



Developed with Megan (Aden) Ferguson Family & Consumer Science Teacher
Courtesy of Iowa & Wisconsin Beef Councils

Volume 32 | Gr. 6-8

Beef basics



3.5 Demonstrate skills needed for product development, testing, and presentation

3.5.3 Analyze features, prices, product information, styles, and performances of consumer goods for potential trade-offs among the components

3.5.6 Evaluate the labeling, packaging, and support materials of consumer goods

Overview

In this lesson, students will learn how to read a meat label to determine what type and where on the animal the meat is coming from. Students will learn about the primal cuts of beef and if they are locomotion or suspension muscles.

Objectives

Students will...

- Read a meat label to help choose appropriate beef cuts for a certain recipe or dish
- Identify the primal beef cuts and the relative tenderness of each
- Differentiate between locomotion and suspension muscles

Career Clusters & Pathways

- Hospitality & Tourism (Restaurant & Food/Beverage Services Pathway)
- Agriculture, Food, and Natural Resources (Food Products and Processing Systems Pathway)

MEAT DEPARTMENT

WEIGHT Lb. Net	PAY	PRICE Per Lb.
0.00	\$0.00	\$0.00
BEEF ROUND TOP ROUND STEAK		

Materials list

- Examples of Beef Labels Handout (included)
- Beef Basics Handout (included)
- Beef Primal Cuts Worksheet (included)
- Beef Made Easy® chart (included)
- Basics About Beef Book (included)



Anticipatory Set

- Show students a picture/poster of a beef carcass (use the Beef Made Easy® chart)
Ask: Do you know what this is a picture of? (beef or beef carcass)
- Tell students to write down their favorite cut of beef or beef recipe. Ask volunteers to tell what they have written down.
Ask: Do you know which part of the animal it comes from?

Body of Lesson

How many students have ever purchased uncooked beef at the grocery store before? Have they ever gone with their parents and watched them purchase beef? Beef is categorized in a systematic way. (Hand out examples of beef labels to students or small groups of students)

1. The kind of meat is listed first on the label (also on page 10 *Basics About Beef*; attached with lesson plan download)
 - Have students underline the type of meat they are purchasing — beef
2. The second name tells where the meat comes from on the animal
 - Called “primal” or wholesale cut
 - Have students put an “X” under the primal cut name — chuck, rib, loin, etc.
3. The third name tells you what part of the primal cut the meat comes from
 - Called retail cut name (retail refers to the meat case at supermarkets)
 - Have students circle this name
 - Notice beef tenderloin steak: tenderloin is a cut taken from the sirloin and loin area. Primals can have more specific names/locations than what is covered here.
 - Other information found on the package: price per pound, number of pounds in the package, and the total price of the cut

Give each student, or each pair of students, the Beef Basics handout and Beef Primal Cuts worksheet for them to fill in as they learn each primal. The teacher should guide students through the beef basics handout and students should complete the beef primal cuts worksheet as each area is explained.

Practice

Have students flip over their meat labels. On the back of their meat labels, have students indicate whether the muscle they are purchasing is a suspension or locomotion muscle. With a partner, have students discuss their cut of beef and what type of muscle it is — partners should check their peers’ muscle type to make sure they correctly categorized their cut of meat.

Conclusion

The last few minutes of class, have students create a “3-2-1.” Students will get out a blank sheet of paper and write down three important ideas from the day’s lesson or related material, two questions they have about the day’s lesson or a related topic, and one main theme/idea they will keep from the day’s lesson.

Interactive Strategies

- The “3-2-1” activity is an interactive strategy to close the lesson and have students reflect on what they have learned that day.
- Students marking symbols on their meat labels when discussing the various parts is another interactive strategy used. This helps them visually see which part is being described throughout the lesson.
- The Beef Primal Cuts worksheet is a visual way students can follow along with the lesson as each primal cut is discussed. It will be useful when they need to study for the test.

Addressing the Diverse Learner

Students will have the opportunity to interact with the lesson, write information down they have retained, and discuss the lesson. This caters to a variety of learning styles: linguistic, spatial, bodily-kinesthetic, and interpersonal.

Beef label examples

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<p>Meat Department</p> <p>Net Weight: 0.00</p> <p>Beef Chuck Pot Roast</p> <p>Total price: 0.00</p> <p>Price per lb. \$0.00/lb.</p> <p>Local Grocery Store</p>	<p>Meat Department</p> <p>Net Weight: 0.00</p> <p>Beef Brisket Flat Cut</p> <p>Total price: 0.00</p> <p>Price per lb. \$0.00/lb.</p> <p>Local Grocery Store</p>
<p>Meat Department</p> <p>Net Weight: 0.00</p> <p>Beef Round Top Round Steak</p> <p>Total price: 0.00</p> <p>Price per lb. \$0.00/lb.</p> <p>Local Grocery Store</p>	<p>Meat Department</p> <p>Net Weight: 0.00</p> <p>Beef Rib Roast</p> <p>Total price: 0.00</p> <p>Price per lb. \$0.00/lb.</p> <p>Local Grocery Store</p>
<p>Meat Department</p> <p>Net Weight: 0.00</p> <p>Beef Tenderloin Steak</p> <p>Total price: 0.00</p> <p>Price per lb. \$0.00/lb.</p> <p>Local Grocery Store</p>	<p>Meat Department</p> <p>Net Weight: 0.00</p> <p>Beef Chuck Shoulder Pot Roast</p> <p>Total price: 0.00</p> <p>Price per lb. \$0.00/lb.</p> <p>Local Grocery Store</p>
<p>Meat Department</p> <p>Net Weight: 0.00</p> <p>Beef Round Bottom Round Roast</p> <p>Total price: 0.00</p> <p>Price per lb. \$0.00/lb.</p> <p>Local Grocery Store</p>	<p>Meat Department</p> <p>Net Weight: 0.00</p> <p>Beef Loin Top Loin Steak</p> <p>Total price: 0.00</p> <p>Price per lb. \$0.00/lb.</p> <p>Local Grocery Store</p>
<p>Meat Department</p> <p>Net Weight: 0.00</p> <p>Beef Flank Steak</p> <p>Total price: 0.00</p> <p>Price per lb. \$0.00/lb.</p> <p>Local Grocery Store</p>	<p>Meat Department</p> <p>Net Weight: 0.00</p> <p>Beef Loin Porterhouse Steak</p> <p>Total price: 0.00</p> <p>Price per lb. \$0.00/lb.</p> <p>Local Grocery Store</p>
<p>Meat Department</p> <p>Net Weight: 0.00</p> <p>Beef Top Sirloin Steak</p> <p>Total price: 0.00</p> <p>Price per lb. \$0.00/lb.</p> <p>Local Grocery Store</p>	<p>Meat Department</p> <p>Net Weight: 0.00</p> <p>Beef Ribeye Steak</p> <p>Total price: 0.00</p> <p>Price per lb. \$0.00/lb.</p> <p>Local Grocery Store</p>
<p>Meat Department</p> <p>Net Weight: 0.00</p> <p>Beef Chuck Eye Steak</p> <p>Total price: 0.00</p> <p>Price per lb. \$0.00/lb.</p> <p>Local Grocery Store</p>	<p>Meat Department</p> <p>Net Weight: 0.00</p> <p>Beef Chuck Shoulder Petite Tender</p> <p>Total price: 0.00</p> <p>Price per lb. \$0.00/lb.</p> <p>Local Grocery Store</p>

Name: _____ Class: _____

Primals (second name listed on the label, after the type of meat)

Large Muscle Sections of Meat

- Chuck — shoulder area, known for pot roasts (Letter A on Beef Primal Cuts worksheet)
- Rib — known for rib-eye steaks and prime rib (D)
- Short loin or loin — home of the T-bone steak (F)
- Sirloin — contains tender steaks (G)
- Round — the animal's back leg (I)
- Foreshank — leg of animal, one of the least tender cuts (C)
- Brisket — the animal's chest, large and boneless (B)
- Short plate — below the rib, seldom seen at meat counter; boned for ground beef (E)
- Flank — small, located just below the short loin; each carcass contains just two flank steaks (H)

Muscle Types — Suspension & Locomotion

Suspension

- Muscles not used in movement of the animal; provide structure and support to animal.
- Contain very little connective tissue (which holds muscles to the bones and helps support the muscles — tough and chewy).
- Cuts from this area are very tender.
- Found along the animal's back.
- Cuts that are considered suspension include rib, loin, and sirloin. On your Beef Primal Cuts worksheet, next to these cuts, list an “S” beside the names to remind you they are muscles used for suspension.
- Since these muscles are so tender, dry heat methods are used to prepare them.
- Grilling, roasting, and stir-frying are examples of dry heat method.

Locomotion

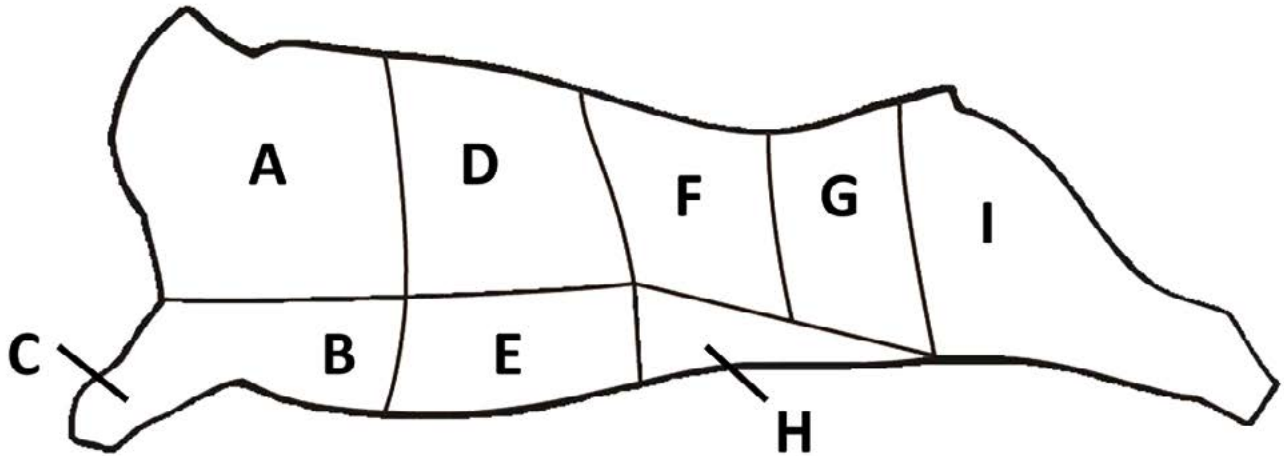
- Muscles used to move the animal.
- Contain more connective tissue than suspension.
- Round is the animal's back leg and rump, while the chuck is the shoulder.
- Think of your own arms and legs — both get a lot of movement and are typically more muscular.
- Extra motion and the extra connective tissue make these muscles less tender. The primals not considered suspension muscles are locomotion.
- Primals that are considered locomotion muscles include round, flank, short plate, brisket, shank, and chuck. Indicate which muscles are used for locomotion on your Beef Primal Cuts worksheet using the letter “L”.
- Cuts taken from these muscles are typically cooked at a low temperature with moisture to help tenderize the beef and soften the connective tissues making them tender and juicy. These methods are referred to as moist-heat methods.
- Braising, slow cooking, cooking in liquid are all examples.

Keep in mind, the farther you get away from the center of the back of the animal, the less tender the cuts become. Key message to take away — muscles that get little movement are very tender; muscles that are used a lot have more connective tissue, so are less tender and require a form of tenderization when cooking them.

Important Points to Remember, Questions to Ponder, and Things to Discuss:

1. Definitions of the two types of muscles:
Locomotion = muscles used for movement, not tender, but made tender with appropriate cooking methods.
Suspension = used for structure, very tender.
2. How will you use the information you have learned to make future beef-buying decisions?
3. Unique features of the round cut — leg of the animal, 25% of entire carcass, large supply, cheaper purchase.
4. Next time you go to the grocery store or butcher shop, based on what you have learned, compare the prices of meat coming from the locomotion muscles versus the suspension muscles (cuts from the tender cuts, rib, short loin, and sirloin, are more expensive than less tender cuts).
5. What would happen if you cooked a less tender cut (locomotion muscle) on the grill?
6. Ground beef comes from pieces of trim as the carcass is cut into retail cuts; primal may be ground into ground chuck, ground round, ground sirloin.

