

BEEF HEIFER SKILL-A-THON

Introduction

This manual is provided as a *study guide* for the skill-a-thon competition and should be used as an additional aid to ongoing educational programs. Sections are labeled **Junior, Intermediate, Senior, & Bonus** to help exhibitors and educators identify which materials are required for their age level. The topic for this year's Skill-a-thon is **cuts of meat and by- products**.

Topics for the Knowledge and Skills Stations may include the following:

Juniors (age 8-10 as of September 1, 2020)

Body parts
Breeds
Structure
Cuts of Beef
Beef By-products
Common Livestock Terms

Intermediates (age 11-13 as of September 1, 2020)

All of the above plus...
Parts of a Feed Label
Basic Livestock Terms

Seniors (age 14 and over as of September 1, 2020)

All of the above plus....
Retail Cuts of Meat

Bonus

Knots

The contest will be held on **January 27, 2021, from 2:00 p.m. until 6:00 p.m. in the KVLS Arena.**

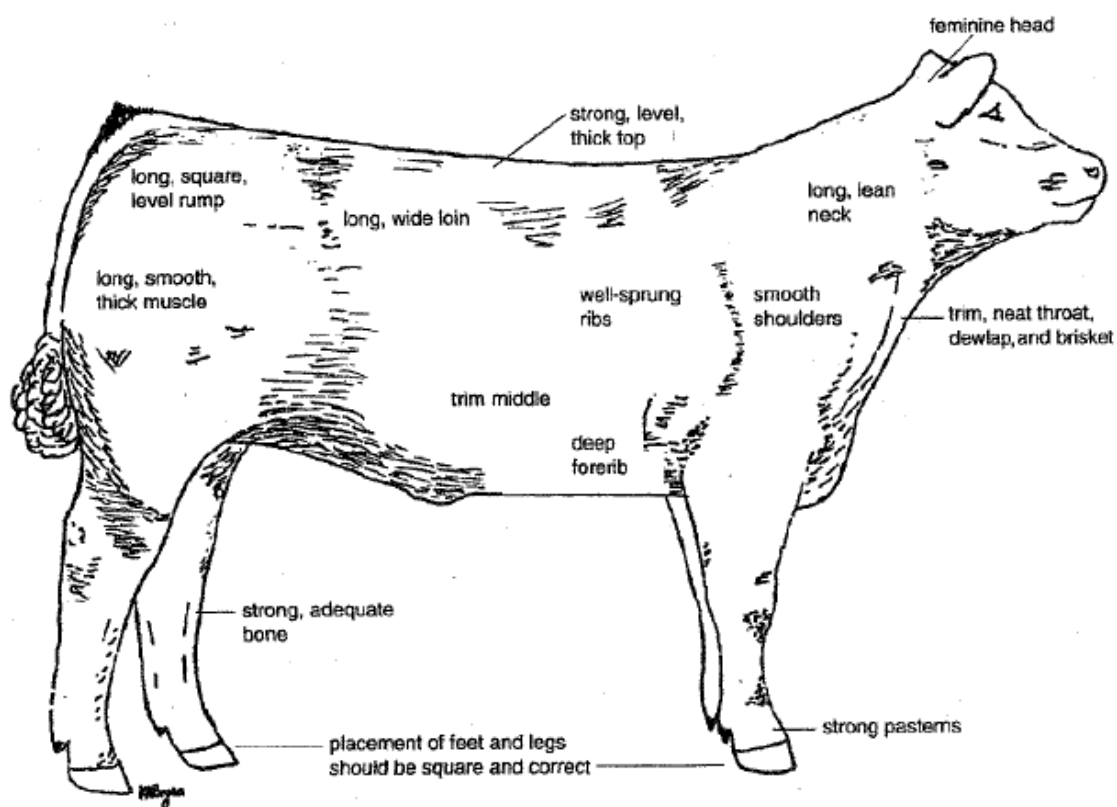
KVLS Skill-a-thon Rules for 2020-2021

1. All market exhibitors must take the Skill-a-thon in their project area for the animal that they are showing in order to participate in the market programs, i.e. steer exhibitors must take the Steer Skill-a-thon. Any exhibitor who does not meet the required grade average on their report card or who does not have a report card must score 70% on the Skill-a-thon to participate in the Market Animal Program.
2. All exhibitors must take the Skill-a-thon for the first time on their own, then a reader can be requested the second time, if a passing grade is not achieved.
3. Awards will be given on the score of the first Skill-a-thon taken. Top awards are only given for passing scores (70% or above).
4. Only those exhibitors who do not make the grade point requirement are required to make a passing score of 70% or above in order to participate in the market animal program.
5. Exhibitors must stay in the testing room once they have signed up to take the Skill-a-thon.
6. Exhibitors showing a second animal must stay in the testing room to take the second animal Skill-a-thon.
7. No parents or other adults not on the Committee are allowed in the Skill-a-thon room.
8. No exhibitors are allowed to have cell phones while in the Skill-a-thon room.
9. No time limit will be imposed on the exhibitors.
10. Skill-a-thon handbooks will be given at the project start-up Mandatory Meetings.

