

Cow Anatomy Curriculum



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2709 Mondovi Road
Eau Claire, WI 54701 USA
800.830.1416
+1.715.830.2040
www.realityworks.com

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Cow Anatomy Curriculum

Use this curriculum with the Cow Model and/or Cow Anatomy 3D Flip Chart to bring the lessons to life and give students a hands-on learning opportunity

Curriculum Structure

The *Cow Anatomy Curriculum* is composed of the following lessons. Approximate lesson times are included.

Lesson	Title	Approximate Time
1	Beef and Dairy Cattle Anatomy	45-60 minutes
2	Ruminant Digestive Tract	45-60 minutes
3	Cow and Bull Reproductive Systems	45-60 minutes
	Total	3 hours

Lesson Structure

Each lesson begins with an overview, lesson objectives, and a Lesson at a Glance table which lists the lesson activities, materials required, suggested preparation steps and approximate class time.

Lesson Sections

The actual lesson follows the overview, which will contain some of the sections described below.

FOCUS

Every lesson begins with a FOCUS activity intended to capture participants' attention. This may be in the form of a small or large class discussion, a game, a review of previous lesson information or a demonstration. During this activity, participants are introduced to the topic of the lesson.

LEARN

The LEARN activity in each lesson varies in its presentation mode. It may be a slide presentation, group activity or demonstration.

REVIEW

The majority of lessons end with a REVIEW activity intended to briefly review the lesson's key messages or main points.

Lesson One – Beef and Dairy Cattle Anatomy

Lesson Overview

Gain understanding of the anatomy of cattle. This lesson splits up the different major features of dairy and beef cattle. This lesson introduces the external body parts, beef cuts, nomenclature, and location for beef and dairy animals.

Lesson Objectives

After completing this lesson, participants will be able to:

- Correctly name and identify the location of external beef cattle body parts and beef cuts
- Correctly name and identify the location of external and internal dairy cattle body parts

Lesson at a Glance

Activity	Materials	Preparation	Approximate class time
FOCUS	• <i>Dairy Cattle Anatomy</i> worksheet • <i>Beef Cattle Anatomy</i> worksheet • Cow Model and/or Cow Anatomy 3D Flip Chart	1. Print/photocopy <i>Dairy Cattle Anatomy</i> and <i>Beef Cattle Anatomy</i> worksheets (one per participant)	10-15 minutes
LEARN	• <i>Beef Cattle Anatomy and Dairy Cattle Anatomy</i> slide presentations • <i>Beef Cuts Poster</i> • Cow Model and/or Cow Anatomy 3D Flip Chart	1. Prepare to display <i>Beef Cattle Anatomy</i> and <i>Dairy Cattle Anatomy</i> slide presentations	20-30 minutes
REVIEW	• <i>Beef Cattle Anatomy Quiz</i> • <i>Dairy Cattle Anatomy Quiz</i> • <i>Beef Cattle Anatomy Quiz – Answer Key</i> • <i>Dairy Cattle Anatomy Quiz – Answer Key</i> • Cow Model and/or Cow Anatomy 3D Flip Chart	1. Print/photocopy <i>Beef Cattle Anatomy Quiz</i> and <i>Dairy Cattle Anatomy Quiz</i> (one per participant)	10-15 minutes

Lesson One – Beef and Dairy Cattle Anatomy

FOCUS: Anatomy Overview

10-15 Minutes

Purpose: Give participants an overall baseline understanding of the anatomy for beef and dairy cattle.

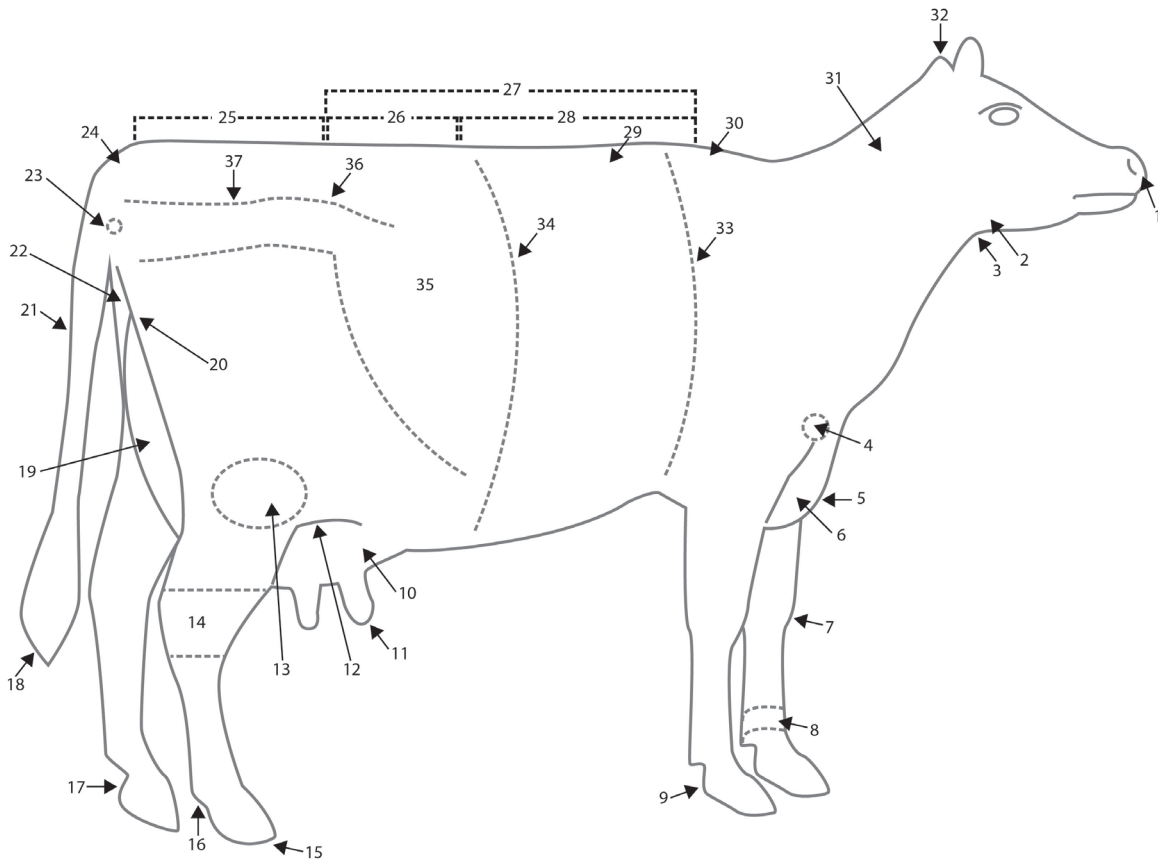
Materials:

- Cow Model and/or Cow Anatomy 3D Flip Chart
- *Dairy Cattle Anatomy* worksheet
- *Beef Cattle Anatomy* worksheet

Facilitation Steps:

1. Hand out *Dairy Cattle Anatomy* and *Beef Cattle Anatomy* worksheets to each student (one per individual).
2. Have Cow Model and/or Cow Anatomy 3D Flip Chart displayed for students to reference.
3. Let students know that this is a way to see what knowledge they already have.
4. Give them between 10-15 minutes to complete as much of the *Dairy Cattle Anatomy* and *Beef Cattle Anatomy* worksheets as possible.

