

BASICS ABOUT

BEEF

NUTRITION

BUYING BEEF

BEEF CUTS

FOOD SAFETY

DRY HEAT COOKING METHODS

MOIST HEAT COOKING METHODS

TIMETABLES

TENDERIZING

MICROWAVE BEEF PRODUCTS

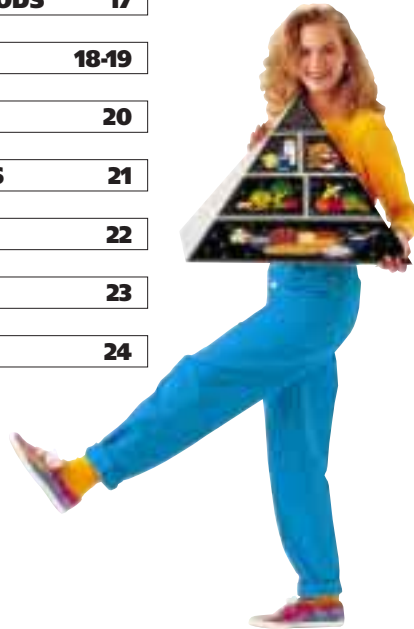
CARVING



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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 all of these. 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 virtually no vitamin B₁₂.

For this reason, dietitians and health advisors recommend we consume a wide variety of foods from different food categories 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.

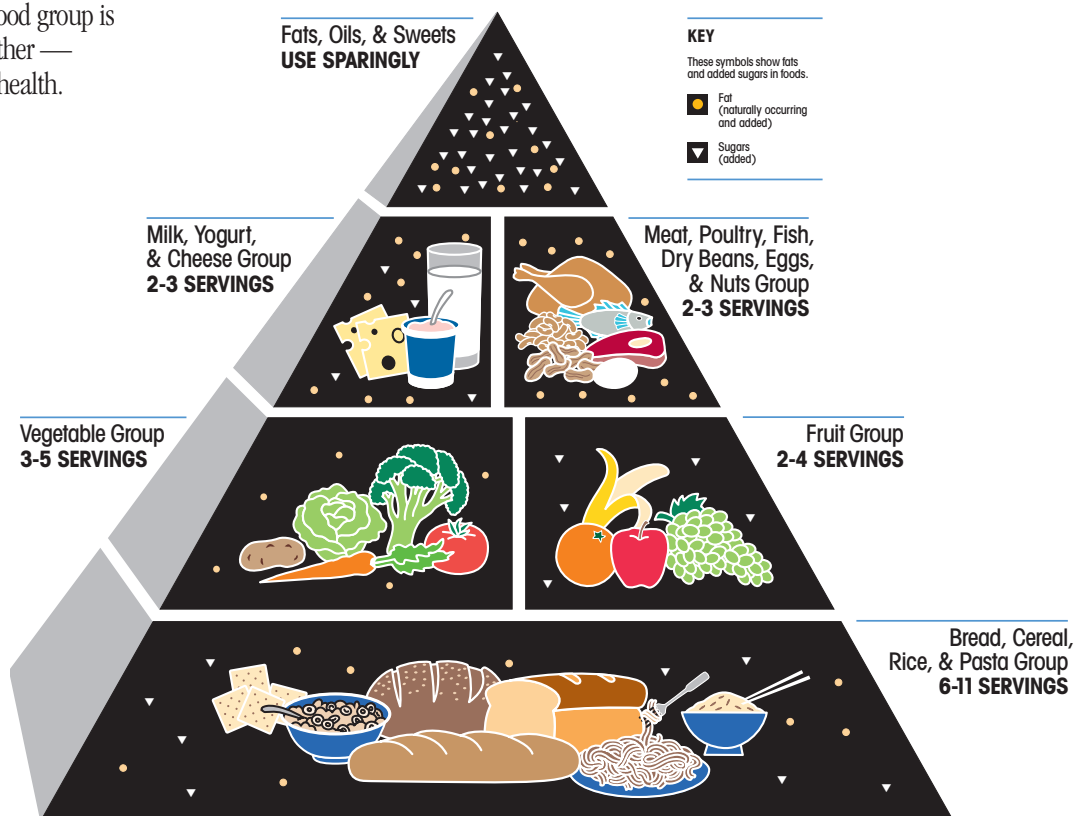
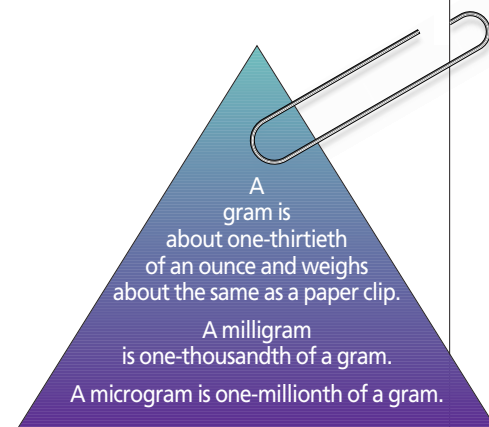
To help you choose the right variety and amounts, food guides have been developed. The *Food Guide Pyramid* is one such guide. It illustrates the research-based food guidance system developed by government agencies (USDA and HHS). The *Pyramid* presents a general guide to choosing a healthful diet. It recommends eating a variety of foods for essential nutrients and appropriate amounts of calories to maintain or improve body weight. The *Pyramid* emphasizes foods from the five major food groups (grains, fruits, vegetables, meats and 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.

Beef is an important component of the *Food Guide Pyramid* because it provides significant amounts of several key nutrients. These nutrients, and the amounts most teens and adults should eat daily, are listed in the chart below.

Daily Values (DVs)* for Some Key Nutrients

Protein	50 grams
Riboflavin (B ₂)	1.7 milligrams
Niacin	20 milligrams
Vitamin B ₁₂	6 micrograms
Iron	18 milligrams
Zinc	15 milligrams

*The term *Daily Value* refers to the amount of each nutrient most teens and adults should eat daily. The value (recommended amount) is based on teens or adults who eat about 2000 calories each day. The *Daily Value* is an approximate amount. The exact amount each person needs varies with age, gender and activity level.



PROTEIN

Beef supplies complete, high quality protein. Proteins are made up of amino acids. We need 22 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 or high quality proteins. 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. (85 g) cooked serving of 80% lean/20% fat ground beef will supply 48% of the amount of protein most people need each day.

B-VITAMINS

Beef contains significant amounts of several B-vitamins. Riboflavin (vitamin B₂) helps the body use energy and promotes healthy skin and good vision.

Niacin (another B-vitamin) promotes healthy skin and nerves, aids digestion and fosters normal appetite.

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. (85 g) cooked serving of 80% lean/20% fat ground beef will supply 11% of the amount of riboflavin, 25% of the amount of niacin and 36% of the amount of vitamin B₁₂ most people need each day.

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. The iron in meat is called heme (hēm) 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 an excellent source of iron, the single nutrient most often lacking in the diets of adult women, young children and athletes.

One 3-oz. (85 g) cooked serving of 80% lean/20% fat ground beef will supply 13% of the amount of iron most people need each day.



ZINC

Zinc is a mineral the body needs to form enzymes and insulin. 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. (85 g) cooked serving of 80% lean/20% fat ground beef will supply 35% of the amount of zinc most people need each day.

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.

Conjugated Linoleic Acid (CLA) is a unique fatty acid found naturally in beef and dairy products. Research has shown that CLA may have many health benefits, such as helping to prevent cancer.

