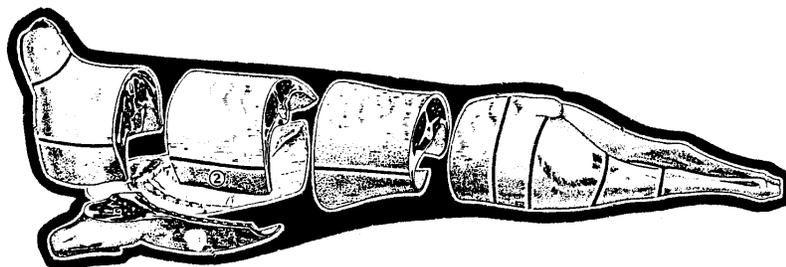
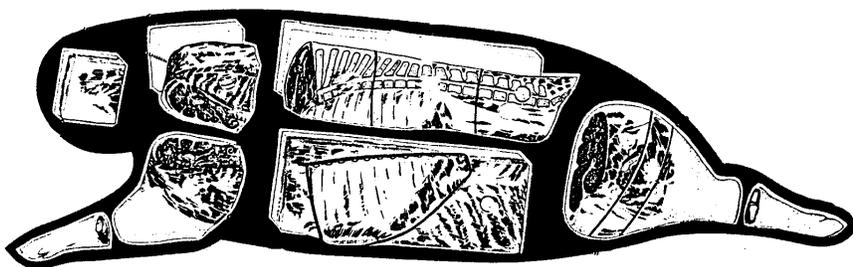
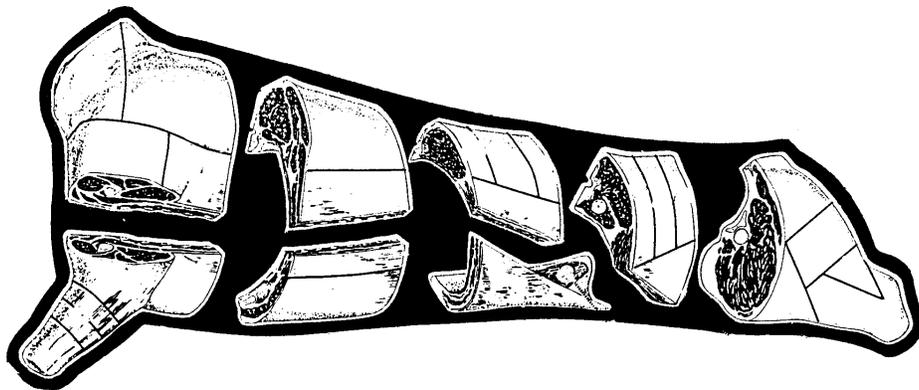


Meat Evaluation Handbook



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Acknowledgments:

Portions of this manual were developed from materials produced by the National Livestock and Meat Board, which is located at 444 North Michigan Avenue, Chicago, IL 60611.

Appreciation goes to the **Wyoming Beef Council** for financial help in publishing this manual and to the National Livestock Meat Board for permission to use their color separations for Section D.

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Issued in furtherance of Cooperative Extension work, acts of May 8 and June 30, 1914, in cooperation with the U.S. Department of Agriculture. Glen Whipple, Director, Cooperative Extension Service, University of Wyoming, Laramie, Wyoming 82071.

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Wyoming State 4-H Meats Evaluation Contest

Objectives

The meats evaluation contest is a learning experience developed to educate Wyoming 4-H youth with the following skills:

- Identifying and selecting quality meats
- Evaluating carcass, wholesale, and retail cuts for economical meat purchases and consumer appeal
- Understanding relationship between carcasses and live animals and raising more productive, economical livestock
- Developing decision-making and public speaking abilities

Contest rules

Each county may enter one senior division team (members 14 or older as of January 1) and one junior division team (members 13 or younger as of January 1) in the state contest. A county may enter as many individuals as it wishes.

A team consists of four members, with the lowest member's score dropped, or three members with all scores tallied.

Contestants will be allowed to have only a pencil and clip board in the judging area.

During the contest, contestants will be moved from class to class by groups.

Contestants will not be permitted to:

- Handle any exhibits
- Touch the lean cut surface of any exhibit
- Handle or touch cuts under any condition
- Talk to fellow contestants at any time during the contest
- Monopolize any exhibit for an unreasonable amount of time
- Separate themselves from the class in which their group is working
- Obstruct the work of any other contestant

Team members will be allotted 15 minutes per class and 30 minutes for retail cut identification. There will be 45 seconds per cut with remaining time used to go back and check answers.

Team members and coaches will go through the classes and hear official placings and reasons after the contest is completed.

Individual and team awards will be presented in both the junior and senior divisions.

State contest

The state contest consists of five different areas:

Retail meat cut identification 300 points

Identify 30 retail cuts (beef, pork, and lamb)

Identify species = 2 points

Identify primal cut = 3 points

Identify retail cut = 5 points

Carcass evaluation 150 points

Members will place three carcass classes consisting of four beef carcasses, four pork carcasses, and four lamb carcasses.

Carcasses should be evaluated on:

Cutability - fat depth and percent of kidney, pelvic, and heart fat

Muscling - rib eye area and expression of muscling throughout the carcasses

Quality - marbling, color, and maturity

Wholesale cut evaluation 100 points

Members will place two classes (four cuts per class) of wholesale cuts, one from beef and one from pork. They will include beef chucks, beef ribs, beef loins, beef rounds, or fresh hams.

Wholesale cuts are evaluated on:

Cutability - fat depth and seam fat

Muscling - amount of lean meat

Quality - marbling, color, and texture

Retail cut evaluation 50 points

Members will place one class (four cuts per class) of retail cuts. They may be beef rib steaks, t-bone steaks, chuck roasts, or pork chops.

Cuts should be evaluated on:

Cutability - fat cover

Muscling - greatest amount of meat

Quality - marbling, color, and texture of lean and fat

Oral reasons 150 points

Only senior division 4-H members will give reasons. They will give three sets of oral reasons on carcasses, wholesale cuts, or retail classes.

Lessons for leaders

Lesson 1: Correlations between live animals and carcasses Location of wholesale cuts

Purpose: Leaders will teach the correlations between the live animals and carcasses of beef, sheep, and swine. Furthermore, they will show the location of the wholesale cuts.

Material needed:

- Slide set S-B-62 “Wholesale Cuts.” The slides can be ordered from:
Ag Resource Center,
PO Box 3313,
Laramie, WY 82071-3313.
- Handout 1 in Section C of this manual.
- Handout 2 in Section C of this manual.

(If you do not have a slide projector and screen, borrow one from your UW County Extension Service Office.)

Suggested procedure:

“A live beef, sheep, or hog goes through several processing steps before you can buy, cook, and eat your favorite roast, steak, or chop. First, an animal is slaughtered and becomes a beef, lamb, or pork carcass. A carcass is then cut into primal cuts. Look at the location of the primal cuts on the live animal.”

The leader should show slides 1, 2, and 3, pointing out the location of each wholesale cut on the beef, sheep, and hog.

“Look at the same primal cuts and their location on the beef, lamb, and pork carcasses.”

The leader should show slides 4, 5, and 6, pointing out the primal cuts, and then help the members relate the carcass to the live animal.

Slide 7: “You are going to become meat cutters and will cut this beef carcass into eight primal cuts. The first thing you need to do is count the number of ribs. Always count from the front (anterior end) to the back (posterior end) of the carcass. Did you count 13 ribs? Make the first cut between the 12th and 13th ribs, perpendicular to the backbone. This quarters the carcass, separating the forequarter from the rear quarter.”

Slide 8: “The next cut will be between the 5th and 6th ribs, perpendicular to the backbone. This cut separates the chuck from the rib.”

Slide 9: “The third cut will be through the tail bone, pelvic bone, and the anterior end of the round bone, perpendicular to the backbone, separating the loin from the round.”

Slide 10: “Now make a cut just above the joint between the fore shank and the arm bone all the way back to the bottom of the third cut, parallel to the backbone. Slightly curve the cut toward the posterior end. This breaks the brisket, shank, and flank primal from the other primal parts.”

Slide 11: “Now fill in the wholesale cut names—chuck, shank, brisket, rib, plate, loin, flank, round.”

Now, the leader should ask the members for questions.

Slide 12: “You have cut the largest carcass into primal cuts. Now work on a pork carcass. Again, count the ribs. Did you count 13? The first cut this time will be between the 2nd and 3rd rib, perpendicular to the backbone. This is the cut that separates the shoulder from the loin.”

Slide 13: “The next cut will be made at the anterior end of the fourth sacral vertebrae (tail bone) at an angle down to the side, breaking the loin from the leg or ham.”

Slide 14: “The last cut will be made starting at the first cut just under the blade bone. Draw the line parallel to the backbone, back to the second cut made. This cut separates the side (belly) from the loin.”

Slide 15: “Label the wholesale cuts—shoulder, loin, side (belly), leg.”

Again, the leader should ask the members for questions.

Slide 16: “Two down, one to go. Count the ribs on the lamb carcasses. Thirteen again? This time make the first cut end at the anterior end of the hip bone, perpendicular to the backbone. This makes the primal cut called the leg.”

Slide 17: “The next cut will start at the joint between the fore shank and the arm bone. Run it parallel to the backbone, with a slight curve toward the posterior end to the bottom of the first cut made. This cut separates out the shank and breast from the carcass.”

Slide 18: “Make the next cut between the 5th and 6th ribs, perpendicular to the backbone, down to the second cut made. This particular cut makes the shoulder.”

Slide 19: “The last cut will be between the 12th and 13th ribs, perpendicular to the backbone, down to the second cut made. This particular cut makes the primal cuts called the rib and the loin.”

Slide 20: “Label the wholesale cuts—shoulder, breast, rib, loin, leg.”

Next, leaders can ask the members for any questions. Now that members have drawn in the primal cuts, give them Handout 2, the “Beef, Pork, and Lamb Carcass Charts,” to take home to practice drawing in and naming the primal cuts. At the next practice give members the carcass charts and again have them draw in and label the primal cuts of each species.

Lesson 2: Species of retail cuts

Purpose: Leaders will teach members how to identify the species of retail cuts.

Materials needed:

- Slide set S-B-56 “Retail Cut Identification”
- Handout 3 found in Section C of this manual
- The booklet “101 Meat Cuts” for each member

Suggested procedure:

Leaders should review the primal cuts of beef, pork, and lamb with the members and pass out Handout 3 “Guide to Meat Identification.”

“Determining the species of a retail cut is the first step in the identification process. With a little practice, identifying the species is quite easy and can be helpful in the other two steps of the identification process.”

“One of the ways to distinguish whether the species is beef, pork, or lamb is by the size of the cut or how large or small the bone and muscle structures are.”

“Beef cuts will have the largest bone and muscle structures and lamb will be much smaller. Pork cuts will be somewhere in between.”

“In the first picture, notice the round bone near the center of the cut. Look at the muscle structure. There are four main muscles in these certain cuts—the top round, bottom round, eye of round, and top or knuckle. Notice the differences in the size of these cuts from beef (largest), pork (smaller), and lamb (smallest). The name of the cuts differs somewhat, but you can tell by the muscle structure and the shape of the bones that this cut is a cross section of the leg or round bone in all three species. (In beef, the tip muscle is often removed leaving just the top and bottom and eye of round muscles.)”

“What wholesale cut would this come from in beef, pork, and lamb?”
(beef - round; pork - leg; lamb - leg)

“The next picture shows a cross section of the back and hip bone. Again, notice the muscle structure—two prominent muscles and a third, smaller muscle. This is a sirloin steak or chop. (In beef, several different bones distinguish the various types of sirloin steak.)”

“From what wholesale cut would the sirloin come?”
(beef - loin; pork - loin; lamb - leg)

“The third picture should be one you all recognize. The T-shape of the backbone is found in the T-bone or porterhouse steaks of beef and in the loin chops of pork and lamb. Notice the two large muscles—the loin-eye and the tenderloin muscle.” “In beef, the T-bone steak is characterized from the porterhouse steak by measuring the tenderloin muscles. In the T-bone, the tenderloin muscle diameter must be no less than ½ inch when measured across the center of the tenderloin. In the porterhouse steak the diameter of the tenderloin muscle must be no less than one and one-fourth inch when measured across the center of the tenderloin.”

“From what wholesale cut does this come?”

(beef - loin; pork - loin; lamb - loin)

“The rib steak or chop is easy to identify because of the rib, feather, and chine bones exposed on the bottom side. The main muscle is the rib eye.”

“From what wholesale cut does the rib steak or chop come?”

(beef - rib; pork - loin; lamb - rib)

“The next cut might be confused with one you have already seen—the round. What is different about this cut? This is a cross-cut of the arm bone and of the rib bones on the bottom. There are three main muscles. In this cut, you will usually find more intramuscular fat (that is, fat between the muscles, also referred to as seam fat).”

“From what wholesale cut does the arm steak or chop come?”

(beef - chuck; pork - shoulder; lamb - shoulder)

“The sixth picture is another cut that usually contains intramuscular fat. The main bone to look for is the blade bone, which is similar to your shoulder blade. Parts of the rib and backbones appear in beef and lamb cuts. Again, there are three main muscles.”

“From what wholesale cut does the blade steak or chop come?”

(beef - chuck; pork - shoulder; lamb - shoulder)

“The last picture shows you how to identify the brisket or breast. Notice all the rib bones.”

“If you learn to identify the main bones and muscles, you should have no trouble identifying retail cuts.”

“Another way to identify species is by the color of the lean and fat.”

(Leader should now show a slide of a beef cut.)

“Beef will be bright and cherry red in color. The fat of beef will be bright white, hard in texture, and flaky.”

(Leader should now show a slide of a pork cut.)

“Pork lean will be greyish-pink in color when fresh, and if smoked, it will be light pink. The fat cover of fresh pork will be bright white but softer than beef fat and will be slightly more oily in texture. Smoked pork fat will have a light brown edge.”

