



# Animal Science

## Merit Badge Workbook



This workbook can help you but you still need to read the merit badge pamphlet.  
This Workbook can help you organize your thoughts as you prepare to meet with your merit badge counselor

**Merit Badge Counselors may not require the use of this or any similar workbooks.**

You still must satisfy your counselor that you can demonstrate each skill and have learned the information. You should use the work space provided for each requirement to keep track of which requirements have been completed, and to make notes for discussing the item with your counselor, not for providing full and complete answers.

If a requirement says that you must take an action using words such as "discuss", "show", "tell", "explain", "demonstrate", "identify", etc, that is what you must do.

No one may add or subtract from the official requirements found in Scouts BSA Requirements (Pub.# 33216) and/or on Scouting.org.

The requirements were last issued or revised in 2023 • This workbook was updated in November 2023.

Scout's Name: \_\_\_\_\_ Unit \_\_\_\_\_ Date Started \_\_\_\_\_

Counselor's Name: \_\_\_\_\_ Phone No.: \_\_\_\_\_ Email: \_\_\_\_\_

Please submit errors, omissions, comments or suggestions about this **workbook** to: [Workbooks@USScouts.Org](mailto:Workbooks@USScouts.Org)  
Comments or suggestions for changes to the **requirements** for the **merit badge** should be sent to: [Merit.Badge@Scouting.Org](mailto:Merit.Badge@Scouting.Org)

1. Name four breeds of livestock in each of the following classifications: horses, dairy cattle, beef cattle, sheep, hogs, poultry, goats. Tell their principal uses and merits. Tell where the breeds originated.

Horses

Breed	Principal uses and merits.	Where the breed originated.

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Dairy cattle:

Breed	Principal uses and merits.	Where the breed originated.

Beef cattle:

Breed	Principal uses and merits.	Where the breed originated.

Sheep:

Breed	Principal uses and merits.	Where the breed originated.

Hogs:

Breed	Principal uses and merits.	Where the breed originated.

Poultry:

Breed	Principal uses and merits.	Where the breed originated.

Goats:

Breed	Principal uses and merits.	Where the breed originated.

2. List five diseases in each of the classifications in requirement 1. Also list five diseases of poultry. Describe the symptoms of each disease and explain how each is contracted and how it could be prevented.

Horses

Disease	Symptoms	How it's contracted	How it's prevented

Dairy cattle:

Disease	Symptoms	How it's contracted	How it's prevented

Beef cattle:

Disease	Symptoms	How it's contracted	How it's prevented

Sheep:

Disease	Symptoms	How it's contracted	How it's prevented

Hogs:

Disease	Symptoms	How it's contracted	How it's prevented

Poultry:

Disease	Symptoms	How it's contracted	How it's prevented

Goats:

Disease	Symptoms	How it's contracted	How it's prevented

3. Explain the differences in digestive systems of ruminants, horses, pigs, and poultry.

Ruminants


Horses


Pigs


Poultry




Explain how the difference structure and function among these types of digestive tracts affect the nutritional management of these species.

Ruminants


Horses


Pigs


Poultry


4. Select one type of animal -  beef cow,  dairy cow,  horse,  sheep,  goat, or  hog, or a  poultry flock – and tell how you would properly manage it. Include in your discussion nutritional (feeding) concerns, housing, disease prevention, waste control/removal, breeding programs, and biosecurity as appropriate.

Nutritional (feeding) concerns:


Housing:


Disease prevention:


Waste control/removal:


Breeding programs


Biosecurity


5. Explain the importance of setting clear goals for any animal breeding program.


Tell how purebred lines of animals are produced.


Explain the practice of crossbreeding and the value of this practice.

Practice:


Value:


6. Complete ONE of the following options: (Use blank pages for any notes or written answers for any of these options)

BEEF CATTLE OPTION

- a. Visit a farm or ranch where beef cattle are produced under any of these systems:
  - 1. Feeding market cattle for harvest;
  - 2. Cow/calf operation, producing feeder cattle for sale to commercial cattle feeders;
  - 3. Producing purebred cattle for sale as breeding stock to others. Talk with the operator to learn how the cattle were handled, fed, weighed, and shipped. Describe what you saw and explain what you learned. If you cannot visit a cattle ranch or farm, view a video from a breed association, or research the Internet (with your parent or guardian's permission) for information on beef cattle production. Tell about your findings.
- b. Sketch a plan of a feedlot to include its forage and grain storage facilities, and loading chute for 30 or more fattening steers, or sketch a corral plan with cutting and loading chutes for handling 50 or more beef cows and their calves at one time.
- c. Make a sketch showing the principal wholesale and retail cuts of beef. Tell about the U.S. Department of Agriculture (USDA) dual grading system of beef. Tell the basis of each grade in each system.
- d. Define the following terms: bull, steer, bullock, cow, heifer, freemartin, heiferette, calf.

bull


steer


bullock


cow


heifer


freemartin


heiferette


calf


DAIRYING OPTION

- a. Tell how a cow or a goat converts forage and grain into milk. Explain the differences in feeds typically used for dairy cows versus those fed to beef cows.
- b. Make a chart showing the ingredients in cows' milk or goat's milk. Chart the amount of each ingredient.
- c. Explain the requirements for producing grade A milk. Tell how and why milk is pasteurized.
- d. Tell about the kinds of equipment used for milking and the sanitation standards that must be met for dairy farms.
- e. Define the following terms: bull, cow, steer, heifer, springer, buck, doe, kid.

bull	
cow	
steer	
heifer	
heifer	
springer	
<i>buck</i>	
<i>doe</i>	
kid	

- f. Visit a dairy farm or a milk processing plant. Describe what you saw and explain what you learned. If you cannot visit a dairy farm or processing plant, view a video from a breed or dairy association, or research the Internet (with your parent or guardian's permission) for information on dairying. Tell about your findings.