Name: _____ Date: _____



Beef Primal Cuts

Please label primal cuts from the above diagram on the lines below. Next to each cut name, write a letter "L" if the muscle is for locomotion or a letter "S" if the muscle is for suspension.

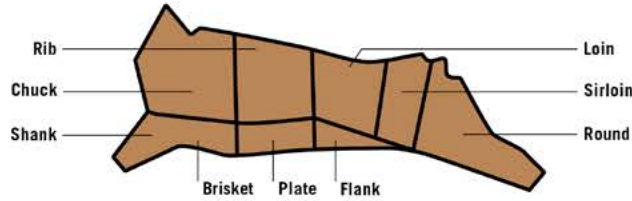
- A _____
- B _____
- C _____
- D _____
- E _____
- F _____
- G _____
- H _____
- I _____

Word Bank

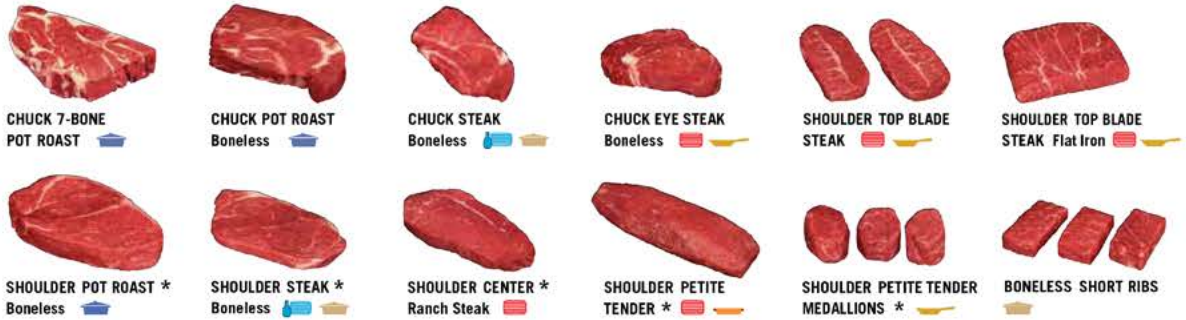
- Plate
- Flank
- Round
- Sirloin
- Fore Shank
- Brisket
- Rib
- Chuck
- Short Loin

Beef Made Easy®

Retail Beef Cuts and Recommended Cooking Methods



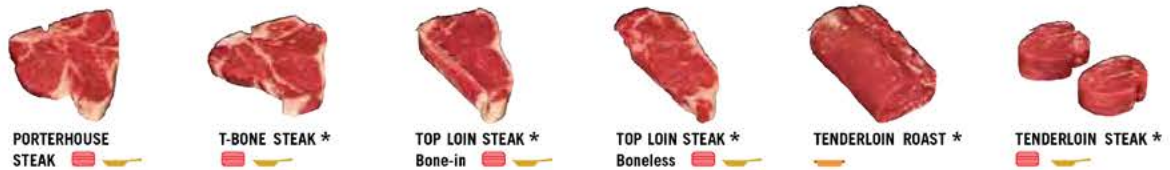
Chuck



Rib



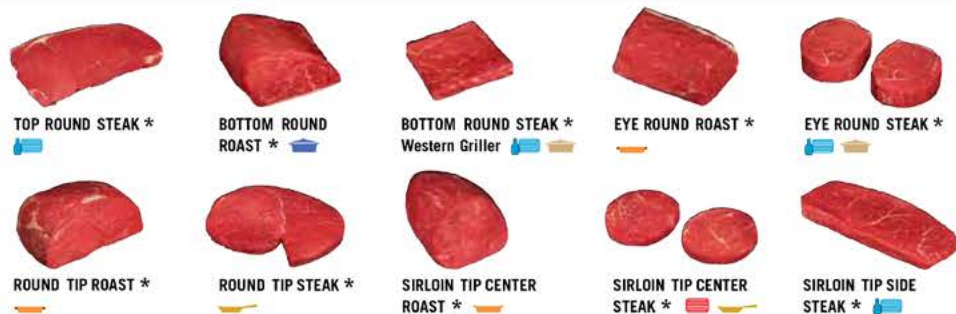
Loin




Sirloin



Round



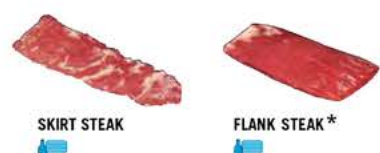
Key to Recommended Cooking Methods

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

Shank and Brisket



Plate and Flank



* These cuts meet government guidelines for "lean" and are based on cooked servings with visible fat trimmed.
Lean is defined as less than 10 g of total fat, 4.5 g of saturated fat, and less than 95 mg of cholesterol per serving and per 100 g (3.5oz).

Other



BASICS ABOUT

BEEF

NUTRITION

BUYING BEEF

BEEF CUTS

FOOD SAFETY

DRY HEAT COOKING METHODS

MOIST HEAT COOKING METHODS

TIMETABLES

TENDERIZING

CONVENIENCE PRODUCTS

CARVING



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This booklet is all about beef.

The information is designed to help you get the most value when you buy beef and to show you how to prepare beef to enhance the tenderness and flavor.

But why should you choose beef in the first place? The most important reasons are to obtain many of the key nutrients needed by your body and to enjoy its taste.



About 50 separate nutrients are essential to health and no single food contains them all. Vitamin B₁₂, for instance, is found in beef, which isn't a good source of vitamin C. On the other hand, oranges contain vitamin C, but no vitamin B₁₂.

For this reason, dietitians and health advisors recommend we consume a wide variety of foods from the different food groups every day. One type of food can't do the job alone, and extra amounts of one nutrient can't make up for too little of another. To help you choose the right variety and amounts, the United States Department of Agriculture (USDA) provides dietary guidance. This guidance provides information on choosing a healthful diet. It recommends eating a variety of foods for essential nutrients and appropriate amounts of calories to maintain or improve body weight. It also emphasizes foods from the five major food groups (grains, fruits, vegetables, protein, dairy products). Each of these food groups provides some, but not all, of the essential nutrients. Foods in one group cannot totally replace those in another. No one food group is more important than another — all are necessary for good health.

Today, in America, we continue to hear concerns about obesity as it relates to public health. At the same time, Americans are not meeting their needs for many important nutrients. These facts point out the need to

not only consume foods from each food group, but also choose foods within each food group that provide the most nutrients for calories. We all must balance the calories we eat with the calories we expend. At the same time we consume foods which contain different amounts and combinations of nutrients. Naturally nutrient-rich foods are those foods that give more and greater amounts of nutrients than other foods in the same food group. For good health, choose naturally nutrient-rich foods first to make the best use of your calories. You can then choose other less nutrient-rich foods as long as you stay within your caloric allowance.

The Protein Foods Group is an important component of dietary guidance because it contributes to the Daily Value (DV) of many key nutrients, like protein, iron, zinc, and many B-vitamins. The DV for a nutrient refers to the amount most teens and adults should eat each day. The value (recommended amount) is based on a person who eats about 2,000 calories each day. The DV is approximate because the exact amount each person needs varies with age, gender and activity level. The chart below lists the DV of many essential nutrients found in meat.

Beef is one of the most naturally nutrient-rich foods in the Protein Foods group because it provides a high percentage of the DV of many of these nutrients.

**Daily Values (DVs)
for Some Key Nutrients**

Protein	50 grams
Niacin (B ₃)	20 milligrams
Vitamin B ₆	2.0 milligrams
Vitamin B ₁₂	6.0 micrograms
Iron	18 milligrams
Zinc	15 milligrams



A gram is about one-thirtieth of an ounce and weighs about the same as a paper clip.

A milligram is one-thousandth of a gram.

A microgram is one-millionth of a gram.

PROTEIN

Beef supplies complete, high-quality protein. Proteins are made up of amino acids. We need 20 amino acids, but only nine are essential, meaning they must come from food. The body makes the remaining nonessential amino acids.

Proteins which contain all of the nine essential amino acids in proportions most useful to the body are called complete proteins.

Some plant proteins, when eaten alone, do not contain all of the essential amino acids in sufficient quantity and therefore are incomplete. Complete proteins such as those in beef help to build, maintain and repair body tissues, form body hormones and enzymes, and increase resistance to infection and disease.

One 3-oz. (85g) cooked burger of 90% lean/10% fat Ground Beef will supply 43% of the DV* for protein.

B-VITAMINS

Adequate B-vitamin intake has been associated with improved brain performance. Beef contains significant amounts of several B-vitamins.

Niacin (Vitamin B₃) promotes healthy skin and nerves, aids digestion and fosters normal appetite.

Vitamin B₆ helps the body make nonessential amino acids. It also helps form red blood cells and maintains cognitive performance.

Vitamin B₁₂ is needed for normal functioning of body cells and of the nervous system, and is only found naturally in animal foods.

One 3-oz. (85g) cooked burger of 90% lean/10% fat Ground Beef will supply 26% of the DV* for niacin, 16% of the DV* for vitamin B₆ and 42% of the DV* for vitamin B₁₂.

IRON

One of the most important nutrients is iron. Iron helps red blood cells carry oxygen to and away from the other body cells. There are two types of iron. Much of the iron in meat is called heme (h- em) iron and is easily utilized by the body. It also helps the body use the non-heme iron present in other foods such as legumes, grain products and vegetables. Beef is a good source of iron, a nutrient often lacking in the diets of women, young children, teen girls and athletes.

One 3-oz. (85g) cooked burger of 90% lean/10% fat Ground Beef will supply 13% of the DV* for iron.

*Daily Value, the amount most people need each day.



ZINC

Zinc is a mineral the body needs to form enzymes and insulin. It also supports the body's immune system. Deficiencies of iron and zinc may have a negative effect on behavior and cognitive functions like learning. As with iron, adequate zinc can be difficult to obtain without meat in the diet.

One 3-oz. (85g) cooked burger of 90% lean/10% fat Ground Beef will supply 36% of the DV* for zinc.

FAT, SATURATED FATTY ACIDS AND CHOLESTEROL

Fats are responsible for the flavors, aromas and textures of foods. Fats also increase the feeling of "satiety," or satisfaction, after a meal. Fats are needed to transport vitamins A, D, E and K into the body and through the walls of the digestive tract.

Dietary fat is made up of three types of "building blocks" called fatty acids. Saturated fatty acids come from animal sources and some vegetables. They are often solid at room temperature. Monounsaturated fatty acids (MUFAs) are usually liquid at room temperature. Vegetable oil, peanut oil, olive oil and beef contain MUFAs. Polyunsaturated fatty acids are soft or liquid at room temperature. Examples include corn and soybean oils and most of the fat in seafood.

Lean beef has a beneficial fatty acid profile. On average, 33 percent of the saturated fat in beef is stearic acid (the same fat found in chocolate that has been recognized for its health benefits) – and more than 50 percent of the remaining fatty acids in beef are monounsaturated, the same heart-healthy kind found in olive oil.

A great deal of attention has been given to the health concerns with trans fatty acids (TFAs) in the diet. Trans fatty acids have been shown to lower "good" cholesterol, thereby increasing the risk for heart disease. The vast majority of the TFAs consumed in the American diet come from man-made TFAs. These man-made TFAs are made from partially hydrogenated vegetable oils.

Cholesterol is a waxy, fat-like substance needed for cell building, manufacturing vitamin D and hormones, and other body functions. The liver produces as much cholesterol as the body needs, whether or not cholesterol is eaten.

The current dietary guidance recommends we limit total fat intake to 20 to 35 percent of daily calories, with no more than 10 percent of calories from saturated fat, and less than 300 mg of cholesterol daily. Remember, the fat goal refers to the entire diet over several days, not to each serving of food, or even to each meal.