(At this point, the leader should show a slide of a lamb cut.)

“The muscle of lamb is a reddish pink color. The fat also is white in color but is much firmer than pork fat.”

Suggested exercises:

Leaders can mix up 15 to 20 slides and let members practice identifying species. Discussing the differences in the cuts and how you can tell the difference between species will help the members learn more identification skills.

(If actual cuts can be obtained to show the difference in color and size, it would be beneficial to members.)

Lesson 3: Beef retail cuts

Purpose: Leaders will teach members how to identify beef retail cuts.

Materials needed:

- Beef portion of the “101 Meat Cuts” identification booklet
- Beef slides from slide set S-B-56

Suggested procedure:

Leaders should review the primal cuts of beef.

Next, leaders may choose to take each primal cut and discuss with members that retail cuts come from the various primal cuts. For example, the leaders can start with the round and show each retail cut that comes from the round. Next, they can discuss distinguishing points about each cut that will be helpful to identify and progress to the loin, rib, chuck, brisket, plate, and flank, using the same method.

After going through cuts once, leaders can quickly go through them again, starting with the round and progressing forward toward each primal cut. This will reinforce where the primal cuts were obtained from.

Now, leaders should see if there are any questions. The members should study the cuts at home. At the next session, leaders may mix up beef cuts and have members identify the beef retail cuts and from what primal they are taken.

Lesson 4: Pork retail cuts

Purpose: Leaders will teach members how to identify pork retail cuts.

Materials needed:

- Pork portion of “101 Meat Cuts” identification booklet
- Pork slides from slide set S-B-56

Suggested procedure:

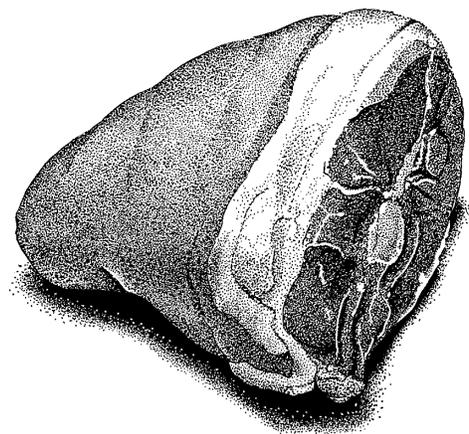
Leaders may elect to quiz members over all the beef primal and retail cuts learned in the last lesson.

Leaders should review the primal cuts of pork.

Starting with the leg (or ham) primal, leaders should discuss the retail cuts that come from this area. They can then review distinguishing muscle and bone structures that will help identify retail cuts and advance to the loin, shoulder, side (belly), and spareribs. After discussing these retail cuts and where they are located, leaders should go through them again briefly and answer the members' questions.

Members should study these pork cuts at home along with the previously learned beef cuts.

At the next meeting, leaders may want to mix pork cuts in with a few beef cuts and have members identify the species, primal, and retail cuts. Thirty cuts at a meeting is usually a sufficient number to do each week. Twenty cuts is sufficient the first few times with younger members.



Lesson 5: Lamb retail cuts

Purpose: Leaders will teach members how to identify lamb retail cuts.

Material needed:

- Lamb section of the “101 Meat Cuts” identification booklet
- Lamb slides from slide set S-B-56

Suggested procedure:

Leaders can quiz members on beef and pork cuts studied in previous lessons.

Leaders should review lamb primal cuts.

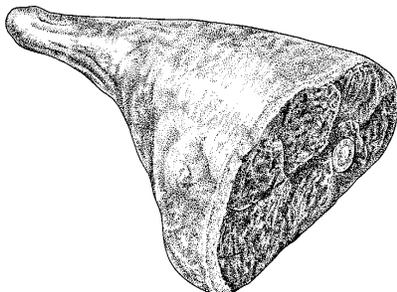
Starting with the leg, leaders should discuss the retail cuts coming from this primal and the factors, like muscle and bone structure, that help identify these cuts. Then, they can proceed to the loin, rib, shoulder, and shank using the same procedure.

After going through these primal and retail cuts, leaders should quickly review them and answer members’ questions.

At the following practices, the leaders can mix the cuts from all species and let members gain experience identifying. Reviewing a variety of these cuts (30 cuts) each week will help members become precise in identification.

Two other possible exercises to train members in identifying cuts include:

- Have an experienced meat cutter cut beef, pork, and lamb carcasses for members. This will help members see how the retail and primal cuts fit together to make the whole carcass. This should be done after members have studied the first five lessons and have some knowledge in identifying cuts. This can be done at three different sessions—one for each species.
- Go to local supermarkets and study cuts at the meat counter. This will help members see the difference in bone and muscle size and color of lean and fat. Since each cut will look slightly different than the slides, it will give members a chance to identify actual cuts of meat.



Lesson 6: Evaluation of beef carcasses

Purpose: Leaders will teach members how to evaluate beef carcasses on cutability and quality and demonstrate how the value and consumer appeal of a carcass is determined.

Materials needed:

- Parts of a beef carcass found in Section D
- Quality and yield grades of beef found in Section E and F
- Beef carcass class slide set S-B-36

Suggested procedure:

The leader should go through the parts of the carcass with members, showing them each part of the carcass on a slide.

“When evaluating a beef carcass, select a high cutability carcass that is high in quality (will grade Choice). A beef carcass must grade Choice, and Choice is determined by the amount of marbling found in the rib-eye muscle.”

Leaders can refer to the section on beef quality on page E-1 in this handbook and discuss the aspects of quality with the members.

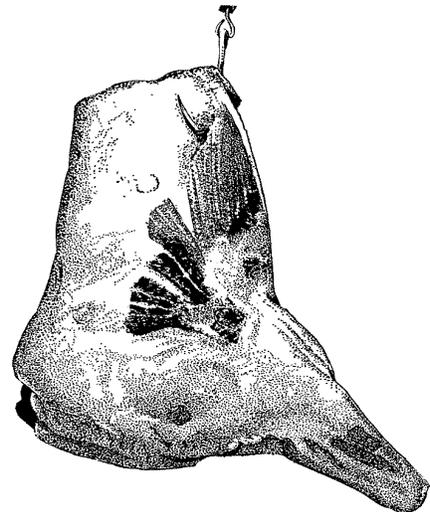
“After determining if a carcass grades Choice, look at the cutability or yield grade of the carcass. Cutability is the amount of boneless, closely trimmed, retail cuts found in the round, loin, rib, and chuck. In other words, the carcass that will give the most red meat with the least fat to be trimmed away and still grade Choice.”

Leaders can review the yield grade section with the members.

“These are the points to look for when evaluating a beef carcass.”

Trimness or least waste over the:

- Round
- Sirloin
- Loin
- Rib-eye External
- Lower rib
- Chuck
- Inside round
- Cod or udder
- Kidney
- Pelvic Internal
- Heart
- Brisket



Muscling in the:

- Round
- Sirloin
- Rib-eye
- Chuck

Quality of the:

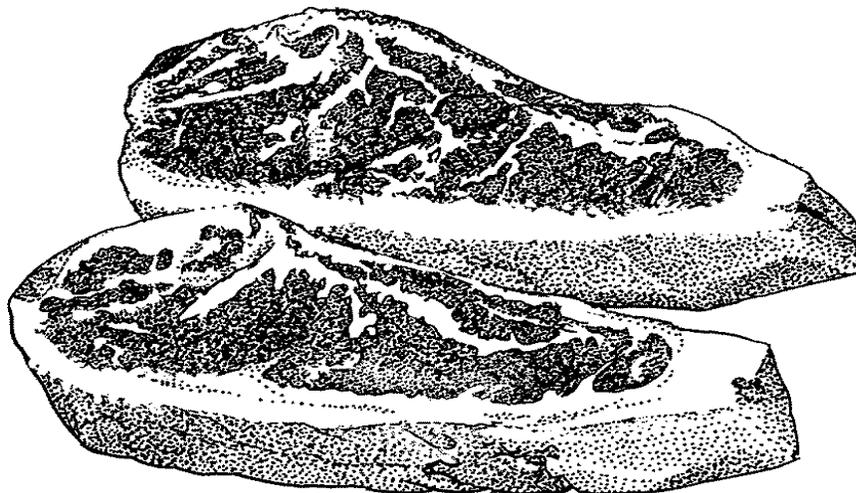
- Amount of marbling in rib-eye
- Color of lean
- Texture of lean
- Color and texture of fat cover

“Your top carcass should be a trim, heavily muscled carcass that is acceptable to high in quality. Therefore, a lower placing carcass may have more waste, be lighter muscled, lower in quality, or a combination of these three traits.”

Another factor leaders may want to teach members when judging carcasses is the difference between heifer and steer carcasses. A heifer carcass will have udder fat that is very smooth, while a steer carcass will have cod fat that is rough. This is the easiest way to tell the difference in the sex of a carcass.

Leaders should have the members practice judging beef carcasses from the slide sets available from the UW CES Bulletin Room.

If there is access to a locker plant, leaders and members would have the advantage of practicing on real carcasses. Things are much easier to evaluate when members can actually see the entire carcass.



Lesson 7: Evaluation of pork carcasses

Purpose: Leaders will teach members how to evaluate pork carcasses on trimness, muscling, and quality.

Materials needed:

- Parts of a pork carcass found in Section D
- Pork grades from Section F
- Pork carcass class slide set S-B-36

Suggested procedure:

Leaders should point out to members various parts of the pork carcass, showing each part on the slide.

“When evaluating a pork carcass, select a carcass that is trim from ham to shoulder, heavily muscled, and high quality. Unlike beef, pork does not have to make a certain grade but must meet some standards of quality.”

“The muscle should be greyish-pink in color and firm in texture. The loin-eye area also should reveal some marbling. Pork that is very pale or very dark should be criticized. Also, muscle that is very soft and watery is objectionable and should be dropped down in placing.”

Leaders can refer to pork grading materials to further explain the grading of pork and evaluation of quality.

“The trimness and muscling of the carcass are most important factors in judging pork carcasses.”

“Here are the points to look for when judging pork carcasses.”

Trimness (or least waste) over the:

- Ham collar
- Last lumbar vertebrae
- Last rib
- Loin-eye (if ribbed)
- Lower rib (if ribbed)
- First rib
- Shoulder
- Side
- Sternum

Muscling in the:

- Ham
- Lumbar lean (especially if the carcass is not ribbed)
- Depth of chine
- Loin-eye (if ribbed)
- Shoulder

Quality of the:

- Marbling (loin-eye if ribbed and feathering between ribs or streaking in flank)
- Color
- Texture

“Your top carcasses should be trim, heavily muscled, and acceptable in quality. Lower placing carcasses may have less waste, be lighter muscled, or poorer in quality, or a combination of any of these three traits.”

Again, leaders may want to teach members the difference in the sex of a carcass. The method for determining the sex of a pork carcass is explained under pork yield grades in Section F.

Leaders should have members practice judging pork carcasses from slides.

If there is access to actual pork carcasses, leaders should use them for training practices. They are much easier to see and compare than slides.

Lesson 8: Evaluation of lamb carcasses

Purpose: Leaders will teach members how to evaluate lamb carcasses based on cutability, muscling, and quality.

Material needed:

- Parts of a lamb carcass found in Section D
- Quality and yield grades of lamb found in Section E and F
- Lamb carcass classes slide set S-B-36

Suggested procedure:

Leaders should discuss the parts of a lamb carcass with members by pointing them out on the slides.

“Cutability is a main factor in selecting top lamb carcasses. Muscling also plays an important part in an outstanding carcass. Although quality is important in lambs, they seldom do not make Choice grade. Consequently, in judging a class of lambs, trimness and muscling are evaluated first, as most

lambs are Choice or Prime in quality.” Leaders can then review quality and yield grade of lambs found in the circular from Section E and F.

“Here are some points to look at when evaluating a lamb carcass.”

Trimness (or less waste) over the

- Leg
 - Sirloin
 - Loin
 - Loin-eye
 - Lower rib
 - Shoulder
 - Cod or udder
 - Breast
 - Flank
 - Kidney
 - Pelvic
- External fat
- Internal fat

Muscling in the:

- Leg
- Sirloin
- Loin-eye
- Shoulder

Quality of the:

- Marbling (if ribbed)
- Flank streaking (if unribbed)
- Color
- Texture

“The top carcass should be a trim, heavily muscled carcass, while a lower placing carcass may have excess fat cover, lighter muscle, or both.”

Once again, the leaders may want to explain the difference between wether and ewe carcasses. As in beef, the wether carcass will have cod fat that is very rough, while a ewe carcass will have udder fat that is very smooth.

Leaders should have the members start practice judging lamb carcasses using slides.

If there is access to actual lamb carcasses, leaders may want to use them for training and practicing. They are much easier to evaluate than slides.

Lesson 9: Wholesale cuts of beef

Purpose: Leaders will teach members how to evaluate beef wholesale cuts that include the round, loin, rib, and chuck. Leaders also should teach members the parts of these cuts.

Material needed:

- Parts of the wholesale cuts found in Section D
- Classes of each cut on slide set S-B-36
- Sections on quality and cutability if review is needed

Suggested procedure:

Leaders can discuss with members the parts of each of the wholesale cuts. (Leaders may want to do only two cuts at a practice and divide this lesson into two different sessions.) Leaders should explain each part thoroughly with members so they understand the parts.

After explaining parts, the leaders should discuss with members the most important things to look for when evaluating cuts.

“Let’s start with the loin and rib wholesale cuts. These are know as the quality cuts, because like the beef carcass, they should grade Choice. This is determined by evaluating the amount of marbling in the loin-eye in loins and the rib-eye in ribs. Quality in the sirloin face of loins or the blade face of ribs also is important, but quality grade is determined by the amount of marbling in the eye. One should also consider color, texture, and uniformity of marbling when looking at quality.”

“The following are factors to consider when evaluating beef loins.”

