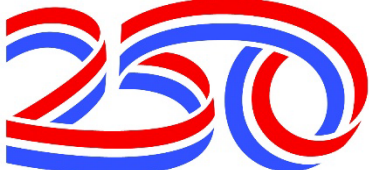




Iowa's Agriculture Heritage

Melanie Bloom, 2025 Iowa Teacher of the Year

AMERICA  IA

 | Department of Education

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How This Project Started

This project was completed as part of the 2025 Iowa Teacher of the Year's year of service. As part of Iowa's America 250 commemoration, it was suggested by Iowa Department of Education Director **McKenzie Snow**, Iowa Governor **Kim Reynolds** and later supported by Iowa Secretary of Agriculture **Mike Naig** and many staff members in each office.

Acknowledgements

- **Andrew Klumpp** and **Rachel Hansen** at the **State Historical Society of Iowa** (Des Moines, Iowa) allowed me access to State Historical Museum resources for a couple days and then invited me to share ideas with other teachers through webinars and workshops. Lesson 1 really came together during those visits as did any other task with a map of Iowa or historical artifacts.
- **NASA's Space Academy for Educators** staff (Huntsville, Ala.) provided several activity ideas to incorporate throughout Lesson 2. Their teacher programming and resources are great minds-on experiences.
- **Conservation Districts of Iowa** (Des Moines, Iowa) have long hosted the Envirothon competition. Many of the native species' activities in Lesson 2 came from previous Envirothon experiences with students.
- **Seed Savers** (Decorah, Iowa) let me dive into their resources and provided some food for thought, especially around rematriation of seeds for Indigenous communities and food security issues in Lesson 3. I can't wait to tour their facilities with students!
- I connected with author **Drake Hokanson**, whom I've long followed! His book about the history of Peterson (a town I have personal and professional connections to), laid the foundation, built the walls and put the roof on Lesson 4. His support brings one of my favorite units to life.
- **Daniel Jones** at **Living History Farms** (Des Moines, Iowa) assisted with brainstorming. They host many educational events and workshops throughout the year, too.
- The **Iowa FFA Association** (Ankeny, Iowa) also organizes several competitive events related to topics within the curriculum that my students have enjoyed participating in over the years (agricultural issues, agricultural mechanics, agronomy, food science, soils, and more).
- The **Sioux Central agricultural education students** (Sioux Rapids, Iowa) who have been good sports as I've facilitated threadbare versions of a few of these tasks in the past, and who will learn a lot more along with me as we continue to explore these topics in the future.
- In addition to the help with ideas and brainstorming, I had the help of a small unit of helpers. **Nathen Anderson** and **Kelly Tate** (fellow Sioux Central teachers), **Annaliese Bloom** (my daughter, an Iowa State University Agricultural Education student), **Josh Day** (Muscatine CSD teacher), and **Dr. Amber Rice** (Iowa State University Department of Agricultural Education and Studies associate professor) all answered calls, returned emails and critically read lessons as this curriculum came together.
- The support throughout the year from my Department of Education supervisors and support team was imperative for this project to happen. Thank you to **Stefanie Wager** and **Alan Spencer** for the many hours they also spent on this project with me!
- Finally, thank you to close friends, family members, and especially my husband Stephen, all of whom have listened to me brainstorm and process ideas out loud all year long.

Thank you all!

- Melanie Bloom, 2025 Iowa Teacher of the Year

Meet 2025 Iowa Teacher of the Year Melanie Bloom

Melanie Bloom, an agriculture teacher from Sioux Central Community School District in Sioux Rapids, is the 2025 Iowa Teacher of the Year.

See [photos](#) from the announcement event, watch the [announcement video](#), and view an [interview with Bloom](#).

“Learning from Melanie Bloom means something more than just reading from textbooks or preparing for tests,” Governor Reynolds said. “It involves experiencing a field not only of study but also of building and doing—and that means preparing for life. This is what teaching looks like at its very best, and it’s no wonder Melanie is the first CTE and agriculture educator in many years to become Iowa’s Teacher of the Year. It was a pleasure to present this award to Melanie in the presence of her students and colleagues.”

“Iowa’s amazing teachers, like Melanie Bloom, provide students with what they need to meet high expectations and realize their incredible potential,” Snow said. “Melanie creates a classroom community where students are deeply engaged in what they are learning and why it matters. Through career-connected learning, she empowers students to make informed postsecondary choices and succeed in what comes next. Melanie invests in new and future educators, and believes that, together, our students make the greatest difference in the world.”

Bloom was selected from nine finalists as Iowa’s first-ever Regional Teachers of Year representing all education regions of the state. Bloom also serves as the Prairie Lakes Regional Teacher of the Year.

“Getting to know students, each of them, who they are, where they’re coming from, what they’re bringing to the classroom, I think that is the most fun part of teaching,” Teacher of the Year Melanie Bloom said.

Bloom is an Iowa native, farmer and agriculture educator who established the district’s first full-time agriculture program and serves as the FFA advisor. With about one in five Iowans earning their living in agriculture and agriculture-related industries, Melanie helps students explore diverse career opportunities in agriculture-related fields through engaging classroom instruction and work-based learning experiences.

“I think students need to be exposed to as many different careers of interest as early as they can,” Bloom said. “My job is to find and connect to opportunities and then prepare my students to take advantage of those opportunities.”

Beyond her classroom, Bloom is an expert in the development and implementation of high-quality agriculture instructional materials. She has served as a beginning teacher mentor and faculty member in an Iowa teacher preparation program. Bloom is currently pursuing a Ph.D. in agriculture education, working to support the implementation of evidence-based instructional practices.



