A Day in the Life of a Kansas Dairy Farmer!

Suggested Grade Level: 3-5

Time: 6, 30-40 minute activities

Subject: Mathematics, Operations and Algebraic Thinking, Numbers and Operations, English Language Arts, Informational Reading, Fluency, Speaking and Listening, Agriculture, Dairy

Overview: Got milk? This lesson teaches students about the daily life of Kansas dairy farmers through hands-on activities and discussions. Students explore how farmers care for cows, grow crops, fix equipment, and protect the environment to produce fresh milk, all while learning about hard work, responsibility, and stewardship.

Objectives:

1. Describe the daily duties and responsibilities of a dairy farmer.
2. Explain the ways dairy farmers care for their animals and land.

Background Information:

Kansas dairy farmers bring us fresh milk every day. They work hard to care for dairy animals. They milk cows, feed them proper nutrition, ensure animals have access to fresh water, bottle feed calves, provide clean bedding, prepare fields, plant crops, check on crops, harvest crops, repair broken machinery, assist animals with medical needs, manage calving, and promote general health and wellness. Kansas dairy farmers' schedules include, but are not limited to, working with dairy nutritionists, veterinarians, health inspectors, milk truck drivers, and salespeople. They build terraces in sloping fields to save topsoil and lay drain tile. They plant cover crops in between rotations to improve soil health. The bottom line is that Kansas dairy farmers work hard so we can have milk! They work hard to get their land in the best shape possible to raise the best crops, feed their animals with the best nutrition, and give us the freshest milk possible!

One cow weighs 1,500 pounds and produces 2,500 gallons per year. That is 8 gallons of milk, 3.3 pounds of butter, or 7.0 pounds of cheese daily (Silver). A high-producing cow can produce 11.6 gallons of milk a day. That is 5 lb of butter or 10 pounds of cheese. One cow consumes the following daily: 20 pounds of grain and concentrated feed, 35 gallons of water (about a bathtub full), and 35 pounds of hay or silage. A cow converts roughage and grains not consumed by people and turns them into high-energy foods. Cows can digest it because they have four compartments in the stomach (Nebraska). Dairy farmers use a feed mix called TMR, which stands for "Total

Mixed Ration," to ensure that dairy cows get a balanced diet. Dairy farmers create TMRs with the optimal combination of forage and feed, thereby providing their cows with a balanced array of nutrients (Eckelkamp). Cows can digest it because they have four compartments in the stomach: *rumen, reticulum, omasum, and abomasum.*

Cover crops are planted in fields between crop rotations to build soil health because organic matter from the live roots of plants makes the soil airy and helps with water quality. Cover crops also conserve water and help keep soil from washing away. Farmers plant cool-season cover crops, such as wheat, oats, and barley, or legumes, including field peas, clover, alfalfa, chickpeas, and soybeans, during the cold months. They plant warm-season cover crops in the warm months, including sunflowers, buckwheat, squash, chicory, millet grasses, grain sorghum, and corn. Other cover crops include radishes, turnips, beets, and carrots.

Kansas Connections:

Kansas, which ranks 16th for overall milk production in the U.S., is home to 173,000 milk cows that live on more than 220 dairy farms. Kansas has six plants that produce dairy products. These dairy farms and plants are crucial to the Kansas economy, as they support local businesses and contribute to the community's tax base. This is particularly important to Kansas rural economies; for every dollar a dairy farm spends, about $2.50 in wages and transactions flow back into the local economy. In 2020, the milk produced in Kansas totaled over $688 million. The average single cow produces about $11.36 (about 7.55 gallons) of milk per day. That's a cash cow! The Kansas dairy industry has created approximately 1,330 jobs directly and around 4,000 jobs indirectly. Dairies have created jobs on farms, in trucking, breeding services, sales, repair services, veterinary care, pharmaceutical services, dairy nutrition, and other consulting services (Kansas).