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 Dietary Guidelines for Americans recommend we get less than 30% of calories from fat, less than 10% of calories from saturated fatty acids and less than 300 mg cholesterol daily. Remember, the 30% 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. (85 g) cooked serving of 80% lean/20% fat ground beef has 235 calories and provides 23% of the total fat, 29% of the saturated fatty acids, and 28% of the dietary cholesterol recommended on a 2000 calorie diet. Look for labels on steaks and roasts with the words loin or round. These cuts have the least amount of fat.

The chart at the right is based on the 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.

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

To Calculate Grams of Fat

$$2000 \text{ total calories} \times 30\% \text{ of calories from fat} = 600 \text{ calories from fat}$$

$$600 \text{ calories from fat} \div 9 \text{ calories per gram of fat} = \sim 67 \text{ grams fat}$$



FILL IN THE CHART

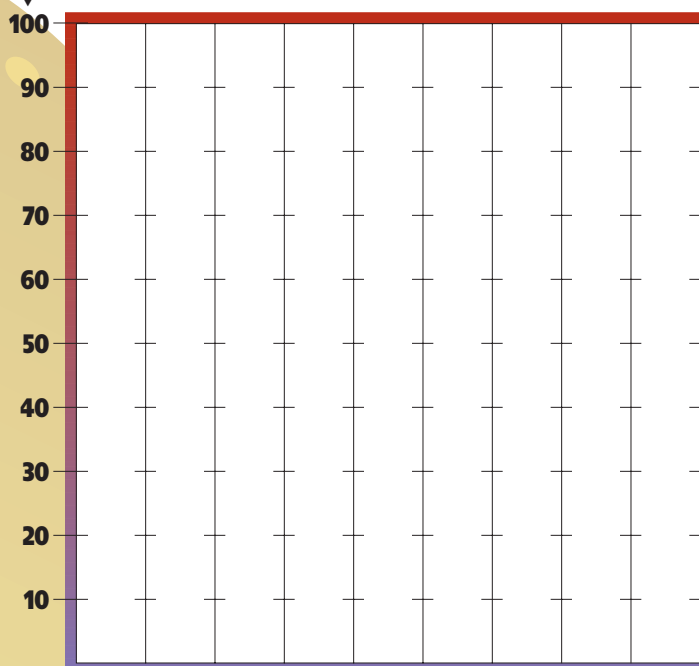
When you eat a cooked, 3-oz. (85g) 80% lean/20% fat ground beef patty, what percent of the *Daily Value* for beef's key nutrients do you get? Fill in the bar-chart below using information from pages 3-5.

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



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

Percent of Daily Value



- ▲ Protein
- ▲ Riboflavin (Vitamin B₂)
- ▲ Niacin
- ▲ Vitamin B₁₂
- ▲ Iron
- ▲ Zinc
- ▲ Fat
- ▲ Saturated Fatty Acids
- ▲ Cholesterol

Some supermarkets now distribute brochures or display posters with nutrition information at the meat case. This information, known as Meat Nutri-Facts, is based on data compiled by the U.S. Department of Agriculture (USDA).

Besides nutritional value, there are other factors to consider as you purchase beef:

- ▶ wholesomeness
- ▶ quality
- ▶ appearance
- ▶ available refrigerator and freezer storage space
- ▶ 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 meat sold must pass inspection for wholesomeness.

MEAT INSPECTION

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

Some states have their own inspection programs which regulate meat that is processed and sold only within that state. If a state does not have an inspection program or if the meat 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. meat products with a safety record envied throughout the world. In addition to inspection of animals and of processed



meat at the plant, beef is subject to further inspection as processing continues, in supermarket and meat market cutting rooms and in restaurant kitchens. For information on food safety in the home see page 14.

QUALITY

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

USDA BEEF GRADING

USDA meat grading is a voluntary service. Firms pay a fee to the USDA for the services provided by its graders, who are highly trained specialists employed by the agency.

A grade mark is a shield-shaped symbol with the letters USDA and the grade name (such as Choice). When a beef or veal carcass is graded, the grade mark is applied to the carcass with a safe-to-eat purple dye in a long, ribbon-like imprint. Prepackaged meats sometimes have grade shield stickers on the package.

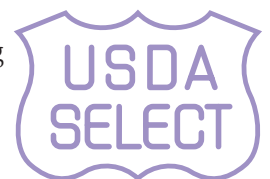
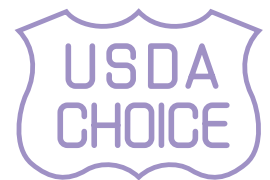
The top three of the eight beef grades are U.S. Prime, U.S. Choice and U.S. Select. These grades may be found in retail stores and meat markets.

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 tenderness. It is usually less costly than U.S. Prime.

Select: Generally lower-priced grade of beef with less marbling than U.S. Choice. Select cuts of beef may vary in tenderness and juiciness.



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

OTHER NAMES INDICATING BEEF QUALITY

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

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

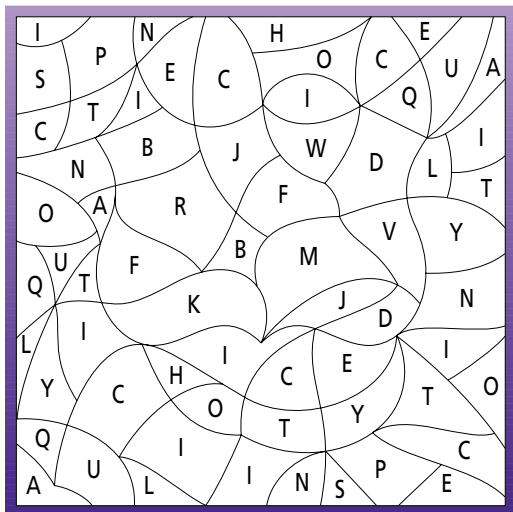
Meat **grading**, on the other hand, is voluntary. The grade mark indicates a level of quality (tenderness, juiciness and flavor).

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 customers is _____.

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



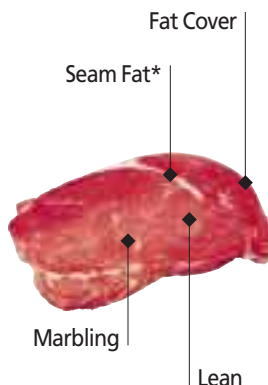
APPEARANCE

How beef looks at the meat counter is the third factor to consider in buying beef. 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 meat is further processed using salt or a salt solution and sodium nitrite.)

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,



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

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 meat's flavor and juiciness. It also supplies a few additional calories — although marbling is not as big a factor as fat cover in supplying fat and calories.

FAT COVER

The thin layer of fat covering the exterior of most beef cuts is called fat cover. It prevents drying out before cooking and helps in retaining juices during cooking. This fat cover acts as a self-baster on roasts. Look for a fat cover of $\frac{1}{8}$ " or less on steaks and roasts, or ask the meat cutter to trim the extra fat.

STORAGE

The fourth factor in buying beef is adequate refrigerator or freezer storage space. When purchasing beef, look for packages that are cold and tightly wrapped without tears or punctures. Plan to make beef the last purchase before returning home. See page 14 for more food safety tips.

REFRIGERATING

Most beef is prepackaged and should be stored wrapped as purchased. 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 meat causing a whitish surface layer known as “freezer burn.” This affects the palatability of the beef when cooked, but not the wholesomeness. Plastic sandwich bags and waxed paper are unsuitable wrapping materials for freezing.

Packaged meats from most grocery stores are wrapped in film that doesn't protect against dehydration. For freezer storage, beef should be rewrapped or the package overwrapped in a material designed for use in the freezer.