Curriculum Outline

Topics:	Each Lesson Includes:
Lesson 1: Introduction	Teacher Outline
Lesson 2: Iowa's Landscape	Support Document(s)
Lesson 3: Indigenous Impact on the Land	Student Document(s)
Lesson 4: Lines on the Land	Evaluation Rubric
Lesson 5: Advocacy in Agriculture	

This curriculum is designed to support inquiry, historical understanding, agricultural literacy, and career-connected learning aligned to Iowa academic standards.

Lesson 1: Introduction

Teacher Outline

Use this brief lesson to introduce students to significant events in Iowa's agricultural history, including geological and geographical changes to the landscape, statehood, agricultural achievements, educational advancements and policy development.



Background

Duration

1 – 2 class periods

Learning Objectives

- Analyze significant events related to agricultural history in Iowa.
- Construct a simplified timeline representing significant events related to agricultural history in Iowa.

Essential Questions

- How do events that are part of Iowa's agricultural heritage impact current-day Iowans?
- How have Iowa's landscapes and agricultural practices changed throughout history?
- How have historical Iowans adapted agricultural practices in the midst of challenging circumstances?

Supplies and Materials

- Devices with internet access
- Poster-making supplies (optional)
- Devices with graphic design app (optional)

Key Terms

4-H – of or relating to a program set up by the USDA originally in rural areas to help young people become productive citizens by instructing them in useful skills, community service and personal development

Agriculture – the science, art, or practice of cultivating the soil, producing crops and raising livestock and in varying degrees the preparation and marketing of the resulting products

Appointment – a nonelective office or position

Capital – a group of buildings in which the functions of state government are carried out

County – the largest territorial division for local government within a state of the U.S.

Culture – a particular society that has its own characteristic features of everyday existence

FFA – an intracurricular student organization for those interested in agriculture and leadership

General Assembly – a legislative assembly

Glacier – a large body of ice moving slowly down a slope or valley or spreading outward on a land surface

Green Revolution – the great increase in production of food grains due to the introduction of high-yielding varieties, to the use of pesticides and to better management techniques

Humanitarian – promoting human welfare and social reform

Hybrid – an offspring of two animals or plants of different subspecies, breeds, varieties, species, or genera

Incursion – an entering in or into

Inflation – a continuing rise in the general price level usually attributed to an increase in the volume of money and credit relative to available goods and services

Louisiana Purchase – region of the west central U.S. between the Mississippi River and the Rocky Mountains purchased in 1803 from France

Magazine – a print periodical containing miscellaneous pieces and often illustrated

Plat – a plan, map, or chart of a piece of land with actual or proposed features

Survey – to determine and delineate the form, extent, and position of by taking linear and angular measurements and by applying the principles of geometry and trigonometry

Territory – a part of the U.S. not included within any state but organized with a separate legislature

Township – a division of territory in surveys of U.S. public land containing 36 sections or 36 square miles

Tractor – a four-wheeled or tracklaying automotive vehicle used especially for drawing farm equipment



Teacher Preparation

Complete the following tasks prior to instructional time:

- ☐ Collect supplies and materials
- ☐ Copy Agricultural Heritage Event Cards for each group of students; cut out
- ☐ Find a historical timeline image (such as the [Timeline of Ancient Egypt](#) or [Ancient Mesopotamia from Cities to Empires](#)); avoid using a U.S. or Iowa history timeline
- ☐ Determine local expectations for the project and modify documents as needed
- ☐ Prepare documents and resources for student access



Getting Started

Show students a timeline, using one of the suggestions above or another of your choice. Discuss the following questions, then have students capture a summary of the discussion on their worksheets.

1. How are timelines organized?
2. What is the purpose of a timeline?
3. How do timelines help us understand historical events?
4. Is it important to put historical events into order? Why or why not?



Instructional Strategies and Activities

Task 1: Agricultural Heritage Events

- Arrange students in groups of 3-4 students.
- Provide one set of **Agricultural Heritage Events Cards** to each group.
- Students should attempt to arrange the cards in chronological order on a large desk, table, or floor; do not allow use of the internet or other resources. Note: the item numbers on the cards are randomized and will not provide chronological clues.
- Use the key to help students correctly rearrange the timelines.
- Assign or facilitate a selection of events: each student in the class should select or be assigned one event to learn more about it, then write down what they already know about the topic.
- Ask the class to compile a short list of basic questions to be used for researching event significance. If students struggle to identify questions to ask, suggest one or more of the following to help with the brainstorming process.
 - When did this event take place?
 - Where did this event take place?
 - Who are some significant people responsible for or affected by this event?
 - Why is this topic important to Iowa's history?
 - What causes can you identify?
 - What present-day effects do we experience because of this event?
- Introduce your expectations for the project using the **Agricultural Heritage Events Rubric**. Discuss instructions for submission of the project and due date.
- Students research basic information about the assigned event, using the questions suggested during brainstorming.
- Students create a paper poster or a sample social media post.
- Collect, evaluate and provide feedback projects.

Advanced Applications

- Share student projects with a broader audience for others to learn from (other students and classes, on social media, or other audiences).
- Students interested in this topic should prepare for and participate in National History Day event sponsored by the State Historical Society of Iowa (<https://history.iowa.gov/learn/national-history-day>).



Assessment and Evaluation

Formative Assessment: refer to the **Agricultural Heritage Event Cards** key below.