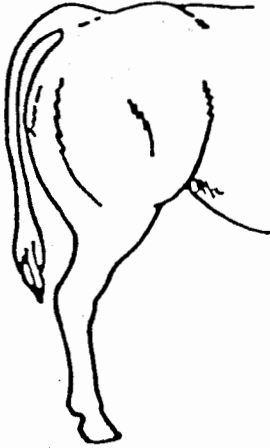
KVLS Awards

There will be a Junior (8-10), Intermediate (11-13), Senior (14 - graduate from High School) division for the contest. Within each division, 1st, 2nd and 3rd place will receive rosette ribbons and a monetary award.

PARTS OF AN IDEAL HEIFER



Evaluation of Market Cattle



When selecting and evaluating market cattle, the 4-H member must keep in mind the purpose of these animals. The primary function of market animals is meat production. Therefore, traits such as muscling and finish are emphasized. Frame size and structural correctness are examined but to a slightly lesser degree than in breeding cattle.

MUSCLING

*Modern market cattle should exhibit extra muscling down their top and through their hind quarters. These are the areas from which the high-priced cuts come. Traits that are found in the ideal market steer include:

- more natural thickness down the top
- more muscular loin
- long, level rump
- thicker through the center of the quarter
- wider, deeper stifle

FINISH

*Finish refers to the amount of fat cover a market animal possesses. An ideal market animal should have the minimal amount of body fat and still be able to reach the Choice quality grade. Desirable traits in regard to finish include:

- smooth and uniform fat cover over ribs
- uniform depth of body
- freedom from fat patches about tailhead
- no excessive fullness in brisket

FRAME SIZE

*Current trends in market cattle frame size have shifted toward moderation. Market cattle should have enough frame to enable them to reach an acceptable market weight (1,100-1,350 lbs.) at an age of 12-18 months. Acceptable traits for today's frame size include:

- moderate hip height (frame size 5.0-7.0)
- extra length of body
- longer rump

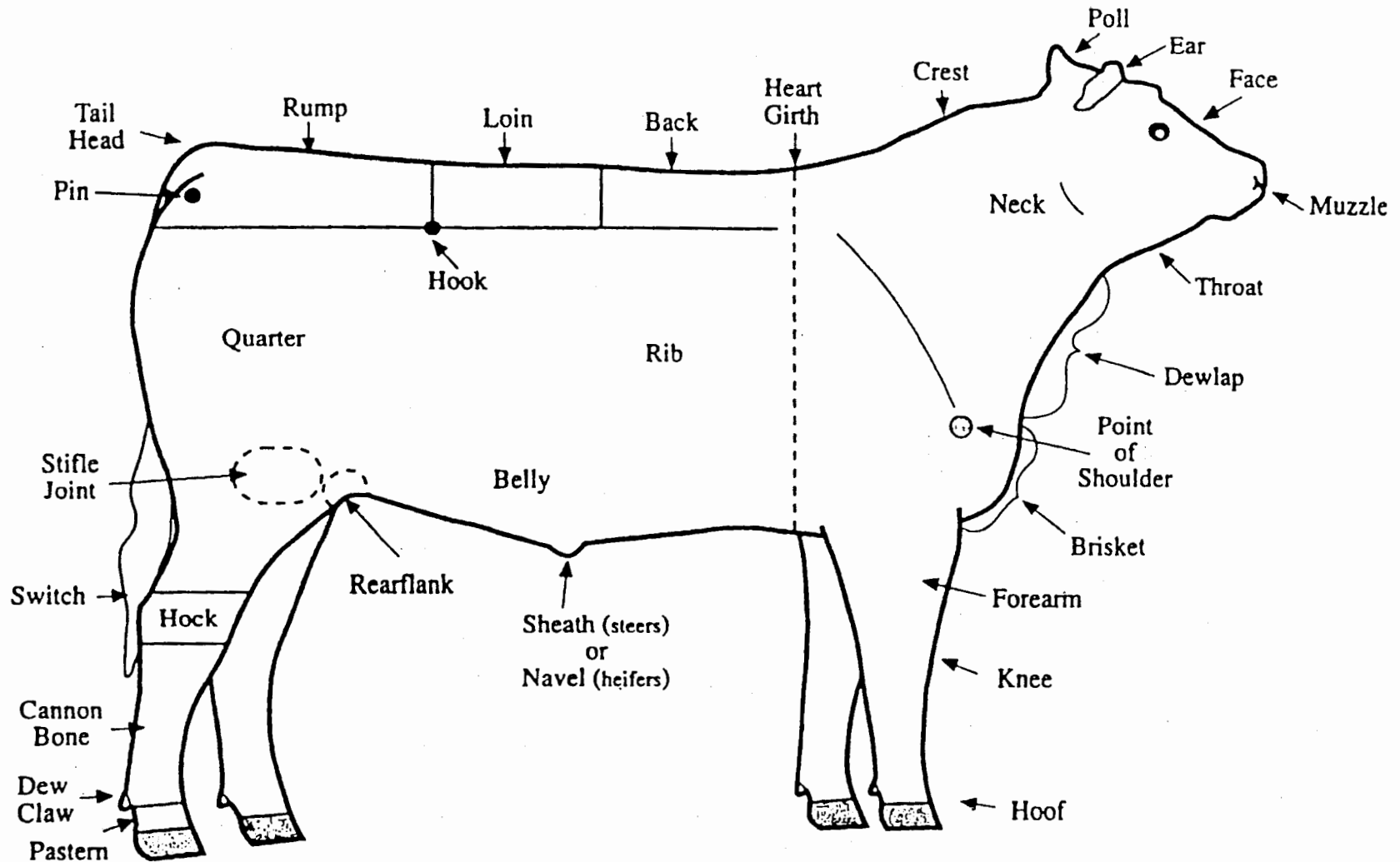
STRUCTURAL CORRECTNESS

*While it is not emphasized as greatly as it is with breeding cattle, structural correctness is an important selection criteria when judging market animals. As with breeding cattle, look for animals that are:

- standing squarely on front and rear legs
- heavier boned
- moving with a long, reaching stride
- more nearly level from hooks to pins
- possessing adequate set to the hocks

It is important for livestock producers to share a common language. Using the correct names for various body parts is one way to be certain your message is understood. Study the pictures with the names of the body parts labeled so that you can communicate with other producers using correct terms.

Parts of a Beef Animal



Juniors, Intermediates, Seniors

BREED IDENTIFICATION



BRANGUS

The Brangus breed was developed by crossing Brahman and Angus cattle. Brangus cattle are based on foundation stock that is $\frac{3}{8}$ Brahman and $\frac{5}{8}$ Angus. Brangus cattle are solid black and polled. An inspection is necessary to determine conformation and breed character before the animal may be registered.



PINZGAUER

This is a horned breed and is brown in color. They have some white on top and underlines. Bulls weigh 2,200 to 2,900 pounds and cows weigh 1,300 to 1,650 pounds.



BEEFMASTER

This breed is a result of crosses among Herefords, Shorthorns and Brahms. The exact percentage of blood from each is not known. The breed has a variety of colors. Selection has been mainly for good disposition, fertility, gain, conformation, hardiness, and milk production.



MAINE-ANJOU

Maine-Anjou cattle are dark red and white in color. Some animals are roan in color. They have lightly pigmented skin. They are a horned breed with medium-size horns that curve forward. They are considered docile and easily handled.

BREED IDENTIFICATION



BRAFORD

The color of the Braford is red and shows a Hereford color pattern. The breed is about 5/8 Hereford and 3/8 Brahman. Calves grow rapidly and attain weaning weights of 500 to 800 pounds. The breed is noted for its superior maternal ability.



SCOTCH HIGHLAND (Highlander)

Scotch Highland cattle have a long, coarse outer coat of hair with soft, thick undercoat. The colors are black, brindle, red and light red, dun yellow and silver. Animals of this breed are hardy and excellent foragers.



SALERS

Salers are naturally polled and some are black in color. Salers cows are noted for their ease of calving and good maternal ability. Other characteristics include good foraging ability on poor range, high weaning weights and excellent carcass quality that meet the current market demand.



GELBVIEH (a big yellow cow)

This breed originated in Germany. They are solid cream to reddish yellow in color. These animals are known as a general-purpose breed with good milking abilities.

BREED IDENTIFICATION



ABEERDEEN-ANGUS
(a sleek, polled, black cow)

This breed originated in Scotland. These animals are polled with a black, smooth coat. They are known for their carcass quality, milking, mothering, and reproductive abilities.



LIMOUSIN
(a long, sleek cow)

This breed originated in the west-central part of France. They are solid-red to golden-red in color with lighter circles around the eyes and muzzle. When slaughtered at an early age, these animals yield a high percentage of lean meat with a minimum amount of fat.



SANTA GERTRUDIS
(a saggy, solid cherry red cow)

This breed was developed on the King Ranch in Texas. These animals are 5/8 Shorthorn and 3/8 Brahman. They are known for their growth rate, long life, and hardiness.



CHAROLAIS
(a big, white, pink-nosed cow)

This breed was developed in France and imported into the United States from Mexico in 1936. These animals are large and white. They are noted for their fast growth and lean meat.

BREED IDENTIFICATION



CHIANINA
(the biggest/tallest cow)

This breed was developed in Italy. These animals are white with black skin pigmentation. They are large. A mature bull can weigh up to 4,000 pounds and stand 6 feet tall. They are noted for their working, mothering, and beef producing abilities.



