



Math



Literacy

THE BEEF JOURNEY

Grade Level

4-8

Length of Lesson

45 minutes

Objective

Students will be able to describe the basic life cycle of beef cattle and use math skills to solve problems related to cattle production.

Materials Needed

- Cattle life-cycle cards or pictures
- Student worksheets
- Colored pencils
- Calculator (optional)
- Paper

Standards

Common Core

CCSS.ELA-LITERACY.SL.3-5.4; CCSS.ELA-LITERACY.RI.3-5.7

NGSS

3-LS4-4; 5-LS1-1; MS-LS1-7

Lesson Summary

This lesson gives students a close-up look at beef production. Students will discover it involves many steps, from the birth and care of a calf to feeding, animal health, processing, and getting beef to consumers.

Suggested Sequence of Events:

1. Set Up: Print all materials or have ready on slides.
2. Read through the IAITC Beef Ag Mag/Reader series at agintheclassroom.org.
3. Complete the activity following the procedures:
 - Engage: Ask students, “How does a calf become the beef we find at the grocery store or eat at a restaurant?” Allow students to share what they already know about cattle and beef production.
 - Introduce Cattle: Explain that beef cattle go through several stages as they grow. Review the vocabulary terms. Discuss how cattle may move from pasture to other stages of production as they grow.
 - Complete the Beef Journey Activity: Provide students with the cattle life-cycle pictures and descriptions. Have students complete the activity by arranging the pictures and descriptions in the correct order to create a beef cattle timeline. Once students have completed their timelines, review the sequence as a class.
 - Discuss Cattle Care: Explain that farmers work to keep cattle healthy and well cared for throughout their lives. Discuss the importance of proper nutrition, clean water, veterinary care, safe handling, and appropriate living conditions. Ask students to identify ways farmers can care for cattle.
 - Complete the Cattle Diet Activity: Review the different diets provided for the calf and steer. Have students complete the activity by coloring the feed buckets to represent the percentage of corn, soybean meal, and hay in each animal's diet. Discuss why cattle may have different nutritional needs as they grow.
 - Complete the Math Activity: Have students complete the math activity using information from the lesson. Students should show their work as they solve problems involving gestation, calf growth, cattle transportation, and cattle feed rations.
- See Teacher Resources for more extensions.

TEACHER RESOURCES

Extension Ideas

- Beef From Farm to Table
 - Have students choose a beef product, such as ground beef, steak, beef jerky, or a hamburger. Students create a flowchart showing the steps involved in getting that product from cattle production to the consumer.
- Cattle Care Research
 - Students research one aspect of cattle care—nutrition, water, health, housing, handling, or transportation—and create a one-page fact sheet.
- Career Connection
 - Have students investigate careers involved in beef production, including:
 - Cattle farmer/rancher
 - Veterinarian
 - Animal nutritionist
 - Livestock truck driver
 - Meat scientist
 - Food safety specialist
 - Meat processor
 - Food inspector
 - Butcher/meat cutter
 - Agricultural educator
- ELA Extension
 - Have students write a short response to:
 - “What would happen if one step in the beef production chain were missing?”
 - They should identify the step and explain how it could affect farmers, cattle, businesses, or consumers.
- Invite a beef cattle farmer into your classroom to talk with your students!
- Learn more about beef by-products.
- Learn about the history of cattle in the United States.
- Have students share their favorite beef recipes.
- Learn about what cattle eat and how they are cared for by farmers and ranchers.
- Research cattle breeds in the United States and compare to cattle breeds around the world.
- Go to agintheclassroom.org to contact your County Literacy Coordinator for free classroom sets of our Ag Mags!



THE BEEF JOURNEY

Activity

CARING FOR CATTLE

Draw a line from the cattle need to an example of how a farmer can meet that need.

Cattle Need	Example
Nutrition	Clean, fresh water
Water	Proper handling
Health	Veterinary care
Safety	Appropriate space and shelter
Living Conditions	Balanced Feed

FARMER CARE CHALLENGE

List three more things a farmer can do to help keep cattle healthy and well cared for.

- 1** **ANSWERS WILL VARY!**
clean water
- 2** provide inside and outside space
- 3** healthy food

CATTLE DIET

Did you know that just like humans cattle have different nutritional needs. Depending on their age, size and living conditions, cattle eats lots of different foods.

Here are some sample diets, Fill in the buckets with different colors to signify the types of feed found in their diet.

KEY:



Hay/Forage



Corn



Soybean Meal



CALF

40% Hay/Forage
40% Corn
20% Soybean Meal



STEER

20% Hay/Forage
70% Corn
10% Soybean Meal



HEIFER

50% Hay/Forage
30% Corn
20% Soybean Meal



COW

60% Hay/Forage
25% Corn
15% Soybean Meal

CATTLE DIET

In a cows diet, corn provides energy, hay/forage provides fiber, and soybean meal is a source of protein. Farmers might even add in more vitamins like you have at home!

THINK ABOUT IT...

1. Why might a steer need a different ration than a young calf?

Steers are used for meat. So a young calf needs different nutrients than those.

