4-H

ANIMAL SCIENCE PROJECT

LEADERS GUIDE

BEGINNING UNIT

UNIVERSITY OF CALIFORNIA AGRICULTURAL EXTENSION SERVICE

4-H—AG60

PROJECT MEMBERS

NAME	ADDRESS	PHONE	PROJECT	YR. IN 4-H

4-H ANIMAL SCIENCE PROJECT

The 4-H Animal Science project is designed to provide educational experiences for 4-H members enrolled in any type of animal or poultry projects. 4-H leaders can more easily work with boys and girls approximately the same age and, therefore, make their job of teaching easier and more effective.

BEGINNING UNIT

(For younger 4-H members who are carrying an animal science project for the first time.)

INTERMEDIATE UNITS

MANAGEMENT PRACTICES - (to be available)
FEEDS AND NUTRITION
ANIMAL SCIENCE FIELD TRIPS - (to be available)
MEAT AND MILK PRODUCTS

ADVANCED UNITS

(For 4-H members in high school)
MARKETING
CAREER EXPLORATION
VETERINARY SCIENCE
SPECIAL INTEREST

The material in this leaders guide has been prepared to help 4-H club leaders do a better job of teaching animal science to 4-H club members. It was prepared by the following committee:

4-H Farm Advisors Don Brittsan, Marin County; Ray Lyon, Glenn County; Robert Savage, Modoc County; Robert Sheesley, Fresno County; Herbert Shirley, Kings County; and Extension Animal Husbandman, Horace Strong, Extension Dairyman, Don Bath, and 4-H Club Specialists William G. Schneeflock and John A. Emo.

Co-operative Extension work in Agriculture and Home Economics, College of Agriculture, University of California, and United States Department of Agriculture co-operating.
Distributed in furtherance of the Acts of Congress of May 8, and June 30, 1914.
George B. Alcorn, Director, California Agricultural Extension Service.

MARCH 1965--10,000

BEGINNING UNIT

The ideal 4-H Animal Science Project member shows an increase each year in knowledge, skills and experience.

We suggest that members each year:

DEMONSTRATE	**TURN IN COMPLETE RECORDS**
OWN AN ANIMAL	**ATTEND FIELD TRIP**

Your boys and girls will want to know:

1. How to fill out fair entries
2. The date entries are due for fairs (see 4-H calendar)
3. The date and place of the county demonstration and regional demonstration days (see 4-H calendar)
4. When record books are to be completed
5. When there is a judging contest
6. The date of their local exhibit day
7. The health regulations for showing (see fair premium books).

GESTATION AND TEMPERATURE TABLE

	Average Gestation Period			
	Weeks	Days	Extremes (days)	Normal Rectal Temperature
Sow	16	112	109 to 120	101.7° to 193.3°F
Ewe	22	150	146 to 157	104° to 105°F
Cow	40½	283	240 to 311	101.5°F

4-H LIVESTOCK PROJECT FEED AND WEIGHT GUIDE

Members, leaders, and parents often are confronted with questions concerning the weight and age of animals, and time needed to complete a livestock-fattening project for a certain event.

The following figures are given as a guide and should be modified for specific cases. The calculations represent adequate feeding standards recommended by feeding authorities. The expected daily gains in the guide are averages and will vary with individual animals.

GUIDE FOR FEEDING

ANIMAL	Weight of Animal (Pounds)	Expected Daily Gain (Pounds)	Pounds of Feed per Day (Pct. Body Weight)	Digestible Protein (Pct. of Ration)	Approximate Days to Event
Pig	35-40	.90	5.0	13.3	120
Sheep	50	.25	4.2	8.1	166
Beef	400-500	2.00	3.0	9.2	200
Pig	75	1.50	5.0	12.0	81
Sheep	60	.30	3.8	7.8	126
Beef	500	2.00	3.0	8.6	180
Pig	125	1.75	4.5	11.0	48
Sheep	70	.35	3.8	7.0	96
Beef	600	2.00	2.8	8.1	140
Pig	175	1.80	4.0	10.0	20
Sheep	80	.35	3.6	6.9	68
Beef	700	2.00	2.7	7.8	90
Pig	210	1.80	4.0	10.0	0
Sheep	90	.25	3.3	6.7	40
Beef	800	2.00	2.7	7.5	42

BEGINNING UNIT

LEARN	AIDS	IDEAS
First Meeting **Project planning**	Worksheet 1	*Invite parents *Project selection Field Day
Second Meeting **Feeds and nutrition**	Worksheets 2a and 2b	*Use samples of feed *Member reports *Junior leaders give demonstrations
Third Meeting **Animal health**	Worksheet 3	*Talk by veterinarian on sanitation and animal health *Movies and slides - (See your farm advisor)
Fourth Meeting **Breed characteristics and parts of animals**	Worksheets 4a and 4b	*Breed flash cards (See farm advisor) *Charts or posters (See farm advisor)
Fifth Meeting **Judging and selection**	Worksheets 5a and 5b Livestock and Dairy Judging Manual	*Judging field trip *Contests *Film strips and slides, picture classes
Sixth Meeting **Fitting and showing**	Worksheet 6 Project Manuals	*Junior leader demonstration *Practice on live animals *Film strips
Seventh Meeting **Project tour**		
Eighth Meeting **Attend at least one field day**		

Eager Beaver Worksheets

LIVESTOCK PROJECT PLANNING

Beginning Unit
Worksheet 1

Name _____ Age_____ Club_____

What do you know about livestock?

STEP I Take quiz and correct it.

True or False

_____ 1. A Suffolk is a breed of pigs.
_____ 2. A hog ready for market weighs about 350 pounds.
_____ 3. A good milk cow gives about 40 pounds of milk per day.
_____ 4. A 500-pound steer will gain about 5 pounds per day.
_____ 5. On the market, a fat lamb will sell for 18 to 25 cents per pound.
_____ 6. You get on a horse from the right side.

6 points - Professor	3 points - Camp Cook
5 points - Cattleman	2 or 1 point - Rustler
4 points - Cowboy	

STEP II Have different members read aloud and discuss.

Market Hog

A 40-pound pig costs $8 to $15
Feed costs $18 to $22
Misc. costs $3
Time for project — 120 days
Space needed — 200 square feet

Market Lamb

A 60-pound lamb costs $10 to $16
Feed costs $5 to $8
Misc. costs $2
Time for project — 120 days
Space needed — 100 square feet

Horse

A horse costs $300 to $600
Feed costs $100 to $125
Misc. costs $50 to $150
Time — 365 days
Space — 500 square feet

Beef

A 500-pound calf costs $100 to $125
Feed costs $125 to $175
Misc. costs $10
Time for project — 300 days
Space needed — 400 square feet

Dairy Cow

A 3-months calf costs $50 to $60
Feed costs $40 to $60
Misc. costs $10
Time for project — 365 days
Space needed — small pen and pasture

STEP III Have each member fill in questions and check boxes—Junior Leaders assist.

1. What type of animal do you want? _____
2. How much money do you have for your project? $ _____
3. Will you need a loan? ☐ Yes ☐ No
4. What do you have now?
   Size of pen _____ Feed on hand _____
   Shelter _____ Equipment _____
5. What will you need to get or make for your project? (Check those you do not have.)
   - ☐ Pen
   - ☐ Shelter
   - ☐ Bucket
   - ☐ Water facilities
   - ☐ Feed trough (grain and hay)
   - ☐ Feed (kind and amount to start)
6. What will project cost? $_____(approximate—see front of this sheet)
   Estimated sale price (pounds x price per pound = $_____)
7. Starting feed tips (check those you need).
   ☒ Fresh water ☒ Salt

☐ Grain	_____ type needed	_____ amount to feed daily	_____ cost per sack
☐ Hay	_____ type needed	_____ amount to feed daily	_____ cost per bale
☐ Pasture	_____ type needed		_____ cost per month

   Be sure animal cleans up feed quickly.
8. Be a good herdsman.
   a. Watch for sickness symptoms.
      - ■ droopy ears
      - ■ not eating
      - ■ runny nose
      - ■ lameness
      - ■ scouring
      - ■ fever
   b. Don't let animal get loose.
   c. Don't excite animal.
   d. Become his friend.
9. Literature available (see leader) (check those you need).
   - ☐ Annual Record Sheet
   - ☐ Project Record Sheet
   - ☐ Project Outline Sheet
   - ☐ Project Manual
   - ☐ Judging Manual
10. Project meetings will be held
    Date _____ Time _____ Place _____

STEP IV Members take sheets home for signature

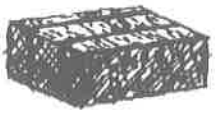
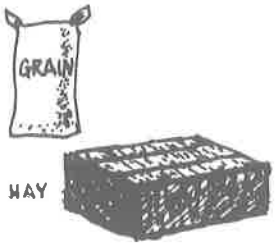
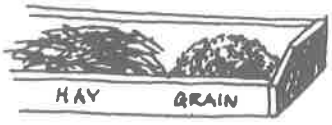
_____ _____

Leader's Signature Parent's Signature

Parents are always welcome at our meetings and activities.

FEED TERMS

Beginning Unit
Worksheet 2a

ITEM	DEFINITION
1. Roughages 	Feeds low in TDN or energy, high in fiber
2. Concentrates 	Feeds high in TDN or energy, low in fiber
3. Fiber 	That part of a feed which is hard to digest, such as stems, straw
4. TDN (energy) (Total Digestible Nutrients)  23% NOT digestible 77% digestible 50% NOT digestible 50% digestible	That portion of a feed which is digestible and provides fuel (energy) for use by animal
5. Proteins 	Feeds which builds muscle, hair, etc.
6. Ration 	Amount of feed an animal eats in 24 hours
7. Minerals 	Build bones and promote good health
8. Vitamins A B D B_{12} C E K	Food substances required in small amounts by animals

Directions:

Write in on the blank line whether the feed is a **roughage** or **concentrate.**

1. _____

2. _____

3. _____

4. _____

5. _____

Your Score Rating	
No. correct	
10	Professor
8-9	Feed mill operator
6-7	Sack sewer
5 or below	Unemployed

6. Concentrates are low in _____ high in _____

7. The amount of feed an animal eats in 24 hours is called a _____

(T for True; F for False)

8. _____Vitamins build bones

9. _____Minerals are used mainly to build muscles.

10. _____Oat hay is low in fiber.

(One point per question)

FEEDS AND NUTRITION

Beginning Unit
Worksheet 2b

FEEDING TIPS

1. Don't change feeds suddenly.
2. Feed at regular times.
3. Mix feed well.
4. Feed what they will eat and still not waste any.
5. Have clean fresh water available always.
6. Have salt and shade available always.
7. Have plenty of feed trough space.

How much should you feed per day ?

Type of animal	Animal Weight		Pounds of feed per pound of body wt.		Number of pounds to feed each day
	50 pounds	×	.042	=	2+ pounds
	80 pounds	×	.036	=	2¾ pounds
	75 pounds	×	.05	=	3¾ pounds
	175 pounds	×	.04	=	7 pounds
	500 pounds	×	.03	=	15 pounds
	800 pounds	×	.027	=	21½ pounds
	1000 pounds	×	.014 (maintenance ration)	=	14 pounds

(For foals' ration, refer to horse manual.)

POULTRY and RABBITS — Refer to your 4-H project manuals for feeding.

Can you feed the right amount?

(Find amount of feed/lb of body wt. Use closest figures.)

1. If you own a 40-pound pig, how many pounds of feed should you feed him per day?
   Answer _____

Work Space
Pig weight 40 pounds
lb feed/lb body wt. x _____
Answer

2. If you own a 75-pound lamb, how many pounds of feed should you feed him per day?
   Answer _____

Work Space
Lamb weight 75 pounds
lb feed/lb body wt. x _____
Answer

3. If you own an 800-pound steer, how many pounds of feed should you feed him per day?
   Answer _____

Work Space
Steer weight 800 pounds
lb feed/lb body wt. x _____
Answer

4. If you own a 1000-pound horse, how many pounds of feed should you feed him per day?
   Answer _____

Work Space
Horse weight 1000 pounds
lb feed/lb body wt. x _____
Answer

5. What does your animal weigh? _____

   How many pounds do you feed him per day? _____

   How many pounds should you feed him per day? _____

ANIMAL HEALTH

Beginning Unit
Worksheet 3

Members will read questions and discuss answers. Each member fills in answers on his worksheet.

Members should read the sections on care, feeding, and diseases in their project manuals.

1. What symptoms might your animal have if he were getting sick?

Refuses feed	Unusual behavior
Looks droopy	Fever
Has diarrhea	Increased respiration

2. Why would your animal refuse feed?

Change of feed	Contaminated feed
Dirty feed trough	Sick

3. What are some causes of diarrhea?

Overfeeding	Sudden change of feed
Spoiled feed	Stomach and intestinal parasites
Excitement	

4. What are some examples of unusual behavior?

Temperament Lameness Droopiness

5. Normal temperature range for my project animal is _____

Normal Rectal Temperature	
Swine 101.7°- 103.3°F	Beef 101.5°F
Sheep 101.5°- 103.5°F	Horse 100.5°F

6. What is fever? Higher than normal body temperature.

7. What does a fever indicate?

infectious disease extremely hot day heat stroke

8. What can you do to reduce the chances of your animal getting a disease?

Provide enough space Keep pen clean and dry
Keep feed and water clean Keep other sick animals away
Provide shade in summer, shelter in winter

9. A vaccine helps prevent disease by producing an immunity or resistance to a specific disease in the animal inoculated. Some common diseases which you can vaccinate against : black leg, anthrax, distemper, blue tongue, sleeping sickness, and hog cholera.

10. Underline the things to do when your animal gets sick.

Call a veterinarian Keep animal with the herd
Keep animal warm and comfortable Take animal's temperature
Vaccinate the animal with something Provide water but no feed

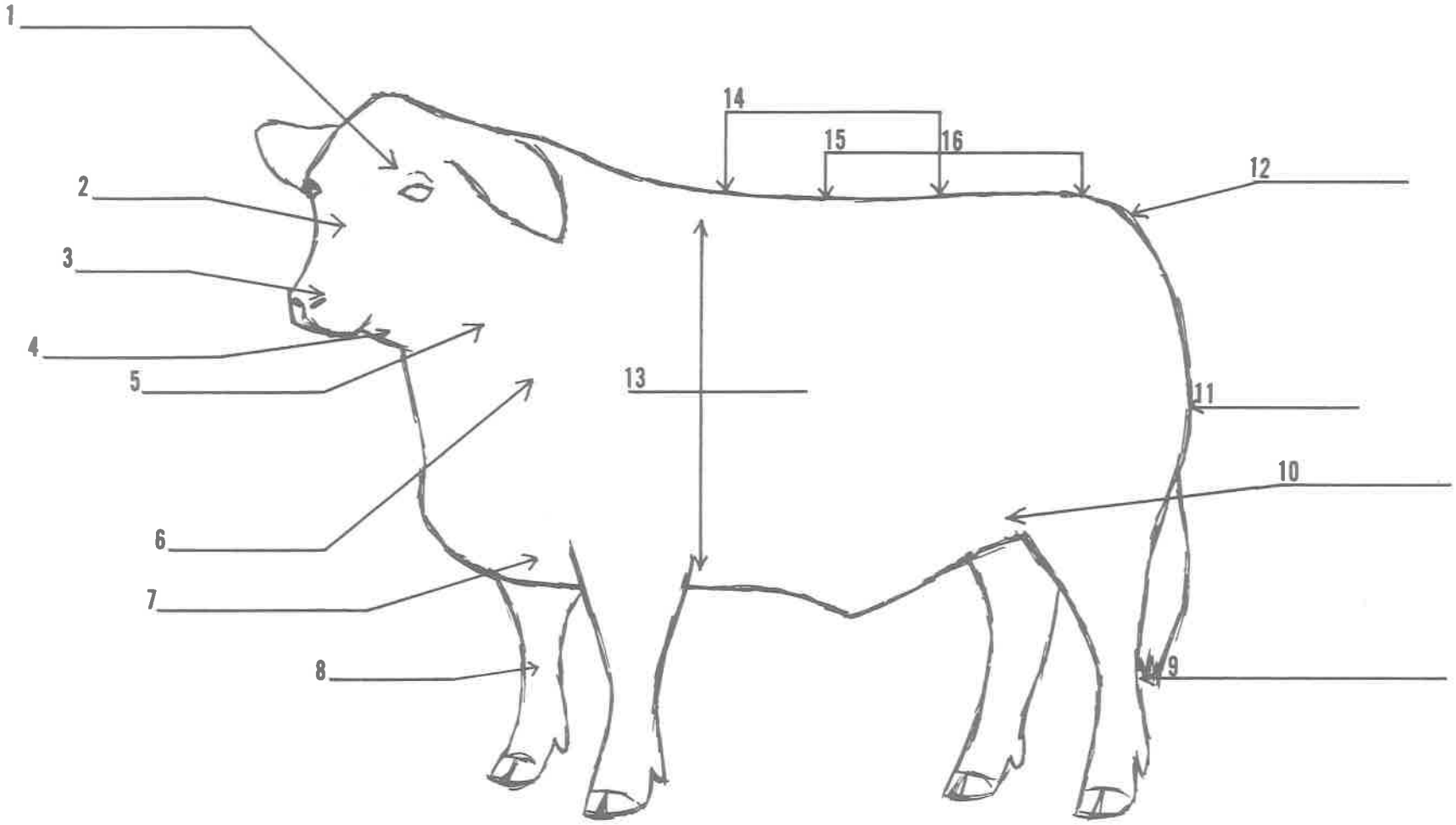
Demonstrations Members Can Do

Take temperature of project animal.
Chart temperature of your project animal each day for a week.

Study your project manual,
then fill in the name of each part.