- Prepare beef for freezing before wrapping. To conserve freezer space, trim excess fat and remove bones when practical. Shape ground beef into patties. Separate individual pieces with a double thickness of freezer wrap. For those cuts of meat you plan to use for stew or similar dishes, remove the bone and cut the meat into pieces. Do not season with salt as this shortens the length of time that meat can be frozen.
- Wrap tightly, pressing out as much air as possible.
- Label properly. Indicate name of cut, approximate number of servings, and/or weight and date of freezing.
- 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.

- Use chart below.

Freezing Cooked Beef:

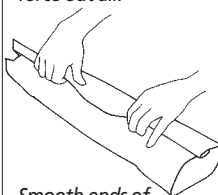
Cooked beef can be frozen by following steps 4-7 above. Be sure to cool the beef in the refrigerator for approximately two hours before freezing.

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 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 bologna.

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

Defrost beef in the refrigerator or in a microwave oven, following the manufacturer's directions. Defrosting meat at room temperature is not recommended — bacterial growth occurs rapidly at room temperature. The length of time for defrosting meat in the refrigerator at 35° to 40°F is:

- ▶ Large Roast 4-7 hours (per pound)
- ▶ Small Roast 3-5 hours (per pound)
- ▶ 1-inch Steak 12-14 hours (total)
- ▶ Ground Beef:
 - 24 hours for 1 to 1½ inch thick patties
 - 12 hours for ½ to ¾ inch thick patties

STORAGE TIMETABLE

Type of Meat		Refrigerator (at 35-40°F)	Freezer (at 0°F)
Fresh Beef	Roasts, steaks	3 to 4 days	6 to 12 months
	Beef for stew	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	3 to 5 days	1 to 2 months
	Luncheon meat	3 to 5 days	1 to 2 months
	Sausage, smoked	1 week	
	Sausage, dry and semi-dry, (unsliced)	2 to 3 weeks	
Cooked Beef Products		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. ZERGFEN APWR UTSM LEAS OTU RAI DAN COKL NI TREMSUOI.
4. TEIDSRONGF TEMA TA ORMO PATTERNMREEU SI TNO CODEDMERNEM.

COST PER SERVING

The fifth consideration in buying beef is the cost per serving and number of people to serve. 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 round and round tip are not only lean, but can be good values because of their per-serving cost. Cooking method and degree of doneness (internal temperature) are also factors.

Chart A shows how many 3-ounce servings per pound you can expect from each specific 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. Chart B shows examples of cost per serving based on this formula.

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
Roasts	Round Tip (thin cut)	4
	Eye Round	4
	Ribeye	3
	Rib	2½
	Round Tip	4
Pot Roasts	Tri-Tip	4
	Arm (boneless)	3
	Blade (boneless)	3
	Brisket	2½ to 3
Other Cuts	Shoulder (boneless)	3
	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

CHART B
Approximate Cost Per Serving

Cost Per Pound	Servings per Pound				
	2	2½	3	3½	4
\$1.69	\$.85	\$.68	\$.56	\$.48	\$.42
2.29	1.15	.92	.76	.65	.57
2.89	1.45	1.16	.96	.83	.72
3.89	1.95	1.56	1.30	1.11	.97
5.19	2.60	2.08	1.73	1.48	1.30
6.19	3.10	2.48	2.06	1.77	1.55



COOKERY METHOD AND TIME

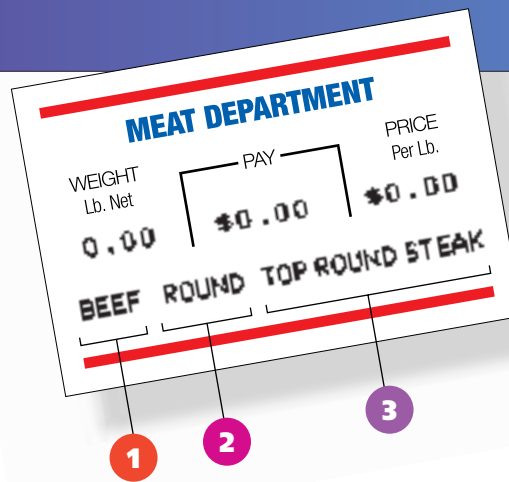
The final consideration when buying beef is how you plan to prepare it. The cut you select depends largely on the method of meat cookery you plan to use. Moist heat methods, like braising and stewing, are best used with less expensive, less tender cuts, such as the chuck and the round. Dry heat methods, 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 providing cooking information for different cuts at the meat case. Others are arranging meat cases according to cooking method. 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 meat is from muscles which are not used greatly in movement and which have smaller amounts of connective tissue. Therefore, meat from suspension muscles is frequently more tender than meat 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 remaining primals are made up of locomotion muscles and are usually less tender (e.g. chuck, flank, brisket). See illustration on page 12-13.

When you're at the meat counter, the name of the cut on the package label will help you determine the tenderness of the cut.



UNIFORM RETAIL MEAT LABELING

Most retail stores across the U.S. have adopted a meat 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 meat 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**.

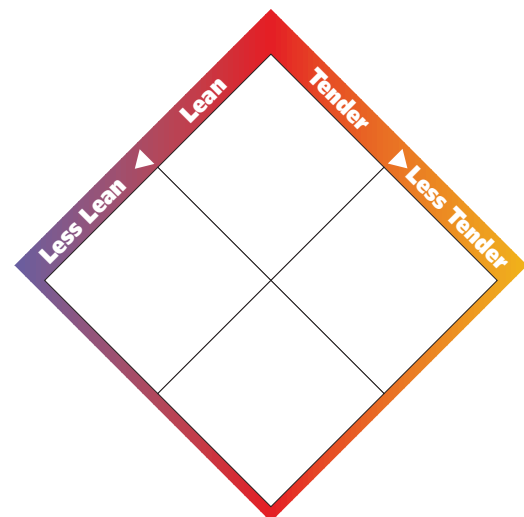
GROUND BEEF LABELING

The meat label indicates the leanness of ground beef. Ground beef can come from one of several muscles or primals. Its leanness depends upon where it comes from on the beef carcass. Leanness refers to the ratio or proportion of lean meat to fat. A label that says "Not less than 80% lean" means the ground beef is at least 80% lean meat and no more than 20% fat. USDA is currently reviewing nutrition labeling requirements for ground beef because "lean" as defined by the 1990 Nutrition Labeling and Education Act refers to foods that have less than 10 grams of fat.

Until the regulations are final, you may see percent lean information on the ground beef label as shown on page 11.

FILL IN THE SQUARES

Can you name an appropriate primal cut to fit each of the four squares?



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 73% Lean.

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

GROUND MEAT PRODUCTS (3-ounce, cooked portion, broiled, well-done*)

Type of Ground Meat	Ratio of Lean-to-Fat (raw weight)		Calories	Total Fat (grams)	Saturated Fatty Acids (grams)	Cholesterol (milligrams)
	%Lean	%Fat				
Ground Turkey	92	8	200	11	2.9	87
Ground Beef (90%)	90	10	214	11	4.3	83
Ground Beef (85%)	85	15	228	13	5.1	84
Ground Beef (80%)	80	20	235	15	5.8	85
Ground Beef (73%)	73	27	248	17	6.5	86
Ground Pork			252	18	6.6	80

*Ground beef nutrient values extrapolated from USDA/NL Nutrient Database for Std. Release 13, values for regular, lean and extra lean ground beef, broiled, well done. Ground turkey and ground pork nutrient values from USDA/NL Nutrient Database for Std. Release 13. Nutrient Laboratory Home Page. www.nal.usda.gov/fnic/foodcomp.



Ground Beef — Not Less Than 80% Lean.