Beef can be part of a balanced diet that does not exceed the limits for total fat, saturated fat and cholesterol. Typically, a 3-oz. (85g) cooked burger of 90% lean/10% fat Ground Beef has 173 calories and provides 14% of the total fat, 18% of the saturated fatty acids, and 23% of the dietary cholesterol recommended on a 2,000 calorie diet.

The chart at the right is based on a 30% fat goal. It uses the calculation (shown in blue below) to determine the maximum grams of fat you should eat each day. The chart indicates the maximum amount of fat allowed for each level of calorie intake. For example, if you eat about 2000 calories every day, your meals should contain no more than 67 grams of total fat. This 67 grams represents 30% of a 2000-calorie diet. Your family physician and/or a registered dietitian can help you pinpoint the calorie level that's best for you.

Look for steaks and roasts with the words loin or round on the label. These cuts have the least amount of fat.

Daily Calorie Level	Daily Calories From Fat	Maximum Grams of Fat
1600	480	53
2000	600	67
2400	720	80
2800	840	93

There are 9 calories per gram of fat.

WHOLE MUSCLE CUTS OF BEEF

Since 2008, the United State Department of Agriculture has been regularly updating its Nutrient Database, which is considered the premier data collection of the nutrient content of most foods. The recent updates include data for new beef cuts as well as revised information on traditional cuts. The new data show that many cuts of beef have up to 20% less fat than the available nutrient data indicated just 30 years ago. In addition, retail purchase data that 19 of the top 25 most popular muscle cuts meet government guidelines for "lean" (less than 10 grams of total fat, 4.5 grams or less of saturated fat and 95 milligrams of cholesterol per serving and per 100 grams). Consumers now have a range of choices at retail with at least 29 whole muscle cuts available that meet these guidelines. To avoid unnecessary fat, be sure to trim visible fat from your beef before eating.

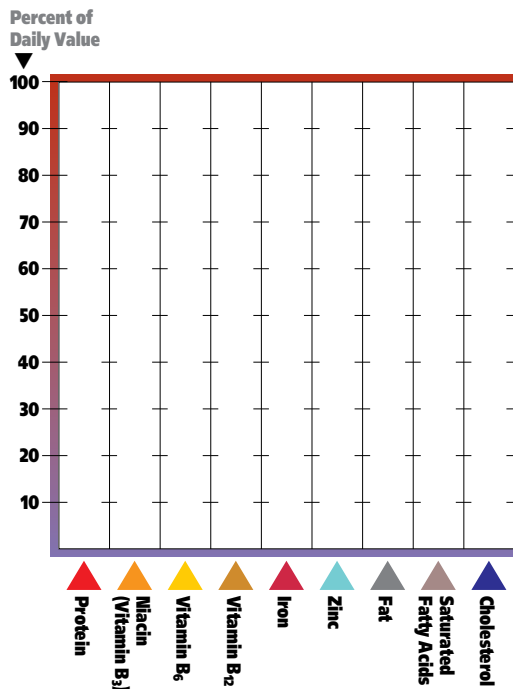
FILL IN THE CHART

When you eat a cooked, 3-oz. (85 g) 90% lean 10% fat ground beef burger, what percent of the *Daily Value* for beef's key nutrients do you get? Fill in the bar chart below using information from pages 3-5.

A 3-oz. (85g) cooked ground beef burger (usually 4 oz., uncooked) is about 3 inches in diameter and 5/8-inch thick.



In general, a 3 oz serving of lean cooked beef is about the size of a deck of cards.



There are several factors to consider as you purchase beef:

- ▶ wholesomeness
- ▶ quality
- ▶ appearance
- ▶ storage
- ▶ cost per serving and number to serve
- ▶ cookery method and time needed for preparation



WHOLESOMENESS

Wholesomeness has to do with the safety of food. Federal law requires that all beef sold must pass inspection for wholesomeness.

BEEF INSPECTION

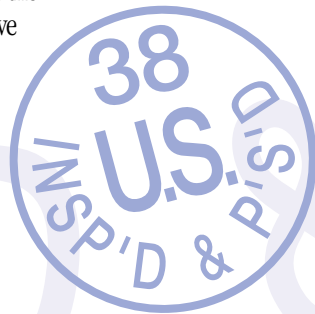
The purpose of inspection is to assure the consumer that all beef sold is from healthy animals which were processed under sanitary conditions, and that the beef is safe to eat.

Some states have their own inspection programs which regulate beef that is processed and sold only within that state. If a state does not have an inspection program or if the beef is to cross state or national lines, it must be federally inspected. Federal inspection is supervised by the USDA.

Experienced veterinarians or specially trained, supervised inspectors inspect beef both before and after processing. Beef which passes federal inspection is stamped with a round, purple mark made with a safe-to-eat vegetable dye. The number inside the mark is the official number assigned to the plant where the beef animal was processed.

State inspected beef will usually have a different inspection mark which varies state to state. The inspection mark is generally placed only once on larger (wholesale) cuts, so it is unlikely you will see it on the cuts you buy.

Whether done by the federal government or the state government, beef inspection is extensive and thorough, resulting in U.S. beef products with a safety record envied throughout the world. In addition to inspection of animals and of processed beef at the plant, beef is subject to further inspection as processing continues, in product manufacturing facilities, supermarkets and restaurant kitchens. For information on food safety in the home see page 14.



QUALITY

Quality is a factor to consider in buying beef. Quality refers to characteristics associated with the palatability of the beef (tenderness, juiciness and flavor). The names you see on beef labels often indicate the degree of meat quality. These names may be either the USDA grade names or the beef packer and retailer brand names.

USDA BEEF GRADING

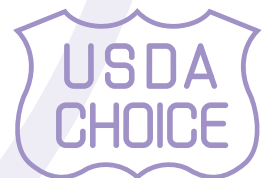
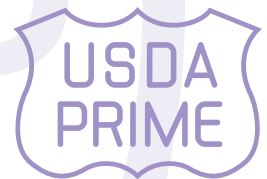
Unlike mandatory inspection, beef quality grading is voluntary and paid for by beef packers and, ultimately consumers. Grading sets standards of quality and yield used in the buying and selling of beef. The beef grading program is administered by the USDA, using highly trained specialists. Recently, the USDA has approved grading instruments to assist in determining the official quality grade. This enhancement to the grading program will result in improved consistency and uniformity across all beef plants throughout the country.

GRADES OF BEEF

Prime: The grade of beef which contains the greatest degree of marbling.* It is generally sold to finer restaurants and to some selected meat stores. It is usually higher priced because it is produced in very limited quantities.

Choice: The grade preferred by many consumers because it contains sufficient marbling for taste and juiciness. It is usually less costly than U.S. Prime.

Select: Generally lower-priced grade of beef with less marbling than U.S. Choice. Select beef cuts are leaner but also less juicy and flavorful.



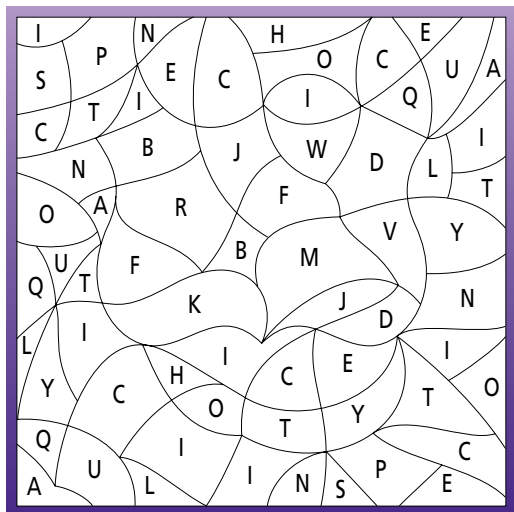
*Marbling is the term for the small flecks of fat that are interspersed with the lean (muscle). It contributes to juiciness and flavor. (See next page)

FIND THE ANSWERS

Complete the following statements. Find the answer in the jumble below. Pencil in the shapes which contain the letters appearing in each of the answers. (Answers appear more than once.)

1. The grade shield on beef indicates the _____ of the product.
2. Wholesomeness in beef is indicated by the _____ mark.
3. The grade preferred by many consumers is _____.

What is the symbol that remains after you have penciled in all the answers?



OTHER NAMES INDICATING BEEF QUALITY

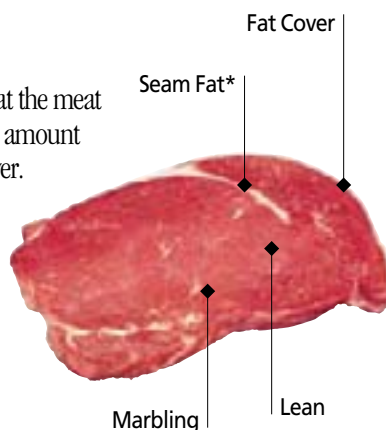
Because beef grading is a voluntary program, not all beef is graded by the USDA. Some beef processors use “brand names” their customers can readily identify with a desired level of quality. Therefore, you may find varying names on beef labels.

APPEARANCE

When buying beef, consider how it looks at the meat counter. Look at the color of the lean, the amount of marbling and seam fat, and the fat cover.

LEAN

The color of the lean part of the beef should be bright cherry-red unless it has been cured and/or cooked. (A cured beef is further processed using salt or a salt solution and sodium nitrite.)



Remember, beef **inspection** is mandatory. The inspection mark means the beef is wholesome and safe to eat.

Beef **grading**, on the other hand, is voluntary. The grade mark indicates a level of quality (tenderness, juiciness and flavor).

When first cut, beef is a dark, purplish-red color. Vacuum-packaged beef will have this same dark color. After cutting and exposure to the air, the surface becomes bright red due to a reaction with oxygen in the air. This is why the outside layer of ground beef is often red while the middle is darker. The middle will also brighten after it is exposed to the air. With extended exposure to air, beef will eventually take on a brown color.

MARBLING

The small flecks of fat throughout the lean are called marbling. Marbling improves the beef's flavor, tenderness and juiciness. It also supplies a few additional calories — although marbling is not as big a factor as trim fat in supplying fat and calories.

TRIM FAT

The thin layer of fat surrounding many beef cuts is called trim fat. Most cuts currently available in the supermarket have little or no trim fat. Look for one eighth of an inch or less on steaks and roasts. Cooking before removing the fat has little effect on total fat and calories. However, be sure to trim all visible fat before eating.

STORAGE

Before buying beef, consider how you plan to store it.

REFRIGERATING

Most beef is prepackaged and should be stored wrapped as purchased. When purchasing beef, look for packages that are cold and tightly wrapped without tears or punctures. It can be stored at a temperature of 35° to 40°F for one to four days after purchase. Meat compartments in many refrigerators maintain ideal temperatures.

FREEZING

Freezing Fresh Beef

1. Freeze beef as soon as possible after purchase while fresh and in top condition.
2. Select proper freezer wrapping materials, such as:
 - ▶ specially coated freezer paper
 - ▶ aluminum foil
 - ▶ heavy-duty, food-safe, plastic freezer bags

The wrap must seal out air and lock in moisture. If air penetrates the package, moisture is drawn from the surface of the beef causing a whitish surface layer known as “freezer burn.” This affects the palatability of the beef when cooked, but not the wholesomeness.

*Seam fat is the fat between sections of lean beef.



You can freeze beef in its original packaging up to two weeks. For longer storage, wrap in heavy-duty aluminum foil or place in plastic freezer bags, removing as much air as possible.

3. Prepare beef for freezing before wrapping. Think ahead to your weeknight meals and re-package into right-size portions for you and your family.
4. Wrap tightly, pressing out as much air as possible.
5. Label properly. Indicate name of cut, approximate number of servings and/or weight, and date of freezing.
6. Freeze immediately at 0°F or lower. Do not stack unfrozen packages or freeze too many packages at one time. This slows down the freezing, which may lower quality. Maintain freezer temperature at 0°F or lower. Use a thermometer to check freezer temperature.
7. Use chart below.