MARKET STEER

Beginning Unit
Worksheet 4a

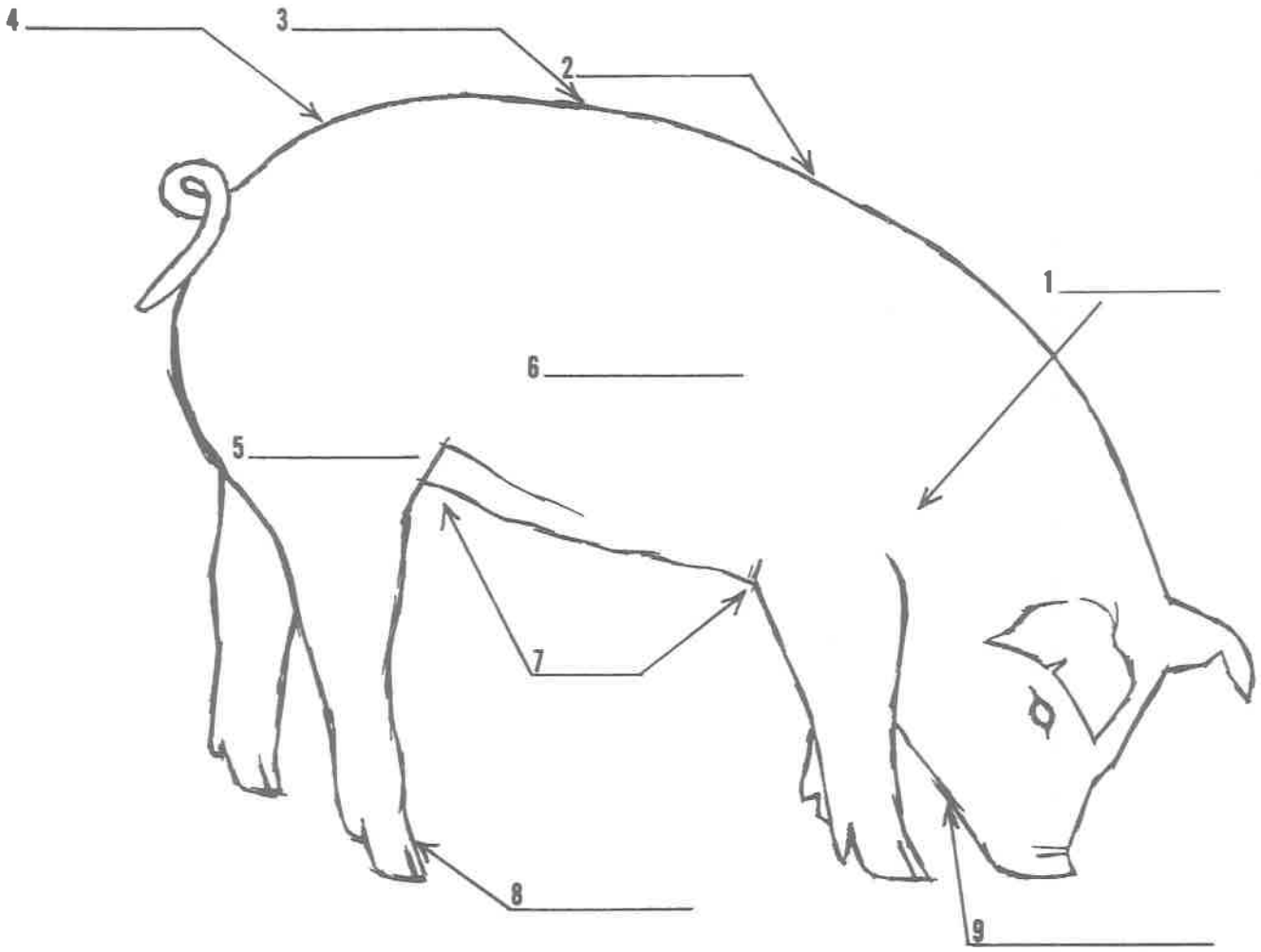


17 Probable dressing percentage_____%

Study your project manual,
then fill in the name of each part.

MARKET BARROW

Beginning Unit
Worksheet 4a

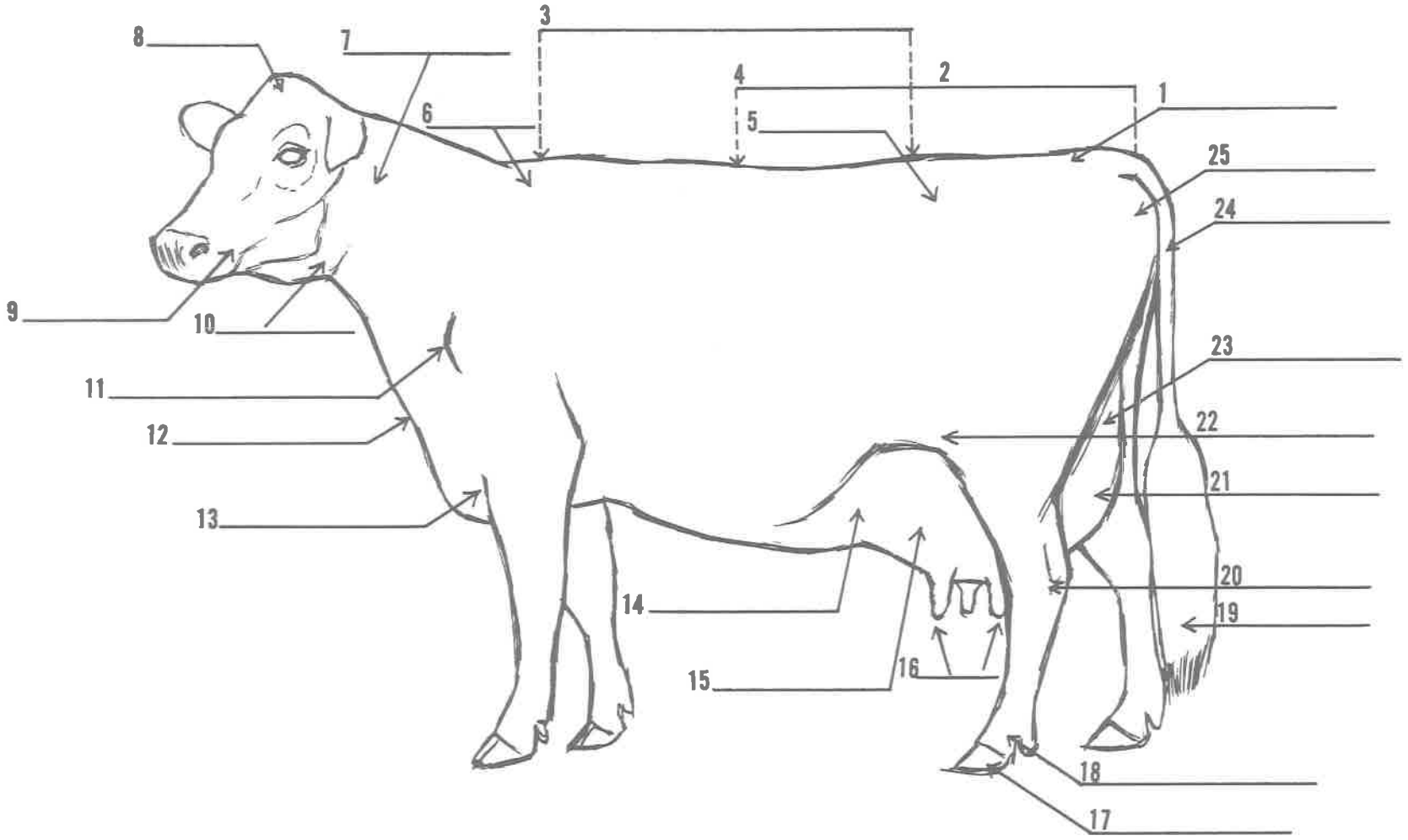


10 Probable dressing percentage_____%

Study your project manual,
then fill in the name of each part.

DAIRY COW

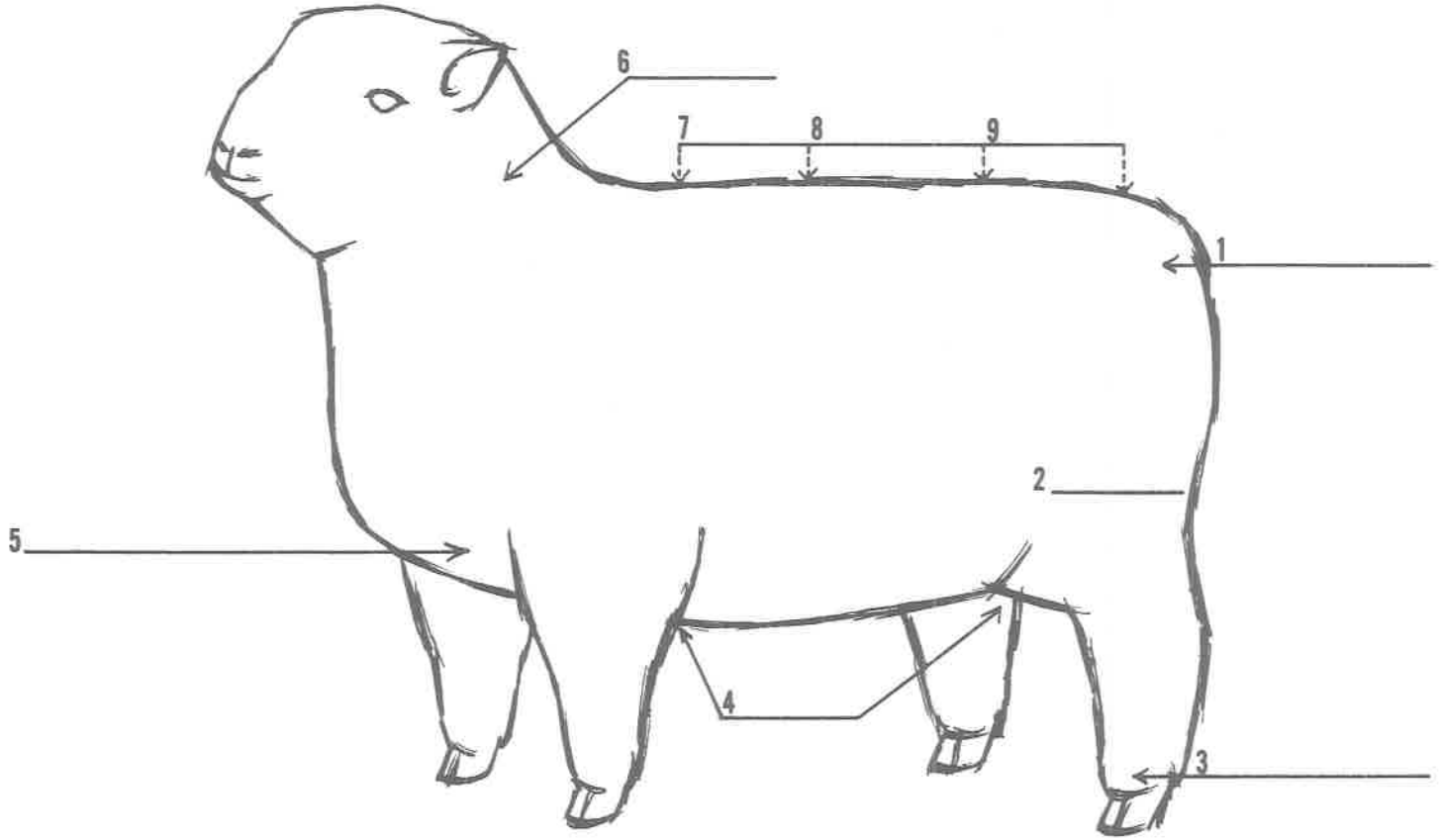
Beginning Unit
Worksheet 4b



Study your project manual,
then fill in the name of each part.

MARKET WETHER

Beginning Unit
Worksheet 4b

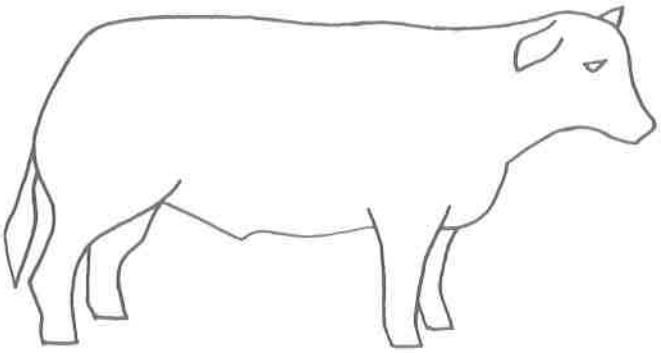


10 Probable dressing percentage_____%

My placing:
1st _____ 2d _____
3d _____ 4th _____

MARKET STEERS

Beginning Unit
Worksheet 5a



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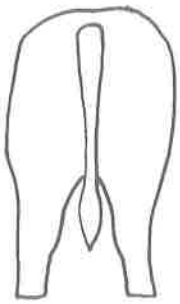

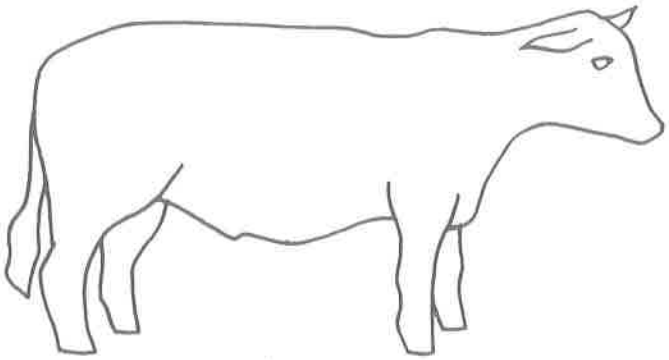

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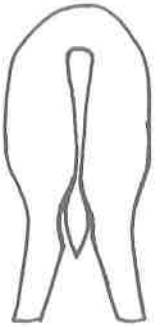

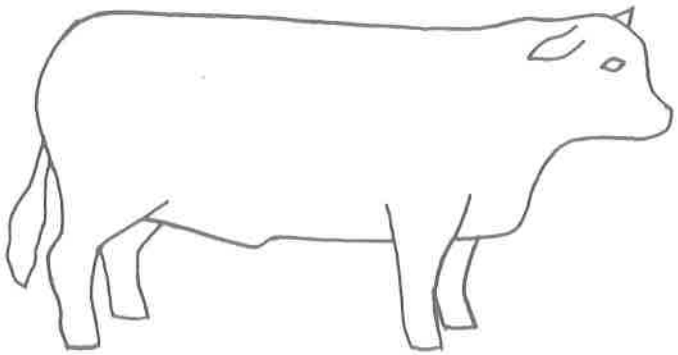

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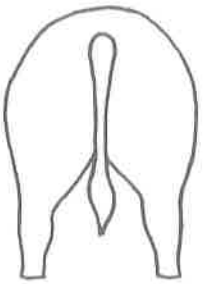

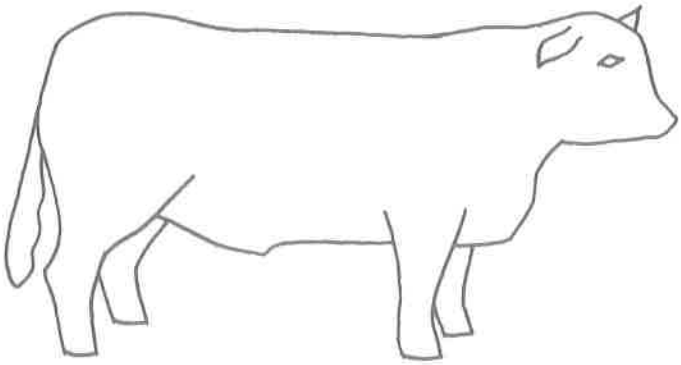

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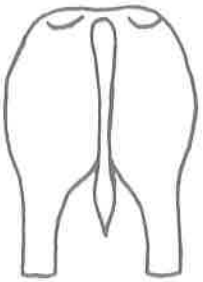
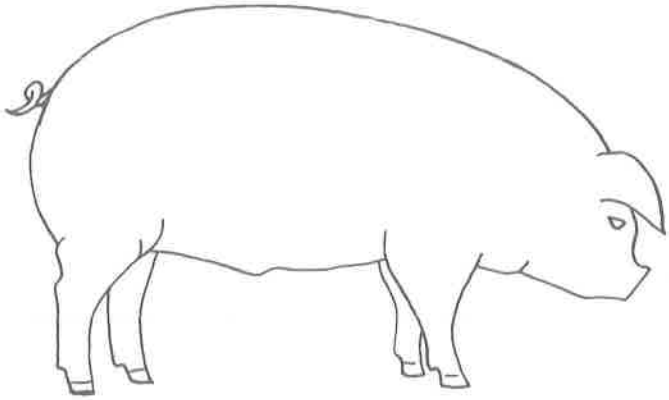


My placing:
1st _____ 2d _____
3d _____ 4th _____

MARKET BARROWS

Beginning Unit
Worksheet 5a



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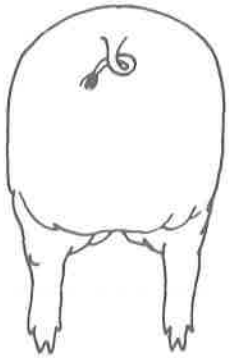

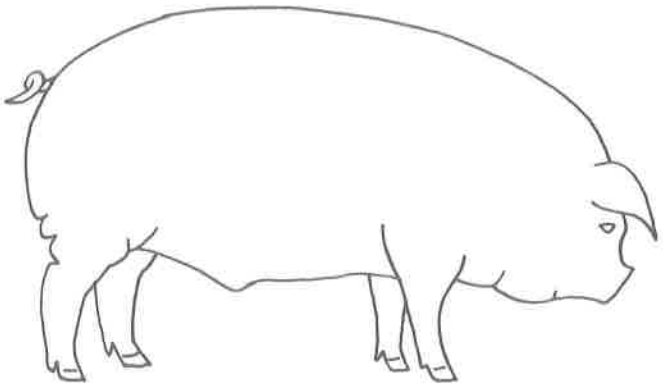

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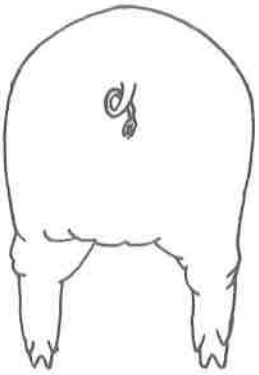

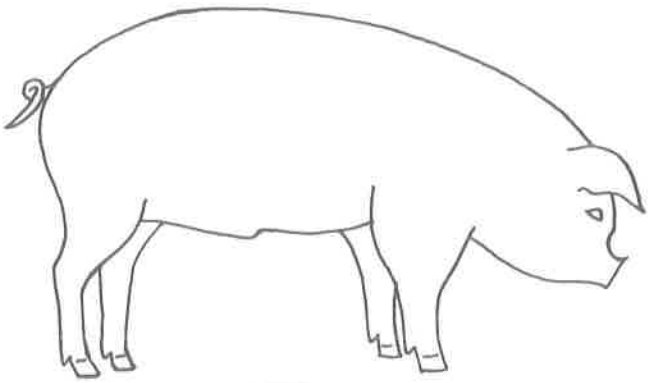

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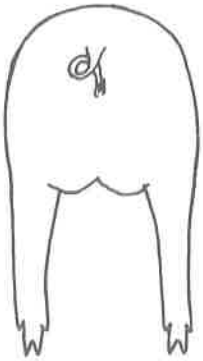

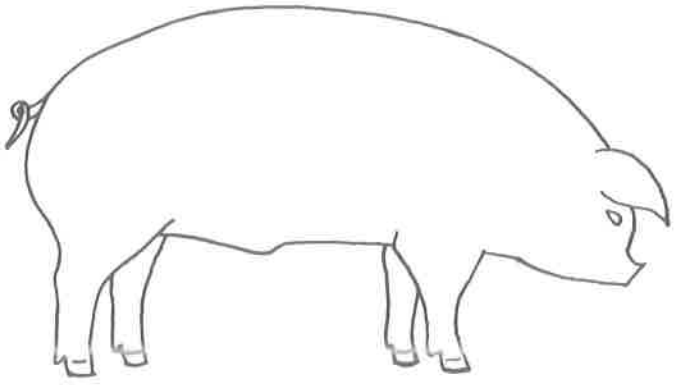

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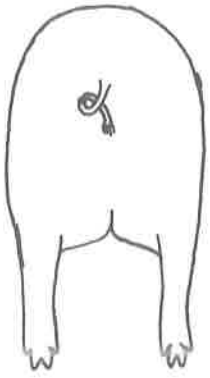
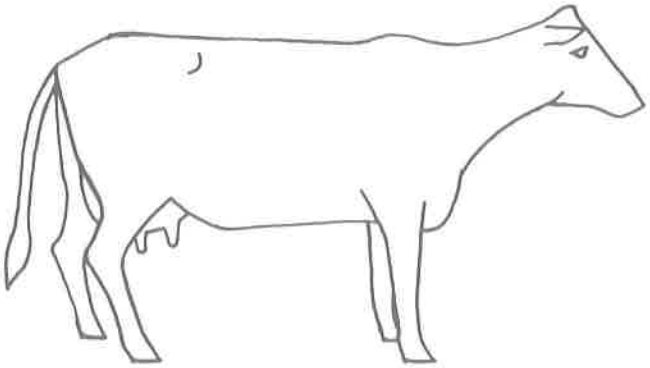