Item number topical key:

E = education
G = geography
I = invention
P = policy
S = society

Item #	Events	Year(s)	Key
G00	The most recent glacial incursion in present-day Iowa, known as the Des Moines Lobe, melts.	10,000 - 9,000 BC	1
S50	The Woodland culture first appeared in present-day Iowa; early agricultural experimentation was evident among the denser population and complex social organization; the Woodland culture gave rise to the Glenwood and Mill Creek cultures in present-day western Iowa and Oneota culture in present-day eastern Iowa.	1,000 BC - 1,250 AD	2
S00	The Ioway (present-day northern, central, and eastern Iowa) and Sioux tribes (present-day northwest Iowa), descended from the Oneota culture, and were the predominant Native American tribes residing in present-day Iowa.	1500 - 1840	3
S40	Sauk, Meskwaki, Potawatomi, and Winnebago Native American tribes were relocated into present-day Iowa by other Native American tribes, the French, and then the U.S. government from Wisconsin and Illinois.	1700 - 1840	4
P76	The Declaration of Independence signed in Philadelphia, Penn. , marking the establishment of the United States of America. The U.S. celebrates the 250th Anniversary in 2026.	1776	5
P03	President Jefferson acquires most of present-day central U.S. with the Louisiana Purchase from the French First Republic , including Iowa's land.	1803	6
G36	Surveyors for the Public Land Survey System (PLSS) created the first counties and townships in present-day eastern Iowa using the rectangular survey method.	1836	7
G38	Iowa Territory separated from the Wisconsin Territory , including parts of present-day Minnesota, North and South Dakota. The capital is first located in Burlington and later moved to Iowa City.	1838	8
G46	Iowa, with present-day borders, achieves statehood , separating it from the Minnesota Territory. The capital moves to Des Moines.	1846	9
S50	Indian tribes have all been resettled in Kansas, Oklahoma and South Dakota - some by treaty, others forcibly by the U.S. Government.	1850	10
E47	Iowa's General Assembly establishes the State University of Iowa in Iowa City to educate "future doctors, lawyers and other professionals." The Board of Regents approved using "The University of Iowa" for everyday usage.	1847	11

Item #	Events	Year(s)	Key
S57	A portion of the Meskwaki Native American tribe returned to Iowa to purchase land in present-day Tama County, land that is to this day owned and controlled by the Meskwaki.	1857	12
E58	The Iowa Agricultural College and Model Farm was chartered near Ames ; Iowa State College is established as Iowa's Land Grant Institution under the Morrill Act signed by President Lincoln in 1864. It was later renamed Iowa State University of Science and Technology.	1858	13
G72	The process of surveying and platting Iowa's counties is completed , resulting in Iowa's 99 counties with the boundaries and names used today.	1872	14
E79	The only veterinary school in Iowa is established at Iowa State College .	1879	15
I92	John Froelich invents the first gasoline-powered machine , an improvement over steam engines commonly used for threshing. The Waterloo Company and later John Deere built tractors using the same basic principles.	1892	16
I96	George Washington Carver completes undergraduate and graduate studies and agricultural research at Iowa State College . He is Iowa State's first Black student and then goes on to make broad improvements in agricultural practices in the southern U.S. and worldwide.	1896	17
I02	Edwin T. Meredith established the popular agricultural magazine, Successful Farming , the first publication of the Meredith Corporation in Des Moines. He later served as U.S. Secretary of Agriculture under President Wilson.	1902	18
E04	The first agricultural youth clubs are established in Iowa. These laid the foundation for 4-H program . Jessie Field Shambaugh is the "Mother of 4-H."	1904	19
E14	The Smith-Lever Act , signed by President Wilson, establishes the Cooperative Extension Service, modeled after the Iowa Agricultural Extension to conduct research and share modern technologies with agriculturalists across the state through Iowa State College.	1914	20
P14	At the outbreak of World War I , Iowa-born Herbert Hoover headed the Commission for Relief in Belgium, an international relief organization that provided food in Europe. He later headed the Food Administration and the American Relief Administration, was appointed as Secretary of Commerce, and was elected to President	1914	21
I16	Henry C. Wallace, a dairy science teacher at Iowa State College, became editor of the family-owned magazine, Wallaces Farmer . He later served as the U.S. Secretary of Agriculture under Presidents Harding and Coolidge.	1916	22
E17	Vocational agriculture courses were established in Iowa by the Smith-Hughes Act signed by President Wilson. Today agricultural education courses are offered in most Iowa high schools.	1917	23
I23	Henry A. Wallace developed Copper Cross, the first hybridized corn which drastically increased corn yields. He later established what became Pioneer Hi-bred before going on to serve as the U.S. Secretary of Agriculture and the Vice President of the U.S. under President Franklin D. Roosevelt	1923	24

Item #	Events	Year(s)	Key
E29	Students from 23 schools in Iowa established the Iowa Future Farmers of America (FFA) , providing opportunities to develop premier leadership, personal growth and career success skills for high school students taking agriculture courses. The organization's name was later changed to reflect the diversity and breadth of the agriculture industry.	1929	25
I70	Iowa native Norman Borlaug receives the Nobel Peace Prize for his humanitarian work throughout the Green Revolution, improving agricultural practices and alleviating hunger in Asia and Latin America. He later established the World Food Prize Foundation headquartered in Des Moines.	1970	26
S80	The Farm Crisis, resulting from severe inflation, high interest rates, low trade demand for agricultural products, causes extensive population movement, mental health issues among farmers, and bankruptcy among family farmers.	1980's	27
P09	Former Iowa Governor Tom Vilsack begins his first appointment as the U.S. Secretary of Agriculture , serving in the same role under both Presidents Obama and Biden.	2009	28

Summative Assessment: **Agricultural Heritage Events Rubric**



References and Resources

Merriam Webster. (2026). Merriam-Webster Online Dictionary. Retrieved from www.merriam-webster.com/

National FFA Organization. (2026). What is FFA? Retrieved from www.ffa.org/about-us/what-is-ffa/

Student Documents



Background

Investigate various significant events in Iowa's agricultural heritage, including geological and geographical changes to the landscape, statehood, agricultural achievements, educational advancements and policy development.