Trimness (or least waste) over the:

- Loin-eye
- Rib end
- Flank edge
- Short loin
- Sirloin-short loin junction
- Sirloin
- Sirloin face
- Top sirloin
- Bottom sirloin (knuckle)
- Amount of seam fat (fat between the muscles of sirloin face)

Muscling in the:

- Width and depth of loin-eye
- Depth of chine
- Width of short loin
- Meatiness of sirloin
- Meatiness of top sirloin
- Meatiness of bottom sirloin (knuckle)

Quality of the:

- Marbling in loin-eye
- Marbling in sirloin face
- Dispersion of marbling in both ends
- Color of lean
- Texture of lean
- Color of fat

“Your top place loin should grade Choice and be a trim, heavily muscled cut. Lower placing loins may have more waste, lighter muscle, poorer quality, or a combination of these three traits.”

Leaders should review a class of beef loins either on slides or an actual class if it is available.

“The beef rib is evaluated much the same as a beef loin. Top place ribs should be high in quality, trim, and heavily muscled. Lower placing ribs may have more fat trim, lighter muscle, poorer quality, or a combination of these three traits.”

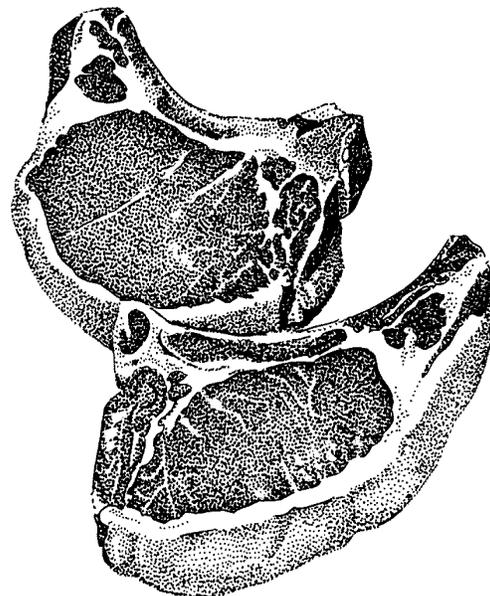
“Here are some points to consider in beef ribs.”

Trimness (or least waste) over:

- Rib-eye
- Lower rib
- Rib ends
- Back
- Lower black
- Blade face
- Top blade
- Amount of seam fat in blade face

Muscling in the:

- Rib-eye
- Depth of chine
- Width of back
- Blade face (depth and meatiness)
- Top blade
- Lower blade
- Eye of the blade face



Quality (in both ends) of the:

- Marbling
- Color
- Texture
- Dispersion of marbling

Leaders should have members review a class of ribs on slides or an actual class if it is available.

“Beef rounds and chucks are not considered quality cuts. Therefore, you do not need to worry if they grade Choice in your placings. However, you should notice marbling to mention in your oral reasons or to help make a decision on a close pair. Trimness and quantity of muscling are the two most important factors in rounds and chucks.”

“Here are some factors to consider when evaluating beef rounds.”

Trimness (or least waste) over the:

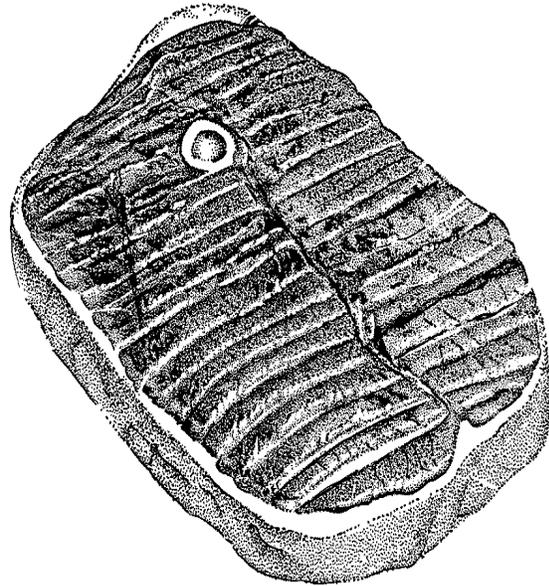
- Round face (sirloin end)
- Tip (knuckle)
- Rump
- Seam fat
- Cod
- Pelvic cavity
- Cushion
- Heel

Muscling in the:

- Tip (knuckle)
- Rump
- Depth and width of round face
- Length of cushion
- Depth of cushion
- Width of cushion

Quality of the:

- Marbling
- Color
- Texture



“A top place round should be higher in cutability, more heavily muscled throughout, and higher quality. A lower placing round may have more waste, lighter muscle, poorer quality (very soft muscled or very poor color), or a combination of these three traits.”

With the members, leaders should examine a class of rounds on slides or actual meat if it is available.

“Beef chucks are evaluated much the same as rounds. A top chuck will be high in cutability, heavily muscled, and acceptable in quality. A lower placing chuck may have more waste, lighter muscle, or poorer quality. If this is the case, the chuck will be very soft muscled or extremely poor in color.”

“Here are some factors to consider when placing a class of chucks.”

Trimness (or least waste) over:

- Arm face
- Cross ribs
- Clod or chuck
- Neck clod region
- Blade face
- Rib-ends
- Seam fat in both faces

Muscling in the:

- Depth and width of arm face
- Depth and width of blade face
- Meatiness of cross cut
- Depth of clod or chuck
- Size of the eye in the blade face

Quality of the:

- Marbling (both faces)
- Color
- Texture

Lesson 10: Evaluation of pork legs (fresh hams)

Purpose: Leaders will teach members the important factors for evaluating wholesale cut pork legs and teach members the parts of the pork leg.

Material needed:

- Parts of a pork leg found in Section D
- Class of pork legs slide set S-B-36

Suggested procedure:

Leaders should review parts of the pork leg with members. During the review, leaders can discuss important things to evaluate when placing a class of pork legs.

“A pork leg should be trim, heavily muscled, and acceptable in quality. A good quality leg will be greyish-pink in color, firm in muscle texture, have some marbling, and be free of excess water. A poor quality leg will be either pale or dark in color, loose in muscle structure (showing muscle separation), low in marbling, and have extra water seeping from the muscle. When a leg has water seeping from the muscle it is called weeping.”

“A severe problem in pork quality is often called pale, soft, and exudative (PSE). This is when the leg or other meat is very pale in color, soft in muscle structure, and has an excessive amount of water seeping from the muscle. Often the muscle and water will be all over the table if the leg is PSE.”

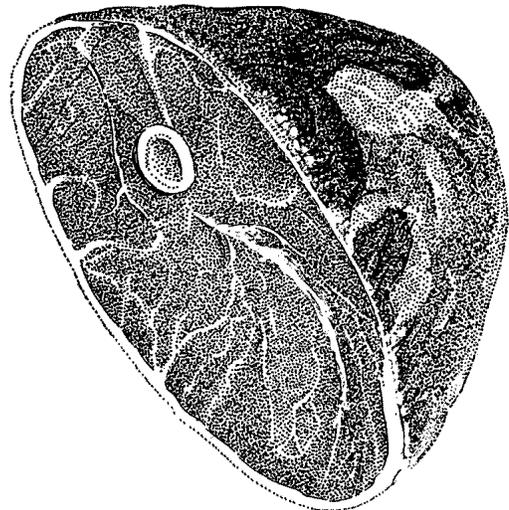
“This condition is caused by an animal being highly susceptible to stress. However, this kind of meat is not often seen in a contest.”

“One should pay close attention to the quality of pork, and if it is acceptable, make final decisions on trimness and muscling.”

“Factors to consider when placing a class of legs include:”

Trimness (or least waste) over:

- Ham collar
- Cushion
- Fore cushion
- Underneath the butt face
- Alongside the butt face
- Seam fat



Muscling in the:

- Length of cushion
- Depth of cushion
- Bulge of cushion
- Meatiness of fore cushion
- Depth of butt face
- Width of butt face

Quality of the:

- Color
- Uniformity of color
- Firmness of texture
- Marbling
- Free of excess moisture

Leaders should have members place a class of pork legs, either from slides or actual meat if it is available.

Additional information:

Giving oral reasons on carcass and wholesale cuts of each specie is important in the meats evaluation program. They are helpful for developing speaking skills, organizing thoughts, and supporting their decisions.

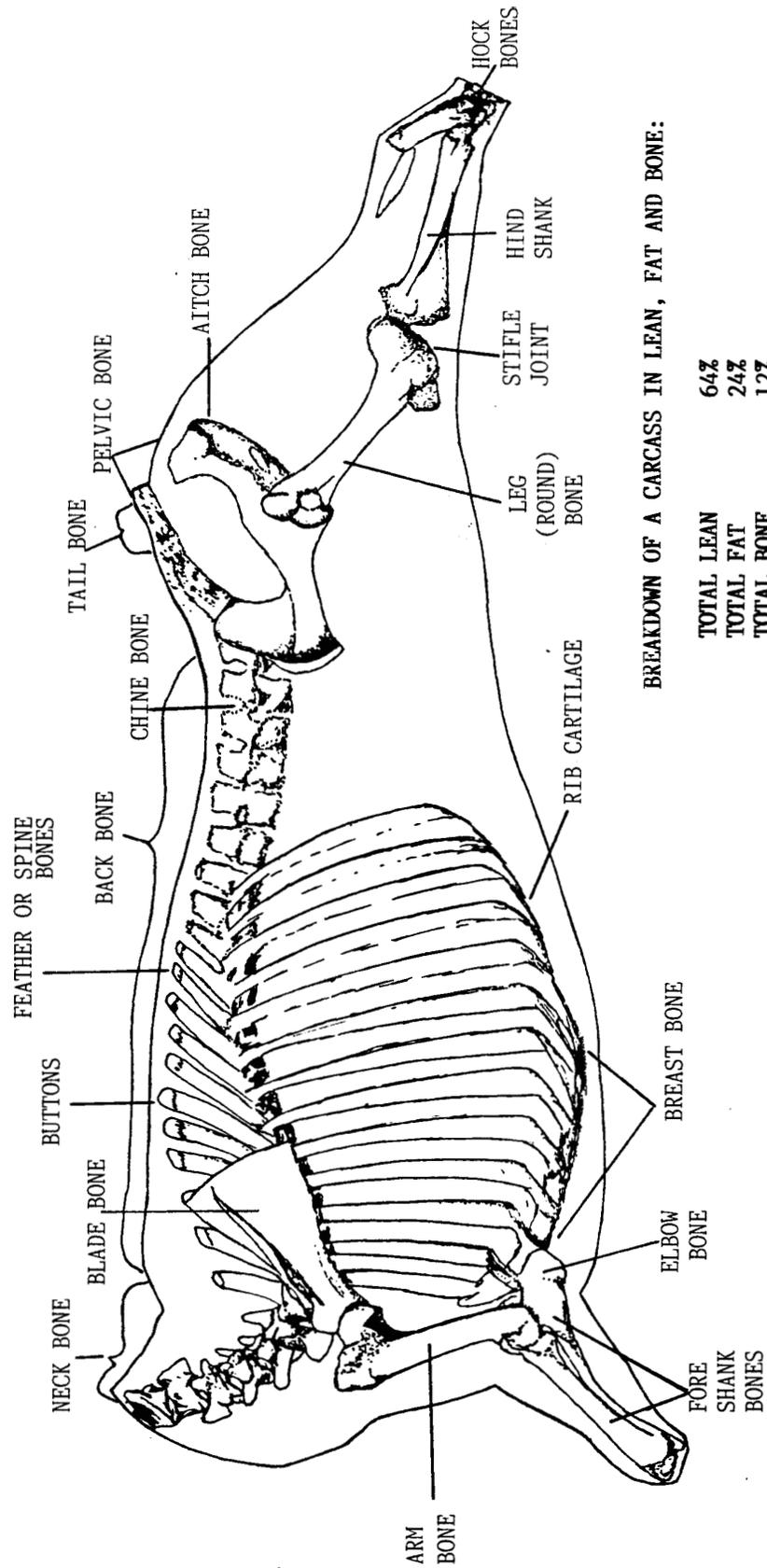
This handbook contains a section to help members with oral reasons (see Section G). Examples for each specie are provided in both carcasses and wholesale cuts.

The diagrams on the following pages show the similarity of cuts from different meat animals. The bone and muscle structures offer the key for identification.

Meat identification consists of classifying the cut as beef (largest cuts), lamb (smallest cuts), or pork (medium cuts). It also includes naming the primal cut from which the retail cut was obtained.

The information sheets and meat charts give further help.

