can be cooked in a microwave?

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3. Is it recommended to cook fresh cuts of beef in the microwave? Why or why not?

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4. What kind of changes (color, texture, taste) take place in fresh beef when it is cooked in the microwave?

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## Labs 4-9: Methods of Cooking

### QUESTIONS

1. List one moist heat cooking method.

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List two cuts of beef you would use this method for.

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2. List two cooking methods that use dry heat.

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List three cuts of beef you would use this method for.

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3. What is the difference between pan broiling, pan frying and braising? Which preparation methods are more healthy?

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4. What is the difference between oven and pot roasting?

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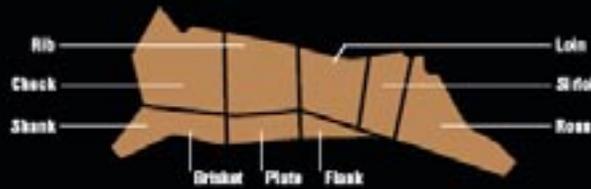
5. What method of cooking is used when stir frying? Why is this a healthy cooking option?

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# Beef Made Easy\*

Retail Beef Cuts and Recommended Cooking Methods



**DEEP BEEF**  
IT'S WHAT'S FOR DINNER.

**BEEF**  
FUNDED BY AMERICAN BEEF PRODUCERS

## Chuck

 <b>CHUCK 7-BONE POT ROAST</b> * Boneless 	 <b>CHUCK POT ROAST</b> Boneless 	 <b>CHUCK STEAK</b> Boneless  	 <b>CHUCK EYE STEAK</b> Boneless  	 <b>SHOULDER TOP BLADE STEAK</b>  	 <b>SHOULDER TOP BLADE STEAK Flat Iron</b>  
 <b>SHOULDER POT ROAST</b> * Boneless 	 <b>SHOULDER STEAK</b> * Boneless  	 <b>SHOULDER CENTER * Brisket Steak</b> 	 <b>SHOULDER PETITE TENDER</b> *  	 <b>SHOULDER PETITE TENDER MEDALLIONS</b> * 	 <b>BONELESS SHORT RIBS</b> 

## Rib

 <b>RIB ROAST</b> 	 <b>RIB STEAK</b> 	 <b>RIBEYE ROAST</b> Boneless 	 <b>RIBEYE STEAK</b> Boneless  	 <b>BACK RIBS</b> 
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## Loin

 <b>PORTERHOUSE STEAK</b>  	 <b>T-BONE STEAK</b> *  	 <b>TOP LOIN STEAK</b> * Bone-In  	 <b>TOP LOIN STEAK</b> * Boneless  	 <b>TENDERLOIN ROAST</b> * 	 <b>TENDERLOIN STEAK</b> *  
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## Sirloin

 <b>TRI-TIP ROAST</b> *  	 <b>TRI-TIP STEAK</b> * 	 <b>TOP SIRLOIN STEAK</b> * Boneless 
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## Round

 <b>TOP ROUND STEAK</b> * 	 <b>BOTTOM ROUND ROAST</b> * 	 <b>BOTTOM ROUND STEAK</b> * Western Griller  	 <b>EYE ROUND ROAST</b> * 	 <b>EYE ROUND STEAK</b> *  
 <b>ROUND TIP ROAST</b> * 	 <b>ROUND TIP STEAK</b> *  	 <b>SIRLOIN TIP CENTER ROAST</b> * 	 <b>SIRLOIN TIP CENTER STEAK</b> *  	 <b>SIRLOIN TIP SIDE STEAK</b> *  

## Shank and Brisket

 <b>SHANK CROSS CUT</b> * 	 <b>BRISKET FLAT CUT</b> * 
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## Plate and Flank

 <b>SKIRT STEAK</b> 	 <b>FLANK STEAK</b> * 
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## Other

 <b>GROUND BEEF</b>  	 <b>CUBED STEAK</b> 	 <b>BEEF FOR STEW</b> 	 <b>BEEF FOR KABOBS</b> 	 <b>BEEF FOR STIR-FRY OR FAJITAS</b> 
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**Key to Recommended Cooking Methods**

-  Stew
-  Grill or Broil
-  Marinate & Grill or Broil
-  Stir-Fry
-  Roast
-  Stew
-  Braise
-  Pot Roast

\* Check with your government guidelines for "lean" and are based on cooked average with visible fat trimmed.  
Lean is defined as less than 10 grams of total fat, 4.5 grams of saturated fat, and less than 90 milligrams of cholesterol per serving and per 100 grams (3.5 oz).

