Pennsylvania 4-H Livestock Judging Manual

Contents

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Introduction

Evaluation of breeding and market animals in each of the various livestock species—beef cattle, sheep, and swine—is the foundation of any 4-H livestock project. Feeding, exercising, grooming, and showing of the animal are all important aspects of your 4-H project; however, none may be as exciting as selecting your project animal. Selection of project animals is actually judging livestock, which is comparing the merits of one animal against the merits of other potential project animals. This selection process is just one of many applications of livestock evaluation and judging.

Livestock producers, breeders, feeders, buyers, and packers evaluate livestock for their potential as either breeding or market animals. These people try to relate the "form" of an animal with the "function" for which it is intended to serve. That is why livestock judging is often called the application of "form and function" to livestock.

Why judge livestock?

Stockpersons judge livestock to differentiate among the "superior," "average," and "inferior" animals within each of the livestock industries. They are looking for the "most desirable" animals for their particular needs. Stockpersons often compare their own livestock to those of others. Using their judging knowledge and skills, producers analyze the potential value of animals for particular purposes.

As a result of reading this manual, listening to your parents, 4-H leaders, and county agents, and practicing on your own, you should be able to:

- identify the different breeds of livestock,

- compare livestock for their merit and value as either breeding or market animals,

- look at an animal and determine its more desirable characteristics and its less desirable traits,

- improve your livestock project by selecting more desirable animals and gain an appreciation of their value for a particular purpose,

- make decisions and defend them in a logical, well-organized manner,

- make complex decisions based on a variety of information available, and

- appreciate the opinions of others.

Breeds of livestock

Before learning to compare animals of the same breed, a knowledge of the most popular breeds is necessary. The next three sections of this manual—Breeds of Beef Cattle, Breeds of Sheep, and Breeds of Swine—outline the distinguishing characteristics of the major breeds within each species. A few pictures have been provided to help you learn to make these identifications.

Breeds of beef cattle

Table 1 outlines some of the breeds of beef cattle that are common in the United States. Each breed is categorized by frame size, muscling, mature cow weight, milking ability, and some of the more distinguishing features of the breed.

Frame size is divided into three categories: small, average, and large. Muscle is divided into three categories: flat, medium, and thick. Average mature cow weight is listed in pounds and describes the size of cows of this breed relative to other breeds.

It is important to remember that this table is for reference only. There is as much variation within a particular breed of livestock as there is among breeds—for example, milking ability, muscle, and other characteristics. Therefore, the data contained in this table represent averages for the particular breeds and are not absolute values. The table is provided as a reference to help you better distinguish one breed from another.

TABLE 1. BREEDS OF BEEF CATTLE

Breed	Frame size	Muscle	Avg. mature cow wt	Birth weight[a]	Wean weight[a]	Post-wean weight[a]	Characteristics
Angus	avg	med	1,100	2	4	4	black; polled; pigment; fertility
Beefalo	small	med	varies	—	—	—	brown; 3/8 Buffalo, 5/8 Bovine
Beefmaster	avg	med	varies	4	2	2	1/2 Brahman, 1/4 Hereford, 1/4 Shorthorn
Blonde d'Aquitaine	large	thick	1,500	4	3	2	blonde; terminal sire
Braford	avg	med	1,250	—	—	—	reddish; 3/8 Brahman, 5/8 Hereford
Brahman	avg	med	1,400	4	1	3	various colors; heat tolerance; "hump"
Brangus	avg	med	1,250	3	3	3	black or red; 3/8 Brahman, 5/8 Angus
Charbray	large	med	1,500	—	—	—	whitish gray; 3/8 Brahman, 5/8 Charolais
Charolais	large	thick	1,550	5	1	1	white; muscle; growth
Chianina	large	med	1,600	5	1	1	white, silver, brindle or black; terminal sire
Devon	small	flat	1,100	3	4	2	dark red; carcass quality
Galloway	small	flat	950	3	4	3	black; long, curly hair; late maturing
Gelbvieh	avg	thick	1,450	4	1	2	pale brownish-orange; milk; growth
Hereford	avg	med	1,100	3	4	3	red with white face; adaptability; hardiness
Limousin	avg	thick	1,300	4	3	3	pale brown, golden; muscle; cutability
Longhorn	small	flat	varies	1	5	5	various colors; late maturing; long, slender horns
Maine-Anjou	large	thick	1,600	5	1	1	deep red and white; frame; growth rate; muscle
Marchigiana	large	thick	1,500	—	—	—	grayish-white; muscle; terminal sire
Murray Grey	small	med	1,150	3	3	4	gray; low birth weights
Pinzgauer	avg	thick	1,350	4	2	2	brown with white topline, underline; hardiness
Polled Hereford	avg	med	1,100	3	4	3	red with white face; polled; fertility
Red Angus	avg	med	1,100	2	4	3	red; polled; fertility
Salers	avg	med	1,300	—	—	—	dark red or black; low birth wt; growth
Santa Gertrudis	large	med	1,450	4	2	3	deep red; 3/8 Brahman, 5/8 Shorthorn
Scotch Highland	small	flat	900	2	4	4	dun; long, dense, shaggy hair
Shorthorn	avg	med	1,100	3	4	3	red, roan or white; calving ease; early maturing
Simmental	large	thick	1,500	5	1	1	red, cream or black with white; muscle; milk
South Devon	large	flat	1,450	—	—	—	light red; milk; growth rate

[a]Ranking based on 1 (most desirable) through 5 (least desirable). Insufficient data for comparison is indicated by (—).
Adapted from *Beef Production and Management*, 2nd edition, 1979, Gary L. Minish and Danny G. Fox.

Angus heifer
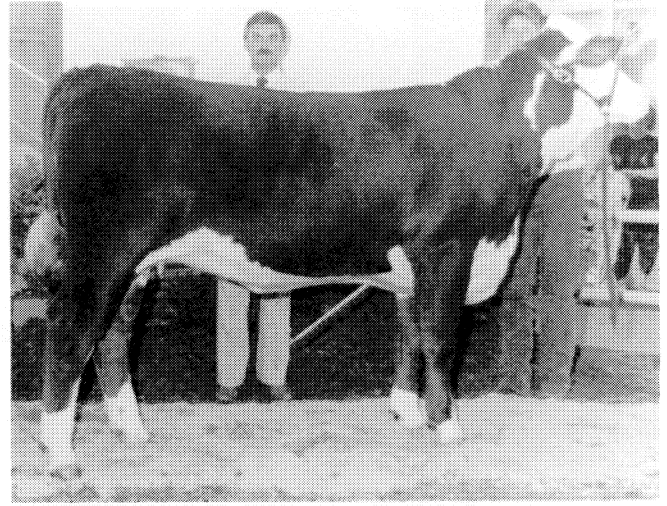
Polled Hereford heifer

Shorthorn heifer
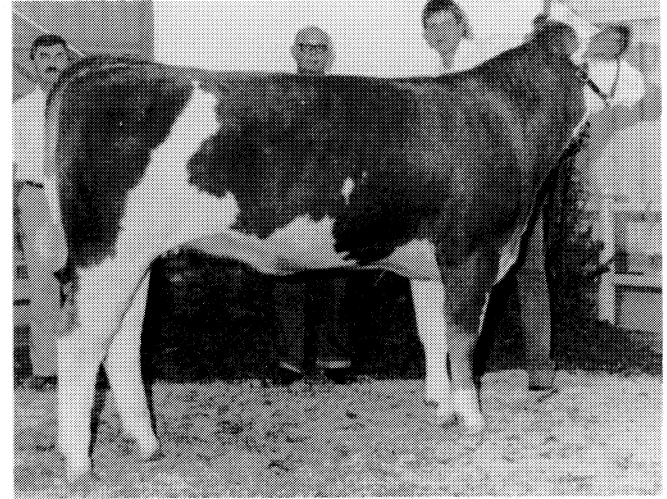
Simmental heifer
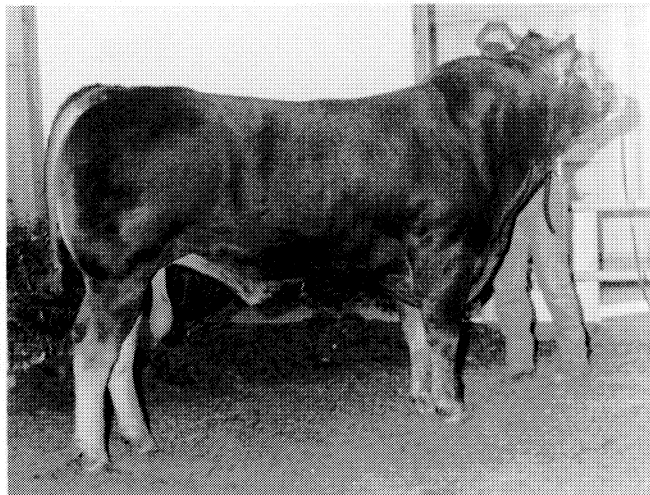
Limousin bull
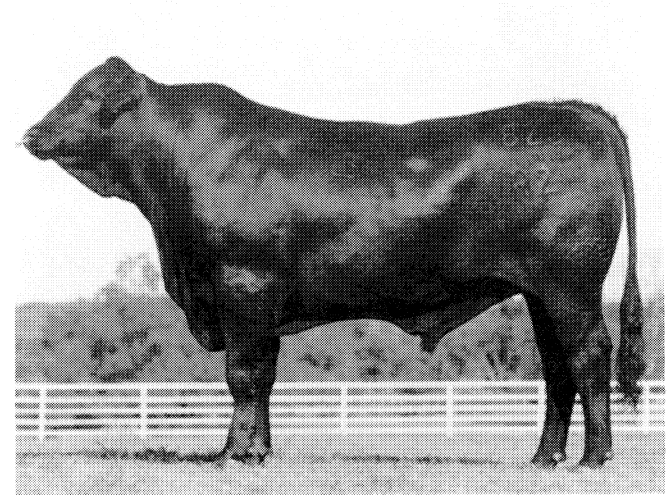
Brangus bull

Breeds of sheep

Table 2 outlines some of the breeds of sheep that are common to the United States. Each breed has been assigned a breed class (ram, ewe, or dual) according to whether the dominant characteristics of the breed are associated with growth and carcass traits (ram), or reproductive characteristics (ewe). The dual breed class indicates that the breed is noted equally for growth, carcass, and reproductive characteristics.

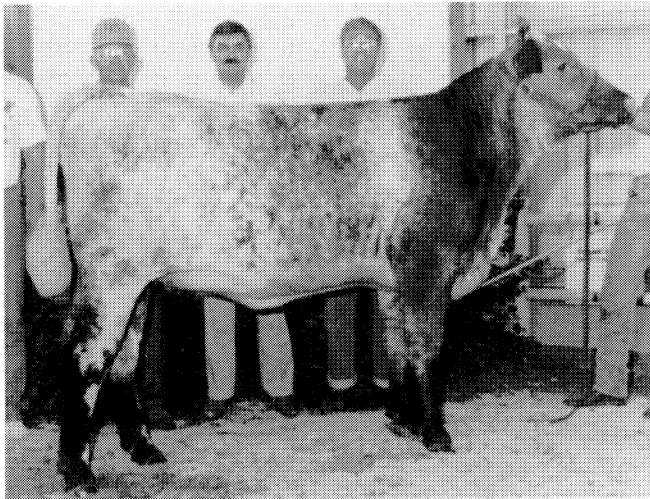Average weights for mature rams and ewes are listed. Again, these are included to allow you to compare one breed with another breed. The weights and other characteristics listed are breed averages; there is as much variation within a breed as there is among breeds for these traits.

Growth rate, hardiness, gregariousness, prolificacy, and milking ability are ranked among breeds, using a six-point scale, with 1 as the most desirable and 6 as the least desirable. Fleece weight is given in pounds of wool per year from the average animal of that breed. Fleece type is listed as either fine, medium, or long, and describes the type of wool fiber characteristic of the breed.

TABLE 2. BREEDS OF SHEEP

Breed	Breed class	Ram wt	Ewe wt	Growth rate[a]	Hardi-ness[a]	Gregari-ousness[a]	Proli-ficacy[a]	Milking ability[a]	Fleece weight	Wool type	Face color
Border Leicester	ram	210	160	4	6	6	3	3	9	long	white
Cheviot	ewe	180	135	4	4	6	4	4	5	medium	white
Columbia	dual	260	165	2	4	4	4	4	11	medium	white
Corriedale	ewe	190	140	5	4	4	4	4	11	medium	white
Debouillet	ewe	190	140	5	2	2	5	5	11	fine	white
Delaine	ewe	195	130	5	2	2	5	5	11	fine	white
Dorset	dual	225	170	3	6	6	3	2	6	medium	white
Finnsheep	ewe	200	140	5	6	6	1	2	6	medium	white
Hampshire	ram	275	200	2	6	6	3	2	7	medium	black
Lincoln	dual	300	225	5	6	6	4	5	12	long	white
Montadale	ram	235	160	4	5	6	4	4	8	medium	white
Oxford	ram	250	190	3	6	6	4	4	8	medium	brown
Rambouillet	ewe	225	160	3	2	2	5	5	11	fine	white
Romney	dual	220	175	5	6	6	4	5	10	long	white
Shropshire	ram	235	170	3	5	6	3	3	8	medium	dark brown
Southdown	ram	200	145	4	6	6	4	4	5	medium	light brown
Suffolk	ram	300	215	1	6	6	2	2	5	medium	black
Targhee	ewe	250	175	3	4	4	4	4	11	medium	white

[a]Ranking based on 1 (most desirable) through 6 (least desirable).
(Adapted from *The Sheepman's Production Handbook*, 1982, George E. Scott, editor.)
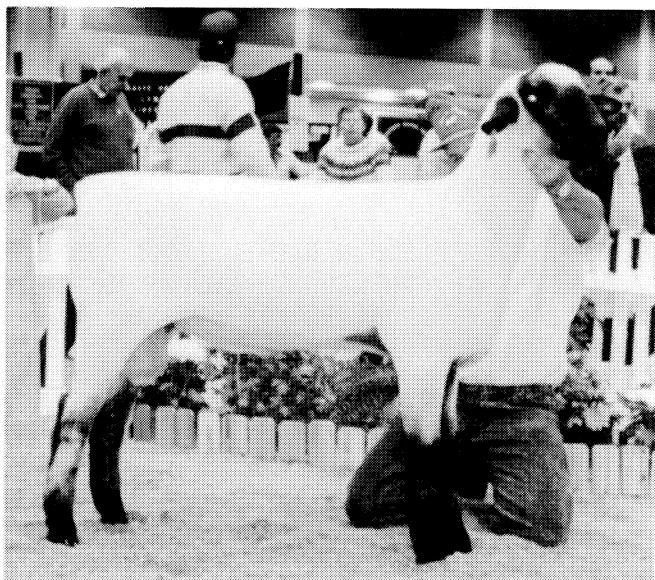
Hampshire ram
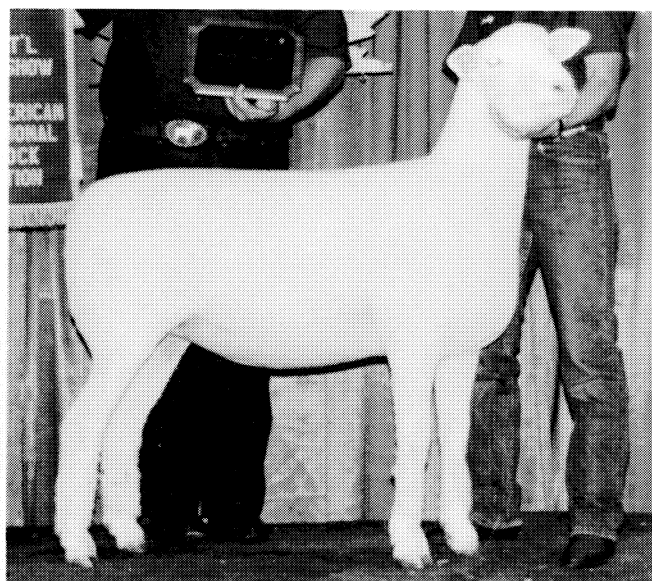
Dorset ewe

Columbia ram
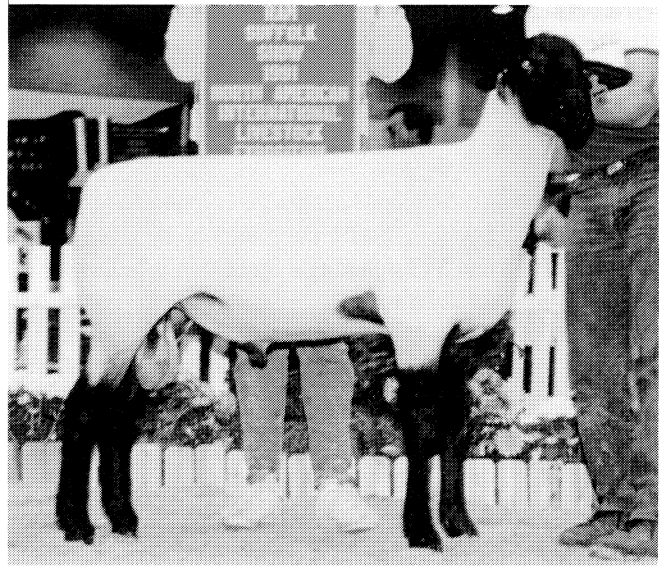
Suffolk ram
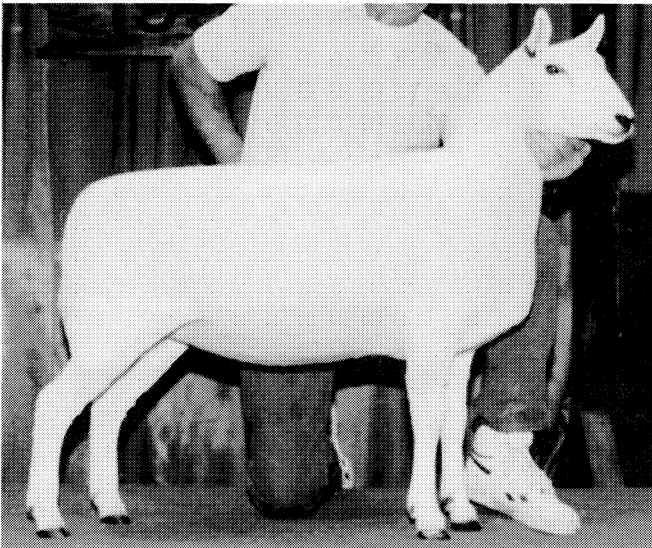
Cheviot ewe
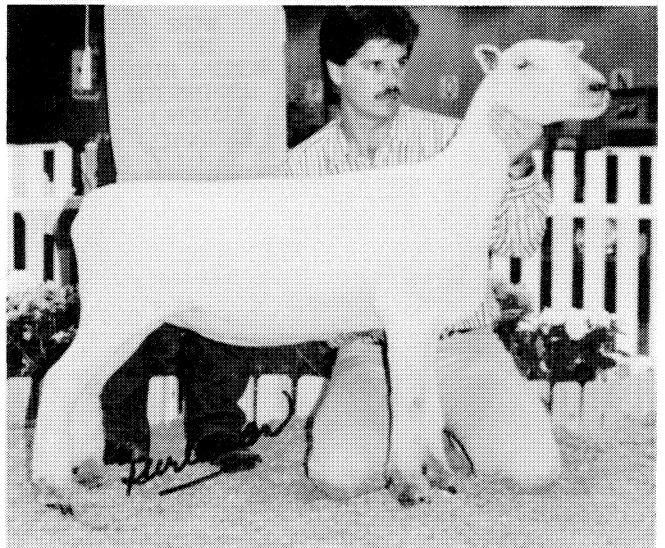
Southdown ewe
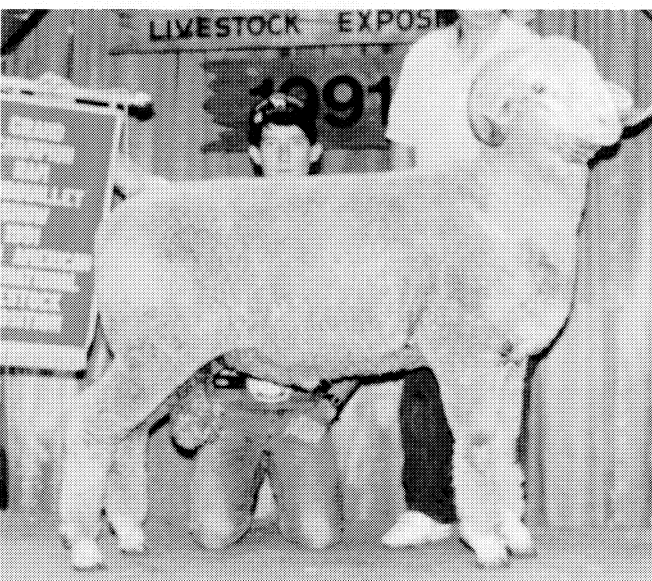
Rambouillet ram

Shropshire ewe

Breeds of swine

The following table outlines characteristics of the breeds of swine that are common to the United States (Table 3). A comparison of the characteristics of one breed is given in relation to the characteristics of the other breeds represented.

A five-point scale is used with 1 and 2 representing a breed that is above average for the trait, 3 being average for the trait, and 4 and 5 designating a breed that is below average for a particular trait.

Litter size and litter weight are characteristics associated with reproductive performance of females in the herd. Growth rate and feed efficiency are traits associated with an animal's ability to grow rapidly and convert feed to body weight. Backfat thickness and loineye area describe the relative merits of market animals to yield muscular and lean carcasses.

The ear-set of swine is either erect or it is down; that ear characteristic will help you to distinguish some of the breeds from each other.