Handouts

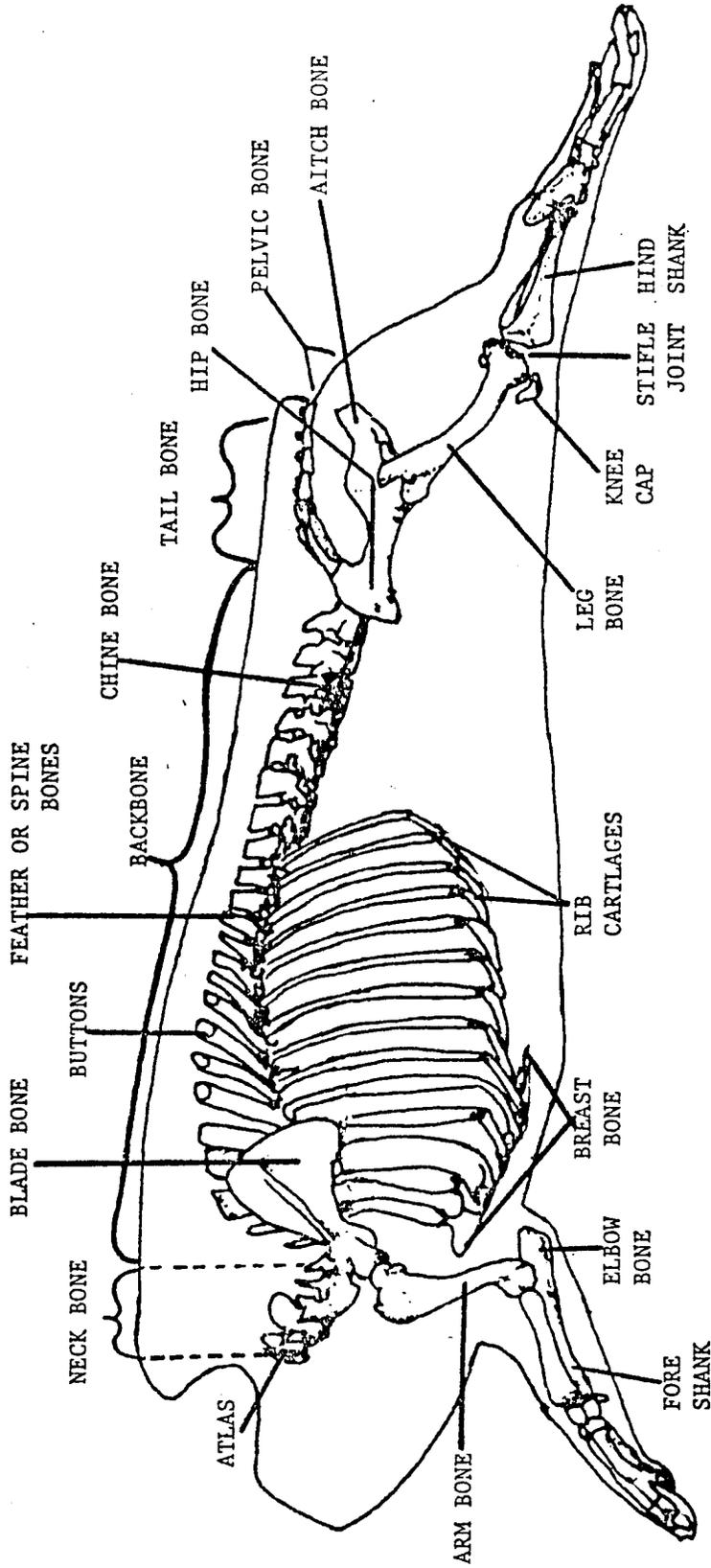


BREAKDOWN OF A CARCASS IN LEAN, FAT AND BONE:

TOTAL LEAN	64%
TOTAL FAT	24%
TOTAL BONE	12%

(The above figures are for average grade and weight in their species)

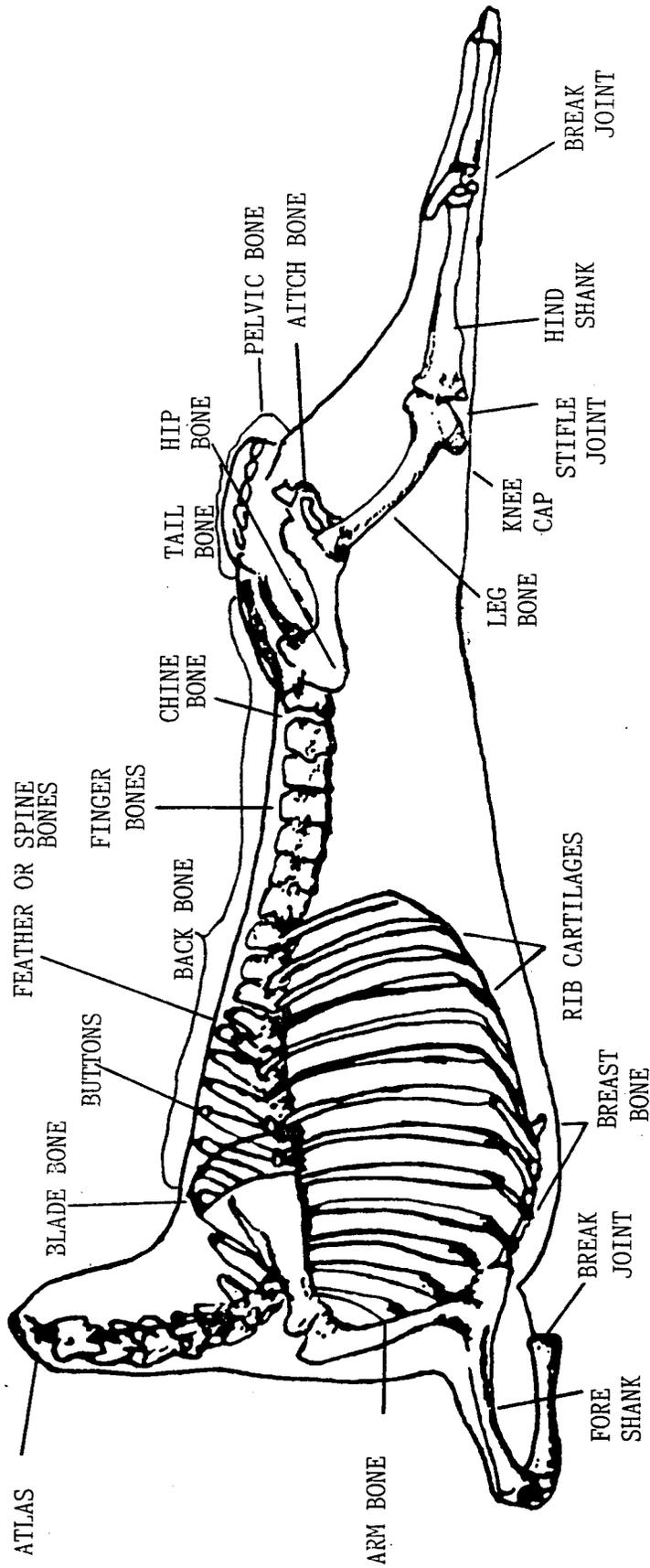
BEEF



BREAKDOWN OF A CARCASS IN LEAN, FAT AND BONE:

TOTAL LEAN	52%
TOTAL FAT	38%
TOTAL BONE	10%

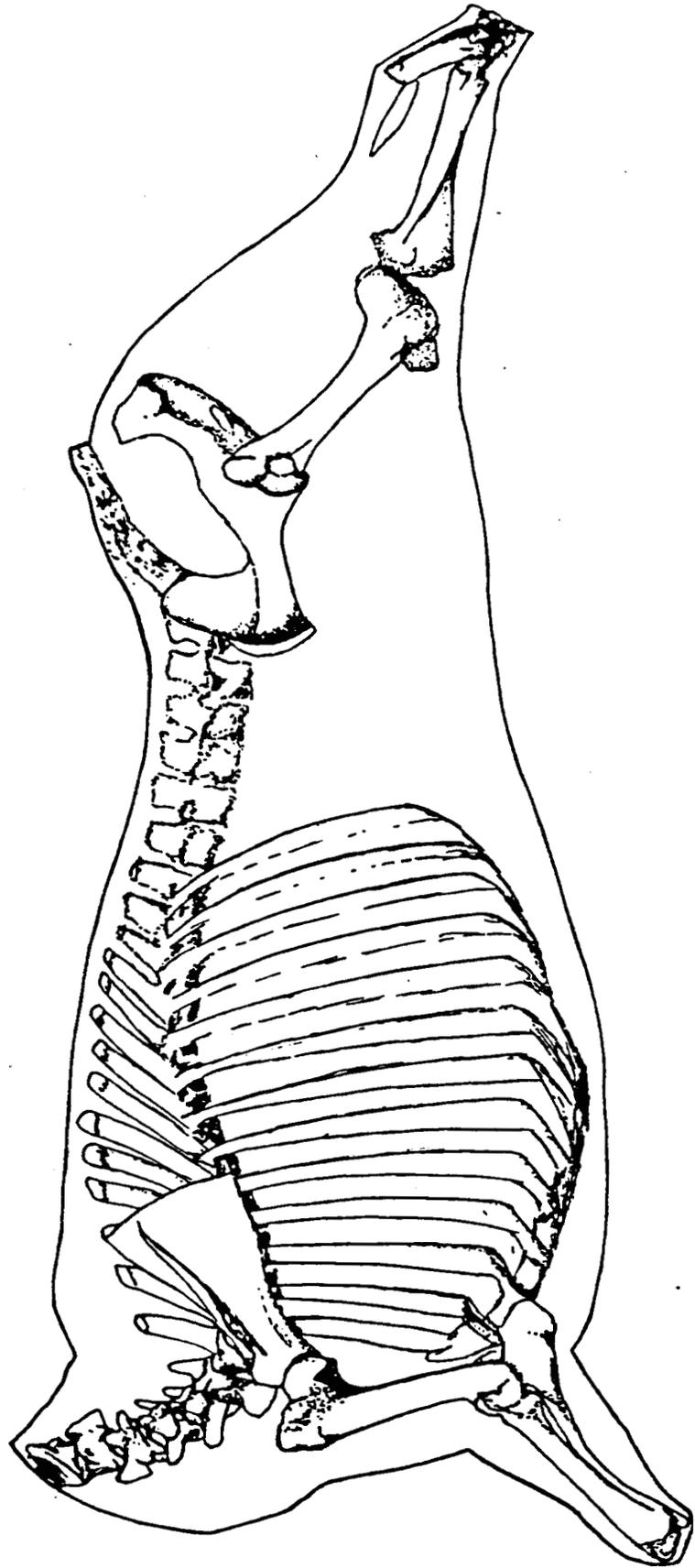
PORK



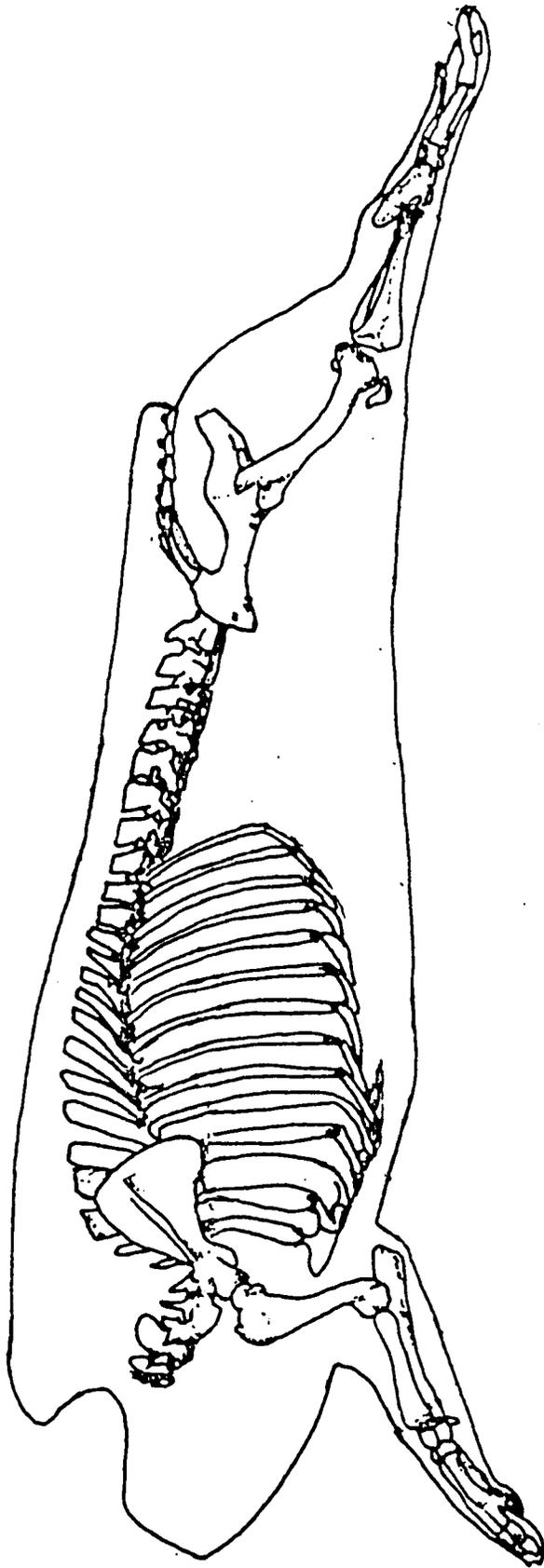
BREAK DOWN OF A CARCASS IN LEAN, FAT AND BONE

TOTAL LEAN	50%
TOTAL FAT	30%
TOTAL BONE	20%

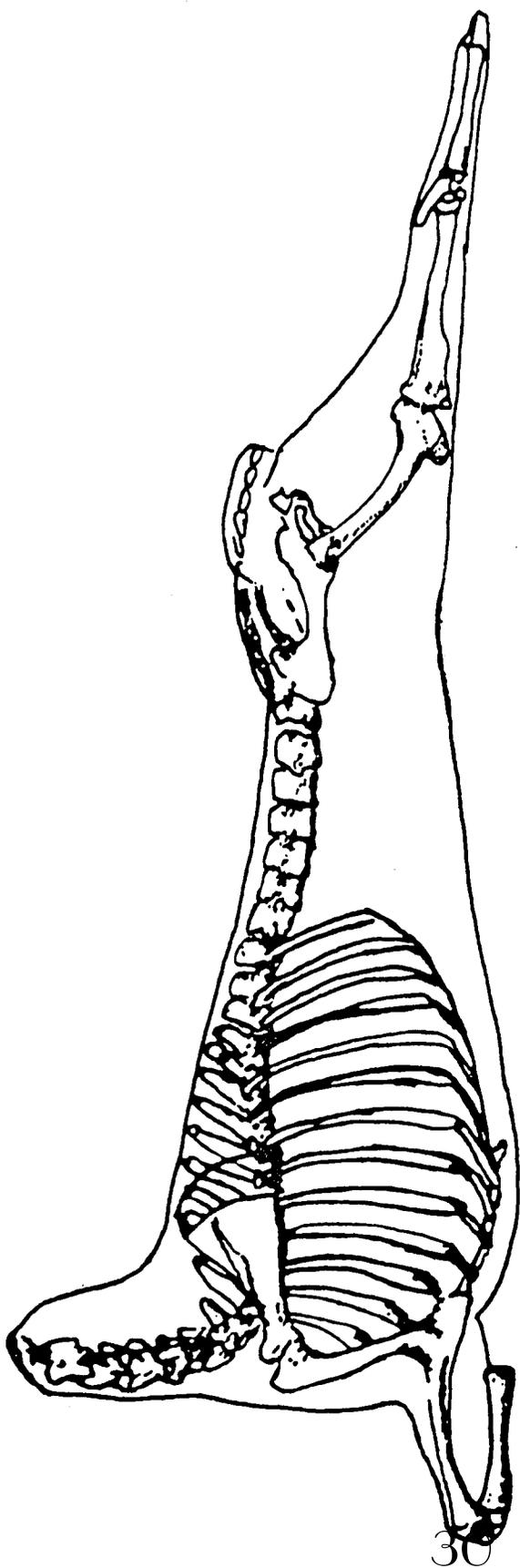
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BEEF



PORK



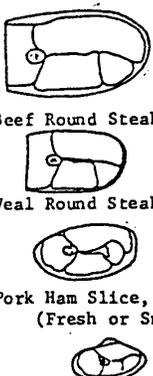
LAMB

GUIDE TO MEAT IDENTIFICATION

The diagrams on the following pages show the similarity of cuts from different meat animals. The bone and muscle structure offer the key for identification.