Materials:

Activity 1: Practice Milking a Cow

- Non-latex gloves
- Water
- Needle
- A container or bucket to catch water.
- *Activity 2: Trail Mix TMR (Total Mixed Ration)*
- Scale
- Mini pretzel sticks
- Candy corn
- M&Ms
- White yogurt raisins
- Sugar Babies
- Mixing bowl
- Mixing spoon
- Small individual bowls or cups

Activity 3: Straw vs. Hay Exploration

- a trash bag of hay
- a trash bag of straw (ask a farmer for some)

Activity 4: Fix the Machinery

Per group:

- 2 pieces of thick cardboard to represent machinery with holes (different sizes drilled in them)
- buckets or containers of junk, including mixed sizes of bolts, nuts, and washers,

For the teacher:

- tag board
- hot glue gun
- a bolt, nut, and washer
- a marker

Activity 5: Good, Better, Best Cheer

- poster board or a whiteboard
- a marker

Activity 6: A Day in the Life of a Kansas Dairy Farmer

- One copy of A Day in the Life of a Kansas Dairy Farmer per student

Activity 1: Practice Milking a Cow

Instructional Format

1. Conduct engagement exercise.
2. Complete the activity.
3. Conduct assessment exercise.

Engagement:

Introduction: We can't bring a cow into class, but students can learn to milk using a rubber glove to simulate the experience of milking a cow by hand. Ask students: "Did you know that in 1850, everyone milked their cows by hand?" Explain that even though today a machine does most of the milking, there are times when a farmer still milks out a cow by hand. Then, ask: "Do you know what time it is? It is time to milk a cow!"

Procedures:

Activity

1. Wash and rinse a rubber glove several times. Use non-latex gloves in case of allergic reactions.
2. Fill the rubber glove with water.
3. Tie the open end of the glove securely.
4. Take a needle and prick the end of one finger.
5. Let the fun begin! Instruct students to grasp a "teat" with thumb and forefinger (pointer finger, index finger). Then, have your students squeeze while all the fingers wrap around and gently pull downward so the water "milk" goes into the bucket.

Activity 2: Trail Mix TMR (Total Mixed Ration)
This activity was adapted from Find the Right Mix | Total Mixed Ration by Elizabeth Eckelkamp and Jennifer Richards for the University of Tennessee Institute of Agriculture.

Instructional Format:

1. Conduct engagement exercise.
2. Complete the activity.
3. Lead a class discussion.
4. Review the vocabulary.
5. Conduct assessment exercise.

Engagement:
Ask students: "Have you ever eaten trail mix?" "What types of food are usually included in trail mix?" "Why do people eat trail mix?" Lead students through a discussion emphasizing that trail mix is an inexpensive snack that combines various types of food to provide a high amount of energy.

Procedures
Discussion

1. Ask students: "Did you know that dairy farmers feed a type of trail mix to cows for the same reasons?"
2. Explain to your students, "A Total Mixed Ration (TMR) is a completely balanced diet that farmers feed to their cows. They combine different ingredients the same way we will combine ingredients today to make trail mix!
3. Tell students that by the end of this activity, they will be able to follow a recipe, measure correctly using a scale, and understand the types of food dairy cows need to produce high-quality milk.

Activity

1. Divide students into groups of 3-4. Provide each group with the following ingredients:

- Mini Pretzel Sticks: These represent forages like corn silage or alfalfa hay. These provide high energy through protein, carotene, and calcium to help the cow produce high-quality milk.
- Candy Corn: This represents corn, another source of cows' energy.
- M&Ms: These protein representatives help provide energy for the cows.
- White Yogurt Raisins: These represent cottonseed, which is an excellent source of fiber, protein, and fat.
- Sugar Babies: These represent a sugar source or liquid feed. Molasses is a common type of liquid feed. Liquid feeds provide the cow with carbohydrates, sugars, protein, and additional nutrients. It also helps dry feed stick together. Farmers don't always need extra sugar in the ration, so the sugar babies can be an optional ingredient.
- Invite students to guess what each ingredient represents.