My placing:
1st _____ 2d _____
3d _____ 4th _____

MILKING COWS

Beginning Unit
Worksheet 5b



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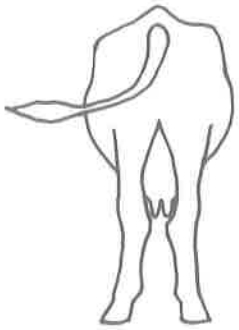

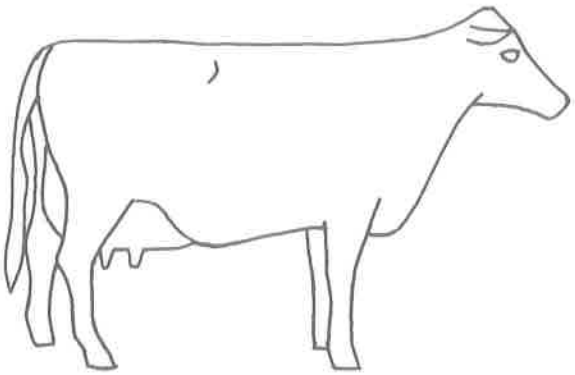

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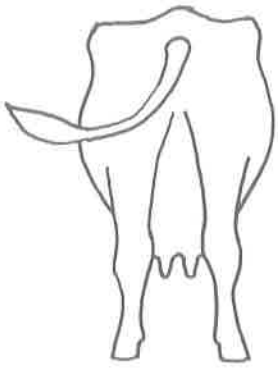

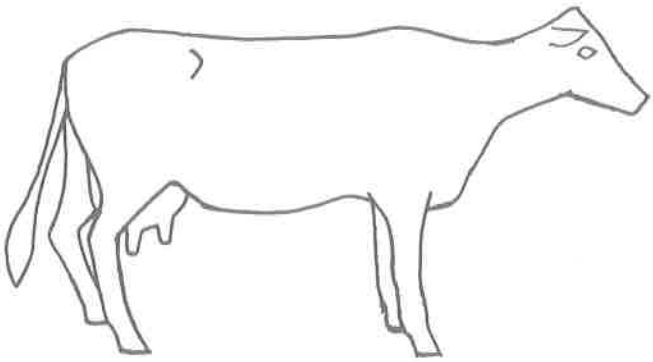

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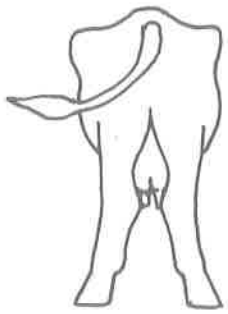

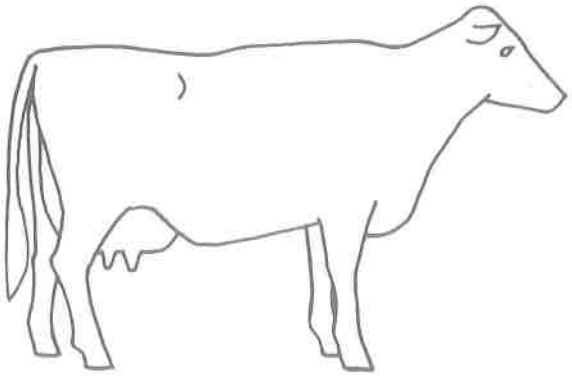

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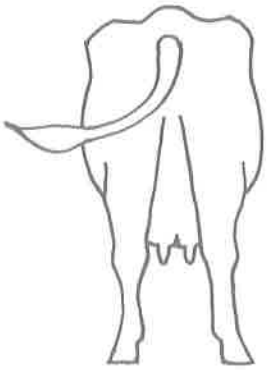
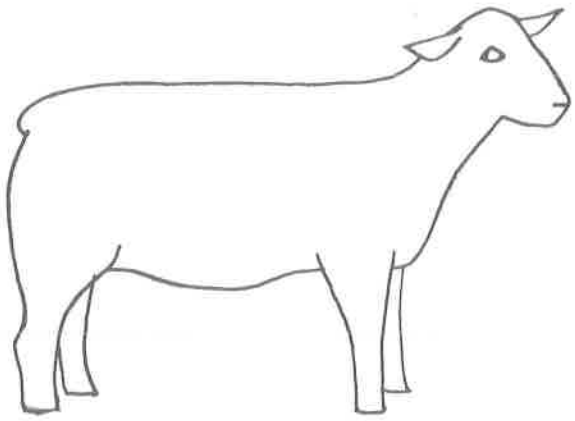


My placing:
1st _____ 2d _____
3d _____ 4th _____

BREEDING EWES

Beginning Unit
Worksheet 5b



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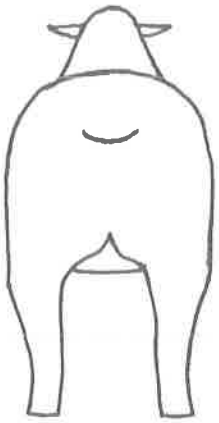

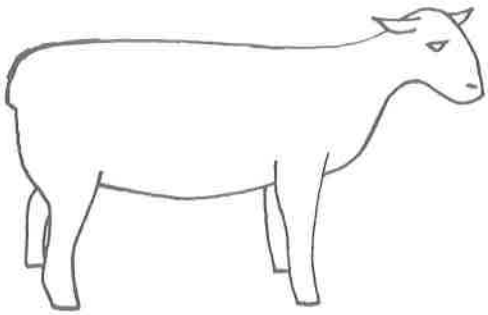

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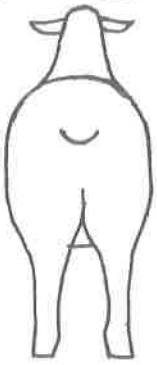

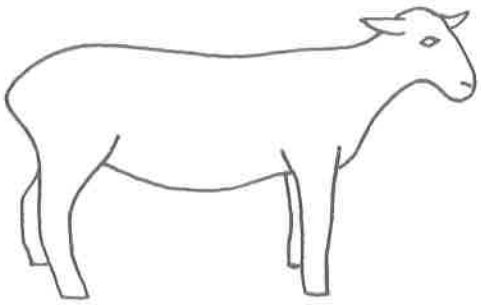

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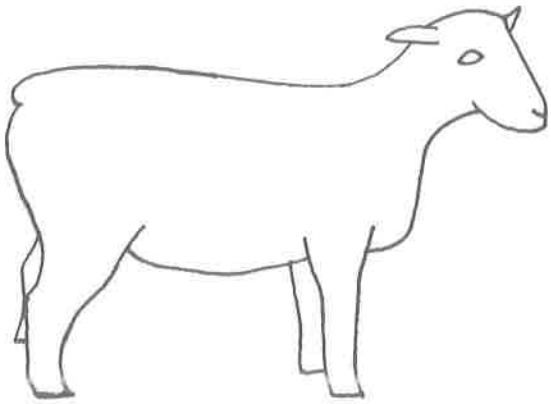

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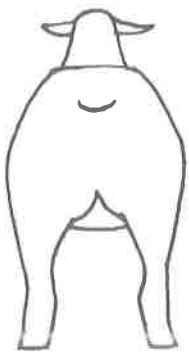

Leader's Copy
Worksheet 5a

Market Steers

Official placing 3, 4, 1, 2

Three is a wide, deep, smooth steer. His shoulders blend in smoothly. He is straight over the topline, fuller in the round, and deeper in the twist than four. His flank is the fullest of any in the class.

Four is light over the loin, patchy in his rump, and cut up in the flank. However, he is a longer, deeper, thicker steer than one, deeper in the twist and fuller in the round.

One is thicker than two. He carries more fleshing throughout, but particularly over the rump, through the round; he is fuller in the flank and deeper through the heart girth.

Two lacks beef type and seems to lack finish. He is open in the shoulders, slopes off in the rump, is shallow in the twist, and is not full in the round.

Market Barrows

Official placing 4, 3, 1, 2

Four is a neat barrow that has both length and depth. He is longer and deeper than three and is much fuller in the ham.

Three is not as thick as one and is not as full in the ham, but he is much neater and trimmer and would hang up a more desirable carcass.

One and two are similar types. Both are overdone and are carrying far too much fat for today's market. Two is worse in this respect than one. Both can be commended for their thickness, but they are not the meaty type hog we look for today.

Worksheet 5b

Milking Cows

Official placing 2, 4, 1, 3

Two has more dairy type and character than any animal in the class. She has the straightest topline in the class. She is more level and wider in the rump than four. Her udder is attached higher in the rear and more firmly and smoothly in the front. She has a more feminine appearing head.

Four is more level and wider in the rump than one. She is typier and stands straighter on her legs. Her udder has much more capacity, with a higher rear attachment and a more even teat placement. She shows more depth, refinement, and dairy character than one.

One is longer from hooks to pins, has a higher rear udder attachment and more udder capacity. She is deeper in the heart girth.

Three has a pendulous udder with light front quarters. Both one and three are plain headed. In this class there is an easy top pair and an easy bottom pair.

Breeding Ewes

Official placing 1, 4, 2, 3

One is a large ewe that is deep bodied and wide. She stands straight on her legs. She has more length than four, is squarer over the rump, and has a larger leg of mutton.

Four has more size and scale than two, is much deeper in the areas adjoining the twist, and has a meatier though still feminine appearance.

Two shows more balance than three, is smoother over the shoulders. She carries more thickness low down in the hindquarters, has a larger leg of mutton, and stands straighter on her legs.

Three lacks condition and lacks size through her heart girth.

FITTING AND SHOWING

(Members will use project manuals and fill in blanks when doing the fitting and showing.) This skill can best be learned by demonstration using an animal.

1. Market lambs ready for show usually weigh 90 to 110 pounds.
   Market steers 950 to 1050 pounds.
2. Lambs may be washed but it should be done 3 weeks before show.
3. Feed should be increased ☐ decreased [x] during show.
4. Shear lambs about 12 weeks before the show.
5. Swine market animals should be washed at least 2 times before show.
6. Clip the hair on the tail and ears of swine.
7. A light oil may be used on Dairy [x] Beef [x] Sheep ☐ Horse [x]
   Goat [x] Swine [x] to give sheen to the hair just before going into show ring.
   (Check the ones.)
8. Take your animal to the show ring wet ☐ dry [x].
9. Dairy cattle should be blanketed 6-8 weeks before show.
10. Training your animal to lead and handle correctly is one of the most important points in getting ready for the show ring.
11. Walk on the dairy and beef animals' left [x] right ☐ side.
12. Hold the lead rope or strap in the left [x] right ☐ hand when showing dairy animals.
    Left ☐ right [x] for beef.
13. Dairy goats are judged on the same basis as dairy cattle and should be shown in the dairy division.
14. When showing dairy goats you should walk on the left side, hold the lead strap with left hand, and walk backward as you would in showing dairy cattle—only during the time when the judge is studying your animal. (True) or False (Circle one).

HORSE PROJECT

Instructions: Use the horse project manual to find answers to these questions.

1. A horse's feed (ration) each day should contain roughages , concentrates, salt
2. All horses should receive 1½ pounds of hay (roughages) for each 100 pounds of weight.
3. Fresh water should be available at all times.
4. If you feed your horse grain, he should eat it all in about 30 minutes. If there is grain left after this time, are you feeding him too much or too little grain? too much
5. Changes in feed should be made (gradually) (suddenly) gradually
6. Name some kinds of roughages (hay). oat , alfalfa , timothy , sudangrass , meadow grass .
7. Name some grains that are fed horses. oats , barley , wheat , bran .
8. A foal's mother is called a mare and its father is called a stallion .
9. A female that is used to raise colts is known at a broodmare .
10. List five safety rules you should always follow when around horses.
    1. Always warn a horse when you walk up behind him.
    2. Work about a horse as near the shoulder as possible.
    3. Always walk around your horse; never under or over the tie rope.
    4. Always work close to a horse.
    5. Always let the horse know what you intend to do.
    6. Attendants should not be loud or rowdy.
11. When showing horses, you walk on the left side and hold the halter rope in your right hand.
12. When showing your horse, you should always turn him to his right , thereby pushing your horse around the turn.

4-H ANIMAL SCIENCE PROJECT

The material in this leaders' guide has been prepared to help 4-H Club leaders do a better job of teaching animal science to 4-H Club members. It was prepared by the following committee:

Farm Advisors Don Brittsan, Marin County; Ray Lyon, Glenn County; Robert Savage, Modoc County; Robert Sheesley, Fresno County; Herbert Shirley, Kings County; Extension Animal Husbandman Horace Strong; Extension Dairyman Don Bath; and 4-H Club Specialists William G. Schneeflock and John A. Emo.

OBJECTIVES

Although some club members cannot participate in all of its phases, this program is designed to help 4-H members:

- Develop desirable traits of character, such as leadership, responsibility, initiative, self-reliance, and sportsmanship.
- Develop a greater love for animals, and a humane attitude toward them.
- Increase knowledge of safety precautions to prevent injuries to themselves, others, and their animals.
- Develop skill, patience, and understanding in handling animals.
- Develop a clear understanding and appreciation of the animal industries and their role in the agricultural and commercial economy of the country.
- Understand the importance of meat, milk, and other animal products to human nutrition and health.
- Learn to recognize meats of varying quality and be able to identify the wholesale and retail meat cuts.
- Develop an understanding of the values of scientific research and its influence upon the animal industries.
- Experience the pride and responsibility of owning animals and receive training in their care, feeding, management, and related costs.
- Demonstrate sound animal feeding and management practices on the farm, and in the home and community.
- Earn money and learn how to manage this resource effectively.
- Prepare for citizenship responsibilities by working together in groups and supporting community projects and activities.

4-H

ANIMAL SCIENCE PROJECT

LEADERS GUIDE

INTERMEDIATE UNIT

FEEDS AND NUTRITION

UNIVERSITY OF CALIFORNIA AGRICULTURAL EXTENSION SERVICE

4-H–Ag73

PROJECT MEMBERS

NAME	ADDRESS	PHONE	PROJECT	YR. IN 4-H

4-H ANIMAL SCIENCE PROJECT

The 4-H Animal Science project is designed to provide educational experiences for 4-H members enrolled in any type of animal or poultry project. 4-H leaders can work more easily with boys and girls approximately the same age, and therefore make their job of teaching easier and more effective. The starred (*) units are now available. Worksheets for use with members can be obtained from the farm and home advisors' office. This leaders' guide has the answers for the worksheets.

*Beginning unit (For younger 4-H members who are carrying an animal science project for the first time.)

Intermediate units
- *Management Practices
- *Feeds and Nutrition
- *Animal Science Field Trips
- Meat and Milk Products

Advanced units (For 4-H members in high school)
- *Marketing
- Career Exploration
- Veterinary Science
- Special Interest

The ideal 4-H Animal Science project member shows an increase each year in knowledge, skills, and experience.

We suggest that members each year:

Own an animal

Demonstrate

Attend field trip

Turn in complete records

Your boys and girls will want to know:

1. How to fill out fair entries
2. The date entries are due for fairs (see 4-H calendar)
3. The date and place of the county demonstration and regional demonstration days (see 4-H calendar)
4. When record books are to be completed
5. When there is a judging contest
6. The date of their local exhibit day
7. The health regulations for showing (see fair premium books).

Co-operative Extension work in Agriculture and Home Economics, College of Agriculture, University of California, and United States Department of Agriculture co-operating. Distributed in furtherance of the Acts of Congress of May 8, and June 30, 1914. George B. Alcorn, Director, California Agricultural Extension Service.

FEBRUARY 1966--3½M

OBJECTIVES

Although some club members cannot participate in all of its phases, this program is designed to help 4-H members:

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FEEDS AND NUTRITION UNIT

The order for using the worksheets is only a suggestion. Feel free to use them in the order that seems best to you.

LEARN	AIDS	IDEAS
First Meeting Types of feeds	Worksheet 1 Feed samples	Feed identification contest; visit feed mill
Second Meeting Feeds & their uses	Worksheet 2	Feed mixing demonstration
Third Meeting Digestive system	Worksheet 3 Charts	Identify parts of digestive tract of a chicken or rabbit
Fourth Meeting Feeding requirements	Worksheet 4	Members bring samples of their animals' rations and compare with recommended samples
Fifth Meeting Feeding terms	Worksheet 5	
Sixth Meeting Feeding management	Worksheet 6 (for leaders only)	Movies or slides; visit a feedlot
Seventh Meeting Project tour		
Eighth Meeting Attend a field day		

If you want good attendance at project meetings and the greatest satisfaction as a leader—

- hold regular meetings — at the same interval, time, and place.
- inform members and parents of what you are planning to do — this can be done at the first project meeting, on a visit to the home, or by telephone.
- give members a chance to take part by project reports, demonstrations, discussions, questions, judging.
- plan your meetings well. Use various methods of instruction. Use materials provided.

4-H LIVESTOCK PROJECT FEED AND WEIGHT GUIDE

Members, leaders, and parents often ask about the weight and age of animals, and time needed to complete a livestock-fattening project for a certain event.

Table 1 is a guide and should be modified for specific cases. The calculations represent adequate feeding standards recommended by feeding authorities. The expected daily gains in the guide are averages and will vary with individual animals.

Table 2 shows gestation periods and normal temperatures for various animals.

TABLE 1 – GUIDE FOR FEEDING

Animal	Weight of Animal (Pounds)	Expected Daily Gain (Pounds)	Pounds of Feed per Day (Pct. Body Weight)	Digestible Protein (Pct. of Ration)	Approximate Days to Event
Pig	35-40	.90	5.0	13.3	120
Sheep	50	.25	4.2	8.1	166
Beef	400-500	2.00	3.0	9.2	200
Pig	75	1.50	5.0	12.0	81
Sheep	60	.30	3.8	7.8	126
Beef	500	2.00	3.0	8.6	180
Pig	125	1.75	4.5	11.0	48
Sheep	70	.35	3.8	7.0	96
Beef	600	2.00	2.8	8.1	140
Pig	175	1.80	4.0	10.0	20
Sheep	80	.35	3.6	6.9	68
Beef	700	2.00	2.7	7.8	90
Pig	210	1.80	4.0	10.0	0
Sheep	90	.25	3.3	6.7	40
Beef	800	2.00	2.7	7.5	42

TABLE 2 – GESTATION PERIODS AND NORMAL TEMPERATURES

Animal	Average Gestation Period			Normal Rectal Temperature
	Weeks	Days	Extremes (days)	
Sow	16	112	109 to 120	101.7° to 103.3°F
Ewe	22	150	146 to 157	101.5° to 103.5°F
Cow	40½	283	240 to 311	101.5°F

TYPES OF FEEDS

I. Use feed identification kit to acquaint members with various feeds. Then use kit to quiz members.

Have members collect small jars (baby food jars or plastic bags) and make their own feed identification kit.

Feeds that can be used are:

. Barley – whole, ground, or rolled
. Oats – whole, ground, or rolled
. Milo – whole, ground, or rolled
. Wheat – whole, ground, or rolled
. Corn
. Beet pulp
. Bran
. Meat scraps
. Cottonseed meal
. Linseed meal
. Bone meal
. Iodized salt
. Alfalfa meal
. Hay

II. All livestock feeds are classed as roughages or concentrates. Have members name them and learn their meanings.

Roughages — consist of all hays, silage, and pasture. They appear coarse.

Concentrates — are all feeds other than roughages. Protein concentrates contain large amounts of protein.