Meat identification also consists of classifying the cut as beef (largest cuts), lamb (smallest cuts), or pork (about half way between) and also naming the wholesale cut from which the retail cut was obtained.

The information sheets and meat charts give further help in identification.

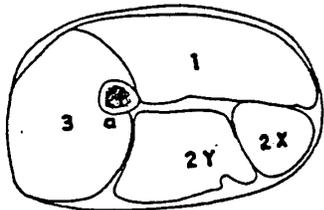


Beef Round Steak

Veal Round Steak (Cutlet)

Pork Ham Slice, Center Cut
(Fresh or Smoked)

Lamb Leg Steak, Center Cut



Bone

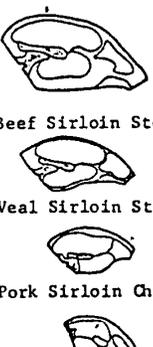
a. Round or leg
(Smallest in center cuts)

Muscles

1. Top (inside) round or leg
2. Bottom (outside) round or leg
(X) Eye of round or leg
(Y) Bottom round or leg
3. Tip (knuckle)

Other features

Oval shape
Separating lines of connective tissue and fat between muscles.

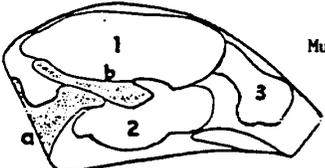


Beef Sirloin Steak

Veal Sirloin Steak

Pork Sirloin Chop

Lamb Sirloin Chop



Bones

a. Back Wide variation in shape

b. Hip

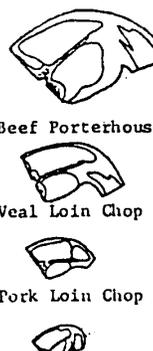
Muscles

1. Top sirloin
2. Tenderloin Wide variation in shape
3. Tip (knuckle)

This muscle is replaced by flank in steaks and chops cut across forward end of hip bones

Other features

Muscles in area (3), in some steaks and chops, appear to have been cut with grain of meat.

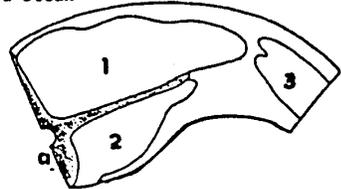


Beef Porterhouse or T-Bone Steak

Veal Loin Chop

Pork Loin Chop

Lamb Loin Chop



Bone

a. Back (T shape)

Muscles

1. Loin eye or strip
2. Tenderloin (larger in Porterhouse than in T-bone)
3. Flank (tail of steaks and chops)

Other Features

Beef club steak looks very much like Porterhouse or T-bone except that it contains no tenderloin



Beef Rib Steak



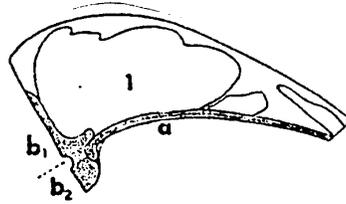
Veal Rib Chop



Pork Rib (Loin) Chop



Lamb Rib Chop



Bones

- a. Rib (Steaks and chops cut between ribs do not have this bone)
- b. Back (B₁) Feather (B₂) Chine

Muscles

- 1. Rib-eye (continuation of loin eye muscle)

Other Features

Steak and chops near chuck or shoulder have thin layer of meat over rib-eye called rib cover.



Beef Arm Steak



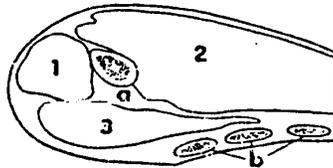
Veal Arm Steak (Chop)



Pork Arm Steak (Chop)



Lamb Arm Chop



Bones

- a. Arm
- b. Rib cross cuts (in all cuts except pork)

Muscles

- 1. Small round forearm muscle completely surrounded with connective tissue.
- 2. Arm (thick end of clod or outside shoulder)
- 3. Brisket or middle rib

Other Features

Although cuts from round and arm look somewhat alike, a close comparison shows a wide difference in muscle structure. Cuts from round contain no cross cut rib bones



Beef Blade Steak



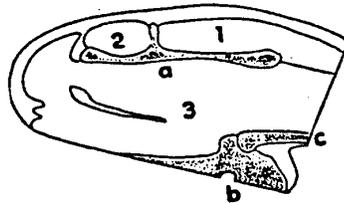
Veal Blade Steak



Pork Blade Steak



Lamb Blade Steak



Bones

- a. Blade
- b. Back (in all cuts except pork) Rib (in all cuts except pork unless made between ribs)

Muscles

- 1. Outside chuck (thin end of clod or shoulder)
- 2. Chuck tender
- 3. Inside chuck

Other Features

Muscles of inside chuck (3) run in different directions



Beef Brisket (1) and Short Plate (2)



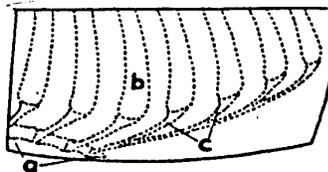
Veal Breast



Pork (Side Pork and Bacon)



Lamb Breast



Bones

- a. Breast (except in pork)
- b. Ribs (except in pork)
- c. Rib cartilage (except in pork)

Muscles

- a. Alternating layers of lean and fat

Other Features

Breast of veal and lamb are comparable to plate and brisket sections of beef Side pork (bacon before curing and smoking) comes from same area in pork as preceding cuts come from in beef, lamb, and veal

Side pork and bacon are sold boneless. Bones (spareribs) were removed in packing plant.

Colored pictures

Quality of beef, pork, and lamb

Quality of beef

Quality of red meat cuts is important to the consumer. Quality affects the palatability characteristics of tenderness, flavor, and juiciness in prepared meats and consumer appeal of cuts at the meat counter. Factors that are considered when determining beef quality include: maturity, marbling, texture of lean, firmness of lean, and color of the lean and fat.

Maturity. The age of an animal when slaughtered is closely related to its eating qualities. In young carcasses, the split dorsal processes of the vertebrae are red, porous, and tipped with large amounts of soft, pearly white cartilage, especially in the thoracic vertebrae. As the animal ages, these parts of the skeleton become harder and whiter, and the white cartilage “buttons” become ossified. These changes in ossification (hardening of bones) are first noticed in the posterior portion of the vertebral column (sacral vertebrae). As the animal matures, the ossification process progresses to the lumbar vertebrae, the posterior thoracic vertebrae, and then to the anterior thoracic vertebrae. In other words, ossification starts at the tail of the animal and progresses to the front.

In very mature carcasses, all of the cartilage on the anterior thoracic vertebrae are completely ossified. Generally, a progressive change in the color of the lean occurs as the animal matures. Veal lean is characterized by a pale pink color, whereas yearling cattle lean is a bright cherry red color. A mature animal’s lean is usually a deep, dark red color.

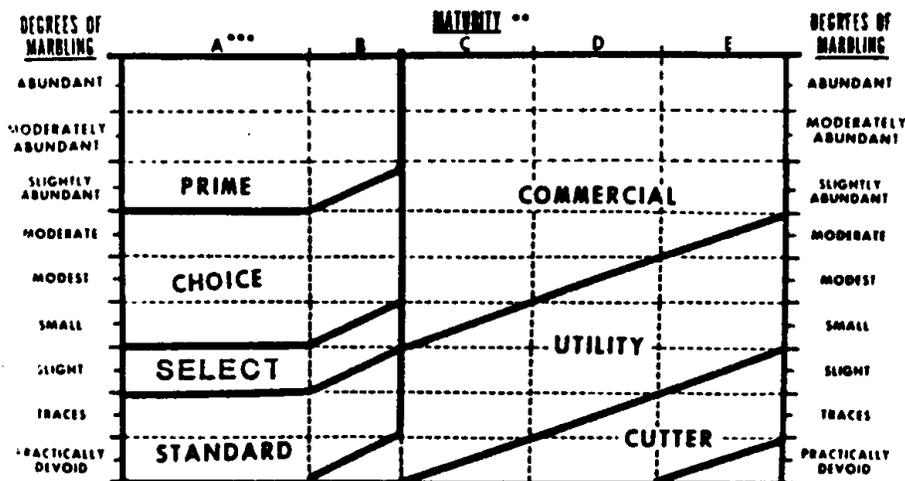
Marbling. (See Sections D and F) A beef carcass is usually split between the 12th and 13th ribs. This divides the forequarter from the hindquarter of the carcass. When this is done, the rib-eye muscle is exposed. This muscle is where marbling of the carcass is evaluated.

Marbling is the tiny specks of fat found within the lean of the rib-eye. These particles of fat help make meat more juicy and flavorful. Therefore, some marbling is desired in the meat product. A fine, uniform dispersion of marbling is preferred over coarse marbling. Marbling is also important in evaluating wholesale and retail cuts of beef.

The degrees of marbling include: abundant, moderately abundant, slightly abundant, moderate, modest, small, slight, traces, and practically devoid. Abundant is the greatest amount of marbling and practically devoid the least. (See Section D for the differences in these degrees of marbling.)

The degree of marbling, in conjunction with maturity, determines the quality grade of a carcass. The various quality grades include Prime, Choice, Select, and Standard for young animals and Commercial, Utility, and Cutter for older animals. It is preferred to have an animal grade Choice for the purpose of palatability. The following is a chart that shows how quality grade is determined in beef using marbling and maturity.

RELATIONSHIP BETWEEN MARBLING, MATURITY AND CARCASS QUALITY GRADE



- *Assumes that firmness of lean is comparably developed with the degree of marbling and that the carcass is not a "dark cutter."
- **Maturity increases from left to right (A through E.)
- ***The A maturity portion of the figure is the only portion applicable to bullock carcasses.

Texture. Texture of the lean refers to the prominence of muscle bundles observed in the cut surface of the lean. Fine-textured lean will have few, if any, visible muscle bundles bound by connective tissue. Coarse-textured lean will have many visible bundles that are bound by heavy connective tissue. Usually, less connective tissue in the muscle results in a more tender product than lean that has more connective tissue. Most often, mature beef will have more connective tissue than younger beef.

Firmness. Firmness of lean and fat also is part of beef quality. A firm textured lean is most preferred. Often a soft textured lean will have an excessive amount of moisture and is called "weepy." This type of meat will be less attractive to the consumer. Other objectionable qualities are coarse marbling, heavy bands of connective tissue, and coarse stringy appearance of the lean.

The fat should be firm and free from a greasy or oily appearance.

Color. Color of lean and fat also is an important aspect of beef quality. A change in color generally occurs as an animal matures. A yearling animal will produce lean with a bright, cherry red color, but as the animal matures, lean will become a deep, dark red color.

A white or creamy white fat color is preferred. A yellow color is objectionable to the consumer, although yellow color is not a severe problem. Yellow color is due to the concentration of fat-soluble carotenoid pigments in the fat caused by age, diet, and breed of animal.

Carcass maturity and marbling within the rib-eye are main factors that determine beef quality. However, color, texture, and firmness of fat may or may not alter the final quality grade.

Quality of pork

The factors that influence the quality of pork are the color of lean and fat, texture of meat and fat, and marbling.

Color. The ideal lean coloring of pork is greyish-pink. It is preferred that the meat be uniform in color. In contrast to the ideal, color of lean may vary from ash grey to dark red. In various cuts a two-toned color may exist where muscles closest to the bone are generally darker than other muscles. A more uniform color provides a more appealing product to the consumer.

Texture. The texture of pork also is important in the quality of the meat. A firm, fine texture of lean is preferred. Objectionable textures include coarse and stringy lean with little or no marbling distributed within the muscle. However, the most severely criticized pork texture is lean that is soft, watery, and very pale in color. This is often referred to as weepy or pale, soft, and exudative (PSE).

Marbling. Marbling is evaluated in the loin-eye area. The quality of an unribbed carcass is determined by the amount of feathering (streaks of fat) in the rib cage or flank streaking. Marbling or the amount of finely distributed specks of fat found within the lean, is used to evaluate the quality of wholesale and retail cuts of pork. However, excessive amounts of marbling are as objectionable as no marbling.

The fat of pork should be firm, white, and dry. A soft, oily fat cover is undesirable and lowers the quality of the pork.

Quality of lamb

When observing lamb carcasses, methods of evaluating meat quality may vary depending upon whether the carcass is ribbed or unribbed. Ribbed is when the carcass has been split between the 12th and 13th ribs exposing the rib-eye muscle. Unribbed is when the carcass is left whole. However, the following factors help in evaluating quality: color of lean and fat, firmness of lean and fat, marbling and/or flank streaking, and maturity.