HOW TO WRAP BEEF FOR FREEZING

Place beef in center of wrapping material. When several steaks, patties or individual pieces of beef are packaged together, place a double thickness of freezer wrap between them for easy separation.



Bring edges of wrap together over beef. Fold over twice and press the wrap closely to the beef to force out air.



Smooth ends of wrap, creasing edges to form triangles. Turn package over, double folding the ends under the package and away from the top fold to tighten it and seal out air.



Seal ends with strips of freezer tape. Label package with name of cut, number of servings and the date of freezing.



Freezing Cooked Beef:

Cooked beef can be frozen by following steps 4-7 at left. Be sure to chill the beef in the refrigerator for approximately two hours before freezing.

Freezing Cured, Smoked or Ready-to-Serve Beef Products:

These products do not keep their high quality in the freezer as long as fresh beef. This is because salt in the products speeds the development of rancidity which results in objectionable flavors and odors. For best quality, limit freezer storage time of products such as corned beef and deli meats.

Freezing Defrosted Beef:

Refreezing of completely defrosted beef is not usually recommended. This is because the quality of the beef may deteriorate between the time of thawing and refreezing. *Partially* defrosted beef may be refrozen.

For food safety reasons, refreezing of steaks, roasts, kabobs or sliced beef is only recommended if the beef has been defrosted in the refrigerator. Do not refreeze thawed ground beef products.

DEFROSTING

For best quality, defrost beef in the refrigerator, never at room temperature. Place frozen package on a plate or tray to catch any juices and place in the refrigerator according to chart.

Beef can be refrozen as long as it was defrosted properly and is used within the freezer storage guidelines below.

DEFROSTING GUIDELINES

Beef Cut	Package Thickness	Approximate Refrigerator Time (at 35-40°F)
Steaks, Ground Beef*	½ to ¾ inch	12 hours
Beef for Stew, Kabobs or Stir-Fry	1 to 1½ inches	24 hours
Small Roast	Varies	3 to 5 hours per pound
Thin Pot Roast	Varies	3 to 5 hours per pound
Large Roast	Varies	4 to 7 hours per pound
Thick Pot Roast	Varies	4 to 7 hours per pound

* According to USDA, Ground Beef can be defrosted in the microwave, but it must be cooked within the same day.



STORAGE TIMETABLE

Type of Beef		Refrigerator (at 35-40°F)	Freezer (at 0°F)
Fresh Beef	Roasts, Steaks	3 to 4 days	6 to 12 months
	Beef for Stew, Kabibs, or Stir-Fry	2 to 3 days	6 to 12 months
	Ground beef	1 to 2 days	3 to 4 months
Fresh Veal	Roasts, chops, cutlets	1 to 2 days	6 to 9 months
	Ground veal	1 to 2 days	3 to 4 months
Cured and/or Smoked and Ready-To-Serve Beef Products	Corned beef (ready-to-cook)	1 week	2 weeks
	Frankfurters, Deil Meats	3 to 5 days	1 to 2 months
	Luncheon meat	3 to 5 days	1 to 2 months
	Sausage, smoked	1 week	Not recommended
	Sausage, dry and semi-dry, (unsliced)	2 to 3 weeks	Not recommended
Leftover Cooked Beef	All	3 to 4 days	2 to 3 months



UNSCRAMBLE THE STATEMENTS

Unscramble these to make each a factual statement about beef storage.

1. YASAWL APNL OT EMKA EBFH HET TLSA RHESAUPC FREBEO GERTRUNIN MEHO.
2. TESSKA DNA ARSOST ANC EB DOREST NI ETH GRAFTERIERRO ORMF HERTE OT ROUF SADY.
3. ZEREREF APWR UTSM LEAS OTU RAI DAN COKL NI TREMSUOI.
4. TEIDSRGNF TEMA TA ORMO PATTERNREEU SI TNO CODEDMERNEM.

COST PER SERVING

Another consideration when buying beef is the cost per serving. To be a smart shopper, choose beef on the basis of cost per serving rather than cost per pound.

The number of cooked 3-oz. (85 g) servings a pound of beef will provide is determined by the amount of bone and fat in the cut. Some boneless cuts, although priced higher than bone-in cuts, may be better buys because they have little waste. Cuts such as the top loin, top sirloin, top round, eye of round and round tip are not only lean, but can be good values because of their per-serving cost.

Chart A shows how many 3-ounce cooked 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, divide the price per pound by the number of servings per pound.



Here's an example of how to figure cost per serving. Suppose you decide to prepare a stir-fry dish. The recipe recommends a boneless top sirloin steak. To figure cost per serving:

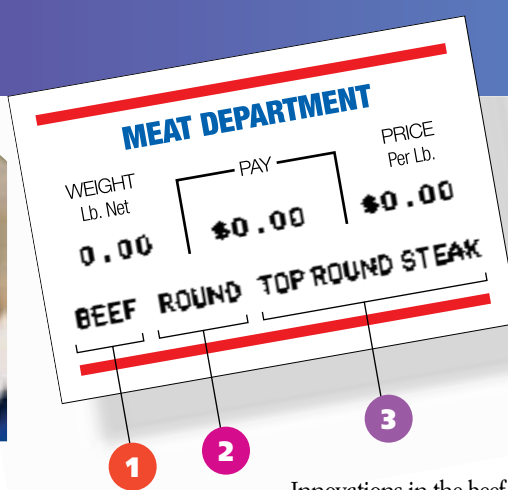
1. Locate top sirloin steak in chart A.
2. Write down the servings per pound a top sirloin steak will provide (*from Chart A*). _____
3. Write down the price per pound from the package label or a newspaper ad. _____
4. Divide the price per pound by the number of servings per pound a top sirloin steak will provide (*from step 2 above*). This is the cost per serving. _____

Select another cut suitable for your recipe and figure cost per serving using the steps described above. Which of the two cuts is a better buy?



CHART A
Servings Per Pound

	Type of Beef Cut	Number of Servings Per Pound (3-ounce cooked trimmed)
Steaks	Chuck Shoulder	3½
	Chuck Top Blade	3
	Flank	4
	Porterhouse/T-Bone	2½
	Rib	2½
	Ribeye	3
	Tenderloin	4
	Top Loin (boneless)	4
	Top Round	4
	Top Sirloin (boneless)	4
	Round Tip (thin cut)	4
	Roasts	Eye Round
Ribeye		3
Rib		2½
Tenderloin		4
Round Tip		4
Tri-Tip		4
Pot Roasts	Arm/Blade (boneless)	3
	Brisket	2½ to 3
	Shoulder (boneless)	3
Other Cuts	Beef for Stew	2½ to 3
	Ground Beef	4
	Shank Cross Cuts	1½ to 2½
	Short Ribs	1½ to 2½
	Short Ribs (boneless)	2½ to 3
	Country-Style Ribs (boneless)	2½ to 3



COOKERY METHOD AND TIME

When deciding on a particular cut of beef to buy, consider the method of meat cookery you plan to use. Moist heat methods, like braising and stewing, are best used with less expensive, less tender cuts, such as the chuck and the round. Dry heat methods, like broiling, are best with tender cuts from the loin and rib. For specific information on different cooking methods, see pages 15-19.

You can make any beef cut tender and good-tasting if you use the right cooking method. Not all beef cuts should be cooked the same way. Many supermarkets are helping their customers by including cooking information right on the package. Check out supermarket websites for beef recipes and cooking tips. Many supermarkets publish electronic newsletters and even monthly or quarterly magazines that often include meal planning options and recipes. If your store doesn't arrange its meat case with cooking information included, ask the meat manager how to cook the different cuts. You can also learn for yourself how to cook beef to get the most tender and best-tasting results. You just need to know a little about how muscles in the beef animal affect the tenderness of different beef cuts.

The beef animal is made up of two types of muscles: suspension and locomotion. Suspension muscles are not used greatly in movement and have less connective tissue than locomotion muscles. (Connective tissue supports and reinforces the fibers in the muscles.) Locomotion muscles are used in movement and have more connective tissue.

Generally, the most tender beef is from muscles which are not used greatly in movement and which have smaller amounts of connective tissue. Therefore, beef from suspension muscles is frequently more tender than beef from locomotion muscles. Early in the marketing chain, the beef carcass is divided into eight primals (wholesale cuts). The rib and loin primals are made up of suspension muscles (tender) and are found along the middle of the animal's back. The locomotion muscles are found in the remaining primals which are usually less tender (e.g. chuck, flank, brisket). See illustration on page 12-13.

Innovations in the beef industry resulting in new cuts, like the Flat Iron steak, from the chuck and the round offering the same tenderness as many of those from the rib and loin. These two primals, traditionally considered to be less tender, contain muscles which can provide lean, tender steaks and roasts. Consumers are now seeing more variety and quality choices in supermarkets and restaurants.

As a general rule, look for the primal name, rib or loin, on the package label to ensure tenderness.

UNIFORM RETAIL BEEF LABELING

Most retail stores across the U.S. have adopted a beef labeling program for all meats. The label used in the program tells you:

- 1 The kind of meat (Beef, Pork, Lamb or Veal).
- 2 The primal (wholesale cut). Names such as Round, Chuck, Rib or Loin indicate where the beef comes from on the carcass.
- 3 The retail cut (names such as Top Round Steak, Blade Roast, or Short Ribs).

See page 14 for information on the mandatory safe handling label.

MANDATORY NUTRITION LABELING IN THE MEAT CASE

The meat package label identifies the kind of meat (i.e., beef), the wholesale (primal) cut and the cut name. It also includes the weight, price per pound, total price, sell-by date and safe handling instructions. It may also include a grade, nutrition and preparation information, and the country of origin.

GROUND BEEF LABELING

Ground Beef packages are labeled according to USDA standards. The information on the labels will be expressed as percent lean to percent fat (80% lean/20% fat, for example). Ground Beef labels may also indicate where the beef comes from (such as Chuck, Round or Sirloin).



The amount of leanness guides you in choosing ground beef products which meet your needs for health, taste and proper use in recipes. Different ground beef dishes require different degrees of leanness. Three possible categories of ground beef and some dishes best suited for each category are:



Ground Beef — Not Less Than 75% Lean.

Good for dishes in which you drain the fat from the cooked beef, such as Sloppy Joes, chili and spaghetti sauce.



Ground Beef — Not Less Than 80%–85% Lean.

Suitable for meatloaf, meatballs, casseroles and Salisbury Steak.



Ground Beef — Not Less Than 90%–95% Lean.

Good for combination dishes and low calorie recipes.

GROUND MEAT PRODUCTS (3-ounce, cooked portion)

Type of Ground Meat	Ratio of Lean-to-Fat (raw weight)		Calories	Total Fat (grams)	Saturated Fatty Acids (grams)	Cholesterol (mg)	Zinc (mg)	Iron (mg)	Protein (mg)
	%Lean	%Fat							
Ground Beef, 95%, pan-broiled	95	5	139	5.1	2.3	65	5.5	2.4	21.9
Ground Beef, 90%, pan-broiled	90	10	173	9.1	3.6	70	5.4	2.4	21.4
Ground Turkey, 85%, pan-broiled	85	15	212	13.7	3.5	89	2.8	1.7	22.0
Ground Beef, 85%, pan-broiled	85	15	197	11.9	4.5	73	5.3	2.3	20.9
Ground Pork, 84%, pan-broiled	84	16	256	18.2	6.3	82	2.2	1.0	23.1
Ground Beef, 80%, pan-broiled	80	20	209	13.6	5.1	73	5.2	2.2	20.4
Ground Beef, 75%, pan-broiled	75	25	211	14.0	5.4	71	5.1	2.1	19.9

Source: U.S. Department of Agriculture, Agricultural Research Service, 2010. USDA Nutrient Database for Standard Reference, Release 23. NDJ homepage. www.nal.usda.gov/foodcomp

In order to meet emerging consumer demand for lower fat products, some retailers are now packaging 95% lean ground beef.