Learning Objectives

- Construct a simplified timeline representing significant events related to agricultural history in Iowa.
- Analyze significant events related to agricultural history in Iowa.

Essential Questions

- How do events part of Iowa's agricultural heritage impact current-day Iowans?
- How have Iowa's landscapes and agricultural practices changed throughout history?
- How have historical Iowans adapted agricultural practices in the midst of challenging circumstances?

Key Terms

4-H – of or relating to a program set up by the USDA originally in rural areas to help young people become productive citizens by instructing them in useful skills, community service, and personal development

Agriculture – the science, art, or practice of cultivating the soil, producing crops and raising livestock and in varying degrees the preparation and marketing of the resulting products

Appointment – a nonelective office or position

Capital – a group of buildings in which the functions of state government are carried out

County – the largest territorial division for local government within a state of the U.S.

Culture – a particular society that has its own characteristic features of everyday existence

FFA – an intracurricular student organization for those interested in agriculture and leadership

General Assembly – a legislative assembly

Glacier – a large body of ice moving slowly down a slope or valley or spreading outward on a land surface

Green Revolution – the great increase in production of food grains due to the introduction of high-yielding varieties, to the use of pesticides and to better management techniques

Humanitarian – promoting human welfare and social reform

Hybrid – an offspring of two animals or plants of different subspecies, breeds, varieties, species, or genera

Incursion – an entering in or into

Inflation – a continuing rise in the general price level usually attributed to an increase in the volume of money and credit relative to available goods and services

Louisiana Purchase – region of the west central U.S. between the Mississippi River and the Rocky Mountains purchased in 1803 from France

Magazine – a print periodical containing miscellaneous pieces and often illustrated

Plat – a plan, map, or chart of a piece of land with actual or proposed features

Survey – to determine and delineate the form, extent, and position of by taking linear and angular measurements and by applying the principles of geometry and trigonometry

Territory – a part of the U.S. not included within any state but organized with a separate legislature

Township – a division of territory in surveys of U.S. public land containing 36 sections or 36 square miles

Tractor – a four-wheeled or tracklaying automotive vehicle used especially for drawing farm equipment



Materials and Resources to Gather

- ☐ Multimedia and Technology:
 - Internet
 - Graphic design app (optional)
- ☐ Supplies and Equipment:
 - Poster-making supplies (optional)



Step-by-Step Instructions

Task 1: Agricultural Heritage Events

1. With your group, attempt to arrange the **Agricultural Heritage Events Cards** in chronological order on a desk, table, or floor. Do not use the internet or other resources. Note: the item numbers on the cards are randomized and will not provide chronological clues.
2. Your teacher will review the correct order of events with the class. Rearrange your cards into the correct order.
3. Your teacher will facilitate selection of events. Each student in the class will choose one event to research independently. Write your topic name on the Topic Research page.
4. Write down what you already know about this topic on the Topic Research page.
5. As a class, brainstorm basic questions to ask and answer during research. Record these questions on the Topic Research page.
6. Review expectations for the project using the **Agricultural Heritage Events Rubric**.
7. Research your topic and record information on the Topic Research page.
8. Develop a poster or sample social media post to share with your classmates.

Advanced Applications

- Share your project with a broader audience (other students and classes, on social media, or other audiences).
- Participate in a National History Day (State Historical Society of Iowa) event.

Student Work for Lesson 1: Introduction

Name: _____



Before Class

Summarize the class discussion about timelines below.



During Class

Task 1: Agricultural Heritage Events – Topic Research

Chosen Topic: _____

What do you already know about your topic?

Questions to answer:

1.

2.

3.

4.

5.



Reflect on Learning

What is the most important information you learned during this lesson, and why?

1.

What two pieces of information were surprising to you, and why?

1.

2.

What three questions do you still have about any of these topics?

1.

2.

3.



After Class

How could you use the information above to inform others or to further your understanding of the subject?

Evaluation Rubric: Agriculture Heritage Events

Expectation	★★★★	★★★	★★☆	★☆☆	Feedback
Historical Accuracy All information is accurate, clearly explains the event's significance in Iowa's agricultural history, and includes dates, names, and facts.					
Relevance to Iowa Agriculture Clearly connects the event to Iowa's agricultural development, economy or culture.					
Clarity & Communication Message is concise, engaging, and easy to understand; clear main idea or theme.					
Sources & Credibility All sources are credible, cited correctly and enhance understanding of the event.					
Creativity & Visual Design (Poster) Design is eye-catching, original and enhances understanding of the topic; excellent use of visuals, layout and color.					
Creativity (Social Media Post) Post is formatted authentically for a platform, uses captions, hashtags or visuals effectively to reach an audience.					
Totals					Points Possible = _____

Other Comments:

Timeline Cards

Print and cut out

The most recent glacial incursion in present-day Iowa, known as the Des Moines Lobe, melts. G00	Sauk, Meskwaki, Potawatomi and Winnebago Native American tribes were relocated into present-day Iowa by other Native American tribes, the French, and then the U.S. government from Wisconsin and Illinois. S40
The Woodland culture first appeared in present-day Iowa; early agricultural experimentation was evident among the denser population and complex social organization. The Woodland culture gave rise to the Glenwood and Mill Creek cultures in present-day western Iowa and Oneota culture in present-day eastern Iowa. S50	The Declaration of Independence signed in Philadelphia, PA, marking the establishment of the United States of America; the U.S. celebrates the 250th Anniversary in 2026. P76
The Ioway (present-day northern, central, and eastern Iowa) and Sioux tribes (present-day northwest Iowa), descended from the Oneota culture and were the predominant Native American tribes residing in present-day Iowa. S00	President Jefferson acquires most of present-day central U.S. with the Louisiana Purchase from the French First Republic, including Iowa's land. P03

Surveyors for the Public Land Survey System (PLSS) created the first counties and townships in present-day eastern Iowa using the rectangular survey method. G36	Indian tribes have all been resettled in Kansas, Oklahoma, and South Dakota - some by treaty, others forcibly by the U.S. Government. S50
Iowa Territory separated from the Wisconsin Territory, including parts of present-day Minnesota, North and South Dakota. The capital is first located in Burlington and later moved to Iowa City. G38	Iowa's General Assembly establishes the State University of Iowa in Iowa City to educate "future doctors, lawyers and other professionals." The Board of Regents later approved the title "The University of Iowa" for everyday usage E47
Iowa, with present-day borders, achieves statehood, separating it from the Minnesota Territory. The capital moves to Des Moines. G46	A portion of the Meskwaki Native American tribe returned to Iowa to purchase land in present-day Tama County, land that is to this day owned and controlled by the Meskwaki. S57
The Iowa Agricultural College and Model Farm was chartered near Ames. Iowa State College is established as Iowa's Land Grant Institution under the Morrill Act signed by President Lincoln. It was later renamed Iowa State University of Science and Technology. E58	John Froelich invents the first gasoline-powered machine, an improvement over steam engines commonly used for threshing. The Waterloo Company and later John Deere built tractors using the same basic principles. I92

The process of surveying and platting Iowa's counties is completed, resulting in Iowa's 99 counties with the boundaries and names used today. G72	George Washington Carver, completes undergraduate and graduate studies and agricultural research at Iowa State College. Iowa State's first Black student, Carver then went on to make broad improvements in agricultural practices in the southern U.S. and worldwide. I96
The only veterinary school in Iowa is established at Iowa State College. E79	Edwin T. Meredith established the popular agricultural magazine, Successful Farming, the first publication of the Meredith Corporation in Des Moines. He later served as U.S. Secretary of Agriculture under President Wilson. I02
The first agricultural youth clubs are established in Iowa. These laid the foundation for 4-H program. Jessie Field Shambaugh is the "Mother of 4-H." E04	Henry C. Wallace, a dairy science teacher at Iowa State College, became editor of the family-owned magazine, Wallaces Farmer. He later served as the U.S. Secretary of Agriculture under Presidents Harding and Coolidge. I16
The Smith-Lever Act signed by President Wilson establishes the Cooperative Extension Service to conduct research and share modern technologies with agriculturalists across the state through Iowa State College. E14	Vocational agriculture courses were established in Iowa by the Smith-Hughes Act signed by President Wilson. Today agricultural education courses are offered in most Iowa high schools. E17

At the outbreak of World War I, Iowa-born Herbert Hoover headed the Commission for Relief in Belgium, an international relief organization that provided food in Europe. He later headed the Food Administration and the American Relief Administration, was appointed as Secretary of Commerce, and was elected to President P14	Henry A. Wallace developed Copper Cross, the first hybridized corn which drastically increased corn yields. He later established what became Pioneer Hi-bred before going on to serve as the U.S. Secretary of Agriculture and the Vice President of the U.S. under President Franklin D. Roosevelt. I23
Students from 23 schools in Iowa established the Iowa Future Farmers of America (FFA) providing opportunities to develop premier leadership, personal growth and career success skills for high school students taking agriculture courses. The organization's name was later changed to reflect the diversity and breadth of the agriculture industry. E29	The Farm Crisis, resulting from severe inflation, high interest rates and low trade demand for agricultural products causes extensive population movement, mental health issues among farmers and bankruptcy among family farmers. S80
Iowa native Norman Borlaug receives the Nobel Peace Prize for his humanitarian work throughout the Green Revolution, improving agricultural practices and alleviating hunger in Asia and Latin America. He later established the World Food Prize Foundation headquartered in Des Moines. I70	Former Iowa Governor Tom Vilsack begins his first appointment as the U.S. Secretary of Agriculture, serving in the same role under both Presidents Obama and Biden. P09

Lesson 2: Iowa's Landscape

Teacher Outline

This lesson includes several tasks that will provide students with experiences related to soil development, topography, native vegetation and native wildlife in Iowa.



Background

Duration

5 - 6 class periods

Learning Objectives

- Construct explanations for soil formation processes in Iowa.
- Create and analyze topographic maps representing landforms in Iowa.
- Categorize native plants and animals in Iowa ecoregions.

Essential Questions:

- Why do different soils exist?
- How does topography impact human activities?
- What significant differences exist between Iowa ecoregions?