Suitable for meatloaf, meatballs, casseroles and Salisbury Steak.



Ground Beef — Not Less Than 85%–90% Lean.

Good for combination dishes and low calorie recipes.

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 meat cut, not its recommended method of preparation.

If you buy ground beef with a higher percentage of fat, you can reduce the fat by “rinsing” it away. After browning ground beef, use a slotted spoon to transfer the meat to a plate lined with white paper towels. Carefully blot the top of the meat with more paper towels. Now, transfer the beef to a colander and rinse with four cups of hot (but not boiling) water. *Do not run water directly from the tap because it causes the beef to break into finer pieces, which can affect the texture of your finished dish.* After rinsing the beef, transfer it back to the drained pan or to a clean pan. This method can reduce the fat in ground beef by as much as half.

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 meat 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.





CHUCK



Chuck Arm
Pot Roast, Boneless
Braise



Chuck Shoulder
Pot Roast, Boneless
Braise



Chuck Shoulder
Steak, Boneless
Marinate & Grill
Marinate & Broil, Braise



Chuck Eye Steak
Grill, Broil, Pan-broil, Pan-fry



Chuck Top Blade Steak, Boneless
Pan-broil, Pan-fry



Chuck Mock Tender Steak
Braise



Chuck Blade Steak, Boneless
Marinate & Grill
Marinate & Broil, Braise



SHORT LOIN PORTION



Top Loin (Strip) Steak, Boneless
Grill, Broil, Pan-broil, Pan-fry



T-Bone Steak
Grill, Broil, Pan-broil, Pan-fry



Porterhouse Steak
Grill, Broil, Pan-broil, Pan-fry



Tenderloin Roast



Tenderloin Steak
Grill, Broil, Pan-broil, Pan-fry

LOIN



SIRLOIN PORTION



Top Sirloin Steak
Grill, Broil, Pan-broil, Pan-fry



Tri-Tip Roast
Roast, Grill, Broil



Tri-Tip Steak
Grill, Broil



ROUND



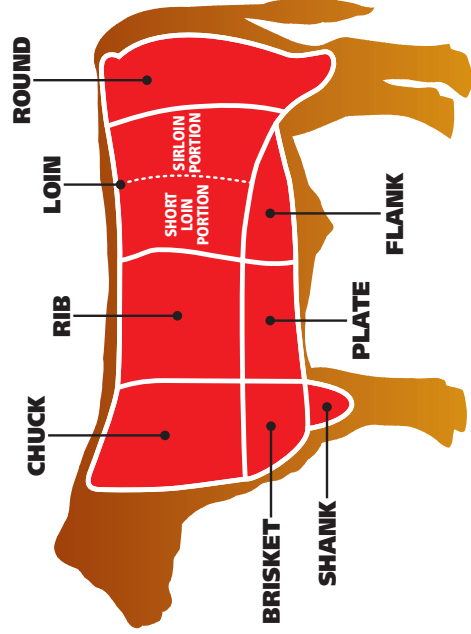
Top Round Steak
Marinate & Grill
Marinate & Broil



Round Tip Steak, Thin Cut
Pan-broil, Pan-fry



Round Tip Roast
Roast





Bottom Round Roast
Braise



Eye Round Roast
Roast



Eye Round Steak
Pan-broil, Pan-fry, Braise

OTHER CUTS



Ground Beef
Roast, Grill, Broil, Pan-broil, Pan-fry



Cubed Steak
Pan-broil, Pan-fry



Beef for Kabobs
Grill, Broil

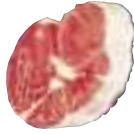


Beef for Stew
Cook in Liquid

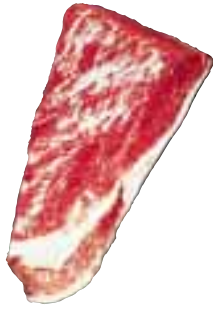


Beef for Stir-Fry
Stir-fry

SHANK & BRISKET



Shank Cross Cut
Cook in Liquid



Brisket, Whole
Braise



Brisket, Flat Cut, Boneless
Braise

PLATE & FLANK



Skirt Steak
Marinate & Grill/Marinate & Broil



Flank Steak
Marinate & Grill/Marinate & Broil



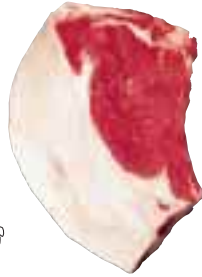
Chuck 7-Bone Pot Roast
Braise



Chuck Short Ribs
Cook in Liquid



RIB



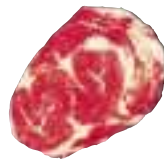
Rib Roast, Small End
Roast



Rib Steak, Small End
Grill, Broil



Ribeye Roast
Roast



Ribeye Steak
Grill, Broil, Pan-broil, Pan-fry



Back Ribs
Grill, Broil

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 meat contains any harmful bacteria, they will exist on the surface. Cooking steaks and roasts to medium rare doneness will destroy surface bacteria. Medium rare steaks and roasts will have a final internal temperature of 145°F, and the interior will be rosy pink.



GROUND MEAT

When raw meat 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 meat or poultry patties. Cook ground meat to medium (160°F) doneness. If an instant-read thermometer is not available, check to be sure the center is not pink and juices show no pink color. Never eat raw or undercooked ground meat or poultry.

In the case of meatloaf, always use a meat thermometer because the color can be deceiving. Vegetables, such as onions, celery and peppers added to ground beef can cause the meat to remain pink even after the internal temperature of 160°F is reached. Also, sauces that are brown (such as soy sauce, teriyaki or worcestershire) can change the color of the beef, making it hard to tell when the meat is done. Brush the sauce onto the surface of the beef after it is cooked, rather than mixing it into raw 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.

Meat safety is of particular concern to some consumers. The food industry, from farm to table, has followed strict rules to help ensure safe and wholesome food. However, new procedures and safeguards continue to be put into place. One such safeguard is the safe handling label on raw meat and poultry. This label gives basic guidelines for keeping food safe.

SAFE FOOD HANDLING TIPS

Follow this checklist to help keep food safe.

- ▶ When shopping, put meat in plastic bags to keep packages from dripping onto other foods in your cart.
- ▶ Wash hands with hot soapy water before preparing food and after handling raw meat, poultry or fish.
- ▶ Use hot soapy water to wash surfaces and utensils immediately after preparing meat, 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 meat, fish and poultry in the refrigerator or microwave oven, not at room temperature.
- ▶ Marinate meat, fish and poultry in the refrigerator. Throw out leftover marinade that came into contact with meat OR bring to a rolling boil for 1 minute before using on cooked meat.
- ▶ Cook ground beef to medium (160°F) until no longer pink inside and juices show no pink color. Steaks and roasts should be well-browned on the surface but can be pink (medium rare) on the inside.
- ▶ Reheat leftovers to 165°F or until steaming hot.
- ▶ When eating out, order your burger medium. Cut into the middle to check that the meat is no longer pink.



One of the objectives of cooking meat is to improve tenderness. Any cut can be made 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 (see page 18).
- 2 Place beef, fat side up, on rack in shallow roasting pan. Season, if desired. Insert ovenproof meat thermometer so tip is centered in thickest part of the roast, not resting in fat or touching bone. Do not add water. Do not cover.
- 3 Roast to 5° to 10°F below desired degree of doneness. Allow roast to stand 15-20 minutes before serving. Temperature will continue to rise 5° to 10°F to reach desired doneness. In addition, the roast will be easier to carve. (See carving instructions, page 22.)