The package label will indicate whether the product inside is ground beef, hamburger, or another type of ground beef or poultry. “Ground beef” or “hamburger” indicate chopped fresh and/or frozen beef with no more than 30% fat and without added seasonings, water, phosphates, binders or extenders. The difference between ground beef and hamburger is that hamburger may have beef fat added to it while no fat may be added to ground beef.

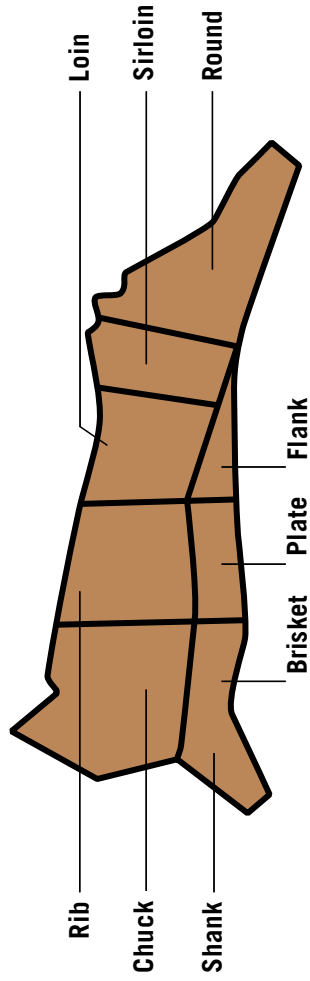
The package label may also include a “sell-by” or “use-by” date. The first tells you the last day by which it is safe to buy the product. Ground beef should be used or frozen within two days of that date. The use-by date tells you the last day it is safe to use the product. Use or freeze ground beef before that date.



The chart on the next two pages shows primals (wholesale cuts — the major sections into which a carcass is divided) and retail cuts (the cuts sold at the meat counter). The terms “steak” and “roast” describe the size of a beef cut, not its recommended method of preparation.

Beef Made Easy®

Retail Beef Cuts and Recommended Cooking Methods



Chuck



CHUCK 7-BONE POT ROAST



CHUCK POT ROAST Boneless



CHUCK STEAK Boneless



CHUCK EYE STEAK Boneless



SHOULDER TOP BLADE STEAK



SHOULDER TOP BLADE STEAK Flat Iron



SHOULDER POT ROAST * Boneless



SHOULDER STEAK * Boneless



SHOULDER CENTER * Ranch Steak



SHOULDER PETITE TENDER *



SHOULDER PETITE TENDER * MEDALLIONS



BONELESS SHORT RIBS

Rib



RIB ROAST



RIB STEAK



RIBEYE ROAST Boneless



RIBEYE STEAK Boneless



BACK RIBS

Loin

LOIN



PORTERHOUSE STEAK  



T-BONE STEAK *  



TOP LOIN STEAK *   **Bone-in**



TOP LOIN STEAK *   **Boneless**

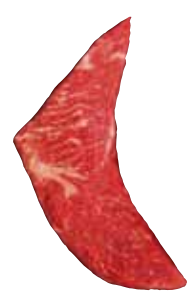




TENDERLOIN ROAST * 



TENDERLOIN STEAK *  

Sirloin



TRI-TIP ROAST *  



TRI-TIP STEAK *  



TOP SIRLOIN STEAK *   **Boneless**

Round



TOP ROUND STEAK *  



BOTTOM ROUND ROAST *  



BOTTOM ROUND STEAK *  



EYE ROUND ROAST *  



EYE ROUND STEAK *  



ROUND TIP ROAST * 



ROUND TIP STEAK * 



SIRLOIN TIP CENTER ROAST *  











SIRLOIN TIP CENTER STEAK *  



SIRLOIN TIP SIDE STEAK *  

Key to Recommended Cooking Methods

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

Shank and Brisket



SHANK CROSS CUT * 



BRISKET FLAT CUT * 

Plate and Flank



SKIRT STEAK  



FLANK STEAK *  

Other



GROUND BEEF  



CUBED STEAK 



BEEF FOR STEW 



BEEF FOR KABOBS 



BEEF FOR STIR-FRY OR FAJITAS 

* These cuts meet government guidelines for "lean" and are based on cooked servings with visible fat trimmed.
Lean is defined as less than 10 g of total fat, 4.5 g of saturated fat, and less than 95 mg of cholesterol per serving and per 100 g (3.5oz).

Most cases of foodborne illness that are reported in the U.S. every year can be traced to poor handling, storage or preparation at home or in foodservice establishments.

The key is to control conditions that give bacteria opportunities to get into food, grow and/or survive during the food preparation process.

STEAKS AND ROASTS

Bacteria are part of the environment and may exist wherever food is present. Not all of these bacteria are harmful. If a cut of beef contains any harmful bacteria, they will exist on the surface. Cooking steaks and roasts to medium rare (145°F) doneness will destroy surface bacteria.

GROUND BEEF

When raw beef or poultry is ground, harmful bacteria that might exist on the surface are mixed throughout the meat. Therefore, it is important to thoroughly cook both the inside and outside of ground beef.

Safe Handling Instructions

This product was prepared from inspected and passed meat and/or poultry. Some food products may contain bacteria that could cause illness if the product is mishandled or cooked improperly. For your protection, follow these safe handling instructions.



Keep refrigerated or frozen.
Thaw in refrigerator or microwave.



Keep raw meat and poultry separate from other foods.
Wash working surfaces (including cutting boards), utensils, and hands after touching raw meat or poultry.



Cook thoroughly.



Keep hot foods hot. Refrigerate leftovers immediately or discard.



The food industry, from farm to fork, follows strict rules to help ensure safe and wholesome food. Procedures and safeguards are implemented as needed. The safe handling label on raw beef and poultry. This label gives basic guidelines for keeping food safe.

SAFE FOOD HANDLING TIPS

Follow this checklist to help keep food safe.

- ▶ Plan to make beef the last purchase before returning home.
- ▶ Wash hands with hot soapy water before preparing food and after handling raw beef, poultry or fish.
- ▶ Use hot soapy water to wash surfaces and utensils immediately after preparing beef, fish, poultry, or unwashed fruits and vegetables.
- ▶ Use separate cutting boards, platters, trays and utensils for cooked and raw foods. Do not put cooked food on a platter which held raw food without washing the platter first.
- ▶ Thaw beef, fish and poultry in the refrigerator or microwave oven, not at room temperature.
- ▶ Marinate beef, fish and poultry in the refrigerator. Throw out leftover marinade that came into contact with raw beef.
- ▶ Ground Beef (patties, meatloaves, meatballs) should be cooked to an internal temperature of 160°F (medium doneness). Color is not a reliable indicator of Ground Beef doneness. Steaks and roasts should be well-browned on the surface.
- ▶ Due to the natural nitrate content of certain ingredients often used in meatloaf, such as onions, celery and bell peppers, meatloaf may remain pink even when a 160°F internal temperature has been reached.
- ▶ Reheat leftovers to 165°F or until steaming hot.



One of the objectives of cooking

meat is to improve tenderness.

Any cut can be tender,

juicy and flavorful when cooked

by the appropriate method.

Tender cuts from the rib and loin are best cooked by dry heat methods. Less tender cuts from the round, chuck, brisket and shank require moist heat methods. The longer cooking time at lower temperatures with moisture helps soften connective tissue in less tender cuts.

Marinating less tender cuts may allow them to be cooked with dry heat methods. For an explanation of marinades and how they work, see page 20.

DRY HEAT METHODS FOR TENDER CUTS



ROASTING

- 1 Heat oven to temperature specified in chart. (Pages 18)
- 2 Place roast (directly from the refrigerator), fat side up, on rack in shallow roasting pan. The exception is a Rib roast; the ribs form a natural rack. Season roast with herbs and seasonings, 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 chart (page 18). Transfer roast to carving board; tent loosely with aluminum foil. Let stand 15 to 20 minutes. (Temperature will continue to rise 5°F to 10°F to reach desired doneness and roast will be easier to carve.)



BROILING

- 1 Set oven for broiling; preheat for 10 minutes. (Consult owner's manual for specific information.)
- 2 Season beef with herbs or spices, as desired. Place beef on rack of broiler pan. Position broiler pan so that surface of beef is within specified distance from heat.
- 3 Broil according to chart (page 19), turning once. After cooking, season beef with salt, if desired.

DRY HEAT METHODS FOR TENDER CUTS



PAN-BROILING

- 1 Heat heavy, nonstick skillet 5 minutes over medium heat.
- 2 Season beef (directly from the refrigerator), as desired. Place beef in preheated skillet (do not overcrowd). Do not add oil or water; do not cover.
- 3 Pan-broil according to chart (page 19), turning occasionally. After cooking, season beef with salt, if desired.



GRILLING

- 1 Prepare grill (charcoal or gas) according to manufacturer's directions for medium heat.
- 2 Season beef (directly from the refrigerator) with herbs or spices, as desired. Place on cooking grid.
- 3 Grill, covered, according to chart (page 19), turning occasionally. After cooking, season beef with salt, if desired.



PAN-FRYING

- 1 Heat small amount of oil in heavy, nonstick skillet over medium heat until hot.
- 2 Season beef (directly from the refrigerator), as desired. Place beef in preheated skillet (do not overcrowd). Do not add water. Do not cover.
- 3 Pan-fry to desired doneness, turning occasionally. After cooking, season beef with salt, if desired.

STIR-FRYING

- 1 Cut beef into thin, uniform strips. For easier slicing, partially freeze beef (about 30 minutes). Marinate beef to add flavor while preparing other ingredients, if desired.
- 2 Heat small amount of oil in large nonstick skillet or wok over medium-high heat until hot.
- 3 Stir-fry beef in 1/2 pound batches (do not overcrowd), continuously turning with a scooping motion, until outside surface of beef is no longer pink. Add additional oil for each batch, if necessary.

MOIST HEAT METHODS FOR LESS TENDER CUTS



BRAISING

- 1 Slowly brown beef on all sides in small amount of oil in heavy pan over medium heat. Pour off drippings. Season beef with herbs or spices, as desired.
- 2 Add small amount (1/2 to 2 cups) of liquid (such as broth, water, juice, beer or wine).
- 3 Cover tightly and simmer gently over low heat on top of the range or in a preheated 325°F oven according to chart (page 19) or until beef is fork-tender.



STEWING

- 1 Coat beef lightly with seasoned flour, if desired. Slowly brown beef, in batches, on all sides in small amount of oil in heavy pan over medium heat. Pour off drippings. (Omit browning step for Corned Beef Brisket.)
- 2 Cover beef with liquid (such as broth, water, juice, beer or wine). Add herbs or seasonings, as desired. Bring liquid to boil; reduce heat to low.
- 3 Cover tightly and gently simmer on top of range or in a 325° F oven until beef is fork-tender

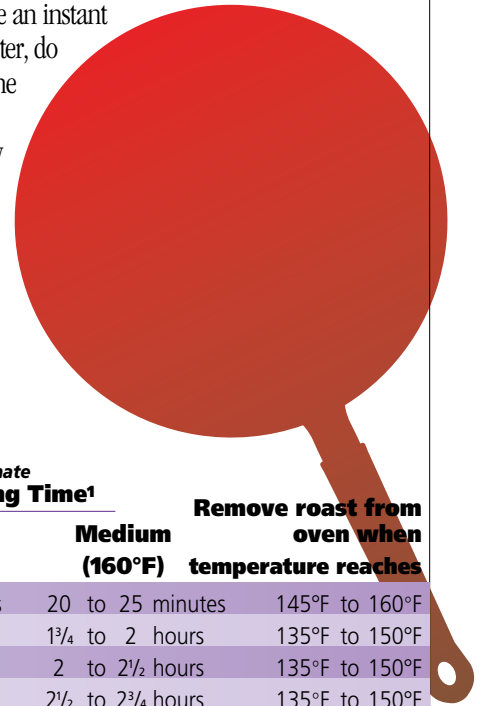
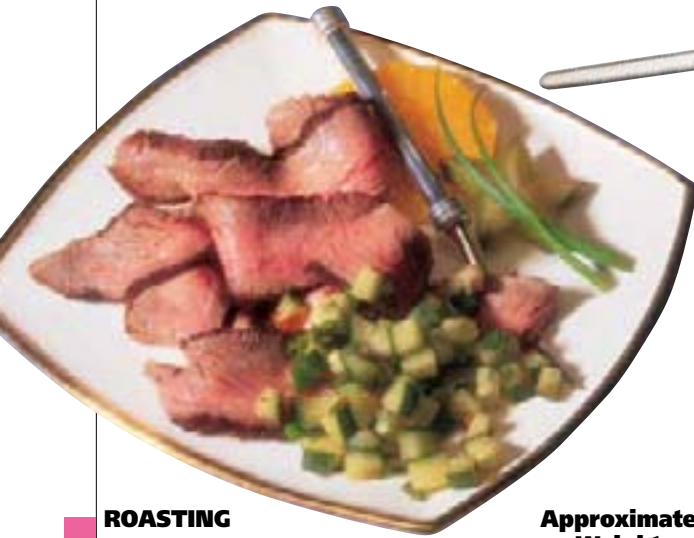
COOKING IN A PRESSURE PAN

Less tender cuts of beef can also be cooked in a pressure pan in less time than used in ordinary cooking methods. Use manufacturer's directions.