Color. The color of lamb should be a bright, reddish pink. If the animal is ribbed, look at the color in the rib-eye. If the carcass is unribbed, examine color of the lean in the flank and thoracic cavity. Color is an indication of maturity, so as the animal grows older the lean will become darker. This darker lean is less appealing to the consumer.

Firmness. Firmness of lamb is important for a high quality product. As in beef and pork, a soft, coarse texture of lean is quite inferior to a firm, fine texture. A fine texture will appear smooth and velvety, while a coarse texture will be rough in appearance.

Marbling. Marbling found in the rib-eye muscle is a quality indicator in lamb. The amount, distribution, and texture of marbling can easily be seen in the muscle if the carcasses is ribbed. If unribbed, quality must be evaluated by flank streaking. Flank streaking is the amount of fat found within the flank muscle. The more streaking, the higher the quality of the lamb. Although streaking is an indicator of marbling, research has shown that it is not a particularly accurate predictor of marbling. It is best to evaluate lamb quality by examining the rib-eye.

Maturity. Maturity is another important factor in the quality of lamb. The maturity of lamb is usually determined by the break joint or the spool joint. When dressing lamb carcasses, the foot and pastern are removed at the ankle. There is a round or spool joint on the lower end of the cannon bone. A break joint is located immediately above the spool joint at the zone of bone growth. Growth in this zone stops when cartilage ceases to regenerate and is ultimately replaced by bone. Until an animal reaches 12 to 14 months of age, it is possible to remove the foot at the break joint. These two types of joints are major marks of distinction between lamb and mutton carcasses.

Young lambs that are five to six months old show considerable redness in the break joint, have narrow and round ribs and show a lot of redness in the shank. In lambs approaching 10 to 12 months, the shank bones are whiter, ribs are broader and flatter, and the break joint is whiter and more brittle.

Since younger carcasses have a milder flavor and are generally more tender, they are preferred over the older lamb carcasses.

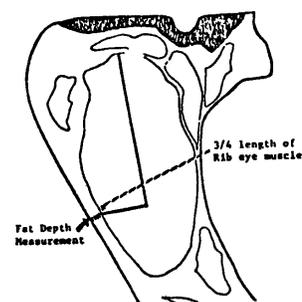
Yield grades of beef, pork, and lamb

Yield grades of beef

Yield grades identify carcasses for differences in cutability. Cutability refers to yield of boneless, closely trimmed retail cuts from the round, loin, rib, and chuck. There are five yield grades numbered 1 through 5. Carcasses in Yield Grade 1 have the highest degree of cutability, while carcasses in Yield Grade 5 have the lowest cutability. Yield grades for beef carcasses are applied without regard to sex or quality grade.

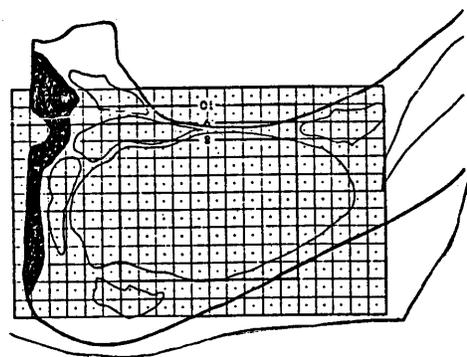
The yield grade of a beef carcass is determined by considering four characteristics: amount of external fat; amount of kidney, pelvic, and heart fat; area of the rib-eye muscle; and hot carcass weight.

External fat. The amount of external fat on a carcass is evaluated in terms of thickness of fat over the rib-eye muscle. Measure perpendicular to the outside surface at the point three-fourths of the length of the rib-eye, from its chine bone end. This measurement may be adjusted to reflect unusual amounts of fat on other parts of the carcass. In many carcasses no such adjustment is necessary; however, an adjustment of as much as two-tenths of an inch is not uncommon. In some carcasses, an even greater adjustment may be necessary.



Kidney, pelvic, and heart fat. Fat in the kidney knob (kidney and surrounding fat), lumbar and pelvic fat in the loin and round, and heart fat in the chuck and brisket area that is normally removed in making closely trimmed retail cuts, are evaluated subjectively and expressed as a percent of the carcass weight. A carcass with an average amount of fat in these locations would equal about 2.5 percent of the hot carcass weight. Carcasses that are extremely trim with regard to internal fat may have as low as 1 percent kidney, pelvic, and heart fat, while extremely wasteful carcasses may have as much as 4.5 to 5.5 percent kidney, pelvic, and heart fat.

Rib-eye muscle. The area of the rib-eye is determined where this muscle is exposed by ribbing between the 12th and 13th ribs. This area may be subjectively evaluated or it may be measured with the use of a grid or other measuring device.



Hot carcass weight. The hot carcass weight usually can be obtained from a tag on the carcass.

The yield grades can be determined by the following method. Members can determine a “preliminary yield grade” by tenths (2.1, 3.3, 3.5, etc.) using the following schedule as a guide.

Thickness of fat over the rib-eye	Preliminary yield grade	Thickness of fat over the rib-eye*	Preliminary yield grade
0.2 inch	2.5	1.0 inch	4.5
0.4 inch	3.0	1.2 inch	4.5
0.6 inch	3.5	1.4 inch	5.5
0.8 inch	4.0	1.6 inch	6.0

**These measurement should be adjusted as necessary to reflect unusual amounts of fat on other parts of the carcass.*

Members can determine the final yield grade (105) by adjusting the preliminary yield grade as necessary. For variations in area of rib-eye, members can adjust the yield grade by using the schedule shown below.

Hot carcass weight (lbs)	Area of rib-eye (sq. in.)	Hot carcass weight (lbs)	Area of rib-eye (sq. in.)
350	8.0	675	11.9
375	8.3	700	12.2
400	8.6	725	12.5
425	8.9	750	12.8
450	9.2	775	13.1
475	9.5	800	13.4
500	9.8	825	13.7
525	10.1	850	14.0
550	10.4	875	14.3
575	10.7	900	14.6
600	11.0	925	14.9
625	11.3	950	15.2
650	11.6	975	15.5
		1000	15.8

Here is the guide to rib-eye area for other weights of carcasses between the 25 pound gradations.

Hot carcass weight (lbs)	Area of rib-eye (sq. in.)	Hot carcass weight (lbs)	Area of rib-eye (sq. in.)
600	11.0	600-608	11.0
625	11.3	609-616	11.1
		617-624	11.2
		625-633	11.3

The rate of adjustment for area of rib-eye in relation to weight is:

- For each square inch more than the area indicated in the weight area of the rib-eye schedule, subtract 0.3 of a grade from the preliminary yield grade.
- For each square inch less than the area indicated in the weight area of the rib-eye schedule, add 0.3 of a grade to the preliminary yield grade.

The rate of adjustment for percent of kidney, pelvic, and heart fat is:

- For each percent of kidney, pelvic, and heart fat more than 3.5 percent, add 0.2 of a grade to the preliminary yield grade.
- For each percent of kidney, pelvic, and heart fat less than 3.5 percent, subtract 0.2 of a grade from the preliminary yield grade.

The following are several examples of how to determine a yield grade of beef.

Example 1

Fat depth	Preliminary yield grade	Hot carcass weight	Required rib-eye area	Actual rib-eye area	Percent kidney, heart, and pelvic fat	Final yield grade
0.4	3.0	725	12.5	13.0	2.5	2.7

The first step is to determine the preliminary yield grade of 13.0. As the chart indicates, a fat depth of 0.4 equals a preliminary yield grade of 3.0. Next, determine the required rib-eye area. The chart indicates that a 725 pound carcass needs 12.5 inches of rib-eye area. Determine the difference in the required rib-eye area and the actual rib-eye area. In this case subtract 12.5 from 13.0 to get 0.5.

There is 0.5 more rib-eye than is required. Multiply 0.5 times the given number of 0.3 to get 0.15

Since having more rib-eye than is required is a positive factor, subtract the 0.15 from the preliminary of 3.0, thus making a more desirable yield grade of 2.85.

Now the preliminary yield grade is 2.85.

The next step is to determine how the percentage of kidney, pelvic, and heart fat affects the yield grade. The base for kidney, pelvic, and heart fat is 3.5 percent. Since the carcass only has 2.5 percent, we subtract 2.5 percent from 3.5 percent to get a difference of 1.0 percent. Multiply the 1.0 by the given number of 0.2 to get 0.2.

Since there is less kidney, pelvic, and heart fat than the base, subtract 0.2 from the preliminary of 2.85 to make a more desirable yield grade of 2.65.

The final yield grade on this particular carcass is rounded to 2.7.

Example 2

Fat depth	Preliminary yield grade	Hot carcass weight	Required rib-eye area	Actual rib-eye area	Percent kidney, heart, and pelvic fat	Final yield grade
0.6	3.5	625	11.3	10.4	3.0	3.7

Again, the first step is to determine the preliminary yield grade. As the chart indicates, a fat depth of 0.6 equals a preliminary yield grade of 3.5. Next, determine the required rib-eye area. The chart indicates that a 625 pound carcass needs a rib-eye of 11.3 square inches. Determine the difference between the required rib-eye and the actual rib-eye area. In this case subtract 10.4 from 11.3 to get 0.9.

There is 0.9 of a square inch less than required. Multiply this 0.9 by the given 0.3. This equals 0.27.

Since there is less rib-eye area than required, add 0.27 to the preliminary yield grade of 3.5. Having less muscling is a negative factor, so you add to make a less desirable yield grade. The answer is 3.77.

The preliminary yield grade is now 3.77.

The next step is to determine how the percentage of kidney, pelvic, and heart fat affects the yield grade. For this example, subtract the 3.0 percent from the base of 3.5 percent to get 0.5.

Next, you multiply 0.5 by the given number of 0.2 to get 0.10.

Then, you should subtract the 0.1 from the preliminary 3.77, as there is less kidney, pelvic, and heart fat than the base, thereby improving the yield grade of the carcass.

The final yield grade on this particular carcass is rounded to 3.67. Then round this number to 3.7 to make the final yield grade on this carcass.

Example 3

Fat depth	Preliminary yield grade	Hot carcass weight	Required rib-eye area	Actual rib-eye area	Percent kidney, heart, and pelvic fat	Final yield grade
0.5	3.25	763	12.9	14.1	4.0	3.0

First, determine the preliminary yield grade. Since 0.4 depth equals a preliminary of 3.0 and 0.6 fat depth equals a preliminary of 3.5, 0.5 fat depth will be halfway between these two preliminary yield grades. The halfway mark is 3.25, so this is the preliminary yield grade for 0.5 fat depth.

Then, determine the required rib-eye area. A 750 pound carcass needs a 12.8 rib-eye. If you add 8 pounds to make a 758 pound carcass, you add 0.1 to the rib-eye area. So a 758 to 766 pound carcass needs a 12.9 rib-eye. This carcass falls in this area so it needs 12.9 square inches (0.1 is added to the required rib-eye area for every 8 pounds). Since this carcass has 14.1 square inches, subtract 12.9 from 14.1. The answer is 1.2.

Next, you will multiply 1.2 by the given of 0.3 to find the adjustment factor, which is 0.36.

Then, subtract 0.36 from the preliminary of 3.25 because there is more muscling than is required to make a better yield grade.

The preliminary yield grade is now 2.89.

Next, determine the percentage of kidney, pelvic, and heart fat and how it affects the yield grade. This carcass has 4.0 percent, so subtract the given of 3.5 percent from the 4.0 percent to get 0.5.

Then, you multiply 0.5 by the given factor 0.2, which equals 0.1.

Add this factor of 0.1 to the preliminary yield grade of 2.89, as there is more kidney, pelvic, and heart fat than the base, thereby having a negative influence on the the final yield grade. This gives you 2.99.

The final yield grade on this particular carcass is rounded to 3.0.

Note: Fractional parts of the final yield grade are dropped. For example, a carcass with a calculated yield grade of 2.85 is a Yield Grade 3.

Yield grades for pork

As is the case for other meats, pork grading involves identifying differences in quality and quantity. Because of the relationships between sex and/or sex condition in pork and the acceptability of the prepared meats to the consumer, separate standards have been developed for barrow and gilt carcasses and sow carcasses. There are no official standards for grades of boar or stag carcasses.

The determination of sex condition is based on the following:

- Barrow carcasses are identified by a small pizzle eye and the typical pocket in the split edge of the belly where the preputial sheath was removed.
- Gilt carcasses are recognized by the smooth split edge of the belly, the absence of the pizzle eye, and the lack of development of mammary tissue.

- Sow carcasses exhibit the smooth split edge of the belly characteristic of females. They differ from gilts in that mammary tissue has developed in connection with advanced pregnancy or lactation.

The grades for barrow and gilt carcasses are based on two general considerations: quality-indicating characteristics of the lean and expected combined yields of the four lean cuts, which are the ham, loin, picnic shoulder, and boston butt.

Characteristics. The standards provide two general levels of quality. One standard is for carcasses with acceptable lean quality and the other is for carcasses with unacceptable lean quality. The quality of the lean is best evaluated by observing the cut surface of a major muscle. When such a surface is available, it is used as the basis for the quality evaluation. The quality-indicating characteristics include marbling, firmness, and color. The degree of external fatness is not considered when evaluating lean quality. When evaluating quality on a lean cut surface, the standards describe the characteristics of the loin-eye muscle at the 10th rib. Other exposed major muscle surfaces can be used when this surface is not available, such as the end of the loin. Such evaluations are based on the normal development of the quality-indicating characteristics in relation to their development in the loin-eye muscle at the 10th rib.

When a major muscle cut surface is not available, the quality of the lean is evaluated indirectly, based on quality-indicating characteristics that are evident in carcasses. These include firmness of fat and lean, amount of feathering between ribs, and color of lean.

Carcasses that have unacceptable lean quality (or bellies too thin) to be suitable for bacon production are graded U.S. Utility. Soft and oily carcasses are also graded U.S. Utility regardless of the development of other quality-indicating characteristics.

