

Introduction to Butcher Beef Cuts

Curriculum



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Curriculum Structure

The *Introduction to Butcher Beef Cuts* curriculum is composed of the following lessons. Approximate lesson times are included.

Lesson	Title	Approximate Time
One	Beef Cattle Anatomy	60 minutes
Two	Cattle Harvesting Procedures	60 minutes
Three	Beef Carcass Fabrication	90 minutes
	Total	3 ½ hours

Lesson Structure

Each lesson begins with a Lesson Overview, Lesson Objectives, and a Lesson at a Glance table that lists lesson activities, materials required, suggested preparation steps, and approximate class time.

Lesson Sections

The actual lesson follows the overview, which contains 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 demonstration, or a review of previous lesson information. 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 Cattle Anatomy

Lesson Overview

Learn the basics of beef cattle anatomy so you will understand the parts and pieces that make up the different meat primals. Learn how the major muscle groups function and work on the animal.

Lesson Objectives

After completing this lesson, participants will be able to:

- Understand the basis of anatomy
- Identify the major bones in the skeletal system
- Identify the major muscle muscular system
- Define the functions of the major muscle in a beef animal

Lesson at a Glance

Activity	Materials	Preparation	Approximate class time
FOCUS	• Whiteboard/whiteboard markers • <i>Beef Cattle Anatomy</i> slide presentation	1. Prepare slide 2 of the <i>Beef Cattle Anatomy</i> slide presentation for viewing.	10-15 minutes
LEARN	• <i>Beef Cattle Anatomy Key Terms</i> • <i>Beef Cattle Anatomy Key Terms – Answer Key</i>	1. Prepare the <i>Beef Cattle Anatomy</i> slide presentation for viewing. 2. Print/photocopy <i>Beef Cattle Anatomy Key Terms</i> (one per participant).	30 minutes
REVIEW	• <i>Beef Cattle Anatomy Quiz</i> • <i>Beef Cattle Anatomy Quiz – Answer Key</i>	1. Print/photocopy <i>Beef Cattle Anatomy Quiz</i> (one per participant).	10 minutes

Lesson One – Beef Cattle Anatomy

FOCUS: What is Anatomy?

10-15 minutes

Purpose:

Participants work to understand what anatomy is and the importance of the tie between knowing the anatomy of a bovine and understanding the locations of different meat cuts.

Materials:

- Whiteboard/whiteboard markers
- *Beef Cattle Anatomy* slide presentation

Facilitation Steps:

1. Write the question, “What is anatomy?” on the board.
2. Give the participants a minute or two to write down a definition or think of an answer in their heads.
3. Have a brief discussion on the definition and importance of knowing what anatomy is. Discuss the different meanings that participants give.
4. Next, ask participants, “Why is anatomy important when you are going to cut beef cuts?”
5. Give a few minutes for participants to answer this question. The focus is to have participants start to think about different ideas on why anatomy is important and the anatomy of beef cattle when they are learning about the different cuts of meat.
6. Once you have discussed this, present slide 2 of the *Beef Cattle Anatomy* slide presentation, explaining what anatomy is.

Lesson One – Beef Cattle Anatomy

LEARN: Intro to Beef Cattle Anatomy

30 minutes

Purpose:

Participants will learn and understand the major anatomy that is looked at when creating butcher cuts. This will include an introduction to the skeletal system and muscular system.

Materials:

- *Beef Cattle Anatomy* slide presentation
- *Beef Cattle Anatomy Key Terms* worksheet
- *Beef Cattle Anatomy Key Terms – Answer Key*

Facilitation Steps:

1. Project the *Beef Cattle Anatomy* presentation slides. Discuss each slide with the participants.
2. Have participants fill out the *Beef Cattle Anatomy Key Terms* worksheet while going through the presentation slides.
3. Give participants time to work on the *Beef Cattle Anatomy Key Terms* at the end of the presentation slides and go back over the worksheet if they have questions.

Name: _____ Class: _____

Beef Anatomy Key Terms

Use the *Beef Cattle Anatomy* slide presentation to fill in the following key terms.

1. What is the definition of anatomy?
2. For what structures do ligaments act as a connective tissue?
3. A tendon connects bones with what other structures?
4. What is the purpose of long bones?
5. What is the purpose of flat bones?
6. There are two classifications of muscles. What do they do?

Voluntary muscles:

Involuntary muscles:

7. What are the three types of muscles?

_____ : Muscle of the heart

_____ : Muscle attached to the skeletal system

_____ : Found in arteries, digestive, and reproductive systems

Beef Anatomy Key Terms – Answer Key

Use the *Beef Cattle Anatomy* slide presentation to fill in the following key terms.