BROILING

- 1 Set oven regulator for broiling; preheat for 10 minutes. *During broiling, the oven door for electric ranges should be left ajar; the oven door for gas ranges should remain closed. (However, consult your owner's manual for specific broiling guidelines.)*
- 2 Place beef on rack in broiler pan. Use seasonings as desired. Position broiler pan so that surface of beef is within specified distance from the heat as indicated in chart (see page 19).
- 3 Broil according to chart, turning once. After cooking, season beef with salt, if desired.

DRY HEAT METHODS FOR TENDER CUTS



PAN-BROILING

- 1 Heat heavy nonstick skillet over medium heat for 5 minutes.
- 2 Place beef in preheated skillet (do not overcrowd). Do not add oil or water, do not cover.
- 3 Pan-broil to desired doneness, turning once. Remove excess drippings from skillet as they accumulate. Season, if desired.



PAN-FRYING/STIR-FRYING

- 1 Place beef in small amount of heated oil. Do not cover.
- 2 Cook at medium to medium-high temperature. Brown on both sides for pan-frying; turn meat pieces over continuously for stir-frying.
- 3 Season, as desired.



GRILLING

- 1 Prepare charcoal for grilling. When coals are medium, ash-covered (approximately 30 minutes), spread in single layer and check cooking temperature. Position cooking grid. *(To check temperature, cautiously hold the palm of your hand above the coals at cooking height. Count the number of seconds you can hold your hand in that position before the heat forces you to pull it away; approximately 4 seconds for medium heat.)*
- 2 Use seasonings as desired. Place on cooking grid directly over coals.
- 3 Grill according to chart, turning occasionally. After cooking, season beef with salt, if desired. *(Because gas grill brands vary greatly, consult your owner's manual for grilling guidelines.)*



MOIST HEAT METHODS FOR LESS TENDER CUTS



BRAISING

- ❶ Slowly brown beef on all sides in small amount of oil in heavy pan. Pour off excess drippings. Season, if desired.
- ❷ Add a small amount ($\frac{1}{2}$ to 2 cups) of liquid.
- ❸ Cover tightly and simmer gently over low heat on top of range or in a 325°F oven until beef is fork-tender.



COOKING IN LIQUID

- ❶ Coat beef with seasoned flour, if desired. Slowly brown beef on all sides in small amount of oil in heavy pan. Pour off excess drippings.*
- ❷ Cover beef with liquid. Season, if desired. Bring liquid to boil; reduce heat to low.
- ❸ Cover tightly and gently simmer on top of range or in a 325°F oven until beef is fork-tender.

*The first step may be eliminated for some beef cuts such as corned brisket or shank cross cuts.



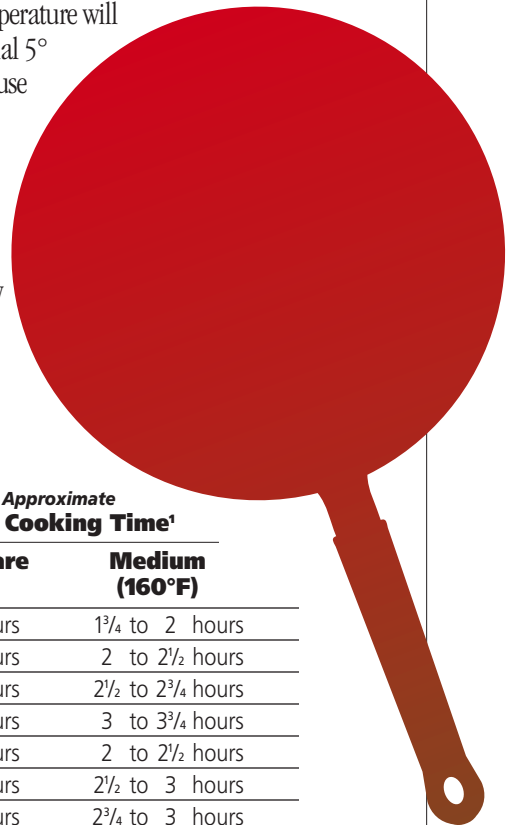
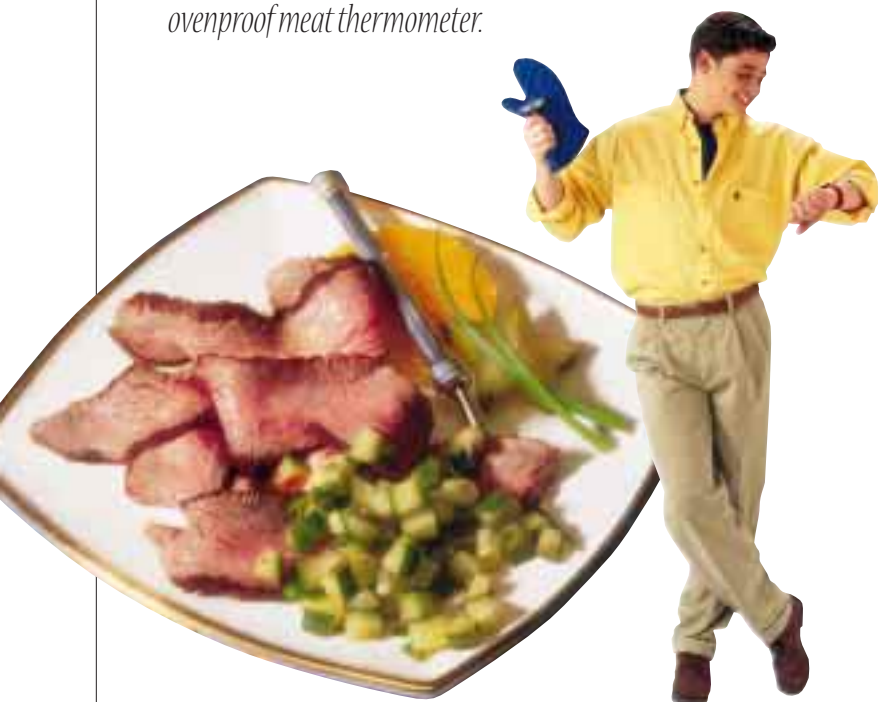
COOKING IN A PRESSURE PAN

Less tender cuts of beef can also be cooked in a pressure pan in less time than used in ordinary cooking methods. Consult the instruction book that accompanies the pressure pan to avoid over- or undercooking.

The degree of doneness can be easily determined by measuring the internal temperature of a cut of meat. 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 meat, 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 Primal	Retail Cut	Approximate Weight (pounds)	Oven Temperature (degrees F)	Approximate Total Cooking Time ¹	
				Medium Rare (145°F)	Medium (160°F)
RIB	Ribeye Roast (small end)	3 to 4	350	1½ to 1¾ hours	1¾ to 2 hours
		4 to 6	350	1¾ to 2 hours	2 to 2½ hours
		6 to 8	350	2 to 2¼ hours	2½ to 2¾ hours
	8 ² to 10 ²	325	2½ to 3¼ hours	3 to 3¾ hours	
Ribeye Roast (large end)	3 to 4	350	1¾ to 2¼ hours	2 to 2½ hours	
	4 to 6	350	2 to 2½ hours	2½ to 3 hours	
	6 to 8	350	2¼ to 2½ hours	2¾ to 3 hours	
Rib Roast (chine bone removed)	4 to 6 (2 ribs)	350	1¾ to 2¼ hours	2¼ to 2¾ hours	
	6 to 8 (2 to 4 ribs)	350	2¼ to 2½ hours	2¾ to 3 hours	
	8 to 10 (4 to 5 ribs)	350	2½ to 3 hours	3 to 3½ hours	
LOIN	Tenderloin Roast (well-trimmed)	2 to 3 (center-cut)	425	35 to 40 minutes	45 to 50 minutes
		4 to 5 (whole)	425	50 to 60 minutes	60 to 70 minutes
	Tri-Tip Roast	1½ to 2	425	30 to 40 minutes	40 to 45 minutes
ROUND	Round Tip Roast (cap off)	3 to 4	325	1¾ to 2 hours	2¼ to 2½ hours
		4 to 6	325	2 to 2½ hours	2½ to 3 hours
		6 to 8	325	2½ to 3 hours	3 to 3½ hours
		8 ² to 10 ²	325	3 to 3¾ hours	3¾ to 4½ hours
Top Round Roast	6 to 8	325	2½ to 3 hours	—	
	8 ² to 10 ²	325	3 to 3¾ hours	—	
Eye Round Roast	2 to 3	325	1½ to 1¾ hours	—	
OTHER	Meatloaf (8" x 4")	1½	350	—	1¼ hours