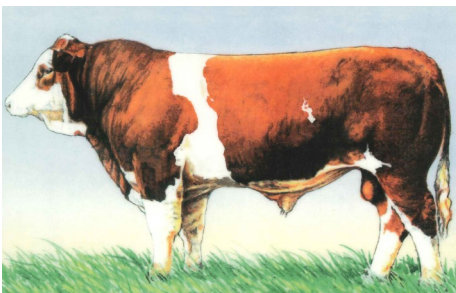
HEREFORD
(a white-faced cow)

This breed was developed in England and brought to the United States in 1817. These animals have red bodies with white faces. They are known for their foraging ability, vigor, hardiness and quiet dispositions.



SHORTHORN
(a red-and-white, red, white, or roan-colored beef cow)

This breed was brought to the United States from England in 1783. These animals can be red, white, or roan in color. They are noted for their good disposition, mothering and milking abilities.



SIMMENTAL
(a white-faced, yellowish red cow)

This breed was imported into the United States from Switzerland, France, and Germany. These animals have red to dark red, spotted bodies with white to light straw faces. They are noted for their fast growth and milking abilities.

BREED IDENTIFICATION

BRAHMAN



The Brahman breed was developed in the southwestern part of the United States. The major use of the Brahman is in crossing with other breeds. The color of the Brahman is light gray or red to almost black. In addition to the characteristic hump over the shoulders, they have loose skin under the throat and large drooping ears. Brahman cattle have a very high heat tolerance.

TEXAS LONGHORN **(a long-horned, rangy cow)**



This breed originated from Spanish Andalusian cattle. These animals have large horns and several different color patterns. They are known for their longevity, hardiness, strong survival instincts, and resistance to disease and parasites.

POLLED HEREFORD **(a white-faced cow without horns)**



This breed was developed in the United States from the Hereford breed. Except for the polled trait, these animals exhibit the same characteristics as the Hereford breed.