Dairy Cattle Anatomy



1. _____

2. _____

3. _____

4. _____

5. _____

6. _____

7. _____

8. _____

9. _____

10. _____

11. _____

12. _____

13. _____

14. _____

15. _____

16. _____

17. _____

18. _____

19. _____

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21. _____

22. _____

23. _____

24. _____

25. _____

26. _____

27. _____

28. _____

29. _____

30. _____

31. _____

32. _____

33. _____

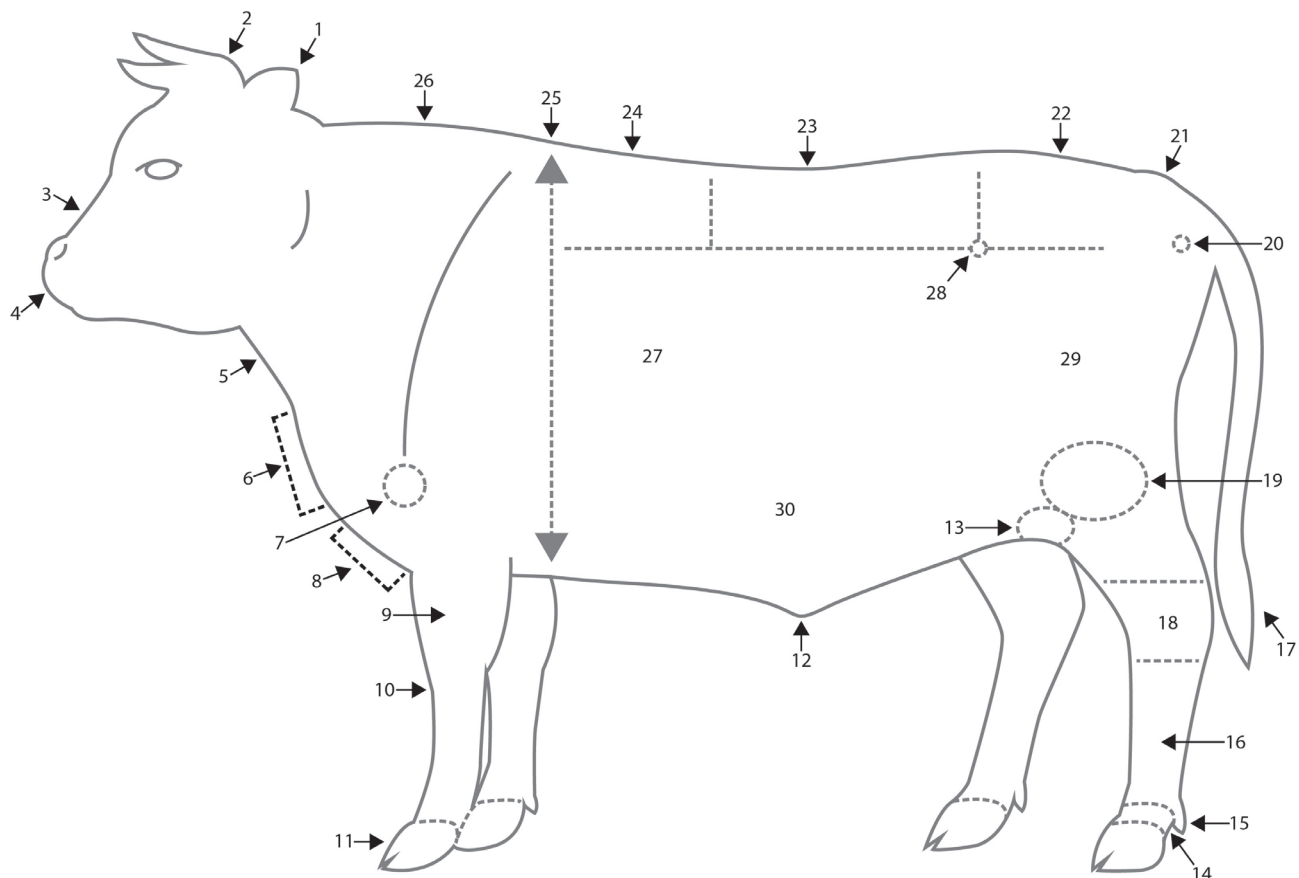
34. _____

35. _____

36. _____

37. _____

Beef Cattle Anatomy



1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____
9. _____
10. _____

11. _____
12. _____
13. _____
14. _____
15. _____
16. _____
17. _____
18. _____
19. _____
20. _____

21. _____
22. _____
23. _____
24. _____
25. _____
26. _____
27. _____
28. _____
29. _____
30. _____

Lesson One – Beef and Dairy Cattle Anatomy

LEARN: Beef and Dairy Cattle Anatomy

10-15 Minutes

Purpose: Participants will learn the cuts of beef and where they come from well as the anatomy for both beef and dairy cattle.

Materials:

- *Beef Cattle Anatomy* and *Dairy Cattle Anatomy* slide presentations
- *Beef Cuts Poster*
- Cow Model and/or Cow Anatomy 3D Flip Chart

Facilitation Steps:

1. Familiarize yourself with the *Beef Cattle Anatomy* and *Dairy Cattle Anatomy* slide presentations. Start with the *Dairy Cattle Anatomy* slide presentation first.
2. Have the *Cow Model* and/or Cow Anatomy 3D Flip Chart and *Beef Cuts Poster* out on the table for reference.
3. Present the *Beef Cattle Anatomy* and *Dairy Cattle Anatomy* slide presentations to the class. Starting with the *Dairy Cattle Anatomy* slide presentation first.
4. Have students reference and correct the *Dairy Cattle Anatomy* and *Beef Cattle Anatomy* worksheets as you present the *Beef Cattle Anatomy* and *Dairy Cattle Anatomy* slide presentations.
5. Have students keep track of the number of correct answers they got when doing the FOCUS activity.

Lesson One – Beef and Dairy Cattle Anatomy

REVIEW: Quiz

10-15 Minutes

Purpose: Participants will be assessed on their understanding of the parts of both dairy and beef cattle.

Materials:

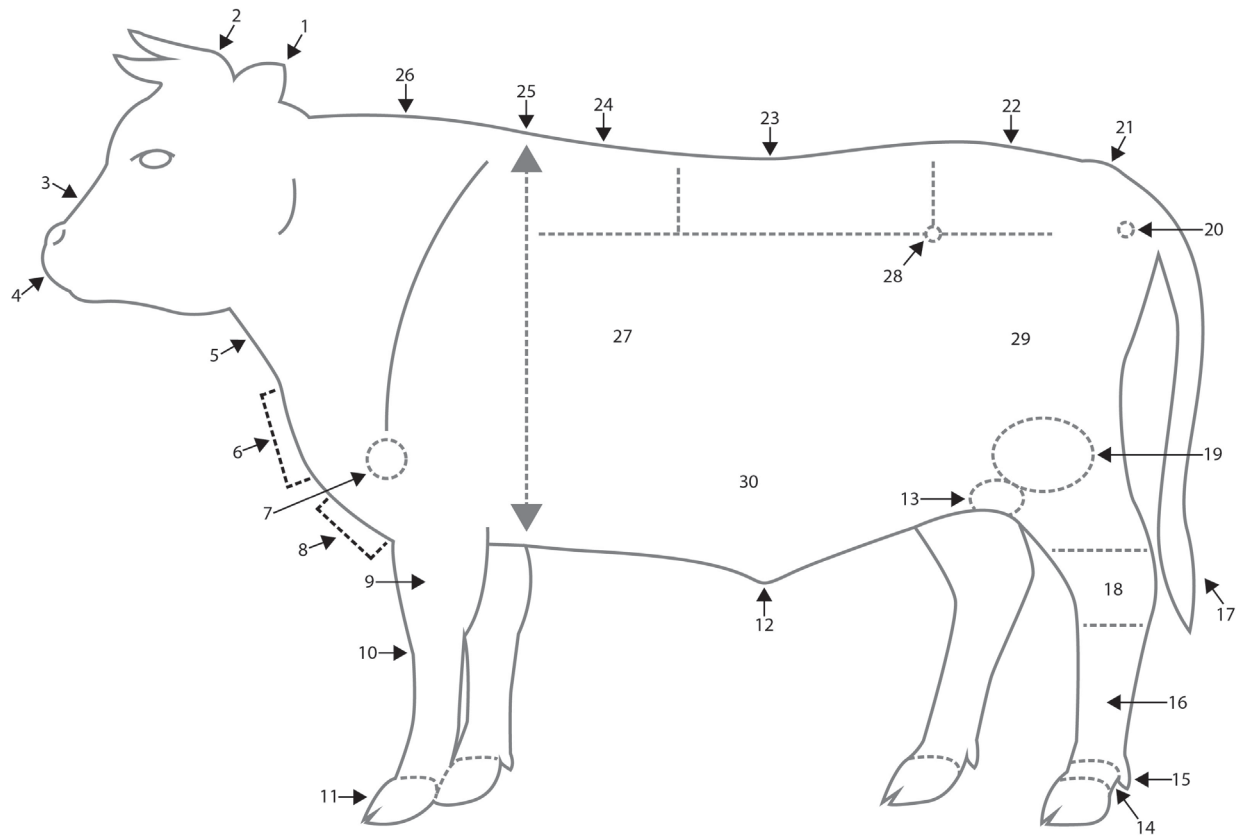
- *Beef Cattle Anatomy Quiz*
- *Beef Cattle Anatomy Quiz – Answer Key*
- *Dairy Cattle Anatomy Quiz*
- *Dairy Cattle Anatomy Quiz – Answer Key*
- Cow Model and/or Cow Anatomy 3D Flip Chart

Facilitation Steps:

1. Have the Cow Model and/or Cow Anatomy 3D Flip Chart set up in a place where all students can see it.
2. Hand out *Beef Cattle Anatomy Quiz* and *Dairy Cattle Anatomy Quiz*.
3. Have students work on quiz in class if there is time. Allow them to finish at home if needed.
4. Correct in class the next day or collect and correct yourself.

Name _____

Beef Cattle Anatomy Quiz

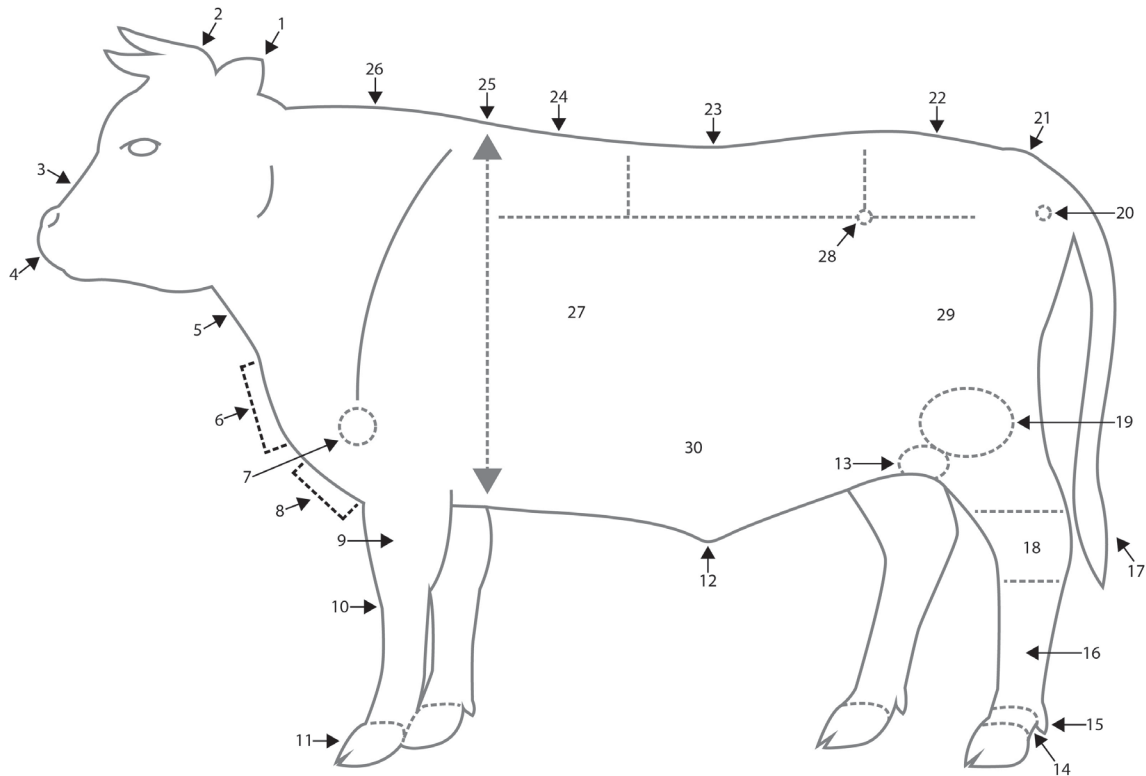


1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____
9. _____
10. _____

11. _____
12. _____
13. _____
14. _____
15. _____
16. _____
17. _____
18. _____
19. _____
20. _____