TABLE 3. BREEDS OF SWINE

Breed	Litter size[a]	Litter weight[a]	Growth rate[a]	Backfat thickness[a]	Loin muscle area[a]	Ear set	Characteristics
Berkshire	4	4	—	—	3	erect	black with white on face, legs, possibly the switch
Chester White	1	4	5	3	3	down	solid white
Duroc	3	3	2	3	3	down	solid red, from bright orange to chocolate-red
Hampshire	4	3	4	1	2	erect	black with white belt across the front legs
Landrace	1	1	3	5	4	down	solid white
Poland China	—	—	3	2	2	down	black with white on face, legs, possibly the switch
Spotted	5	4	2	4	2	down	white with black spots
Yorkshire	1	2	2	4	3	erect	solid white

[a]Ranking based on 1 (most desirable) through 5 (least desirable). Insufficient data for comparison is indicated by (—).
Adapted from the *Pork Industry Handbook,* 1985, Purdue University Cooperative Extension Service.
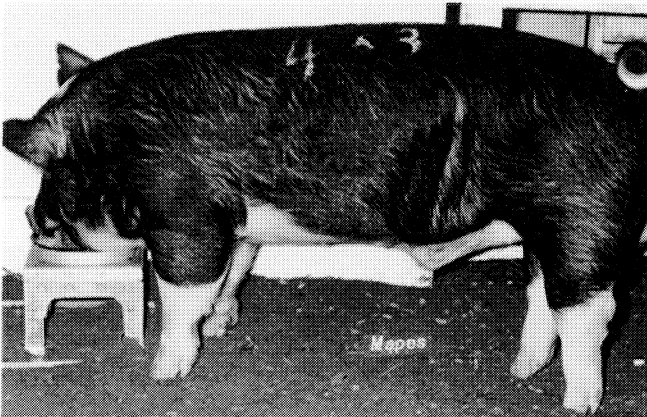
Berkshire boar
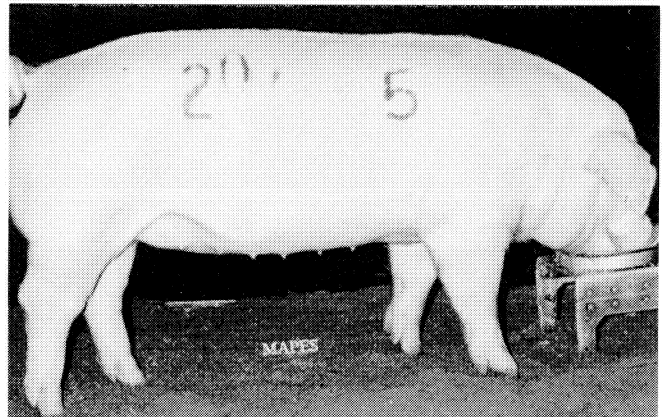
Chester White gilt
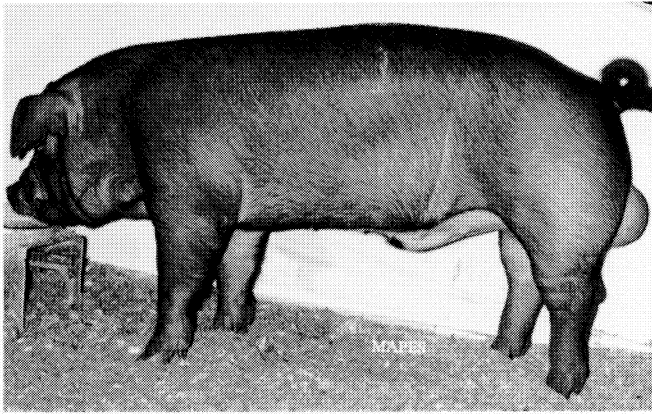
Duroc boar
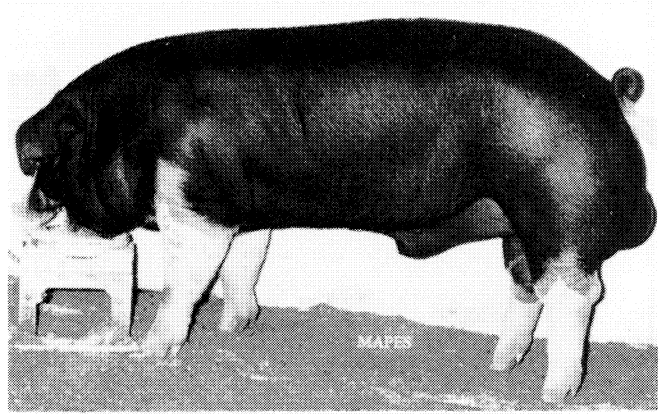
Poland China boar
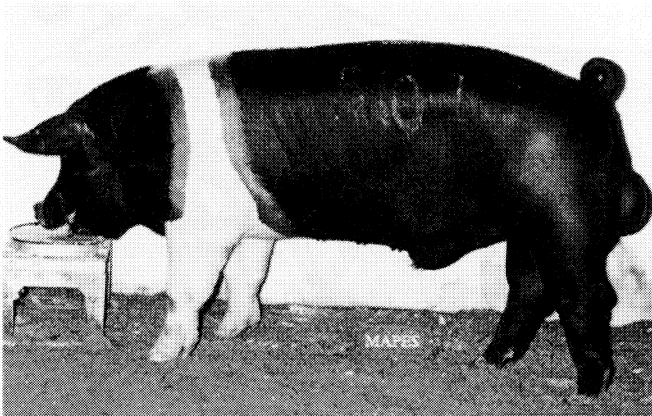
Hampshire boar
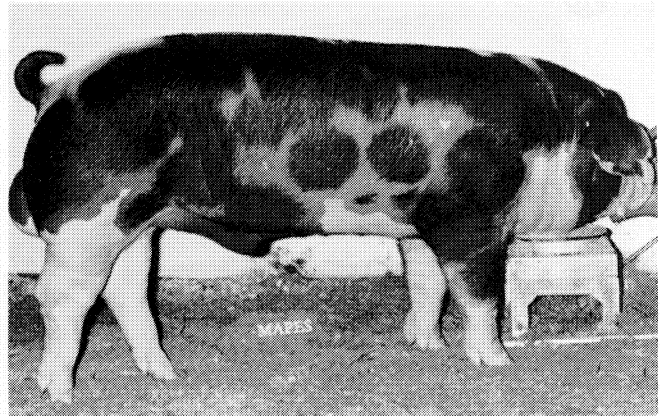
Spotted boar
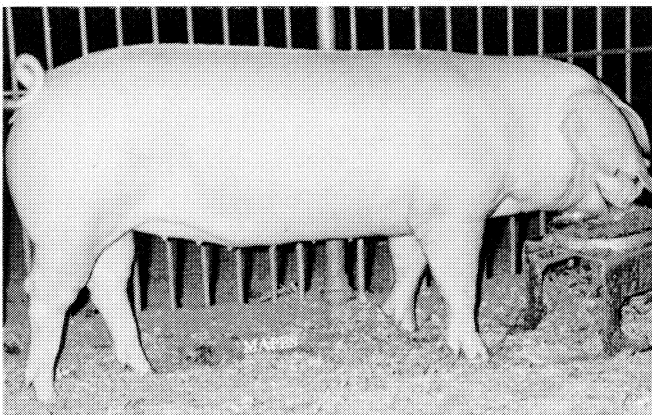
Landrace gilt
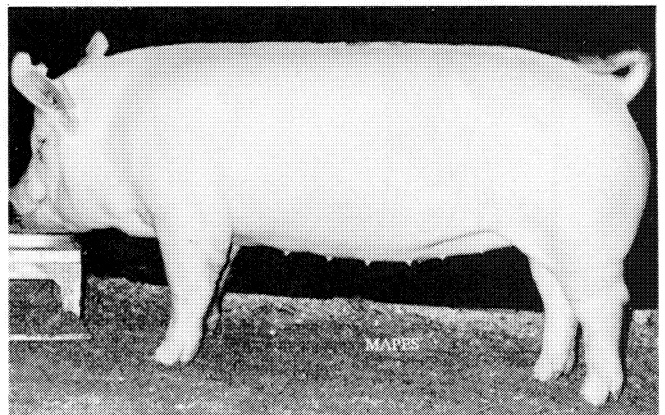
Yorkshire gilt

Parts of an animal

After you have become familiar with the breeds of livestock, you should learn the external parts and carcass regions of each species. In the next three sections, you will be provided with diagrams of the external parts of an animal, characteristics of an ideal female, and characteristics of an ideal market animal. (See figures 1–9.) You will need to take enough time to study all of the parts and to become familiar with them so you can refer to them without hesitation. You will need to use these terms as part of your reasons.

Characteristics of the ideal breeding female and ideal market animal are included for reference only. Depending on the location and production situation, an *ideal* can take on various shapes and forms.

Beef cattle

FIGURE 1: EXTERNAL PARTS OF BEEF CATTLE
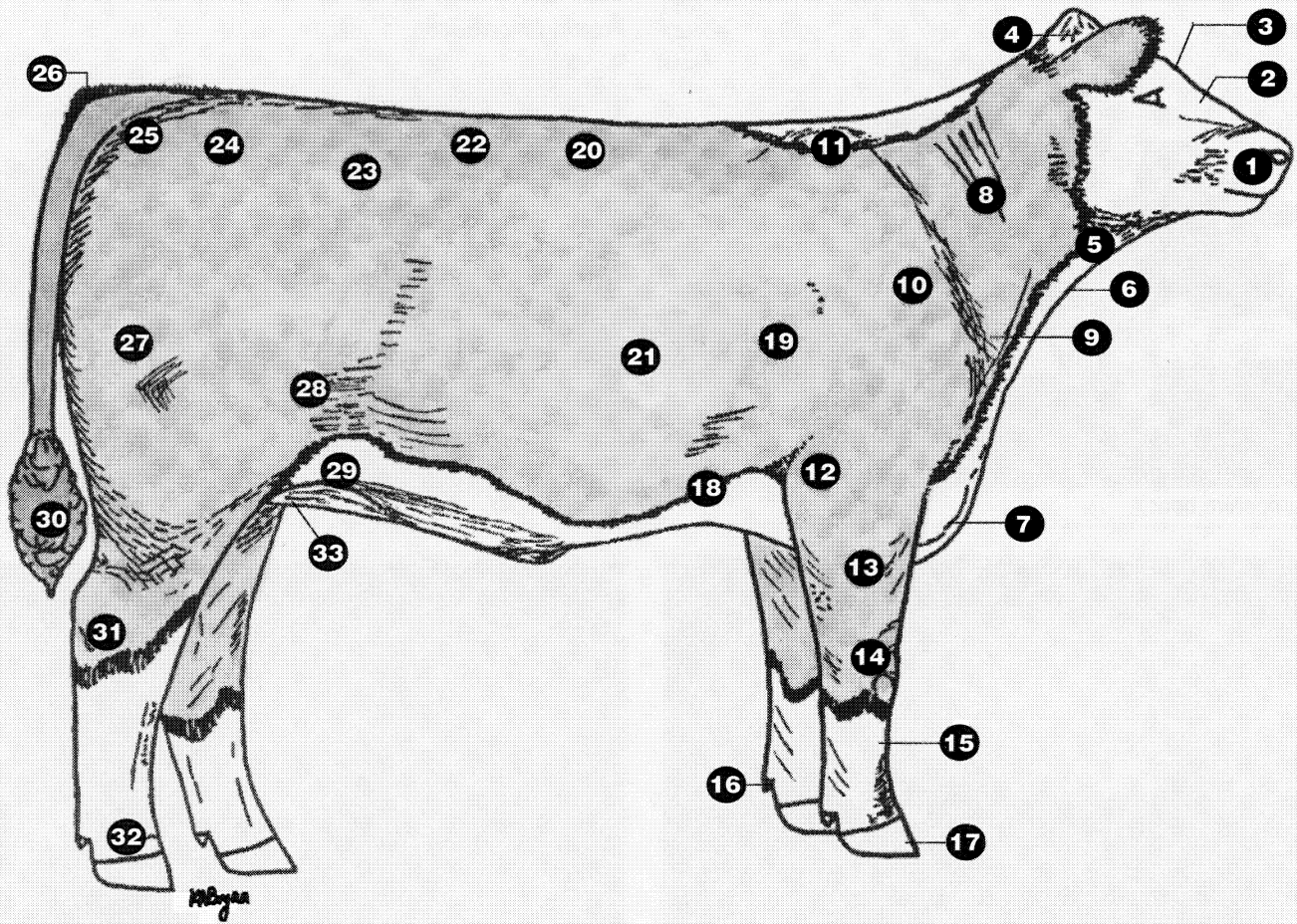
1 muzzle	13 forearm	25 pin bone
2 face	14 knee	26 tailhead
3 forehead	15 cannon	27 quarter
4 poll	16 dewclaw	28 stifle
5 throat	17 hoof	29 rear flank
6 dewlap	18 lower forerib, fore flank	30 switch
7 brisket	19 forerib	31 hock
8 neck	20 back or top	32 pastern
9 point of shoulder	21 rib	33 udder (cow, heifer),
10 shoulder	22 loin	cod (steer),
11 top of shoulder	23 hook or hip	scrotum (bull)
12 elbow	24 rump	

Beef cattle

FIGURE 2: CHARACTERISTICS OF AN IDEAL BREEDING HEIFER

feminine head

strong, level, thick top

long, square, level rump

long, lean neck

long, wide loin

long, smooth thick muscle

well sprung ribs

smooth shoulders

trim, neat throat, dewlap and brisket

trim middle

deep forerib

strong, adequate bone

placement of feet and legs should be square and correct

strong pasterns
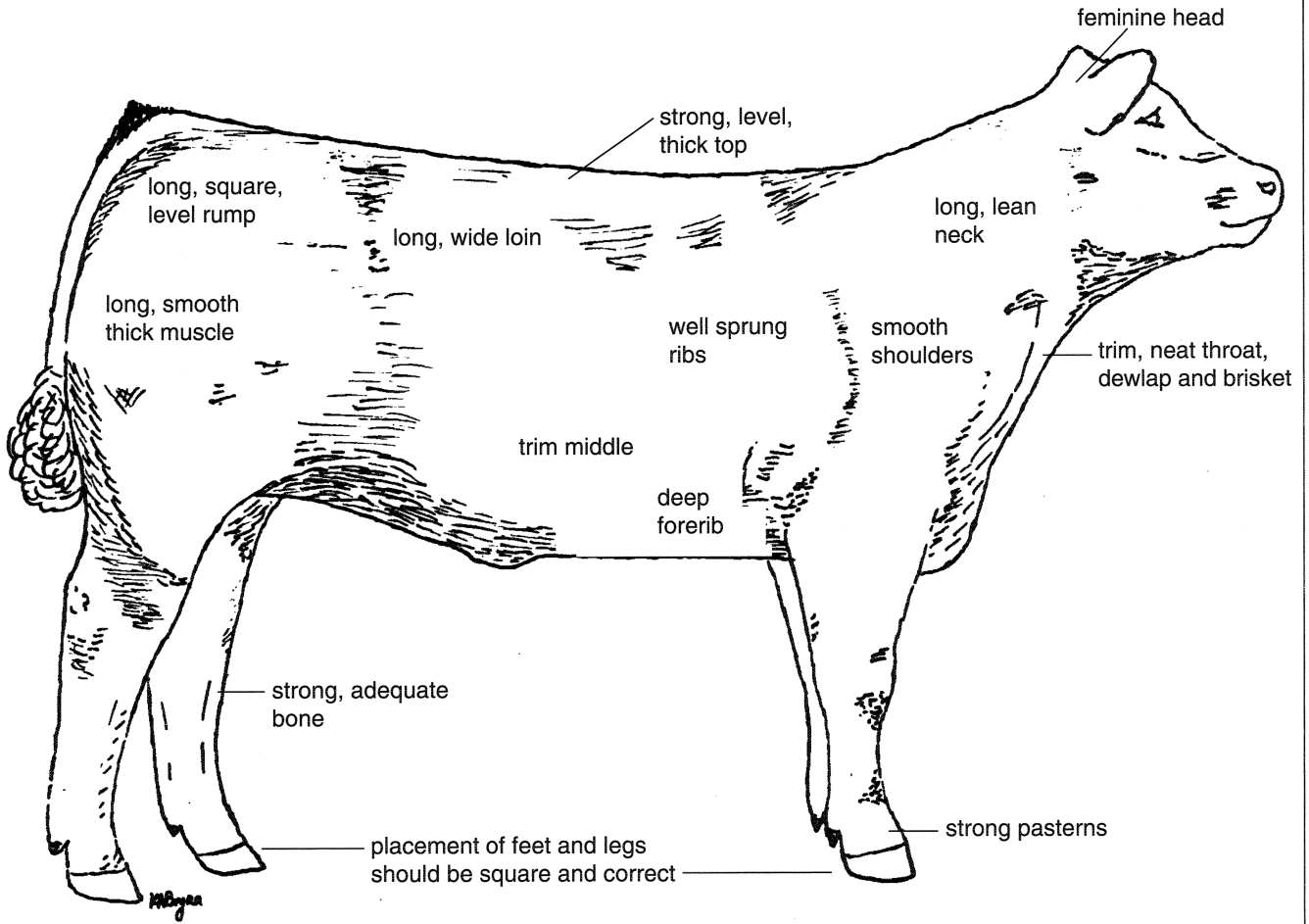
FIGURE 3: CHARACTERISTICS OF AN IDEAL MARKET STEER

thick, strong, level top

long neck

long, level, wide, full rump

wide, deep loin

well-sprung ribs

smooth shoulders

long, deep, thick muscular quarter

trim middle

trim, neat, throat, dewlap and brisket

deep forerib

adequate bone

strong pasterns

placement of feet and legs should be square and correct
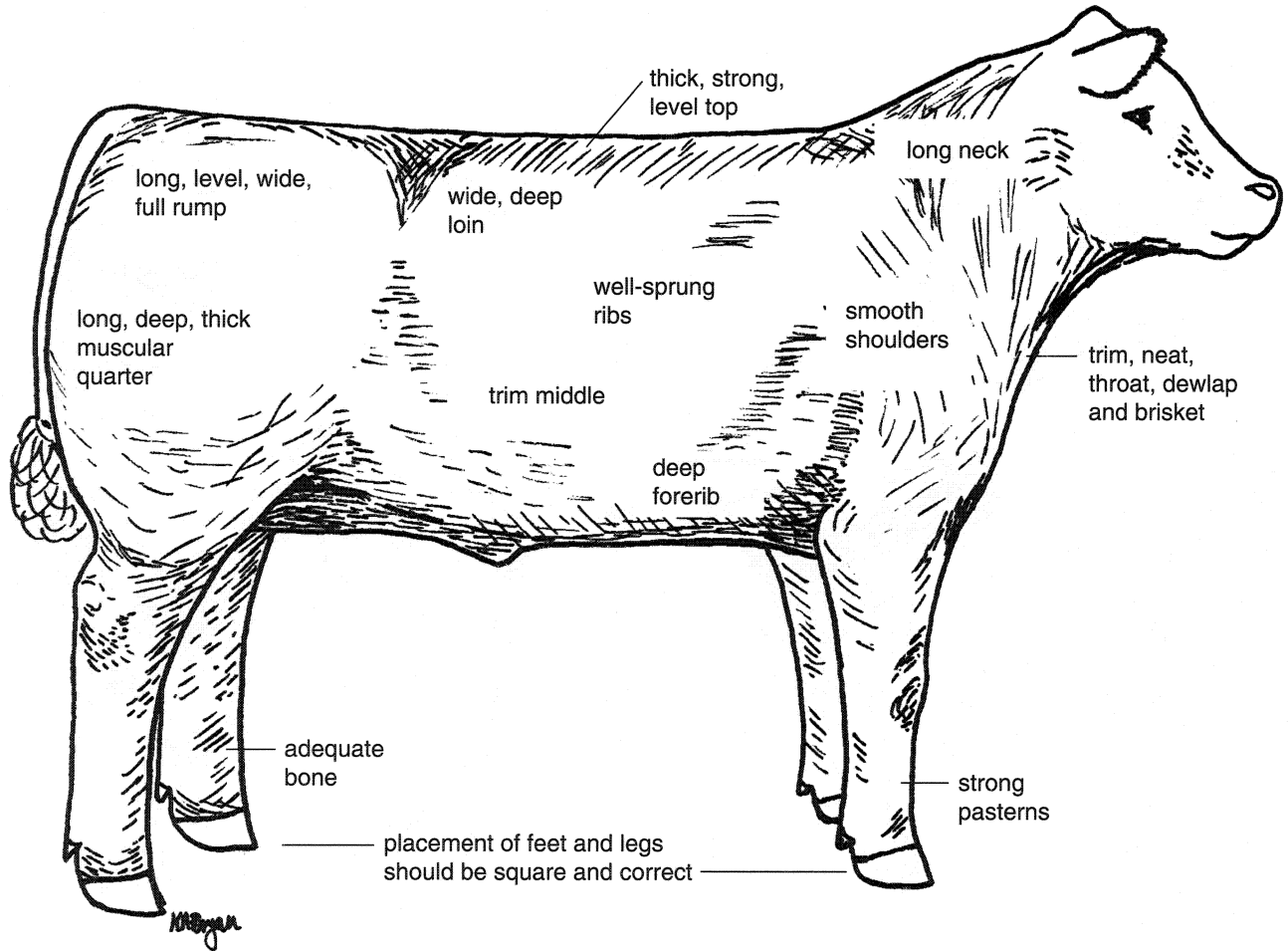
	NORMAL RANGE	AVERAGE	IDEAL
Live weight (lb.)	900 - 1,400	1,150.0	1,220.0
Dressing percentage	55 - 67	62.0	62.0
Fat thickness (in.)	.15 - 1.0	.50	.30
Ribeye area (sq. in.)	8 - 16	11.5	13.3
KPH fat percentage	1 - 6	3.5	2.0
Quality grade	Low Select - Avg. Prime	Low Choice	Avg. Choice

Adapted from *Live Animal Carcass Evaluation and Selection Manual*, 4th edition, 1993, Donald L. Boggs and Robert A. Merkel.

