



Lesson Seven: Seeking New Management

Grade Level: 4th Grade

Time: 3 Days (30-40 minutes each day)

Essential Question: How can we be stewards of Wyoming's agriculture to benefit current and future generations?

Objectives: Students will:

- Understand Wyoming's agriculture and the complexity of decisions that people in this industry make on a regular basis.
- Create positive stewardship practices for our state.

Purpose: Students will construct a design of a ranch or farm that demonstrates stewardship of Wyoming to create the most profit.

Required Materials/Resources:

- Maps from Lesson 2 (one set per group)
- Completed Cost/Benefit recording sheets from Lesson 6 (each student/pair will get their own)
- Agriculture Scenario sheets (one per group)
- Acre sheets (one set of the acre papers per group)
- Livestock Cost/Profit Conversion (one per group)
- Budget Summary sheet (one per group)
- Butcher paper (one large piece for each group)
- Glue/tape and scratch paper for each group
- Quick Write (one per student)

TEACHER NOTE:

Students will be tasked with becoming a ranch/farm manager of a 10-acre, undeveloped, plot of land.

Groups will use all resources and products from the previous lessons to determine what their land will raise, grow, or both raise and grow. Students will have certain constraints to follow to make sure the land is stewarded appropriately.

Explain to the students these constraints need to be followed to ensure that the land is not overgrazed, and livestock has sufficient amount of food and water year-round. Students need to keep in mind that if their land is in a drier, non-irrigated area, some acreage should be kept open only for grazing.

Suggested Teacher Preparation:

- Decide whether to put students into new groups or have them stay in the groups from previous lessons.
- Choose the Wyoming county all groups will use for the project.
- Read the teacher note about the constraints and expectations of the culminating activity.

Standards:

Science: 4-ESS2-2, 3-5-ETS1-1 (DCI,SEP), 3-5-ETS1-2 (DCI,SEP) - (Practiced/Encountered)

ELA: 4.SL.1, 4.SL.2, 4.SL.4 (Practiced/Encountered)

Math: 4.NBT.4 (Practiced/Encountered)

CVE: CV5.1.4, CV5.2.1, CV5.2.2, CV5.2.3, CV5.3.2, CV5.3.3, CV5.4.1 (Practiced/Encountered)

Vocabulary: No new vocabulary is introduced

Instructional Procedure/Steps:

Day 1:

1. Place students into groups of 2-4. Provide each group with an Agriculture Scenario sheet explaining the culminating activity.
2. With the whole group, review the Agriculture Scenario sheet and the following constraints for setting up their ranches/farms. Say:
 - **“Today, you get to be the managers of your new ranch/farm. Please give your ranch/farm a name. To be good stewards of this property, you will need to consider everything we have learned about so far. Think about the topography and climate of your ranch/farm, and the responsibility involved in caring for your livestock and crops.”**

- **“The 10 acres can be managed as one large piece of land, or it can be broken into smaller pieces that are each managed differently. For example, you could use 3 acres for cropland and 7 acres of rangeland for grazing. Acre plots can be configured in various ways but must share at least one common border with no space between.**
- **Each acre may have only one type of crop or livestock grown or raised on it.**
- **If crops are grown on an acre, livestock cannot be raised in that acre.**
- **If livestock is raised in an acre, crops cannot be grown in that acre.**
- **You will use the information from Lesson 5’s Cost/Benefit recording sheet to complete the Livestock Cost/Profit Conversion and Budget Summary sheets.”**

Spend some time reviewing that too many livestock on the grass can cause overgrazing and multiple years of farming on a certain acre can damage the soil quality. Students will need to take this into consideration when planning how to use their land for the best profit. Field and pasture rotations are stewardship strategies used to maintain the health of the land.

3.  Assign the Wyoming county that ALL groups will be using. For example, if you pick Laramie County, all students will use Laramie County for the ranch/farm simulation. Students will then need to look at/review the maps from Lesson 2 to determine what topography, climate, and precipitation may affect that county. They will also need to look at the irrigation map to determine if the county has that resource. All of these maps will help the groups decide what livestock or crops should be grown/raised on their land.