# COOKERY TIME CHARTS

## Stove-Top Skillet Cooking (Pan Broiling, Sautéing)

1. Heat heavy non-stick skillet over medium heat for 5 minutes.
2. Season beef straight from the refrigerator with herbs or spices, as desired. Place in preheated skillet. Do not overcrowd. Do not add water; do not cover.
3. Cook according to timetable below, turning once. (For cuts 1 inch thick or thicker, turn occasionally.) Remove excess drippings from skillet as they accumulate. After cooking, season beef with salt, if desired.

Beef Cut	Thickness	Approx. Total Cooking Time Over Medium Heat ( <i>medium rare to medium doneness</i> )
<b>Rib Eye Steak</b>	3/4 inch	8 to 10 minutes
	1 inch	12 to 15 minutes
<b>Porterhouse/T-Bone Steak</b>	3/4 inch	11 to 13 minutes
	1 inch	14 to 17 minutes
<b>Top Loin Strip Steak, <i>boneless</i></b>	3/4 inch	10 to 12 minutes
	1 inch	12 to 15 minutes
<b>Tenderloin Steak</b> <i>*Use medium-high heat for 1/2-inch thick steak.</i>	1/2 inch	3-1/2 to 5-1/2 minutes
	3/4 inch	7 to 9 minutes
	1 inch	10 to 13 minutes
<b>Top Sirloin Steak, <i>boneless</i></b>	3/4 inch	10 to 13 minutes
	1 inch	15 to 20 minutes
<b>Top Round Steak (<i>marinate</i>)</b> <i>Recommended cooking to medium rare only</i>	3/4 inch	11 to 12 minutes
	1 inch	15 to 16 minutes
<b>Eye Round Tip</b>	1/2 inch	2 to 4 minutes
<b>Round Tip Steak</b>	1/8 to 1/4 inch	1 to 2 minutes
<b>Chuck Eye Steak, <i>boneless</i></b>	3/4 inch	9 to 11 minutes
	1 inch	12 to 15 minutes
<b>Chuck Top Blade Steak, <i>boneless</i></b>	3/4 inch	10 to 12 minutes
	1 inch	13 to 17 minutes
<b>Cubed Steak</b> Use medium-high heat	N/A	3 to 4 minutes
<b>Ground Beef Patties</b> Cook to medium (160° F) doneness; see Determining Doneness	1/2 x 4 inches (4 per pound)	10 to 12 minutes
	3/4 x 4 inches (4 per 1-1/2 pounds)	12 to 15 minutes

- ***All cooking times are based on beef removed directly from refrigerator.***

## Oven Broiling

1. Set oven regulator for broiling; preheat for 10 minutes. During broiling the door of electric oven should be left ajar; the door of gas oven should remain closed. (However, consult your owner's manual for specific broiling guidelines.)
2. Place beef on rack of broiler pan. Season beef straight from the refrigerator with herbs or spices, as desired. Position broiler pan so that surface of beef is within the distance from heat specified in timetable below.
3. Broil according to timetable, turning once. After cooking, season beef with salt, if desired.

<b>Beef Cut</b>	<b>Thickness/ Weight</b>	<b>Distance From Heat</b>	<b>Approx. Total Cooking Time Over Medium Heat (<i>medium rare to medium doneness</i>)</b>
<b>Rib Eye Steak</b>	3/4 inch 1 inch 1-1/2 inches	2 to 3 inches 3 to 4 inches 3 to 4 inches	8 to 10 minutes 14 to 18 minutes 21 to 27 minutes
<b>Rib Steak, <i>small end</i></b>	3/4 inches 1 inch 1-1/2 inches	2 to 3 inches 3 to 4 inches 3 to 4 inches	9 to 12 minutes 13 to 17 minutes 24 to 31 minutes
<b>Porterhouse/T-Bone Steak</b>	3/4 inch 1 inch 1-1/2 inches	2 to 3 inches 3 to 4 inches 3 to 4 inches	10 to 13 minutes 15 to 20 minutes 27 to 32 minutes
<b>Top Loin Strip Steak, <i>boneless</i></b>	3/4 inch 1 inch 1-1/2 inches	2 to 3 inches 3 to 4 inches 3 to 4 inches	9 to 11 minutes 13 to 17 minutes 19 to 23 minutes
<b>Tenderloin Steak</b>	1 inch 1-1/2 inches	2 to 3 inches 3 to 4 inches	13 to 16 minutes 18 to 22 minutes
<b>Top Sirloin Steak, <i>boneless</i></b> <i>*Turn occasionally as needed during cooking.</i>	3/4 inch 1 inch 1-1/2 inches 2 inches	2 to 3 inches 3 to 4 inches 3 to 4 inches 3 to 4 inches	9 to 12 minutes 16 to 21 minutes 26 to 31 minutes 34 to 39 minutes
<b>Flank Steak (<i>marinate</i>)</b>	1-1/2 to 2 pounds	2 to 3 inches	13 to 18 minutes
<b>Top Round Steak (<i>marinate</i>)</b> <i>Recommended cooking to medium rare (145° F) only</i>	3/4 inch 1 inch 1-1/2 inches	2 to 3 inches 2 to 3 inches 3 to 4 inches	12 to 13 minutes 17 to 18 minutes 27 to 29 minutes
<b>Chuck Shoulder Steak, <i>boneless</i></b> <i>(marinate)</i>	3/4 inch 1 inch	2 to 3 inches 3 to 4 inches	10 to 13 minutes 16 to 21 minutes