III. Members identify and classify the following feeds, using the proper code.

R — for roughages
C — for concentrates
PC — for protein concentrates

C Wheat
C Barley
PC Cottonseed meal
C Bran
C Milo
C Beet pulp
R Alfalfa hay
PC Meat scraps
R Oat hay
PC Milk, dried
R Alfalfa meal
PC Safflower meal
R Timothy hay
C Corn
C Oats

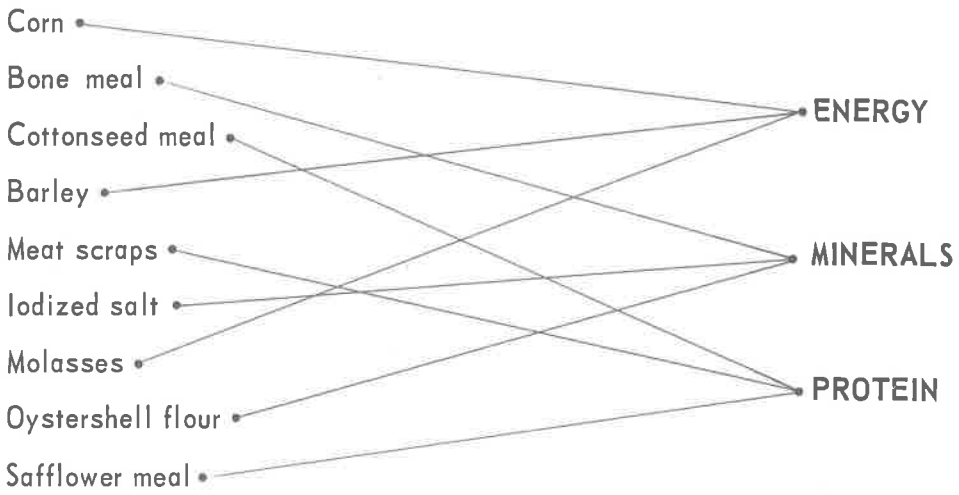
FEEDS AND THEIR USES

READ AND DISCUSS

We have divided feed into two general categories—roughages and concentrates. Both types can contain the five nutrients: energy, protein, vitamins, minerals, and water. The amount of nutrients they contain is important. Barley, for example, has all five nutrients. But your animal won't do well on barley alone, because barley doesn't have **enough** of some nutrients. You can add other kinds of feed to barley so that your animal will grow and stay healthy. Mixing feed in the right proportion and amount for a particular animal is called **balancing a ration.** To mix a ration properly, you must know feeds and the nutrients they supply.

How Feeds Are Used:

Match the type of feed to the main kind of nutrient supplied by the feed:



Fill in the blanks with one of the following kinds of nutrients:

Energy **Protein** **Vitamins** **Minerals** **Water**

1. __Water__ is the largest part of all living things.
2. __Vitamins__ and __minerals__ are needed only in small amounts but are vital to animal health.
3. Carbohydrates and fats are classed as __energy__ nutrients.
4. __Energy__ nutrients are the body's fuel.
5. The nutrient from which muscle is made is called __protein__.
6. Proper bone and tooth formation would not take place without __minerals__ in the animals' rations.
7. The body's "cooling system" and "lubricant" is __water__.
8. Sugar and starch are __energy__ nutrients.

DIGESTIVE SYSTEM

STEP I — Take turns reading the following information and discuss it.

People and farm animals use food as fuel and body-building material. Food, or feed, is made available to the body for energy, flesh, bone, and blood through a process called **digestion**. In the digestive process, food and feed are broken down into simple chemical forms. Most of these forms are soluble in water and can be absorbed readily into the body tissues. The simple chemical forms are then combined by the tissues into bone, muscle, hair, or energy to be used by the body.

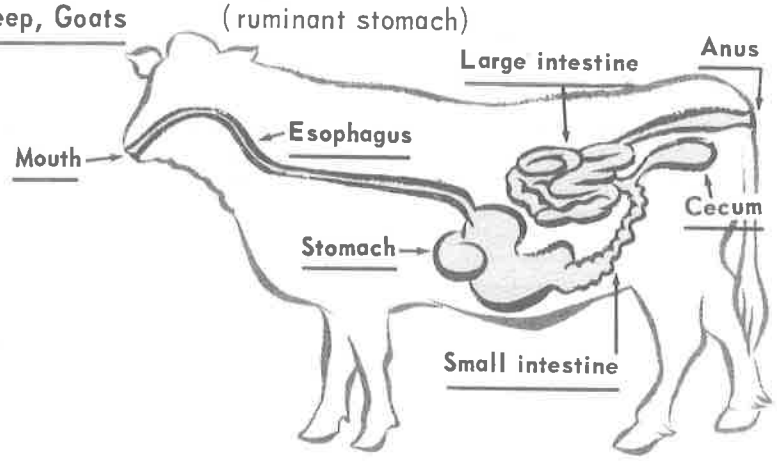
This digestive process is similar in all animals. However, the digestive tract is built differently in some animals. For example, cattle, sheep, horses, and rabbits can use a lot of hay or other feeds high in fibers. Pigs and poultry are fed mostly grain or feeds low in fiber because their digestive tracts will not handle large amounts of roughages.

A digestive system is like an assembly line in a factory. Each worker on the assembly line has a name and a job. Following are the names of the workers in the digestive system, and the jobs they do.

1. Mouth – food enters body here and is ground up by teeth and softened by saliva.
2. Esophagus – tube that carries food from mouth to stomach.
3. Stomach – "vat" or "tank" where chemicals are added to the food and most of the nutrients are absorbed into the bloodstream.
4. Small intestine – long, spiral tube where more chemicals are added to the remaining food, and most of the nutrients are absorbed into bloodstream.
5. Cecum – a chamber between the small and large intestines. This is small in most animals, but in horses and rabbits, fibrous feeds are digested here.
6. Large intestine – short but large tube where water is absorbed, some bacterial digestion takes place, and lubricating material is added to the waste feed not used in digestion.
7. Anus – opening where undigested waste feed is discharged from body.

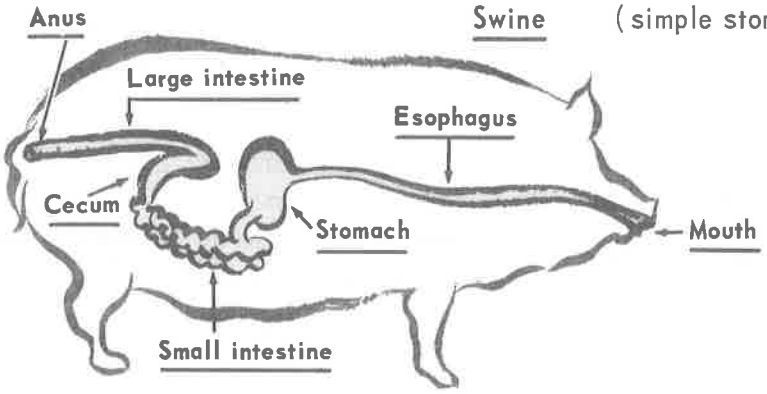
STEP II – Label each part of digestive tract on each animal (parts are named next to each silhouette).

Cattle, Sheep, Goats (ruminant stomach)



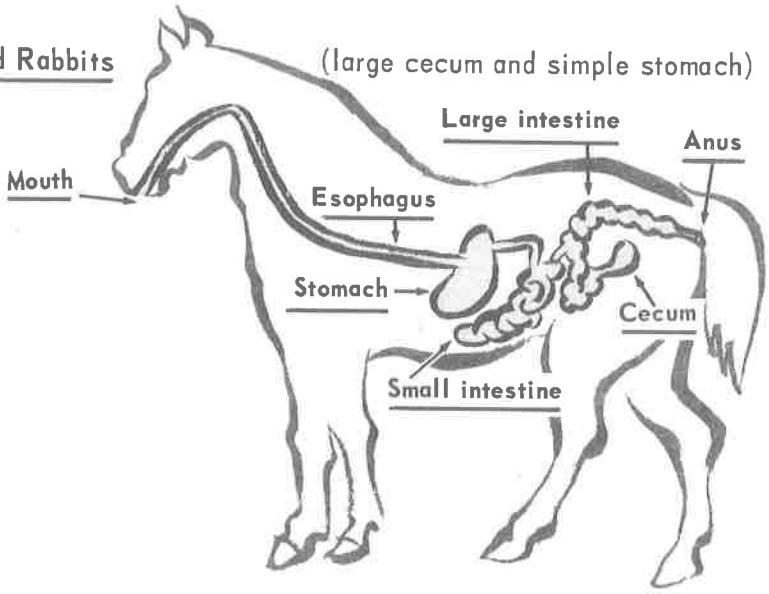
Mouth
Esophagus
Stomach
Small intestine
Cecum
Large intestine
Anus

Swine (simple stomach)



Mouth
Esophagus
Stomach
Small intestine
Cecum
Large intestine
Anus

Horses and Rabbits (large cecum and simple stomach)



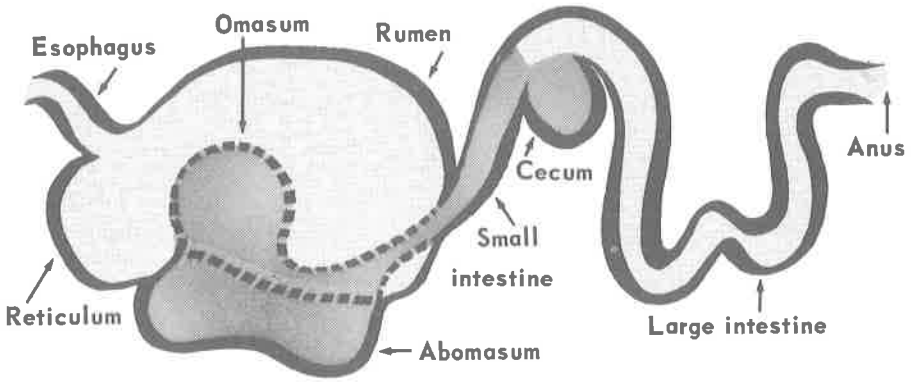
Mouth
Esophagus
Stomach
Small intestine
Cecum
Large intestine
Anus

STEP III – Use pin-on charts or flannelgraphs.

FEEDING REQUIREMENTS

1. To feed farm animals properly, you must know how the digestive system works.
2. These farm animals, beef , dairy , sheep , goats , are ruminants. They have four -compartment stomachs. (number)
3. Ruminants are heavy users of roughages
4. Nonruminants include the farm animals swine , poultry , horses , rabbits . They are nonruminants because they have a simple stomach.
5. Nonruminants are heavy users of grains or high energy feeds. (high or low)
6. Horses and rabbits have a cecum that makes it possible to use a larger amount of roughage.

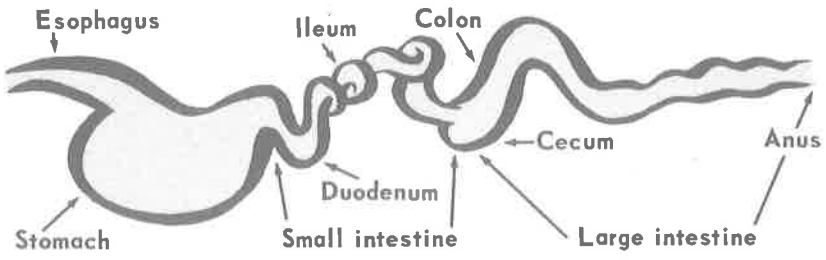
RUMINANT STOMACH — Cattle, Sheep, Goats



7. Which of these feeds would the cow digest better than the pig?

☒ Hay	☐ Tankage	☒ Straw
☒ Silage	☐ Barley	☒ Wilted alfalfa
☐ Corn	☒ Corncobs	☐ Oats

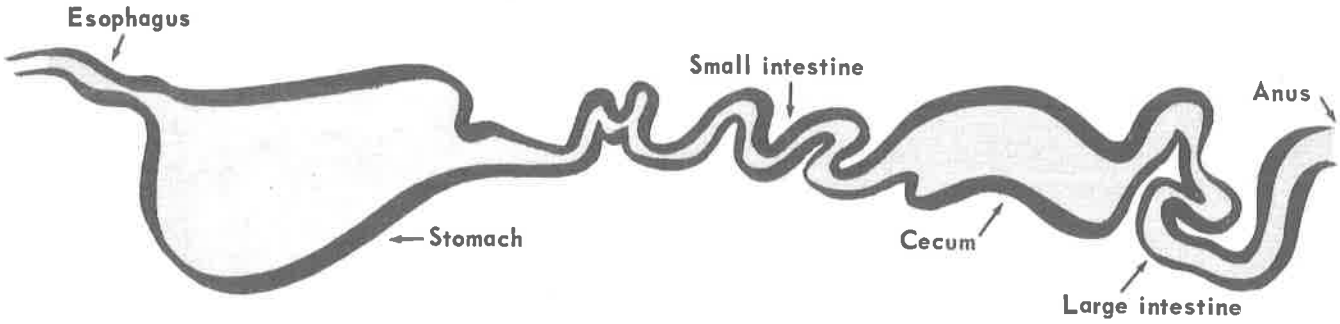
SIMPLE STOMACH OF NONRUMINANTS — Swine, etc.



8. Which of these feeds could best be used by swine?

☐ Hay	☒ Corn	☒ Cottonseed meal
☐ Silage	☒ Barley	☒ Tankage
☒ Soybean oil	☒ Oats	☐ Corncobs

HORSES — RABBITS



9. Which of these feeds could the horse and rabbit use better than the pig?

☒ Alfalfa hay	☐ Corn	☐ Barley
☐ Oats	☐ Tankage	☐ Cottonseed meal
☐ Milo	☒ Corncob meal	

10. This is true because: (check one)

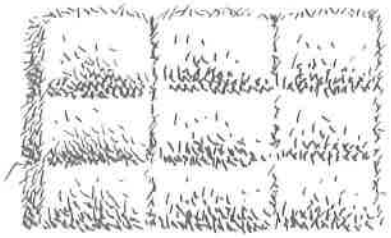
☐ Stronger digestive juice ☐ Chewed longer

☒ Feed stays in digestive tract longer and bacteria help break down the feed in the cecum

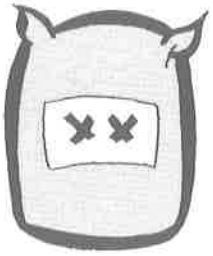
SAMPLE FATTENING RATION

Cattle	**75% Grain**	**25% Roughage**
Swine	**75% Energy feed**	**25% Roughage**
Sheep	**50% Grain**	**50% Roughage**

Alfalfa hay — Oat hay



Corn – Oats – Barley



11. Balance the feed for beef that requires 12 pounds of feed each day. Draw the correct number of bales of hay and sacks of feed (each bale and each sack represents 2 pounds of feed).

3 lb = 1½ bales

Hay

9 lb = 4½ sacks

Grain

12. Draw the correct number of bales and sacks for a sheep that needs 4 pounds of feed daily.

2 lb = 1 bale

Hay

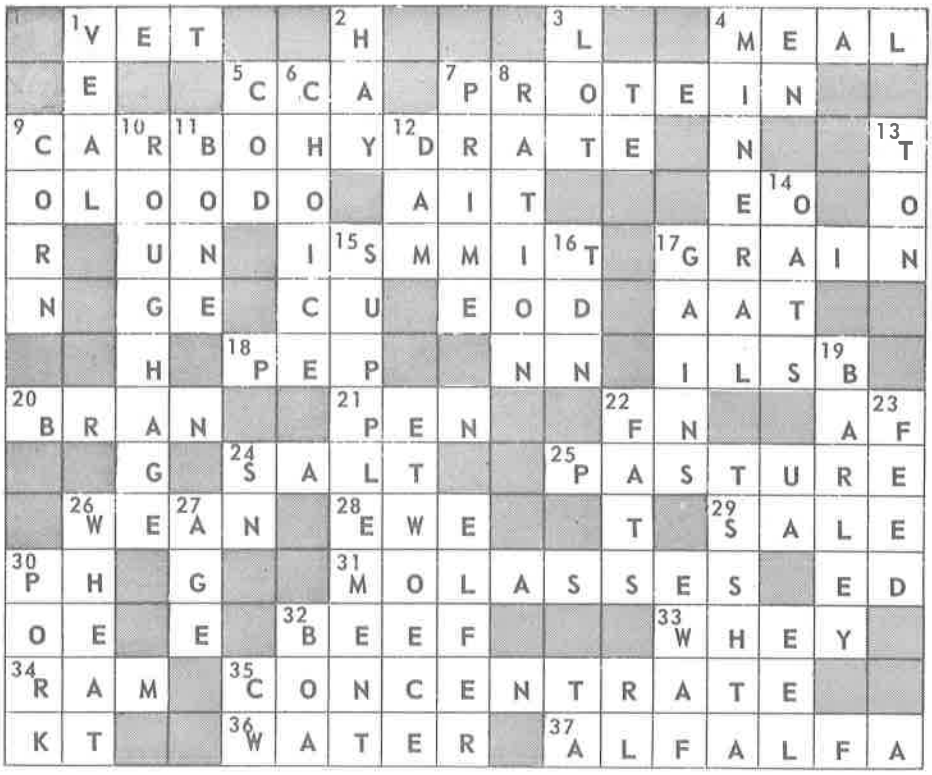
2 lb = 1 sack

Grain

Leaders should give members other examples.

LIVESTOCK FEEDING TERMS

Crossword Puzzle



ACROSS

1. Abbreviation of the name of an animal doctor
4. Ground feed
7. A necessary nutrient in muscle building; found in complete livestock feeds
9. A nutrient found in livestock feed; contains high amounts of starch
17. The fruit of cereal crops used to feed livestock
18. A necessary ingredient in an active 4-H recreation program
20. A soft roughage feed made from the hulls of grains
21. An enclosure built to house animals
24. A feed additive most necessary in warm weather; usually in dry crystal form
25. A mixture of edible grasses and legumes grown for livestock grazing
26. To remove young animals from nursing their mothers
28. A female sheep
29. A selling transaction
31. A sugar feed additive, normally in liquid form
32. Descriptive term of meat from an Angus, or Hereford, etc.
33. A watery byproduct of cheese making, sometimes fed to livestock
34. A male sheep
35. Feedstuffs that are low in fiber content and high in total digestible nutrients or protein
36. A liquid necessary in the growth of all animals
37. A popular legume hay fed to livestock in California

Note to Leader: The answers are found on opposite page. Discuss the terms first so members know what they mean. Then have members work the puzzle.

DOWN

1. Meat from young calves
2. Grass or legume roughage feed which has been harvested
3. A large feeding pen used for commercial cattle feeding operation
4. A finely ground feed additive which assists in the growth of bones
5. The scrotum
6. The quality grade of beef between prime and good
7. The quality grade of beef above choice
8. The amount and what an animal eats during 1 day
9. A grain sorghum commonly used as a livestock feed
10. Any coarse feed which gives bulk to an animal's ration
11. Material from which an animal's skeleton is made
12. The mother of an animal
13. 2,000 pounds
14. A cereal grain, often used in feeding horses and in feedlots
15. An addition to an animal's diet
16. Abbreviation for total digestible nutrients
17. Increase in weight
19. A cereal grain commonly used in feed concentrates in California
22. The feed nutrients containing the highest amounts of energy; oily substances
23. Food fed to animals
26. A cereal grain substance used in livestock feeds; commonly used in making bread
27. Life span
30. Meat obtained from swine

LIST OF ANSWERS:

Age
Alfalfa
Barley
Beef
Bone
Bran
Carbohydrate
Choice
Cod
Concentrate
Corn
Dam
Ewe
Fats
Feed
Gains
Grain
Hay
Lot
Meal
Mineral
Molasses
Oats
Pasture
Pen
Pep
Pork
Prime
Protein
Ram
Ration
Roughage
Sale
Salt
Supplement
TDN
Ton
Veal
Vet
Water
Wean
Wheat
Whey

FEEDING MANAGEMENT

Instructions for Leaders:

At this project meeting, tell the members that you would like to interview them for a herdsman job on a large diversified ranch.