1. After they have guessed, describe each ingredient and its representative role in a cow's diet.
2. Tell students, "TMR stands for 'Total Mixed Ration,' which is how farmers ensure that dairy cows get the right mix of food for their diet. Dairy farmers weigh out the right ingredients and then mix them. Like your family might use a mixing bowl, farmers use a giant mixer (called a feed mixer) to ensure each bite the cow takes has the nutrients, or energy, protein, minerals, and vitamins needed."
3. Pass out the "Find the Right Mix" handout to each student and explain that they will make one pound of trail mix. Assist students in using the scale to weigh each ingredient and mix it in a bowl.
4. After preparing the mix, give students an individual cup or bowl of the trail mix to eat.
5. Then, tell your students they must plan to make 10 pounds of TMR to share with their friends. To find out how much of each ingredient they need, they will multiply the percentage of that ingredient by 10 pounds. Guide students through the multiplication process, giving help as needed. See the Finding the Right Mix Handout for guidance.

1. To check understanding, ask students the following questions:

- How is a farmer mixing a Total Mixed Ration (TMR) similar to someone baking a cake? How is it different? (Answer: It is similar because it requires a specific ingredient in a set amount. It is different because a TMR makes sure cows get all the nutrients they need, while the correct ingredients for a cake are required so it will properly bake.)
- Why do farmers provide a TMR instead of letting cows eat whatever they want? (Answer: The cow needs energy, protein, minerals, and vitamins to stay healthy and produce milk.)

Activity 3: Hay Exploration
Note: Students with seasonal allergies or asthma should skip the hands-on part of this lesson.

Instructional Format:
1. Conduct engagement exercise.
2. Lead a class discussion.
3. Complete the activity.
4. Conduct assessment exercise.

Engagement
Introduction: Write "Hey, Hey, Hay!" on the whiteboard. Then, say: "Hey, Hey, Hay!! What is Hay?" Guide a class discussion about the differences between hay and straw, allowing students to explore the question independently.

Procedures:
Discussion

1. Introduce the book "Hey, Hey, Hay!" by Christy Mihaly to your class. Ask your students what they think the book will be about.
2. Then, read "Hey, Hey, Hay!" by Christy Mihaley or play this read-aloud to your class. Georgia Grown TV: Agricultural Literacy Day with Commissioner Black https://www.youtube.com/watch?v=r67Cgu9rJk8 (read aloud begins at 0:30)
3. Discuss the book with your students. Ask, "What happened in the book? What machines did the girl and her mom use? Have you ever seen a mower, a tedder, and/or a baler in real life?"

Activity

1. Set out some hay at the front of your classroom. Ideally, you can source this hay from a local farmer. Make sure there is enough hay for every student.
2. Pass around about a handful or less of hay to each student. Let them investigate the hay with their senses (except for taste–humans don't have four stomachs to digest it!)
3. Discuss the hay. Ask your class, "How does the hay look? What color is it? How does it smell? Does it have an interesting texture?"

Activity 4: Fix the Machinery

Instructional Format:

1. Conduct engagement exercise.
2. Complete the activity.
3. Conduct assessment exercise.

Engagement:

Introduction: Ask your students, "Did you know Kansas dairy farmers have the same amount of time you have in a day, but they have many different jobs they must complete?" Explain: "They are often in a hurry to get things done. Farmers must do fieldwork while the weather is good, but what does a farmer do when his farm equipment breaks down?" – "Yes! They will try to fix it. Today, you will be fixing machinery." Say: "Farmers, the weatherman said it is supposed to rain and storm later today. That means you must fix the equipment properly to complete some field work before the weather turns bad. You will be working in cooperative groups. You have to complete the mission of fixing the machinery before three minutes are up." Feel free to increase the time if needed.

Procedures:

Activity

1. Prepare ahead of time by making teaching cards out of tagboard for bolts, nuts, and washers. Hot glue each part onto the tag board and label the back with a marker. You can use this to teach bolts, nuts, and washers, but students can also use them to review. Students can self-check and look at the back for the correct answer.
2. Group students into small groups or pairs.