1. What is the definition of anatomy?

A branch of biology focusing on identifying and describing the structures of living things

2. For what structures do ligaments act as a connective tissue?

Bones

8. A tendon connects bones with what other structures?

Muscles

3. What is the purpose of long bones?

Support and assist with movement

4. What is the purpose of flat bones?

Protection of vital organs

5. There are two classifications of muscles. What do they do?

Voluntary muscles: **control by the animal**

Involuntary muscles: **not controlled by the animal**

6. What are the three types of muscles?

Cardiac Muscles: Muscle of the heart

Skeletal Muscles: Muscle attached to the skeletal system

Smooth Muscles: Found in arteries, digestive, and reproductive systems

Lesson One – Beef Cattle Anatomy

REVIEW: Beef Cattle Anatomy Quiz

10 minutes

Purpose:

Assess participants to see if they understand the basic features of live cattle anatomy.

Materials:

- *Beef Cattle Anatomy Quiz*
- *Beef Cattle Anatomy Quiz – Answer Key*

Facilitation Steps:

1. Hand out the *Beef Cattle Anatomy Quiz* and give participants 5-7 minutes to answer the questions.
2. You may choose to correct the quiz in class with the answer key or collect the quiz and correct it yourself.

Name: _____

Class: _____

Beef Cattle Anatomy Quiz

1. True or False: Anatomy is a branch of biology that focuses on identifying and describing the skeletal, muscular, and nervous systems.
True False
2. Which functions does the skeletal system provide?
 - A. Support
 - B. Shape
 - C. Protection
 - D. All of the above
3. What is the correct name for the tissue that connects two or more bones?
 - A. Ligament
 - B. Tendon
 - C. Joint
 - D. All of the above
4. What connects muscle and bone?
 - A. Ligaments
 - B. Tendons
 - C. Joints
 - D. All of the above
5. Which bones assist movement?
 - A. Long Bones
 - B. Short Bones
 - C. Flat Bones
 - D. Red Bones
6. How many bones make up the bovine skeletal system?
 - A. 107
 - B. 207
 - C. 307
 - D. 407
7. True or False: The animal controls involuntary muscles and typically uses them for eating and walking.
True False
8. Which tissues is the muscular system composed of?
 - A. Adipose
 - B. Epithelial
 - C. Connective
 - D. Nervous
 - E. All of the above
9. The longissimus dorsi muscle is a _____ muscle.
 - A. Supportive
 - B. Locomotive
10. The serratus ventralis is located in the _____.
 - A. Forequarter
 - B. Hindquarter
 - C. Loin
 - D. Round

Beef Cattle Anatomy Quiz – Answer Key

1. True or False: Anatomy is a branch of biology that focuses on identifying and describing the skeletal, muscular, and nervous systems.
True False
2. Which functions does the skeletal system provide?
A. Support
B. Shape
C. Protection
D. All of the above
3. What is the correct name for the tissue that connects two or more bones?
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B. Short Bones
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6. How many bones make up the bovine skeletal system?
A. 107
B. 207
C. 307
D. 407
7. True or False: The animal controls involuntary muscles and typically uses them for eating and walking.
True **False**
8. Which tissues is the muscular system composed of?
A. Adipose
B. Epithelial
C. Connective
D. Nervous
E. All of the above
9. The longissimus dorsi muscle is a _____ muscle.
A. Supportive
B. Locomotive
10. The serratus ventralis is located in the _____.
A. Forequarter
B. Hindquarter
C. Loin
D. Round

Lesson Two – Cattle Harvesting Process

Lesson Overview

This lesson is intended to help understand the processes of slaughter and explain how cattle join the food chain. The story and inspection outcomes are outlined to teach the audience the process that goes behind making safe and wholesome products. In addition, the by-products of slaughter are outlined as this product also contributes to the economy of cattle and beef producers.