¹Based on meat 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	3/4	2 to 3	10 minutes	13 minutes
		1	3 to 4	16 minutes	21 minutes
		1	3 to 4	16 minutes	21 minutes
RIB	Rib Steak (small end)	3/4	2 to 3	9 minutes	12 minutes
		1	3 to 4	13 minutes	17 minutes
		1	3 to 4	13 minutes	17 minutes
	Ribeye Steak	3/4	2 to 3	8 minutes	10 minutes
		1	3 to 4	14 minutes	18 minutes
		1	3 to 4	14 minutes	18 minutes
ROUND	Top Round Steak ³	1	2 to 3	17 minutes	18 minutes
		1 1/2	3 to 4	27 minutes	29 minutes
LOIN	Top Sirloin Steak	3/4	2 to 3	9 minutes	12 minutes
		1	3 to 4	16 minutes	21 minutes
		1	3 to 4	16 minutes	21 minutes
		1	3 to 4	15 minutes	20 minutes
		1	2 to 3	13 minutes	16 minutes
	Porterhouse/T-Bone Steak	3/4	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
		1	2 to 3	13 minutes	16 minutes
	Top Loin Steak (boneless)	3/4	2 to 3	9 minutes	11 minutes
		1	3 to 4	13 minutes	17 minutes
FLANK	Flank Steak ³	1 1/2 to 2 pounds	2 to 3	13 minutes	18 minutes
OTHER	Ground Beef Patties	1/2	3 to 4	—	10 to 12 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	3/4	Medium	8 minutes	10 minutes
		1/8 to 1/4	Medium-high	1 minute	—
		3/4	Medium	11 minutes	12 minutes
LOIN	Top Sirloin Steak (boneless)	3/4	Medium	10 minutes	13 minutes
		3/4	Medium	10 minutes	12 minutes
		3/4	Medium	7 minutes	9 minutes
OTHER	Ground Beef Patties	1/2	Medium	—	10 to 12 minutes

DRY HEAT

Primal	Retail Cut	Approximate Thickness (inches)	Approximate Total Cooking Time ¹ Uncovered Over Medium Coals	
			Medium Rare to Medium	
RIB	Ribeye Steak	3/4	6 to 8 minutes	
		1	11 to 14 minutes	
		3/4	6 to 8 minutes	
		1	9 to 12 minutes	
LOIN	Porterhouse/T-Bone Steak	3/4	10 to 12 minutes	
		1	14 to 16 minutes	
		3/4	10 to 12 minutes	
		1	15 to 18 minutes	
	Tenderloin Steak	1	13 to 15 minutes	
		3/4	13 to 16 minutes	
		1	17 to 21 minutes	
		3/4	13 to 16 minutes	
FLANK	Flank Steak ³	1 1/2 to 2 pounds	17 to 21 minutes	
		1 1/2 to 2 pounds	17 to 21 minutes	
ROUND	Top Round Steak ³	3/4	8 to 9 minutes	
		1	16 to 18 minutes	
CHUCK	Chuck Shoulder Steak (boneless) ³	3/4	14 to 17 minutes	
		1	16 to 20 minutes	
		1	18 to 22 minutes	
OTHER	Ground Beef Patties	1/2	11 to 13 minutes	

MOIST HEAT

Primal	Retail Cut	Approximate Thickness (inches)	Approximate Weight (pounds)	Approximate Total Cooking Time (hours)	COOKING IN LIQUID		Approximate Thickness (inches)	Approximate Weight (pounds)	Approximate Total Cooking Time (hours)
					Primal	Retail Cut			
CHUCK	Blade, Arm, Shoulder	—	2 1/4 to 4	2 to 3	BRISKET	Fresh or Corned Beef	—	2 1/2 to 3 1/2	2 1/2 to 3 1/2
	Short Ribs	2 x 2 x 4	—	1 1/2 to 2 1/2	SHANK	Shank Cross Cuts	1 to 1 1/2	—	2 to 3
ROUND	Round Steak (bottom, eye)	3/4 to 1	—	1 1/4 to 1 3/4	OTHER	Beef for Stew	1 to 1 1/2	—	1 3/4 to 2 1/4



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 meat or use commercial tenderizing mixtures.

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 meat 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 meat, so they work best on thinner cuts.

When marinating, containers must be covered. If the marinade has been in contact with uncooked meat, it must be brought to a rolling boil for one minute before adding it to cooked meat. 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 meat.

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 at the meat counter. Do not confuse this with grinding or cutting the meat into cubes, as for stew.

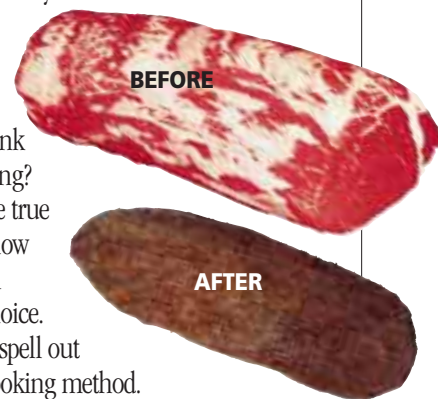


COMMERCIAL TENDERIZERS

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 bromelin from pineapple, are used in commercial tenderizers. Generally, enzyme tenderizers only tenderize the outer 1/4 inch of meat cuts. Be sure to follow package directions when using commercial tenderizers or the meat 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. Pan-frying is best for tender beef cuts with low fat content, cuts made tender by pounding or cubing, or cuts coated with flour, meal or egg and crumbs. |
| W | T | 5. When broiling, always turn meat using a sharp fork. |
| 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 2 1/2 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 the beef industry has developed new beef products specially made for quick reheating in a microwave. You can prepare your favorite beef dishes in minutes.

Look for precooked and microwaveable 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. For more information on new beef products, visit www.beef.org and click on the business menu.



EASY BEEF POT ROAST WITH ZESTY RICE

Total preparation and cooking time: 30 minutes

- 1 package (about 2 pounds) fully-cooked, microwaveable boneless beef pot roast with gravy
- 1 cup uncooked long grain white rice
- 1 teaspoon chili powder
- 1/2 cup frozen corn
- 1/4 cup prepared thick-and-chunky salsa
- 2 tablespoons chopped fresh cilantro
- 3/4 cup prepared thick-and-chunky salsa
- Fresh cilantro sprigs (optional)

1. Cook rice according to package directions, adding chili powder and omitting oil or butter. Remove from heat. Stir in corn, 1/4 cup salsa and chopped cilantro. Let stand, covered, 5 minutes.
2. Meanwhile, prepare fully-cooked beef pot roast with gravy according to package directions. Remove beef to platter; keep warm. Add 3/4 cup salsa to gravy; heat through.
3. Serve pot roast with the rice and gravy. Garnish with cilantro sprigs, if desired.