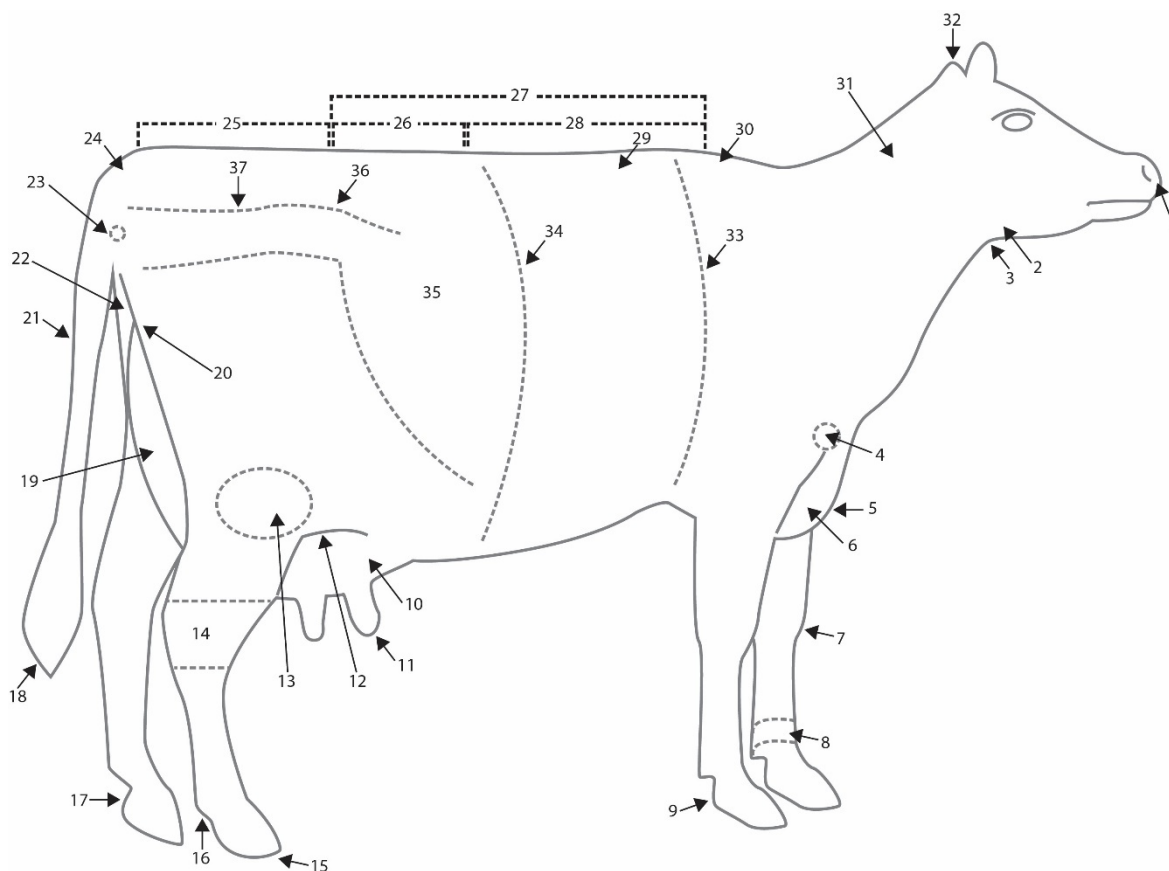
21. _____
22. _____
23. _____
24. _____
25. _____
26. _____
27. _____
28. _____
29. _____
30. _____

Beef Cattle Anatomy Quiz – Answer Key



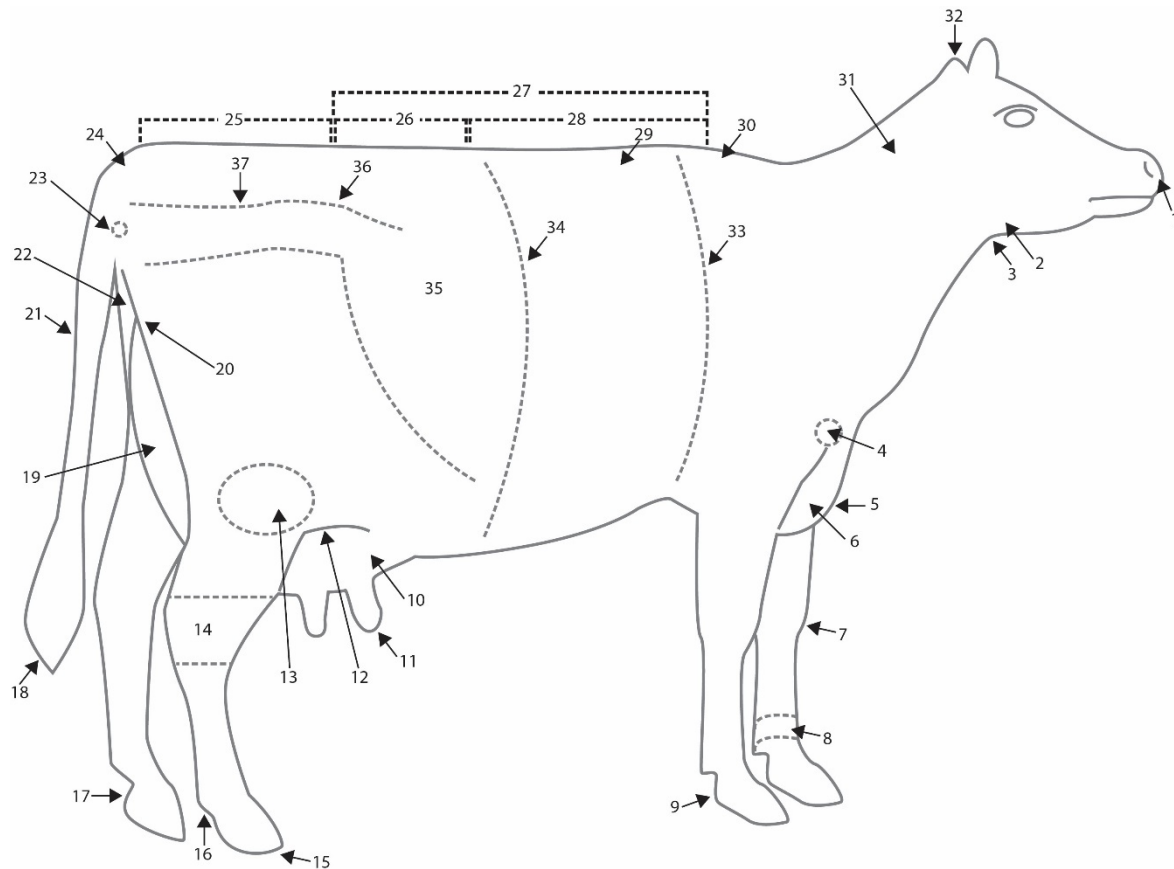
- | | | |
|----------------------|--|-----------------|
| 1. Ear | 12. Sheath (steers) or Navel (heifers) | 22. Rump |
| 2. Poll | 13. Rear Flank | 23. Loin |
| 3. Face | 14. Pastern | 24. Back |
| 4. Muzzle | 15. Dew Claw | 25. Heart Girth |
| 5. Throat | 16. Cannon Bone | 26. Crest |
| 6. Dewlap | 17. Switch | 27. Rib |
| 7. Point of Shoulder | 18. Hock | 28. Hook |
| 8. Brisket | 19. Stifle Joint | 29. Quarter |
| 9. Forearm | 20. Pin | 30. Belly |
| 10. Knee | 21. Tail Head | |
| 11. Hoof | | |

Dairy Cattle Anatomy Quiz



- | | | |
|-----------|-----------|-----------|
| 1. _____ | 14. _____ | 27. _____ |
| 2. _____ | 15. _____ | 28. _____ |
| 3. _____ | 16. _____ | 29. _____ |
| 4. _____ | 17. _____ | 30. _____ |
| 5. _____ | 18. _____ | 31. _____ |
| 6. _____ | 19. _____ | 32. _____ |
| 7. _____ | 20. _____ | 33. _____ |
| 8. _____ | 21. _____ | 34. _____ |
| 9. _____ | 22. _____ | 35. _____ |
| 10. _____ | 23. _____ | 36. _____ |
| 11. _____ | 24. _____ | 37. _____ |
| 12. _____ | 25. _____ | |
| 13. _____ | 26. _____ | |

Dairy Cattle Anatomy Quiz – Answer Key



- | | | |
|----------------------|---------------------------|-----------------|
| 1. Muzzle | 14. Hock | 27. Back |
| 2. Jaw | 15. Hoof | 28. Chine |
| 3. Throat | 16. Dew Claw | 29. Crops |
| 4. Point of Shoulder | 17. Pastern | 30. Withers |
| 5. Dewlap | 18. Switch | 31. Neck |
| 6. Brisket | 19. Rear Udder | 32. Poll |
| 7. Knee | 20. Rear Udder Attachment | 33. Heart Girth |
| 8. Shank | 21. Tail | 34. Barrel |
| 9. Sole | 22. Thigh | 35. Ribs |
| 10. Fore Udder | 23. Pin Bone | 36. Hip |
| 11. Teat | 24. Tail Head | 37. Thurl |
| 12. Flank | 25. Rump | |
| 13. Stifle Joint | 26. Loin | |

Lesson Two – Ruminant Digestive Tract

Lesson Overview

This lesson introduces the ruminant digestive tract; the components of the tract, their location, and their function.