Lesson Objectives

After completing this lesson, participants will be able to:

- Describe the process and steps of slaughter
- Explain the state and federal inspection standards (the types of inspections and the outcomes of inspection)
- Identify the by-products of the slaughtering process

Lesson at a Glance

Activity	Materials	Preparation	Approximate class time
FOCUS	• Pen and paper • Smart devices or computers • <i>Cattle Harvesting Steps</i> worksheet • <i>Cattle Harvesting Steps</i> – Answer Key	1. Print/photocopy <i>Cattle Harvesting Steps</i> worksheet (one per participant).	10-15 minutes
LEARN	• Pen and paper • <i>Cattle Harvesting Steps</i> worksheet • <i>Cattle Harvesting Steps</i> – Answer Key • <i>Meat By-Product Note Sheet</i> • <i>Meat By-Product Note Sheet</i> – Answer Key • <i>Cattle Harvesting</i> slide presentation	1. Print/photocopy <i>Meat By-Product Note Sheet</i> (one per participant). 2. Prepare <i>Cattle Harvesting</i> slide presentation for viewing.	30 minutes
REVIEW	• Pen and paper • <i>Cattle Harvesting Quiz</i> • <i>Cattle Harvesting Quiz</i> – Answer Key	1. Print/photocopy <i>Cattle Harvesting Quiz</i> (one per participant).	10-15 minutes

Lesson Two – Cattle Harvesting Process

FOCUS: Cattle Harvesting Steps

10-15 minutes

Purpose:

Participants will work in groups or on their own to identify the different stages of the cattle harvesting process. Allow students to use smart devices or computers to determine what the different steps in cattle harvest include.

Materials:

- Pen and paper
- Smart devices or computers
- *Cattle Harvesting Steps* worksheet
- *Cattle Harvesting Steps* – Answer Key

Facilitation Steps:

1. Allow participants 10-15 minutes to do research and complete the *Cattle Harvesting Steps* worksheet.

Name: _____ Class: _____

Cattle Harvesting Steps

Research and explain the following eight cattle harvesting steps:

1. Animal Transportation
2. Antemortem Inspection
3. Stunning
4. Exsanguination
5. Hide & Head Removal
6. Evisceration
7. Carcass Splitting
8. Carcass Chilling

Cattle Harvesting Steps – Answer Key

Research and explain what the following eight cattle harvesting steps:

1. Animal Transportation

Transporting the animal to the slaughterhouse from a ranch, farm, or feedlot

2. Antemortem Inspection

Identifying if an animal is fit or not for human consumption

3. Stunning

Stunned by a mechanical stunner, making the animal unconscious

4. Exsanguination

Act of draining blood from the animal, done by cutting the main blood vessels of the neck

5. Hide & Head Removal

Act of removing the hide and head from the carcass

6. Evisceration

Removal of the internal organs

7. Carcass Splitting

Splitting the carcass vertically down the backbone

8. Carcass Chilling

Putting the carcass in the cooler or hot box to remove the heat from the carcass without freezing the meat

Lesson Two – Cattle Harvesting Process

LEARN: Intro to the Cattle Harvesting Process

30 minutes

Purpose:

Participants will use their cattle harvesting process worksheet from the Focus section of the lesson. They will be taking notes on the different steps in the slaughtering or harvesting process.

Materials:

- Pen and paper
- *Cattle Harvesting Steps* worksheet
- *Meat By-Product Note Sheet*
- *Meat By-Product Note Sheet – Answer Key*
- *Cattle Harvesting* slide presentation

Facilitation Steps:

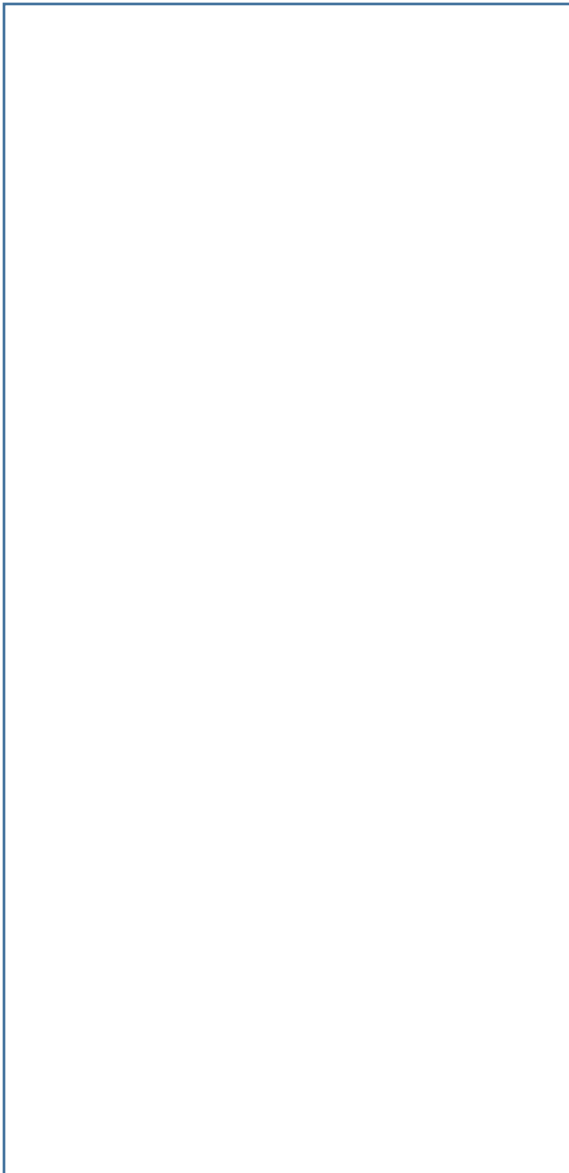
1. Prepare the *Cattle Harvesting* slide presentation for viewing.
2. Present the slides on cattle harvesting steps.
3. Have students use their *Cattle Harvesting Steps* worksheet for taking notes on slides 2-23 and to check if they were on the right track with their research.
4. Pass out the *Meat By-Product Note Sheet* for students to take notes as you go through slides 24-28.