FIGURE 4: EXTERNAL PARTS OF SHEEP
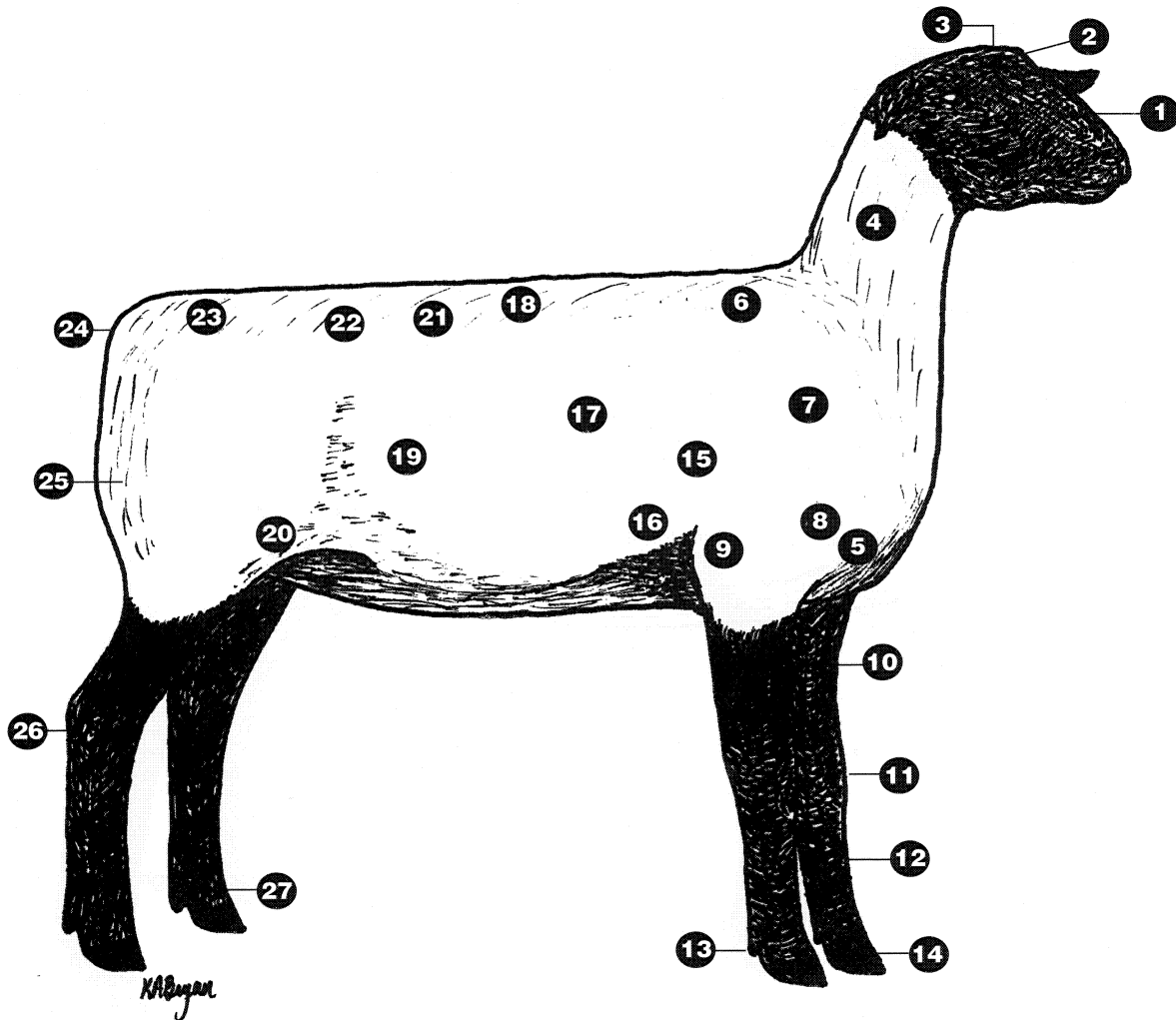
1 face	10 forearm	19 middle
2 forehead	11 knee	20 rear flank
3 poll	12 cannon	21 loin
4 neck	13 dewclaw	22 hip
5 breast	14 foot	23 rump
6 top of shoulder	15 forerib	24 dock
7 shoulder	16 lower forerib	25 leg
8 point of shoulder	17 rib	26 hock
9 elbow	18 back or top	27 pastern

FIGURE 5: CHARACTERISTICS OF AN IDEAL BREEDING EWE

feminine, refined head

strong, level top

long, lean neck

long, square, wide, level rump

long, wide, deep loin

well-sprung ribs

smooth shoulders

long, thick muscle

trim middle

trim breast

strong bone

strong, straight pasterns

placement of feet and legs should be square and correct

Sheep

FIGURE 6: CHARACTERISTICS OF AN IDEAL MARKET WETHER

fresh, youthful head

thick, strong, level top

long, wide, square, level rump

long, wide, deep loin

long, lean neck

thick, meaty leg

smooth shoulders

trim middle

trim breast

adequate bone

placement of feet and legs should be square and correct

strong, straight pasterns

KABryan
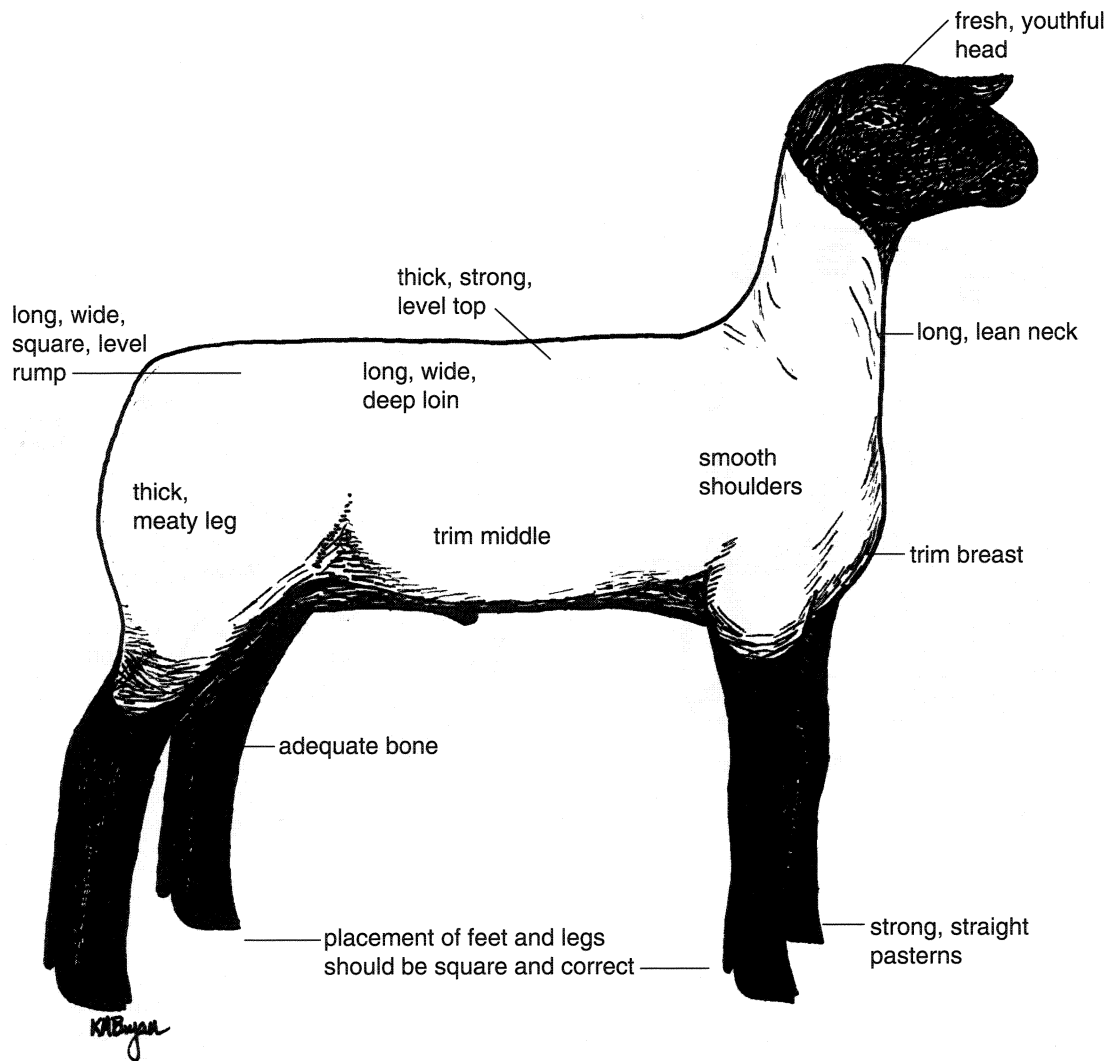
	NORMAL RANGE	AVERAGE	IDEAL
Live weight (lb.)	85 - 145	110.0	120.0
Dressing percent	45 - 58	52.0	52.0
Fat thickness (in.)	.05 - .60	.30	.12
Ribeye area (sq. in.)	1.5 - 3.2	2.25	2.80
KP fat percent	1.5 - 6.0	3.5	2.0
Leg score	low Good - high Prime	avg Choice	low Prime

Adapted from *Live Animal Carcass Evaluation and Selection Manual*, 4th edition, 1993, Donald L. Boggs and Robert A. Merkel.

FIGURE 7: EXTERNAL PARTS OF SWINE
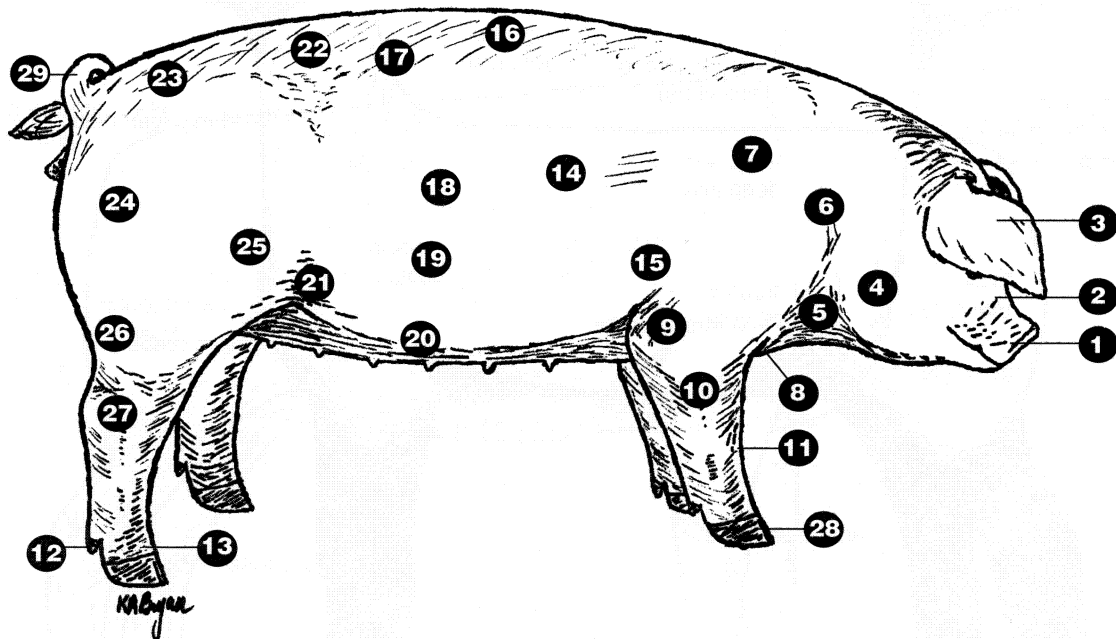
1	snout	11	knee	21	rear flank
2	face	12	dewclaw	22	ham-loin junction
3	ear	13	pastern	23	rump
4	jaw	14	rib	24	ham
5	jowl	15	forerib	25	stifle
6	neck	16	top or topline	26	base of ham
7	shoulder or blade	17	loin	27	hock
8	chest	18	side	28	foot or toes
9	elbow	19	middle	29	tail
10	forearm	20	underline		

FIGURE 8: CHARACTERISTICS OF AN IDEAL BREEDING GILT

high
tailsetting

long, wide,
square, level
rump

wide, lean,
level top

wide, thick
loin

bold rib
shape

big blade

long, deep
muscular
ham

deep flank

roomy
middle

deep
forerib

long neck

flexible
hock

prominent, refined,
evenly-spaced
underline

wide chest

curvature to knee

cushion to pastern

heavy
bone

feet and leg placement
should be wide, square and
structurally correct

KABryan

Swine

long, square, wide, level rump

lean, thick, wide, level top

long, deep, wide, muscular ham

lean, expressive shoulder blade

flexible hock

deep flank

wide chest

heavy bone

curvature to knee

feet and leg placement should be wide, square and structurally correct

cushion to pastern

	NORMAL RANGE	AVERAGE	IDEAL
Live weight (lb.)	210 - 270	245.0	245.0
Dressing percent	68 - 77	72.0	75.0
Average backfat (in.)	0.7 - 2.0	1.5	1.0
Carcass length (in.)	28 - 34	30.5	32.0
Loineye area (sq. in.)	3.0 - 7.0	4.5	5.8
Percent muscle	45 - 65	51.0	54.0

Adapted from *Live Animal Carcass Evaluation and Selection Manual*, 4th edition, 1993, Donald L. Boggs and Robert A. Merkel.

The basics

Now that you know why we judge livestock, what the major breeds of livestock are, what they look like, and the external parts of all three species, you can begin to appreciate why it takes considerable practice to become a good judge of livestock. In this section we'll discuss the placing card, a class of livestock, and a livestock judging contest.

■ A placing card

A placing card is the official record of how a person placed a class. Every time you judge a class of livestock, you will be given a placing card. Three examples of different types of placing cards are shown here; however, they all have very similar information (Figure 10). There is a line for your name or contestant number (A). Write your name on that line if there is not a contestant number already on the line. There is also a line for the class name and/or the class

number (B). Put the name of the class on this line, for example: Yorkshire gilts, or Charolais heifers, or Market lambs. Also, t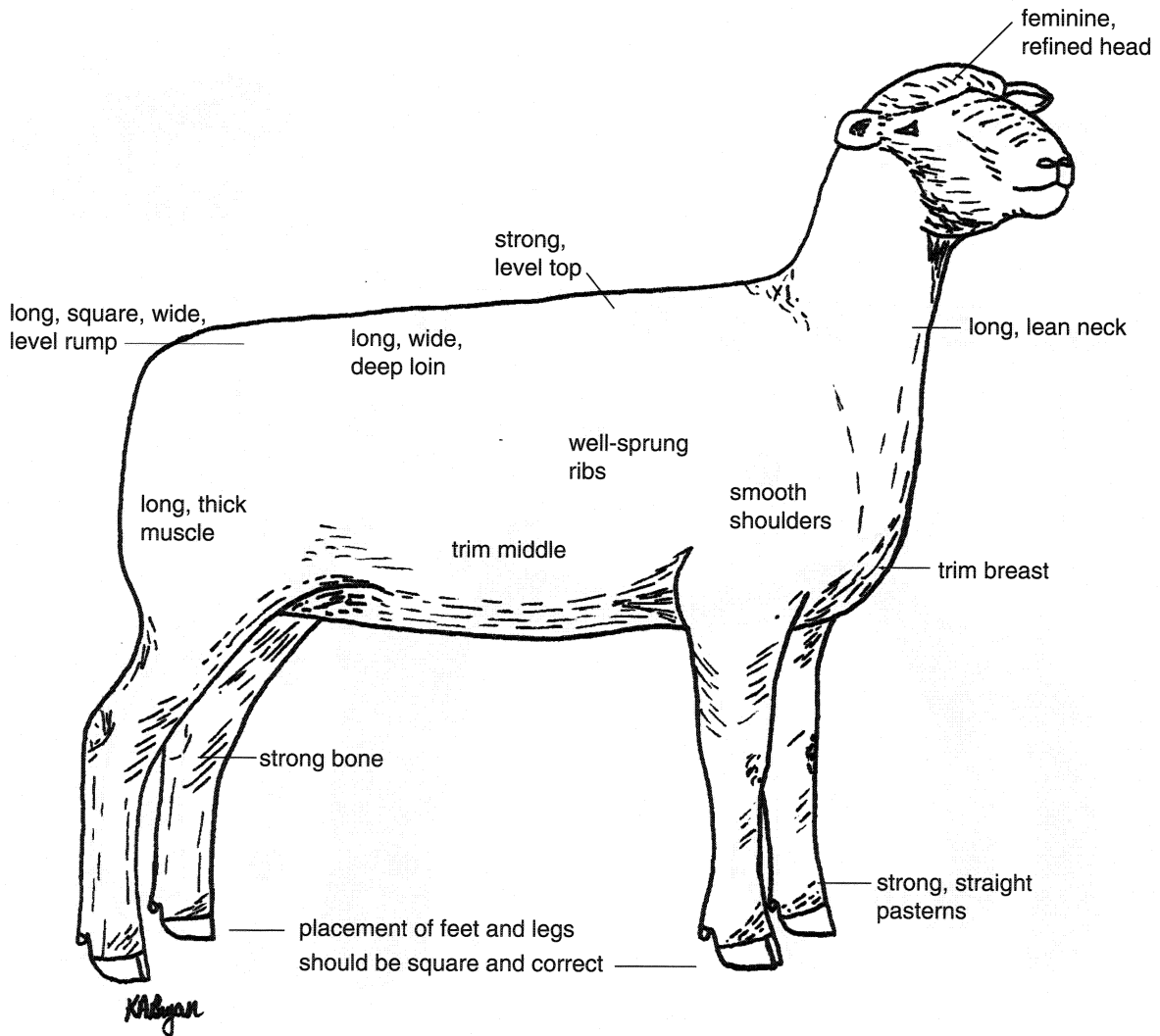here may be a space to indicate which division you are competing in, most likely *junior*, *senior*, *beginner*, or *advanced*. Place a mark in this section only if you are told to do so by your coach, group leader, or the person in charge of the contest. Lastly, there is the area for making your placing, perhaps by writing out your desired placing or by marking a √ or an X next to the placing you select.

In the examples, on August 5, John Doe (a junior contestant) placed Class 4, Angus heifers, 3-1-4-2. This placing indicates the most desirable animal is number 3 and the least desirable animal is number 2.

Be sure each card that you turn in for each class is marked, and that you have listed the name of the class. Mark only one placing on your judging card. Before turning in a card, look at it to see whether you have marked a placing on it.

FIGURE 10

THE PENNSYLVANIA STATE UNIVERSITY
Department of Dairy and Animal Science

(B) Angus
Breed

(B) Yearling Heifers
Age

August 5
Date

(A) John Doe
Name or Number

Placing Score

Reason's Score

Total Score

Circle Placing

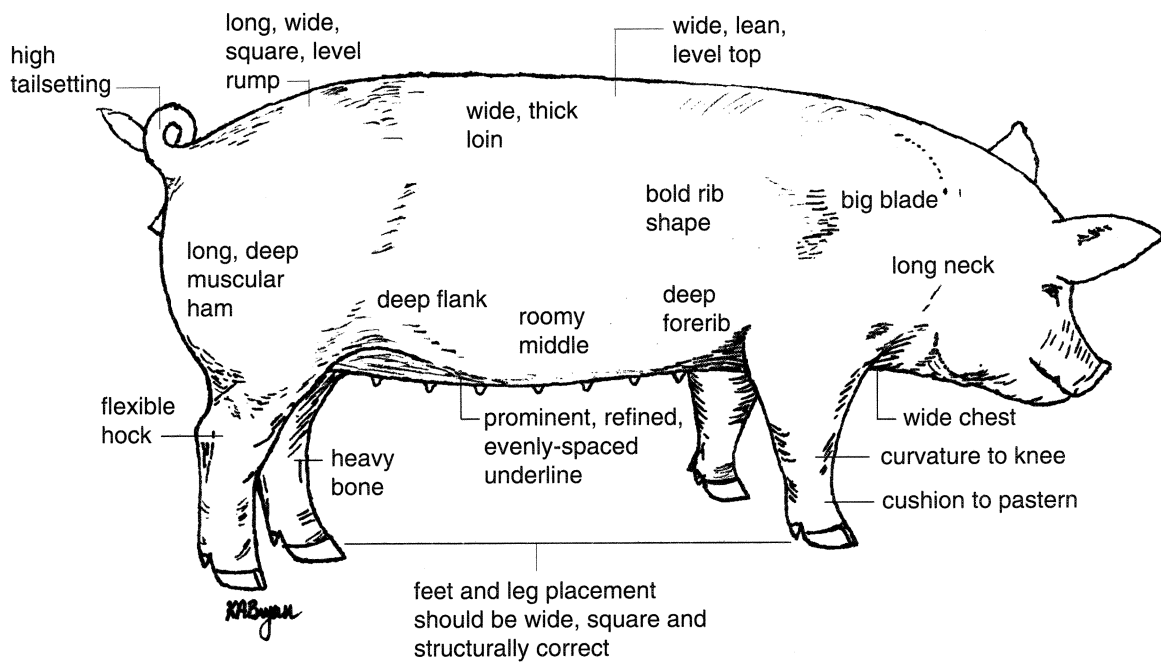| 1 | 2 | 3 | 4 |
1	2	4	3
1	3	2	4
1	3	4	2
1	4	2	3
1	4	3	2
2	1	3	4
2	1	4	3
2	3	1	4
2	3	4	1
2	4	1	3
2	4	3	1
3	1	2	4
3	1	4	2
3	2	1	4
3	2	4	1
3	4	1	2
3	4	2	1
4	1	2	3
4	1	3	2
4	2	1	3
4	2	3	1
4	3	1	2
4	3	2	1

PENNSTATE
College of Agricultural Sciences
Department of Dairy and Animal Science

CONTEST INFORMATION

JUNIOR

(A) John Doe
CONTESTANT I.D.