In this task, students will be engaged in the higher order thinking skill of evaluation by critiquing information gained from the whole unit. Students will also compare ideas about stewardship with peers to evaluate and strategically plan their ranch or farm to demonstrate good stewardship.

4. Give students time to start planning ideas. When time is up, collect any thoughts/ideas groups have created, so they are not lost/forgotten before the next day.

Day 2:

TEACHER NOTE:

Make sure to point out to students that their Cost/Benefit recording sheet profit is per head of livestock, so if they have multiple animals, they will need to multiply that profit by the total number of livestock. For crops, the profit is calculated per acre, so no additional math is necessary.

1. Pass out the Acre sheets, any thoughts/ideas students had the day before, and all resources from other lessons to each group.
2. Let students begin to work on the project. Each group will fill out what crop(s) or livestock(s) will be raised on each individual acre. Students should color code each acre or create their own map key to represent the choices for the acres. Individual Acre sheets can be cut out and re-assembled on the butcher paper for presentation when students have completed their project.
3. Groups complete the Livestock Cost/Profit Conversion sheet.
4. When all 10 acres have been developed, groups should complete the Budget Summary sheet.
 - List the crop/livestock grown on each acre.
 - Fill in the cost per acre for each crop/livestock.
 - Calculate the profit per acre.
 - Calculate the totals for the cost column, profit column, and total ranch/farm profit.
5. Collect all groups' Acre sheets and materials at the end of the time period. When groups finish, have students tape the sheets together to represent their 10 acres and attach it to the butcher paper. Have students do this on the final day if you are giving them extra time to finish before they

TEACHER NOTE:

The cost and income per acre for all crops will be found on the Cost/Benefit sheet from Lesson 6. The cost and income per acre for all livestock will be found on the Livestock Cost/Profit conversion sheet.

present.

Day 3:

1. Have students finish their acre sheets and attach them to the butcher paper if you gave them extra time to complete their project.
2. When each group has completed their ranch/farm project, hang them around the room. Each group will have a chance to share their completed ranch/farm project with the class by using the gallery walk technique. Half of the groups stand by their sheets and present while the other groups rotate and listen. When all groups have been heard, flip and complete the process again. Each group will share what they grew and/or raised and explain why they made the decisions that they did.
3. After all groups have presented, reconvene the whole class and ask the following question: **“After looking at everyone’s ranch/farm project, are there any changes that you would make on your property, why or why not?”** Allow all groups to share their thoughts.
4. After students have discussed their ranch/farm projects, have them take out the maps from Lesson 2. Point out that while the ranch/farm project managed 10 acres, the average size of farms and ranches in Wyoming is over 2,600 acres. Some are smaller, and others are much larger. Using the map resources from Lesson 2, discuss how the size of ranches, when combined with the precipitation, topography, and irrigation potential of an area, are all factors that ranchers and farmers must consider when managing their businesses.
 - Ask students to share what they notice about where larger numbers of crops and livestock are raised or grown when comparing the maps



In this task, students will be engaged in the higher order thinking skill of synthesis by combining information gained from the maps to learn about good stewardship and economic decisions.



In this task, students will be engaged in the higher order thinking skill of evaluation by critiquing information gained from the whole unit. Students will also compare ideas about stewardship with peers to evaluate and strategically plan their ranch or farm to demonstrate good stewardship.

side-by-side.



- Say: **“How might your decisions have been different with a larger ranch/farm size and/or your ranch/farm was in a different county.”** Draw student’s attention to the fact that you wouldn’t run a cattle ranch on 10 acres, though 10 acres may be enough for a small farm.



Assessment: Pass out Quick Write sheets, on which students answer the following question: **“When planning how to use your 10 acres, what things did you need to consider in order to be a good steward of your land in Wyoming?”** *In their Quick Writes, students should make the connection that they needed to look at their environment (topography, precipitation, irrigation) to decide what crops/livestock would be the best to raise on their land. They should also write about crop rotation, which takes care of the soil, and how many animals they could raise on the land to avoid overgrazing. They should include the economic impact of the different options and how they made land use decisions that would also be profitable. Finally, they should identify that all of these decisions are good stewardship practices.*

Credits/Sources: Not applicable