Name: _____ Class: _____

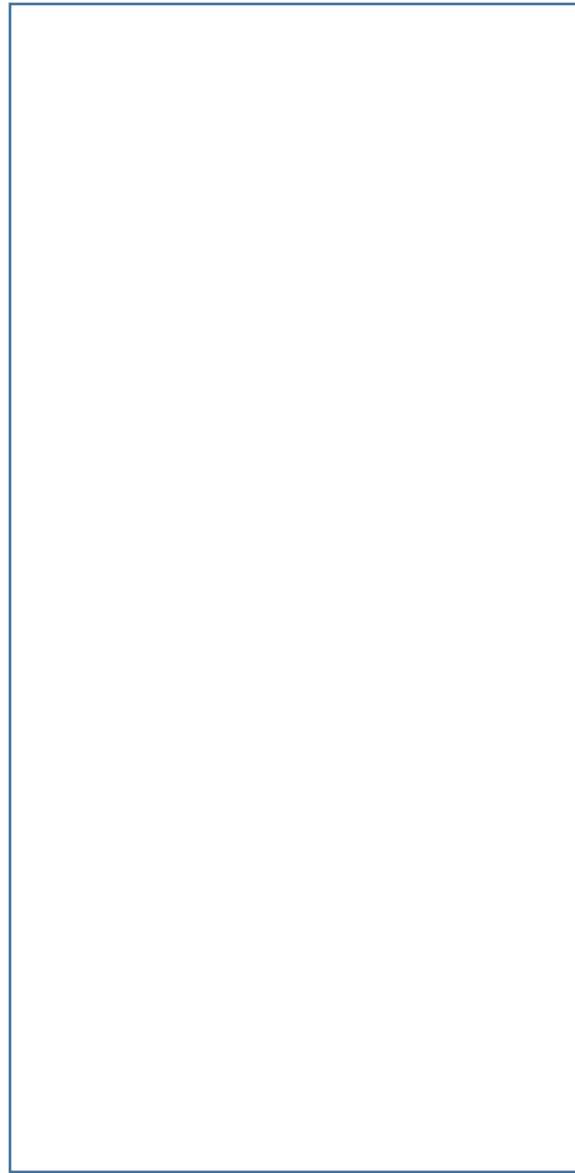
Meat By-Product Note Sheet

Fill in the charts below by separating edible and inedible products when processing cattle.

Edible Products



Inedible Products



Meat By-Product Note Sheet – Answer Key

Fill in the charts below by separating edible and inedible products when processing cattle.

Edible Products

Tongue

Heart

Liver

Kidneys

Cheek meat/head meat

Rumen

Intestines

Brain (under 30 months of age, not sold in the US)

Inedible Products

Lungs

Tallow (fat)

Water

Solids

Lesson Two – Cattle Harvesting Process

REVIEW: Cattle Harvesting Process Quiz

10 minutes

Purpose:

Assess participants on the key points of the cattle harvesting process.

Materials:

- Pen and Paper
- *Cattle Harvesting Quiz*
- *Cattle Harvesting Quiz – Answer Key*

Facilitation Steps:

1. Hand out the *Cattle Harvesting Quiz* and give participants 5-10 minutes to complete.

Optional: You can have students use their notes for this assessment, depending on your assessment desires.