(B) Angus Heifers
CLASS NAME

(B) 4
CLASS NUMBER

REASON SCORE

1 2 3 4		A
1 2 4 3		B
1 3 2 4		C
1 3 4 2		D
1 4 2 3		E
1 4 3 2		F
2 1 3 4		G
2 1 4 3		H
2 3 1 4		I
2 3 4 1		J
2 4 1 3		K
2 4 3 1		L
3 1 2 4		M
3 1 4 2	X	N
3 2 1 4		O
3 2 4 1		P
3 4 1 2		Q
3 4 2 1		R
4 1 2 3		S
4 1 3 2		T
4 2 1 3		U
4 2 3 1		V
4 3 1 2		W
4 3 2 1		X

PENNSTATE
Department of Dairy and Animal Science

Class (B) Angus Heifers
Placing: 1st 3   2nd 1   3rd 4   4th 2
Name (A) John Doe
Date August 5

19

■ A class of livestock

A class of livestock generally consists of four animals of one particular breed, sex, and age group. For instance: Suffolk yearling ewes, or Dorset ram lambs, or crossbred market hogs, or Duroc boars, or summer yearling Polled Hereford bulls, or Simmental heifer calves. The animals will be numbered 1, 2, 3, and 4 so they can be readily identified. A possible exception to this is when judging beef cattle or sheep and the animals are haltered or being held in racks. When this is the case, the animals should be numbered from left to right as you stand behind them. The people holding these animals probably will have numbers on their backs or arms.

■ A livestock judging contest

A livestock judging contest will include classes of beef cattle, sheep, and swine. You may judge either market or breeding classes, or both. If you place the class correctly, you will receive a score of 50 points for the placing. If you incorrectly place one pair, or two pairs, or make other placing errors, your score will be determined in proportion to the seriousness of the error made.

In many judging events you will have the opportunity to give oral reasons. Oral reasons allow you to justify and explain the rationale for your placings to an official judge. The official judge will score you on accuracy, completeness, length, presentation and delivery, and terminology. A score of 50 points is the highest that can be awarded for oral reasons. Detailed information on reasons can be found in the section of this manual titled, "Introduction to Reasons."

A livestock judging contest is simply a collection of various classes of livestock. Usually there are at least three classes, and can be as many as 12 or more classes in a contest.

Always follow the instructions of your group leader or the person in charge of the contest. If you have any questions, ask your group leader *rather than* another contestant. There should be *no* talking among contestants during the contest!

As you approach a class of livestock, you will probably be told to turn your back toward the class and to label your placing card. Do not begin judging until told to do so!

Once "time is in," you may begin judging. You will have from 10 to 18 minutes to place a class, with most classes being 15 minutes. With approximately 2 or 3 minutes remaining in a class, you will be asked to mark your card. Make certain that your name or contestant number, class name, number, and placing are on the card. When "time is out," turn your back toward the class, check your placing one last time, and hand your placing card to your group leader.

How to begin

Before you start judging livestock, try to make a mental image of the perfect animal. You can do this by recalling the most desirable features of the high-quality animals that you have seen and thinking of them as belonging to one animal. You can also study pictures of champions, show reports, current livestock magazines, or "ideal-type" pictures from the breed associations.

In our contest system, we typically use four animals in each class. As you judge, divide the class into three pairs: a top pair, a middle pair, and a bottom pair. You will make comparisons between these pairs.When you look at any class, you should have five animals in mind: the four in the class and the ideal animal of that breed, sex, and age group.

Develop a judging system

Each time you judge a class of livestock or analyze a group of livestock, you should rely on a system of observing the animals. Listed below are a few pointers for judging a class of livestock:

1. Stand back—Allow enough room between yourself and the animals so that you can see all animals at one time. Usually, 25 to 30 feet is a good distance from which to view the class. You should become skilled in placing the classes from a distance and handle the animals only to confirm your observations. It is a mistake to place a class only with the hands. Market lambs are often placed on visual appraisal and handling.

2. Three angles—Try to look at the class from the side, front, and rear. Compare each animal to the others in the class and to the "ideal" animal that you have pictured in your mind.

3. Big things first—Always look for and analyze the good and bad characteristics of each animal, in major areas such as: frame size, volume, condition, muscling, structural correctness, movement, and breed character. Learn to study the animals carefully. Concentrate on the parts where we get the high-priced cuts. A keen judge of livestock is orderly and never haphazard. Make your placings according to the big things, unless a pair of animals is very similar, in which case you must analyze the minor differences between the animals.

4. Place the class—Once you have analyzed the important factors that go into placing a class, place the class. Mark your placing at the top of your notebook and begin taking notes. There is a more thorough discussion of note-taking and reasons format in the "Introduction to Reasons" section of this manual.

5. Close inspection—You will usually be given some time for close inspection of a class. When you are near the animals for close inspection or handling, you should simply confirm the decisions you made at a distance. If an animal appears or handles differently than what it looked like from a distance, and if the difference merits consideration, then change your placing. Close inspection is different for each species, so we will deal with them separately.

   Beef cattle—During close inspection of beef cattle you probably will not be permitted to handle breeding animals, but you may be allowed to handle animals in a market class. If you are permitted to handle the animals, move quietly and cautiously so you don't excite or frighten the animals (See "Handling Market Steers").

   Sheep—During close inspection of sheep, you may or may not be permitted to handle breeding and market classes. Once again, move quietly and cautiously so the animals don't become nervous or excited. The following section deals with the preferred method of handling sheep (See "Handling Market Lambs").

   Swine—There are no predetermined guidelines for close inspection of swine, because hogs are usually judged loose in a pen. Feel free at any time during the class to kneel and look at underlines, ear notches, feet, and legs, etc. This should become part of your normal routine for judging pigs.

6. Stand back and take notes—Even if you are not giving reasons, you should still write down a few notes on why you placed the class the way you did. If you are going to give reasons, stand back from the class and write your notes for reasons. If you are unsure of something, either try to look at it again or omit it. You will probably be wrong if you are unsure and guess. Try to be accurate and descriptive when writing notes, and try to remember what the animals look like.

■ Handling market steers

There are no pre-determined guidelines for handling steers. The primary objectives when handling steers are to estimate accurately the amount and uniformity of finish, and to determine the quantity of muscle in the loin, and maybe rump or quarter, as an indicator of total muscle volume.

With fingers extended and together, place the palm of your hand and finger tips on the steer at the top of his shoulders (step 1) and estimate the width and thickness of muscle directly behind his shoulders. Heavily muscled steers will be wide and full; lightly muscled steers will be narrow and angular.

Step 1

To determine the quantity of muscle in the loin, move your hand down his topline and toward his loin, or examine his loin and move forward toward his last rib (step 2). Cup your hand and place the palm of your hand on the loin of the steer and evaluate the depth and width of his loin. The loin should be wide and deep with muscle.

Step 2

Next, determine the amount of finish over his last rib and along the edge of his topline, progressing toward the top of his shoulder (step 3).
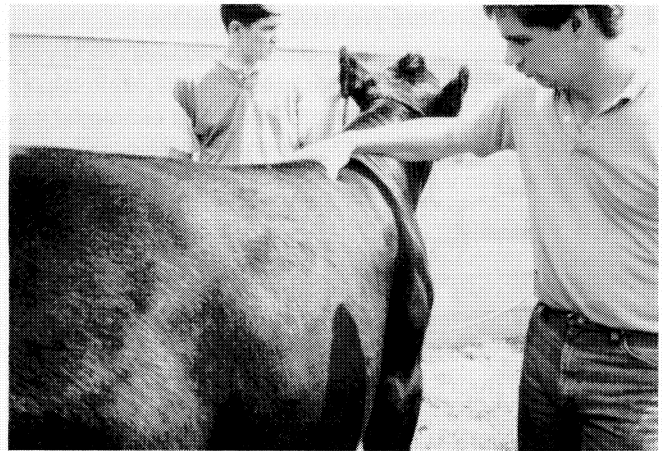
Step 3
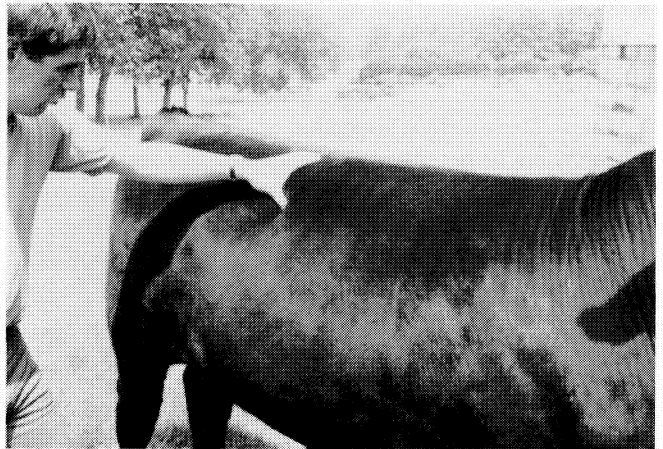
Step 4

Determine the finish near the elbow of the steer (step 4).
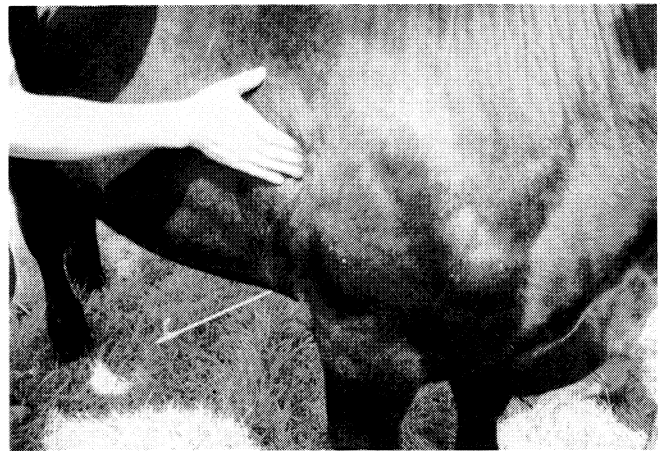
Step 5

Move your hand toward his last rib (steps 5 and 6).

Step 6

Analyze the amount and uniformity of finish over the various areas of the steer's rib region. Press firmly to detect the differences between fat, muscle, and bone. Fat will feel soft, like jelly, muscle will feel firm, and bone will feel hard.

■ Handling market lambs

One key to handling market lambs is to develop a system to accurately determine differences in muscle and finish. Each lamb should be handled in the same manner. If you handle one lamb from rear to front for finish or fleshing on the back, handle all lambs that way.

Step 1

The way the sheep stands will affect what you are able to feel (step 1).The sheep should be standing squarely on all four feet while it is being handled.
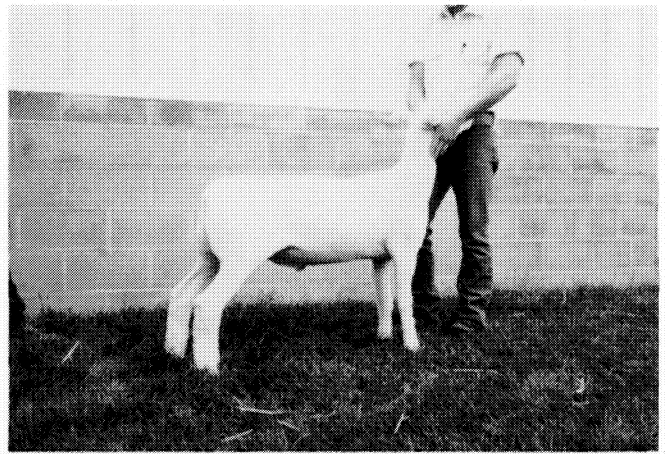
Step 2

With your fingers extended and together, check the width and smoothness of the top of his shoulders (step 2).
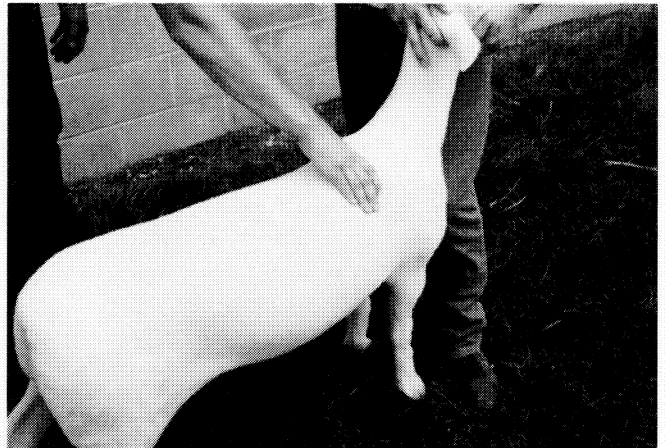
Step 3

Handle the topline of the lamb for finish and muscle (step 3). Begin by evaluating the width, spread of muscle, and firmness of finish directly behind the shoulders.

Step 4

Continue down the topline of the lamb. End by evaluating width of the loin and rump (step 4).
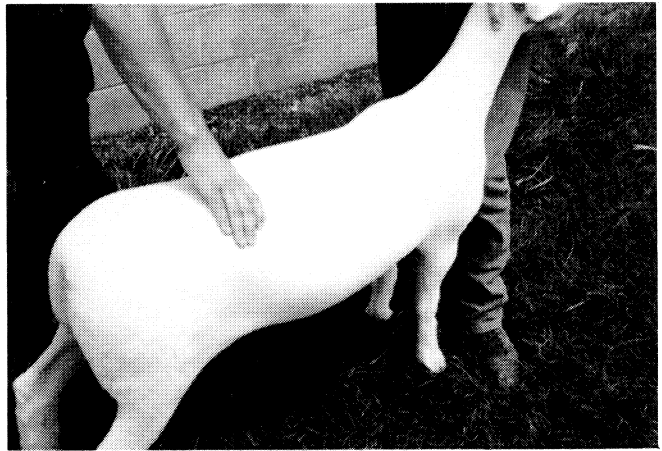
Step 5

Next, check for finish over the rib of the lamb by starting in his lower forerib (step 5).
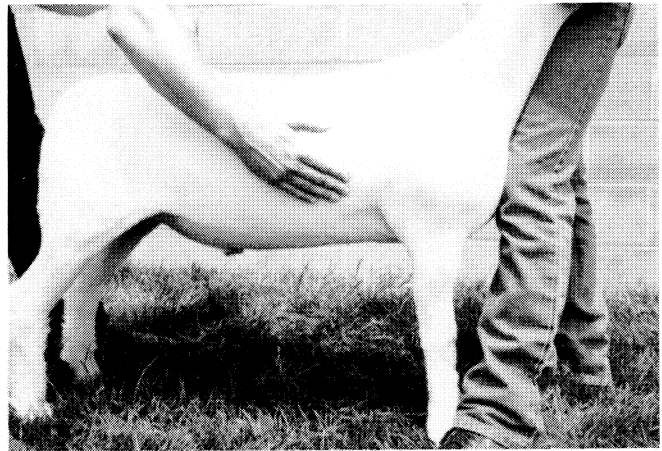
Step 6

Continue handling toward the last rib of the lamb (step 6).
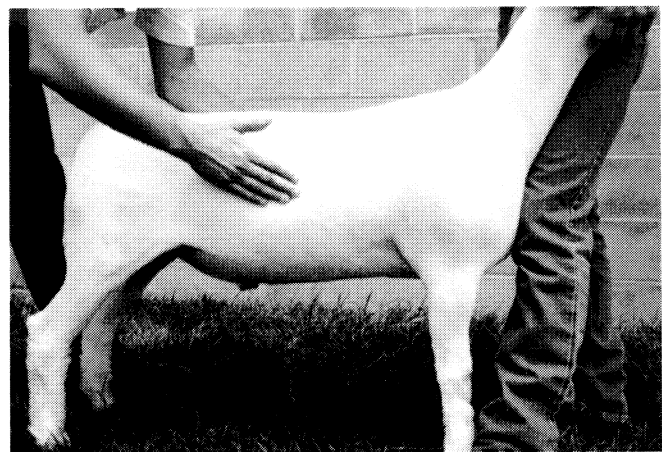
The final location used to determine finish of a lamb is at the last rib (step 7). Lambs should feel trimmer at the last rib compared with the forerib. Trim, muscular lambs are firm and hard when handled. Fat lambs are soft to the touch, and you will find it is difficult to distinguish the bones of the shoulder, spine, and ribs.
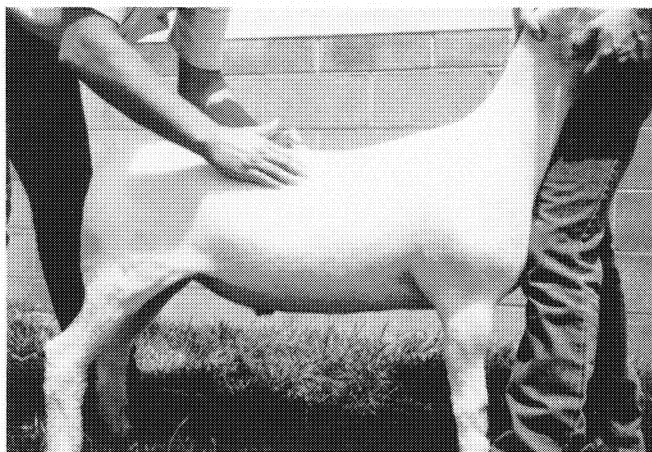
Step 7

Evaluate muscle dimension of the high-priced regions of the lamb by grasping the loin and checking for width and depth (step 8).
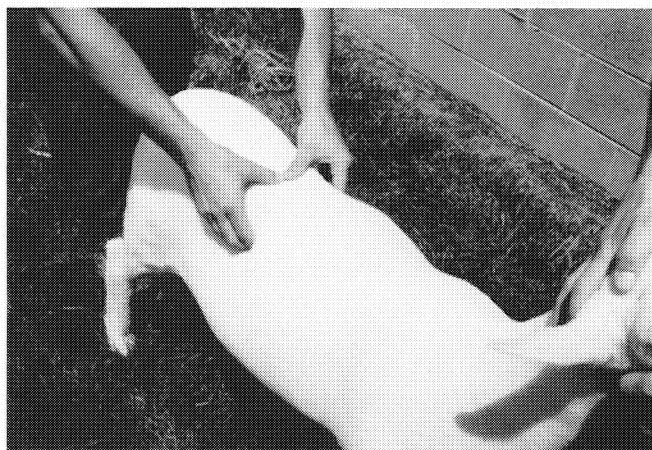
Step 8

Handle for length of loin by placing your fingertips at the last rib and determining where the lamb's hooks fall on your hand or forearm (step 9). The three dimensions – width, depth, length – contribute to the total volume of muscle in the loin, which is one of the more valuable cuts.
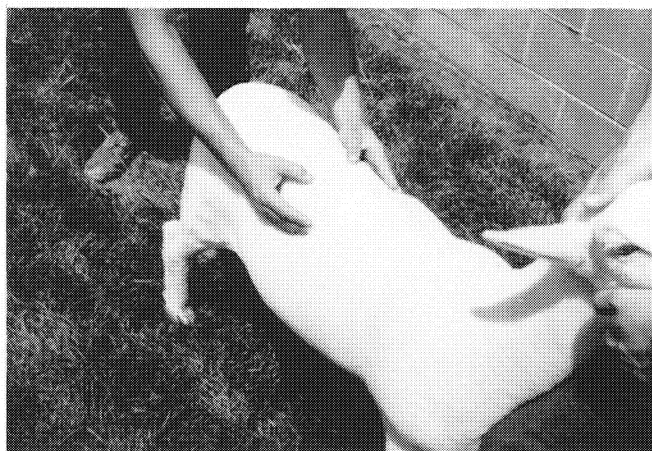
Step 9
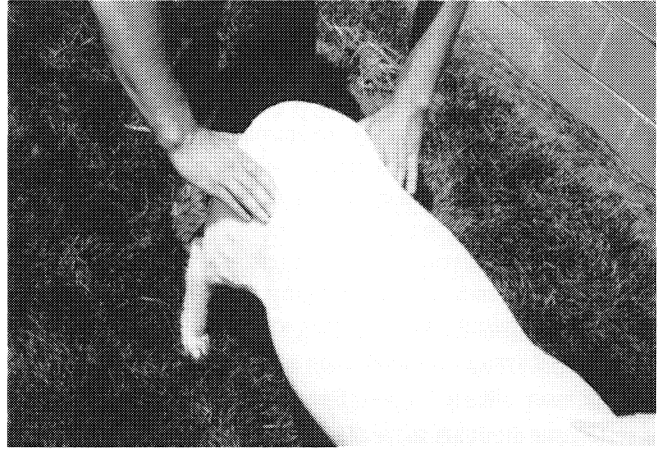
Next, handle the lamb for width and length of rump (step 10).

Step 10

Determine the size of the leg and the amount and firmness of inside and outside muscling by grasping the leg firmly at the stifle region (step 11). Using one hand as in the picture, or both hands, press firmly with the fingers meeting on the inside. The leg should be firm and heavily muscled, and the muscle should extend toward the hock.
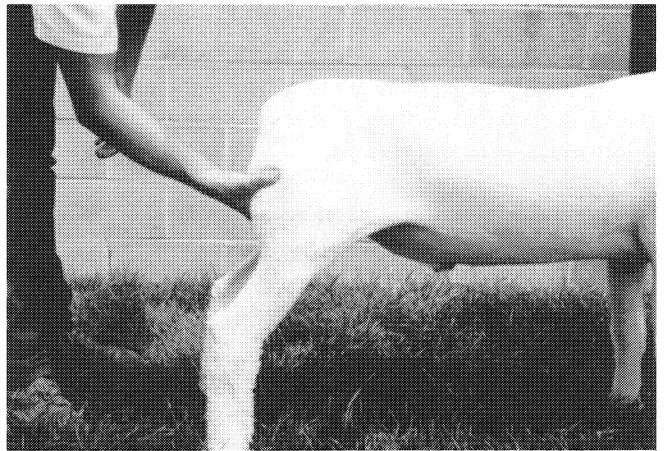
Step 11

Introduction to oral reasons

Good judges of livestock have a special quality that an average judge does not possess. A good judge can accurately and concisely describe an animal or group of animals so that an audience knows exactly what the judge saw. The ability to accurately and concisely describe animals is the basic foundation of the reasons process. This section is devoted to a discussion about giving reasons, starting with the basics and ending with a lengthy list of terminology.