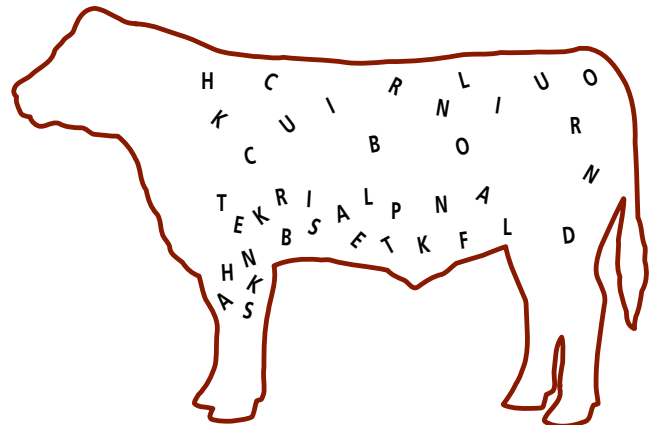
Makes 6 servings.

Nutrition information per serving:
361 calories; 36 g protein; 35 g carbohydrate; 9 g fat; 4.4 mg iron; 968 mg sodium; 92 mg cholesterol.



COMPLETE THE DIAGRAM

Draw lines on this carcass 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.

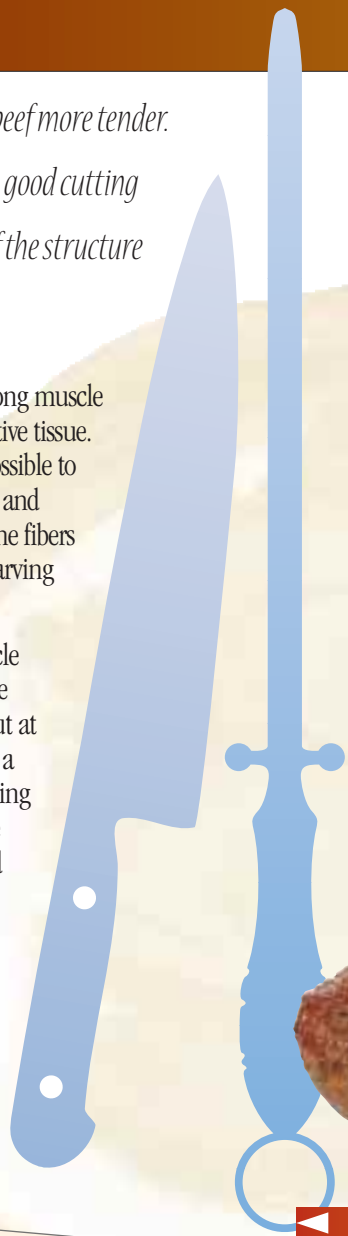


Proper carving makes beef more tender.

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

Meat 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 meat 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 what the grain looks like and the correct method of slicing.



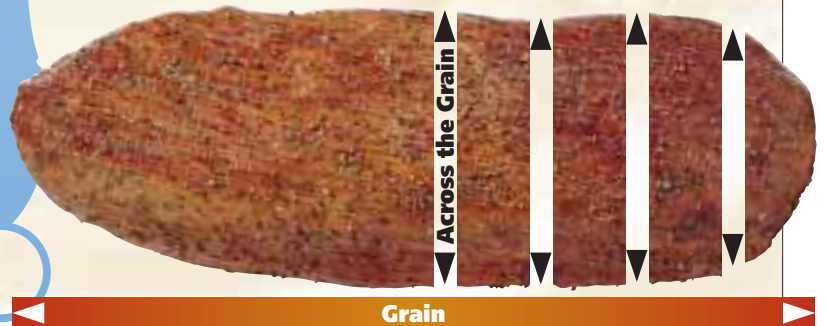
CUT ACROSS THE GRAIN

Steps

There are four easy steps to 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. If steaks are to be carved, do so immediately.
2. Determine which way the muscle fibers run in the meat. This is the grain.
3. Anchor the meat firmly with a two-pronged carving fork.
4. Carve roasts across the grain; carve tender steaks with the grain. Carve less tender steaks (flank steaks, for example) diagonally across the grain into thin slices.

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 meat fibers are tender and already short. (*Roasts* from these primals, however, should be cut across the grain.)



MEXI-CHILI MAC

Total preparation and cooking time: 30 minutes

- 1 pound ground beef
- ½ cup chopped green bell pepper
- ¼ cup chopped onion
- 1 clove garlic, crushed
- 1 can (14½ ounces) Mexican-style diced tomatoes, undrained
- 1 can (8 ounces) tomato sauce
- ¾ cup water
- ¾ cup uncooked elbow macaroni
- 2 teaspoons Spicy Seasoning Mix (see right)
- ½ teaspoon salt

1. In 3-quart saucepan, brown ground beef, bell pepper, onion and garlic over medium heat 8 to 10 minutes or until the beef is no longer pink, breaking up into ¾-inch crumbles. Pour off drippings.
2. Stir in remaining ingredients. Bring to a boil; reduce heat to low. Cover tightly and simmer 15 minutes. Remove from heat; cover and let stand 5 minutes before serving.

Makes 4 servings (serving size: 1½ cups).

Spicy Seasoning Mix:

Preparation time: 5 minutes

- 3 tablespoons chili powder
- 2 teaspoons ground cumin
- 1½ teaspoons garlic powder
- ¾ teaspoon dried oregano leaves
- ½ teaspoon ground red pepper

Combine all ingredients. Cover and store in airtight container. Shake before using to blend.

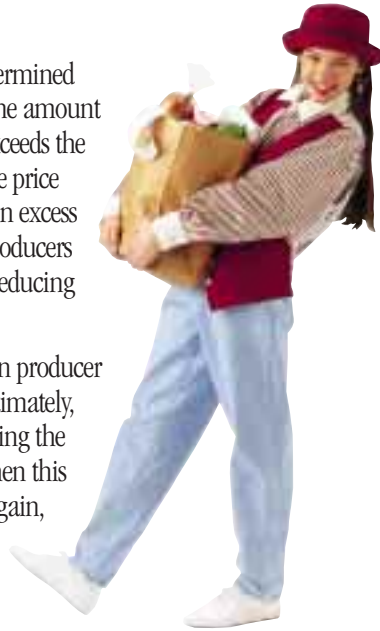
Makes about ⅓ cup.



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 in producer herds 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.