Supplies & Materials:

- Topographical or relief map of Iowa
- Modeling clay or dough
- Craft supplies
- Device with internet, camera and video editing apps
- Shoebox (one per group)
- Plastic building blocks or modeling clay
- Bamboo skewer sticks
- Colored pencils
- Ruler

Key Terms:

Alfisol – a soil of an order comprising leached basic or slightly acid soils with a clay-enriched B horizon (subsoil)

Alluvium – clay, silt, sand, gravel, or similar detrital material deposited by running water

Biodiversity – biological diversity in an environment as indicated by numbers of different species of plants and animals

Climate – the weather conditions prevailing in an area in general or over a long period

Colluvium – highly variable soils found on current or former footslopes

Deposition – something deposited

Ecoregion – a major ecosystem defined by distinctive geography and receiving uniform solar radiation and moisture

Elevation – the height above the level of the sea

Entisol – a soil of an order comprising mineral soils that have not yet differentiated into distinct horizons

Eolian – borne, deposited, produced, or eroded by the wind

Fauna – the animals of a region, period, or special environment

Flora – plant, bacterial, or fungal life of a region or special environment

Food chain – a hierarchical series of organisms each dependent on the next as a source of food

Habitat – the place or environment where a plant or animal naturally or normally lives and grows

Horizon – any of the reasonably distinct layers of soil or its underlying material in a vertical section of land

Inceptisol – soils that exhibit minimal horizon development

Lacustrine – materials deposited in lake environments

Loess – a loosely compacted yellowish-gray deposit of windblown sediment of which extensive deposits occur

Mollisol – a soil of an order comprising temperate grassland soils with a dark, humus-rich surface layer containing high concentrations of calcium and magnesium

Outwash – material carried away from a glacier by meltwater and deposited beyond the moraine

Parent material – the underlying geological material—unconsolidated mineral matter or organic matter—from which soil horizons develop

Till – unstratified glacial drift consisting of clay, sand, gravel, and boulders intermingled

Topography – the configuration of a surface including its relief and the position of its natural and constructed features

Vertisol – a clayey soil with little organic matter which occurs in regions having distinct wet and dry seasons



Teacher Preparation

Complete the following tasks prior to instructional time:

- ☐ Collect supplies and materials
- ☐ Locate a topographical or relief map of Iowa to provide for students (three-dimensional would be best, but digital or two-dimensional print versions such as https://commons.wikimedia.org/wiki/File:Iowa_topography.jpg also work)
- ☐ Locate a simple stop-motion video online to provide to students as an example (view the collection at www.youtube.com/playlist?list=PLI2c1xsVYM6XoUjaE_jc99Jn7EAnZHMTg)
- ☐ Determine which digital apps might be appropriate for students to use to create stop-motion videos

- ☐ Set up three-dimensional topographic maps in shoeboxes according to the instructions in **Physical Topography Map Setup**
- ☐ Review the advanced application options in the **Physical Topography Map Setup** and determine which, if any, to pursue with students
- ☐ Verify that all website links used for all tasks are accessible on student devices
- ☐ Determine local expectations for the project and modify documents as needed
- ☐ Prepare documents and resources for student access



Getting Started

Provide a topographical or shaded relief map of the state of Iowa to students for observation. Discuss the following or other questions. Ask students to write a summary of the class discussion on the student worksheet.

1. Where are the higher elevations in the state?
2. Where are the lower elevations in the state?
3. Can you guess how Iowa's topography was formed?



Instructional Strategies and Activities

Task 1: Soil Formation Stop-Motion Video

- Arrange students in groups of two or three and assign a parent material to each group. (Note: not all parent materials and soil orders are commonly found in Iowa.)
- Students research assigned parent materials, soil formation process, and likely soil orders using [Introduction to Soil Science, 2E](#) sections: Parent Materials, Soil Development and Soil Orders.
- Once research is complete, review expectations for stop-motion video projects using the **Stop-Motion Video Evaluation Rubric** and clarify any student questions.
- Students plan and produce stop-motion videos, using modeling clay and digital apps, depicting how specific soil order(s) are derived from specific parent materials.
- Collect, evaluate and provide feedback on each stop-motion video.

Task 2: Topography Maps

- Arrange students in groups of three or four; provide a previously prepared topographic map in a shoebox for each group.
- Students use the bamboo skewers and rulers as measuring tools: they will record raster data and create a two-dimensional pixelated map of the land mass to create a topographic map.
- Student groups compare their maps to other groups and reflect on the process.
- Optional: students complete advanced applications according to **Physical Topography Map Setup**.

Task 3: Prairie Species

- Students work individually or in small groups to “meet” some basic prairie plants and animals by researching and drawing each recommended species.
- For the five plants, include common height, common root depth, and identifying characteristics.

- Species: big bluestem, Indiangrass, compass plant, prairie tickseed, leadplant
- For the nine animals and birds, include common size, identifying characteristics and footprint or track.
 - Mammals: bison, white-tailed deer, coyote, badger, thirteen-lined ground squirrel
 - Amphibian/reptiles: ornate box turtle, garter snake
 - Insect: monarch butterfly, regal fritillary
 - Birds: meadowlark (choose eastern or western depending on which is more common in your part of the state), bobolink, red-tailed hawk
- Optional: for a more interactive experience,
 - Students cut pieces of paper to match the column widths and row heights for each species.
 - Next, sketch and describe each species on the blank papers.
 - Then, match and tape each strip over the species name.
 - As students fold the taped papers back, they read the species names to practice identification of the common species.

Task 4: Native Flora & Fauna

- Assign Iowa's 10 ecoregions to students, either independently or in groups.
- Students use internet resources to learn about ecoregion characteristics, plant and animal species typical to the ecoregion.
- Students create a simple food chain showing several relationships among species common to the ecoregion.