Lesson Objectives

After completing this lesson, participants will be able to:

- Name, locate, and describe the functions of the parts of a ruminant digestive system.
- Correctly label the digestion path as it travels through the ruminant system.

Lesson at a Glance

Activity	Materials	Preparation	Approximate class time
FOCUS	• Whiteboard/Blackboard • Whiteboard Markers/Chalk • White Paper or Student Notebooks	1. Draw the four parts of the Ruminant Digestive Tract on the board. Use slide 2 of the <i>Ruminant Digestive Tract</i> slide presentation for reference	5-10 minutes
LEARN	• <i>Ruminant Digestive Tract</i> slide presentation • <i>Ruminant Digestive Tract Student Notes</i> • <i>Ruminant Digestive Tract Student Notes – Answer Key</i>	1. Prepare to present the <i>Ruminant Digestive Tract</i> slide presentation 2. Print/Photocopy <i>Ruminant Digestive Tract Student Notes</i> (one per participant)	25-35 minutes
REVIEW	• <i>Ruminant Digestive Tract Student Worksheet</i> • <i>Ruminant Digestive Tract Student Worksheet – Answer Key</i> • <i>Ruminant Digestive Tract Quiz</i> • <i>Ruminant Digestive Tract Quiz – Answer Key</i>	1. Print/Photocopy <i>Ruminant Digestive Tract Student Worksheet</i> (one per participant) 2. Optional: Print/Photocopy <i>Ruminant Quiz</i> (one per participant)	15-25 minutes

Lesson Two – Ruminant Digestive Tract

FOCUS: Ruminant Overview

5-10 Minutes

Purpose: Participants will learn the four main compartments of the ruminant, allowing for them to gain upfront knowledge of the digestive system.

Materials:

- Whiteboard/Blackboard
- Whiteboard Markers/Chalk
- White Paper or Student Notebooks

Facilitation Steps:

1. Draw the four parts of the Ruminant Digestive Tract on the board. Use slide two of the *Ruminant Digestive Tract* slide presentation for reference.
2. Have students draw the same image.
3. Together write the names of each compartment of the Ruminant.

Lesson Two – Ruminant Digestive Tract

LEARN: Ruminant Digestive Tract

25-35 Minutes

Purpose: Participants will get an in-depth look at the complete digestive tract and a deeper understanding of the ruminant.

Materials:

- *Ruminant Digestive Tract* slide presentation
- *Ruminant Digestive Tract Student Notes*
- *Ruminant Digestive Tract Student Notes – Answer Key*

Facilitation Steps:

1. Prepare the *Ruminant Digestive Tract* slide presentation.
2. Present each slide to the class.
3. Have the students complete the *Ruminant Digestive Tract Student Notes* as you do the slide presentation.
4. Use the *Ruminant Digestive Tract Student Notes – Answer Key* for any missing answers.

Name _____

Ruminant Digestive Tract Student Notes

1. The four compartments of the stomach are the _____, _____, _____ and _____.
2. The rumen:
 - May also be called the _____ or _____.
 - Will hold approximately _____ gallons.
 - Is located on the _____ side of the animal.
 - Finger-like projections called _____ are in the rumen.
 - The rumen environment for bacteria is anaerobic, meaning _____.
 - Constitutes about _____ of the stomach's capacity.
3. The reticulum:
 - Commonly called the _____ or _____ stomach.
 - Holds about _____ gallons or _____ % of the stomach's capacity.
 - Main function is to collect small particles and move them to the _____.
4. The omasum:
 - Is _____ in shape.
 - Constitutes about _____ of the stomach capacity.
 - Is called the _____ because of its many folds.
 - The main functions are to _____ and _____.
5. The abomasum:
 - Is called the _____ because it most closely represents the human stomach.
 - Constitutes about _____ of the stomach capacity.
 - Produce _____ acid to aid in digestion.
6. The small and large intestine will absorb nutrients which make their way into the _____.

Ruminant Digestive Tract Student Notes – Answer Key

1. The four compartments of the stomach are the rumen, reticulum, omasum, and abomasum.
2. The rumen:
 - May also be called the fermentation vat or paunch.
 - Will hold approximately 50 gallons.
 - Is located on the left side of the animal.
 - Finger-like projections called papillae in the rumen.
 - The rumen environment for bacteria is anaerobic, meaning no oxygen.
 - Constitutes about 80% of the stomach's capacity.
3. The reticulum:
 - Commonly called the hardware or honeycomb stomach.
 - Holds about 5 gallons or 5 % of the stomach's capacity.
 - Main function is to collect small particles and move them to the omasum.
4. The omasum:
 - Is spherical in shape.
 - Constitutes about 8% of the stomach capacity.
 - Is called the many plies or Butcher's bible because of its many folds.
 - The main functions are to reduce particle size and absorb water.
5. The abomasum:
 - Is called the true stomach because it most closely represents the human stomach.
 - Constitutes about 8% of the stomach capacity.
 - Produces hydrochloric acid to aid in digestion.
6. The small and large intestine will absorb nutrients which make their way into the blood stream.

Lesson Two – Ruminant Digestive Tract

REVIEW: Ruminant Digestive Tract Recap

15-25 Minutes

Purpose: Participants will have a formal assessment on their understanding of the digestive tract, allowing for a good standard on participant understanding.

Materials:

- *Ruminant Digestive Tract Student Worksheet*
- *Ruminant Digestive Tract Student Worksheet – Answer Key*
- *Ruminant Digestive Tract Quiz*
- *Ruminant Digestive Tract Quiz – Answer Key*

Facilitation Steps:

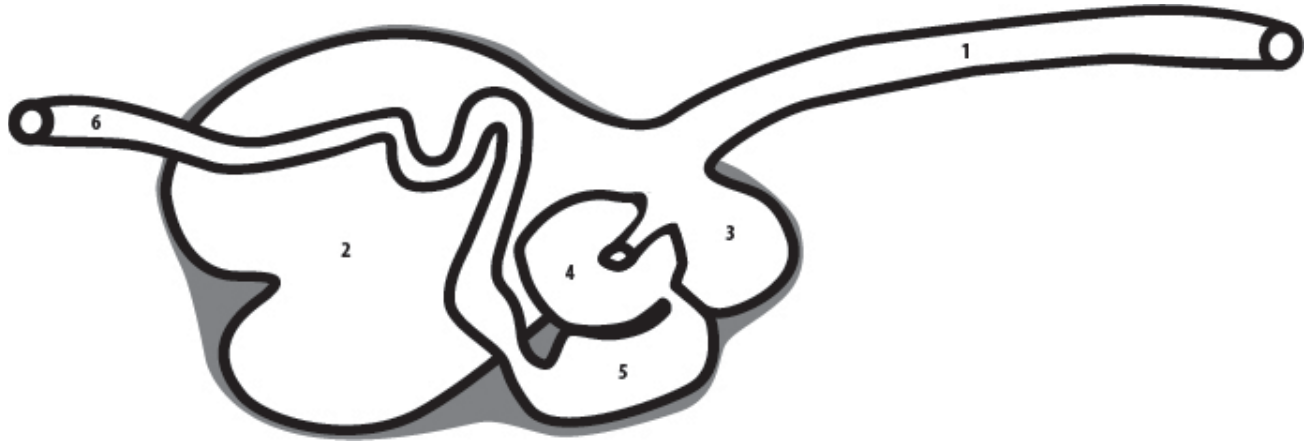
1. Hand out the *Ruminant Digestive Tract Student Worksheet*.
2. Students should complete this worksheet based on what they have from their notes.
3. Either peer grade using answer key as a class or collect worksheets for teacher to grade.