3. Pass out two pieces of cardboard "machinery" with different-sized holes to be matched to each group.
4. Then, give each group of students a container or bucket of junk, including different sizes of bolts, washers, and nuts.
5. Dairy farmers are notorious for doing things right. Designate one student in each group to be the bolt checker. They will ensure that everything is done correctly and that the bolts are securely in place after the group fixes the machinery.
6. Once you say, "GO!" the students will have 3 minutes to work together to find the correct sizes of fasteners, including bolts, washers, and nuts for the machinery holes. They will thread everything together to fix the machinery, and at the end of three minutes, the bolt checker will verify that everything is done correctly and that the bolts are tightly in place. Explain the procedure to your students.

Activity 5: Good Better Best Cheer

Instructional Format:

1. Conduct engagement exercise.
2. Complete the activity.
3. Conduct assessment exercise.

Engagement:

Ask: "Who likes K-State the best? Who likes KU the best?" Explain, "We cheer for K-State and KU when we believe they are the best team winners! Kansas dairy farmers are winners, too! They work hard so we can have the best milk! They work hard to get their land in the best shape possible to raise the best crops possible, feed their animals with the best nutrition possible, and give us the best, wholesome milk possible!"

Procedures:

Activity

1. Before the lesson begins, write the cheer on a poster board or the whiteboard.
2. Explain to your students that Kansas dairy farmers work hard to keep making improvements on their farms to bring us the healthiest and freshest milk possible every day. They work hard to care for dairy animals. They milk cows, feed them proper nutrition, ensure animals have access to fresh water, bottle feed calves, put down clean bedding, plant crops, check crops, harvest crops, fix broken machinery, assist animals with medical needs, calving, and maintain general health and wellness. Kansas dairy farmers' schedules include, but are not limited to, working with nutritionists, veterinarians, health inspectors, milk truck drivers, and salespeople. They build terraces in sloping fields to save topsoil and lay tile for drainage. They plant cover crops in between rotations to improve soil health. The bottom line is that Kansas dairy farmers work hard so we can have the best milk! They work hard to get their land in the best shape possible to raise the best crops possible, feed their animals with the best nutrition possible, and give us the best, freshest milk possible!

GOOD! BETTER! BEST CHEER!!!

Good, Better, Best

Never Let it Rest,

Until Your Good is Better

And Your Better is Best!

GO, Kansas Dairy Farmers!

Activity 6: A Day in the Life of a Kansas Dairy Farmer

Instructional Format:

1. Conduct engagement exercise.
2. Lead a class discussion.
3. Conduct assessment exercise.

Engagement:

Tell students, "You are going to put yourself in the Life of a Kansas dairy farmer for a day." Explain that the life of a Kansas dairy farmer can be busy and exhausting. Call on students and ask, "Why do you think Kansas dairy farmers are so busy?"

Procedures:

1. Ask students, "Although no two dairy farms are alike, schedules vary from farm to farm, season to season. Have you ever wondered what being a Kansas dairy farmer for a day would be like?"
2. Follow the "Day in the Life of a Kansas Dairy Farmer" script and ask discussion questions throughout the lesson.

Vocabulary:

- **Colostrum:** The first milk given by a dairy cow following freshening (giving birth) that is rich in fat and protein and has immunity elements. Calves need colostrum in the first 24 hours of life.
- **Pasteurization:** the process that kills the bacteria in milk
- Homogenization: a process that keeps the fat from rising to the top
- **Udder:** the part of the cow that holds the milk
- Teats: the part of the cow where the milk comes out
- **Milking Machine:** the machine that makes the milk come out of the udder

