

Lesson 3: From Milk to Butter

Grade Level: 2nd Grade

Time: 60 minutes

Subjects: ELA, Science

Overview: This lesson is Lesson 3 of 5 in the *Milk Comes From a Cow?* unit within the *Growing Readers* micro-curriculum, based on a series of books written by Kansas author Dan Yunk. Building on the first read and learning experiences from Lessons 1 and 2, students deepen their understanding of dairy farming through a purposeful second read of the text, a hands-on butter-making investigation, and narrative writing. As they retell key details, observe how cream changes into butter, and write about the experience in sequence, students strengthen reading comprehension, scientific observation, and foundational literacy skills while reinforcing that agricultural products are transformed into the foods we enjoy every day.

Skillset: Activating and connecting prior knowledge across units, purposeful rereading for scientific process connections, comparing and contrasting the most important points of two texts, describing a series of scientific steps, hands-on science investigation, analyzing how the properties of materials change during a process and how those properties determine suitability for a purpose, bridging to writing through oral rehearsal, narrative writing with elaborated actions, thoughts, feelings, and closure, and consulting reference materials to check and correct spelling of vocabulary.

Kansas Academic Standards

Kansas ELA Standards

RI.2.3 Describe the connection between a series of historical events, scientific ideas or concepts, or steps in technical procedures in a text.

RI.2.9 Compare and contrast the most important points presented by two texts on the same topic.

W.2.3 Write narratives in which they recount a well-elaborated event or short sequence of events, include details to describe actions, thoughts, and feelings, use temporal words to signal event order, and provide a sense of closure.

W.2.11.e Consult reference materials, including beginning dictionaries, as needed to check and correct spellings.

Science Standards

2-PS1-2 Analyze data obtained from testing different materials to determine which materials have the properties that are best suited for an intended purpose.

National Agriculture Literacy Outcomes

Plants and Animals for Food, Fiber, and Energy

T2.K-2.b Identify animals involved in agricultural production and their uses (i.e., work, meat, dairy, eggs).

T2.K-2.d Identify examples of food and fiber products that come from plants and animals.

Objectives

Science Objectives

Students will be able to:

- Describe how butter is made from cream, which comes from cow's milk.
- Observe and describe what happens to heavy whipping cream when it is shaken over time.
- Sequence the steps in the butter-making process in the correct order.
- Record the observable properties of heavy whipping cream before and after shaking.
- Analyze how the properties of the cream changed during the butter-making process based on their observations.
- Determine which properties make butter better suited for spreading and cooking than cream.
- Explain how testing a material and observing its properties helps us understand what it can be used for.

English Language Arts Objectives

Students will be able to:

- Describe the connection between a series of scientific steps in the butter-making process as described in the text.
- Compare and contrast the most important points presented by *Milk Comes From a Cow?* and *Celebrate Wheat*.
- Write a well-elaborated narrative that includes specific actions, thoughts, and feelings, uses temporal words, and provides a sense of closure.
- Consult reference materials appropriately to support correct spelling of technical dairy vocabulary.

Materials Needed

- Book: *Milk Comes From a Cow?* by Dan Yunk, physical copy or author read-aloud on unit landing page
- Book: *Celebrate Wheat* by Dan Yunk, physical copy or author read-aloud on unit landing page
- Heavy whipping cream (approximately 1/4 cup per student or small group)
- Small plastic jars with tight-fitting lids (one per student or pair)
- Plastic knives for spreading butter
- Salt (optional, a small pinch per jar)
- Crackers or bread for tasting
- Paper towels or napkins
- Chart paper and markers
- Content vocabulary reference card (one per student — key unit terms: Holstein, buttermilk, processing, pasteurize)
- Beginning dictionaries or classroom word reference materials (one per student or pair)
- Lined writing paper (one per student)
- Pencils