Giving reasons will help you to:

- develop a system for analyzing a class of livestock,
- think more clearly on your feet,
- state your thoughts more clearly,
- improve your speaking poise and presentation,
- improve your voice, and
- develop your memory.

By now, you should have a pretty good understanding of the parts of the various livestock species, and how they join together to make a particular breeding or market animal. Every animal is different, and so is every class of livestock. Therefore, there are no guidelines or rules for placing a class. Nor is there a right or wrong way to deliver or present a set of oral reasons.

How good are your oral reasons?

The judge will determine the value of your reasons by:

Accuracy—You must tell the truth! This means that you need to see the important things in the class correctly. Accuracy is very important. You will lose points for incorrect or inaccurate statements.

Completeness—Describe all the major differences in your reasons. Omit small things that leave room for doubt.

Length—A well-organized, properly delivered set of reasons should never be more than 2 minutes in length.

Presentation and Delivery—Present your reasons in a logical well-organized manner that is pleasant to hear, and clear and easy to follow. If reasons are poorly presented, the value of accuracy may be lost because most of what you say doesn't "get through" to the listener. Speak slowly and clearly in a conversational tone. Speak loudly enough to be understood, but avoid talking too loudly and too rapidly. Use well-organized statements and be sure to use correct grammar. Emphasize the important comparisons and be confident in your presentation.

Terminology—Use correct terminology. Incorrect terminology greatly detracts from the value of your reasons. Study and use the terms in this guide (See "Terminology for Oral Reasons").

Rules for giving oral reasons

- Do not claim strong points for one animal unless the animal has them. Verbally state *(claim)* the points where one is superior, and then acknowledge *(grant)* points of advantage to the other animal.

- Emphasize the major differences strongly. Present the important differences first on each pair.

- Be concise and definite. Don't hunt for things to say. If you don't remember, go on to the next pair you are to discuss.

- State your reasons with confidence and without hesitation. Talk with enough vim and vigor to keep the judge interested, but do not yell or shout.

- End reasons strongly. Give a concise and final statement as to why you placed the fourth-placed animal last.

- Be sure you have your reasons well-organized, so you do not hesitate when you present them to the judge.

The four most important factors that go into an effective set of reasons are:

1. accuracy
2. organization
3. delivery
4. terminology

Let's take each one in order, and see how they can be used to deliver a better set of reasons.

Importance of accuracy

Accuracy is the most important aspect of a good set of reasons. Not only must you be able to see important differences among animals, but you must be able to describe these differences accurately. Two animals may be extremely similar except for one or two minor differences, or they may be extremely different and have very little in common. In your reasons, you must be able to identify the important differences and similarities among animals and convey these traits to the judge. The official judge will want you to *paint a mental picture* by using the proper terminology to describe the animals.

Correct phrases about the livestock are the foundation of accuracy. Claim strong points for an animal only if the animal has them. Do not try to make small differences into big placing points. Furthermore, do not try to impress the judge with a discussion of every point that is different among animals. Discuss only the more important reasons for placing one animal above another.

Organization and format of a set of reasons

Organization is the second important factor in the presentation of reasons. It is easier for the person listening to you to follow and understand what you are saying when you present things in a logical and well-ordered fashion. This organization begins with taking notes. If your notes are organized, your reasons will be organized also.

In your reasons, a class should be divided into three pairs: a top pair, a middle pair, and a bottom pair. Your notes for reasons also should be divided into three pairs.

The standard format for taking notes is shown in Figure 11. Boxes A, B, and C refer to the top pair; boxes D, E, and F refer to the middle pair; and boxes G, H, and I refer to the bottom pair. Boxes A, D, and G are for *placings*; boxes B, E, and H are for *grants*; and boxes C, F, and I are for *faults*. This outline for note-taking can be used for any class of four animals with any placing.

■ Sample notes

When you begin taking notes, always write down the most obvious characteristics first, then underneath the important things, write the details or specific differences. Figure 12 represents a sample set of notes for a class of Angus Heifers placed 3-1-4-2.

Notice how the most important characteristics of each animal are at the top of each box (underlined), and the specific differences describing the important features are listed below in detail.

The reasons can be read directly from the notes in a logical fashion—left to right and top to bottom. Notice how the terms and phrases are read directly from the notes, flowing and blending to make a complete set of reasons.

FIGURE 11

FIGURE 12

■ Sample set of reasons

I placed this class of Angus Heifers 3-1-4-2.

In my top pair, I preferred 3 over 1, as she was a larger framed, heavier muscled, bigger volumed, growthier heifer. She was a longer bodied, taller topped heifer that had more arch and spring of rib, with more width and natural thickness down her top and through all portions of her quarter. In addition, she appeared to have a higher weight-per-day-of-age. However, I do admit that 1 was a more feminine fronted heifer and was more refined about her head, longer necked, and smoother about her shoulder, but she was a shallower ribbed, lighter muscled heifer that was pinched in her forerib.

Coming to my middle pair, I placed 1 over 4 because she was a more feminine, longer bodied, and more structurally correct heifer. She was especially smoother through her neck/shoulder junction, longer sided, and stood more squarely on her feet and legs. Granted, 4 was a heavier muscled, more ruggedly designed heifer that stood on more substance of bone, but she was a more conventional, coarser shouldered heifer that was cow-hocked and splay-footed.

Dropping to my bottom pair, I placed 4 over 2 as she was a heavier, bigger volumed, heavier muscled heifer that stood on a greater diameter of bone. She had more arch and spring through a deeper rib, with more thickness down her top and a greater volume of muscle from hip to hock. However, 2 was more feminine, leaner about her neck and smoother shouldered. Nonetheless, 2 was the smallest framed, lightest muscled, narrowest made heifer in the class, and stood on the finest bone with the lowest weight-per-day-of-age. Thank you.

Delivery of a set of oral reasons

This leads us to the third factor that is necessary for a good set of reasons: delivery.

Organization is important in preparing your reasons. Everyone will be nervous the first time they give a set of reasons, but it will become easier with practice. These six factors for delivering a good set of reasons will help.

Flow—The way you put the words together into phrases, sentences, and paragraphs is considered flow. A group of short, choppy phrases, each standing alone, is boring and difficult to follow. A group of long, smooth-flowing phrases is pleasant to listen to and enjoyable for the listener. Begin your reasons at one speed and keep a similar speed throughout the entire set. Don't talk too fast or too slow. Speaking without hesitation will allow you to receive a higher score for your reasons. The only places to pause are between pairs, and when you need to take a breath. A pleasant and sincere "thank you" should follow every set of reasons that you give.

Inflection—Voice inflection is one of the most important items in your delivery. Emphasis should be placed on the words that describe the important things and the important characteristics of each animal. Careful selection of the key words to emphasize will take some practice, but in time it should become a normal part of your reasons.

Volume—The volume you use to deliver your reasons will depend on how you normally speak and the size of the room. If you are soft-spoken and in a large room, you will need to increase the volume of your voice in order to be heard and understood. If you are normally loud and happen to be giving reasons in a small room, you may want to decrease the volume of your voice so it doesn't echo.

Eye Contact—Try to look at the person who is listening to your reasons. If you maintain eye contact throughout the entire set, your reasons will be more professional. You don't have to look the judge straight in the eye, but you should direct your discussion toward the official. You will receive a higher score if you aren't gazing into outer space or looking around the room.

Distance—Depending on your voice and stature, the distance you stand from the judge will vary. A short, soft-spoken person should stand closer to the judge than a tall, deep-voiced person whose voice carries well. However, 6 to 10 feet is generally adequate.

Stance—When giving a set of reasons, you will want to make the situation as comfortable as possible for both the judge and yourself. Stand upright with your hands behind your back or folded at your waist. Your feet should be placed squarely at shoulders' width. Avoid rocking back-and-forth or rolling on the balls of your feet.

Terminology for oral reasons

Terminology is the fourth and final factor that goes into an effective set of reasons. Try to put the words and phrases together in a well-organized, logical fashion when describing livestock. However, only describe what you see and never invent things that aren't there!

It is important to know the meaning of every term or phrase that you use. An official who is unfamiliar with a certain term may ask you to define it further. As you look over the terms, try to picture an animal with the characteristics described by the terminology. If you are uncertain about the exact meaning of a term or phrase, ask your parents, 4-H leader, or county agent.

More desirable and less desirable characteristics are listed on the following pages for several traits of each species. Use caution when applying the terminology in a set of reasons; in some instances, a more desirable characteristic actually may be a less desirable characteristic (i.e., larger framed vs. smaller framed). Furthermore, not every term in the following list has an appropriate opposite term, and therefore, no term is given (—). For terms that contain a blank (_ _ _ _ _), insert the appropriate part of the animal you are describing.

■ Beef cattle terminology

GENERAL

MORE DESIRABLE CHARACTERISTICS	LESS DESIRABLE CHARACTERISTICS
more progressive	conventional
more dimensional	—
stouter	needs more size and performance
more upstanding	—
growthier	lacks growth and do-ability

STRUCTURE

MORE DESIRABLE CHARACTERISTICS	LESS DESIRABLE CHARACTERISTICS
fault-free	ill structured
problem-free	poorer structured
straighter-lined	slack framed
more structurally correct	structurally incorrect, poorer structured
better balanced	more off balance
tighter framed	—
stronger topped, stronger loined	weaker topped, weaker loined
squarer, leveler rumped	dropped at the pins
higher and wider at the pins	narrower at the pins
more nearly level in her rump	steeper in her rump

FRAME AND GROWTH

MORE DESIRABLE CHARACTERISTICS	LESS DESIRABLE CHARACTERISTICS
larger framed	smaller framed
more size and scale	lacked size and scale
longer _ _ _ _ _	shorter _ _ _ _ _
more ruggedly designed	finer boned, frailer
higher weight-per-day-of-age	lower weight-per-day-of-age
more performance oriented	lacked growth and performance

HEAD, NECK, CHEST AND SHOULDER

MORE DESIRABLE CHARACTERISTICS	LESS DESIRABLE CHARACTERISTICS
fresher appearing	staler appearing
later maturing	earlier maturing
more future growth potential	less future growth potential
more extended through her front end	shorter fronted
longer, leaner neck	shorter, leathery fronted
laid in more neatly about the shoulder	coarser fronted
smoother, tighter shouldered	more open shouldered
smoother neck/shoulder junction	coarser neck/shoulder junction
more desirable slope to the shoulder	straighter shouldered
wider chested	narrower chested

CONDITION

MORE DESIRABLE CHARACTERISTICS	LESS DESIRABLE CHARACTERISTICS
trimmer, cleaner patterned	—
cleaner conditioned	heavier conditioned
more ideal in (his/her) condition	less ideal in (his/her) condition
trimmer dewlap, brisket	wastier through her front end
easier fleshing	harder doing, harder fleshing

VOLUME AND CAPACITY

MORE DESIRABLE CHARACTERISTICS	LESS DESIRABLE CHARACTERISTICS
wider sprung	narrower made
deeper _ _ _ _ _	shallower _ _ _ _ _
more capacious, higher capacity	less capacious
bigger volumed	had less volume
more dimensional _ _ _ _ _	less dimensional _ _ _ _ _
more arch and spring of rib	flatter ribbed
bolder spring of rib	pinched in the forerib
longer ribbed	shorter ribbed
more dimension through the center of the rib	less dimension through the center of the rib

MUSCLE AND MUSCLE DESIGN

MORE DESIRABLE CHARACTERISTICS	LESS DESIRABLE CHARACTERISTICS
longer, smoother muscle design	shorter, tighter muscle design
_ _ _ _ _ muscle make-up	—
heavier muscled	lighter muscled
thicker made	—
deeper quartered	shallower quartered

FEET AND LEGS

MORE DESIRABLE CHARACTERISTICS	LESS DESIRABLE CHARACTERISTICS
stood on more bone	stood on finer bone
heavier boned	finer boned
stood on more rugged bone	stood on finer bone
stood squarer in (his/her) foot placement	splay-footed, pigeon-toed, toes out
stood wider both front and rear	stood narrower both front and rear
more desirable set to the hock	posty-legged, sickle-hocked
stronger pasterns	weaker pasterns

STRIDE AND MOVEMENT

MORE DESIRABLE CHARACTERISTICS	LESS DESIRABLE CHARACTERISTICS
more mobile	restricted in (his/her) movement
more fluid moving	stiffer strided
easier moving, sounder footed	restricted in (his/her) movement
moved out freer and easier	shorter strided
farther reaching in (his/her) stride	shorter strided
truer tracking	narrower tracking, cow-hocked
longer strided	shorter strided
moved with more strength of top	roached (his/her) top on the move
moved with more levelness of rump	dropped (his/her) pins on the move

BULL

MORE DESIRABLE CHARACTERISTICS	LESS DESIRABLE CHARACTERISTICS
stouter	—
more powerful	—
more scrotal circumference	less scrotal circumference
greater testicular development	less testicular development
more testicular distention	less testicular distention
more ruggedly designed	—
wider chested	narrower chested

■ Beef cattle terminology (continued)

BULL (CONTINUED)

MORE DESIRABLE CHARACTERISTICS	LESS DESIRABLE CHARACTERISTICS
more masculine	—
more agile	more restricted in his movement
more correctly designed	—
three dimensional	—

more potential to sire calves with _ _ _ _ _	should sire calves with more _ _ _ _ _		less potential to sire calves with _ _ _ _ _	should sire calves with less _ _ _ _ _

frame	frame
length	length
volume	volume
growth	growth
muscle	muscle
trimness	—
performance	performance
weight-per-day-of-age	weight-per-day-of-age

HEIFER

MORE DESIRABLE CHARACTERISTICS	LESS DESIRABLE CHARACTERISTICS
broodier	—
more angular	less angular, coarser
more stylish	—
easier fleshing	harder fleshing
easier keeping	harder keeping
better combines correctness, length, and eye appeal	—
better brood cow prospect	—

STEER

MORE DESIRABLE CHARACTERISTICS	LESS DESIRABLE CHARACTERISTICS
more upstanding	—
nicer balanced	more off balance
tighter framed	slack framed
trimmer, cleaner patterned	heavy middled, off balance
heavier muscled	lighter muscled
more total muscle mass	less total muscle mass
wider, thicker topped	narrow down his top
wider, more expressively muscled	—
longer _ _ _ _ _	shorter _ _ _ _ _
deeper, wider, thicker quarter	narrower based, lighter muscled quarter
pushed more stifle on the move	—
more ideally finished	patchy, uneven finish
handled with _ _ _ _ _	—
cleaner in his condition	—
possessed less waste through _ _ _ _ _	wastier, fatter, overfinished
trimmer _ _ _ _ _	wastier _ _ _ _ _
should rail a carcass with a _ _ _ _ _	should rail a carcass with a _ _ _ _ _

higher lean-to-fat ratio	lower lean-to-fat ratio
more desirable yield grade	less desirable yield grade

■ Sheep terminology

GENERAL

MORE DESIRABLE CHARACTERISTICS	LESS DESIRABLE CHARACTERISTICS
more progressive	more conventional
more dimensional	—
stouter	needed more size and performance
more upstanding	low fronted
growthier	lacked growth and do-ability

STRUCTURE

MORE DESIRABLE CHARACTERISTICS	LESS DESIRABLE CHARACTERISTICS
more fault-free	ill structured
more problem-free	poorer structured
straighter-lined	slack framed
more structurally correct	structurally incorrect, poorer structured
better balanced	off balance
tighter framed	slack framed
stronger topped, loined	weak topped, weaker loined
squarer, leveler rumped	dropped at the dock
more nearly level in (his/her) rump	steeper in (his/her) rump

FRAME AND GROWTH

MORE DESIRABLE CHARACTERISTICS	LESS DESIRABLE CHARACTERISTICS
larger framed	smaller framed
more size and scale	lacked size and scale
longer _ _ _ _ _	shorter _ _ _ _ _
more ruggedly designed	finer boned
higher weight-per-day-of-age	lower weight-per-day-of-age
more performance oriented	lacked growth and performance

HEAD, NECK AND SHOULDER

MORE DESIRABLE CHARACTERISTICS	LESS DESIRABLE CHARACTERISTICS
fresher appearing	staler appearing
later maturing	earlier maturing
more future growth potential	less future growth potential
more extended through her front end	shorter fronted
longer, leaner neck	shorter, more pelty in (his/her) neck
laid in more neatly about the shoulder	coarser fronted
smoother, tighter shouldered	more open shouldered
smoother neck/shoulder junction	coarser neck/shoulder junction
more desirable slope to (his/her) shoulder	straighter shouldered

CONDITION

MORE DESIRABLE CHARACTERISTICS	LESS DESIRABLE CHARACTERISTICS
trimmer, cleaner patterned	—
cleaner conditioned	heavier conditioned
more ideal in (his/her) condition	—
trimmer breasted	wastier through (his/her) breast
easier fleshing	harder fleshing, harder doing

VOLUME AND CAPACITY

MORE DESIRABLE CHARACTERISTICS	LESS DESIRABLE CHARACTERISTICS
wider sprung	narrower made
deeper _ _ _ _ _	shallower _ _ _ _ _
higher capacity	shallower bodied, tighter ribbed
more capacious	less capacious
more internal volume	less internal volume
more dimensional _ _ _ _ _	less dimensional _ _ _ _ _
more arch and spring of rib	flatter ribbed
bolder spring of rib	pinched or constricted in the forerib
more dimension through the center of the rib	less dimension through the center of the rib

MUSCLE

MORE DESIRABLE CHARACTERISTICS	LESS DESIRABLE CHARACTERISTICS
longer, smoother muscle design	shorter, tighter muscle design
_ _ _ _ _ muscle make-up	—
heavier muscled	lighter muscled
thicker made	—
more expressively muscled in (his/her) leg	lighter muscled in (his/her) leg

FEET AND LEGS

MORE DESIRABLE CHARACTERISTICS	LESS DESIRABLE CHARACTERISTICS
stood on more bone	stood on finer bone
heavier boned	finer boned
stood on more rugged bone	stood on finer bone
stood squarer in (his/her) foot placement	splay-footed, pigeon-toed, toes out
stood wider both front and rear	stood narrower both front and rear
more desirable set to the hock	posty-legged, sickle-hocked
stronger pasterns	weaker pasterns

STRIDE AND MOVEMENT

MORE DESIRABLE CHARACTERISTICS	LESS DESIRABLE CHARACTERISTICS
more mobile	restricted in (his/her) movement
more fluid moving	stiffer strided
easier moving, sounder footed	restricted in (his/her) movement
moved out freer and easier	shorter strided
farther reaching in (his/her) stride	shorter strided
truer tracking	narrower tracking, cow-hocked
longer strided	shorter strided
moved with more strength of top	roached (his/her) top on the move
moved with more levelness of rump	dropped (his/her) dock on the move

FLEECE

MORE DESIRABLE CHARACTERISTICS	LESS DESIRABLE CHARACTERISTICS
freer from black fiber	possessed black fiber _ _ _ _ _
tighter, denser fleece	pencil fleece, more open fleece
fleece with finer crimp	cottony fleece

RAM

MORE DESIRABLE CHARACTERISTICS	LESS DESIRABLE CHARACTERISTICS
greater scrotal circumference	smaller scrotal circumference
"buck"	—

more potential to sire lambs with _ _ _ _ _	should sire lambs with more _ _ _ _ _	—	should sire lambs with less _ _ _ _ _

frame	frame
length	length
volume	—
balance	—
growth	growth
muscle	muscle
trimness	—
performance	performance
weight-per-day-of-age	weight-per-day-of-age

EWE

MORE DESIRABLE CHARACTERISTICS	LESS DESIRABLE CHARACTERISTICS
broodier	—
brood ewe prospect	—
more feminine	coarser fronted
more stylish	—
more capacious	less capacious

WETHER

MORE DESIRABLE CHARACTERISTICS	LESS DESIRABLE CHARACTERISTICS
muscle and trimness	—
trimmer, cleaner patterned	—
trimmer fronted	wastier fronted, pelty
cleaner, harder handling	overfinished, fatter, wastier
firmer handling	softer handling
handled with _ _ _ _ _	—
heavier muscled	lighter muscled
more dimensional leg	narrower, lighter muscled leg
wider, fuller rump	narrower rump, pinched at (his/her) dock
heavier muscled hindsaddle	lighter muscled hindsaddle
should hang a carcass with _ _ _ _ _	—
should rail a _ _ _ _ _ carcass	—
trimmer, higher cutability carcass	—
carcass with more leg muscle	—

■ Swine terminology

GENERAL

MORE DESIRABLE CHARACTERISTICS	LESS DESIRABLE CHARACTERISTICS
growthier	—
more performance-oriented	—
faster-growing	slower-growing
higher performing	lower performing, poorer performing
more functional	—
more problem-free	—
more complete	—
more fault-free	—
better combination of _ _ _ _ _	—
larger outlined	smaller outlined
larger scale	smaller scale
longer sided	shorter sided
better balanced	more off balance
more desirable composition of gain	less desirable composition of gain

DURABILITY AND BONE

MORE DESIRABLE CHARACTERISTICS	LESS DESIRABLE CHARACTERISTICS
more durable	frailer
heavier boned	finer boned
stood on more substance of bone	stood on finer bone
stood on a wider based	stood narrower at (his/her) base
more ruggedly designed	—
bolder fronted	narrow fronted
bolder sprung	—
stood on greater substance of bone	frailer
greater diameter of bone	finer boned