The degree of doneness can be easily determined by measuring the internal temperature of a cut of beef. To do so, use an ovenproof meat thermometer.



Insert the thermometer into the roast at a slight angle so that the tip of the thermometer is in the thickest portion of the beef, but not resting in fat or against bone. Since the potentially harmful bacteria that might be present are typically on the surface of the beef cut, do not remove and reinsert the thermometer without first washing it in hot soapy water. In general, beef should be cooked to an internal temperature of 145°F (medium rare), 160°F (medium) or 170°F (well done). To avoid overcooking, remember to remove a roast from the oven when the thermometer reads 5° to 10°F below the desired degree of doneness. As the roast sits before carving, its temperature will rise an additional 5° to 10° F. If you use an instant read thermometer, do not leave it in the roast during cooking. Follow manufacturer instructions.



DRY HEAT

ROASTING		Approximate Weight (pounds)	Oven Temperature	Approximate Total Cooking Time ¹		Remove roast from oven when temperature reaches
Primal	Retail Cut			Medium Rare (145°F)	Medium (160°F)	
CHUCK	Shoulder Petite Tender Roast	8 to 12 -oz	425°F	20 to 25 minutes	20 to 25 minutes	145°F to 160°F
RIB	Ribeye Roast (small end)	3 to 4	350°F	1½ to 1¾ hours	1¾ to 2 hours	135°F to 150°F
		4 to 6	350°F	1¾ to 2 hours	2 to 2½ hours	135°F to 150°F
		6 to 8	350°F	2 to 2¼ hours	2½ to 2¾ hours	135°F to 150°F
	Ribeye Roast (large end)	3 to 4	350°F	1¾ to 2¼ hours	2 to 2½ hours	135°F to 150°F
		4 to 6	350°F	2 to 2½ hours	2½ to 3 hours	135°F to 150°F
		6 to 8	350°F	2¼ to 2½ hours	2¾ to 3 hours	135°F to 150°F
LOIN	Tenderloin Roast	4 to 6 (2 ribs)	350°F	1¾ to 2¼ hours	2¼ to 2¾ hours	135°F to 150°F
		6 to 8 (2 to 4 ribs)	350°F	2¼ to 2½ hours	2¾ to 3 hours	135°F to 150°F
		8 to 10 (4 to 5 ribs)	350°F	2½ to 3 hours	3 to 3½ hours	135°F to 150°F
SIRLOIN	Tri-Tip Roast	4 to 5 (whole)	425°F	50 to 60 minutes	60 to 70 minutes	135°F to 150°F
ROUND	Round Tip Roast	2 to 3 (center-cut)	425°F	35 to 40 minutes	45 to 50 minutes	135°F to 150°F
		3 to 4	325°F	1¾ to 2 hours	2¼ to 2½ hours	140°F to 155°F
		4 to 6	325°F	2 to 2½ hours	2½ to 3 hours	140°F to 155°F
	Round Sirloin/Tip Center roast	6 to 8	325°F	2½ to 3 hours	3 to 3½ hours	140°F to 155°F
		2 to 2½	325°F	1¼ to 1½ hours	—	140°F
		3 to 4	325°F	1½ to 2 hours	—	135°F
		3 to 4	325°F	1½ to 2 hours	—	135°F
Eye Round roast	2 to 3	325°F	1½ to 1¾ hours	—	135°F	
OTHER	Meatloaf (8" x 4")	1½	350°F	—	1¼ hours	160°F

¹Based on beef removed directly from refrigerator.

²Tent loosely with aluminum foil halfway through roasting time.

³Marinate.



DRY HEAT

Primal	Retail Cut	Approximate Thickness (inches)	Distance From Heat (inches)	Approximate Total Cooking Time ¹	
				Medium Rare 145°F	Medium 160°F
CHUCK	Chuck Shoulder Steak (boneless) ³	¾	2 to 3	10 minutes	13 minutes
		1	3 to 4	16 minutes	21 minutes
RIB	Rib Steak (small end)	¾	2 to 3	9 minutes	12 minutes
		1	3 to 4	13 minutes	17 minutes
	Ribeye Steak	¾	2 to 3	8 minutes	10 minutes
		1	3 to 4	14 minutes	18 minutes
ROUND	Top Round Steak ³ (marinate)	1	2 to 3	17 minutes	18 minutes
		1½	3 to 4	27 minutes	29 minutes
LOIN	Top Sirloin Steak (boneless)	¾	2 to 3	9 minutes	12 minutes
		1	3 to 4	16 minutes	21 minutes
	Porterhouse/T-Bone Steak	¾	2 to 3	10 minutes	13 minutes
		1	3 to 4	15 minutes	20 minutes
	Tenderloin (Filet Mignon)	1	2 to 3	13 minutes	16 minutes
		¾	2 to 3	9 minutes	11 minutes
	Top Loin (Strip) Steak (boneless)	¾	2 to 3	9 minutes	11 minutes
		1	3 to 4	13 minutes	17 minutes
FLANK	Flank Steak ³	1½ to 2 pounds	2 to 3	13 minutes	18 minutes
OTHER	Ground Beef Patties	½	2 to 3	—	12 to 13 minutes

DRY HEAT

Primal	Retail Cut	Approximate Thickness (inches)	Range Temperature	Approximate Total Cooking Time ¹	
				Medium Rare 145°F	Medium 160°F
RIB	Ribeye Steak	¾	Medium	8 minutes	11 minutes
	Round Tip Steak	¼	Medium-high	3 to 4 minutes	—
	Top Round Steak ³	¾	Medium	12 minutes	15 minutes
LOIN	Top Loin (Strip) Steak (boneless)	¾	Medium	8 minutes	11 minutes
	Tenderloin Steak	¾	Medium	7 minutes	10 minutes
Sirloin	Top Sirloin Steak (boneless)	¾	Medium	12 minutes	15 minutes
OTHER	Ground Beef Patties	½	Medium	—	10 to 12 minutes

DRY HEAT

Primal	Retail Cut	Approximate Thickness (inches)	Approximate Total Cooking Time ¹	Approximate Total Cooking Time ¹
			Charcoal Grill	Gas Grill
			Medium Rare to Medium	Medium Rare to Medium
Chuck	Shoulder Steak (boneless) ³	¾	8 to 12 minutes	9 to 12 minutes
		1	12 to 17 minutes	15 to 19 minutes
	Chuck Top Blade Steak (boneless)	8-oz	10 to 14 minutes	12 to 16 minutes
		¾	7 to 10 minutes	7 to 10 minutes
RIB	Rib Steak (small end)	¾	7 to 10 minutes	7 to 10 minutes
		1	10 to 15 minutes	10 to 15 minutes
	Ribeye Steak	¾	7 to 10 minutes	7 to 10 minutes
		1	10 to 14 minutes	9 to 14 minutes
LOIN	Porterhouse/T-Bone Steak	¾	8 to 11 minutes	9 to 13 minutes
		1	11 to 16 minutes	15 to 19 minutes
	Top Loin (Strip) Steak (boneless)	¾	7 to 10 minutes	7 to 10 minutes
		1	11 to 14 minutes	11 to 15 minutes
	Tenderloin Steak	1	10 to 14 minutes	11 to 15 minutes
		¾	7 to 11 minutes	8 to 13 minutes
SIRLOIN	Sirloin Steak (boneless)	¾	7 to 11 minutes	8 to 13 minutes
		1	11 to 15 minutes	13 to 16 minutes
ROUND	Top Round Steak ³	¾	10 to 11 minutes	10 to 11 minutes
		1	12 to 14 minutes	16 to 19 minutes
FLANK	Flank Steak ³	1½ to 2 pounds	11 to 16 minutes	16 to 21 minutes
OTHER	Ground Beef Patties	½	8 to 10 minutes	7 to 9 minutes

MOIST HEAT

Primal	Retail Cut	Approximate Thickness (inches)	Approximate Weight (pounds)	Approximate Total Cooking Time (hours)	STEWING		Approximate Total Cooking Time (hours)		
					Primal	Retail Cut		Approximate Thickness (inches)	Approximate Weight (pounds)
CHUCK	Blade, Arm, Shoulder	—	2¼ to 4	2 to 3	BRISKET	Fresh or Corned Beef	—	2½ to 3½	2½ to 3
	Short Ribs	2 x 2 x 4	—	1½ to 2½	SHANK	Shank Cross Cuts	1 to 1½	—	2 to 3
ROUND	Round Steak (bottom, eye)	¾ to 1	—	1¼ to 1¾	OTHER	Beef for Stew	1 to 1½	—	1¾ to 2¼



You may choose to tenderize less tender cuts of beef before cooking them. They can then be cooked by a dry heat method. You can use marinades, pound or cube the beef. These are forms of tenderizations.



MARINADES

Marinades are seasoned liquid mixtures that add flavor and in some cases tenderize.

A tenderizing marinade must contain an acidic ingredient or a natural tenderizing enzyme. Acidic ingredients include vinegar, wine, and citrus or tomato juice. Naturally tenderizing enzymes are found in fresh papaya, ginger, pineapple and figs. The food acid or enzyme helps soften or break down the beef fibers and connective tissue and adds flavor. Some marinades also contain a small amount of oil. Marinades penetrate only about 1/4 inch into the surface of the beef, so they work best on thinner cuts.

If the marinade has been in contact with uncooked beef, it must be brought to a rolling boil for one minute before adding it to cooked beef. However, it is better to set aside a portion of the marinade mixture to use later as a sauce for basting. Be sure that it hasn't come in contact with raw beef.

POUNDING

Pounding with a heavy object such as a meat mallet tenderizes by breaking down the connective tissue.

CUBING

Cubing is a more thorough process than pounding because it breaks down the fiber structure even more. Beef is "cubed" by a machine. Do not confuse this with grinding or cutting the beef into cubes, as for stew.



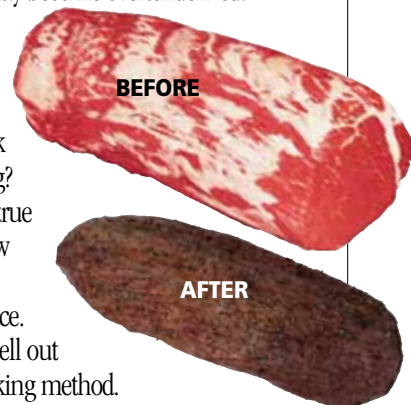
COMMERCIAL TENDERIZERS

Tenderizers come in various forms and contain active ingredients called enzymes. The enzymes break down the connective tissue. Naturally occurring enzymes, such as papain from the papaya fruit and bromelain from pineapple, are used in commercial tenderizers. Generally, enzyme tenderizers only tenderize the outer 1/4 inch of beef cuts. Be sure to follow package directions when using commercial tenderizers or the beef may become overtenderized.

DISCOVER THE REASON

Why did this roast shrink so much during cooking?