Expected yields. Carcasses with acceptable lean quality and acceptable belly thickness are graded U.S. No. 1, U.S. No. 2, U.S. No. 3, and U.S. No. 4. These grades are based almost entirely on the expected carcass yield of the four lean cuts. The expected yield of the four lean cuts for each of these four grades is shown in Table 1.

Table 1

Expected yields for the four lean cuts based on chilled carcass weight, by grade*

Grade	Yield
U.S. No. 1	60.4 percent and over
U.S. No. 2	57.4 to 60.3 percent
U.S. No. 3	54.4 to 57.3 percent
U.S. No. 4	Less than 54.4 percent

**These yields will be approximately one percent lower if based on hot carcass weight.*

These yields are based on the cutting and trimming methods used by the USDA. In general, this involves closer trimming of fat than is usual in commercial practice. Different yields may result from other methods of cutting and trimming. However, if these methods are applied uniformly, differences in yields between the grades will remain comparable.

Carcasses differ in yield of the four lean cuts because of differences in their degrees of fatness and muscling. Thickness of muscling in relation to skeletal size also is a reason for the differences. Backfat thickness has been found to be a good indicator of the yield of the four lean cuts. Fat depth, along with a muscling evaluation, is used as the basis for the numbered grades.

Yield grades for lamb

Yield grades also have been developed for lamb and mutton. These grades identify carcasses for differences in cutability or expected yield of boneless, closely trimmed, major retail cuts, which are those from the leg, loin, rack, and shoulder. There are five yield grades numbered 1 through 5. Yield Grade 1 represents the highest yield of retail cuts while Yield Grade 5 designates the lowest yield. Yield grades are applied without regard to quality grade. Yield Grades 1 and 5 are open end grades. Based on the cutting and trimming methods used to develop the standards, Yield Grades 2, 3, and 4 each include a range of 1.8 percent in expected yields of boneless, closely trimmed, major retail cuts.

The yield grade of a lamb or mutton carcass is determined by considering three characteristics: amount of external fat, amount of kidney and pelvic fat, and conformation grade of the leg.

External fat. The amount of external fat is the most important yield grade factor, since it is a good indicator of the amount of fat that is trimmed when making retail cuts. In carcasses with a normal distribution of external fat, this factor is evaluated in terms of fat actual thickness over the center of the rib-eye muscle, between the 12th and 13th ribs. On intact carcasses, fat thickness is measured by probing. This measurement may be adjusted to reflect unusual amounts of fat on other parts of the carcass. When determining the direction and amount of this adjustment, particular attention is given to the amount of external fat on the rump; over the top and sides of the shoulders; and in the breast, flank, cod, or udder. In a carcass that has more fat over its other parts than indicated by the actual fat thickness over the rib-eye, the measurement is adjusted upward. Conversely, in a carcass that has less fat over its other parts than indicated by the actual fat thickness over the rib-eye, the measurement is adjusted downward. In many carcasses no such adjustment is necessary; however, an adjustment of as much as 0.05 or 0.10 inch is not uncommon. In some carcasses a greater adjustment may be necessary. As the amount of external fat increases, the percentage of retail cuts decreases. Each 0.15 of an inch change in adjusted fat thickness over the rib-eye changes the yield grade by a full grade.

Kidney, and pelvic fat. The amount of kidney and pelvic fat is evaluated subjectively and expressed as a percent of the carcass weight. As the amount of these fats increases, the percentage of retail cuts decreases. A difference of four percent of the carcass weight in kidney and pelvic fat changes the yield grade a full grade.

Conformation grade of leg. Conformation grade of the leg is evaluated as described in the official USDA quality grade standards. The evaluation is made in terms of thirds of a grade and coded using 15 for High Prime and 1 for Low Cull. An increase in conformation grade of the leg increases the percentage of retail cuts. A change of one full grade in leg conformation changes the yield by 15 percent.

Grades of lamb legs

High Prime	=	15
Average Prime	=	14
Low Prime	=	13
High Choice	=	12
Average Choice	=	11
Low Choice	=	10
High Good	=	9

The following is a simple method that has been devised to calculate lamb yield grades: Members can determine a preliminary yield grade by hundredths (2.10, 3.35, 3.58, etc.) to reflect the external fatness of the carcass based on the following schedule:

Thickness of fat over the rib-eye*	Preliminary yield grades	Thickness of fat over the rib-eye*	Preliminary yield grade
0.5 inch	2.33	0.35 inch	4.33
0.10 inch	2.67	0.40 inch	4.67
0.15 inch	3.00	0.45 inch	5.00
0.20 inch	3.33	0.50 inch	5.33
0.25 inch	3.67	0.55 inch	5.67
0.30 inch	4.00	0.60 inch	6.00

**This fat thickness measurement over the rib-eye muscle may be adjusted to reflect unusual amounts of fat on other parts of the carcass.*

Members can then determine the final yield grade (1 to 5) by adjusting the preliminary yield grade for variation in kidney and pelvic fat from 3.5 percent and for variations in leg conformation grade from Average Choice.

The rate of adjustment for percent of kidney and pelvic fat is:

- For each percent of kidney and pelvic fat more than 3.5 percent, add 0.25 of a grade to the preliminary yield grade.
- For each percent of kidney and pelvic fat less than 3.5 percent, subtract 0.25 of a grade from the preliminary yield grade.

The rate of adjustment for leg conformation grade is:

- For each one-third of a grade the conformation of the leg exceeds Average Choice, subtract 0.05 of a grade from the preliminary yield grade.
- For each one-third of a grade the conformation of the leg is less than Average Choice, add 0.05 of a grade to the preliminary yield grade.

Note: The fractional parts of the final yield grade are dropped. For example, a carcass with a calculated yield grade of 3.85 is a Yield Grade 3. The following are several examples of the method used to determine the yield grades of lambs:

Example 1

Fat depth	Preliminary yield grade	Percent kidney, pelvic, and heart	Leg conformation	Final yield grade
0.10	2.67	3.0	14	2.4

First, determine the preliminary yield grade. This chart indicates that 0.10 fat depth equals a preliminary yield grade of 2.67.

Next, figure how the percentage of kidney, pelvic, and heart fat affects the yield grade. In this case subtract the 3.0 from the given 3.5 to get 0.5.

Then, multiply 0.5 by the given 0.25. This equals 0.125.

Finally, subtract the 0.125 from the preliminary of 2.67 (as there is less kidney, pelvic, and heart fat than the base of 3.5), which equals 2.545.

This gives a new preliminary yield grade of 2.55.

Next, determine how the leg score affects the yield grade. The base leg score is 11. Since this carcass has a leg score of 14, it is three grades above the base. Therefore, multiply 3 times the given of 0.05 to get 0.15.

Finally, subtract this factor of 0.15 from the preliminary of 2.55 to get 2.40, as there is more muscling than average.

Federal meat graders would round off to 2.0 for the final yield grade as fractional parts are dropped. However, for carcass contests and/or judging contests, the yield grade would remain 2.4.

Example 2

Fat depth	Preliminary yield grade	Percent kidney, pelvic, and heart	Leg conformation	Final yield grade
0.30	4.00	3.5	11	4.0

First, determine the preliminary yield grade by looking at your chart. Fat depth of 0.3 equals a preliminary of 4.0.

Next, determine the effect of the kidney, pelvic, and heart fat. Since this carcass has 3.5 percent kidney, pelvic, and heart fat, make no adjustment. *Consequently, the preliminary is still 4.0.*

The next step is to determine the affect of the leg conformation. In this case, there is no difference, as the base is 11 and this lamb has an 11.

The final yield grade is 4.0.

Oral reasons

Oral reasons are an important part of the meats judging contest. Reasons give contestants a chance to tell the official judge what they saw in a particular class and why they evaluated it the way they did.

Often, members dread oral reasons, but with practice, oral reasons can be enjoyable and easily delivered.

There are several keys to giving good reasons. First and foremost is telling the official exactly what you saw in the class. Do not make up things to make reasons sound better, just state the facts. Accuracy is most essential.

Second, it is important to take complete, accurate, and organized notes. Well written notes will help in organizing your thoughts, that is fundamental in a smooth delivery of oral reasons.

Third, use correct terminology. If you are going to talk to individuals who work in the meat industry, you must speak their language. The better you communicate with the official, the higher your reasons score will be.

Furthermore, reasons should be a comparison of each pair in your placings, not a description. For example, if you say, "Number 1 is a long, heavy muscled carcass," that does not explain your placing thoroughly. However, if you say, "Number 1 is a longer, heavier muscled carcass than number 2," that explains why number 1 is better than number 2. The use of words that end in "er" will be helpful in making your reasons comparative.

Words like better, best, and good should be avoided in a set of reasons because they do not explain why. For example, the statement, "Number 1 is a better carcass than number 2," does not tell why number 1 is better.

Reasons should be detailed enough so the official knows what you mean. If you say that number 1 is heavier muscled than number 2, tell where it is heavier muscled. It would be more desirable to say, "Number 1 is heavier muscled in the round, sirloin, and chuck and also displays a larger, meatier rib-eye than number 2." This leaves no questions in the official's mind as to what you mean.

The following pages show the oral reasons format.

Taking notes

A complete and accurate set of notes is very important in preparing an outstanding set of oral reasons. Although you may not use your notes as you give your reasons, they help you remember the class, the comparisons, and points you observed as you judged the class.

The method for taking notes is entirely up to the individual. However, make sure you take notes on everything you see. Do not wait until you have finished placing a class to take notes. You should take notes the entire time you are judging a class.

Even though the note-taking format is up to the individual or team coach, here is one method that many have found to be helpful:

Class I	Beef carcasses	Placing 1-2-3-4
Comparisons	Grants	Criticism
1/2 - Heavier muscled round in a larger, shaplier eye; less waste over round, loin, and rib-eye with less kidney, pelvic, and heart fat; higher cutability	2/1 - More marbling in a brightly colored lean	
2/3 - Larger rib-eye with a meatier round, sirloin, and chuck; trimmer around rib-eye and lower rib; more marbling in a brighter colored lean	3/2 - Less kidney, pelvic, and heart fat; trimmer over chuck	2 - Most internal fat in the class
3/4 - Higher quality with more marbling in rib-eye area; less waste externally and less kidney, pelvic, and heart fat	4/3 - Larger rib-eye and meatier round and chuck	4 - Lowest quality in the class with the least amount of marbling and a dark colored lean; heavy condition over the rib-eye, and lower rib, and the chuck has excessive internal fat

Terminology

Using correct terminology is important in giving reasons. An individual must be able to talk intelligently and fluently with the official judge.

Here is a list of basic terms that can be used in explaining the various species and classes in your reasons:

Carcasses and wholesale cuts

Desirable characteristics

Larger
Smaller
Longer
Heavier
Smoother
Meatier
More symmetrical

Larger rib-eye or loin-eye
Shapelier rib-eye or loin-eye
Heavier muscled
Thicker
Meatier
Deeper
Tapering leg or round
Fuller
Bulging
Plumper
Deeper chined
Deeper clod
Large lumbar lean (pork)
Deeper loin

Higher cutability
More desirable yield grade
Less waste
Less external fat
Less internal fat
Trimmer
Neater

Less seam fat

General

Muscling

Trimness

Undesirable characteristics

Lighter
Poorly balanced

Smaller or smallest rib-eye or loin-eye
Ill-shaped rib-eye or loin-eye
Lighter or lightest muscled

Lack meatiness

More shallow in the loin

Lower or lowest cutability
Less or least desirable yield grade

More external fat
More internal fat
More waste

Excessive finish
Greater amount of seam fat

Beef carcass, wholesale, and retail cut quality

Higher quality grade	Lower or lowest quality grade
Higher degree of marbling	Least amount of marbling
Finer dispersed marbling	More coarse, uneven marbling
Brighter, cherry red color	Darker color
More youthful colored lean	
Firmer, finer textured lean	More soft, coarse lean
Brighter, white fat cover	Yellow fat cover
Harder, flaky fat cover	Soft, oily fat cover

Pork carcass, wholesale, and retail cut quality

Greyish-pink color	Lighter, pale colored lean
Darker colored lean	
More uniform color	Two-toned color
Firmer, finer textured lean	Softer, watery lean
Smoother textured lean	Coarser textured lean
Greater amount of marbling	Least amount of marbling
Firmer, whiter fat cover	More soft, oily fat cover
Thicker, firmer side	Thin side

Lamb carcass quality

Higher degree of marbling	Least amount of marbling
Brighter colored lean and flank	Dull, dark lean
More youthful colored lean and flank	
More flank streaking	Least amount of flank streaking
Redder ribs	White ribs
Fuller, firmer flank	Thinner flank

Useful terms

Comparative verbs

Showed	Portrayed	Displayed
Contained	Possessed	Presented
Exhibited	More prominent	Indicated by
Lacked	Revealed	

Grants

Realize Admit	Although	Recognize
Grant	Concede	

Degrees of comparison

Greater amount	Longer	Larger
Little	Superior	Least
Higher degree	Limited	Excessive
Lower	Distinctively	Smallest
Slightly	Lowest	Unsurpassed
Shortest		

Connective

Furthermore	As evidenced by	In addition
Blending into	Coupled with	Shown by
Also	Indicated by	Moreover
Carrying into	Along with	

Extra terms*

Beef

- Greater percentage of high priced cuts
- Higher percentage of steaks and roasts
- Meatier hindquarter or forequarter
- Less kidney, pelvic, heart, cod, or udder fat
- Higher merchandising value
- Higher quality

Lamb

- Greater percentage of leg and loin
- Greater percentage of hindsaddle
- Greater percentage of high priced cuts
- Higher percentage of chops and roasts
- Higher quality

Pork

- Greater percentage of ham and loin
- Higher percentage of high priced cuts
- Higher quality
- Higher lean to fat ratio
- Higher percentage of muscle
- All species
- More pounds of edible red meat (or least)

*These extra terms can also be used to indicate undesirable characteristics. For example, you could say, "One would yield the lowest percentage of higher priced cuts," or "one contained an excessive amount of kidney, pelvic, and heart fat."