STRUCTURE AND MOVEMENT

MORE DESIRABLE CHARACTERISTICS	LESS DESIRABLE CHARACTERISTICS
more confinement adaptable	less confinement adaptable
looser _ _ _ _ _	tighter _ _ _ _ _
looser in (his/her) skeleton	tighter in (his/her) skeleton
sounder	poorer structured
sounder designed	tighter structured
leveler topped	higher topped
leveler rump	steeper rumped
leveler in (his/her) rump design	steeper in (his/her) rump design
more curvature to (his/her) knee	buck-kneed, straighter through (his/her) knee
more even in (his/her) toe length	more uneven in (his/her) toe length
more desirable slope to (his/her) shoulder	straighter in (his/her) shoulder
more flex of hock	straighter in (his/her) hock
more animation to (his/her) hock	posty legged
more cushion to (his/her) pasterns	straighter in (his/her) pasterns
looser strided	more tightly wound
freer strided	—
longer strided	shorter strided
more flexible	more tightly wound
wider tracking	narrower tracking
moves out with more _ _ _ _ _	moves out with less _ _ _ _ _

■ **Swine terminology (continued)**

VOLUME AND CAPACITY

MORE DESIRABLE CHARACTERISTICS	LESS DESIRABLE CHARACTERISTICS
bigger volumed	—
higher capacity	less capacious, tighter ribbed
roomier middled	—
looser middled	tighter middled
deeper chested	shallower chested
deeper ribbed	shallower ribbed
deeper sided	—
deeper flanked	shallower in (his/her) flank
looser flanked	tighter in (his/her) flank
wider based	narrower based
wider through (his/her) lower one-third	narrower through (his/her) lower one-third
wider through (his/her) chest floor	narrower through (his/her) chest floor
wider sprung	—
bolder sprung	—
more expanded in (his/her) chest floor	narrower chested
more expanded in (his/her) forerib	pinched in (his/her) forerib
more natural width through (his/her) rib	constricted in (his/her) rib
more internal capacity	less capacious

MUSCLE

MORE DESIRABLE CHARACTERISTICS	LESS DESIRABLE CHARACTERISTICS
heavier muscled	lighter muscled
more expressively muscled	flatter in (his/her) muscle
more natural thickness _ _ _ _ _	lacks muscle expression _ _ _ _ _
more natural turn of top	—
more desirable turn to (his/her) top	—
pushes more stifle on the move	flatter in (his/her) stifle
wider and more expressively muscled from stifle to stifle	—
wider and squarer rump	narrower through (his/her) rump
thicker through (his/her) rump	—

CONDITION

MORE DESIRABLE CHARACTERISTICS	LESS DESIRABLE CHARACTERISTICS
leaner turn to (his/her) top	more condition over (his/her) loin edge
less condition over (his/her) loin edge	wastier over (his/her) loin edge
leaner through (his/her) lower one third	pushes more fat in (his/her) elbow pocket
cleaner topped	plainer down (his/her) top
leaner made	heavier conditioned
leaner designed	has more fat _ _ _ _ _
had a groove down (his/her) top	plainer down (his/her) top
had a dimple above (his/her) tail	—

MARKET AND CARCASS

MORE DESIRABLE CHARACTERISTICS	LESS DESIRABLE CHARACTERISTICS
more producer oriented	less producer oriented
more packer oriented	less packer oriented
more packer acceptable	less packer acceptable
more industry oriented	less industry oriented
required less days to 230	required more days to 230
took fewer days to reach 230	took a greater number of days to reach 230
should rail _ _ _ _ _	—
higher lean-to-fat ratio	—
heavier muscled carcass	lighter muscled carcass
carcass with the most edible lean	carcass with the least edible lean
carcass with a higher percentage muscle	carcass with a lower percentage muscle
carcass with a higher percentage ham/loin	carcass with a lower percentage ham/loin
carcass with a higher percentage lean cuts	carcass with a lower percentage lean cuts
carcass with a greater lean value	carcass with the least lean value
carcass with more loin muscle area	carcass with less loin muscle area
more muscular turn to (his/her) top	—
more muscle thickness deeper into that ham	—
wider in the lower one-third of the ham	narrower in the lower one-third of the ham

FEMININITY AND UNDERLINE

MORE DESIRABLE CHARACTERISTICS	LESS DESIRABLE CHARACTERISTICS
more feminine fronted, as evidenced by _ _ _ _ _	—
longer in her neck	shorter in her neck
longer fronted	shorter fronted
higher quality underline that was _ _ _ _ _	poorer quality underline that was _ _ _ _ _
more evenly spaced teats	was uneven in her teat spacing
more refined teats	thicker, coarser teats
more numerous	—
more prominent underline	possessed a pin teat (where?)
—	was blunt in her teats (where?)
—	looser in her rear udder sections

PERFORMANCE AND MISCELLANEOUS

MORE DESIRABLE CHARACTERISTICS	LESS DESIRABLE CHARACTERISTICS
more desirable EPDs across all traits	—
more desirable _ _ _ _ _ EPDs	less desirable _ _ _ _ _ EPDs

more potential to sire pigs with _ _ _ _ _	should sire pigs with more _ _ _ _ _	less potential to sire pigs with _ _ _ _ _	should sire pigs with less _ _ _ _ _
width		width	
muscle		muscle	
growth		growth	
leanness		—	
soundness		—	
confinement adaptability		confinement adaptability	

Feet and leg placement

FIGURE 13. REAR LEG SET

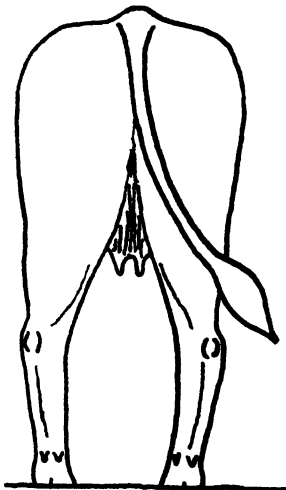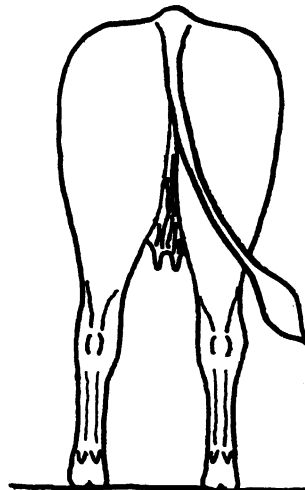Extremely straight
(posty)

Correct

Extremely curved
(sickled)

FIGURE 14. REAR LEG ALIGNMENT

Bowlegged

Correct
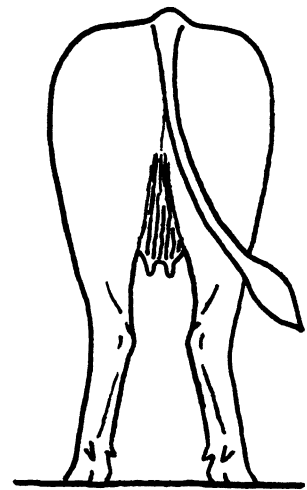
Cow hocked

FIGURE 15. FRONT LEG SET

Correct

Over at the knee
(buck kneed)

Back at the knee
(calf kneed)

Weak pasterns

FIGURE 16. FRONT LEG ALIGNMENT

Bowlegged
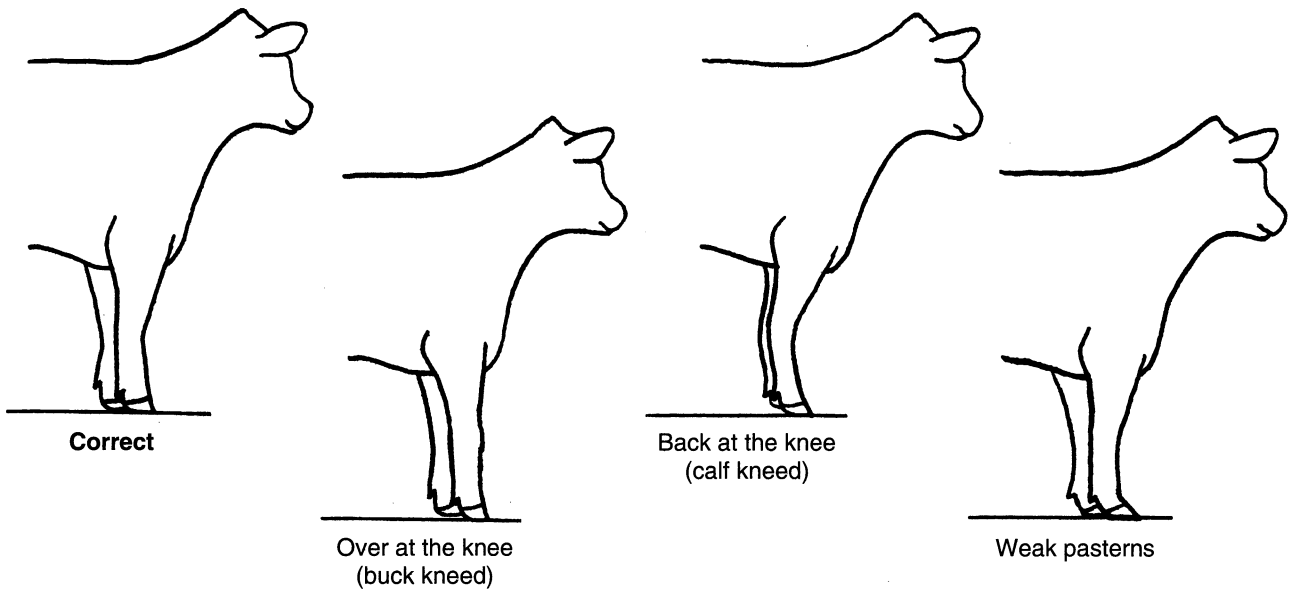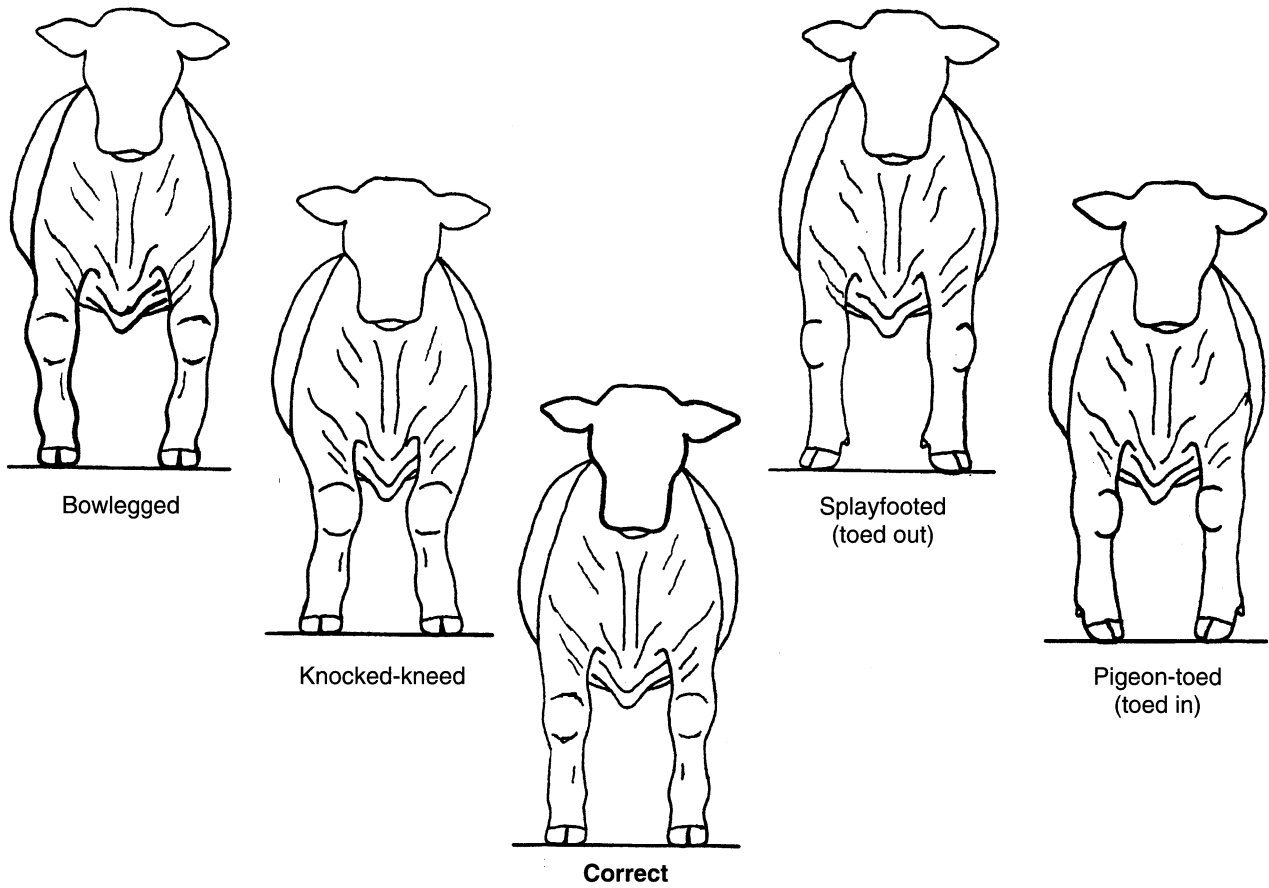
Knocked-kneed

Correct

Splayfooted
(toed out)

Pigeon-toed
(toed in)

Sample oral reasons for beef cattle

■ Angus heifers

3 - 4 - 2 - 1

I placed this class of Angus heifers 3-4-2 and 1. I started with 3, the split-eared heifer in the class, over 4 in my top pair of larger framed heifers, as 3 was a taller framed, longer boned, smoother shouldered heifer that showed more femininity and refinement through her front end. She was the most progressive heifer in the class in terms of her muscle length and smoothness, and moved out with a freer, easier and more ground-covering stride. 3 stood on more length of cannon and more closely followed that modern Angus ideal. I must admit that 4 was a deeper ribbed heifer that had more thickness down her top and through the center and lower portions of her quarter, and stood on more substance and diameter of bone.

I preferred 4 over 2 in my middle pair, as 4 more closely followed my top heifer in terms of skeletal size and scale. 4 was a larger framed, deeper ribbed, wider sprung, higher capacity heifer that exhibited more total volume and capacity from end to end. She was a more ruggedly de-signed heifer that had more thickness of muscle down her top and through all dimensions of her quarter. She stood on more substance of bone and more correctly on her feet and legs. I must admit that 1 more closely followed my top heifer in terms of muscle length and smoothness, and was more refined about her front end, but she splayed out up front and was cow hocked.

But I did prefer to place 2 over 1 in my bottom pair of smaller framed heifers, as 2 was a growthier heifer that was cleaner about her middle, trimmer through her front and showed more youthfulness and growth potential to her head and neck. She blended in neater and smoother through her shoulder. She appeared to be a later maturing heifer that should grow into a more productive and functional cow. I admit that 1 was straighter and stronger in her topline, and was more structurally correct, but I placed 1 last in this class as she was the lowest set, heaviest fronted and most conventional heifer. She lacked the overall size, scale, and balance of the heifers placed above her in the class today. Thank you.

■ Market steers

4 - 2 - 1 - 3

I placed the Market steers 4-2-1 and 3. I placed 4 over 2 in my top pair because he was a thicker made, heavier muscled steer. He was a leveler topped steer that was longer in his rump. He had more thickness of muscle down his top and out through a fuller rump. When viewed from behind, he had more expression of muscle in the upper and center portions of his quarter, and pushed more stifle on the move. He handled with more finish over his rib, and should be more apt to reach the Choice quality grade. However, I do realize that 2 was a cleaner middled, trimmer fronted steer.

Nonetheless, I did place 2 over 1 in my middle pair, as 2 was a longer bodied, more upstanding steer that was trimmer through his front and middle. When viewed from the rear, he had more thickness through the center and lower portions of his quarter, and should go to the rail and hang a higher cutability carcass. I admit that 1 was a deeper ribbed, wider sprung, higher capacity steer that stood on more substance of bone. Also, he was a squarer rumped steer that was more ideal in the amount and uniformity of his finish.

I confidently placed 1 over 3 in my bottom pair, as he was a thicker, heavier muscled steer that was more nearly ideal in his finish. He had more natural thickness down his top and through his quarter. He should hang a heavier muscled carcass that should be more likely to grade Choice. I realize that 3 was a trimmer made steer, having less waste throughout. However, he was the lightest muscled, most underfinished steer of the class. He would hang up the least merchandizable carcass and, therefore cannot merit a higher placing today. Thank you.

■ Charolais bulls

2 - 3 - 1 - 4

I placed the Charolais bulls 2-3-1 and 4. I started with 2 as he best combined pattern and performance. He was a longer bodied bull that was more extended through his front end. He was a more eye-appealing bull with more balance and symmetry. I concede that 3 was heavier muscled and showed more dimension through his quarter, but he was also a coarser fronted bull.

In my middle pair, I preferred 3 over 1 as he was a heavier muscled, bigger volumed bull that showed more dimension of muscle down his top and through his quarter. In addition, he was a higher volumed bull that was deeper sided and had more spring of rib. Furthermore, he had a greater scrotal circumference and should sire heifers that reach sexual maturity at a younger age. I grant that 1 was cleaner fronted and smoother shouldered, but he simply lacked the growth and performance of the top pair of bulls.

Nonetheless, I placed 1 over 4 as he was a taller, longer bull with more length to his head, neck and cannon. He was a nicer patterned, more eye appealing bull that was stronger down his top, leveler from hooks to pins and stood down more squarely on his feet and legs. I will admit that 4 was a higher volumed, deeper sided bull that appeared to have a higher weight-per-day-of-age, but he was coarser shoul-dered, weaker topped, and both cow and sickle hocked. He was also a shorter necked, smaller framed bull, thus being the earliest maturing bull in the class. Thank you.

Sample oral reasons for sheep

■ Dorset ewes
3 - 2 - 1 - 4

I placed this class of Dorset ewes 3-2-1-4. I started this class with the two more modern-type ewes. In my top pair, I placed 3 over 2 as she was a leveler topped, leveler rumped ewe that was more progressive in her type and muscle makeup. She was a stretchier ewe that put a longer, smoother muscle structure onto a longer skeletal frame-work, and was taller. She was a cleaner fronted, more feminine headed female. However, I concede that 2 had more arch and spring to her forerib.

Nevertheless, I placed 2 over 1 in my middle pair as 2 more closely followed the type and pattern set by my top ewe. She was a more feminine fronted ewe that was laid in tighter about her shoulder, was longer and leaner about her neck, and exhibited more femininity about her head. She was a longer bodied ewe that was higher at her dock and had a more desirable set to her hock. I grant that 1 was a thicker ewe, although she was weaker on her rear pasterns.

Now, in my bottom pair, I placed 1 over 4 as 1 was a longer bodied, larger framed ewe that had more natural thickness of muscle and more total volume and capacity. She was a longer bodied ewe that was trimmer in her breeding condition. However, I grant that 4 was a smoother shouldered ewe, but she was the smallest framed, shortest bodied ewe that was the most conventional in her type. Thank you.

■ Market lambs
1 - 2 - 3 - 4

I placed the Market lambs 1-2-3 and 4. In my top pair, I placed 1 over 2 as he was a trimmer made lamb that was cleaner and neater about his front end. He handled with less finish over his rib, and was a larger framed, longer bodied lamb. He should go to the rail and hang a trimmer, higher cutability carcass. I grant that 2 was a heavier muscled lamb that had more dimension of muscle in his loin, over his rump and down in his leg, but he was a softer handling, heavier finished lamb.

Nevertheless, I placed 2 over 3 in my middle pair because 2 was a larger framed, taller fronted lamb that handled with a longer hindsaddle. He was a heavier muscled lamb that was leveler and fuller through his rump. He was a more structurally correct wether that should go to the rail and hang up a heavier muscled carcass. I admit that 3 was the most correctly finished lamb in the class, but he simply lacked the growth, scale and total muscle volume of the two lambs placed above him.

In my bottom pair, I placed 3 over 4 because 3 was more correctly finished than 4. He was a firmer handling lamb that had more dimension and expression of muscle in his leg. He should rail a trimmer finished carcass with more total pounds of muscle. I realize that 4 was a larger framed lamb, but he was a wastier, heavier conditioned and lighter muscled lamb that should hang up the least profitable carcass in the class. Thank you.

■ Suffolk rams
1 - 3 - 4 - 2

I placed the Suffolk rams 1-3-4-2. In my top pair, I placed 1 over 3 as 1 was the more upstanding, powerful, longer bodied and more structurally correct ram of the class. He was a stronger topped ram that was more nearly level out through his rump. He stood on more substance of bone with squarer feet and leg placement. Additionally, he was a bigger volumed ram with more arch and spring through a deeper rib. I readily admit that 3 was more ideal in his Suffolk breed type. He was blacker about his points and had a longer more bell-shaped ear.

Nevertheless, I did place 3 over 4 in my middle pair as 3 was simply the better balanced, more eye-appealing ram with a more symmetrical profile. He was a larger framed, longer bodied ram that stood on greater length of cannon. He was certainly a more upheaded, alert ram that was longer necked and laid in smoother through the point of his shoulder. I grant that 4 was the bigger volumed, heavier muscled, growthier ram of the pair with a higher weight-per-day-of-age, but he was a heavier conditioned, shorter bodied, coarser fronted ram that was shorter fronted, more open in his shoulder and appeared to be the earliest maturing ram of the class.

In spite of this, I placed 4 over 2 in my bottom pair as 4 excelled in growth and performance. He was a bigger volumed, higher capacity, heavier muscled ram with a higher weight-per-day-of-age. I grant that 2 was cleaner fronted, but he was the smallest framed, narrowest made, lightest muscled ram of the class that lacked the growth and do-ability to be placed higher today. Thank you.