There are several ways you can do this and have fun. You might choose one of the following methods:

a. Pass out blank sheets of paper. Have members number from 1 to 15. You read aloud each question which they must answer "Yes" or "No" on their paper. Correct questions. Discuss them. The 4-H'er with highest score is hired. Break ties with runoff questions.

– or –

b. Rotate around room asking questions of each member, discussing as you go. One member can keep score to determine whom to hire.

1. If your animal scours, would you feed him less feed until he stops scouring?
   Answer: – Yes. (This is one of the things you might do. You may have overfed him.)
2. When starting an animal on feed, feed a small amount of grain twice a day and increase the amount gradually.
   Answer: – Yes. (If you don't, he may go off feed.)
3. You can change the type of feed suddenly, but not the amount of feed.
   Answer: – No. (Never change types or amounts of feed suddenly – he may go off feed.)
4. Always keep salt available and plenty of fresh, cool water.
   Answer: – Yes. (Very important.)
5. If you are feeding your animal the right amount of concentrates, he usually will clean it up in 30 to 60 minutes.
   Answer: – Yes.
6. Let your animal eat his hay first, then feed him his concentrates.
   Answer: – No. (Generally it is best to feed concentrates (energy feed) first to be sure he cleans it up.)
7. Feed your animal at the same time each morning and evening.
   Answer: – Yes. (His digestive system will be ready and functioning smoothly.)
8. Provide animals on lush green pasture with some dry feed, such as hay or straw.
   Answer: – Yes. (It will help prevent scouring.)
9. Using pasture with concentrates usually increases the feed cost.
   Answer: – No. (Pasture used to supplement concentrate feeding is generally good and usually lowers cost of weight gained.)
10. Feed pigs whole grains in their daily ration because they are excellent chewers and do not need their feed ground.
    Answer: – No. (All of the grains in a pig's ration should be ground. The pig gets more food value from them and they are easier to mix. Pigs are not good chewers.)

11. Meat scraps commonly are fed in a dairy ration as a high protein supplement.
    Answer: – No. (Ruminants do not like animal protein such as meat scraps. Their digestive systems cannot handle them as well as they do plant protein, such as cottonseed meal. Meat scraps are good for pigs.)
12. A feed trough and/or hay manger should be built so it will not waste feed. It will keep feed clean, and has space enough for all animals using it.
    Answer: – Yes.
13. A milk cow needs a certain amount of feed to maintain herself, and an extra amount according to her milk production.
    Answer: – Yes.
14. When moving an animal to a new location, such as fairgrounds or another ranch, cut back on the animal's feed to prevent scouring and going off feed.
    Answer: – Yes.
15. Feed storage space is important. You should store up enough concentrates to last for the year.
    Answer: – No. (Concentrates can become rancid, rodent infected, etc. It is best to have enough fresh, clean, dry feed on hand for a week or two at a time.)

4-H

ANIMAL SCIENCE PROJECT

LEADERS GUIDE

INTERMEDIATE UNIT
ANIMAL SCIENCE FIELD TRIPS

UNIVERSITY OF CALIFORNIA AGRICULTURAL EXTENSION SERVICE

4-H–Ag74

PROJECT MEMBERS

NAME	ADDRESS	PHONE	PROJECT	YR. IN 4-H

4-H ANIMAL SCIENCE PROJECT

The 4-H Animal Science project is designed to provide educational experiences for 4-H members enrolled in any type of animal or poultry project. 4-H leaders can work more easily with boys and girls approximately the same age, and therefore make their job of teaching easier and more effective. The starred (*) units are now available. Worksheets for use with members can be obtained from the farm and home advisors' office. This leaders' guide has the answers for the worksheets.

***Beginning Unit** (For younger 4-H members who are carrying an animal science project for the first time.)

Intermediate Units

* Management Practices
* Feeds and Nutrition
* Animal Science Field Trips
  Meat and Milk Products

Advanced Units (For 4-H members in high school)

* Marketing
  Career Exploration
  Veterinary Science
  Special Interest

If you want good attendance at project meetings and the greatest satisfaction as a leader —

- hold regular meetings—at the same interval, time, and place.
- inform members and parents of what you are planning to do—this can be done at the first project meeting, on a visit to the home, or by telephone.
- give members a chance to take part by project reports, demonstrations, discussions, questions, judging.
- plan your meetings well. Use various methods of instruction. Use materials provided.

The ideal 4-H Animal Science project member shows an increase each year in knowledge, skills, and experience.

We suggest that members each year:

Own an animal

Demonstrate

Attend field trip

Turn in complete records

Your boys and girls will want to know:

1. How to fill out fair entries
2. The date entries are due for fairs (see 4-H calendar)
3. The date and place of the county demonstration and regional demonstration days (see 4-H calendar)
4. When record books are to be completed
5. When there is a judging contest
6. The date of local exhibit day
7. The health regulations for showing (see fair premium books).

Co-operative Extension work in Agriculture and Home Economics, College of Agriculture, University of California, and United States Department of Agriculture co-operating. Distributed in furtherance of the Acts of Congress of May 8, and June 30, 1914. George B. Alcorn, Director, California Agricultural Extension Service.

JANUARY 1966--3,500

4-H LIVESTOCK PROJECT FEED AND WEIGHT GUIDE

Members, leaders, and parents often ask about the weight and age of animals, and time needed to complete a livestock-fattening project for a certain event.

Table 1 is a guide and should be modified for specific cases. The calculations represent adequate feeding standards recommended by feeding authorities. The expected daily gains in the guide are averages and will vary with individual animals.

Table 2 shows gestation periods and normal temperature for various animals.

TABLE 1 – GUIDE FOR FEEDING

Animal	Weight of animal (pounds)	Expected daily gain (pounds)	Pounds of feed per day (pct. body weight)	Digestible protein (pct. of ration)	Approximate days to event
Pig	35–40	.90	5.0	13.3	120
Sheep	50	.25	4.2	8.1	166
Beef	400–500	2.00	3.0	9.2	200
Pig	75	1.50	5.0	12.0	81
Sheep	60	.30	3.8	7.8	126
Beef	500	2.00	3.0	8.6	180
Pig	125	1.75	4.5	11.0	48
Sheep	70	.35	3.8	7.0	96
Beef	600	2.00	2.8	8.1	140
Pig	175	1.80	4.0	10.0	20
Sheep	80	.35	3.6	6.9	68
Beef	700	2.00	2.7	7.8	90
Pig	210	1.80	4.0	10.0	0
Sheep	90	.25	3.3	6.7	40
Beef	800	2.00	2.7	7.5	42

TABLE 2 – GESTATION PERIODS AND NORMAL TEMPERATURE

Animal	Average Gestation Period			Normal Rectal Temperature
	Weeks	Days	Extremes (days)	
Sow	16	112	109 to 120	101.7° to 103.3° F
Ewe	22	150	146 to 157	101.5° to 103.5° F
Cow	40½	283	240 to 311	101.5° F

ANIMAL SCIENCE FIELD TRIP UNIT

These trips can be taken in any order. You should make maximum use of members in planning and arranging the details.

DO	AIDS	IDEAS
Visit a livestock sale-yard	Worksheet 1 for members	Suggested procedure: Call manager or foreman and make an appointment. Instruct members to observe, ask questions, and make notes. On the tour, introduce your host and/or the guide. Have members fill out checksheet. At the end of the tour, thank your host and the guide. Instruct members to be prepared to report at the next community club meeting. Select a member to write a thank-you letter to the manager.
Visit a meat-packing plant or a creamery	Worksheet 2 for members	Follow suggestions for procedure outlined for visit to a saleyard.
Tour a feed mill	Worksheet 3 for members	Follow suggestions for procedure outlined for visit to a saleyard.
Take part in a skill practice day	Live animals	Explain reasons for the practice (see management unit). Demonstrate first, using a live animal; then allow member to practice skills under supervision. Possible skills to include: Hoof trimming, dehorning, tagging, castrating, docking, shearing, washing, and branding.
Attend a livestock judging field day	Judging cards, Livestock & Dairy Judging Manual	Suggested procedure: Arrange with a dairy or livestock farm to bring members for judging practice. Judging of feed, equipment, wool, and other similar items can be included in a judging day.
Visit a successful farm	Worksheet 4 for member	The business side of the operation should be stressed, along with important aspects of production.

DO	AIDS	IDEAS
Attend a livestock field day for adults	No aids provided	Attend meetings of adult groups such as: Cattlemen's Association Wool Growers Breed Associations Dairy Herd Improvement Associations Livestock or Dairy Marketing Associations Beef Cattle Improvement Associations Instructional meetings for livestock growers held by the farm advisor or a commodity group. Members need to find out: • Name of organization or group holding meeting • Why meeting is held • Purpose of organization • Topics discussed • Name and title of speaker, if any • Decisions made at meeting • Who conducted the meeting
Attend a 4-H Club project tour	No aids provided	Tour may be conducted by: 1. Visiting each member's home 2. Having several members gather with their projects at three or four central locations and visiting those spots 3. Having all members gather with their projects at one location. Leader should ask members the following questions regarding their project: • Breed of animal? • Where obtained? • Grade or registered? • What was the animal's age when you got it? • When did you get animal? • What is its present age and weight? • What feed is used? • How much is fed? • If a commercial feed is used, what is in it? • How much has the animal gained or how much does it produce? • What are your plans for the animal? • What skills have you learned with the project?

SALEYARD FIELD TRIP

Name _____ Type of plant visited _____

Date of trip _____ Name of plant _____

(Fill in during the trip)

1. How are animals identified when consigned? pen cards ____ pen numbers _____

   chalk marks ____ adhesive tag ____ eartag _____

2. Are animals graded or sorted before the sale? _____

3. Are animals fed or watered before the sale? ____ If so, who pays for feed? _____

4. Animals are weighed: when consigned ____ immediately prior to sale _____

   after they are sold _____

5. What method of selling is used? auction ____ private treaty _____

6. What are the selling charges? cattle _____ sheep _____ swine _____

7. How does the buyer pay for the animals he purchases? _____

8. How soon is the seller paid for animals he consigns? _____

(Auction only)

9. Who starts the bidding in the auction ring? _____

10. What happens if there is no bid on the animal? _____

11. How are the animals handled after the sale? holding pens ____ buyer pens _____

    other _____

12. Who owns the facilities? operators ____ other persons ____ cooperative _____

13. Are other selling agencies operating at the same location? _____

(Questions for leaders to ask:)

14. _____

15. _____

16. _____

17. _____

18. _____

MEAT-PACKING PLANT OR CREAMERY FIELD TRIP

Name _____ Type of plant _____

Date of visit _____ Name of plant _____

Who owns the plant? _____

The animal (or product) is brought to the plant by: commercial (hired) truck ☐

farm truck ☐ railroad ☐ car and trailer ☐ other ☐

Are the animals (or products) graded when they arrive at the plant? Yes ☐ No ☐

If they are, find out what the grades are. Are all grades of animals or products handled the same? Yes ☐ No ☐

How many kinds of animals are killed at the plant? _____

Are the carcasses graded? _____ By whom? _____

How many different products are made at the plant? _____

How long are the finished products stored at the plant? _____

How are the hides handled? _____

What is the offal? _____ What happens to it? _____

After the products leave the plant they are:

Delivered to stores by the plant ☐

Picked up at the plant by stores ☐

Sold directly to the consumer from the plant ☐

Sold directly to the consumer on routes from the plant ☐

How many people handle the animal or product from the time it enters the plant until it is ready for market? _____

What is meant by dressing percentage or yield? _____

What is a shroud and why is it used? _____

On what types of carcasses is a shroud used? _____

Other questions: _____

_____

FEED MILL FIELD TRIP

1. Who owns the mill? operators ____ large corporation ____ co-op _____
2. Where is feed obtained? _____
3. How is feed handled? bulk ____ sacks _____
4. Is feed prepared for special order? _____
5. How large is the area served by the mill? _____
6. Does the feed mill finance growers? _____
7. Who determines the feed mixtures? _____
8. Does the mill sell anything other than feed? _____
9. What are educational requirements of employees? _____
10. What are the largest selling feeds? _____
11. Are employees trained on the job? _____
12. Number of people employed. _____
13. How long has the plant operated? _____

FIELD TRIP TO A SUCCESSFUL FARM

(Designed for all types of farms, so some questions may not apply.)

Name of farmer _____

Type of farm _____

Size _____

What part of farm is owned? ____ leased? ____ rented? _____

1. What jobs on this farm were done by machine (example, picking cotton)?

_____ _____ _____

_____ _____ _____

2. What products are sold on the farm? _____

_____ _____

3. How many years has the farmer operated the farm? _____

4. What crops are grown on the farm? _____ _____

_____ _____ _____

5. What animals are a part of the farming operation? _____

_____ _____ _____

6. To what factors does the farmer feel he owes his success? _____

_____

7. How did the farmer get started? _____

_____

8. Did the farmer go to college? Yes ☐ No ☐ What courses did he take?

_____

9. Did the farmer mention any advantages of farming? _____

_____

_____

Disadvantages? _____

_____

OBJECTIVES

Although some club members cannot participate in all of its phases, this program is designed to help 4-H members:

- Develop desirable traits of character, such as leadership, responsibility, initiative, self-reliance, and sportsmanship.
- Develop a greater love for animals, and a humane attitude toward them.
- Increase knowledge of safety precautions to prevent injuries to themselves, others, and their animals.
- Develop skill, patience, and understanding in handling animals.
- Develop a clear understanding and appreciation of the animal industries and their role in the agricultural and commercial economy of the country.
- Understand the importance of meat, milk, and other animal products to human nutrition and health.
- Learn to recognize meats of varying quality and be able to identify the wholesale and retail meat cuts.
- Develop an understanding of the values of scientific research and its influence upon the animal industries.
- Experience the pride and responsibility of owning animals and receive training in their care, feeding, management, and related costs.
- Demonstrate sound animal feeding and management practices on the farm, and in the home and community.
- Earn money and learn how to manage this resource effectively.
- Prepare for citizenship responsibilities by working together in groups and supporting community projects and activities.

The material in this leaders' guide has been prepared to help 4-H Club leaders do a better job of teaching animal science to 4-H Club members. It was prepared by the following committee: *Farm Advisors Don Brittsan, Marin County; Ray Lyon, Glenn County; Robert Savage, Modoc County; Robert Sheesley, Fresno County; Herbert Shirley, Kings County; Extension Animal Husbandman Horace Strong; Extension Dairyman Don Bath; and 4-H Club Specialists William G. Schneeflock and John A. Emo.*

4-H

ANIMAL SCIENCE PROJECT

LEADERS GUIDE

INTERMEDIATE UNIT

MANAGEMENT PRACTICES

AGRICULTURAL EXTENSION UNIVERSITY OF CALIFORNIA
4-H–Ag72
Rev. 5/72

PROJECT MEMBERS

NAME	ADDRESS	PHONE	PROJECT	YR. IN 4-H

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Demonstrate
Take part in project activities
Turn in complete records

Your boys and girls will need to know—

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- When there is a judging contest
- The date of their local exhibit day
- The health regulations for showing (see fair premium books)
- When record books are to be completed

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MANAGEMENT PRACTICES UNIT

The order for the use of these worksheets is only a suggestion. You can use them in the order that seems best for you.

LEARN	AIDS	IDEAS
First Meeting Livestock skills	Worksheet 1	Demonstrations; read project manuals; visit farm to see the practices used
Second Meeting Breeding age, weight, gestation periods, heat cycle	Worksheet 2	Junior leader discuss; look at breeding records kept on a farm
Third Meeting Care for young at birth	Worksheet 3	Read project manual; members discuss experiences; visit a farm to see how this is done
Fourth Meeting How to keep records	Worksheet 4	Check members' record books
Fifth Meeting How to figure market value of project	Worksheet 5 Price Chart	Explain market reports from daily papers
Sixth Meeting How inheritance works	Worksheet 6a and 6b	
Seventh Meeting Animal health	Worksheet 7	Talk by veterinarian
Eighth Meeting Project tour		
Ninth Meeting Attend at least one field day		

LIVESTOCK SKILLS

A. Match the following skills with the proper definition and discuss.

Dehorning	Castrating	Tagging
Docking	Hoof trimming	Vaccinating

Docking removing a lamb's tail.

Tagging clipping wool from ewe's rear before lambing.

Castrating removing male's testicles so he cannot breed.

Hoof trimming cleaning and straightening an animal's feet.

Vaccinating injecting a vaccine.

Dehorning removing an animal's horns.

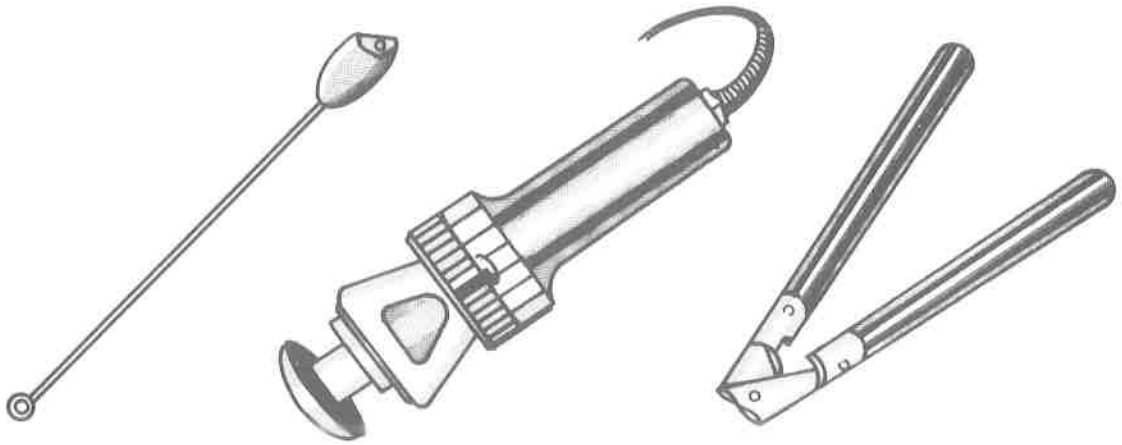
B. Members complete the following questions and discuss.

1. Dehorning is done on what animals? beef and dairy cattle
2. The purpose of dehorning is to prevent injury to other cattle
3. Three methods of dehorning are:

chemical mechanical hot iron

Chemical is the use of an alkali in a stick or paste form, applied when the calf is a few weeks old.

Mechanical is the use of a tube or clipper on older cattle.