- ***All cooking times are based on beef removed directly from refrigerator.***

## Oven Roasting

1. Heat oven to temperature specified in roasting timetable below.
2. Place roast (straight from refrigerator), fat side up, on rack in shallow roasting pan. Season roast before cooking, as desired. Insert ovenproof meat thermometer so tip is centered in thickest part of roast, not resting in fat or touching bone. Do not add water; do not cover.
3. Roast according to timetable. Transfer roast to carving board; tent loosely with foil. Let stand 15 to 20 minutes. (Internal temperature will continue to rise 5° F to 10° F to reach desired doneness and roast will be easier to carve.)

Beef Cut	Oven Temp. (pre-heated)	Weight	Approximate Total Cooking Time	Remove when internal temp. equals
Rib Eye Roast, small	350° F	3 to 4 lb	Medium Rare: 1-1/2 to 1-3/4 hours	135° F
			Medium: 1-3/4 to 2 hours	150° F
		4 to 6 lb	Medium Rare: 1-3/4 to 2 hours	135° F
			Medium: 2 to 2-1/2 hours	150° F
		6 to 8 lb	Medium Rare: 2 to 2-1/4	135° F
			Medium: 2-1/2 to 2-3/4 hours	150° F
Rib Eye Roast, large	350° F	3 to 4 lb	Medium Rare: 1-3/4 to 2-1/4 hours	135° F
			Medium: 2 to 2-1/2 hours	150° F
		4 to 6 lb	Medium Rare: 1-3/4 to 2-1/4 hours	135° F
			Medium: 2-1/2 to 3 hours	150° F
		6 to 8 lb	Medium Rare: 1-1/4 to 2-1/2 hours	135° F
			Medium: 2-3/4 to 3 hours	150° F
Rib Roast ( <i>chine bone removed</i> )	350° F	4 to 6 lb (2 ribs)	Medium Rare: 1-3/4 to 2-1/4 hours	135° F
			Medium: 2-1/4 to 2-3/4 hours	150° F
		6 to 8 lb (2 to 4 ribs)	Medium Rare: 2-1/4 to 2-1/2 hours	135° F
			Medium: 2-3/4 to 3 hours	150° F
		8 to 10 lb (4 to 5 ribs)	Medium Rare: 2-1/2 to 3 hours	135° F
			Medium: 3 to 3-1/2 hours	150° F