Lesson Procedures

1. Connecting to What We Know
 - a. Explain to students: “We have already read *Milk Comes From a Cow?* and visited three centers where we tasted different dairy products, simulated milking a cow, and mapped the journey of milk from farm to home. Today we are going to read our book a second time with a sharper purpose. In second grade, a second read is not about hearing the story again — it is about reading like a scientist and a critic. We are going to pay attention to the series of steps the author describes, the words he uses, and how this book compares to what we know from *Celebrate Wheat*.”
 - b. Ask students:
 - “What do you remember about how milk gets from a cow to our homes? What were the main steps?”
 - “At our centers, we tasted three dairy products. How were they different from each other? What caused those differences?”
 - “Heavy whipping cream is one of the thickest dairy products. What do you think might happen if you shook cream in a jar for a long time?”
2. Purposeful Second Read-Aloud. Set a listening purpose: “As we reread today, listen for the steps the author describes in the process of how milk is made and what happens to it. Pay attention to how each step connects to the next one.”
 - a. Read *Milk Comes From a Cow?* aloud. Pause at three key points:
Stopping Point Suggestions (3 total, brief stops to maintain flow):
 - Stop #1 — Scientific Process: After Farmer George introduces the Holstein cows.
Ask students:
 - “The author has started describing a process. What is the first step in that process so far?”
 - “The author says cows eat about 80 pounds of hay and drink 30 to 40 gallons of water each day. What is the connection between that step and the next step in the process?”
 - Stop #2 — Series of Steps: After the milking parlor is described.
Ask students:
 - “The author has described several steps now. Can you name them in order? What happens first, next, and after that?”
 - “Why does the order of these steps matter? What would happen if the milk went to the store before it was cooled in the tank?”
 - Stop #3 — Author’s Purpose & Compare-Contrast Setup: After the chocolate milk question.
Ask students:
 - “What is the most important point this author wants us to understand? Not just what the book is about — what does the author, Dan Yunk, most want us to walk away knowing?”
 - “Keep that in mind as we finish — we are going to compare it to what *Celebrate Wheat* most wants us to know.”

Keep stops brief to maintain the flow of the story.
3. Scientific Process

- a. Explain to students: “Informational authors often describe a process — a series of steps that must happen in a specific order. In this book, Dan Yunk describes the process of how milk gets from a cow to our homes. Let’s build that series together and think about how each step connects to the next.”
 - b. Build the series on chart paper as students contribute. After each step, ask: “What is the connection between this step and the next one?”
 - Step 1: The cow eats hay or grass, corn, or other grains, and drinks 30–40 gallons of water daily.
 - Step 2: The cow’s body converts that food and water into milk, stored in the udder.
 - Step 3: A milking machine removes the milk from the udder in the milking parlor.
 - Step 4: The milk moves through tubes into a refrigerated storage tank on the farm.
 - Step 5: A milk truck transports the cooled milk to a processing plant.
 - Step 6: The plant pasteurizes and packages the milk.
 - Step 7: Trucks deliver packaged milk to grocery stores and schools.
 - c. Ask students:
 - “Why does each step depend on the one before it? What breaks down if one step is skipped or done out of order?”
 - “Dan Yunk described this process through Kailey’s visit to a dairy farm. How did organizing it as a journey make it easier to understand?”
4. Compare and Contrast — Most Important Points
- a. Hold up both books.
 - b. Explain to students: “In second grade, we do not just compare books by listing things that are the same or different. We compare the most important points — what each author wants us to understand most. Let’s think carefully about that.”
 - c. Ask students:
 - “What is the most important point Dan Yunk wants us to understand in *Milk Comes From a Cow*? — not just the topic, but his main message.”
 - “What is the most important point he wants us to understand in *Celebrate Wheat*?”
 - “How are those two most important points similar? How are they different?”
 - d. Guide students toward substantive responses:
 - “Both books, most importantly, want us to understand that the food we eat every day has a farm story, and that farmers are the ones who make that story possible.”
 - “What is different is how each food gets to us — milk requires a living animal and a daily process, while wheat requires seasonal growing and harvesting. One is never finished; the other follows the seasons.”
 - e. Record student ideas in a compare-and-contrast chart: Most Important Point | *Milk Comes From a Cow*? | *Celebrate Wheat*
(RI.2.9 asks students to compare and contrast the MOST IMPORTANT points — push back gently if students list surface details like characters or settings. The goal is central message comparison.)
5. Butter Making Activity — Science Investigation