B. Members complete the following questions and discuss. – continued

4. Docking is done on what animal? sheep

5. What tools can be used to dock and castrate?

knife, elastrator

6. A lamb's tail is docked between the second and third joints.

7. Why are young male animals castrated?

so they can't breed and are easier to manage

8. When do you tag ewes? shortly before they lamb

9. Name five animals whose feet can be trimmed.

beef cattle, sheep, dairy cattle, swine, horses

10. Why is it important to trim an animal's hoofs?

so they walk and stand correctly; prevents foot rot and other diseases

11. At what age should animals be docked, castrated, and dehorned?

when a few weeks old, except horses, which are castrated when a year or older

12. Why is it best to mark animals when they are young?

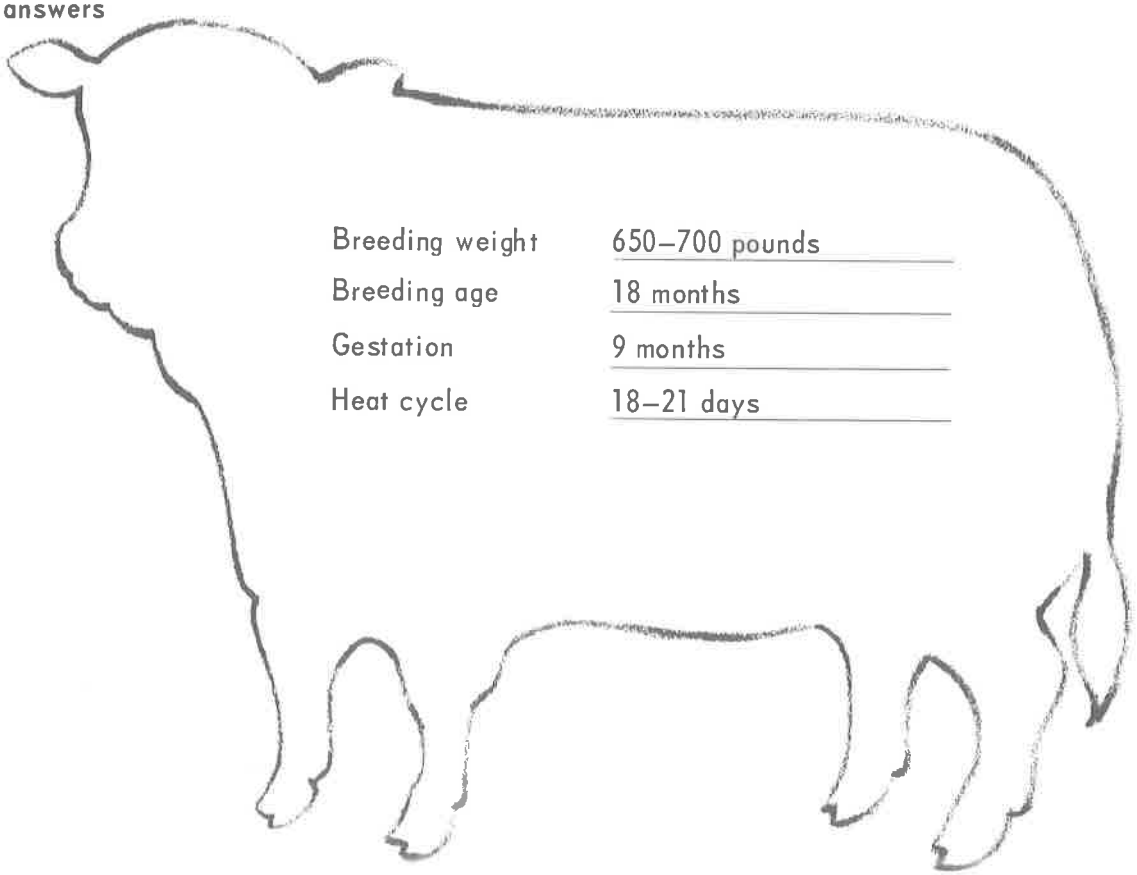
less shock, bleed less, and heal faster

BREEDING AGE, WEIGHT, GESTATION PERIODS, HEAT CYCLES

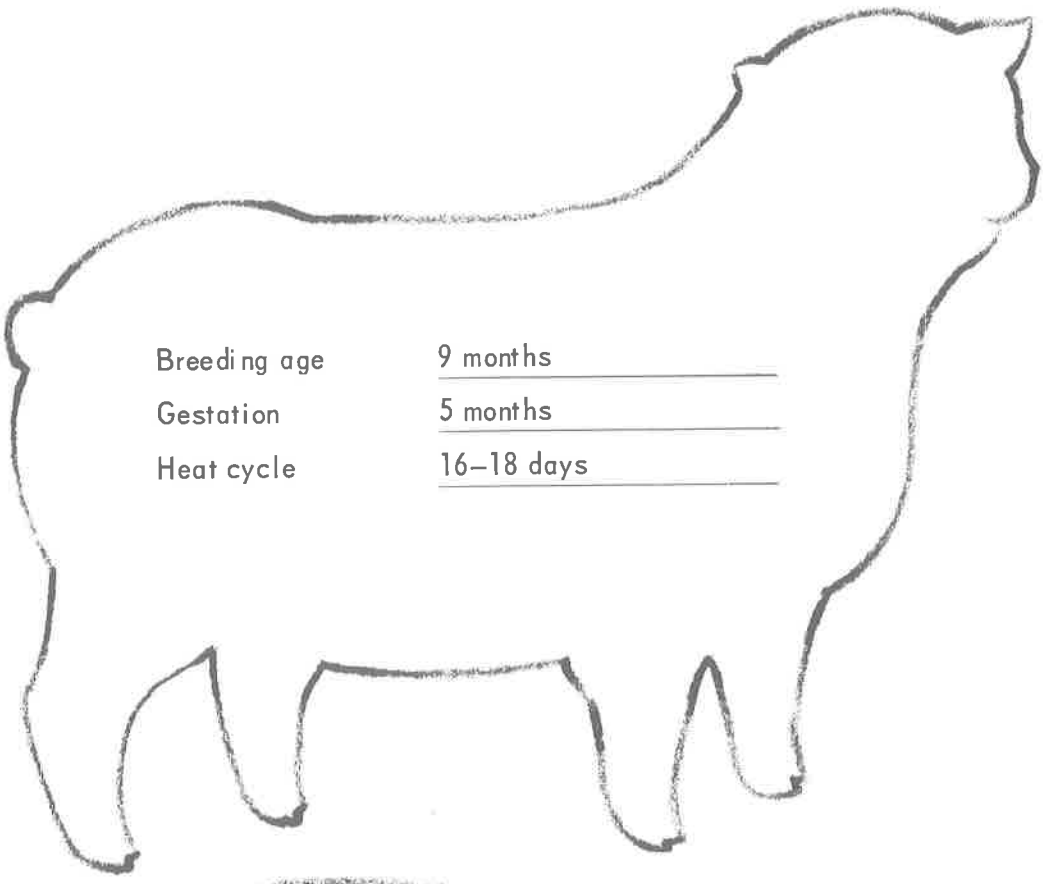
MATCH TERMS

Farrow	To give birth to calves
Gestation	Sexual maturity
Heat cycles	Pregnancy
Breeding age	Time between periods when pregnancy may occur
Lambing	To give birth to pigs
Calving	To give birth to lambs
Foaling	To give birth to horses

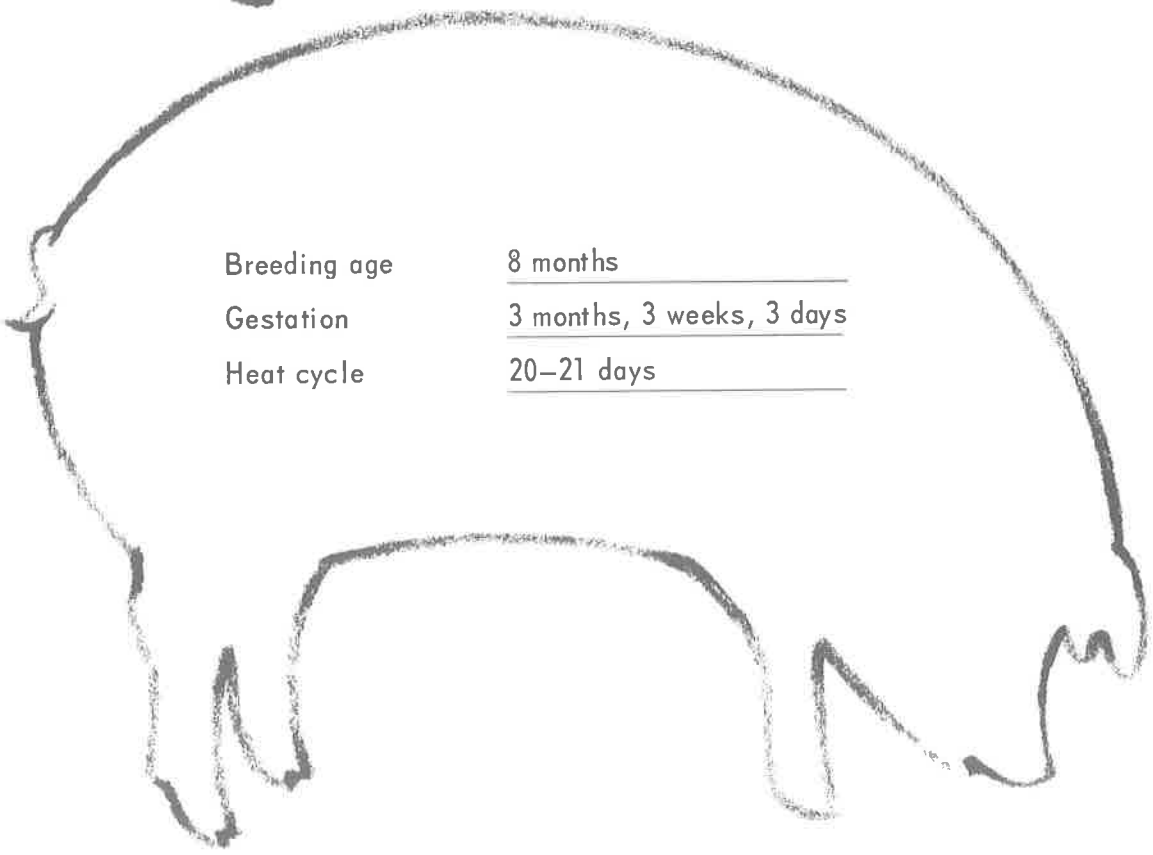
Fill in answers



Breeding weight	650–700 pounds
Breeding age	18 months
Gestation	9 months
Heat cycle	18–21 days



Breeding age	9 months
Gestation	5 months
Heat cycle	16–18 days



Breeding age	8 months
Gestation	3 months, 3 weeks, 3 days
Heat cycle	20–21 days

CARING FOR YOUNG AT BIRTH

Newborn animals go through a most critical period the first few hours after birth. The change from a completely controlled environment of the mother to the outside, where there are all kinds of changes, makes it a very trying time for the young.

The number of young raised in any breeding operation can mean profit if large litters are raised, or loss if few animals are raised. Where only one young usually is born, such as calf, foal, or lamb, it is even more important to raise the young.

When the animal is born, certain steps should be taken to help insure the animal's survival.

Matching Questions

1. The pig and lamb are wiped immediately after birth to remove the mucus .
2. On the lambs, the navel cord usually is clipped at about one inch from the belly.
3. The navel cord should be painted with iodine .
4. The disease prevented by painting the navel cord is navel ill .
5. The first milk is called colostrum .
6. Newborn animals should nurse as soon as they gain a little strength.
7. The heat for young usually is furnished by an infrared lamp.
8. Sows usually are placed in farrowing pen four days before due date.
9. Young animals that get too much milk may scour .
10. Shearing ewes around the dock and udder before lambing is called tagging .

Tagging	Four	Docking
Infrared	Navel ill	Mucus
One	Penning	Scour
Nurse	Iodine	Colostrum

True or False (check the square)

1. The cow usually will clean the newborn calf, so it isn't necessary to wipe it dry.

   True ☒ False ☐

2. Ewes usually are tagged before lambing time. True ☒ False ☐

3. Young animals may be marked for identification by paint brand, ear notch, tattoo, or eartag. True ☒ False ☐

4. The needle teeth should not be removed until the pigs are 2 months old.

   True ☐ False ☒

5. Castrate male pigs and ram lambs at 2 to 3 weeks of age. True ☒ False ☐

6. Open the mother's teats by milking a bit from each teat. True ☒ False ☐

7. Keep moving the mother during the time she is giving birth to young.

   True ☐ False ☒

8. The first feeding for the sow after farrowing could very well be 1 or 2 pounds of your hog feed plus equal amount of wheat bran by weight. True ☒ False ☐

9. Keeping the pen clean isn't important because we have antibiotics now.

   True ☐ False ☒

10. Dairy calves usually are left with their mother from 1 to 3 days and then put in individual pens to be grown out. True ☒ False ☐

11. It is wise to call in a herdsman or someone with some experience during the time a dam is giving birth to young. True ☒ False ☐

RECORDKEEPING

Good records are the backbone of any sound business venture. When you carry a livestock project in 4-H, you are in business. Your 4-H records can show you:

- how much money you're making (or losing)
- how much time you're spending on your project
- how well your animals are turning feed into meat, milk, or wool.

4-H records are simple if you do two things:

- read the directions!
- keep them up to date!

THESE ARE PARTS OF THE 4-H PROJECT RECORD SHEET

A. Project Opening Inventory (things you own when you start project year)
B. Project Closing Inventory (things you own at the end of project year)
C. Feed Record
D. Other Expenses
E. Income
F. Breeding Record
G. Record of Exhibits

Let's practice recordkeeping for a few minutes on an imaginary project. The parts of the record listed above are designated by the letters A through G. Below are some typical items you might find in a livestock project. Decide where you would locate each item in a record book by placing one of the letters (A through G) in each space.

__A__ Bossy cow value at start of project
__G__ Showed Bossy at county fair and won $10 prize money
__B__ 80 pounds of rolled barley left over at the end of club year valued at 3 cents a pound
__E__ Sold Bossy's bull calf at auction for $27.50
__C__ Bought 500 pounds of dairy feed for Bossy
__C__ Bossy on pasture at 10 cents per day for 30 days
__F__ Bossy bred to "Star King Lucky Dog Sam 23d"
__D__ Cost of breeding Bossy
__B__ Value of show equipment at end of year
__A__ Value of show halter at start of project

Put the following entries in the proper places in the Project Summary below and figure net profit (or loss).

1. Sold steer at county fair — 980 pounds at 30 cents per pound.
2. Sales charge at fair — 2 percent of total selling price.
3. Premium money at fair — 2d place, $14.
4. Feed costs — 4200 pounds at $63 per ton.
5. Show halter bought in January — $8.
6. Cost of feeder steer — 400 pounds at 25 cents per pound.
7. Pasture costs — $2 per month for 4 months.
8. Buckets and feed troughs on hand at start — $9.
9. Rent for building — $1 per month for 9 months.
10. Buckets and troughs on hand at close — $8.
11. Show halter on hand at close — $7.

Fill in figures below:

PROJECT SUMMARY

Expenses		Income	
Value of feed bought or raised	$ 8.00 (7)	Value of animal	$ 294.00 (1)
	$ 132.30 (4)		
Other expenses	$ 9.00 (9)	Other income	$ 14.00 (3)
	$ 8.00 (5)		
	$ 5.88 (2)		
Opening inventory (includes cost of animal)	$ 9.00 (8)	Closing inventory	$ 7.00 (11)
	$ 100.00 (6)		$ 8.00 (10)
Total Expenses	$ 272.18	Total Income	$ 323.00
	Net Profit $ 50.82		

FIGURING MARKET VALUE OF YOUR PROJECT

The market value of your project is how much money your animal or animal product would bring if you sold it today. The amount you get depends on two things: (1) How many are for sale that day (supply), (2) how badly people want what you have for sale (demand). If there are a lot of things for sale and nobody wants them, the price goes down. If there aren't very many and everybody wants to buy, the price goes up.

Grade or quality of animals or products also determines how much they will bring. Here are some terms used in describing quality.

Prime	Utility
Medium	Number 2
Number 3	Good
Standard	Number 1
Cull	Choice

Place the above terms under the following livestock classifications, starting with the highest grade.

Feeder Calves

1. Prime
2. Choice
3. Good
4. Standard
5. Utility

Slaughter Swine

1. Number 1
2. Number 2
3. Number 3
4. Medium
5. Cull

Slaughter Steers

1. Prime
2. Choice
3. Good
4. Standard
5. Utility

Slaughter Lambs

1. Prime
2. Choice
3. Good
4. Utility

List the ways that livestock are sold in your area (terminal market, auction yard traders, consignment, etc.).

	Name of Place	How Sold
1.		
2.		
3.		
4.		

DISCUSS THESE OTHER FACTORS WHICH AFFECT MARKET VALUE

1. Pelt credit for sheep. Describe the following pelt credits.

Number 3	Freshly shorn, ¼ inch or less
Number 2	¼ to ½ inch
Number 1	½ to 1 inch
Fall shorn	1 to 1½ inches
Full wooled	1½ inches or longer

2. Shrink or fill (leader discussion). These terms refer to the amount of feed or water the animal is carrying. Buyers object to overfilled animals and sometimes pay less for these. It is customary for buyers to subtract 2% to 4% of the live weight to allow for fill.

3. Shipping damage. List three ways to avoid shipping damage to livestock.

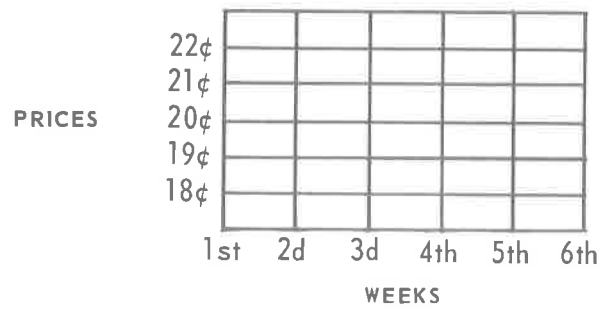
Leader Discussion List

- Do not feed grain heavily just before hauling.
- Use good loading chutes, not too steep.
- Bed truck with sand, free from stones, to prevent slipping.
- Cover sand with straw in cold weather, but no straw for hogs in hot weather.
- Wet sand bedding in summer before loading hogs, and while en route. Sprinkle when necessary.
- Provide covers for trucks to protect from sun in summer and cold in winter.
- Always partition mixed loads to separate classes, also calves from cattle, sows from lightweight butchers. Partition bulls, boars, and cripples from rest of load.
- Remove protruding nails, bolts, or any sharp objects in truck or car.
- Load slowly to prevent crowding against sharp corners, and to avoid excitement.
- Do not overload.
- Use canvas slappers instead of clubs or canes.
- Drive carefully. Slow down on sharp turns and avoid sudden stops.
- Inspect load en route to prevent trampling of "downers."
- Never lift sheep by the wool.

(A trip to visit a marketing agency or facility is suggested with this unit. Also, detailed information on livestock and dressed meat prices can be obtained by writing Market News Service, P.O. Box 805, Stockton, California 95201. Livestock prices usually are listed on the financial page of your local newspaper.

EAGER BEAVER PROJECT

Livestock prices vary quite a bit, depending on supply and demand and other factors. Make a graph of prices for one or more classes of livestock for 6 weeks or longer. Use the same market for your figures.



Make a graph like this one only larger. Graph paper will help you to plot prices more accurately.

Livestock prices usually are listed on the financial page of your local newspaper. Market News Service provides more detailed information on prices.

HOW INHERITANCE WORKS

The birth of an animal is the end of a wondrous process. It starts with the merging of two tiny cells—one from the female animal; one from the male. When these cells are joined, a new animal is conceived.

The reproductive cell from the female is called an **egg**, or ovum. The reproductive cell from the male is a **sperm**. These two tiny cells are the only links an animal has with its parents. When breeding takes place, these cells are united. They grow into the new animal.

We know, therefore, that all characteristics—or traits—inherited from the parents must come from these two cells. Assuming that good care and nutrition are provided, the material in the sperm and egg determines almost everything about the developing animal—its size, shape, color, and even its intelligence.