Advanced Applications:

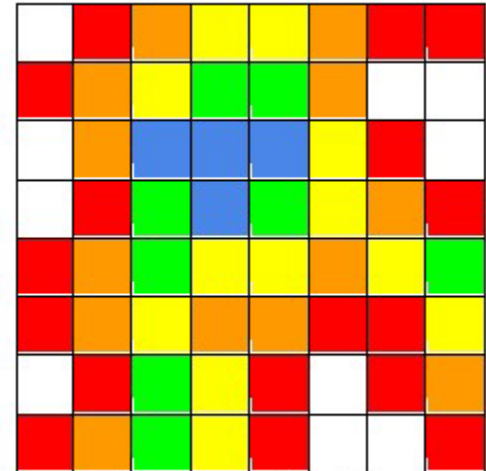
- Make students' videos available to educate a broader audience about soil formation processes in Iowa.
- Students interested in this topic should prepare for and participate in the Iowa FFA Soils Evaluation Career Development Event (www.iowaffa.com/cde.aspx).
- Students interested in this topic should prepare for and participate in the Envirothon competition sponsored by Conservation Districts of Iowa (<https://cdiowa.org/get-involved/envirothon/>).
- Start native plants from seed to be transplanted, donated, or sold.
- Visit a local native ecosystem to record footage of the natural area to share.
- Promote the benefits of native plantings to local land- and homeowners.
- Interview a biologist, conservationist, or naturalist to learn more about local native ecosystems, including soil parent materials, topography and geology, flora and fauna species, and the values and benefits of restoring or conserving natural areas.



Assessment and Evaluation

Formative Assessment

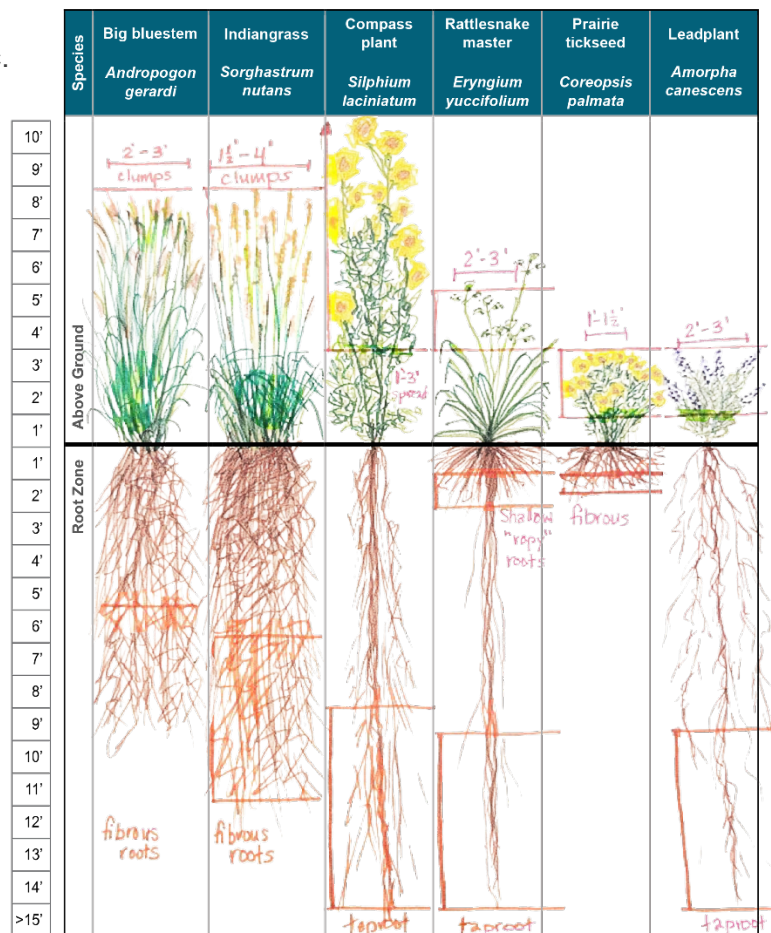
- Task 1: Ensure student data is reasonable, realistic, and accurate before students begin stop-motion video production.
- Task 2: Student topography maps should match the image at right; variations may occur due to errors.
 - White = "sea level" or zero elevation
 - Red = 1 cm elevation
 - Orange = 2 cm elevation
 - Yellow = 3 cm elevation
 - Green = 4 cm elevation
 - Blue = 5 cm elevation
- Task 3: Review student species sketches and descriptions for detail and accuracy.
- Task 4: Review student research and work for accuracy.



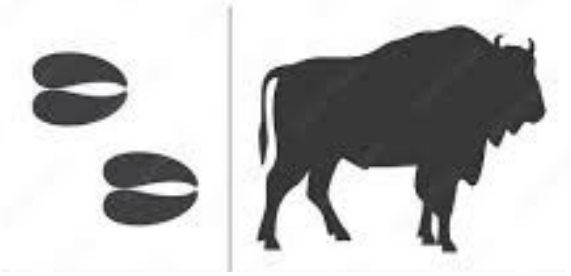
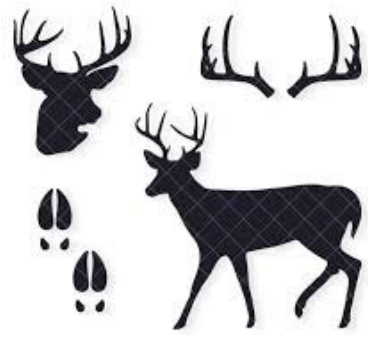
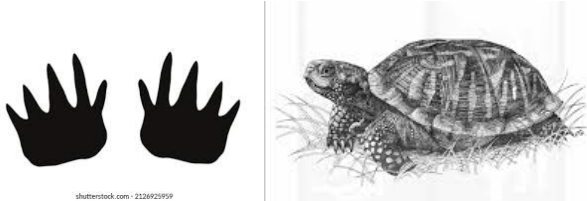
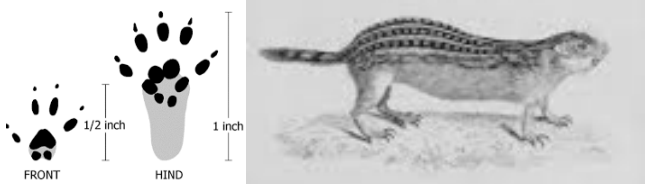
Topography Map Key