- **Dairy Nutritionist:** An animal health professional specializing in dairy cows' nutritional needs. Dairy farmers work with nutritionists to create the optimal rations (the meals cows eat) for their cows.
- **Forage:** Forage includes whole plants of corn, small grains (such as oats, barley, or wheat), legumes, and grasses.
- **Hay:** Dried feed such as rye, alfalfa, clover, grass, and oats, which is used as a food source for dairy cows.
- **Straw:** Straw is the by-product of a grain crop and is used for livestock bedding.
- **Milking Parlor:** A specialized area on the dairy farm where the cows are milked.
- **Milk Safety Inspector:** Milk safety inspectors inspect milk to ensure it is safe to drink and free of contaminants.
- **Terraces:** Built-up land on sloped fields to keep water runoff from removing precious topsoil and nutrients needed for crop growth.
- **Drain tile:** Pipes under the soil to funnel water that comes off terraces.
- **Cover crops:** Crops planted in fields between crop rotations to build soil health.
- **TMR:** Total mixed ration of forage and grains for cows' balanced nutrition

Kansas Standards:

Mathematics

4th Grade

Operations and Algebraic Thinking

4.OA.1 Interpret a multiplication equation as a comparison (e.g., interpret 35 = 5 × 7 as a statement that 35 is 5 times as many as 7 and 7 times as many as 5). Represent verbal statements of multiplicative comparisons as multiplication equations.

5th Grade

Numbers and Operations in a Base Ten

5.NBT.1 Recognize that in a multi-digit number, a digit in one place represents 10 times as much as it represents in the place to its right and 1/10 of what it represents in the place to its left.

Language Arts

3rd Grade

Reading: Informational

Key Ideas and Details

RI.3.1 Ask and answer questions to demonstrate understanding of a text, referring explicitly to the text as the basis for the answers.

RI.3.2 Determine the main idea of a text; recount the key details and explain how they support the main idea.

RI.3.3 Describe the relationship between a series of historical events, scientific ideas or concepts or steps in technical procedures in a text, using language that pertains to time, sequence and cause/effect.

Craft and Structure

RI.3.4 Determine the meaning of general academic and domain-specific words and phrases in a text relevant to a third-grade topic or subject area.

Integration of Knowledge and Ideas

RI.3.8 Describe the logical connection between particular sentences and paragraphs in a text (e.g., comparison, cause/effect, first/second/third in a sequence).

Speaking and Listening

Comprehension and Collaboration

SL.3.2 Determine the main ideas and supporting details of a text read aloud or information presented in diverse media and formats, including visually, quantitatively and orally.

4th Grade
Reading: Foundational
Fluency
RF.4.4 Read with sufficient accuracy and fluency to support comprehension.
RF.4.4a Read complex text with purpose and understanding.
Reading: Literature
RL.4.1 Refer to details and examples in a text when explaining what the text says explicitly and when drawing inferences from the text.
Reading: Informational
Key Ideas and Details
RI.4.2 Determine the main idea of a text and explain how it is supported by key details; summarize the text.
RI.4.3 Explain events, procedures, ideas or concepts in a historical, scientific or technical text, including what happened and why, based on specific information in the text.
Speaking and Listening
Comprehension and Collaboration
SL.4.1 Engage effectively in a range of collaborative discussions (one-on-one, in groups and teacher-led) with diverse partners on fourth-grade topics and texts, building on others' ideas and expressing their own clearly.
SL.4.2 Paraphrase portions of a text read aloud or information presented in diverse media and formats, including visually, quantitatively and orally.

5th Grade
Reading: Foundational
Fluency
RF.5.4 Read with sufficient accuracy and fluency to support comprehension.
Reading: Informational
RI.5.3 Explain the relationships or interactions between two or more individuals, events, ideas or concepts in a historical, scientific or technical text based on specific information in the text.
Speaking and Listening
Comprehension and Collaboration
SL.5.1 Engage effectively in a range of collaborative discussions (one-on-one, in groups and teacher-led) with diverse partners on fifth-grade topics and texts, building on others' ideas
and expressing their own clearly
Presentation of Knowledge and Ideas
SL.5.4 Report on a topic or text or present an opinion, sequencing ideas logically and using appropriate facts and relevant, descriptive details to support main ideas or themes; speak clearly at an understandable pace.
Language in Speaking and Listening
SL.5.7 Demonstrate command of the conventions of standard English grammar and usage when speaking.