The study of how characteristics are passed from parents to offspring is the science of genetics. You can see why genetics is important to livestock producers.

TWO IMPORTANT TERMS TO KNOW AND DISCUSS

1. **Heredity.** This is another word for inheritance; the words mean the same thing. Heredity has to do with the fact that characteristics—or traits—are passed from parents to their offspring.

2. **Environment.** This is anything that affects an animal but is not inherited. It can influence growth, behavior, production, or well-being. Some environmental factors are:

rations	climate	water	management practices
diseases	housing	injuries	

While you study genetics, don't forget how important environment is in its effects on animals. But let's stop discussing environment for now and talk about inheritance.

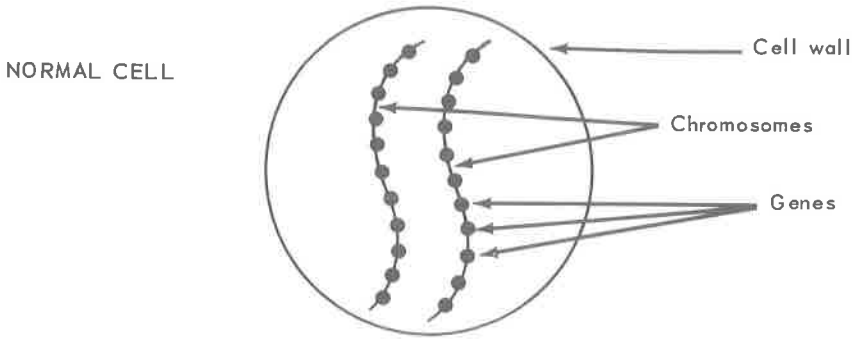
GENES AND CHROMOSOMES

Inside animals' cells are certain complex chemical compounds. Those who study genetics are fairly certain that these chemical compounds carry inheritance. They are called genes and chromosomes. **Chromosomes** are long, threadlike structures large enough to be seen by a microscope. They are apparently made of protein. **Chromosomes exist in pairs.**

Each cell contains several different chromosome pairs: cattle have 30 pairs in each cell; sheep —27; pigs—19; horses—33; goats—30; chickens—6.

Strung along each chromosome, somewhat like beads on a string, are **genes**. Genes are the units of inheritance. It is through genes that characteristics, or traits, pass from parent to offspring. Genes determine what the cell will be like. This, in turn, determines what the individual will be like.

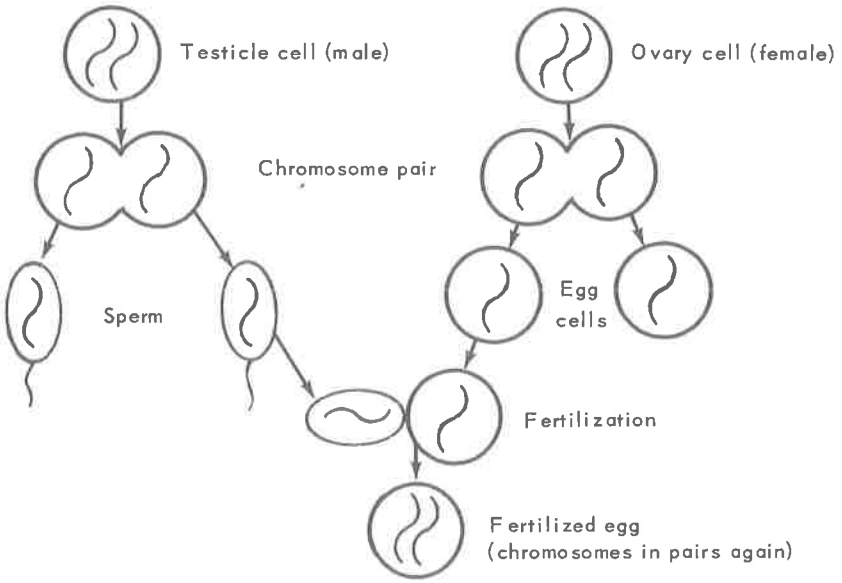
Since chromosomes are in pairs, so are genes. The genes are side by side, one on each chromosome. The total number of genes on a chromosome is not known.



DOMINANT AND RECESSIVE GENES

Since genes are in pairs—one gene obtained from the male and one from the female—and since the offspring take on the appearance (for some traits) of one parent or the other, **one gene is dominant over the other.** To study how inheritance works, it is best to look at traits that are determined by just one pair of genes and whose final form is relatively unaffected by environment.

REDUCTION DIVISION (MEIOSIS)



Follow what happens to the chromosomes during this process. Can you see that the new animal receives one chromosome from the male parent and one from the female parent?

READ AND DISCUSS THE FOLLOWING PROBLEMS

1. A cow that is truly hornless, or polled, is bred to a horned bull. Will the calf have horns?

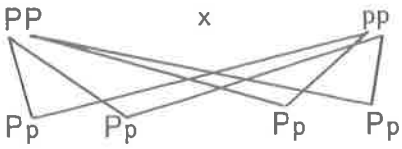
   No, it will not. This is because the gene causing an animal to be polled is **dominant** over the gene causing horns to develop.

   Let's explain. Let capital P represent a gene for polled. We use capital P because polled is dominant. Since genes come in pairs, the **genotype** of the truly polled cow would be PP. (Genotype means genetic makeup.)

   The genotype of the horned bull would be pp. The small p means the gene is **recessive.**

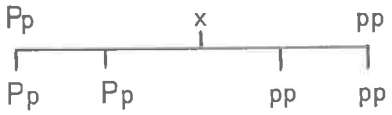
   P = polled p = horned

   polled cow = PP horned bull = pp



= all polled calves, each with one recessive gene

2. What would happen if a Pp (polled) cow were bred to a horned (pp) bull?



= a 50:50 chance for horns or polled
One-half the calves would be polled, one-half horned.

3. How about a Pp bull with a Pp cow?

= 3 polled and one horned or a 25 percent chance for horns

4. Now can you explain why some polled animals have horned calves when mated? Both parents must have the recessive gene. When these genes are matched, that calf is horned.

5. Review by matching the terms and definitions below.

traits	dominant	cells	sperm
egg	heredity	environment	
genotype	gene	climate	

The female reproductive cell is the egg.

The gene is the unit of inheritance.

Climate is an example of an environmental factor.

Animals are made up of millions of tiny cells.

Heredity is another word for inheritance that has to do with passing traits from parents to offspring.

Traits are characteristics of individuals.

The male reproductive cell is the sperm.

The factors affecting an animal's performance after the egg and sperm cells unite are called environment.

The genotype is the genetic makeup of an animal.

A gene that has power to mask the visible effects of its allele (the other gene of a pair) is said to be dominant.

QUANTITATIVE OR CONTINUOUS INHERITANCE

1. **Continuous inheritance** is what occurs for traits that show all kinds of slight gradations from small to large, like those in:

milk production	feed efficiency	weights at weaning
rate of gain	loin-eye area	birth weight
wool clip	conformation	

2. How can we explain continuous inheritance?

   These traits are determined not by one pair of genes, but by many pairs. Any one of dozens to hundreds of gene arrangements can occur, and the resulting possibilities for offspring are equally numerous.

3. Some traits can be more easily passed on to offspring than others. This may be due to the number of genes influencing the trait. After thousands of breeding experiments, scientists have computed the percentage or degree of success that can be expected when selective breeding is done for specific animal traits.

   Heritability is the estimate of the degree to which traits are passed from parents to offspring.

ESTIMATE OF HERITABILITY EXPRESSED IN PERCENTAGES

Traits	Hogs (percent)	Beef Cattle (percent)	Dairy Cattle (percent)
Conformation score	30	25	30
Weights at weaning	10	30	
Feedlot gains after weaning	25	45	
Feed efficiency	30	40	
Loin-eye area	50	65	
Thickness of fat covering	50	40	
Milk production			36
Butterfat production			29

By selecting for traits, animal breeders improve their herds. The more heritable a trait is, the greater and the quicker the improvement when selecting for that trait.

4. Example: The calves weaned in your beef herd averaged 400 pounds. The 10 largest calves averaged 550 pounds. This average is a difference of 150 pounds per animal from the herd average. Part of this (about 70 percent) is due to environment, and part (about 30 percent) is an inherited trait. If you save only the 10 largest calves to use as breeding stock, their offspring can be expected to average 30 percent of the difference (or 45 pounds) more than the present herd average. Thus, you can expect these offspring to average 445 pounds at weaning time. At 25¢ per pound, this 45-pound increase would mean an increase in value of $11.25 per head.

Difference × Heritability	= Predicted Improvement
150 pounds × 0.30	= 45 pounds

5. Work the following problem and discuss your results. You have two bulls—#1 and #2. Calves from #1 have averaged 10 square inches loin-eye area. Calves from #2 averaged 12 square inches. If next year you breed bull #2 to the cows used with #1 this year, what average loin-eye area could you expect in the offspring?

Difference × Heritability = Predicted Improvement

2 square inches × 65% = 1.3 square inches

10 + 1.3 = 11.3 square inches expected in new offspring

Remember

- The **sire** (male parent) and the **dam** (female parent) both equally influence the offspring.
- Dominance and gene arrangement may be the reasons why an animal looks more like one parent than the other.
- Heritability is not for an animal, but for a trait. While one trait is improved by selection, others could well be getting poorer.
- Environment may completely mask the genetic makeup of an animal or herd.
- Some traits are more heritable than others.
- Selection is the process used to improve animals' traits.
- The more highly heritable the trait, the more effective selection will be for it.

ANIMAL HEALTH

Read and discuss the following questions. Each member should fill in answers on his worksheet.

1. In the first year, you learned the symptoms of a sick animal, or how an animal might act if he were sick. Can you remember them?

won't eat	looks droopy	has diarrhea
breathes fast	has a fever	acts strangely

2. Diseases are classed as infectious or noninfectious.

   Diseases that spread from one animal to another are infectious diseases.

   Diseases and sicknesses that do not spread to other animals are noninfectious .

3. Diseases are spread and caused by several different parasites. Parasites live by feeding on animals. We have named two that cause diseases. Can you name three more?

viruses

protozoa

bacteria

insects

worms

4. Match the above parasites with the proper definition:

   worms — live inside animals and vary in size from 1 inch to 25 feet long.

   viruses — very small micro-organisms that can be seen only with the most powerful microscopes.

   bacteria — microscopic in size and the smallest form of plant life.

   protozoa — mostly microscopic in size and the simplest form of animal life containing one cell.

   insects — common pests that live outside the animal.

5. Listed are several diseases that affect man and animals. See if you can name the parasite that causes the disease.

Hog cholera	virus	Liver fluke	worm
Tetanus	bacteria	Roundworm	worm
Coccidiosis	protozoa	Lice	insects
Rabies	virus	Malaria	protozoa
Grubs	insects	Measles	virus
Tuberculosis	bacteria	Ticks	insect

6. Noninfectious diseases are those that are not caused by parasites or spread from one animal to another. Name several causes of noninfectious sicknesses of animals.

overeating	bloat	poisonous plants
chemicals	paint	wire

7. Can you name several diseases or illnesses your project animal can get?

You might have members select a disease to make a report on at a future meeting. There are, of course, other diseases than those listed.

Cattle	Sheep	Swine	Horses
scours	overeating	roundworms	influenza
mastitis	lice	lice	mange
shipping fever	roundworms	hog cholera	sleeping sickness
roundworms	foot rot	brucellosis	lice
grubs	white muscle	vesicular exanthema	

8. What things can you do to reduce the chances of your animal getting a disease or getting hurt?

Keep feed and water clean

Keep pen clean and dry

Clean up wire and trash

Store feed, chemicals, etc. away from animals

Keep sick animals away from your animal

Give proper vaccinations

OBJECTIVES

Although some club members cannot participate in all of its phases, this program is designed to help 4-H members:

- Develop desirable traits of character, such as leadership, responsibility, initiative, self-reliance, and sportsmanship.
- Develop a greater love for animals, and a humane attitude toward them.
- Increase knowledge of safety precautions to prevent injuries to themselves, others, and their animals.
- Develop skill, patience, and understanding in handling animals.
- Develop a clear understanding and appreciation of the animal industries and their role in the agricultural and commercial economy of the country.
- Understand the importance of meat, milk, and other animal products to human nutrition and health.
- Learn to recognize meats of varying quality and be able to identify the wholesale and retail meat cuts.
- Develop an understanding of the values of scientific research and its influence upon the animal industries.
- Experience the pride and responsibility of owning animals and receive training in their care, feeding, management, and related costs.
- Demonstrate sound animal feeding and management practices on the farm, and in the home and community.
- Earn money and learn how to manage this resource effectively.
- Prepare for citizenship responsibilities by working together in groups and supporting community projects and activities.

This leaders guide was prepared by the following committee: *Donald L. Brittsan, County Director and Farm Advisor, Marin County; Raymond G. Lyon, Farm Advisor, Glenn County; Robert E. Savage, Farm Advisor, Modoc County; W. Robert Sheesley, Farm Advisor, Fresno County; Herbert D. Shirley, Agriculturist, Emeritus; Horace T. Strong, Agriculturist, Emeritus; Donald L. Bath, Extension Dairy Nutritionist, Davis; William G. Schneeflock, Program Leader, Personnel, Berkeley (formerly State 4-H – Youth Specialist); and John A. Emo, State 4-H – Youth Specialist, Davis.*

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LIVESTOCK SKILLS

A. Match the following skills with the proper definition and discuss.

Dehorning	Castrating	Tagging
Docking	Hoof trimming	Vaccinating

_____ removing a lamb's tail.

_____ clipping wool from ewe's rear before lambing.

_____ removing male's testicles so he cannot breed.

_____ cleaning and straightening an animal's feet.

_____ injecting a vaccine.

_____ removing an animal's horns.

B. Members complete the following questions and discuss.

1. Dehorning is done on what animals?_____

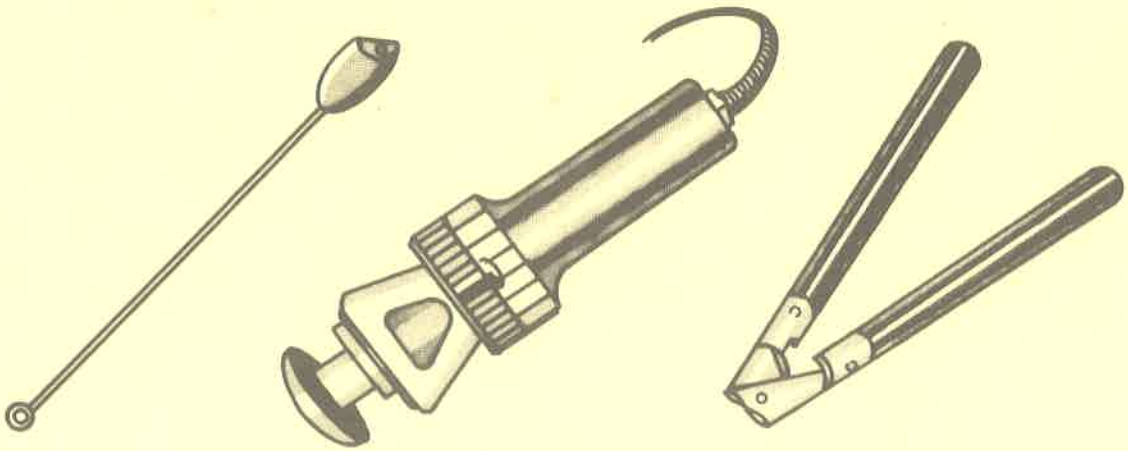
2. The purpose of dehorning is _____

3. Three methods of dehorning are:

_____ _____ _____

_____ is the use of an alkali in a stick or paste form, applied when the calf is a few weeks old.

_____ is the use of a tube or clipper on older cattle.



B. Members complete the following questions and discuss. – continued

4. Docking is done on what animal? _____

5. What tools can be used to dock and castrate? _____

_____

6. A lamb's tail is docked between the _____ and _____ joints.

7. Why are young male animals castrated?

_____

8. When do you tag ewes? _____

9. Name five animals whose feet can be trimmed.

_____, _____, _____, _____, _____

10. Why is it important to trim an animal's hoofs?

_____

_____

11. At what age should animals be docked, castrated, and dehorned?

_____

_____

12. Why is it best to mark animals when they are young? _____

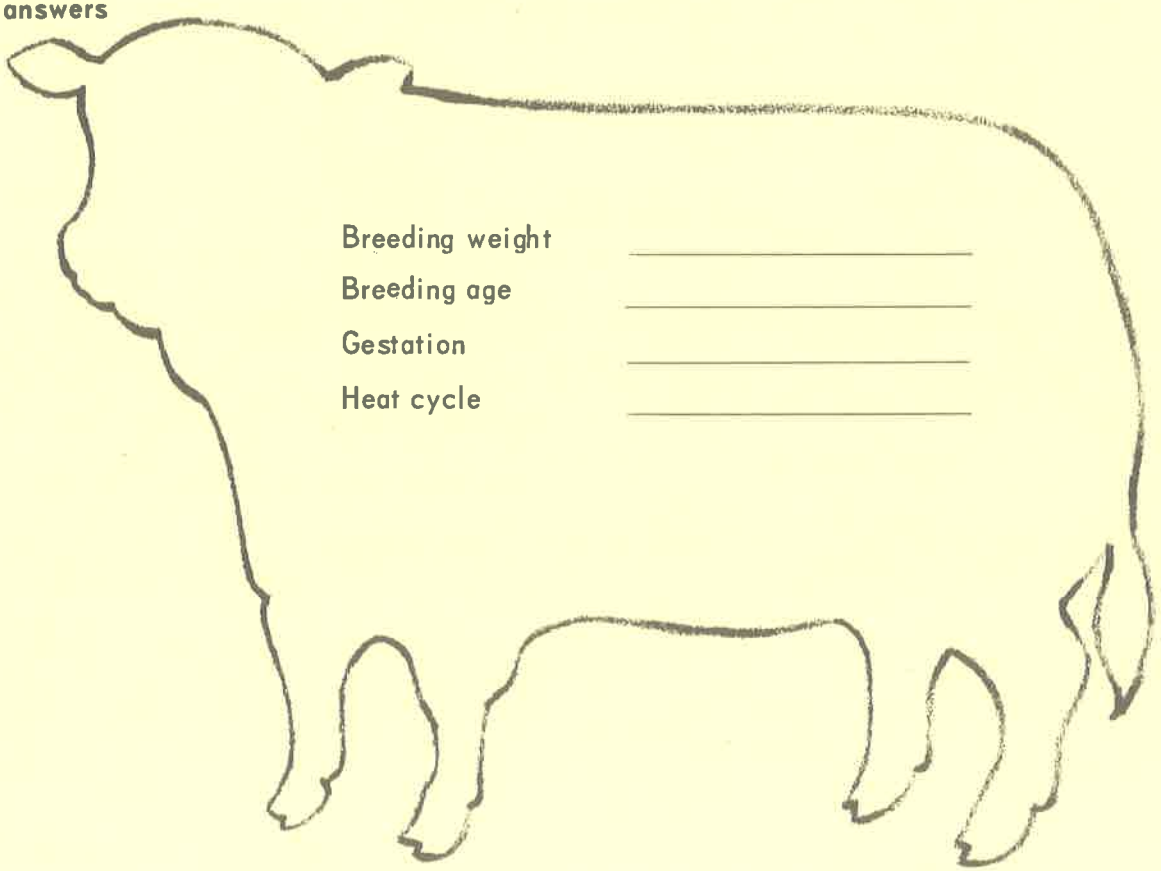
_____

BREEDING AGE, WEIGHT, GESTATION PERIODS, HEAT CYCLES

MATCH TERMS

Farrow ●	● To give birth to calves
Gestation ●	● Sexual maturity
Heat cycles ●	● Pregnancy
Breeding age ●	● Time between periods when pregnancy may occur
Lambing ●	● To give birth to pigs
Calving ●	● To give birth to lambs
Foaling ●	● To give birth to horses