Sample oral reasons for swine

■ Yorkshire gilts
4 - 2 - 1 - 3

I placed this class of Yorkshire gilts 4-2-1-3. I started this class with 4 over 2, as 4 was a broodier, roomier, higher capacity gilt that was higher at her tail set and more mobile. She was a deeper ribbed, deeper flanked gilt that was wider based and had more dimension of muscle down her top and through the center and lower portions of her ham. She was a sounder designed gilt that tracked more fluidly and was sounder footed. I admit that 2 was a more feminine fronted gilt that possessed a higher quality underline that started farther forward.

In my middle pair of similarly designed gilts, I preferred 2 over 1 because 2 was a notably larger framed gilt that more closely followed the type set by 4. She was a longer bodied gilt that was longer necked and more evenly spaced and numerous about her underline. I admit that 1 was a deeper ribbed gilt, but she was the heaviest conditioned gilt of the class.

In my bottom pair, I placed 1 over 3 as she was a larger scaled, longer sided, wider based gilt. She was a looser made, leveler topped gilt that was more structurally correct, having more cushion to her pasterns and she moved with a longer, freer stride. However, I must admit that 3 was a cleaner topped gilt that was more ideal in her breeding condition, but she was the pounds light, narrow based, lighter muscled, harder-doing gilt of the class, that simply lacked the width, scale and soundness to merit a higher placing today. Thank you.

■ Market hogs
2 - 4 - 1 - 3

I placed this class of Market hogs 2-4-1 and 3. In my top pair, I placed 2 over 4 as 2 was the best combination of muscle volume, leanness and capacity in this class. He was more pulled apart at his blades and carried more width and expression of muscle down his top and into the center and lower portions of his ham. He was also a trimmer made barrow that showed more blade action on the move and pushed less fat into his elbow pocket, and should hang the carcass with the highest muscle percentage in the class. I concede that 4, the blue-butt barrow was a more structurally correct barrow, and was leveler topped and freer moving.

In a closer middle pair, I placed 4 over 1, as 4 was a more producer oriented and practical barrow. He was a bigger volumed barrow that had more width to his chest floor, more dimension to his rib, and was more expanded through his lower one-third. He was a more structurally correct barrow with more give and cushion to his knee and hock. I recognize 1 was a trimmer made barrow with less fat out over his loin edge, but he was a narrower constructed barrow that was constricted in his chest floor, flatter ribbed, steeper out through his rump and straighter on his front and rear underpinning.

Nevertheless, in my bottom pair, I placed 1 over 3, as 1 was a leaner, more packer acceptable barrow. He was a longer bodied barrow that showed more overall muscle expression and dimension down his top and through the base of his ham. He had less fat over his blades and should hang a carcass with more packer and consumer appeal. I grant that the black barrow was deeper flanked and looser made, but he was a shorter bodied barrow whose combination of wide top and narrow base indicated he was the fattest barrow in the class. Thank you.

■ Hampshire boars
4 - 3 - 1 - 2

I placed the Hampshire boars 4-3-1 and 2. In my top pair, I placed 4 over 3 as 4 was the best combination of muscle, volume and substance in the class. 4 was the largest scaled, heaviest structured boar that displayed more internal capacity being deeper ribbed and wider through his lower one-third. He was also a heavier muscled boar that had more thickness of muscle down his top and through the base of his ham. I will admit that 3 possessed a more desirable underline.

Still, in my middle pair, I placed 3 over 1, as 3 was a larger outlined, longer boned, bigger bladed boar with more width from end to end. 3 possessed more width at his blades and showed more width and dimension to the center of his rib. Also, he was more expressive in his muscle with more dimension of muscle through the center and lower portions of his ham. 1 was a leaner made, leveler designed boar, but 1 was still a smaller framed, narrower made boar that was tighter in his flank.

Now, in my bottom pair, I placed 1 over 2 as 1 excelled in looseness of skeleton and mobility. 1 was the longer bodied boar that was leaner in his total make-up. He was a wider traveling, looser designed boar that was looser in his hip and had more flex and animation to his hock and took a longer, freer stride. I realize that 2 was a wider made, heavier muscled boar, but he was also the smallest framed, pounds light, poorest moving boar of the class. Thank you.

Utilizing performance data in judging

Performance data, or performance records, allow producers to objectively evaluate economically important traits associated with livestock production. The major production traits of beef cattle, sheep and swine include: 1) measurement of reproductive performance and mothering ability, 2) quantification of growth rate and efficiency of gain, and 3) objective analysis of carcass merit. Performance evaluations can be reported as performance records, or genetic evaluations of those records and of an animal's relatives.

In the past several years an ever increasing emphasis has been placed on the understanding and use of performance evaluations. The next three sections will discuss the importance and application of performance evaluations to livestock judging, and the combined use of visual appraisal and performance records (actual or genetic) for live animal selection in each of the three meat animal species.

Beef cattle performance data

Beef cattle performance data can be listed in several different ways. For example, an Angus bull calf might have a 600-pound weaning weight, or a Polled Hereford heifer might have a 750-pound yearling weight. Both of these examples represent actual records of the individual, but they don't depict how these animals have performed relative to other animals in the herd. Therefore, a more accurate representation of performance would be to rank animals within the same herd. However, ranking animals within the same herd can be biased if they are born at different times of the year, or housed and managed differently. Thus, we often need to rank animals within a contemporary group. A contemporary group is composed of animals which are of the same breed and sex, and have been raised in the same management group (same location and having access to the same feed).

We generally use a ratio to rank animals within a contemporary group in the herd. A ratio consists of a number, typically around 100 (average), that compares each animal to the other animals in a particular group. Any number less than 100 indicates that the animal's performance was below the average of the group. Any number greater than 100 indicates that the animal's performance record was above the average of the group. A ratio of 110 for weaning weight means the animal was 10 percent above average for weaning weight. Likewise, a ratio of 85 for weaning weight means the animal was 15 percent below average for weaning weight. However, use of ratios does not indicate the exact average for a certain trait. Also, ratios may only be used to compare animals within a contemporary group.

When we judge livestock and evaluate performance records, in essence we are attempting to select animals for a particular purpose. Ideally, we would like to know how progeny or offspring of an animal will compare with progeny of another animal for a certain economically important trait. Stated in another way, What is the breeding value of one animal versus another animal?

For instance, the breeding value for yearling weight of a bull is based on the average yearling weight of his progeny. Determination of this breeding value enables producers to predict the yearling weight of his offspring and compare it with the predicted average yearling weight of progeny from another bull. Thus, estimated breeding values (EBVs) were developed.

An EBV is expressed similar to a ratio (average = 100), but it accounts for performance of all of the animals in a pedigree and predicts how the progeny or offspring of a particular animal should perform relative to progeny from an average animal. Thus, a bull with a yearling weight EBV of 108 would be expected to sire progeny that are 8 percent heavier at 365 days of age compared with progeny sired by a bull with a yearling weight EBV of 100.

As producers, we need to be able to compare animals on the same farm that were raised in different contemporary groups, or to compare one animal on a particular farm with another animal on a different farm. However, neither actual records nor ratios allow producers to compare animals accurately from different contemporary groups or herds. EBVs have been replaced with more up-to-date genetic evaluations of performance records.

In order to compare animals accurately within a breed and across different herds, we must rely on use of an expected progeny difference (EPD). An EPD is similar to an EBV because it takes into account the performance of ancestors in a pedigree and related animals. It predicts how the progeny or offspring of a particular animal should perform relative to progeny from average parents. An EPD is more useful than an EBV because differences between individual animals are expressed in actual units (pounds, inches, etc.). However, the biggest advantage is that EPDs allow producers to make comparisons across contemporary groups and herds. Therefore, a bull with a yearling weight EPD of + 55.0 would be expected to sire offspring that are 55 pounds heavier at 365 days of age than offspring from a bull with a yearling weight EPD of zero. Likewise, a bull with a weaning weight EPD of + 45.0 would be expected to sire progeny that are 30 pounds heavier at weaning than the average of the progeny from a bull with a weaning weight EPD of + 15.0.

The student who wishes to excel in beef cattle judging should understand fully the importance and accuracy of using actual records on an individual, ratios from within a herd, and EBVs and EPDs for the following beef cattle production traits.

1. Birth date—Date an animal was born (actual).

2. Birth weight—The weight of a calf taken at birth. Heavy birth weights are associated with calving problems and sometimes death of the calf or cow (actual, ratio, or EPD).

3. Weaning weight—The weight of a calf taken between 160 and 250 days of age and then adjusted to a constant age of 205 days (actual, ratio, or EPD).

4. Yearling weight—The weight of an animal taken between 330 and 440 days of age and adjusted to a constant age of 365 days (actual, ratio, or EPD).

5. Hip height or frame score—Height at the hip in inches, or height at the hip in inches for a particular age (actual or ratio).

6. Maternal EBV—An indication of the milking ability of a female or the potential milking ability of the daughters of a particular bull.

7. Maternal milk EPD—The difference in pounds of calf expected at weaning due to differences in milking and mothering ability of the cow.

8. Yearling scrotal circumference—The distance around the testicles in the scrotum of a bull at 365 days of age measured in centimeters. A greater scrotal circumference indicates that a bull should have the capacity to produce greater volumes of semen and his progeny should reach puberty at earlier ages (actual or ratio).

When presenting more than one type of data for a particular trait (e.g., ratios and EPDs for weaning weight), we rank and utilize the data according to the accuracy with which we can predict future performance of offspring. Therefore, we should usually give emphasis to the data in the following sequence:

1. EPD

2. EBV

3. ratio within a contemporary group

4. an individual animal's actual records

Production situations for beef cattle

The types of beef cattle data, as well as selection of livestock based solely on visual appraisal, have been discussed previously. In most practical situations, a stockperson should be willing to use additional information to aid in the selection process. The availability of actual data, ratios, EBVs, and EPDs allows judges to compare animals using objective criteria of performance. However, without some guidelines the justifications for various placings of a class with performance data may be even more numerous than the reasons based on visual appraisal alone.

Scenarios for beef cattle performance classes are important to full understanding of the selection decision. In each scenario, a complete description of three important factors should be addressed:

1. Breeding program
- What type of breeding program is being used?
- How are the selected animals to be used in that program?
- What are the goals or objectives of this breeding program?

2. Feed and labor resources
- Under what conditions are the animals being raised?
- Are feed resources readily available or limited?
- Are labor resources readily available or limited?

3. Marketing program
- How are the cattle marketed?
- At what age and (or) weight are the cattle to be sold?
- For what type or kind of buyer are the cattle being produced?

■ **First,** the breeding program should be described. Is this a purebred or commercial operation? If cattle are crossbred in this operation, what other breeds are being used? A class of heifers could be replacement females for a purebred program, or a class of bulls could be intended as natural service sires for a purebred or commercial program. Regardless of the situation, an accurate and complete description of the breeding program should be outlined. A few examples of possible breeding programs follow.

Angus bulls—To be used as natural service sires in a two-breed rotational crossbreeding system with Hereford. Cows are medium for mature weight and moderate for milk production.

Simmental heifers—Assume these heifers will be used in a purebred Simmental herd that produces commercial bulls. The bulls will be used on Angus x Polled Hereford crossbred cows and heifers. Mature cow size in the commercial herd is 1,000 to 1,150 pounds.

Polled Hereford bulls—To be used in a three-breed rotational crossbreeding system (Limousin x Brahman x Polled Hereford). Cows weigh 1,100 to 1,300 pounds and are relatively poor in their milk production.

■ **Second,** the feed and labor resources should be discussed. Specifically, the quality and quantity of feed should be described. For example, cattle that are managed on low-feed resources or range conditions should have ample capacity to utilize efficiently the limited nutrients, and probably should not have excessively high milk production. Labor resources will impact on the body type and birth weight performance records of cattle to be selected. High birth weight, cattle with coarse shoulders, and cattle with narrow rump design and narrow pin placement typically require more physical labor to assist in the calving process than cattle with low birth weight records, smooth shoulders, and wide rump design with added width at the pins. Even with adequate labor available at calving, calves with high birth weights can create unwanted problems and economic hardships for cattle producers. A few scenarios for feed and labor resources follow.

Angus bulls—Cows bred to these bulls will be maintained with low labor and limited feed availability for larger sizes of cattle, similar to range conditions.

Simmental heifers—Feed and labor resources in this purebred Simmental herd are adequate to maintain a mature cow size of 1,300 to 1,500 pounds.

Polled Hereford Bulls—Feed resources are adequate to maintain the stated cow size, but labor is limited during calving time.

■ **Third,** the marketing program for a scenario should be discussed in enough detail to allow the judging student to prioritize performance traits and physical characteristics of the animals. Depending on the marketing program used, emphasis should be placed on traits and characteristics that optimize production of beef cattle for the desired market. Examples of marketing programs follow:

Angus bulls—The top 20 percent of heifer calves will be retained as replacements, and the remaining heifer and steer calves will be sold at weaning to be finished in a feedlot.

Simmental heifers—Sale of commercial bulls is the main benefit but some income derives from the sale of a few purebred bulls and heifers to other purebred Simmental breeders.

Polled Hereford bulls—Calves are sold at weaning to be finished in a feedlot, except for a few replacement heifers which are retained for breeding purposes.

■ **Fourth,** all the parts of a scenario (breeding program, feed and labor resources, and marketing program) can be combined into a complete scenario for a particular animal class. Three complete scenarios are listed as examples:

Angus bulls—To be used as natural service sires in a two-breed rotational crossbreeding system with Hereford. Cows are medium mature weight and moderate for milk production, and will be maintained with low labor, and limited feed availability for larger sizes of cattle, similar to range conditions. The top 20 percent of heifer calves will be retained as replacements, and the remaining heifer and steer calves will be sold at weaning to be finished in a feedlot.

Simmental heifers—Assume these heifers will be used in a purebred Simmental herd that produces commercial bulls. The bulls will be used on Angus x Polled Hereford crossbred cows and heifers. Mature cow size in the commercial herd is 1,000 to 1,150 pounds. Feed and labor resources in this purebred Simmental herd are adequate to maintain a mature cow size of 1,300 to 1,500 pounds. The primary income is derived from the sale of commercial bulls, but some income is derived from the sale of a few purebred bulls and heifers to other purebred Simmental breeders.

Polled Hereford bulls—To be used in a three-breed rotational crossbreeding system (Limousin x Brahman x Polled Hereford). Cows weigh 1,100 to 1,300 pounds and are relatively poor in their milk production. Feed resources are adequate to maintain the stated cow size, but labor is limited during calving time. All calves are sold at weaning to be finished in a feedlot, except for a few replacement heifers which are retained for breeding purposes.

Example classes with production situations and data for beef cattle

Whenever performance data are included with a class of livestock, judges should include the data in their selection decisions. They should also be able to include the data and their meaning into a logical discussion of their placing. The reasons for placing a class of beef cattle with performance data are even more numerous than the reasons for placing a class without performance data. Therefore, students of livestock judging should become familiar with as many scenarios as possible in order to understand the associated placing priorities and important aspects to discuss in a set of oral reasons. Three examples of classes of beef cattle with scenarios and performance data are presented here.

■ Yearling Angus bulls

These bulls will be used in a three-breed rotational crossbreeding system (Charolais x Shorthorn x Angus), and will be exposed to all breeding age females. The range of mature weight of the cow herd is 1,150 to 1,300 pounds. Feed and labor resources are typical of Western U.S. range conditions. Replacement heifers will be retained, and all other calves will be marketed at weaning as feeder calves to be finished in a feedlot.

No.	Birth Date	Birth wt EPD	Weaning wt EPD	Yearling wt EPD	Yearling Scr circ	Maternal milk EPD
1	1/3	+ 3.6	+ 26.1	+ 42.6	35.0	+ 13.8
2	1/12	+ 9.2	+ 11.3	+ 37.1	37.0	+ 1.8
3	1/15	+ 3.3	+ 15.3	+ 51.0	33.5	+ 2.9
4	1/18	+ 5.4	+ 20.4	+ 44.4	34.0	+ 2.5

■ Charolais heifer calves

These heifers will be used as replacements for a purebred Charolais operation. Range of mature weight in the cow herd is 1,300 to 1,500 pounds. Feed and labor resources are adequate throughout the year to maintain the present cow herd. The main benefit is from the sale of bulls to commercial cattle producers that use the bulls on crossbred cows of various breed compositions, weights, and ages.

No.	Birth Date	Birth wt EPD	Weaning wt EPD	Yearling wt EPD	Maternal milk EPD
1	3/5	+ 3.6	+ 16.7	+ 27.0 (P)	+ 0.1 (P)
2	3/7	+ 3.7	+ 5.8	+ 19.1 (P)	+ 5.4 (P)
3	4/4	+ 0.6	+ 3.2	+ 8.7 (P)	+ 4.1 (P)
4	4/8	+ 2.9	+ 13.1	+ 39.7 (P)	+ 4.2 (P)

(P) indicates that these EPDs were predicted from the pedigree.

■ Summer yearling Limousin bulls

These bulls will be used as terminal sires on Angus x Shorthorn crossbred cows of various ages that have an average mature weight of 1,050 pounds. Feed and labor resources are adequate to meet cow needs during years of mild climate. At weaning, all calves are placed directly in a feedlot on the farm. At market weight, cattle are sold on a grade and yield basis.

No.	Birth Date	Birth wt EPD	Weaning wt EPD	Yearling wt EPD	Yearling Scr circ	Maternal milk EPD
1	6/5	+ 2.1	+ 5.0	+11.0	34.5	+ 11.8
2	6/14	+ 2.8	+ 16.6	+ 33.9	30.5	+ 2.2
3	6/15	+ 5.9	+ 26.0	+ 44.3	32.0	+ 3.2
4	6/16	+ 2.4	+ 13.9	+ 31.7	31.5	- 1.7

Sheep performance data

Much like performance data for beef cattle, performance data for sheep can be listed in several different ways. Both actual data and ratios are used to select animals that are superior for lamb and wool production within a flock. Performance data is an important tool for selecting replacement animals and culling poor producing animals. Since in our judging classes we don't typically evaluate stud rams or ewes in production, we will be concerned primarily with the use of performance data for selecting replacement ewes and potential stud rams.

In order to understand performance data for sheep, students of livestock judging should familiarize themselves with the following sheep production traits and the associated terms.

1. Birth date—Date an animal was born (actual).

2. Birth weight—The weight of a lamb taken within 24 hours after birth. Heavy birth weights are associated with lambing problems (actual, ratio).

3. Type of birth and type of rearing—The number of lambs born and raised by a ewe. The following designations are used: S-single, TW-twin, TR-triplet, and Q-quadruplet (e.g., Type of birth-TW, Type of rearing-S).

4. Preweaning weights and postweaning weights—Considerable variation exists among sheep producers for age at weaning. Since all performance records for sheep are to be evaluated within flock, preweaning and postweaning weights will be listed according to management procedures for a particular flock.

Age-weight categories—The weight of a lamb adjusted to a particular age (actual, ratio, FEPD). Standard age-weight categories for sheep according to National Sheep Improvement Program (NSIP) guidelines are as follows.

Age-weight category	Allowable range in age
30 - day	23 to 37 days
60 - day	38 to 83 days
90 - day	68 to 113 days
120 - day	98 to 143 days
180 - day	150 to 210 days
365 - day	335 to 395 days

5. Weaning weight—A specified weaning weight will be given for one of the age-weight categories listed above. Usually, weaning weight would correspond with 30, 60, 90, or 120-day weight (actual, ratio, FEPD).

6. Yearling weight—The weight of a sheep taken after 335 days of age and before 395 days of age, and adjusted to a constant age of 365 days (actual, ratio, FEPD).

7. Fleece quantity and quality—Wool measurements on an animal are taken only once in its lifetime, and should be measured at approximately one year of age. Wool measurements include:

   Grease weight—Weight of the freshly shorn fleece in pounds to the nearest tenth of a pound.

   Clean weight—Weight of the cleaned fleece in pounds to the nearest tenth of a pound, as determined by a wool testing laboratory.

   Staple length—Length of the unstretched wool fibers in inches to the nearest tenth of an inch, obtained from the mid-side area of the animal.

   Grade—Fleece grade is recorded to the nearest tenth of a micron (1 micron = 1/25,400 inch).

Expected progeny differences for sheep

Sheep producers have requested more objective selection tools for selecting replacements and culling poor producing animals within a flock. Expected progeny differences have been used in the beef cattle industry for some time, and are now being developed for sheep. These EPDs are very similar to those used by the beef cattle industry to predict progeny performance of the animal. However, EPDs for sheep are for *within-flock comparisons only*. The EPDs take the form of flock expected progeny differences (FEPD) to indicate the necessity to make comparisons within a flock and not across different flocks.

Expected progeny differences for sheep are being developed primarily for the following economically important traits.

1. Maternal FEPDs

   Number of lambs born—A positive FEPD indicates that the ewe has the capability to produce more lambs than a ewe with a zero or negative FEPD for this trait. This FEPD is an indicator of prolificacy or the genetic ability of the ewe to produce lambs.

   Pounds of lamb weaned—This FEPD is an indication of reproductive rate, maternal ability of the ewe, lamb survivability, and growth. A FEPD of + 6.0 means the ewe should wean lambs that are 6 pounds heavier at weaning than lambs produced by a ewe with a FEPD of zero.

2. Growth FEPDs

   Weights at preweaning, weaning, and postweaning — These FEPDs correspond to the age-weight categories of 30, 60, 90, 120, 180, and 365 day weights in lambs, and are used to evaluate the genetic merit for growth.

   In each instance, the age should be listed also. These EPDs are very similar to and should be interpreted much like the EPDs for other age-weight listings (e.g., 205-day weight in beef cattle).

3. Wool FEPDs

   Wool FEPDs are listed for grease fleece weight, clean fleece weight, staple length, and fiber diameter.

Example classes with production situations and data for sheep

As in the beef cattle section, three classes of sheep with performance data are included as examples of different scenarios and ways of presenting performance data.

■ Suffolk ram lambs

Rank these rams as you would use them for stud rams in a purebred Suffolk flock. Feed and labor resources are more than adequate to maintain the flock of ewes. You profit mainly from selling rams and ewes to other purebred Suffolk breeders, and a few rams to commercial sheep producers. You retain your own replacement ewes.