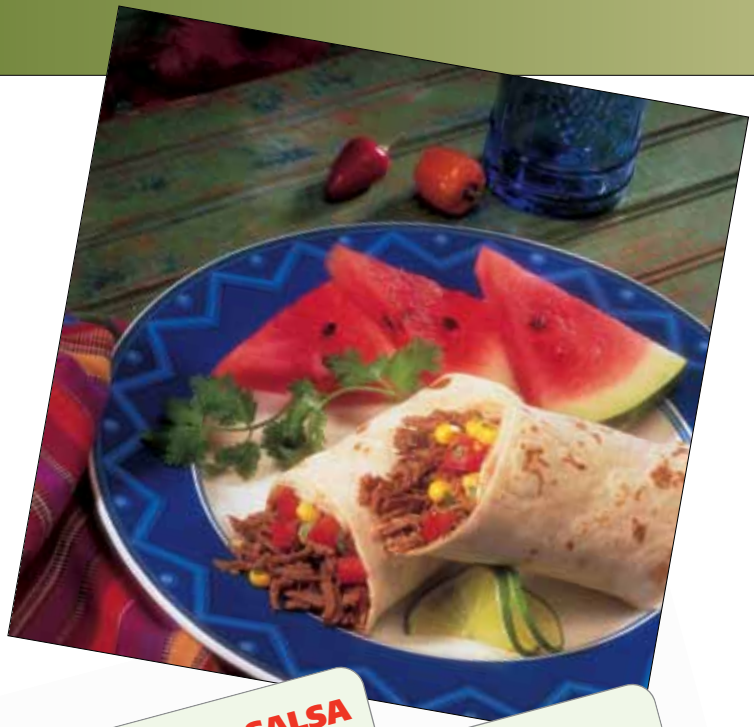
To find out, answer the true and false questions below by circling the letter in the column of your choice. The circled letters will spell out the trouble with the cooking method.



True	False	
O	M	1. Less tender cuts require moist heat cookery methods.
E	V	2. Dry heat helps dissolve connective tissue.
E	A	3. Use thin tender cuts for pan-broiling.
N	T	4. To ensure safety, cook burgers to an internal temperature of 160° F
W	T	5. Marinated cuts can never be cooked with dry heat methods.
O	A	6. When roasting, always cook beef fat side up.
O	S	7. The tip of the meat thermometer should not touch bone or rest in fat.
H	F	8. Allow roasts to stand 15 to 20 minutes before carving.
A	O	9. Keep the liquid boiling at all times when cooking in liquid.
R	T	10. The recommended time to roast a 4- to 5-pound whole tenderloin is 2 to 2½ hours.

In the past, many popular beef dishes took a lot of time to prepare. Microwave ovens were faster but not recommended for cooking meat cuts. Now manufacturers have developed new beef products specially made for quick reheating in a microwave. You can prepare your favorite beef dishes in minutes.

Look for fully-cooked pot roasts, meatloaves, stews, burgers and even steaks in the meat case of your favorite supermarket. If you can't find them, ask the meat department manager.



TEX-MEX BEEF WRAPS WITH TOMATO-CORN SALSA

Total preparation and cooking time: 20 minutes

- 1 package (1³/₄ to 2¹/₂ pounds) fully-cooked boneless beef pot roast with gravy
- 1/2 cup frozen corn, defrosted
- 1 small tomato, chopped
- 1 tablespoon chopped fresh cilantro
- 1 jar (16 ounces) prepared thick-and-chunky salsa
- 2 tablespoons chopped fresh cilantro
- 4 large flour tortillas, warmed

1. Combine corn, tomato, 1 tablespoon cilantro and 2 tablespoons salsa in small bowl; set aside.
2. Remove beef pot roast from package; reserve gravy for another use, if desired. Shred beef into bite-size pieces with 2 forks. Combine beef, remaining salsa and 2 tablespoons cilantro in large saucepan. Cook, uncovered, over medium heat until thoroughly heated, stirring occasionally.
3. Spoon 1/4 of beef mixture onto each tortilla, leaving 1 1/2 inch border all around. Top with 1/4 of corn mixture. Fold right and left edges of tortillas over filling; fold bottom edge up over filling and roll up to enclose. Serve immediately.

Makes 4 servings.

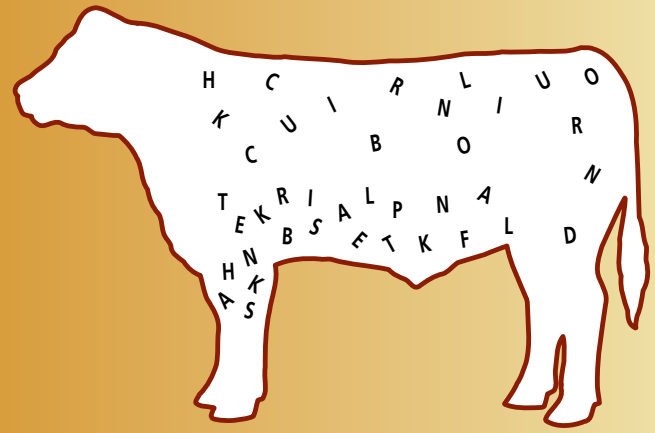
Nutrition information per serving: 501 calories; 14g fat (5g saturated fat); 6g monounsaturated fat; 99mg cholesterol; 1265mg sodium; 34g carbohydrate; 1.9g fiber; 54g protein; 9.3mg niacin; 0.5mg vitamin B₆; 3.6mcg vitamin B₁₂; 6.0mg iron; 63.8mcg selenium; 12.1mg zinc.

This recipe is an excellent source of protein, niacin, vitamin B₆, vitamin B₁₂, iron, selenium and zinc.



COMPLETE THE DIAGRAM

Draw lines on this illustration to show how you would cut it into eight sections. Each section will spell out the name of one of the eight primals (wholesale cuts), if you unscramble the letters correctly.



Proper carving makes beef more tender.

You need a good sharp knife, a good cutting board and some knowledge of the structure of the beef to be carved.

Beef is made up of bundles of long muscle fibers held together with connective tissue. Fibers would be difficult or impossible to chew if they weren't made softer and shorter. Proper cooking softens the fibers and connective tissues. Proper carving shortens the fibers.

The direction in which the muscle fibers run is called the grain. The principle of beef carving is to cut at right angles to the grain. This is a simple principle, but actual carving is not as simple. Some roasts are made up of several muscles, and the fibers in each of the different muscles may run in slightly different directions. This makes finding the grain more difficult. The illustration to the right shows the grain running the length of the beef and the correct method of slicing.



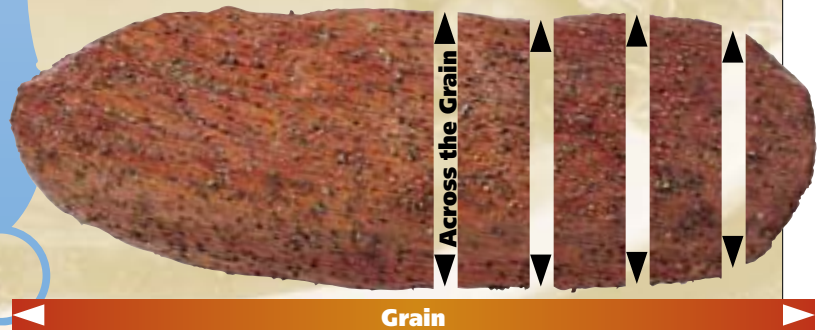
CUT ACROSS THE GRAIN

Steps

Follow these four easy steps for carving:

1. Remove a roast from the oven and let it sit in a warm place before carving so that it will be easier to carve and more juicy. Roasts should stand about 15 to 20 minutes before carving.
2. Determine which way the muscle fibers run in the beef. This is the grain.
3. Anchor the beef firmly with a two-pronged carving fork.
4. Carve roasts across the grain. Carve diagonally across the grain for flank steaks and other thin thin cuts.

Contrary to most carving rules, some tender steaks are carved with the grain. *Steaks* from the short loin and sirloin do not need to be cut across the grain because the beef fibers are tender and already short. (*Roasts* from these primals, however, should be cut across the grain.)



STAR OF TEXAS TORTILLA TOWERS WITH CANTALOUPE-MANGO SALSA

Total preparation and cooking time: 25 to 30 minutes

- 1 pound ground beef (95% lean)
- 1 jar (16 ounces) prepared thick-and-chunky salsa
- $\frac{3}{4}$ cup canned black beans, rinsed, drained
- $\frac{1}{2}$ teaspoon ground cumin
- 7 small whole wheat tortillas (6 to 7-inch diameter)
- 1 cup shredded reduced fat Mexican cheese blend
- Chopped fresh cilantro (optional)

Cantaloupe-Mango Salsa:

- 1 cup coarsely chopped ripe mango
- 1 cup coarsely chopped cantaloupe
- $\frac{1}{8}$ to $\frac{1}{4}$ teaspoon crushed red pepper

1. Brown ground beef in large nonstick skillet over medium heat 8 to 10 minutes or until beef is not pink, breaking up into $\frac{3}{4}$ -inch crumbles. Stir in salsa, beans and cumin. Cook 3 to 5 minutes or until heated through and most of liquid has evaporated. Remove from heat.
2. Heat oven to 350°F. Spray baking sheet with nonstick cooking spray. Place 2 tortillas in single layer on pan. Spoon generous $\frac{1}{2}$ cup beef mixture on each tortilla; sprinkle each with 2 tablespoons cheese. Repeat layering of tortillas, beef mixture and cheese twice. Sprinkle remaining cheese over tops of tortilla towers. Cut 8 small stars from remaining tortilla with cookie cutter; arrange on towers. Bake in 350°F oven 12 to 15 minutes or until heated through and cheese melts.
3. Meanwhile combine salsa ingredients in small bowl. Set aside.
4. Cut each tortilla tower into 4 wedges. Garnish with cilantro, if desired. Serve with fruit salsa.

Makes 4 servings.

Nutrition information per serving: 478 calories; 13g fat (7g saturated fat; 3g monounsaturated fat); 91mg cholesterol; 1725mg sodium; 65g carbohydrate; 71g fiber; 39g protein; 8.2mg niacin; 0.6mg vitamin B₆; 2.3mcg vitamin B₁₂; 4.8mg iron; 18.4mcg selenium; 7.0mg zinc.

This recipe is an excellent source of fiber, protein, niacin, vitamin B₆, vitamin B₁₂, iron, selenium and zinc.



SUPPLY AND DEMAND

As with other items, the price of beef is determined by the law of supply and demand. When the amount of beef



available to consumers (supply) exceeds the price they are willing to pay (demand), the price will drop to move the excess quantity. When excess supplies force prices to levels where beef producers begin losing money, they will respond by reducing the number of cattle in their herds.

The reduction in the number of animals will cause beef supplies to lessen. Ultimately, this will lead to consumer demand exceeding the supply which causes prices to increase. When this happens, production becomes profitable again, and farmers and ranchers expand their herds. Eventually, beef supplies will again overtake demand forcing the cycle to repeat itself.



This is known as the “cattle cycle,” which traditionally takes 10-12 years. The reason the process takes so long is that, unlike other industries, beef producers can’t react quickly to a change in consumer demand. It takes about two to two-and-a-half years from the time a calf is conceived until it is ready for the market.

BY-PRODUCTS

Because of the monetary value of the by-products that come from cattle, the price of beef is less than it might otherwise be.

A 1,300lb. steer doesn’t yield 1300 lbs. of beef. On the average, that steer yields only about 642 lbs. of retail beef cuts sold in the store. This is slightly less than half of the live animal’s weight. Very little of the 642 lbs. that does not become retail beef is lost, however. The flow chart shows how these additional products are used.

SOME EXAMPLES OF BY-PRODUCTS

The importance of the tremendous quantity of zinc, iron, high quality protein and B-vitamins that beef contributes to the American diet is well known. Equally noteworthy and vital are the contributions that the beef industry makes to the quality of American life beyond the dinner table.