Optional: Have students take *Ruminant Digestive Tract Quiz*

Name _____

Ruminant Digestive Tract Student Worksheet

1-6. Label the diagram below:



1. _____

2. _____

3. _____

4. _____

5. _____

6. _____

MATCHING (7-12)

7. _____ Many Plies

8. _____ Functions to absorb water

9. _____ Honeycomb texture

10. _____ "True Stomach"

11. _____ "Fermentation Vat"

12. _____ Hardware Compartment

A. Abomasum

B. Omasum

C. Reticulum

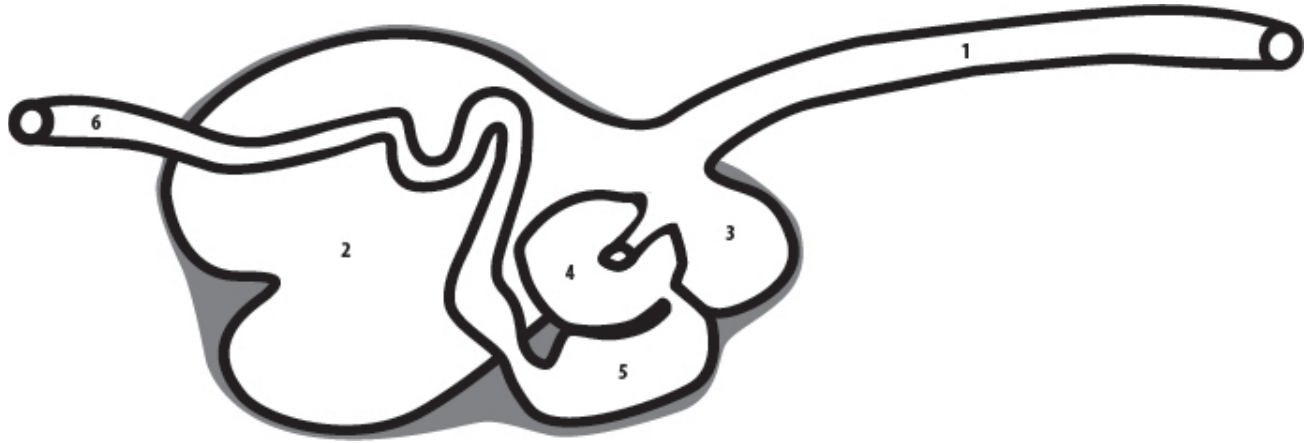
D. Rumen

13. Which compartment has an anaerobic environment for bacteria? _____

14. Where are the most nutrients absorbed into the body? _____

Ruminant Digestive Tract Student Worksheet – Answer Key

1-6. Label the diagram below:



1. Esophagus
2. Ruman
3. Reticulum

4. Omasum
5. Abomasum
6. Small Intestine

MATCHING (7-12)

7. B Many Plies
8. B Functions to absorb water
9. C Honeycomb texture
10. A "True Stomach"
11. D "Fermentation Vat"
12. C Hardware Compartment

- A. Abomasum
- B. Omasum
- C. Reticulum
- D. Rumen

13. Which compartment has an anaerobic environment for bacteria? Rumen
14. Where are the most nutrients absorbed into the body? Small Intestine

Name _____

Ruminant Digestive Tract Quiz

1. List the correct number of each compartment of the ruminant stomach that best answers the statement.

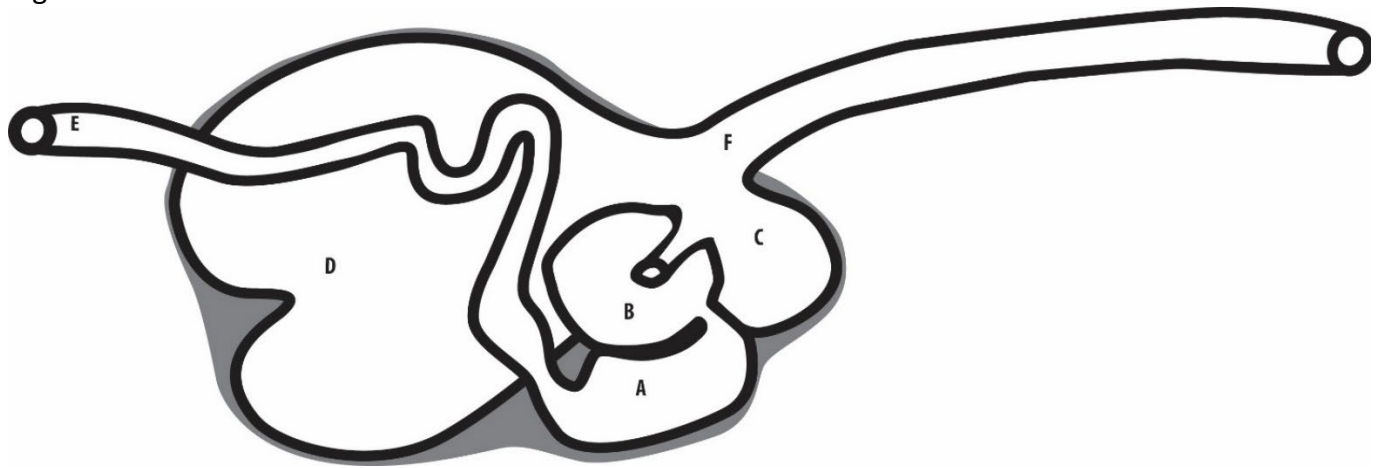
- | | |
|-------------|--------------|
| 1. Abomasum | 3. Reticulum |
| 2. Omasum | 4. Rumen |

- _____ A. Third compartment
- _____ B. Hardware is usually trapped here
- _____ C. The true stomach
- _____ D. Papilla are found in the lining of this compartment
- _____ E. The honeycomb stomach
- _____ F. Oblong and twisted compartment
- _____ G. Water is removed here
- _____ H. Fermentation vat
- _____ I. Color of stomach wall is determined by diet
- _____ J. Contains many folds or layers called "plies"
- _____ K. Enzymes are produced here
- _____ L. Most closely resembles your stomach
- _____ M. Largest compartment of the stomach

2. Which of the following is the primary site of digestion and absorption?

- a) Rumen
- b) Reticulum
- c) Large Intestine
- d) Small Intestine

3. Label the four compartments of the stomach, along with the entry and exit organs, to the digestive tract below:



- A. _____
- B. _____
- C. _____
- D. _____
- E. _____
- F. _____

4. On the diagram above draw the flow of a piece of corn from the ground through the entire digestive process as it travels through the digestive tract.

Ruminant Digestive Tract Quiz – Answer Key

1. List the correct number of each compartment of the ruminant stomach that best answers the statement.

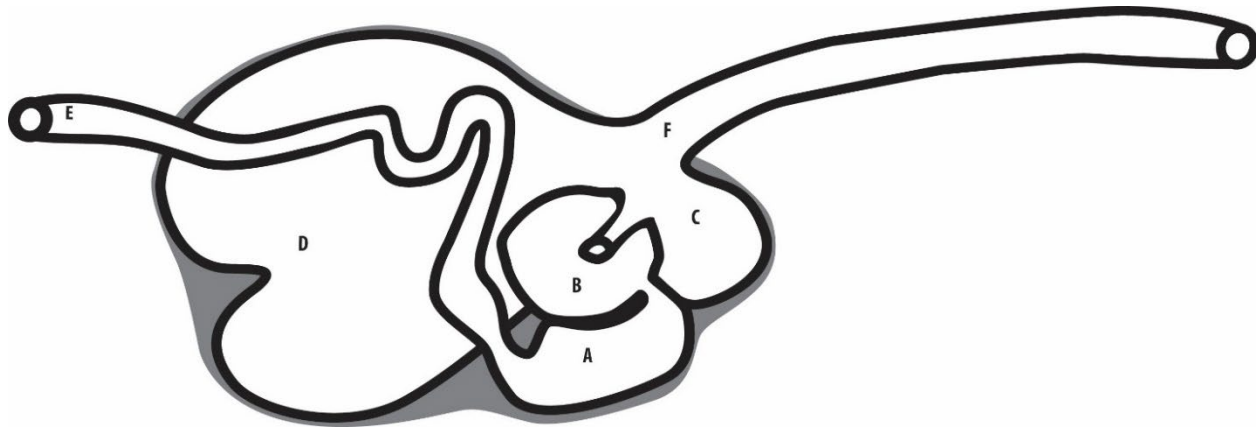
- | | |
|-------------|--------------|
| 1. Abomasum | 3. Reticulum |
| 2. Omasum | 4. Rumen |

- 2 A. Third compartment
- 3 B. Hardware is usually trapped here
- 1 C. The true stomach
- 4 D. Papilla are found in the lining of this compartment
- 3 E. The honeycomb stomach
- 1 F. Oblong and twisted compartment
- 2 G. Water is removed here
- 4 H. Fermentation vat
- 4 I. Color of stomach wall is determined by diet
- 2 J. Contains many folds or layers called “plies”
- 1 K. Enzymes are produced here
- 1 L. Most closely resembles the human stomach
- 4 M. Largest compartment of the stomach

2. Which of the following is the primary site of digestion and absorption?

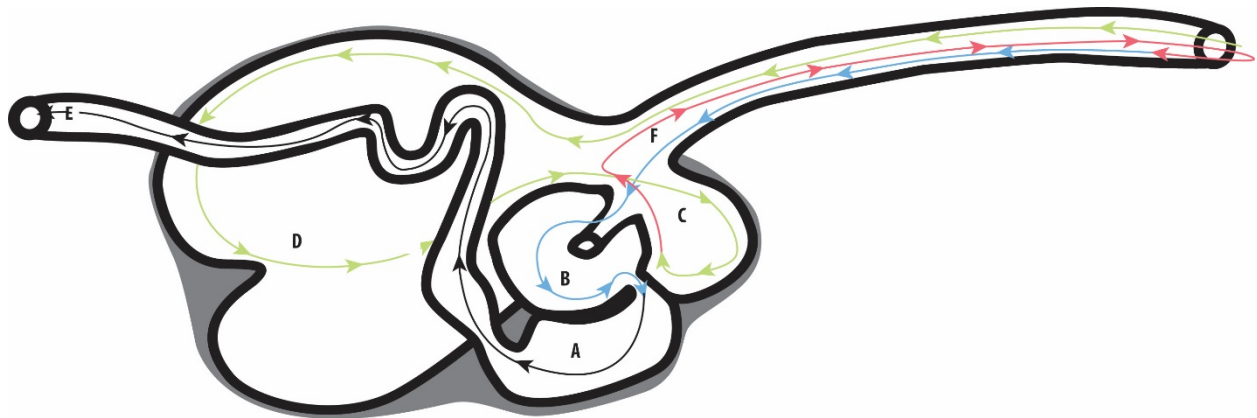
- a) Rumen
- b) Reticulum
- c) Large Intestine
- d) Small Intestine**

3. Label the four compartments of the stomach, along with the entry and exit organs, to the digestive tract below:



- A. Abomasum
- B. Omasum
- C. Reticulum
- D. Rumen
- E. Small Intestine (Intestine)
- F. Esophagus

4. On the diagram above draw the flow of a piece of corn from the ground through the entire digestive process as it travels through the digestive tract.