National Agricultural Literacy Standards:
Agriculture and the Environment
- Explain how the interaction of the sun, soil, water, and weather in plant and animal growth impacts agricultural production (T1.3-5 b.)
- Recognize the natural resources used in agricultural practices to produce food, feed, clothing, landscaping plants, and fuel (e.g., soil, water, air, plants, animals, and minerals) (T1.3-5 e.)

Plants and Animals for Food, Fiber, and Energy
- Provide examples of specific ways farmers/ranchers meet the needs of animals (T2.3-5 d.)

- Understand the concept of stewardship and identify ways farmers/ranchers (T2.3-5 e.) care for soil, water, plants, and animals

Food, Health, and Lifestyle

- Diagram the path of production for a processed product, from farm to table (T3.3-5 b.)
- Identify careers in food, nutrition, and health (T3.3-5 f.)

Science, Technology, Engineering, and Mathematics

- T4. 3-5 a. Compare simple tools to complex modern machines used in agricultural systems to improve efficiency and reduce labor

Supporting Resources:

American Farm Bureau Ag Mag Dairy - Magazine
https://www.agfoundation.org/resources/dairy-ag-mag

"Busy on the Farm With Casey & Friends" by Holley Dufek (Book)
https://octanepress.com/book/busy-farm-casey-friends

Dairy Byproducts Poster
https://ksagclassroom.org/supporting-resources/dairy-byproducts/

Dairy Fun Facts Poster https://ksagclassroom.org/supporting-resources/dairy-fun/

"Farming" by Gail Gibbons (Book)
https://agclassroom.org/matrix/companion-resources/193/

Heywood Banks: The Cow Song https://www.youtube.com/watch?v=8FmnnVTe7fE

Kansas Dairy https://ksagclassroom.org/supporting-resources/kansas-dairy/

Kids Connection Magazine - Dairy
https://ksagclassroom.org/resource-center/connection/

"Milk Comes From a Cow?" by Dan Yunk (Book)
https://agliteracy.org/matrix/companion-resources/381/

Milking at the 1850 Farm by Living History Farms
https://www.youtube.com/watch?v=FTk-FdlOUJY

Midwest Dairy. (2015, March 10). Follow milk's journey from farm to store [Video]. YouTube. https://www.youtube.com/watch?v=1LEGl6SF4Jc

National Dairy Council: https://www.usdairy.com/about-us/national-dairy-council

Career Information: Dairy Nutritionist
A dairy nutritionist works with the dairy farmer by developing a special feeding program to fit the specific herd's needs. They monitor the condition of the dairy cattle to make

sure the program meets their needs. They analyze cow feed and recommend supplements and grains that can be added to increase nutrition. Ensuring that cows receive all the necessary nutrients to maintain their health and well-being is essential. Healthy, happy cows produce more milk! Dairy nutritionists aim to maximize milk production while maintaining herd health.

Assessment: Exit ticket: List three ways dairy farmers care for animals and list two ways dairy farmers care for the land.

Author: Adapted by Wanda Small, USD#377 Atchison County Community Elementary K-6 STEAM Teacher, 2018 KFAC Teacher of the Year, KFAC Curriculum Advisory Coucil, from a lesson “March 13, 2015 A Day in the Life of a Dairy Farmer” by American Dairy Association of Indiana and Find the Right Mix | Total Mixed Ration by Elizabeth Eckelkamp and Jennifer Richards, and edited by Marissa Cook, Secondary Art Education Major at KSU, KFAC intern.

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A Day in the Life of a Kansas Dairy Farmer

4:00 a.m. Beep! Beep! Beep! You shut the alarm off, and you hop out of bed! Unless you use robots to milk cows (like Hildebrand Dairy in Junction City, Kansas), you start your day very early. Milking the cows is the first task on the schedule, and it typically takes 5-7 minutes to milk each cow. Cows need to be milked every day and night at the same time. You don't mind because you care for your cows and are dedicated to doing what is best for them! Depending on the number of cows and how many you can milk at a time, it may take several hours to milk all the cows.