HORSE OPTION

- a. Make a sketch of a useful saddle horse barn and exercise yard.
- b. Tell about the history of the horse and the benefits it has brought to people. Using the four breeds of horses you chose in requirement 1, discuss the different special uses of each breed.
- c. Define the following terms: mare, stallion, gelding, foal, colt, filly; mustang, quarter horse, draft horse, pacer, trotter; pinto, calico, palomino, roan, overo, tobiano.

mare	
stallion	
gelding	
foal	
heifer	
colt	
filly	
mustang	
quarter horse	
bull	
draft horse	

pacer	
trotter	
pinto	
calico	
palomino	
roan	
overo	
tobiano	

- d. Visit a horse farm. Describe what you saw and explain what you learned. If you cannot visit a horse farm, view a video from a breed association, or research the Internet (with your parent or guardian's permission) for information on horses. Tell about your findings.
- e. Outline the proper feeding of a horse doing light work. Explain why the amount and kind of feed will change according to the kind of horse and the work it does. Describe what colic is, what can cause it, and its symptoms.

SHEEP OPTION

- a. Make a sketch of a live lamb. Show the location of the various wholesale and retail cuts.
- b. Discuss how wools are sorted and graded.
- c. Do ONE of the following:
  - 1. Raise a lamb from weaning to market weight. Keep records of feed intake, weight gains, medication, vaccination, and mortality. Present your records to your counselor for review.
  - 2. Visit a farm or ranch where sheep are raised. Describe what you saw and explain what you learned. If you cannot visit a sheep farm or ranch, view a video from a breed association, or research the Internet (with your parent or guardian's permission) for information on sheep. Tell about your findings.
- d. Describe some differences between the production of purebred and commercial lambs. Then select two breeds that would be appropriate for the production of crossbred market lambs in your region. Identify which breed the ram should be.
- e. Define the following terms: wether, ewe, ram, lamb.

wether	
ewe	
ram	
lamb	

HOG OPTION

- a. Make a sketch showing the principal wholesale and retail cuts of pork. Tell about the recommended USDA grades of pork. Tell the basis for each grade.
- b. Outline in writing the proper feeding programs used from the breeding of a gilt or sow through the weaning of the litter. Discuss the growth and finishing periods from the breeding of a gilt or sow through the weaning of the litter. Discuss the feeding programs for the growth and finishing periods.
- c. Do ONE of the following:
  - 1. Raise a feeder pig from weaning to market weight. Keep records of feed intake, weight gains, medication, vaccination, and mortality. Present your records to your counselor for review.
  - 2. Visit a farm where hogs are produced, or visit a packing plant handling hogs. Describe what you saw and explain what you learned. If you cannot visit a hog production unit or packing plant, view a video from a packer or processor, or research the Internet (with your parent or guardian's permission) for information on hogs. Tell about your findings.
- d. Define the following terms: gilt, sow, barrow, boar.

gilt	
sow	
barrow	
boar	



AVIAN OPTION

- a. Make a sketch of a layer house or broiler house showing nests, roosts, feeders, waterers, and means of ventilation. Explain how insulation, ventilation, temperature controls, automatic lights, and other environmental controls are used to protect birds from heat, cold, and bad weather. Explain the importance of light for egg production
- b. Explain why overcrowding is dangerous for poultry flocks.
- c. Tell about the grading of eggs. Describe the classes of chicken meat.
- d. Do ONE of the following:
  - 1. Manage an egg-producing flock for five months. Keep records of feed purchased, eggs sold, medication, vaccination, and mortality. Present your records to your counselor for review.
  - 2. Raise five chickens from hatching. Keep records of feed intake, weight gains, medication, vaccination, and mortality. Present your records to your counselor for review.
  - 3. Visit a commercial avian production facility. Describe what you saw and explain what you learned. If you cannot visit a commercial facility, view a video from a poultry association, or research the Internet (with your parent or guardian's permission) for information on poultry production. Tell about your findings.
- e. Define the following terms: chick, pullet, hen, cockerel, cock, capon

Chick	
Pullet	
Hen	
Cockerel	
Cock	
Capon	

7. Find out about three career opportunities in animal science.

1.	
2.	
3.	

Pick one and explain how to prepare for such a career.


Discuss with your counselor what education and training are required, and explain why this profession might interest you.

Education


Training


Why this profession might interest you.


When working on merit badges, Scouts and Scouters should be aware of some vital information in the current edition of the *Guide to Advancement* (BSA publication 33088). Important excerpts from that publication can be downloaded from <http://usscouts.org/advance/docs/GTA-Excerpts-meritbadges.pdf>.  
 You can download a complete copy of the *Guide to Advancement* from <http://www.scouting.org/filestore/pdf/33088.pdf>.