Lesson Three – Cow and Bull Reproductive Systems

Lesson Overview

This unit introduces terminology relating to male and female reproduction and their respective reproductive tracts including: the components of the tract, their location and their function.

Lesson Objectives

After completing this lesson, participants will be able to:

- Correctly identify terms associated with cow and bull reproduction.
- Name, locate and describe the functions of the parts of male and female reproductive system.
- Identify the primary male and female reproductive structures and their functions.

Lesson at a Glance

Activity	Materials	Preparation	Approximate class time
FOCUS	• <i>Mammal Gestation Game Sheet</i> • Whiteboard/Blackboard • Whiteboard Markers/Chalk	1. <i>Access Mammal Gestation Game Sheet</i>	5 minutes
LEARN	• <i>Bull Reproduction</i> slide presentation • <i>Cow Reproduction</i> slide presentation • <i>Cow and Bull Reproduction Student Notes</i> • <i>Cow and Bull Reproduction Student Notes – Answer Key</i>	1. Prepare to present the <i>Bull Reproduction</i> and <i>Cow Reproduction</i> slide presentations 2. Print/Photocopy <i>Cow and Bull Reproduction Student Notes</i> (one per participant)	30-35 minutes
REVIEW	• <i>Cow Reproduction Quiz</i> • <i>Cow Reproduction Quiz – Answer Key</i> • <i>Bull Reproduction Quiz</i> • <i>Bull Reproduction Quiz – Answer Key</i>	1. Print/Photocopy <i>Cow Reproduction Quiz</i> and <i>Bull Reproduction Quiz</i> (one per participant)	15 minutes

Lesson Three – Cow and Bull Reproduction Systems

FOCUS: Mammal Gestation Overview

5 Minutes

Purpose: Participants will compare and contrast the different gestation periods of different mammals to gain understanding of cow gestation in relation to other mammals.

Materials:

- *Mammal Gestation Game Sheet*

Facilitation Steps:

1. Write a column on the whiteboard labeled “Mammals”.
2. Write the following mammals underneath that column on the whiteboard (cow, dog, horse, cat, human).
3. In another column write down the word “gestation.”
4. Have the students define gestation and then guess how long each gestation period lasts.
5. Write down the correct answer as the students get them correct.

Mammal Gestation Game Sheet

Species	Gestation
Horse (Equine)	11 Months
Cow (Bovine)	9 Months
Human	9 Months
Pig (Porcine)	3 months & 3 months & 3 days
Dog (Canine)	2 Months
Cat (Feline)	2 Months

Lesson Three – Cow and Bull Reproduction Systems

LEARN: Cow and Bull Reproduction Systems

30-35 Minutes

Purpose: Participants will learn the different male and female reproductive systems along with the function each part plays in the reproductive system.

Materials:

- *Bull Reproduction* slide presentation
- *Cow Reproduction* slide presentation
- *Cow and Bull Reproduction Student Notes*
- *Cow and Bull Reproduction Student Notes – Answer Key*

Facilitation Steps:

1. Prepare the *Bull Reproduction* slide presentation and *Cow Reproduction* slide presentation.
2. Hand out the *Cow and Bull Reproduction Student Notes*.
3. Start with the *Bull Reproduction* slide presentation then move to the *Cow Reproduction* slide presentation.
4. Have students fill out the *Cow and Bull Reproduction Student Notes* as you go over the slide presentations.

Name: _____

Cow and Bull Reproduction Student Notes

1. Define the following:

- a. Puberty
- b. Ovulation
- c. Copulation
- d. Fertilization
- e. Conception
- f. Estrous Cycle
- g. Estrus
- h. Gestation
- i. Parturition

2. Complete the chart for each of the following farm animals.

Animal Estrous	Estrous Cycle Length	Estrus Length	Gestation
a. Bovine			
b. Canine			
c. Equine			
d. Feline			

3. Label the following diagram for male reproductive parts:



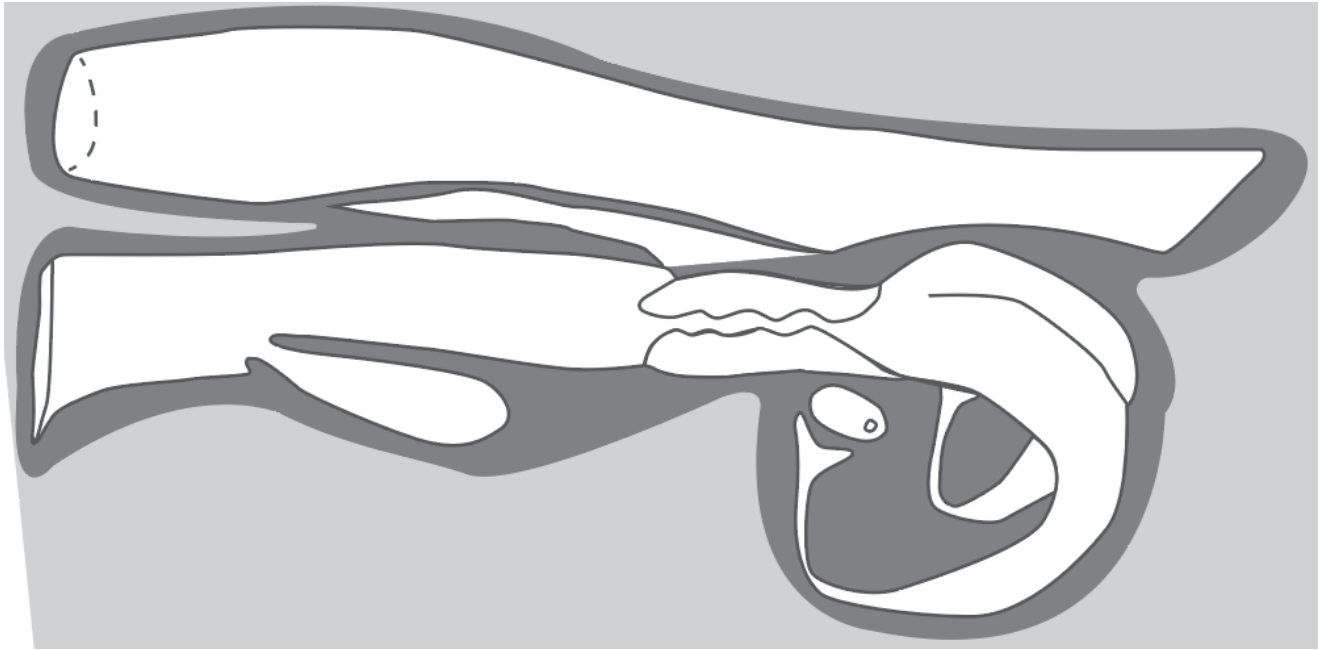
KEY:

- Scrotum
- Testes
- Vas Deferens
- Urethra
- Prostate
- Seminal Vesicles
- Bladder

4. Define the following male reproductive terms:

- a. Scrotum
- b. Testes
- c. Epididymis
- d. Vas deferens
- e. Ampulla
- f. Urethra
- g. Sigmoid flexure
- h. Retractor muscle
- i. Accessory glands
- j. Prostate
- k. Cowper's

5. Label the following diagram for female reproductive parts:



KEY: Anus Vulva Vagina Cervix Uterus Oviducts Ovary

6. Define the following female reproductive terms:

- a. Parturition
- b. Vagina
- c. Vulva
- d. Cervix
- e. Uterus
- f. Oviducts
- g. Ovaries

Cow and Bull Reproduction Student Notes – Answer Key

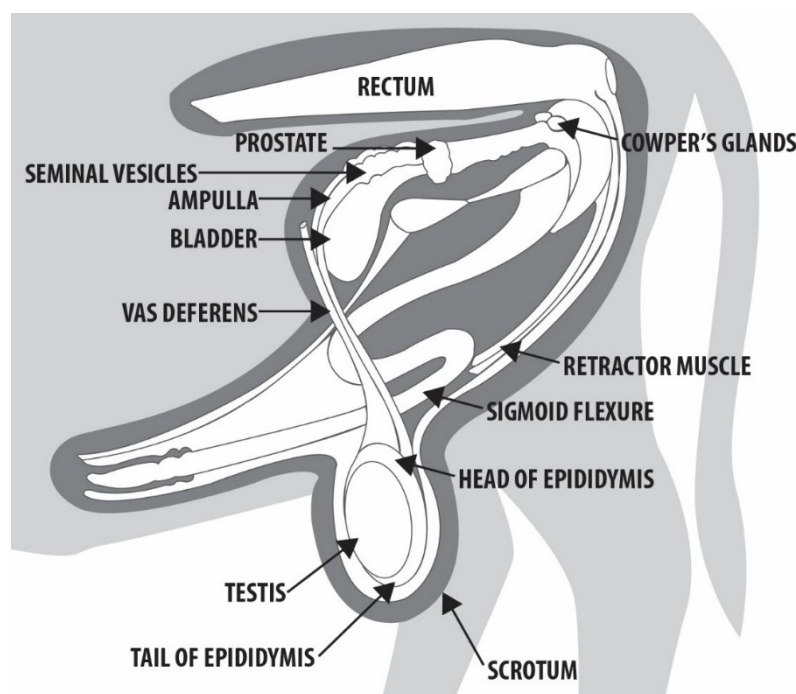
1. Define the following:

- a. Puberty: Sexual maturity
- b. Ovulation: Release of ovum (egg) from ovary
- c. Copulation: The act of mating
- d. Fertilization: Union of male and female sex cells
- e. Conception: Becoming pregnant
- f. Estrous Cycle: Time between when animal is in heat; the entire cycle
- g. Estrus: Actual time animal is in heat, receptive to fertilization
- h. Gestation: Pregnancy
- i. Parturition: The act of giving birth

2. Complete the chart for each of the following farm animals:

Animal	Estrous	Estrous Cycle Length	Estrus Length	Gestation
a. Bovine		19-21 days	15 hours	9 months
b. Canine		6-12 months	2-4 weeks	2 months
c. Equine		19-21 days	5-7 days	11 months
d. Feline		14-21 days	1-7 days	2 months

3. Label the following diagram for male reproductive parts:



KEY:

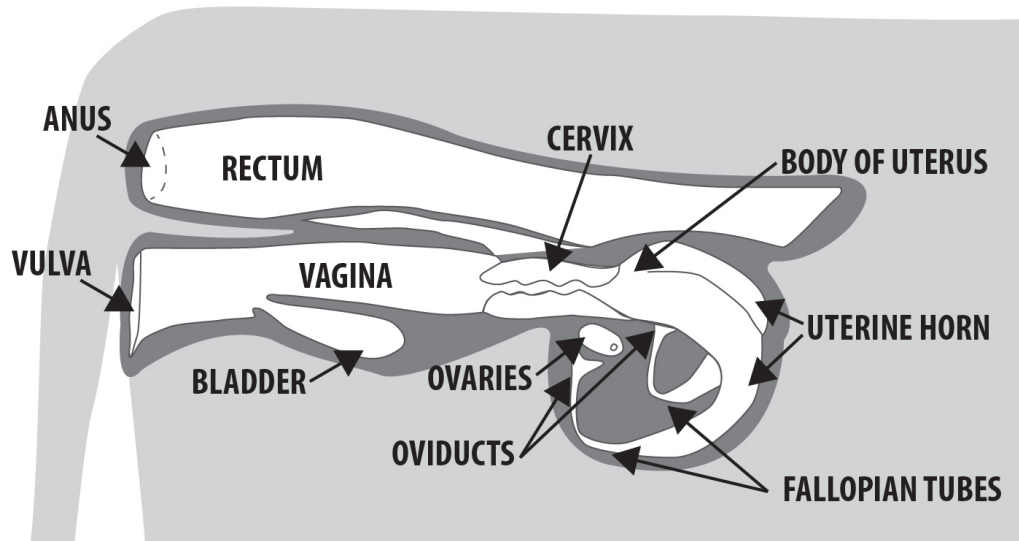
- Scrotum
- Testes
- Vas Deferens
- Urethra
- Prostate
- Seminal Vesicles
- Bladder

4. Define the following male reproductive terms:

- a. Scrotum: Container for the testes external to the body; functions in temperature regulation
- b. Testes: Paired within the scrotum, sperm production factory

- c. Epididymis: Long slender tubule encased- lying along surface of the testes, tight storage, sperm packed so can't swim
- d. Vas deferens: Simple tubule carrying sperm from the epididymis to ampulla or urethra, by peristaltic action
- e. Ampulla: Widened area at juncture of vas deferens and urethra for sperm storage prior to ejaculation; not found in all species
- f. Urethra: Single tubule leading from vas deferens through penis to exit
- g. Sigmoid flexure: Curvature in penis structure of bull & boar allowing for extension to mate
- h. Retractor muscle: Pulls penis back into normal position following elongation
- i. Accessory Glands: (Cowper's and Prostate) glands associated with the male reproductive tract to provide fluids for nutrient source, volume, and protection of the sperm
- j. Prostate: Gland surrounding the neck of the bladder in male mammals and releasing prostatic fluid
- k. Cowper's: Small glands that open into the urethra at the base of the penis and secrete a constituent of seminal fluid

5. Label the following diagram for female reproductive parts:



KEY: Anus Vulva Vagina Cervix Uterus Oviducts Ovary

6. Define the following female reproductive terms:

- a. Parturition: The act of giving birth
- b. Vagina: Structure external to the cervix; accepts penis of male for mating, birth canal
- c. Vulva: Consists of the external genital organs of a female
- d. Cervix: Muscular opening between uterus and vagina; remains reasonably constricted except for relaxation to allow birth
- e. Uterus: Body of uterine structure between cervix & horns; site of implantation
- f. Oviducts: Where sperm meet the ova (egg) and fertilization takes place
- g. Ovaries: Structure containing the reproductive cells (ova); paired

Lesson Three – Cow and Bull Reproduction Systems

REVIEW: Reproduction Systems Recap

15 Minutes

Purpose: Participants will have a formal assessment on the different reproductive systems of a bull and cow.

Materials:

- *Cow Reproduction Quiz*
- *Cow Reproduction Quiz – Answer Key*
- *Bull Reproduction Quiz*
- *Bull Reproduction Quiz – Answer Key*

Facilitation Steps:

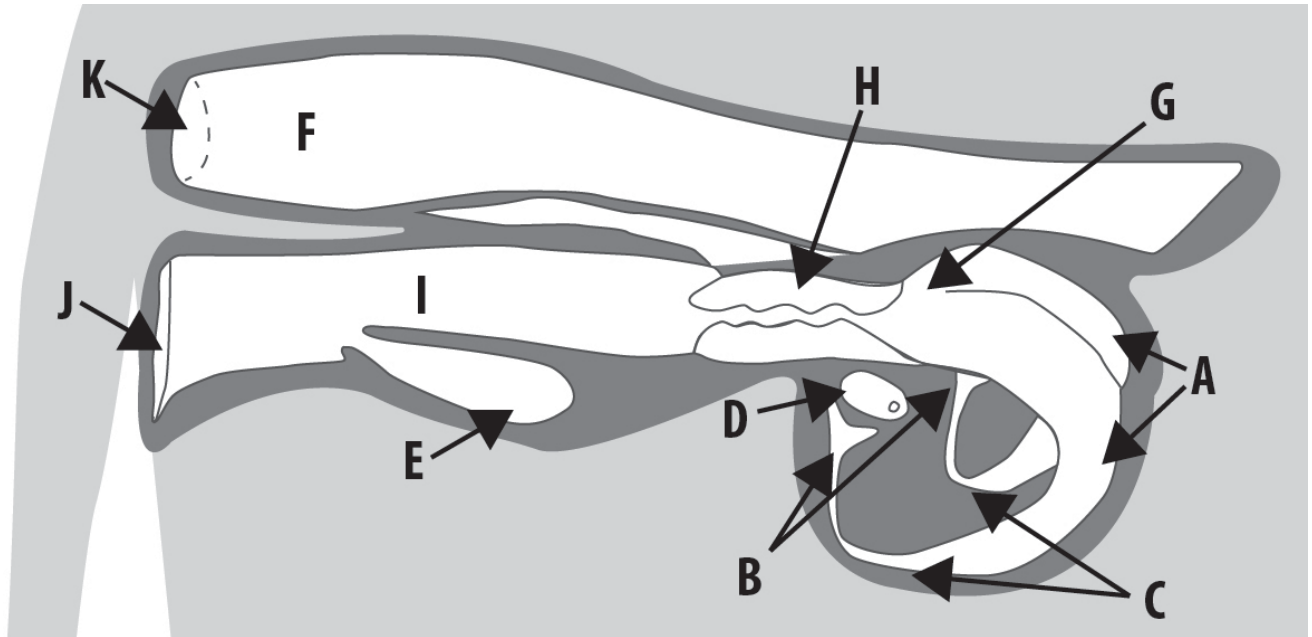
1. Hand out the *Cow Reproduction Quiz* and *Bull Reproduction Quiz*.
2. Have students complete the quizzes.
3. Collect to correct or correct in class.