- a. Explain to students: “Today we are going to make butter — the same way people have made it for thousands of years. As we do, I want you to think like a scientist. Before we start, describe what the cream looks like and feels like. As it changes, record those changes carefully. Afterward, we are going to analyze how its properties changed and what those new properties tell us about what butter can be used for.”
- b. Properties of Materials. Explain to students: “Scientists study the properties of materials — characteristics like texture, color, thickness, and whether something is liquid or solid. Today, before you shake, look at your cream and describe it: what color is it? Is it thick or thin? Is it a liquid or a solid? As you shake, keep noticing how those properties change. At the end, we are going to analyze what you observed and decide: what properties does butter have, and what does that make it suited for?”
- c. Distribute jars and pour approximately 1/4 cup of heavy whipping cream into each jar.
- d. Explain to students: “Shake your jar and pay close attention to every property change you observe. You are going to need specific details for your writing and for our science analysis afterward.”
- e. Students shake their jars for approximately 10–15 minutes. Rotate shaking if students tire.
- f. Stages to narrate: (1) cream sloshes, (2) cream thickens into whipped cream, (3) liquid separates — this is buttermilk, (4) solid yellow butter forms.
- g. Prompt oral observation throughout:
 - “What do you observe happening? Describe it precisely — not just that it changed, but how.”
 - “What stage are you at now? How does this compare to what it looked like when we started?”
 - “The liquid you see separating is called buttermilk. What do you think caused it to separate?”
- h. Once butter has formed, spread it on crackers or bread for tasting.
- i. Ask students:
 - “Before we started, the cream was a thick, pourable liquid. Now describe what you observe. What properties changed?”
- j. Explain to students: “Think about the properties you observed during the shaking process. Butter is a solid — it holds its shape and can be spread. Cream is a liquid — it pours and flows. Those are two very different sets of properties.”
- k. Ask students:
 - “Cream and butter have different observable properties. How do butter’s properties make it better suited for spreading over cream?”
- l. Explain: “As you shook the cream, the tiny fat droplets began to stick together and formed butter. This changed the material’s observable properties. Instead of being a pourable liquid, it became a spreadable solid. Analyzing those property changes is exactly what scientists do when they test materials to find out what they are best suited for.”
- m. Kansas Connection. Explain to students: “The cream in your jar started as milk on a dairy farm. Whether you have seen a dairy farm up close or you have only seen butter on a grocery store shelf, what you just made connects you to a

Kansas dairy farmer. The process you experienced today — cream separating into butter — is the same basic process that has fed families in Kansas and across the country for generations.”

6. Bridge to Writing. Explain to students: “You just made butter. You observed a scientific process from start to finish. Now you are going to write about it — not just what happened, but what you did, what you thought, and how you felt at each stage. In second grade, a narrative is not just a list of events. It is a story in which the reader can picture exactly what you experienced.”
 - a. Explain to students: “Good narrative writers include three kinds of details: action details — what happened; thought details — what you were thinking; and feeling details — what you felt emotionally or physically. Today, you have all three available to you.”
 - b. Model the three kinds of details on chart paper:
 - “Action: I poured the cream into the jar and sealed the lid.”
 - “Thought: I wondered whether shaking it would really make anything happen.”
 - “Feeling: My arms were tired, but I kept going because I wanted to see the butter form.”
 - c. Ask students to verbalize before writing:
 - “Tell a partner one action, one thought, and one feeling from the butter-making experience.”
 - “What temporal word will you use to start? Think about how you will signal each stage of the process.” Allow 2–3 minutes for oral rehearsal. Students who articulate their actions, thoughts, and feelings before writing produce more elaborated narratives.
7. Narrative Writing. Before students begin writing, ensure reference materials are available at each table: the content vocabulary reference card for this unit (Holstein, buttermilk, processing, pasteurize) and a beginning dictionary.
 - a. Remind students: “If you are unsure how to spell a common word, use your dictionary. If you need a dairy or science word, use your vocabulary card. Good writers know when to use a reference — that is a writing skill, not a shortcut.”
 - b. Distribute lined writing paper.