2. You may choose to correct the quiz in class with the answer key, or collect the quiz and correct it yourself.

Name: _____ Class: _____

Cattle Harvesting Quiz

1. Ancient meat inspection instructions were typically associated with which activity?
2. The FMIA of 1906 started what three types of inspection?
3. Name the three classes of approved pre-slaughter stunning methods.
4. Which pathogens were targeted for sampling starting in 1996?
5. List the potential outcomes for antemortem and postmortem inspection.
6. Name the methods of mechanical stunning.
7. The pluck consists of which organs?
8. List the 4 Ds associated with antemortem inspection.
9. What step is the most stressful and dangerous for the animal as it relates to cattle slaughter?
10. What does FMI stand for?

Cattle Harvesting Quiz – Answer Key

1. Ancient meat inspection instructions were typically associated with which activity?

Religious rules

2. The FMIA of 1906 started what three types of inspection?

Antemortem, postmortem, product

3. Name the three classes of approved pre-slaughter stunning methods.

Mechanical, electrical, chemical

4. Which pathogens were targeted for sampling starting in 1996?

Escherichia coli*, *Salmonella species*, *Listeria monocytogenes

5. List the potential outcomes for antemortem and postmortem inspection.

Antemortem: U.S. Condemned, U.S. Suspect

Postmortem: U.S. Retained, U.S. Inspected and Condemned, U.S. Inspected and Passed

6. Name the methods of mechanical stunning.

Handheld pneumatic gun or a blank pistol cartridge

7. The pluck consists of what organs?

Heart, lung, and trachea

8. List the 4 Ds associated with antemortem inspection.

Down, disable, diseased, and dead

9. What step is the most stressful and dangerous for the animal as it relates to cattle slaughter?

Transportation

10. What does FMI stand for?

Feces, milk, or ingesta

Lesson Three – Beef Carcass Fabrication

Lesson Overview

Understand and learn the major primal cuts of the beef carcass. Be able to identify different beef cuts and know what they are used for regarding retail cuts and cooking.

Lesson Objectives

After completing this lesson, participants will be able to:

- Identify the eight major primal cuts
- Identify from which wholesale cut the retail cut comes from
- Identify the major muscle in the retail cuts

Lesson at a Glance

Activity	Materials	Preparation	Approximate class time
FOCUS	• Pen or pencil • <i>Livestock Harvesting Vocabulary</i> worksheet • <i>Livestock Harvesting Vocabulary</i> – Answer Key	1. Print/photocopy <i>Livestock Harvesting Vocabulary</i> worksheet (one per participant).	10 minutes
LEARN	• Projector and projector screen • Butcher Beef Cut Models • <i>Beef Carcass Fabrication</i> slide presentation	1. Prepare the <i>Beef Carcass Fabrication</i> slide presentation for viewing.	40 minutes
REVIEW	• Pen or pencil • <i>Beef Carcass Fabrication Quiz</i> • <i>Beef Carcass Fabrication Quiz</i> – Answer Key • Butcher Beef Cut Models	1. Print/photocopy <i>Beef Carcass Fabrication Quiz</i> (one per participant).	10-30 minutes

Lesson Three – Beef Carcass Fabrication

FOCUS: Livestock Harvesting Vocabulary

10 minutes

Purpose:

Participants will work in groups to complete a matching worksheet, testing their knowledge of the beef carcass fabrication.

Materials:

- Pen or pencil
- *Livestock Harvesting Vocabulary* worksheet
- *Livestock Harvesting Vocabulary* – Answer Key

Facilitation Steps:

1. Give participants 5-10 minutes to complete the *Livestock Harvesting Vocabulary* worksheet individually or in groups.
2. Correct the worksheet in class after students are have completed the worksheet.

Name: _____ Class: _____

Livestock Harvesting Vocabulary

Match each key term with the correct definition.

KEY TERMS

____: Middle Meat

____: Marbling

____: Carcass

____: Sub Primal Cuts

____: Brisket

____: Shank

____: Primal

____: Chuck

DEFINITIONS

- A. Meat that comes from the shoulder of a beef carcass
- B. Larger cuts of meat
- C. Smaller cuts of meat obtained from wholesale cuts and usually sold boneless
- D. The dead body of an animal that is intended to be used for human food
- E. An inexpensive boneless cut of beef ideal for BBQ
- F. Meat from the lower portion of leg of a beef carcass
- G. Intramuscular fat
- H. Rib and loin

Livestock Harvesting Vocabulary – Answer Key

Match each key term with the correct definition.