STRUCTURAL DIFFERENCES FRONT & REAR VIEWS

Front Leg Alignment



Bowlegged



Knock-kneed



Correct



Toed-out



Toed-in

Rear Leg Alignment



Bowlegged



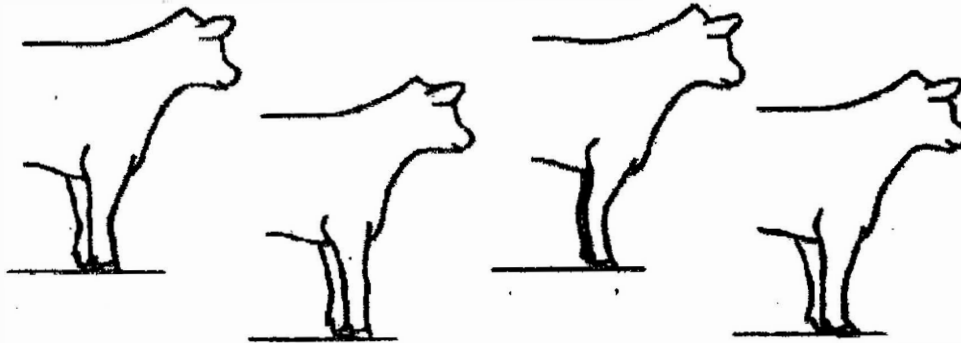
Correct



Cow-hocked

STRUCTURAL DIFFERENCES SIDE VIEWS

Front Leg Set



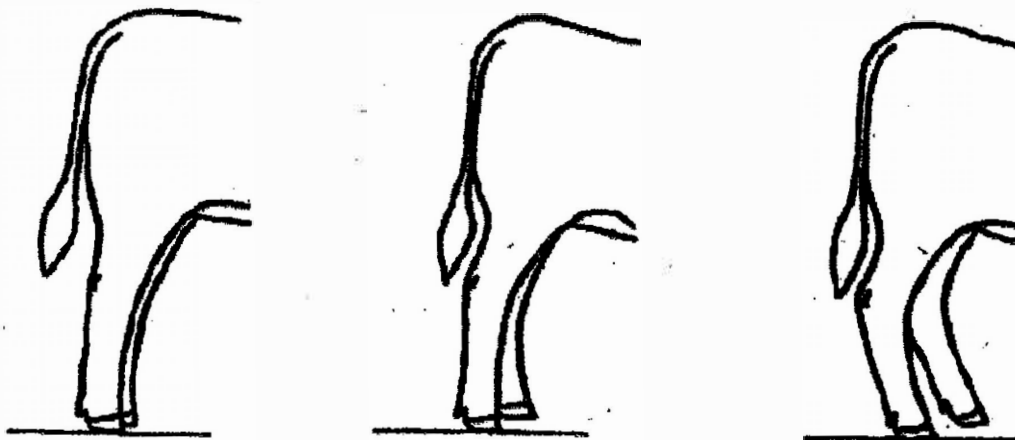
Correct

Buck-kneed

Calf-kneed

Weak Pasterns

Hind Leg Set



Post-legged

Correct

Sickie-hocked

STRUCTURAL DIFFERENCES DESCRIPTIONS

Buck-kneed	When the calf is "over at the knees" or buck-kneed, full extension of the knee cannot occur when observed from the side. This is usually seen in cattle that are also too straight in their shoulder.
Calf-kneed	This is the other extreme, where the calf stands "back at the knees" when viewed from the side.
Weak Pastern	Having an angle greater than 45 degrees in the pastern/h hoof alignment, putting too much pressure on the joint.
Postlegged	The hock has too little angle or set. The calf is too straight through the joint, resulting in very stiff, constricting movement because of the lack of flexibility. More cattle become unsound because of being postlegged than sickle hocked.
Sickle-hocked	When viewing the rear legs from the side, the hock has too much angle or set, causing the steer to stand too far underneath itself. Often these calves also will droop excessively from hooks to pins.
Bowlegged	When viewed from the front or rear, the knees set too far out.
Knock-kneed	When viewed from the front, the knees are close together.
Toed-out (splayfooted)	The feet toe out away from each other. This problem is often seen in extremely light-muscled, narrow-chested cattle, where the legs are naturally set too close together.
Toed-in (pigeon-toed)	Toes turn in towards each other.
Cow-hocked	When viewing the rear legs from the rear, the hocks are turned in or placed too close together.

Animal By-Products

Everything but the moo! Animal by-products are anything of economic value other than the carcass that comes from animals during harvest and processing. They are classified as edible or inedible for humans. There may be some disagreement about what is edible but we can all agree that there are many uses for what is left after the carcass is rolled into the cooler. In developing countries by-products may become jewelry, religious implements, tools, fuel, construction material, fly swatters, or musical instruments. In developed countries, advances in technology have created many products from non-animal sources (synthetics) which compete with animal by-products, thus reducing their value. Still, by-products represent multibillion dollar industries in the United States and other developed countries. An added benefit of changing inedible parts of carcasses into useful products is that the decaying materials don't pile up and cause environmental problems.

BONES/HOOVES/HORNS

adhesives
buttons
charcoal
football helmet
glue
pet food
glass
combs
shampoo & conditioner
piano keys
photo film

HIDE (HAIR & SKIN)

baseball
baseball mitt
belts
boots
candies
Insulation
football
gelatin
gummy bears
marshmallows
medicine
wallets
soccer ball
volleyball
paint brushes

FAT

antifreeze
bio-diesel
candles
cement
ceramics
chalk
chewing gum
crayons
deodorant
dish soap
fireworks
makeup
matches
oils & lubricants margarine
rubber
tires
paint
perfume

INTERNAL ORGANS/BLOOD

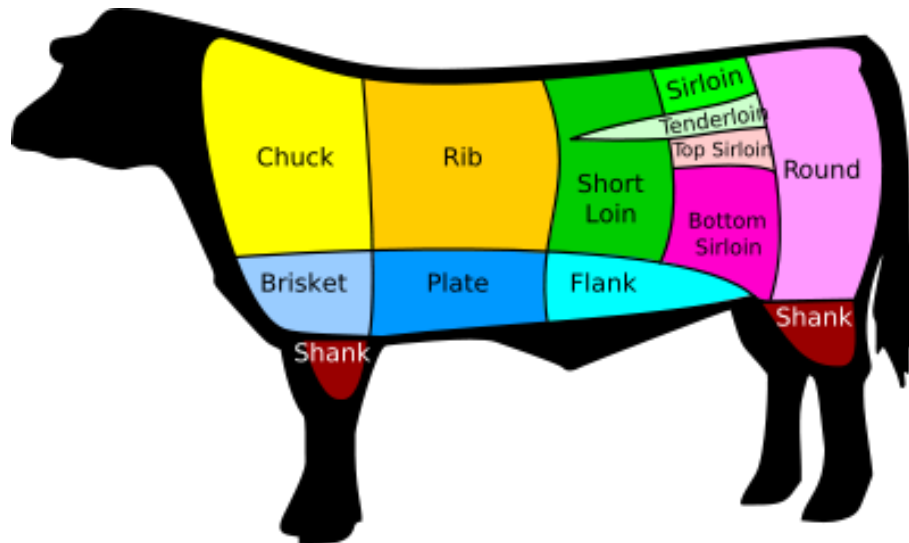
cake mixes
dyes & inks
insulin
medical sutures
medicines
tennis racket strings
instrument strings

MANURE

fertilizer

Wholesale Cuts of Beef

Fabrication of carcasses is the cutting of the carcass into wholesale and retail cuts for distribution to various markets. The size of the carcass and the preferences of the customer will determine how it is fabricated. For beef carcasses, wholesale cuts come from standard cutting methods developed to: a) Separate fat from lean portions b) Separate tough from tender sections c) Separate thick from thin sections d) Separate valuable from less valuable cuts e) Separate retail cuts by cutting across the grain.