Discussion Questions:

- Why do you think dairy farmers who do not have robotic milkers have to get up earlier than farmers with robotic milk machines? Why does the dairy farmer put milking cows first on the schedule?

6 a.m. It's breakfast time for the girls! You serve the cows a nice TMR Total Mixed Ration of hay, grain, corn silage, proteins (like soybean meal), vitamins, and minerals combined in a giant feed mixer and fed to the cows. Cows eat crops and forage that we can't. They have four compartments in their stomach that break down their food. Dairy cows eat about 100 pounds of feed and drink 30-50 gallons of water (about a bathtub full) each day. Ensure the water troughs are unfrozen and filled with fresh, clean water. If the ponds in the pasture are covered with ice, take an ax and chop a drinking hole for the cows. That is a lot of work, but you want your cows to stay healthy.

Discussion Questions:

- How are your meals alike or different from those of cows?
- How can cows eat food that people can't?
- What would happen if farmers didn't chop ice from frozen water for cows?

6:30 a.m. It's bottle feeding time!! These hungry little cuties need their bottles of warm milk. Newborns receive colostrum (mother's first milk, which provides the perfect nutrition for the baby to build a strong immune system), and older calves are given dried milk replacer mixed with warm water. It's like infant formula, but specifically designed for calves to grow strong and healthy. You check on all the babies to make sure they are healthy. Just like a farmer takes care of his children, he also takes good care of his young calves. Calves are prone to catching colds and getting respiratory illnesses, so you must closely monitor them.

Discussion Questions:

- Why is colostrum important for newborn calves?

- Why is it important for farmers to keep checking on calves?

7 a.m. Ok, maybe YOU have time to grab some breakfast now. Since most Kansas dairy farms are family-owned, this is also a good time to wake your kids so they can get dressed, fed, and ready for school. A school bus will take the kids to school.
8 a.m. You remove old straw bedding and put down new, clean, dry, comfortable straw bedding inside pens or outside in pastures where cattle rest.

Discussion Questions:
- Why do you sleep on a bed or mattress?
- Why do you think cows need areas of comfortable bedding to lie down on?

8:30 a.m. You see one cow out! You put the cow back in and check the fence, only to discover a small section that needs repair. You take the time to fix it!
Discussion Question 8: What might happen if the farmer didn't fix the fence?
Discussion Question 9: What do you think the fence is made from?
9 a.m. It's time for land care! Because you care for the land, you want to do what you can to protect the land and water. You build terraces on sloped fields to keep water runoff from removing precious topsoil and nutrients for crop growth. You bury drain tile pipes under the soil to funnel water that comes off terraces. You plant cover crops between crop rotations to build soil health because organic matter from the live roots of plants makes the soil airy and helps with water quality. Cover crops also conserve water and help keep soil from washing away. You spread manure on fields with a fertilizer spreader. It allows crops to grow and reduces the need for chemical fertilizers on the farm.

Discussion Questions:
- What are the ways farmers care for their land?
- When farmers care for their land, how does it help with soil or water quality and conservation?

10:30 a.m. The big silver galvanized milk truck arrives! The milkman connects a large hose from the milk tank to the truck, and the milk flows into the truck. He will take it to the dairy plant, where the milk is pasteurized and homogenized. This milk becomes the milk you drink and the dairy products you eat, like ice cream, butter, cheese, cottage cheese, yogurt, sour cream, and cream cheese. While the milkman is doing his job, you will work on some machinery repairs. You had to replace a few bolts on the combine header. It is important to keep machinery in good working order.

Discussion Questions:

- What are your favorite dairy foods?
- Why do you think it is essential for farmers to keep machinery in good working order?