<b>Tenderloin Roast</b>	<b>425° F</b>	<b>2 to 3 lb (center cut)</b>	<b>Medium Rare: 35 to 40 minutes Medium: 45 to 50 minutes</b>	<b>135° F  150° F</b>
		<b>4 to 5 lb (whole)</b>	<b>Medium Rare: 50 to 60 minutes Medium: 60 to 70 minutes</b>	<b>135° F 150° F</b>
<b>Tri-Tip Roast</b>	<b>425° F</b>	<b>1-1/2 to 2 lb</b>	<b>Medium Rare: 30 to 40 minutes Medium: 40 to 45 minutes</b>	<b>135° F  150° F</b>
<b>Round Tip Roast</b>	<b>325° F</b>	<b>3 to 4 lb</b>	<b>Medium Rare: 1-3/4 to 2 hours Medium: 2-1/4 to 2-1/2 hours</b>	<b>140° F  155° F</b>
		<b>4 to 6 lb</b>	<b>Medium Rare: 2 to 2-1/2 hours Medium: 2-1/2 to 3 hours</b>	<b>140° F  155° F</b>
		<b>6 to 8 lb</b>	<b>Medium Rare: 2-1/2 to 3 hours Medium: 3 to 3-1/2 hours</b>	<b>140° F  155° F</b>
<b>Rump Roast</b>	<b>325° F</b>	<b>3 to 4 lb</b>	<b>Medium Rare: 1-1/2 to 2 hours</b>	<b>135° F</b>
<b>Bottom Round Roast</b>	<b>325° F</b>	<b>3 to 4 lb</b>	<b>Medium Rare: 1-1/2 to 2 hours</b>	<b>135° F</b>
<b>Eye Round Roast</b>	<b>325° F</b>	<b>2 to 3 lb</b>	<b>Medium Rare: 1-1/2 to 1-3/4 hours</b>	<b>135° F</b>
<b>Meatloaf</b> <i>Cook to medium (160° F doneness)</i>	<b>350° F</b>	<b>8 x 4 inches 1-1/2 lb</b>	<b>Medium: 1-1/4 hours</b>	<b>160° F</b>

- **Medium rare doneness = 145° F final internal temperature after 15-20 minutes standing time.**
- **Medium doneness = 160° F final internal temperature after 15-20 minutes standing time.**
- **All cooking times are based on beef removed directly from refrigerator.**

## Undercover Cooking (Braising, Pot Roasting, Stewing)

1. Remove beef from refrigerator. Lightly coat with seasoned flour, if desired. **Slowly brown** beef on all sides in small amount of oil in heavy pan. Pour off drippings. Season beef, as desired.  
(Omit dredging and browning for corned beef brisket.)
2. Add liquid, such as broth, water, juice, beer and/or wine, to pan. Bring to a boil; reduce heat.
  - For pot roasts and other braised dishes, such as Swiss steak, chilis and shredded beef, use small amount of liquid (1/2 to 2 cups).
  - For stews and soups, use at least enough liquid to cover beef.
  - Corned beef brisket is cooked in liquid to cover.
3. **Cover tightly** and **simmer gently** over low heat on top of the range, or in a preheated 325° F oven, according to timetable or until beef is fork-tender. (It is not necessary to turn pot roast or steak over during cooking.) Cooking liquid may be thickened or reduced, as desired.

Beef Cut	Thickness/Weight	Approx. Total Cooking Time (covered over low heat)
Chuck Pot Roast, <i>boneless</i> (Arm, Shoulder or Blade)	2-1/2 to 4 lb	2 to 3 hours
Chuck Shoulder Steak, <i>boneless</i>	3/4 to 1 inch	1-1/4 to 1-3/4 hours
Bottom Rump Roast	3 to 4 lb	2-1/2 to 3-1/4 hours
Round Steak, <i>Boneless</i> (Eye or Bottom)	3/4 to 1 inch 1 to 1-1/2 inches	1-1/4 to 1-3/4 hours 1-3/4 to 2-1/2 hours
Brisket, <i>fresh</i>	2-1/2 to 4 lb	2-1/2 to 3 hours
Beef Brisket, <i>Corned</i>	2-1/2 to 3-1/2 lb 3-1/2 to 5 lb	2-1/2 to 3-1/2 hours 3-1/2 to 4-1/2 hours
Beef or Stew	1 to 1-1/2 = inch pieces	1-3/4 to 2-1/4 hours
Shank Cross Cuts	1 to 1-1/2 = inch thick pieces	2 to 3 hours
Beef Short Ribs	2 x 2 x 4 = inch pieces	1-1/2 to 2-1/2 hours

- **All cooking times are based on beef removed directly from refrigerator.**

# References

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Utah Beef Council. *The Supreme Guide to Beef Marinades*.

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National Cattlemen's Beef Association, *Cooking Methods and Timetables*, 2002.

## Additional Resources For Teachers

**BASICS ABOUT BEEF** - A colorful booklet for senior high, consumer science students that covers all aspects of buying, storing, preparing and serving beef. A variety of word puzzles are designed to arouse student interest, reinforce the information and serve as a means of review.  
*16 pages, full color, 8-1/2" x 11"*

**BEEF MADE EASY RETAIL CUTS HANDOUT** - Color chart that names each retail cut and gives correct cookery methods for each cut. *Full color, 8-1/2" x 11"*

**BEEF MADE EASY RETAIL CUTS POSTER** - Color poster that names each retail cut and gives correct cookery methods for each cut. *Full color, 25" Wide x 38" Tall*