2. Why is it important for farmers to plan cattle diets carefully?

to make sure they are getting all the right nutrients

3. Which of the four diets would you prefer?

answers will vary

4

A steer receives 50 pounds of feed. Using the example finishing ration:

- 70% corn
- 20% hay
- 10% soybean meal

How many pounds of each ingredient are in the ration?

• **CORN**

$$50 \times .7 = 35$$

• **HAY**

$$50 \times .2 = 10$$

• **SOYBEAN MEAL**

$$50 \times .1 = 5$$



MOO MATH

Show all your work when completing the problems.

1

A cow's gestation period is approximately 9 months. **About how many weeks is that?** (assume 1 month is 4 weeks)

$$4 \text{ weeks} \times 9 \text{ months} = 36 \text{ weeks}$$

2

A calf weighs 90 pounds at birth. Several months later, the calf weighs 450 pounds. **How many pounds did the calf gain?**

$$450 - 90 = 360 \text{ pounds}$$

3

If a cattle truck can hold 50,000 pounds of cattle, and the cattle each weigh 1,300 pounds, **how many cattle will the truck hold?** Round down to the nearest whole number.

$$50,000 / 1,300 = 38 \text{ cattle}$$

5

If a steer weighs 1,000 pounds and consumes 2 percent of his weight, **how many pounds does the steer eat?**

$$0.2 \times 1,000 = 200 \text{ pounds}$$

Using your answer from number 5, **how much of this is soybean and how much is corn?** (use previous page for help)

200 pounds total
Soybean: $.10 \times 200 = 20$ pounds
Corn: $.70 \times 200 = 140$ pounds

CATTLE LIFE CYCLE

1



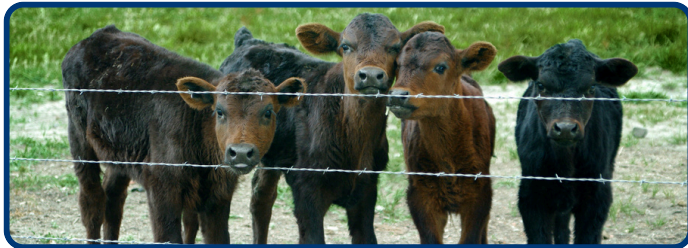
A calf is born after developing inside its mother for about **nine months**. The calf needs proper nutrition, clean water, shelter, and careful observation as it begins life.

2



The calf grows and becomes stronger. It may receive milk from its mother and eventually begin eating grass, hay, and other feeds. Farmers monitor calves to make sure they are healthy and growing properly.

3



As a calf grows, it gradually transitions away from its mother's milk and relies more heavily on feed and forage. The timing of weaning can vary between farms.

4

Young cattle continue to grow. Depending on the farm, cattle may spend time grazing pasture or receiving feed in another type of production system. Farmers continue to monitor animal health and nutrition.



Some cattle enter a finishing phase where they receive a carefully planned, energy-rich ration to help them reach their target market weight. The ration may include ingredients such as corn, hay, and soybean meal.



Market weight of cattle is around 1,400 - 2,100 lbs. The average age is between 18-22 months. A truck takes the cattle for processing. Farmers consider animal health, safety, and handling when moving cattle.



At a processing facility, cattle are processed into beef products. The meat is prepared and packaged so it can move through the food supply chain.



5

6

7

8



Beef products are transported to places such as grocery stores, restaurants, and other food businesses. Consumers purchase beef as part of meals and other food products.



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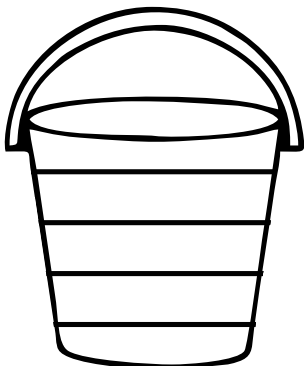
Hay/Forage



Corn

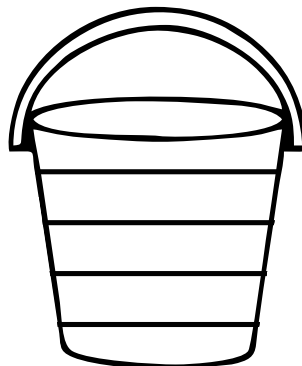


Soybean Meal



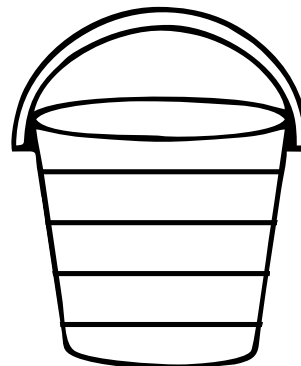
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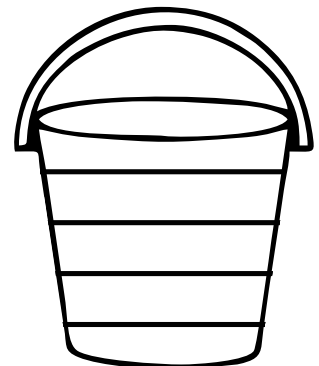
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