Fill in answers

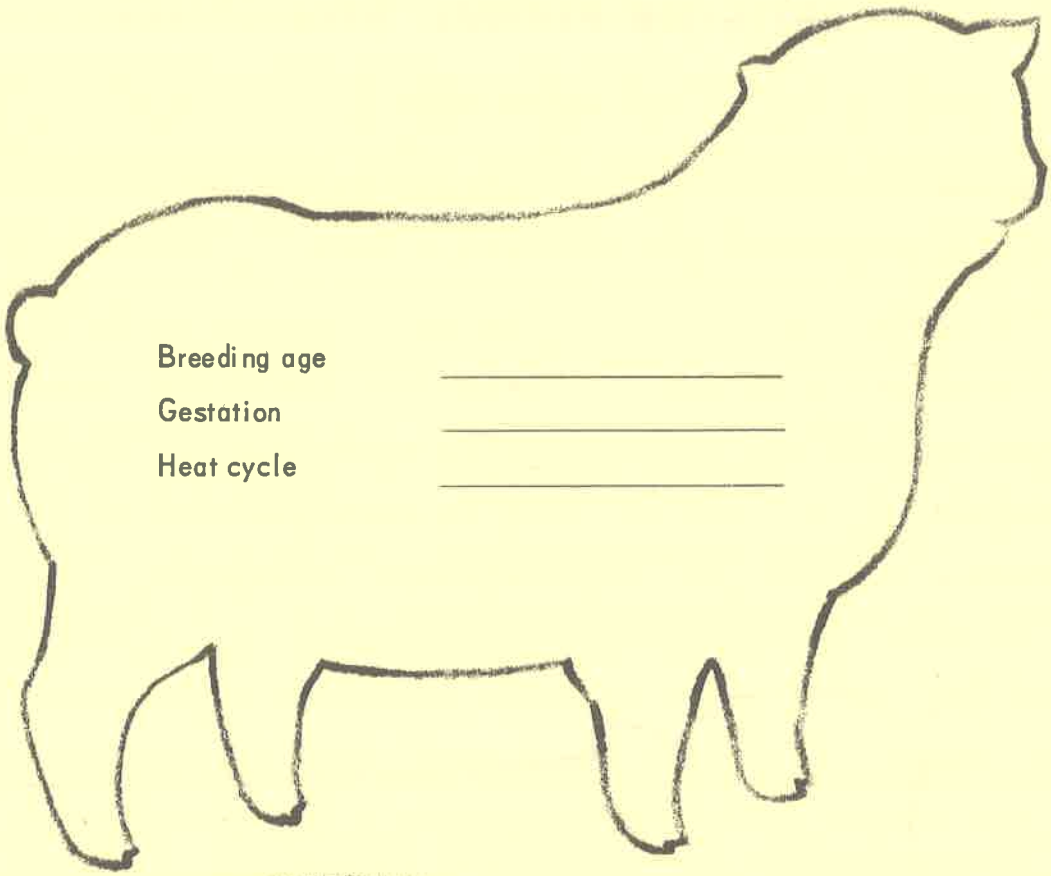


Breeding weight _____

Breeding age _____

Gestation _____

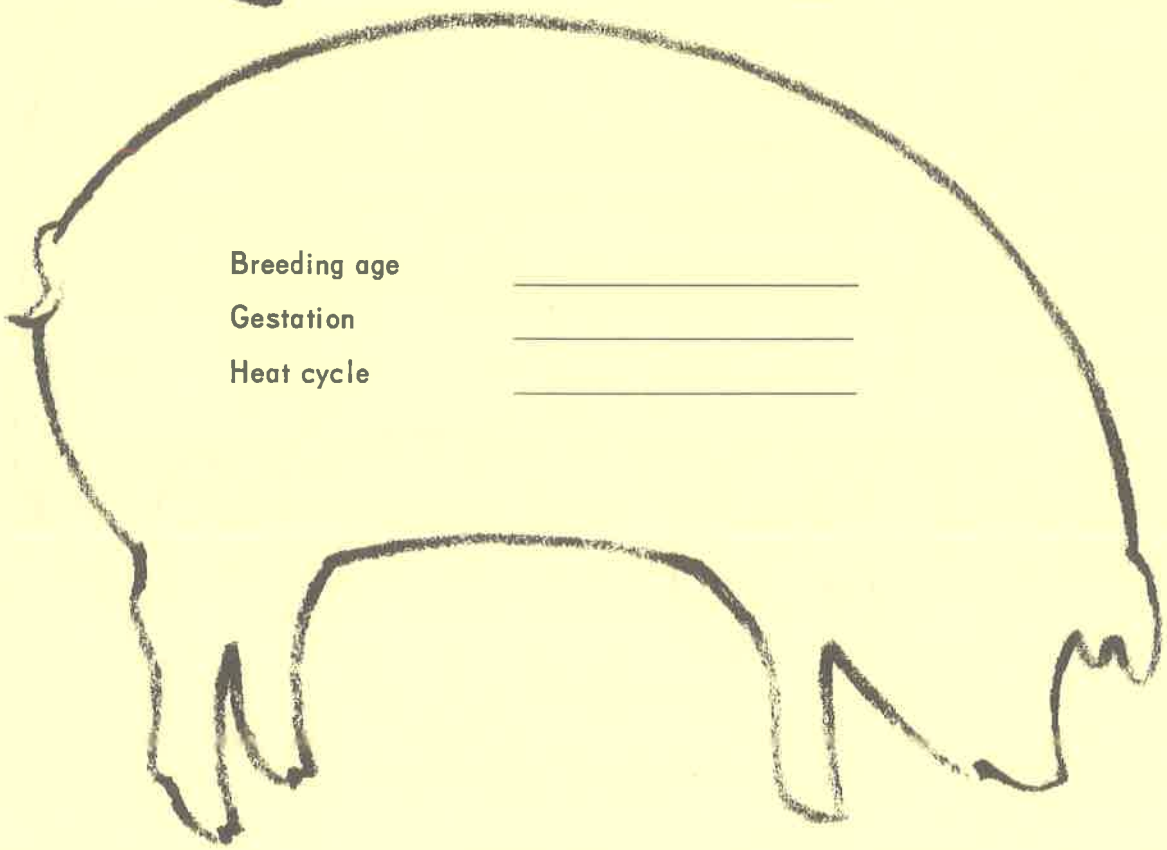
Heat cycle _____



Breeding age _____

Gestation _____

Heat cycle _____



Breeding age _____

Gestation _____

Heat cycle _____

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Newborn animals go through a most critical period the first few hours after birth. The change from a completely controlled environment of the mother to the outside, where there are all kinds of changes, makes it a very trying time for the young.

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When the animal is born, certain steps should be taken to help insure the animal's survival.

Matching Questions

1. The pig and lamb are wiped immediately after birth to remove the _____.
2. On the lambs, the navel cord usually is clipped at about _____ inch from the belly.
3. The navel cord should be painted with _____.
4. The disease prevented by painting the navel cord is _____.
5. The first milk is called _____.
6. Newborn animals should _____ as soon as they gain a little strength.
7. The heat for young usually is furnished by an _____ lamp.
8. Sows usually are placed in farrowing pen _____ days before due date.
9. Young animals that get too much milk may _____.
10. Shearing ewes around the dock and udder before lambing is called _____.

Tagging	Four	Docking
Infrared	Navel ill	Mucus
One	Penning	Scour
Nurse	Iodine	Colostrum

True or False (check the square)

1. The cow usually will clean the newborn calf, so it isn't necessary to wipe it dry.

   True ☐ False ☐

2. Ewes usually are tagged before lambing time. True ☐ False ☐

3. Young animals may be marked for identification by paint brand, ear notch, tattoo, or eartag. True ☐ False ☐

4. The needle teeth should not be removed until the pigs are 2 months old.

   True ☐ False ☐

5. Castrate male pigs and ram lambs at 2 to 3 weeks of age. True ☐ False ☐

6. Open the mother's teats by milking a bit from each teat. True ☐ False ☐

7. Keep moving the mother during the time she is giving birth to young.

   True ☐ False ☐

8. The first feeding for the sow after farrowing could very well be 1 or 2 pounds of your hog feed plus equal amount of wheat bran by weight. True ☐ False ☐

9. Keeping the pen clean isn't important because we have antibiotics now.

   True ☐ False ☐

10. Dairy calves usually are left with their mother from 1 to 3 days and then put in individual pens to be grown out. True ☐ False ☐

11. It is wise to call in a herdsman or someone with some experience during the time a dam is giving birth to young. True ☐ False ☐

RECORDKEEPING

Good records are the backbone of any sound business venture. When you carry a livestock project in 4-H, you are in business. Your 4-H records can show you:

- how much money you're making (or losing)
- how much time you're spending on your project
- how well your animals are turning feed into meat, milk, or wool.

4-H records are simple if you do two things:

- read the directions!
- keep them up to date!

THESE ARE PARTS OF THE 4-H PROJECT RECORD SHEET

A. Project Opening Inventory (things you own when you start project year)
B. Project Closing Inventory (things you own at the end of project year)
C. Feed Record
D. Other Expenses
E. Income
F. Breeding Record
G. Record of Exhibits

Let's practice recordkeeping for a few minutes on an imaginary project. The parts of the record listed above are designated by the letters A through G. Below are some typical items you might find in a livestock project. Decide where you would locate each item in a record book by placing one of the letters (A through G) in each space.

_____ Bossy cow value at start of project
_____ Showed Bossy at county fair and won $10 prize money
_____ 80 pounds of rolled barley left over at the end of club year valued at 3 cents a pound
_____ Sold Bossy's bull calf at auction for $27.50
_____ Bought 500 pounds of dairy feed for Bossy
_____ Bossy on pasture at 10 cents per day for 30 days
_____ Bossy bred to "Star King Lucky Dog Sam 23d"
_____ Cost of breeding Bossy
_____ Value of show equipment at end of year
_____ Value of show halter at start of project

Put the following entries in the proper places in the Project Summary below and figure net profit (or loss).

1. Sold steer at county fair — 980 pounds at 30 cents per pound.
2. Sales charge at fair — 2 percent of total selling price.
3. Premium money at fair — 2d place, $14.
4. Feed costs — 4200 pounds at $63 per ton.
5. Show halter bought in January — $8.
6. Cost of feeder steer — 400 pounds at 25 cents per pound.
7. Pasture costs — $2 per month for 4 months.
8. Buckets and feed troughs on hand at start — $9.
9. Rent for building — $1 per month for 9 months.
10. Buckets and troughs on hand at close — $8.
11. Show halter on hand at close — $7.

Fill in figures below:

PROJECT SUMMARY

Expenses		Income	
Value of feed bought or raised	$_____	Value of animal	$_____
	$_____		
Other expenses	$_____	Other income	$_____
	$_____		
	$_____		
Opening inventory (in-	$_____	Closing inventory	$_____
cludes cost of animal)	$_____		$_____
Total Expenses	$_____	Total Income	$_____

Net Profit $_____

FIGURING MARKET VALUE OF YOUR PROJECT

The market value of your project is how much money your animal or animal product would bring if you sold it today. The amount you get depends on two things: (1) How many are for sale that day (supply), (2) how badly people want what you have for sale (demand). If there are a lot of things for sale and nobody wants them, the price goes down. If there aren't very many and everybody wants to buy, the price goes up.

Grade or quality of animals or products also determines how much they will bring. Here are some terms used in describing quality.

Prime	Utility
Medium	Number 2
Number 3	Good
Standard	Number 1
Cull	Choice

Place the above terms under the following livestock classifications, starting with the highest grade.

Feeder Calves

1. _____
2. _____
3. _____
4. _____
5. _____

Slaughter Swine

1. _____
2. _____
3. _____
4. _____
5. _____

Slaughter Steers

1. _____
2. _____
3. _____
4. _____
5. _____

Slaughter Lambs

1. _____
2. _____
3. _____
4. _____

List the ways that livestock are sold in your area (terminal market, auction yard traders, consignment, etc.).

	Name of Place	How Sold
1.		
2.		
3.		
4.		

DISCUSS THESE OTHER FACTORS WHICH AFFECT MARKET VALUE

1. Pelt credit for sheep. Describe the following pelt credits.

   Number 3 _____

   Number 2 _____

   Number 1 _____

   Fall shorn _____

   Full wooled _____

2. Shrink or fill (leader discussion). These terms refer to the amount of feed or water the animal is carrying. Buyers object to overfilled animals and sometimes pay less for these. It is customary for buyers to subtract 2% to 4% of the live weight to allow for fill.

3. Shipping damage. List three ways to avoid shipping damage to livestock.

_____

_____

_____

HOW INHERITANCE WORKS

1. Words to know and discuss:

   Traits — are characteristics of individuals (color of hair, intelligence, shape, etc.)

   Heritability — is the estimate of degree to which traits are passed from parents to their offspring.

2. Read and discuss the following:

   The growth or performance of any animal depends on two things. These are its inherited traits (determined sexually from parents) and the animal's environment. Life of an animal starts with the joining of two tiny cells—the egg cell from the female parent and the sperm cell from the male parent. Traits of parents are passed to offspring in this way. An animal's inheritance is determined at the exact instant when the sperm and egg cells unite. Anything which affects the animal after this instant is caused by environmental factors.

   Some environmental factors which will affect animal performance are: rations, diseases, climate, housing, water, injuries, and management practices. When animals are provided with the best environmental conditions, they will grow or perform at the peak of their inherited abilities.

3. Match each of the following words with its definition below and discuss.

traits	disease	sperm	hair color
egg	male	heritability	environmental

_____ example of an environmental factor

_____ characteristics of individuals

_____ male reproductive cell

_____ example of a trait which can be inherited

_____ estimate of degree to which parents pass traits to offspring

_____ parent from which sperm cells come

_____ female reproductive cell

_____ kind of factors which affect animal's performance after egg and sperm cells unite

4. Read and discuss the following:

Management of livestock includes controlling the breeding program to influence the inherited traits of animals. Some traits can be passed to offspring more completely than others. From results of thousands of breeding experiments, scientists have computed the percentage or degree of success that can be expected when selective breeding is done for specific traits of animals. On this page is a short list of heritability percentage estimates for traits in beef cattle and hogs.

By using the heritability percentage of a trait, you can predict breeding results if you can measure the trait.

ESTIMATE OF HERITABILITY EXPRESSED IN PERCENTAGES

	Hogs	Beef Cattle
Conformation score	30%	25%
Weights at weaning	10%	30%
Feedlot gains after weaning	25%	45%
Feed efficiency	30%	40%
Loin-eye area	50%	65%
Thickness of fat covering	50%	40%

Example: The calves weaned in your beef herd averaged 400 pounds. The 10 largest calves averaged 550 pounds. This average is a difference of 150 pounds per animal from the herd average. Part of this (about 70%) is due to environment, and part (about 30%) is an inherited trait. If you save only the 10 largest calves to use as breeding stock, their offspring can be expected to average 30% of the difference (or 45 pounds) more than the present herd average. Thus, you can expect these offspring to average 445 pounds at weaning time. At 25¢ per pound, this 45-pound increase would mean an increase in value of $11.25 per head.

Difference	x	Heritability	=	Predicted Improvement
150 pounds	x	.30	=	45 pounds

5. Work the following problem and discuss your results:

You have two bulls—#1 and #2. Calves from #1 have averaged 10 square inches loin-eye area. Calves from #2 averaged 12 square inches. If next year you breed bull #2 to the cows used with #1 this year, what average loin-eye area could you expect in the offspring?

Difference x Heritability = Predicted Improvement

x =

10 + = square inches expected in new offspring

ANIMAL HEALTH

Have members read questions and discuss answers. Each member fill in answers on his worksheet.

1. In the first year, you learned the symptoms of a sick animal, or how an animal might act if he were sick. Can you remember them?

   _____ _____ _____

   _____ _____ _____

2. Diseases are classed as infectious or noninfectious.

   Diseases that spread from one animal to another are _____ diseases.

   Diseases and sicknesses that do not spread to other animals are _____.

3. Diseases are spread and caused by several different parasites. Parasites live by feeding on animals. We have named two that cause diseases. Can you name three more?

   viruses _____

   protozoa _____

   _____

4. Match the above parasites with the proper definition:

   _____ live inside animals and vary in size from 1 inch to 25 feet long.

   _____ very small microorganisms that can be seen only with the most powerful microscopes.

   _____ microscopic in size and the smallest form of plant life.

   _____ mostly microscopic in size and the simplest form of animal life containing one cell.

   _____ common pests that live outside the animal.

5. Listed are several diseases that affect man and animals. See if you can name the parasite that causes the disease.

Hog cholera	_____	Liver fluke	_____
Tetanus	_____	Roundworm	_____
Coccidiosis	_____	Lice	_____
Rabies	_____	Malaria	_____
Grubs	_____	Measles	_____
Tuberculosis	_____	Ticks	_____

6. Noninfectious diseases are those that are not caused by parasites or spread from one animal to another. Name several causes of noninfectious sicknesses of animals.

_____ _____ _____

_____ _____ _____

7. Can you name several diseases or illnesses your project animal can get?

_____

_____

8. What things can you do to reduce the chances of your animal getting a disease or getting hurt?

_____

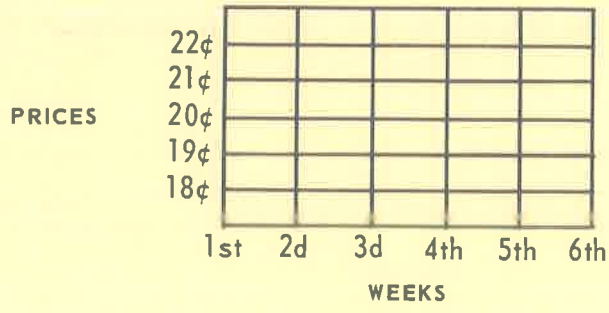
_____

_____

_____

EAGER BEAVER PROJECT

Livestock prices vary quite a bit, depending on supply and demand and other factors. Make a graph of prices for one or more classes of livestock for 6 weeks or longer. Use the same market for your figures.



Make a graph like this one only larger. Graph paper will help you to plot prices more accurately.

Livestock prices usually are listed on the financial page of your local newspaper. Market News Service provides more detailed information on prices.

ANIMAL RECORD SHEET

Kind of Animal _____ **Age** _____ **Average Temperature for Species** _____

Name of Animal _____ **Sex** _____ **Average Pulse Rate for Species** _____

Color and Markings _____ **Average Respiration Rate for Species** _____

	M	T	W	TH	F	S	S	M	T	W	TH	F
Attitude: (normal-abnormal)												
Posture (normal-abnormal)												
Locomotion (normal-abnormal)												
Voice (normal-abnormal)												
Eating:												
Appetite: (normal-abnormal)												
Chewing motions (normal-abnormal)												
Swallowing (normal-abnormal)												
Temperament												
Skin:												
Color												
Evidence of injury (yes-no)												
Condition of hair or feathers												
Mucous membranes:												
Color												
Dryness												
Odors												
Discharges												
Intestinal discharges - color												
consistency												
Body Temperature °F												
Pulse rate/minute												
Respiration rate/minute												
Other observations												