Reasons

Here are samples of reasons that may be helpful to you in practicing organization and fitting terms together. Remember that these are just examples and each class will be different. So make your reasons fit the class, do not make the class fit your reasons. Canned (or memorized) sets of reasons are not acceptable in a judging class.

Sample reasons

Placing: 1st - 4; 2nd - 2; 3rd - 3; 4th - 1

I placed this class of beef carcasses 4-2-3-1.

First: 4/2 - Four was an obvious top over 2 due to its superior muscling, trimness, and quality. Four displayed greater width and length of round, with more bulge of heel and cushion. Four was wider in the loin and exhibited a larger rib-eye. Four excelled in trimness, having less finish over the round, rump, rib-eye, and lower rib. Four also showed less kidney, pelvic, and heart fat. Four displayed higher quality in a brighter cherry red color of the rib-eye, indicating youth and a finer dispersion of marbling. I grant 2 showed more abundant marbling than 4.

Second: 2/3 - Two placed over 3 because of its advantage in trimness, indicating a higher cutability carcass. Two displayed less finish over the round, loin, rib-eye, and lower rib. Two showed heavier muscling, more length of round, and a fuller turn of loin. Also, 2 exhibited a finer dispersion of marbling. However, I admit 3 had more marbling, a brighter cherry colored rib-eye, and possessed a slightly larger rib-eye.

Third: 3/1 - In this close bottom pair of wastier carcasses, 3 placed over 1 due to its advantage in muscling and quality. Three displayed more width of round and bulge of cushion while being fuller through the loin. Three also possessed a more symmetrically-shaped rib-eye. Three exhibited high quality with a higher degree of marbling in a brighter, cherry red colored rib-eye. Three was slightly trimmer over the round and rump. I admit 1 was trimmer over the rib-eye and had less kidney and pelvic fat.

Fourth: 1 - One placed last because of its inferior amount of muscling. One displayed the smallest rib-eye and had the lightest muscled round, sirloin, and chuck. One fell short of the quality of the other carcasses and was over-finished. Therefore, it is last.

Sample reasons

Placings: 1st - 1; 2nd - 2; 3rd - 3; 4th - 4

I placed this class of beef rounds 1-2-3-4.

First: 1/2 - One, an outstanding top, placed over 2 as 1 was a heavier-muscled round that would have a higher percentage of steaks and roasts. One had a longer, wider, deeper cushion; a meatier heel; and a wider, deeper round face with an especially large knuckle. Furthermore, 1 was trimmer over the cushion and heel, and exhibited less seam fat in the round face. I admit 2 had less pelvic and cod fat and had more marbling dispersed in a firmer, more youthful colored lean.

Second: 2/3 - Two placed over 3 as 2 was a trimmer round that was higher in cutability. Two was trimmer over the cushion, heel, round face, and especially around the sirloin tip. Two had less cod and pelvic fat. In addition, 2 had more marbling in a brighter, firmer textured lean. Two had a longer cushion and a meatier heel. I concede that 3 had a wider, deeper cushion, a round face, and a meatier sirloin tip.

Third: 3/4 - Three easily placed over 4 as 3 was a heavier muscled, higher quality round that would have more pounds of edible red meat. Three had a longer, deeper cushion and a meatier heel and rump, coupled with a larger sirloin tip and heavier muscled knuckle. Moreover, 3 had more marbling in a brighter, more youthful colored, finer textured lean. I grant 4 was trimmer over the cushion and the round face and exhibited less seam fat.

Fourth: 4 - Although 4 was a trim round, 4 placed last as it was the lightest muscled, lowest quality round in the class. It had the least amount of marbling in a soft, pale colored lean and had the shortest, shallowest cushion, combined with the lightest muscled sirloin tip and smallest knuckle. It would yield the least amount of steaks and roasts; therefore, 4 is last.

Sample reasons

Placings: 1st - 4; 2nd - 1; 3rd - 2; 4th - 3

I placed this class of beef loins 4-1-2-3.

First: 4/1 - Four placed over 1 as 4 was a bigger, meatier, heavier muscled loin that displayed more quality. Four had a larger, deeper loin-eye and a longer, wider short loin. In addition, 4 had a meatier top sirloin and a deeper, heavier muscled knuckle. Four exhibited more marbling in a finer textured lean. I concede that 1 was a trimmer loin having less fat over the loin-eye, short loin, loin edge, and flank edge.

Second: 1/2 - One easily placed over 2 as 1 was a trimmer loin with less fat trim. One had less waste around the loin-eye, over the short loin, and the back. Furthermore, 1 was trimmer over the flank edge and had less fat around the top sirloin and knuckle. One was also longer through the short

loin and displayed a wider loin-eye. I admit 2 was wider in the short loin and portrayed more marbling in a finer textured lean.

Third: 2/3 - Two placed over 3 as 2 was a trimmer, higher quality loin. Two had less fat over the loin-eye and flank edge and had less waste around the top sirloin and knuckle. Moreover, 2 had a slightly larger loin-eye and a meatier top sirloin. Two also had more marbling in a brighter colored, firmer textured lean. I grant that 3 had a much longer short loin and had a wider, deeper, and meatier knuckle.

Fourth: 3 - Although 3 was an adequately muscled loin, 3 placed last as it was the wastiest loin with the most fat cover. Three was especially wasty over the loin-eye, flank edge, and short loin. It had the most seam fat in the sirloin end and had the smallest loin-eye and lowest cutability in the class, so it is last.

Sample reasons

Placing: 1st - 2; 2nd - 1; 3rd - 3; 4th - 4

I placed this class of beef ribs 2-1-3-4.

First: 2/1 - Two placed over 1 as an outstanding top that exhibited a more desirable combination of quality and muscling. Two displayed a more desirable cherry red beef color; had a finer, more even dispersion of marbling; and was firmer textured. Two was also more muscular as indicated by a larger rib-eye in the loin end, more width to the back, and more depth of blade. Furthermore, 2 was trimmer over the blade and rib ends. However, I realize 1 was trimmer over the rib-eye and lower rib, displayed less seam fat, and had a larger eye in the blade end.

Second: 1/3 - One placed over 3 in a close placing due to trimness. One was trimmer over the rib-eye and lower rib, exhibited less finish in the rib ends, and displayed less seam fat. In addition, 1 was firmer textured and exhibited a brighter color in the blade end. One had a larger eye in the blade end that showed more depth to the blade. I grant 3 displayed a larger eye in the loin end and was trimmer over the blade. Moreover, 3 exhibited a finer, more even dispersion of marbling and was a brighter color in the loin area.

Third: 3/4 - Three placed over 4 due to its advantages in quality and trimness. Three was trimmer over the blade, over the lower rib, and over the rib ends. Three exhibited a distinct quality advantage as it showed a finer, more even dispersion of marbling and was firmer textured. Furthermore, 3 displayed a larger rib-eye. I realize 4 had less seam fat, was trimmer over the rib-eye, and showed more depth of blade and width over the back.

Fourth: 4 - Four placed last, because it lacked quality and was excessively wasty. Four lacked marbling in both ends and was coarse and soft in texture. Four was extremely wasty, especially over the lower rib, over the blade, and in the rib ends. Then too, 4 was the lightest muscled in the rib-eye and blade end; therefore, it is last.

Sample reasons

Placings: 1st - 2; 2nd - 1; 3rd - 4; 4th - 3

I placed this class of beef chucks 2-1-4-3.

First: 2/1 - Two, an outstanding top, placed over 1 as 2 was a trimmer, higher cutability chuck. Two was trimmer over the arm and blade face and displayed less fat trim over the clod and neck clod region. Two also had less seam fat, had the meatiest clod, and had a deeper, heavier muscled arm face. I admit, 1 had a larger, deeper blade face.

Second: 1/4 - One placed over 4 as 1 was a much trimmer chuck with more muscling. One was especially trimmer alongside the arm face, in the neck-clod region, and in the English cut. In addition, 1 had a brighter colored lean and more marbling in both faces. I realize 4 was trimmer in the blade face and had a meatier neck-clod region.

Third: 4/3 - Four placed over 3 as 4 was a much trimmer, higher cutability chuck and offered more muscling. Furthermore, 4 had less seam fat and had a meatier arm and blade face coupled with a heavier muscled clod. I grant 3 was a higher quality chuck with more marbling in both faces and a finer textured lean.

Fourth: 3 - Although 3 was a high quality chuck, 3 placed last as it was the wastiest chuck with the lowest cutability. Three was especially wasteful over both the arm and blade faces as well as the clod. Three displayed the greatest amount of seam fat. Moreover, 3 was shallow in the arm face and had a small, ill-shaped eye in the blade face, so it is last.

Sample reasons

Placings: 1st - 1; 2nd - 2; 3rd - 4; 4th - 3

I placed this class of lamb carcasses 1-2-4-3.

First: 1/2 - One placed over 2 as 1 was a trimmer carcass externally and had more quality. One was slightly trimmer over the leg, dock, loin, loin-eye, and shoulder combined with less cod, flank, and breast fat. Moreover, 1 exhibited more streaking in a fuller, firmer flank and offered more rib feathering. Then too, 1 had a meatier shoulder. I admit 2 had a wider, thicker leg and larger rib-eye. Two also had less kidney fat and a more youthful colored flank.

Second: 2/4 - Two easily placed over 4 as 2 was a heavier muscled, trimmer carcass that would have a higher cutability and a greater percentage of hindsaddle. Two had an especially meatier leg and loin, a larger loin-eye, and a heavier muscled rack and shoulder. In addition, 2 had less waste over the leg and lower rib, and displayed less kidney fat. Two also had a more youthful colored loin-eye and flank. I realize 4 had less fat trim over the shoulder, less breast fat, and had more marbling in the loin-eye.

Third: 4/3 - Four was placed over 3 as 4 was a much trimmer carcass that would have a higher cutability. Four had less waste over the leg, dock, loin, and loin-eye and had less fat trim over the lower rib, rack, and shoulder. Furthermore, 4 was a longer carcass that exhibited a longer cushioned leg. I grant 3 had a plumper, meatier leg and a larger rib-eye. Three was also a higher quality carcass as it revealed more marbling in the loin-eye.

Fourth: 3 - Although 3 was a heavily muscled, high quality carcass, 3 placed last as it was the wastiest carcass in the class. Three carried excess fat over the leg, dock, sirloin, loin-eye, rack, and shoulder coupled with the most crotch, kidney, cod, and breast fat. Therefore, 3 would have the lowest cutability in the class, so it is last.

Sample reasons

Placings: 1st - 3; 2nd - 4; 3rd - 1; 4th - 2

I placed this class of pork carcasses 3-4-1-2.

First: 3/4 - Three placed over 4 as 3 was a trimmer carcass having a higher lean-to-fat ratio. Three was trimmer over the ham collar and had less back fat, especially at the last lumbar, last rib, and over the shoulder. Three also was trimmer in the flank, belly, and sternum. In addition, 3 was a longer carcass with a longer cushioned ham and a greater amount of lumbar lean. Also, 3 had a more youthful colored lean in the ham face. I admit 4 had a wider, thicker, more bulging ham and a meatier sirloin and shoulder.

Second: 4/1 - Four placed over 1 as 4 was a meatier carcass that would have a higher percentage of muscle. Four had a longer, wider, thicker, more bulging ham; a meatier sirloin; a deeper chined loin; and a heavier muscled shoulder. Furthermore, 4 displayed a greater amount of marbling in the lumbar lean. I realize 1 was trimmer over the ham collar and had less back fat from the ham to shoulder. One had significantly less waste over the last lumbar and shoulder coupled with less flank, belly, and sternum fat.

Third: 1/2 - One easily placed over 2 as 1 was a trimmer, heavier muscled carcass that would have a greater amount of lean cuts. One was trimmer over the ham collar and had less back fat at the last lumbar, last rib, and shoulder, combined with less sternum fat. Moreover, 1 exhibited a longer, wider ham; a meatier sirloin; and a heavier muscled shoulder. I grant 2 had a thicker cushioned ham.

Fourth: 2 - Two placed last as 2 was the wastiest, lightest muscled carcass and would have the lowest lean-to-fat ratio. Two was especially wasty over the ham collar and had the most back fat from ham to shoulder. Two lacked meatiness in the ham, sirloin, and shoulder and had the least amount of lumbar lean, so it is last.

Sample reasons

Placings: 1st - 4; 2nd - 3; 3rd - 1; 4th - 2

I placed this class of hams 4-3-1-2.

First: 4/3 - Four, an easy top, placed over 3 as 4 was a trimmer, heavier muscled ham that would yield a greater amount of center slices. Four was trimmer along the side and underneath the butt face, over the forecushion, and ham collar and around the bulge side. Furthermore, 4 had a longer, wider cushion; a meatier forecushion; and a wider butt face. I admit 3 had a deeper cushion and butt face and less seam fat. Three also exhibited more marbling in a more uniform colored lean.

Second: 3/1 - Three placed over 1 as 3 was a meatier ham that would have a higher percentage of muscle. Three had a wider, deeper cushion; a heavier muscled forecushion; and a wider, deeper butt face. In addition, 3 displayed more marbling in a firmer, finer textured lean. I realize 1 was slightly trimmer underneath the butt face and had especially less waste over the forecushion and bulge side.

Third: 1/2 - One placed over 2 as 1 was a heavier muscled ham with a higher lean to fat ratio. One displayed a larger butt face and a deeper, meatier forecushion. Moreover, 1 presented more length, width, and depth of cushion. One also had less waste underneath the butt face and over the forecushion and ham collar. I realize 2 was more uniform in color and possessed more marbling in a firmer textured lean.

Fourth: 2 - Although 2 was a high quality ham, it placed last as it was the lightest muscled ham and would yield the least amount of lean. Two had the shortest, narrowest cushion, the lightest muscled forecushion, and the shallowest, smallest butt face in the class, so it is last.