Source: Wikimedia commons

Primal Cuts

Of the wholesale cuts, those that are lean, tender, thick, and valuable and that contain a large proportion of their muscles running in the same direction are called primal cuts. The **primal beef cuts are round, loin, rib and chuck.**

(Copied with permission from NCBA, "The Guide to Identifying Meat Cuts")

Shoulder Arm Cuts	 Arm Bone
Shoulder Blade Cuts (Cross Section of Blade Bone)	 Blade Bone (near neck)  Blade Bone (center cuts)  Blade Bone (near ribs)
Rib Cuts	 Back Bone and Rib Bone
Short Loin Cuts	 Back Bone (T-shape) T-Bone
Hip (Sirloin) Cuts (Cross Sections of Hip Bone)	 Pin Bone (near short loin)  Flat Bone (center cuts)  Wedge Bone (near round)
Leg or Round Cuts	 Leg or Round Bone
Breast or Brisket Cuts	 Breast and Rib Bones

COMMON LIVESTOCK TERMS

When working with cattle the following terms are important to know.

BULL	Intact male of cattle
COW	Female that has produced progeny in cattle
PROGENY	Offspring, young
CALF	Very young progeny
HEIFER	A female in cattle under three years old, which has not produced a calf
STEER	Male castrated prior to development of secondary sexual characteristics in cattle
CARCASS	The dressed body of a slaughtered meat animal, offal having been removed.
FINISH	Refers to the amount of external fat covering on an animal.
MARBLING	Refers to flecks of fat distributed within the muscle.
MILKING ABILITY	Refers to the amount of milk an animal can produce
HINDQUARTER	The rear half of a side of a carcass, divided between the 12 th and 13 th rib.
FOREQUARTER	The front half of a side of a carcass, divided between the 12 th and 13 th rib.
POLLED	Naturally hornless
PARASITES	Organisms living on other organisms - doing harm
CROSSBREEDING	Is the mating of two animals from different breeds.
HYBRID	The offspring produced from crossbreeding.

Feed Label Information

A commercial law requires each bag or bulk load to be accompanied by a label showing several key items:

- Net weight
- Product name and brand name
- Drug additives
- Guaranteed analysis of the feed – crude protein, crude fat and crude fiber must be guaranteed on all feeds except straight mineral or vitamin supplements, molasses or drug compounds.
- Minimum percentage of crude protein, percentage of equivalent protein from non-protein nitrogen, if any. The amount of crude or total protein in a feed is guaranteed. Crude protein is determined by multiplying the nitrogen content of a feed by the factor 6.25.
- When non-protein nitrogen (NPN) is applied to feedstuffs, a statement “for ruminants only” must appear underneath the name of the feed. Additionally, it must also have a guarantee for crude protein which has been supplied from non-protein nitrogen.
- Minimum crude fat content – Fat has an energy value approximately 2.25 times the value of carbohydrate feedstuffs.
- Maximum crude fiber content – Crude fiber is a measure of the indigestible or non-useful portion of a feed. Feeds having low fiber values tend to be higher in digestible energy or total digestible nutrients than those feeds having high fiber values.
- Minerals – feeds containing 6.5 percent or more minerals must show a guarantee of: calcium – minimum and maximum; phosphorous- minimum; salt – minimum and maximum
- Vitamins, only if guaranteed
- Common and usual name of each ingredient or the collective term for each grouping of feed ingredients
- Directions for use and cautionary statements
- Name and principle mailing address of the manufacturer

50 lbs net weight

Brand Name Show Feed
(for ruminants only)

Medicated

Feed for 28 days as an aid in the maintenance of weight gains in the presence of respiratory diseases, such as shipping fever.

Caution: Use only as directed.
Discontinue use 14 days prior to slaughter.

Active Drug Ingredients:
Chlortetracycline 7.6 grams/ton

Guaranteed Analysis

CRUDE PROTEIN, not less than 12%

This includes not more than 1.00% equivalent crude protein from non-protein nitrogen.

CRUDE FAT, not less than 2.0%

CRUDE FIBER, not less than 19%

Ingredients: Grain products, roughage products, plant protein products, processed grain by-products, forage products, molasses products, calcium carbonate, salt, vitamin E supplement, vitamin A supplement, ferrous sulfate, potassium iodide, manganese oxide copper chloride, cobalt glucoheptonate, vitamin D3 supplement, sodium selenite.

RUMINANT MEAT AND BONE MEAL FREE

FEEDING DIRECTIONS: Feed at the rate of 12 pounds per head per day.