Optional: Allow *Cow and Bull Reproduction Student Notes* to be used with quizzes

Name _____

Cow Reproduction Quiz

Label and match the following reproductive parts:



1) ____ Vagina

2) ____ Uterine Horn

3) ____ Rectum

4) ____ Vulva

5) ____ Fallopian Tubes

6) ____ Cervix

7) ____ Bladder

8) ____ Body of Uterus

9) ____ Ovary

10) ____ Oviducts

11) ____ Anus

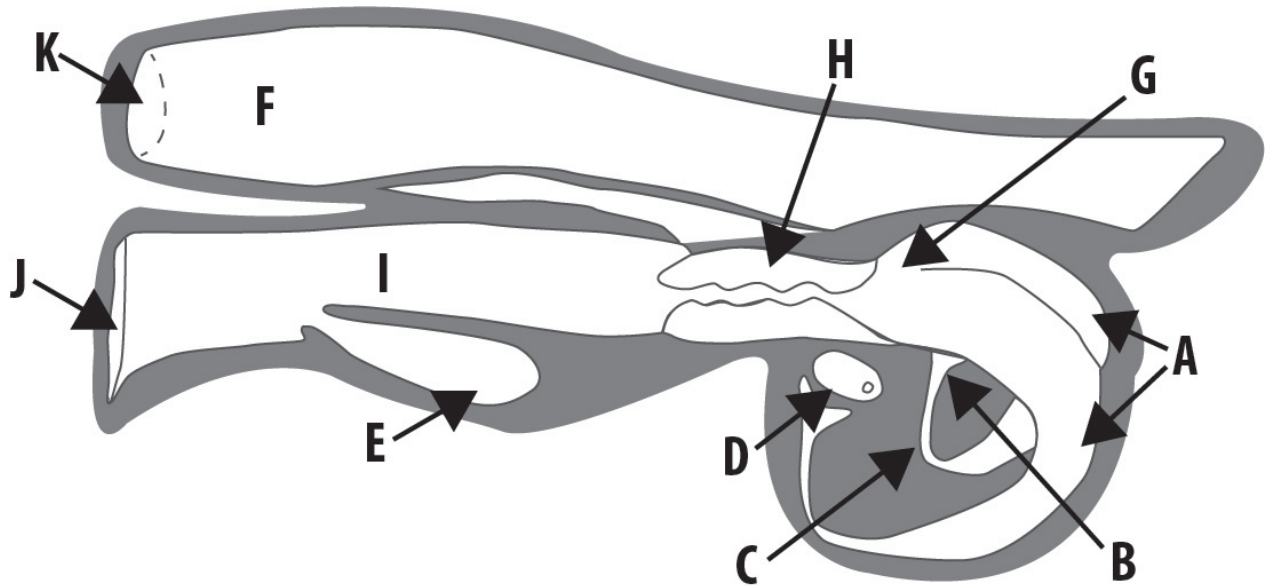
Name _____

Match each part with their correct function:

- | | |
|---------------------------|---|
| 1) _____ Vagina | A) Catches ova after release from ovary |
| 2) _____ Uterine Horn | B) Muscular opening between uterus and vagina |
| 3) _____ Vulva | C) Leads to bladder |
| 4) _____ Oviducts | D) Site for fertilization |
| 5) _____ Cervix | E) Implantation site for litter bearing |
| 6) _____ Body of Uterus | F) Houses penis during intercourse |
| 7) _____ Ovaries | G) Implantation site in non-litter bearing |
| 8) _____ Urethral Opening | H) Egg producing factory |

Cow Reproduction Quiz – Answer Key

Label and match the following reproductive parts:



- 1) I Vagina
- 2) A Uterine Horn
- 3) F Rectum
- 4) J Vulva
- 5) B Fallopian Tubes
- 6) H Cervix

- 7) E Bladder
- 8) G Body of Uterus
- 9) D Ovary
- 10) C Oviducts
- 11) K Anus

Match each part with their correct function:

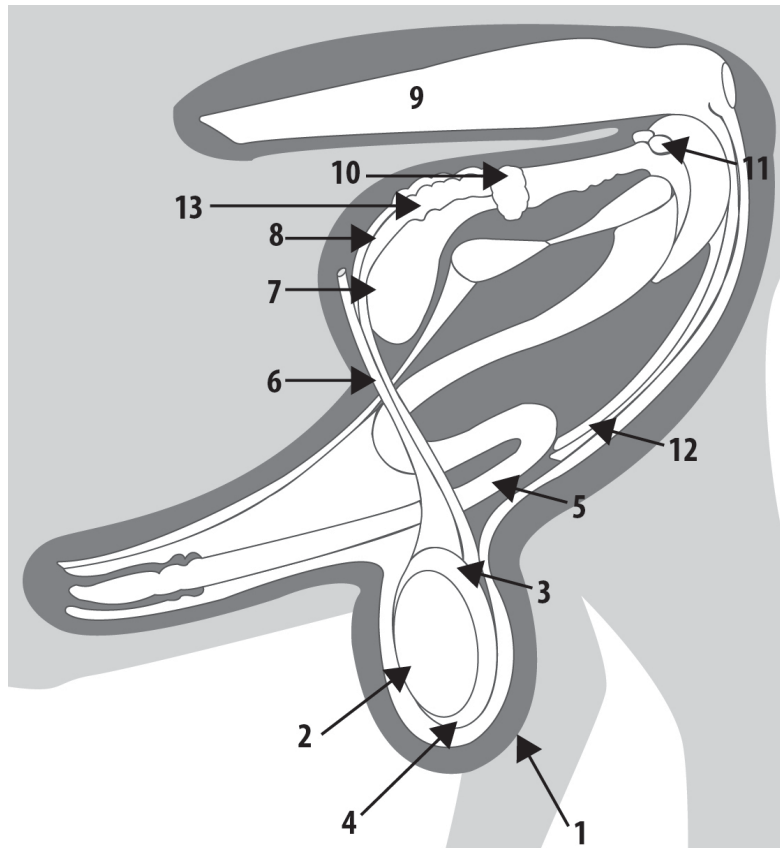
- 1) G Vagina
- 2) F Uterine Horn
- 3) I Vulva
- 4) E Oviducts
- 5) B Cervix
- 6) J Vestibule
- 7) H Body of Uterus
- 8) C Ovaries
- 9) D Urethral Opening

- A) Catches ova after release from ovary
- B) Muscular opening between uterus and vagina
- C) Leads to bladder
- D) Site for fertilization
- E) Implantation site for litter bearing
- F) Houses penis during intercourse
- G) Implantation site in non-litter bearing
- H) Exterior opening to reproductive tract
- I) Egg producing factory

Name _____

Bull Reproduction Quiz

Identify and label the following parts:



- 1) _____
- 2) _____
- 3) _____
- 4) _____
- 5) _____
- 6) _____
- 7) _____
- 8) _____
- 9) _____
- 10) _____
- 11) _____
- 12) _____

- A) Cowper's Glands
- B) Vas Deferens
- C) Head of Epididymis
- D) Testis
- E) Rectum
- F) Tail of Epididymis
- G) Prostate
- H) Bladder
- I) Ampulla
- J) Scrotum
- K) Retractor Muscle
- L) Sigmoid Flexure

Cow Anatomy Curriculum

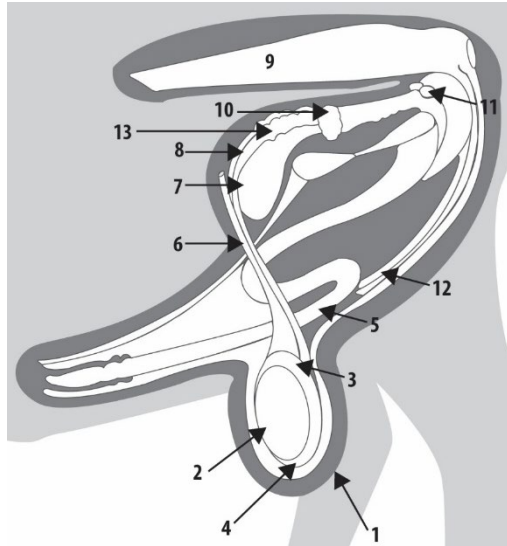
Match each part to their correct function:

- | | |
|---------------------|---------------------|
| A) Cowper's Glands | G) Bladder |
| B) Vas Deferens | H) Ampulla |
| C) Seminal Vesicles | I) Scrotum |
| D) Penis | J) Retractor Muscle |
| E) Rectum | K Testis |
| F) Epididymis | L) Prostate |

- 1) _____ Protects by regulating temperature.
- 2) _____ Tightly packs sperm and keeps them immobile.
- 3) _____ Pulls penis back into original position.
- 4) _____ Secretes some of the liquid volume in semen.
- 5) _____ Used as an exit for solid waste material.
- 6) _____ Storage for sperm before they enter the seminal vesicles.
- 7) _____ Provides a nutrient source for sperm.
- 8) _____ Transports sperm and semen from epididymis to ampulla.
- 9) _____ Male organ for copulation.
- 10) _____ Helps create semen.
- 11) _____ Serves as the sperm production "factory."
- 12) _____ Storage site for liquid waste material.

Bull Reproduction Quiz – Answer Key

Identify and label the following parts:



- 1) J – Scrotum
- 2) D – Testis
- 3) C – Head of Epididymis
- 4) F – Tail of Epididymis
- 5) M – Sigmoid Flexure
- 6) B – Vas Deferens
- 7) H – Bladder
- 8) I – Ampulla
- 9) E – Rectum
- 10) G – Prostate
- 11) A – Cowper's Glands
- 12) K – Retractor Muscle
- 13) L – Seminal Vesicles

- A) Cowper's Glands
- B) Vas Deferens
- C) Head of Epididymis
- D) Testis
- E) Rectum
- F) Tail of Epididymis
- G) Prostate
- H) Bladder
- I) Ampulla
- J) Scrotum
- K) Retractor Muscle
- L) Seminal Vesicles
- M) Sigmoid Flexure

Match each part to their correct function:

- | | |
|---------------------|---------------------|
| A) Cowper's Glands | G) Bladder |
| B) Vas Deferens | H) Ampulla |
| C) Seminal Vesicles | I) Scrotum |
| D) Penis | J) Retractor Muscle |
| E) Rectum | K) Testis |
| F) Epididymis | L) Prostate |

- 1) I Protects by regulating temperature.
- 2) F Tightly packs sperm and keeps them immobile.
- 3) J Pulls penis back into original position.
- 4) L Secretes some of the liquid volume in semen.
- 5) E Used as an exit for solid waste material.
- 6) H Storage for sperm before they enter the seminal vesicles.
- 7) A Provides a nutrient source for sperm.
- 8) B Transports sperm and semen from epididymis to ampulla.
- 9) D Male organ for copulation.
- 10) C Helps create semen.
- 11) K Serves as the sperm production "factory."
- 12) G Storage site for liquid waste material.