Explain to students: “Write a well-elaborated narrative about making butter today. Your narrative must include: specific actions — what you did; thoughts — what you were thinking as it happened; feelings — what you felt emotionally or physically; temporal words to signal the order of events; and a closing sentence that wraps up your experience or reflection.”
 - c. Model a full narrative on chart paper, thinking aloud:
 - “First, I poured the cold, heavy whipping cream into the jar. I thought it looked exactly like the cream we tasted at our center last week. Then I sealed the lid and started shaking. At first, nothing seemed to be happening, and I wondered if I was doing it wrong. After a few minutes, I felt the jar getting harder to shake — the cream was thickening. Finally, I heard a sloshing sound and opened the jar to find real butter. I could not believe that cream had turned into something so completely different. Making butter made me understand why people on farms had to work so hard just to prepare food.”
 - d. Point out each required element in the model:

- Actions: poured, sealed, started shaking, opened the jar
 - Thoughts: “I wondered if I was doing it wrong”
 - Feelings: “I felt the jar getting harder to shake” / “I could not believe”
 - Temporal words: First, Then, After a few minutes, Finally
 - Closure: reflection on what butter-making taught her
- e. Students write their narratives independently.
- As students write, circulate and support:
- Prompt for thought details: “What were you thinking when the cream started to change?”
 - Prompt for feeling details: “How did it feel physically to shake the jar? How did you feel when the butter formed?”
 - Prompt for closure: “How does your narrative end? What does this experience make you think about?”
 - Prompt temporal words if missing: “Which word signals that this happened next?”
- (Differentiation note: For students who need additional support, provide a narrative frame: “First, I _____. I thought _____. Then, _____. I felt _____. Finally, _____. Making butter taught me _____.”) For students ready for a challenge, prompt them to connect their closing reflection to the science argument: “Now that you have analyzed how the properties of cream changed into the properties of butter, what does that tell you about why dairy products are useful to people in so many different ways?”)
8. Closing Discussion & Reflection. Gather students with their completed writing.
- a. Ask students:
- “What happened when we shook the cream? Walk me through the series of steps — in order.”
 - “What properties did the cream have before shaking? What properties does butter have? How do those new properties make butter suited for a different purpose than cream?”
 - “What was the most important point of *Milk Comes From a Cow*? How does what we did today connect to that point?”
 - “How does the most important point of this book compare to the most important point of *Celebrate Wheat*?”
- b. Invite two or three students to share their narratives. After each one, ask the class:
- “What action did the writer describe? What thought did they share? What feeling did they include?”
 - “What temporal words did they use? Did the narrative have a closing thought?”
- c. Reinforce the connection: “Dairy cows give us milk. Milk gives us cream. Cream gives us butter. That series of steps depends on a dairy farmer who starts the process every morning. Dan Yunk wrote both *Celebrate Wheat* and *Milk Comes From a Cow*? because he wants students to understand their connection to that farm story — whatever food is on their table.”

Assessment: Student understanding is assessed through teacher observation during the reread, scientific process discussion, text comparison, butter-making investigation, and property analysis, as well as through the completed narrative writing. Teacher should note whether

students can describe the connection between the series of scientific steps in the butter-making process in correct sequence, identify and compare the most important points of *Milk Comes From a Cow?* and *Celebrate Wheat* rather than listing surface details, describe and record the observable properties of cream and butter, analyze how those properties changed, and determine which properties make butter better suited for its intended purpose, write a well-elaborated narrative that includes specific actions, thoughts, and feelings, uses temporal words, and provides a sense of closure, and consult reference materials appropriately and independently to check and correct spelling of vocabulary. Students who connect their closing narrative reflection to the science property analysis and demonstrate integration of content learning across the lesson should be noted.

Supplemental Activities: Display completed narrative writing pieces alongside the Map the Journey sequence sheets from Lesson 2 and the compare-and-contrast chart from this lesson. Guide students to consider how all three artifacts — the journey chart, the text comparison, and the narrative — tell different parts of the same story: where dairy products come from, how they compare to other Kansas farm products, and what it feels like to experience a dairy process firsthand. For an extension of RI.2.9, invite students to write one sentence stating the most important point of each book and one sentence explaining how those points are connected.

Author: Kelsy Sproul, Literacy Specialist, 2026 KFAC Teacher of the Year, KFAC Curriculum Advisory Council, Former Elementary Teacher. Edited by Marissa Cook, KFAC intern, Kansas State University Secondary Education.

Vocabulary Reference Cards



Holstein



Buttermilk



Processing



Pasteurize