11 a.m. You were just getting ready to head to town to buy a part for the tractor when a seed salesman pulled into the driveway. Listening to the salesman tell you about his latest and greatest seeds for growing crops will cost you some time.
Discussion Question 14: What kinds of seeds do you think Kansas dairy farmers might buy if they grow their crops for cattle feed?
11:30 a.m. You make it to the parts store just in the nick of time before they close for lunch. You pick up the tractor part and head home.
12:30 p.m. You have just enough time to grab a bite of lunch and make a call to order diesel fuel for your tractor and big farm trucks that can be delivered later in the week.
1:15 p.m. You check on some cows that are due to have calves at any time. No calves yet!
2 p.m. Your dairy nutritionist arrives to develop a feeding program for your herd's needs. Ensuring that cows receive all the necessary nutrients to maintain their health and well-being is crucial. Healthy, happy cows produce more milk! The dairy nutritionist aims to maximize milk production while maintaining the health of the herd.
Discussion Question 15. Why would a dairy farmer hire a dairy nutritionist?
Discussion Question 16: What is the goal of a dairy nutritionist?
2:30 p.m. Your veterinarian visits the farm to ensure the herd's health management. Vets routinely visit dairy farms to ensure everything is going well. They administer regular vaccinations and medications to keep animals healthy. Vets also check pregnant cows to ensure the mother and calf are healthy.

Discussion Question:
- How are a dairy nutritionist and a veterinarian alike? How are they different?

3 p.m. Your milk inspector from the Kansas Department of Agriculture arrives! Milk inspectors visit dairy farms at least twice a year. These inspectors ensure that farms comply with all sanitation requirements. Milk is one of the safest, most regulated foods you can buy. While the milk inspector finishes the report, it's time to round up the cows and get ready to milk again.

Discussion Questions:
- Why is milk considered one of the safest, most regulated foods you can buy?
- What is the job of a milk inspector?

4 p.m. It's time to start milking again. Most farms milk twice a day, with each milking about twelve hours apart, although some farms may milk cows three times a day, about 8 hours apart. The kids are home from school. The older kids can help you finish milking. Most dairy farms are multi-generational, family-owned and operated farms. The farm could be passed down to the next generation, allowing the family farm to continue.

Discussion Questions:

- So far, what things have you learned about dairy farmers that you didn't know before?
- What do you think a multi-generational farm is?

6 p.m. Milking is over; it's time to feed the baby calves again. The kids can help feed them, so the job goes quickly.
6:30 p.m. Before it gets too dark, you drive by your corn and hay fields to make sure everything looks good. It's essential to check on the crops–after all, it's next year's food for your cows.

Discussion Questions:

- What other crops might the dairy farmer raise?
- Why is it important for farmers to check on crops?

7 p.m. Time for dinner. The kids must also get their homework done and get ready for bed.
9 p.m. You need to work on farm paperwork. From breeding to fieldwork, there is always paperwork and plans for **improvements** on the farm! Farmers care for their animals and land, so as they plan ahead, they strive to go from **good to better to best!** Even dairy farmers have a growth mindset!
10 p.m. It's time to watch the weather forecast! Keeping track of the weather helps you know how to care for your cows in cold and hot weather. Adding fans in warm weather and extra straw bedding for winter weather helps keep the cows more comfortable. Comfortable cows give more milk! The weather forecast can also help you plan for appropriate fieldwork. After you watch the news and the weather, it's bedtime! After all, you'll be up in five hours to milk tomorrow morning.

Discussion Questions:

- How can farmers make cows more comfortable during hot and cold seasons?
- What does a weather forecaster do?

11:30 p.m. A cow is having trouble giving birth, so you must run down to the barn in case you have to help deliver a calf. Momma cow delivered the calf without help. The

baby calf is healthy, and the mom is doing fine. The calf stands up and tries to drink colostrum (the mother's first milk). Colostrum has a lot of antibodies in it that help boost the baby's immune system. You help the baby learn how to suck by squeezing its mouth as it drinks. Tomorrow, before milking, you will tag the calf and move it to a calf hutch so it can stay safe and be closely cared for. For now, this baby needs to suck as much colostrum as it wants from its mama.

Discussion Questions:

- Why is colostrum milk important for newborn calves?
- What would the farmer do if the cow still had trouble giving birth?

12 a.m. Back to bed. Only four more hours before the day begins.