From Hide and Hair

All leather goods:
shoes and other clothing
luggage
wallets
automobile upholstery
Drum heads

From Bones and Horns

Bone china
Bone charcoal for:
steel ball bearings
Special glue for:
plywood
matches

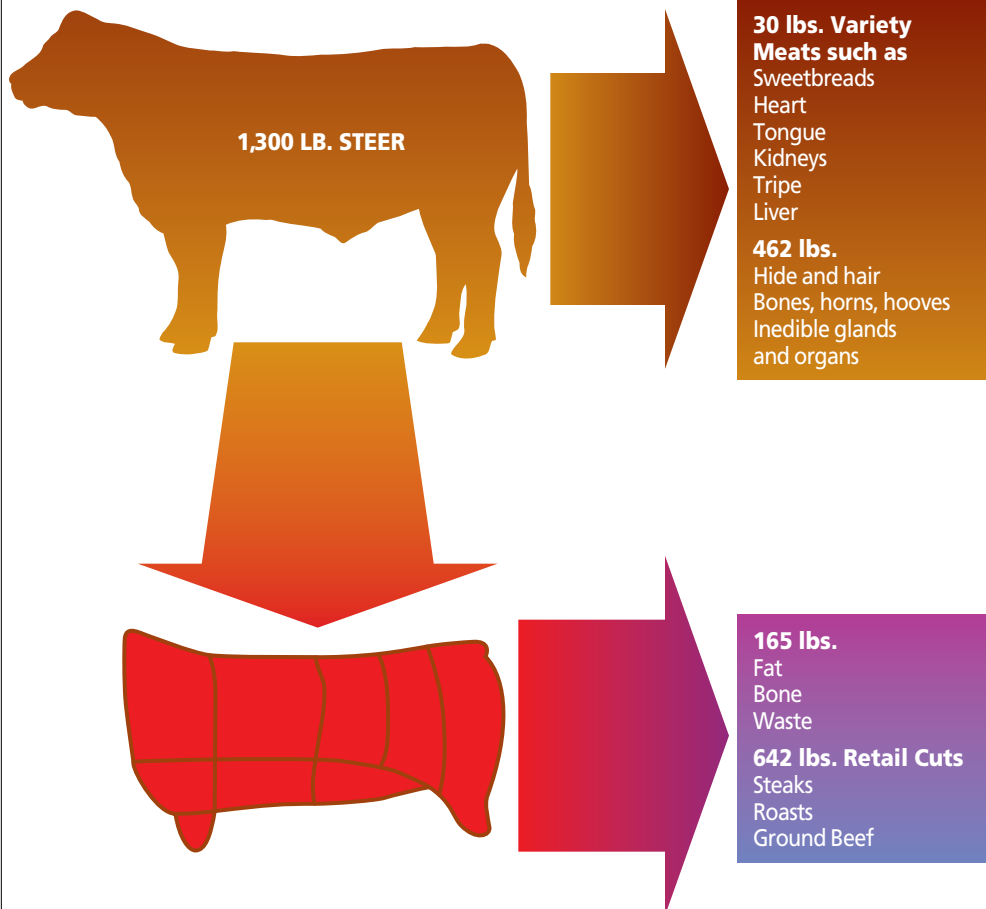
From Glands and Internal Organs

Medicines such as:
insulin
ACTH cortisone
other hormones

Chemicals for:
tires (to run cooler)
Binders for:
asphalt (in roads)

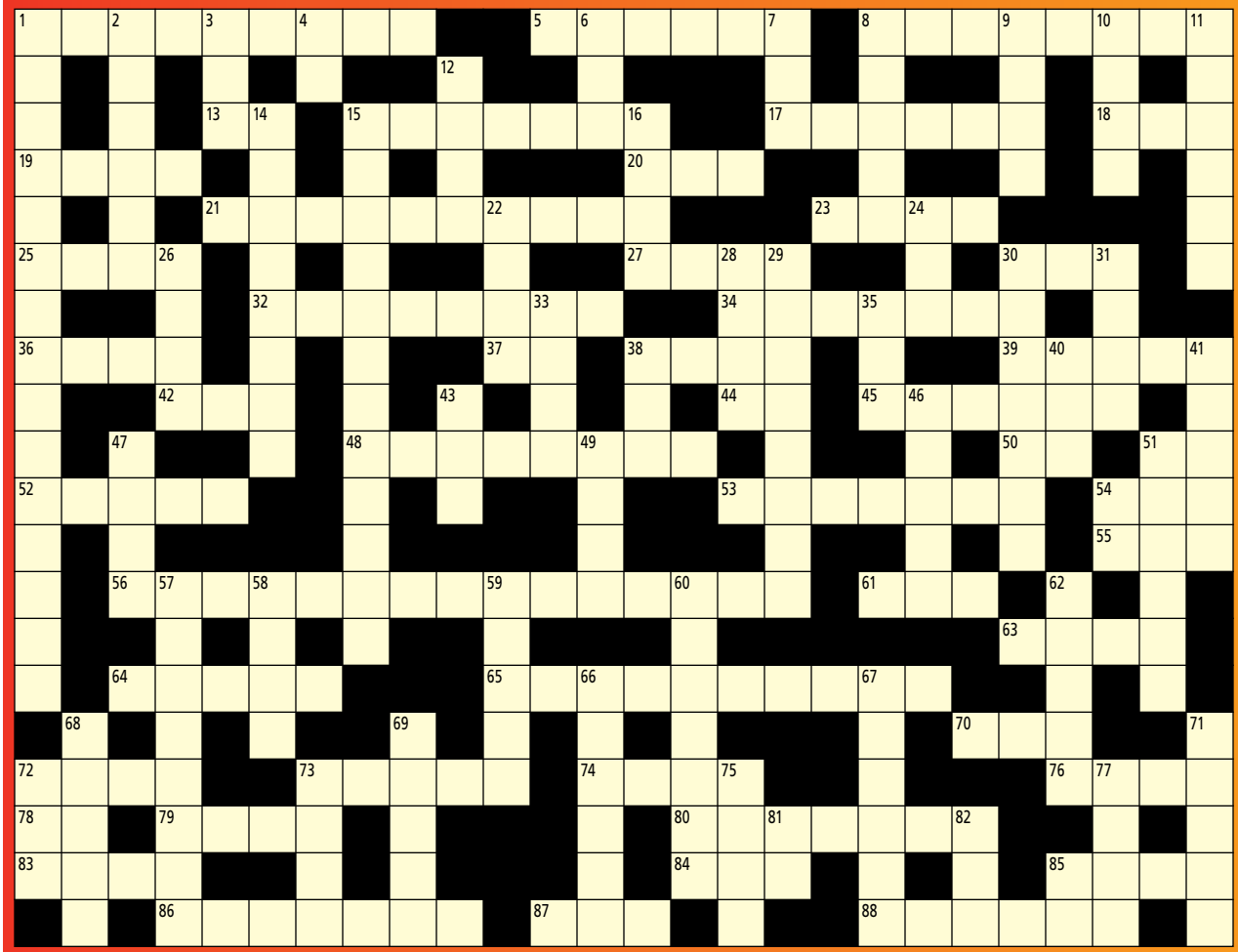
From Fats:

Ingredients for use in:
soap
nitrogen fertilizers



CROSSWORD PUZZLE

24



Across

- 1 This little oven is a big convenience.
- 5 Vitamin that contributes to healthy skin and good appetite.
- 8 When complete, these help build body tissues.
- 13 "Pound," abbreviation.
- 15 Beef cut used for corned beef.
- 17 Also called a wholesale cut.
- 18 Another term for "also."
- 19 From its head to its _____, a beef animal provides valuable by-products.
- 20 _____ a variety of foods for good health.
- 21 The arm and shoulder and the foot are examples of _____ (two words).
- 23 Moist or dry, it's essential to cookery.
- 25 Back of your foot.
- 27 At football games, it's fun to root for the home _____.
- 30 Droop.
- 32 An identification method that tells shoppers what's in a beef package.
- 34 Expresses the energy-producing value of foods.
- 36 Ground beef patties should never be eaten _____ (degree of doneness).

- 37 Ground beef should be stored in the refrigerator no longer than 1 _____ 2 days.
- 38 Two of a kind.
- 39 To act in response to an event.
- 42 Another word for family "relatives."
- 44 Abbreviation for "decibel."
- 45 What's added by herbs and spices.
- 48 _____ beef in a frying pan adds good color.
- 50 Opposite of "out."
- 51 Spanish for "yes."
- 52 Heat methods used for less-tender cuts.
- 53 _____ steak comes from the loin.
- 54 Abbreviation for "et cetera."
- 55 Noah's _____.
- 56 A method that can shorten beef cooking time. (two words)
- 61 In _____ minutes you can cook a stir-fry beef meal.
- 63 Vegetable sometimes served with carrots.
- 64 The type of farm that produces milk.
- 65 The beef grade _____ contains less marbling than USDA Choice (two words).
- 70 Is beef an important source of iron?

- 72 Beef is one type.
 - 73 Ribeye or T-bone _____.
 - 74 What you see out a window.
 - 76 The freezer can be used for long-_____ beef storage.
 - 78 Two letters that follow hours of the morning.
 - 79 Short for "information."
 - 80 This should be done across the grain.
 - 83 A vegetable that's also used in making a type of yellow bread.
 - 84 Holds cookies.
 - 85 Lima, navy, kidney, string or pinto.
 - 86 Done to indicate beef cut quality.
 - 87 Stir _____ can be a quick Chinese-style beef meal.
 - 88 An old phrase is that "silence is _____."
- Down**
- 1 Best implement for measuring roasts' doneness (two words).
 - 2 The USDA beef grade with less marbling than prime.
 - 3 Adding a little bit of this to frying pans can prevent foods from sticking.
 - 4 Beef _____ jus means "served with natural juices."
 - 6 Added to picnic coolers, helps keep foods cold.

- 7 A short sleep.
- 8 USDA beef grade that contains the most marbling.
- 9 Kitchen show and _____ is a good way to learn recipes.
- 10 Spring turns _____ summer.
- 11 This flavorful type of beef should not be frozen for long periods of time.
- 12 Someone who does not tell the truth is a _____.
- 14 A dry heat cooking method used for tender steaks.
- 15 A dish cooked outside over an open fire, served with tangy sauce (two words).
- 16 Inspection is a federal _____ for beef wholesomeness.
- 22 A word that means "leave out."
- 24 Exposure to this changes beef's color from purplish to red.
- 26 A relative of the onion, this looks like a giant scallion.
- 28 Marinades contain a food _____ such as vinegar or citrus, to soften beef fibers and add flavor.
- 29 Flecks of fat throughout the lean.
- 30 To compare beef prices, determine cost per _____.
- 31 Another word for "equipment."

- 33 Lunch time.
- 35 The opposite of "on."
- 38 A wide, shallow container used for frying meat.
- 40 Two or more eras.
- 41 A 3-ounce cooked serving of ground beef is about 3 inches wide and a half-inch _____.
- 43 A female beef animal.
- 46 A wrapping job that's not good for beef stored in the freezer.
- 47 A word meaning "soggy" or "wilted" when describing vegetables.
- 49 Beef can be prepared _____ many different ways (two words)!
- 51 Emotional pressure that can result from doing too much at one time.
- 54 Abbreviation for "each."
- 57 A dry heat method that uses a rack and open pan.
- 58 To separate into different categories.
- 59 Shoulder area of the beef animal.
- 60 Federal officials _____ beef for wholesomeness.
- 62 A sumptuous spread.
- 66 To eat entirely and with gusto.

- 67 A tenderizing process done by machines at meat counters, to break down beef's tough fibers.
- 68 Juice from this yellow citrus fruit can be used in marinades.
- 69 The number after six.
- 71 _____ acids are proteins' building blocks.
- 72 Short for macaroni.
- 73 Something that's been bought has been _____.
- 75 Another word for "delay" or "postpone."
- 77 In a microwave oven, uniformly-shaped foods help make cooking more _____.
- 81 Abbreviation for Registered Nurse.
- 82 What pudding and some pies must do.
- 85 Nutrients help people _____ active and alert.

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