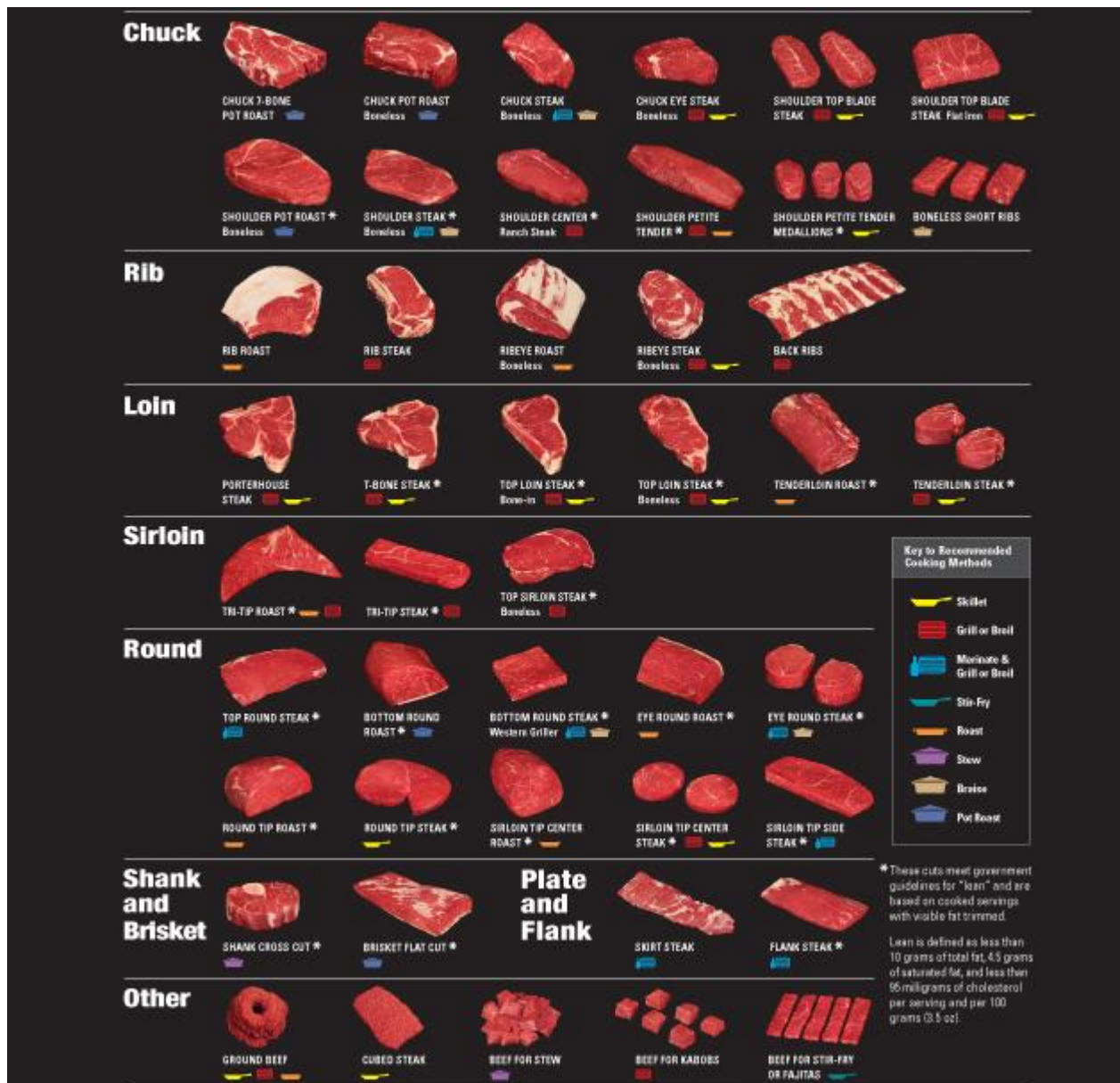
MANUFACTURED BY:
The Best Feed Company
P. O. Box 00000
Small Town, USA