No.	Birth type	Birth rearing	Birth weight	60-day adj. weight	60-day adj. ratio	120-day adj. weight	120-day adj. ratio	Dam's fleece wt
1	TW	TW	9.3	61	91	120	97	8.6
2	S	S	12.0	76	114	136	109	9.5
3	TW	S	10.2	72	108	130	105	10.4
4	TR	TW	9.6	66	99	123	99	7.0

■ Dorset fall ewe lambs

Rank these ewes as you would use them as replacement ewes in a purebred flock of Dorset sheep. You sell a few rams to other purebred Dorset breeders, but you mainly profit from the sale of rams and ewes to commercial sheep operations.

No.	Birth date	Birth type	Rearing type	Birth weight	FEPDs Maternal Lambs born	FEPDs Maternal Pounds weaned	FEPDs Growth 60-day weight	FEPDs Growth 365-day weight
1	9/5	S	S	12.0	-.067	+ 4.1	+ 1.2	+ 5.2
2	9/7	TW	TW	7.5	-.022	+ 3.7	+ 1.3	- 2.7
3	9/20	TW	TW	8.5	+.036	+ 5.0	+ 2.0	+ 12.2
4	9/22	TR	TR	10.5	+.041	+ 6.1	+ 3.1	+ 9.7

■ Yearling Hampshire rams

Assume these rams are terminal sires to be used on Rambouillet x Dorset crossbred ewes for production of feeder lambs. All lambs are finished in a feedlot on the farm. Ewes are maintained on range conditions typical of sheep production operations in the Rocky Mountain states.

No.	Birth date	Birth type	Rearing type	Birth weight	FEPDs Maternal Lambs born	FEPDs Maternal 30-day weight	FEPDs Growth 120-day weight	FEPDs Growth 180-day weight
1	2/5	S	S	12.3	-.010	+ 2.6	+ 5.2	+ 8.2
2	2/7	S	S	14.0	+.060	+ 1.9	+ 3.2	+ 4.4
3	2/20	TW	S	10.2	+.210	- 1.6	- 2.2	- 8.2
4	2/22	TR	TW	9.6	+.122	+ 1.1	+ 4.4	+ 9.7

Swine performance data

Like classes of beef cattle and sheep with performance data, inclusion of performance data with a class of swine challenges students of livestock judging to make complex decisions while utilizing a wide variety of information. Not only must the physical characteristics of each animal be evaluated, but the appropriateness of the data for the given production situation must be considered. A complete understanding of the following swine production terms will enable livestock judges to more critically evaluate a class of swine.

1. Birth date—Date an animal was born (actual).

2. Number born alive—The number of pigs in a litter that were born alive (actual, NBA_{EPD}).

3. Number weaned—The number of pigs in a litter that were weaned. The standard weaning age for swine is 21 days (actual).

4. Litter 21-day weight—Weight of an entire litter of pigs between 14 and 28 days of age and adjusted to a constant age of 21 days (actual, ratio, $LW21_{EPD}$).

5. Sow productivity index—Also referred to as SPI. Sow productivity index is an indicator of maternal ability, and combines the number of pigs born alive and the 21-day litter weaning weight into an index (actual, ratio).

6. Days to 230 pounds—An indicator of growth rate, days to 230 is the number of days required for a hog to reach 230 pounds. A lower number is more desirable than a higher number (actual, $DAYS_{EPD}$).

7. Backfat thickness—The depth of backfat listed either as average backfat thickness or tenth-rib fat depth. A lower number indicates that a hog is leaner than a hog with a higher number (actual, ratio, BF_{EPD}).

Expected progeny differences for swine

Much like sheep producers, swine producers have requested more objective selection tools for selecting replacement gilts and boars within and across herds. Expected progeny differences have been used in the beef cattle industry for some time, and are now also being used in swine selection programs. These EPDs are very similar to those used by the beef cattle industry to predict progeny performance of an animal.

Expected progeny differences for swine have been developed primarily for the economically important traits associated with swine production: an indication of maternal ability, and growth and carcass characteristics. The EPDs include the following:

Maternal EPDs

1. Number born alive (NBA)—Daughters of sires or dams with a positive NBA_{EPD} would farrow larger litters than sows with an NBA_{EPD} of zero.

2. Litter 21-day weight (LW21)—A positive $LW21_{EPD}$ indicates that daughters of sires or dams would produce litters heavier than average.

Growth and carcass EPDs

3. Days to 230 (DAYS)—A $DAYS_{EPD}$ of - 3.00 indicates that progeny from this boar or gilt should reach 230 pounds 3 days sooner than progeny from an animal with a $DAYS_{EPD}$ of zero.

4. Backfat depth (BF)—A BF_{EPD} of -.05 indicates that a boar should sire pigs having .05 inches less backfat than pigs from a boar with an BF_{EPD} of zero.

Careful interpretation of EPDs for swine is necessary. Most producers want large litters of pigs that wean heavier, reach market weight sooner, and have less backfat. Therefore, NBA_{EPD} and $LW21_{EPD}$ should be positive, indicative of more and heavier pigs at 21 days of age. Also, $DAYS_{EPD}$ and BF_{EPD} should be negative, indicative of fewer days required to reach 230 pounds and less backfat thickness at 230 pounds.

Selection indexes have been incorporated into the genetic evaluation of swine performance records. These selection indexes provide for consistent and accurate combining of various performance traits. Four indices currently being used are listed below.

1. Sow productivity index (SPI)—Ranks individuals on number born alive (NBA) and litter 21-day weight (LW21). It does not include any growth or carcass information.

2. Maternal line index (MLI)—This index utilizes growth and maternal EPDs with emphasis on the maternal EPDs for a maternal line.

3. General purpose index (GPI)—Ranks animals on both growth and maternal traits. This index is well-suited for use on both maternal and paternal lines as in a rotational crossbreeding system.

4. Terminal sire index (TSI)—Ranks individuals only on days to 230 (DAYS) and backfat depth (BF) only. This index does not include any maternal information.

All four indexes are listed in a manner similar to that for ratios (average = 100), with superior parents having values greater than 100, and inferior parents having values less than 100. These selection indexes have been developed based on the economic values associated with costs of production. Therefore, each index is listed in dollar units. For example, consider a sow's SPI is 106, then each of her daughters would be expected to produce litters worth $6.00 more at 21 days of age than those daughters of a sow with a SPI index of 100.

Production situations for swine

Production situations for swine classes with performance data take on slightly different formats than for classes of beef cattle or sheep. In scenarios for swine, a complete description of the following three important factors should be addressed:

1. Breeding program
   - What type of breeding program is being used?
   - How are the selected animals to be used in that program?

2. Marketing program
   - How are the hogs marketed?
   - For what type or kind of buyer are the hogs being produced?
3. Type of environment
   In what type of environment are the hogs being raised? For example: confinement, partial-confinement, or nonconfinement.

Example classes with production situations and data for swine

The combination of a situation, performance data, and visual appraisal offers judging students the opportunity to make real-life animal selection decisions.

■ Hampshire boars

Assume these Hampshire boars are to be used as terminal sires on Yorkshire x Landrace sows. You do not retain any gilts as replacements, therefore all hogs are sold as market hogs. You generally sell market hogs on a carcass merit buying program, and all of your hogs are raised in confinement.

No.	Birth date	Dam's SPI	Days to 230	Adj tenth rib fat	Loin-eye area
1	10/20	104	165	.81	5.95
2	10/24	101	165	.71	6.05
3	10/31	101	173	.67	5.70
4	11/2	100	157	.73	6.65

■ Yorkshire gilts

Rank these gilts as you would use them as replacements in a purebred Yorkshire herd. You profit mainly from the sale of performance-tested boars and gilts to commercial swine operations, however, you do sell a few purebred boars as herd sires. All of your hogs and your customers' hogs are raised in total confinement.

No.	Birth date	EPDs			
		NBA	LW21	DAYS	BF
1	3/27	+ 0.25	+ 1.92	- 1.22	- 0.03
2	4/4	+ 0.32	+ 3.40	- 2.18	- 0.01
3	4/8	+ 0.15	+ 2.33	- 0.94	+ 0.04
4	4/8	- 0.05	- 0.39	- 2.05	+ 0.04

■ Duroc boars

Assume these boars are to be used in a three-breed rotational crossbreeding system (Duroc x Yorkshire x Hampshire). Prior to selling feeder pigs, a group of replacement gilts is selected to be retained for breeding purposes. All hogs are maintained in a partial confinement situation.

No.	Birth date	EPDs			
		NBA	LW21	DAYS	BF
1	2/10	- 0.11	- 2.22	+ 1.24	+ 0.01
2	2/15	+ 0.05	+ 0.55	- 2.15	- 0.07
3	2/17	- 0.07	- 1.38	- 0.85	- 0.03
4	2/20	+ 0.08	+ 1.33	- 3.42	- 0.05

ACCURACY (REASONS)—In a livestock judging contest, the contestant's ability to describe correctly the differences among animals in a class.

ACTUAL DATA—The actual records of the individual. For example, an Angus bull calf might have a 600-pound weaning weight, a Dorset ewe might have a 90-pound weight at 90 days, or a Hampshire boar might have a loin-muscle area of 6.55 square inches.

ADAPTABILITY—The ability of an animal to adapt to changes in the environment in which it lives.

AGE-WEIGHT CATEGORIES (SHEEP)—Specific ages at which an animal's weight should be taken and recorded for evaluation of performance records and calculation of the appropriate FEPDs.

BACKFAT THICKNESS (SWINE)—The depth of backfat, listed as either average, or as last-rib backfat thickness, or tenth-rib fat depth. A lower number indicates that a hog is leaner than a hog with a higher number.

BARROW (SWINE)—A castrated male; castrated boar pig.

BIRTH DATE—Date an animal was born.

BIRTH WEIGHT—The weight of an animal taken at birth. Heavy birth weights are associated with calving problems in beef cattle, lambing problems in sheep, and farrowing problems in swine. Heavier weights also tend to be associated with greater survival rates.

BOAR (SWINE)—An intact male; not castrated; a male capable of breeding females.

BOVINE (BEEF CATTLE)—Scientific name for domestic beef and dairy cattle.

BREED CHARACTER—Particular characteristics of separate breeds that distinguish animals among the various breeds (e.g. color, horns, ear set, wool type).

BREED CLASS—Any set of categories that classify breeds according to appearance or function.

BREEDING ANIMAL—An animal kept for the purpose of breeding, as opposed to a market animal.

BULL (BEEF CATTLE)—An intact male; not castrated; a male capable of breeding females.

CALF (BEEF CATTLE)—An animal less than one year of age.

CALVING EASE (BEEF CATTLE)—The ability of a heifer or cow to deliver a calf without difficulty.

CARCASS—The muscle, bone, and fat associated with the slaughter of an animal; after removal of the head, hide, and viscera (internal organs).

CARCASS LENGTH (SWINE)—The linear measurement from the anterior of the first rib to the anterior of the aitch bone (hipbone).

CARCASS QUALITY—The observed properties of a carcass that may directly or indirectly influence the palatability characteristics of the edible meat.

COMPLETENESS (REASONS)—In a livestock judging contest, the contestant's ability to describe thoroughly the differences among animals in a class.

CONFORMATION—The overall appearance of an animal or composition of a carcass.

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COW (BEEF CATTLE)—A female that has had a calf.

CUTABILITY—The percentage of boneless, closely trimmed, retail cuts of a carcass.

DAM—The female parent of an animal.

DAYS TO 230 (SWINE)—An indicator of growth rate; days to 230 is the number of days required for a hog to reach 230 pounds. A lower number is more desirable than a higher number.

DELIVERY (REASONS)—The manner with which a livestock judging contestant presents his or her reasons.

DISTANCE (REASONS)—How far you stand from the judge. Depending on your voice and stature, the distance you stand from the judge will vary. Six to 10 feet is generally adequate.

DRESSING PERCENTAGE—The proportion of carcass weight relative to live weight of an animal; carcass weight divided by live weight.

EARLY MATURING—An animal or breed that typically reaches puberty and the ability to reproduce at an earlier age than other animals of that breed or species.

ESTIMATED BREEDING VALUE (BEEF CATTLE)—An estimated breeding value (EBV) is similar to a ratio, but it accounts for all of the relationships in a pedigree and predicts how the progeny or offspring of a particular animal should perform, in relation to the average for a group of animals. This value is an indication of an animal's expected performance due to genetics. The value can be used to compare performance of animals within a group.

EWE (SHEEP)—A female sheep of any age.

EXPECTED PROGENY DIFFERENCE—An Expected Progeny Difference (EPD) takes into account the relationships in a pedigree and predicts how progeny or offspring of a particular animal should perform relative to animals from an average parent.

EYE CONTACT (REASONS)—Looking at the face of the person listening to your reasons. Try to look at the person who is listening to your reasons. If you maintain eye contact throughout the entire set, your delivery will be more professional.

FAT DEPTH TENTH-RIB (SWINE)—The linear measurement of fat depth taken at the tenth rib and at a position that is three-fourths the length of the loineye.

FAT THICKNESS (SHEEP, BEEF CATTLE)—The typical linear measurement of fat thickness taken over the ribeye.

FEED EFFICIENCY—The calculated measurement of conversion of feed to body weight gain; pounds of feed divided by pounds of body weight gain.

FERTILITY—The associated characteristics of reproduction.

FLEECE (SHEEP)—The coat of wool covering a sheep.

FLEECE CLEAN WEIGHT (SHEEP)—The weight, in pounds, of a fleece that has been washed appropriately.

FLEECE GRADE (SHEEP)—The classification system used to describe grease wool. Three systems are used: the blood or American system, the numerical or English system, and the metric system.

FLEECE GREASE WEIGHT (SHEEP)—The weight, in pounds, of a freshly-shorn fleece that has not been washed or scoured.

FLEECE STAPLE LENGTH (SHEEP)—The length, in inches, of a lock of shorn wool.

FLEECE TYPE (SHEEP)—A classification system to group sheep according to wool quality. Fleece type or wool type is considered as either fine, medium, long, or crossbred and describes the type of wool fiber characteristic of the breed.

FLOCK EPD (SHEEP)—These EPDs are very similar to those used by the beef cattle industry to predict progeny performance of the animal. The EPDs can be listed as such, or may take the form of Flock Expected Progeny Differences (FEPD) for sheep, and presently can be used only within a flock.

FLOW (REASONS)—The way you put the words together into phrases, sentences, and paragraphs is considered flow. A smooth flowing set of reasons is desirable.

FRAME SCORE (BEEF CATTLE)—A numerical value associated with height at the hip in inches for a particular age.

GENERAL PURPOSE INDEX (SWINE)—Ranks hogs on both growth and maternal traits, and is well-suited for use in a rotational crossbreeding system.

GILT (SWINE)—A female that has not had a litter of pigs.

GREGARIOUSNESS (SHEEP)—The ability of a group of sheep to remain in a close proximity to one another; flocking instinct.

GROWTH RATE—Typically, the pounds of body weight gained during a specified period of time (e.g., average daily gain).

HARDINESS—The ability of an animal to withstand the environment.

HEIFER (BEEF CATTLE)—A female that has not had a calf.

HIP HEIGHT (BEEF CATTLE)—Height at the hip in inches.

INFLECTION (REASONS)—Voice inflection is one of the most important items in your delivery of oral reasons. Emphasis should be placed on the words that describe the important differences among animals and the important characteristics of each animal.

KP FAT PERCENTAGE (SHEEP)—The amount of fat contained in the regions of the kidney and pelvis relative to the carcass weight.

KPH FAT PERCENTAGE (BEEF CATTLE)—The amount of fat contained in the regions of the kidney, pelvis, and heart relative to the carcass weight.

LAMB (SHEEP)—Any sheep less than one year of age.

LATE MATURING—An animal or breed that typically reaches puberty and the ability to reproduce at a later age than other animals of that breed or species.

LEG SCORE (SHEEP)—The subjective characteristic indicative of the total volume of muscle in the leg of a lamb. Muscle volume in the leg is reflective of total carcass muscle.

LITTER SIZE (SWINE)—The number of pigs in a litter.

LITTER WEIGHT AT 21 DAYS (SWINE)—Weight of an entire litter of pigs between 14 and 28 days of age and adjusted to a constant age of 21 days.

LOIN MUSCLE AREA (SWINE)—The surface area of the *Longissimus dorsi* muscle at the tenth rib of a pork carcass.

MARKET ANIMAL—Any young animal intended for slaughter purposes.

MATERNAL—Referring to the dam or the dam's side of the pedigree.

MATERNAL LINE INDEX (SWINE)—Ranks hogs by both growth traits and maternal traits, with emphasis on the maternal EPDs.

MATURE COW WEIGHT (BEEF)—Average weight of a group of cows from six to ten years of age.

MILKING ABILITY—The ability of a female to produce milk. Typically, larger quantities of milk result in heavier offspring at weaning.

NUMBER BORN ALIVE (SWINE)—The actual number of pigs in a litter that were born alive.

NUMBER WEANED (SWINE)—The number of pigs in a litter that were weaned. The standard weaning age for swine is 21 days.

ORGANIZATION (REASONS)—The manner in which notes are assembled and reasons are presented to an official judge.

PATERNAL—Referring to the sire or the sire's side of the pedigree.

PEDIGREE—A diagram of the sire, the dam, and the grandparents of an animal (similar to a family tree).

PERCENT MUSCLE (SWINE)—The amount of lean meat contained in the carcass of a pig relative to the carcass weight.

PERFORMANCE DATA AND RECORDS—Objective numerical indexes of economically important traits associated with livestock production.

PIGMENT (BEEF CATTLE OR SHEEP)—The characteristic color found around the eyes of certain breeds of beef cattle.

POLLED (BEEF CATTLE)—Natural trait of not having horns nor the genetic ability to develop horns.

POST-WEANING—After weaning.

PRE-WEANING—Before weaning.

PRESENTATION (REASONS)—The manner in which oral reasons are spoken to an official judge.

PRODUCTION SITUATION—A description of particular limitations or goals of a breeding program that provides guidance for selection decisions involving the use of performance records (sometimes called scenario).

PROGENY—All of the offspring from a particular parent animal.

PROLIFICACY—The ability to reproduce in quantity.

PUBERTY—The age at which an animal is capable of reproducing.

QUALITY GRADE—Those factors associated with palatability characteristics of the lean, edible portion of meat, including color, texture, firmness, marbling, and age.

RAM (SHEEP)—An intact male; not castrated; a male capable of breeding females.

RATIO—To rank animals within the same herd or flock we generally use a ratio. A ratio consists of a number, typically around 100, that compares each animal to the other animals in a particular group. Any number less than 100 indicates that the animal's performance was inferior to or less desirable than the average of the group; whereas, any number greater than 100 indicates that the animal's performance record was superior to or more desirable than the average of the group.

REASONS—The verbal justification for placing animals in a certain order.

RIBEYE AREA (BEEF CATTLE, SHEEP)—The surface area of the *Longissimus dorsi* muscle between the twelfth and thirteenth rib of a beef or lamb carcass.

SCROTAL CIRCUMFERENCE (BEEF CATTLE, SHEEP)—The distance around the testicles in the scrotum of a bull or ram in centimeters, usually adjusted to 365 days of age. A greater scrotal circumference indicates that a male should have the capacity to produce greater numbers of sperm, and his progeny should reach puberty at earlier ages.

SIRE—The male parent of an animal.

SOW (SWINE)—A female that has had a litter of pigs.

SOW PRODUCTIVITY INDEX (SWINE)—Also referred to as SPI. Sow productivity index is an indicator of maternal ability, and combines the number of pigs born alive and 21-day litter weaning weights into an index.

STANCE (REASONS)—The way you stand when giving reasons. When giving a set of reasons, you will want to make the situation as comfortable as possible for both the judge and yourself.

STEER (BEEF CATTLE)—A castrated male; a castrated bull.

TERMINAL SIRE—A breeding male that is used to generate market animals; typically having high growth rate and desirable carcass characteristics.

TERMINAL SIRE INDEX (SWINE)—Ranks hogs on $DAYS_{EPD}$ and BF_{EPD} only, and does not include any maternal information.

TERMINOLOGY (REASONS)—The words and phrases used to describe differences among animals.

TYPE OF BIRTH (SHEEP)—The number of lambs *born* to a ewe. The following designations are used: S-single, TW-twin, TR-triplet, and Q-quadruplet.

TYPE OF REARING (SHEEP)—The number of lambs *raised* by a ewe. The following designations are used: S-single, TW-twin, TR-triplet, and Q-quadruplet.

UNDERLINE (SWINE)—The teats or nipples on the underside or belly of a pig.

VOLUME (REASONS)—How loud you talk when giving reasons. The volume you use to deliver your reasons will depend on how you normally speak, and the size of the room.

WEANING—The time when young animals are removed from their mothers and forced to give up their dam's milk as a source of nutrients.

WEANING WEIGHT—The weight of an animal at weaning or at a standard weaning age. Adjusted weaning weight is calculated for one of the standard weaning ages listed, and the standard age is listed also. The weight of a calf taken from 160 to 250 days of age and then adjusted to a constant age of 205 days. Standard weaning ages for lambs are 45, 60, 90, and 120 days. The standard weaning age for swine is 21 days.

WETHER (SHEEP)—A castrated male sheep; a castrated ram.

YEARLING—An animal that is more than one year of age, but not more than two years of age.

YEARLING WEIGHT—The weight of an animal taken after 330 days of age and adjusted to a constant age of 365 days.

YIELD GRADE (BEEF CATTLE, SHEEP)—The numerical designation (1-5) for the percentage of boneless, closely trimmed, retail cuts obtained from a carcass.

NAME: _____

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4-H Club Motto

"To make the best better"

4-H Club Pledge

I pledge

my head to clearer thinking,

my heart to greater loyalty,

my hands to larger service, and

my health to better living, for

my club,

my community,

my country, and

my world.

4-H Club Colors

Green and white

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