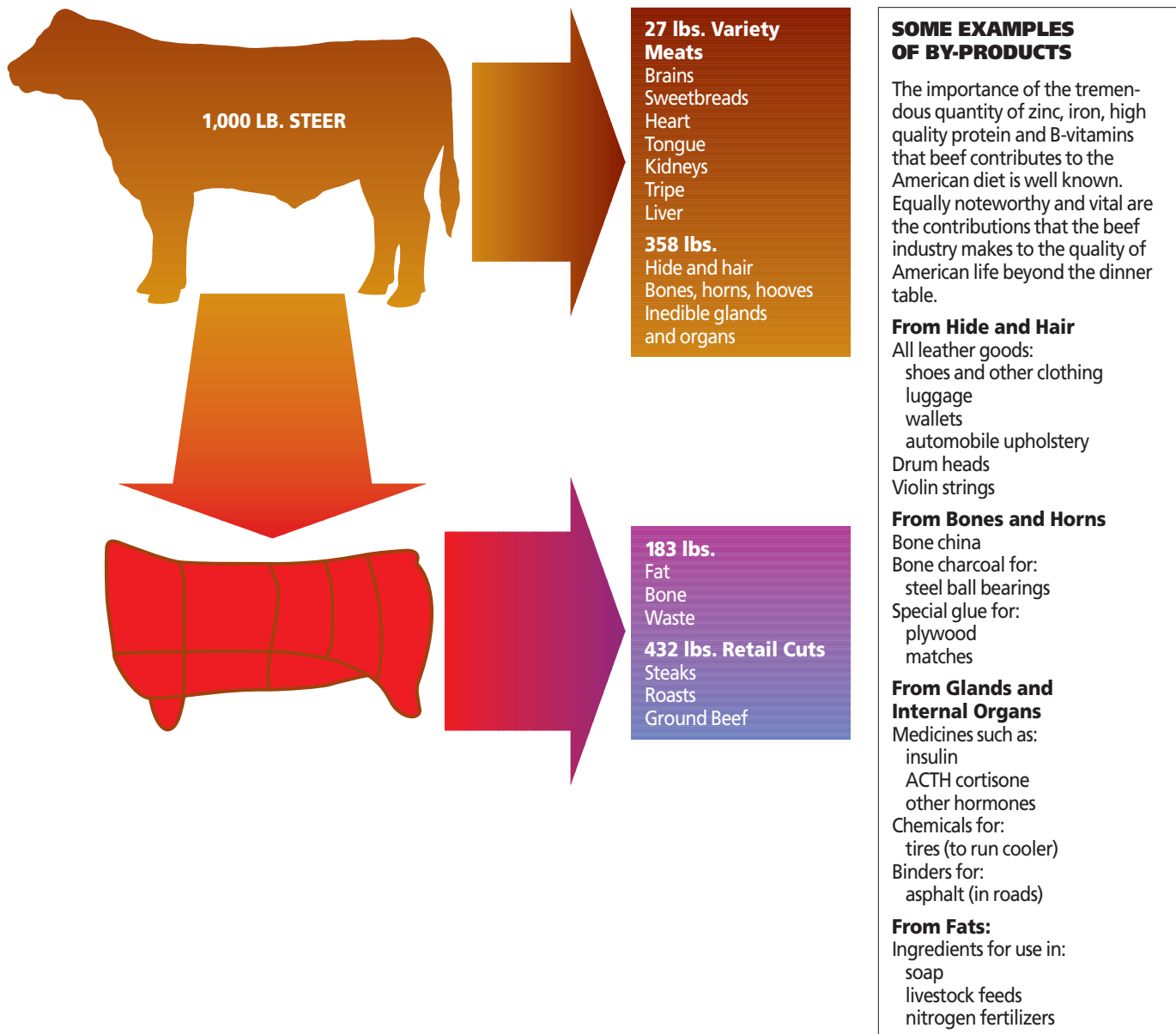


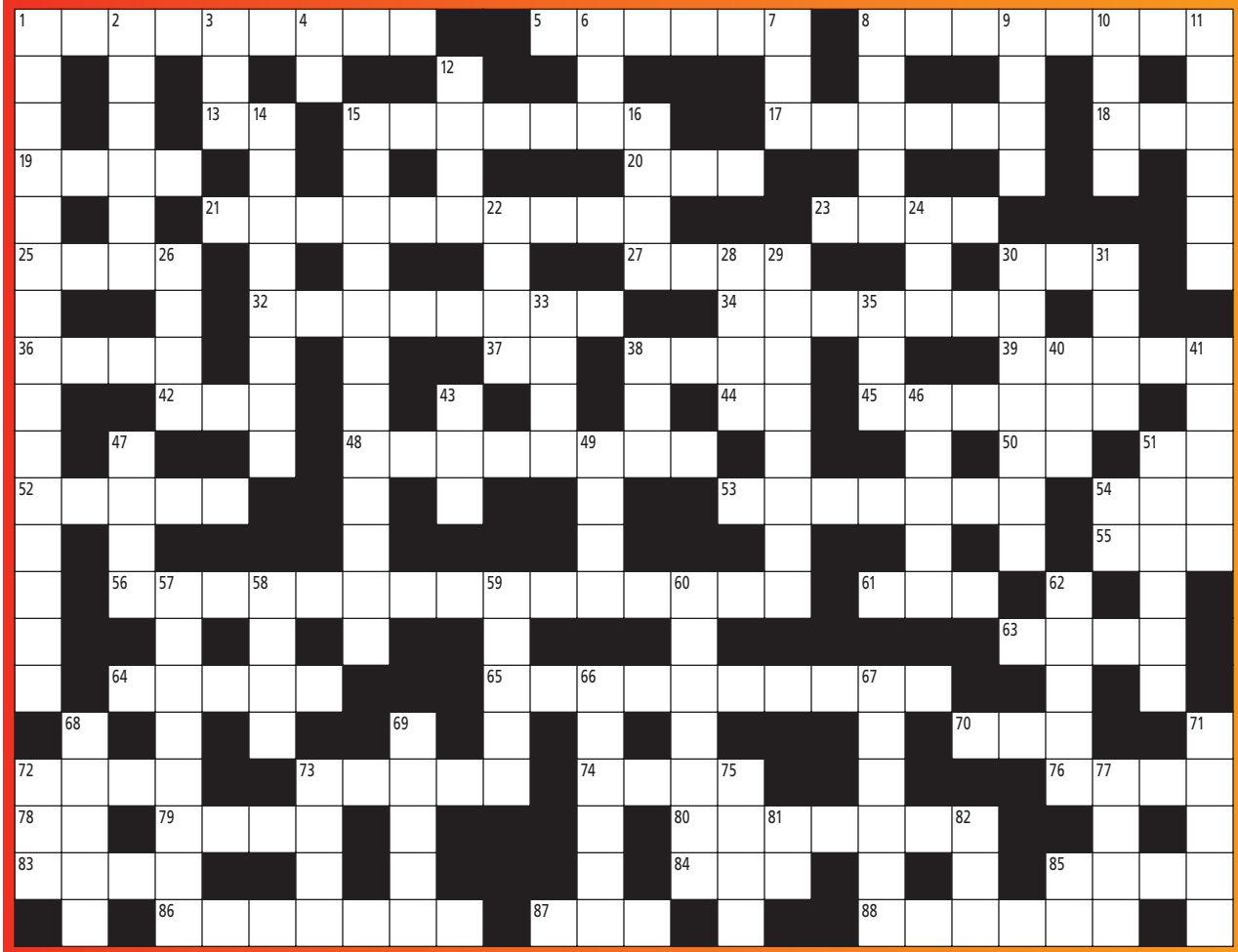
This is known as the “cattle cycle,” which traditionally takes 10-12 years. The reason the process takes so long is that, unlike other industries, beef producers can’t react quickly to a change in consumer demand. It takes about two to two-and-a-half years from the time a calf is conceived until it is 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 1,000 lb. steer doesn’t yield 1,000 lbs. of beef. On the average, that steer yields only about 432 lbs. of retail beef cuts sold in the store. This is less than half of the live animal’s weight. Very little of the 568 lbs. that does not become retail beef is lost, however. The flow chart shows how these additional products are used.





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 Skeleton bands. (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 meat 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 Rib-eye 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 meat fibers and add flavor.
- 29 Flecks of fat throughout the lean.
- 30 To compare meat 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 roasts help make cooking more _____.
- 81 Abbreviation for Registered Nurse.
- 82 What pudding and some pies must do.
- 85 Nutrients help people _____ active and alert.

Answers to games/activities are published on the internet @ www.teachfree.com. You may request a printed copy by sending a self-addressed stamped envelope to: Education Department/BAB, 5420 South Quebec Street, Greenwood Village, CO 80111.



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