Basic Livestock Terms

1. **Condition, Finish or Covering** – All are used to denote fat. The terms finish and covering are used to describe fat on market animals, while condition is used when describing breeding stock.
2. **Growthiness** – The characteristics of having size and weight at a certain age.
3. **Balance or Symmetry** – A proper proportion and blending of parts of the animal. Balance or symmetry is evaluated from a side view.
4. **Ruggedness, Stoutness** – The quality of being heavy or large boned. This is usually determined by the size of the cannon bone (from the knee to the ankle).
5. **Quality** – A general term that combines smoothness and refinement. Refinement of hair coat, freedom of wrinkles in hogs and freedom of roughness, patchiness in cattle indicates quality.
6. **Scale** – The size of the animal as determined by skeletal structure, independent of weight. The height, length and width of the animal.
7. **Style** – The general eye-appeal or attractiveness of the animal. Includes balance, structural correctness and quality.
8. **Broodiness** – Female breeding stock term that means she has a favorable combination of characteristics to be a good mother. Depth, capacity, prominence of teats and/or mammary system, stoutness and correctness of vulva.
9. **Breed Character** – Characteristics that separate breeding stock of one breed from other breeds, primarily by differences of the head: shape, length, dish of face, width of muzzle, shape of poll and ears; color markings and wool covering in sheep.
10. **Trimness** – Freedom from fat or finish.
11. **Meatiness/Muscling** – having a high proportion of muscle in the areas of the high-priced cuts. This is shown primarily by the relative width, length and fullness of the quarter, leg or ham, and by the thickness and fullness through the rib, rack or loin.
12. **Type** – A combination of characteristics that make an animal useful for a specific purpose. Determined by the general shape and form of an animal. Desirable types are constantly changing.
13. **Tight Framed** – The ability of the animal to hold itself together. Indicated by a strong top (back), tightness of shoulder and squareness of feet and leg placements.
14. **Structural Soundness** – The desirability or correctness of the skeletal structure with major emphasis on straightness of top and proper feet and leg structure.
15. **Femininity** – Characteristics that distinguish the female from the male. Indicated by refinement of the head, neck and shoulders.
16. **Masculinity** – Characteristics that distinguish the male from the female. Indicated by boldness or massiveness of head and chest, thickness of the neck and development of the forequarters.

Retail Cuts of Beef

At the retail markets, boxed cuts are used to generate retail cuts for the meat case. Different stores have their own styles for each cut in an attempt to meet customers' needs. Retail specifications include size or thickness of cut, external fat trim, boneless or bone-in, and number of cuts per package. Items generated other than steaks and roasts may include stir fry, kabob, cubing material, and grinding material for processed or value-added products. Labels on meat must be specific for species, wholesale cut and retail cut names (example: Beef Rib Steak). A printable chart for retail cuts can be found at: <http://www.beefretail.org/beefcutcharts.aspx>



Visit the grocery store and practice visually identifying retail cuts of beef or go to:

<http://aggiemeat.tamu.edu/meat-identification-pictures/>

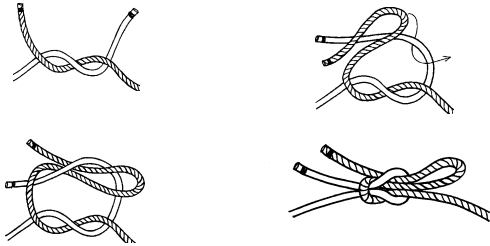
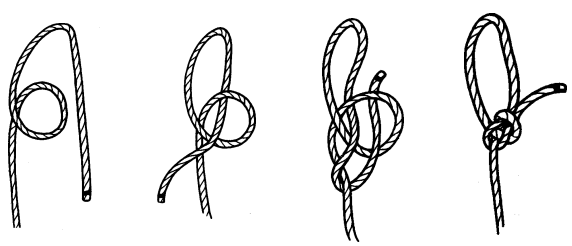
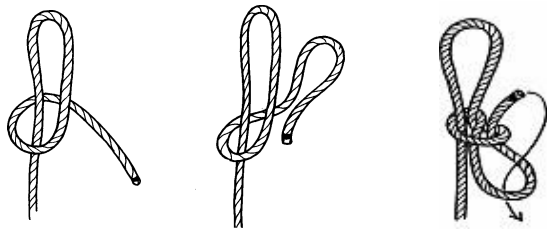
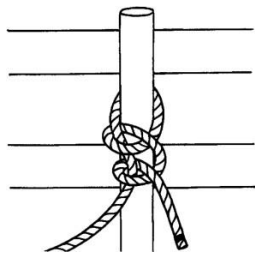
Knots for Livestock Handling

There are many circumstances in cattle handling that will require you to tie knots. Take the time to learn to tie several types of knots and hitches so that you will have the right knot for the right circumstance. Practice often so that it becomes second nature. In an emergency situation, you do not want to have to think about which knot to choose and how to tie it.

Knots join ropes together, attach ropes to a post or rail, or attach ropes to an animal.

Hitches are used to attach a rope to a post or rail - only thing securing the rope to post is the pressure of one rope coil wrapping upon the others.

Splices are used to permanently join ropes to one another - individual strands from each rope are interwoven with strands from the other.

	
<p>Reefer's Knot (<i>Quick-Release Square Knot</i>) A good non-slip knot for tying ends of rope together and can easily be released. An advantage is that it can be tied under tension - an important feature for a knot used to restrain livestock.</p>	<p>Bowline Knot A non-slip knot used to form a loop that will not tighten or draw down when placed around an animal's body or a post.</p>
	
<p>Quick-Release Knot The standard way to tie an animal to a post. A variation of a slipknot that can be released very quickly, even when under tension. This knot should never be tied around the neck or body of an animal.</p>	<p>Double Half Hitch A quick and easy knot which acts like a slipknot and is a convenient way to tie up the end of a rope.</p>