KEY TERMS

H: Middle Meat

G: Marbling

D: Carcass

C: Sub Primal Cuts

E: Brisket

F: Shank

B: Primal

A: Chuck

DEFINITIONS

- A. Meat that comes from the shoulder of a beef carcass
- B. Larger cuts of meat
- C. Smaller cuts of meat obtained from wholesale cuts and usually sold boneless
- D. The dead body of an animal intended to be used for human food
- E. An inexpensive boneless cut of beef ideal for BBQ
- F. Meat from the lower portion of leg of a beef carcass
- G. Intramuscular fat
- H. Rib and loin

Lesson Three – Beef Carcass Fabrication

LEARN: Intro to Beef Carcass Fabrication

40 minutes

Purpose:

Participants will learn about the different beef primals and the sub-primal parts of the animal.

Materials:

- Projector and projector screen
- Butcher Beef Cut Models
- *Beef Carcass Fabrication* slide presentation

Facilitation Steps:

1. Go through the *Beef Carcass Fabrication* slide presentation.
2. While you are going through each slide, use the Butcher Beef Cut Models to show in person what the different cuts look like.
3. Have students handle the cuts on the models while review the cuts on the presentation slides. Allow for this to be a very hands-on part of the lesson.
4. Use the model to demonstrate where different cuts take place and also where you can show the connections of the skeletal and muscular system in relation to other parts.

Lesson Three – Beef Carcass Fabrication

REVIEW: Beef Carcass Fabrication Quiz

10-30 minutes

Purpose:

Participants will complete the Beef Carcass Fabrication Quiz and use the Butcher Beef Cut Models to understand the different cuts of beef.

Materials:

- Pen or pencil
- *Beef Carcass Fabrication Quiz*
- *Beef Carcass Fabrication Quiz – Answer Key*
- Butcher Beef Cut Models

Facilitation Steps:

1. Give participants 10-15 minutes to answer the questions on the *Beef Carcass Fabrication Quiz*.
2. During or after the quiz, allow participants to look at the different cuts and locations of the bones, muscles, ligaments, and primal cuts on the Butcher Beef Cut Models.
3. You may choose to correct the quiz in class with the answer key, or collect the quiz and correct it yourself.

Name: _____ Class: _____

Beef Carcass Fabrication Quiz

1. What is the primary determinant of beef quality grade?
 - A. Marbling
 - B. Firmness
 - C. Color of lean
 - D. Maturity
2. Which of the following is not a factor used to determine yield grade?
 - A. Hot carcass grade
 - B. Size of the ribeye muscle
 - C. Texture
 - D. Amount of external fat
3. Which of the following is not a quality grade for young beef?
 - A. Prime
 - B. Choice
 - C. Cutter
 - D. Select
4. Which beef cut is inexpensive, often used to feed a large number of people, and typically is smoked and slow-cooked?
 - A. Shank
 - B. Round
 - C. Loin
 - D. Brisket
5. The chuck is separated in between which two ribs?
 - A. 1st & 2nd
 - B. 4th & 5th
 - C. 5th & 6th
6. Which of the following is not a retail cut from the loin?
 - A. Ball tip
 - B. Tri-tip
 - C. NY strips
 - D. Ribeye steaks
7. True or False: Retail cuts from the round are extremely lean and tender.
True False
8. A boneless ribeye roll is known as the ____
 - A. 103 rib
 - B. 107 rib
 - C. 112 rib
 - D. 109 rib
9. True or False: The tomahawk steak is a ribeye steak with the rib left on.
True False
10. True or False: The forequarter and hindquarter are separated at the 12th and 13th rib.
True False

Beef Carcass Fabrication Quiz – Answer Key

1. What is the primary determinant of beef quality grade?
A. Marbling
B. Firmness
C. Color of lean
D. Maturity
2. Which of the following is not a factor used to determine yield grade?
A. Hot carcass grade
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A. Shank
B. Round
C. Loin
D. Brisket
5. The chuck is separated in between which two ribs?
A. 1st & 2nd
B. 4th & 5th
C. 5th & 6th
6. Which of the following is not a retail cut from the loin?
A. Ball tip
B. Tri-tip
C. NY strips
D. Ribeye steaks
7. True or False: Retail cuts from the round are extremely lean and tender.
True **False**
8. A boneless ribeye roll is known as the ____
A. 103 rib
B. 107 rib
C. 112 rib
D. 109 rib
9. True or False: The tomahawk steak is a ribeye steak with the rib left on.
True False
10. True or False: The forequarter and hindquarter are separated at the 12th and 13th rib.
True False