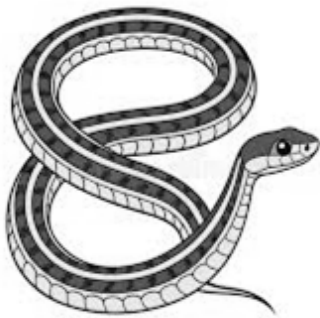
Summative Assessments:

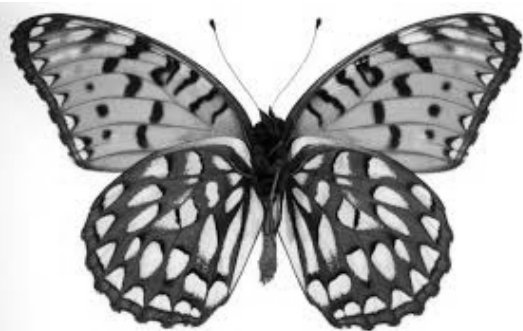
- Evaluate Task 1 using the **Stop-Motion Video Evaluation Rubric**.
- Evaluate Task 2 (optional) advanced application activities for grading purposes.
- Evaluate Task 3 research completed; see examples for plant species on the right, and animal species, below. Optional: Evaluate the advanced application activities for grading purposes.
- Evaluate Task 4 ecoregion research, species research and food chain for grading purposes.



Fauna Species

Species	Bison (<i>Bison bison</i>)	White-tailed deer (<i>Odocoileus virginianus</i>)
Sketch and Print		
Species	Coyote (<i>Canis latrans</i>)	Badger (<i>Taxidea taxus</i>)
Sketch and Print		
Species	Ornate box turtle (<i>Terrapene ornata</i>)	Thirteen-lined ground squirrel (<i>Ictidomys tridecemlineatus</i>)
Sketch and Print		

Species	Common garter snake (<i>Thamnophis sirtalis</i>)	Monarch butterfly (<i>Danaus plexippus</i>)
Sketch and Print		

Species	Regal fritillary (<i>Speyeria Idalia</i>)	Meadowlark – choose one: Western (<i>Sturnella neglecta</i>) Eastern (<i>Sturnella magna</i>)
Sketch and Print		

Species	Bobolink (<i>Dolichonyx oryzivorus</i>)	Red-tailed hawk (<i>Buteo jamaicensis</i>)
Sketch and Print		



Materials and Resources

Anderson, A., & Fidel, R. (2025). Introduction to soil science, 2E. Iowa State University Digital Press: Ames, IA. Retrieved from <https://iastate.pressbooks.pub/isudp-2025-201/>

Merriam Webster. (2026). *Merriam-Webster Online Dictionary*. Retrieved from www.merriam-webster.com/

National Aeronautics and Space Administration. (2026). *Space to Learn*. Retrieved from www.nasa.gov/learning-resources/

Oxford University Press. (2026). *Oxford Languages*. Retrieved from <https://languages.oup.com/google-dictionary-en/>

Animal Species Image Links

Bison: <https://stock.adobe.com/images/silhouette-and-footprints-of-an-american-bison-buffalo-vector-illustration/474499402>

White-tailed deer: www.etsy.com/listing/749247255/whitetail-deer-shapes-vector-bundle

Coyote: www.pressenterprise.com/2017/06/07/how-to-recognize-a-coyote-by-appearance-paw-prints/

Badger: www.istockphoto.com/vector/badger-footprint-illustration-drawing-engraving-ink-line-art-vector-gm898542200-247949602 and <https://stock.adobe.com/search?k=badger+drawing>

Ornate box turtle: https://www.shutterstock.com/image-vector/turtle-paw-footprint-tortoise-step-trace-2126925959?dd_referrer= and <https://inkart.net/product/ornate-box-turtle-signed-fine-art-print/?srsltid=AfmBOoqCxxSRNmCyWPJrhfbmZ--E5N9a-H8snQqIMJqmQy4KBVqr4GC6>

Thirteen-lined ground squirrel: <https://icwdm.org/species/rodents/thirteen-lined-ground-squirrels/> and https://jenikirbyhistory.getarchive.net/media/the-animal-kingdom-pl-31-6963245790-85a89e?_cf_chl_tk=HcyLMAtxvGnH3VGRpv0k9pd3qJD_HRtiMhP_W.94mVs-1775678967-1.0.1.1-LIIdQgPbvNjlcptGpPWrngwFk0iUhvDYGSxI8xfP_Sfo

Common garter snake: www.dreamstime.com/detailed-representation-common-garter-snake-color-highlighting-beauty-image368132068

Monarch butterfly: www.flickr.com/photos/coloredpencilmag/39028459535

Regal fritillary: <https://nebraskalepidoptera.com/idalia2/>

Meadowlark: www.supercoloring.com/media/coloring/2321417/meadowlark

Bobolink: www.flickr.com/photos/internetarchivebookimages/20717988606/

Red-tailed hawk: www.supercoloring.com/media/drawing-tutorials/363465/how-to-draw-a-hawk-flying

Physical Topography Map Setup (Teacher Instructions)

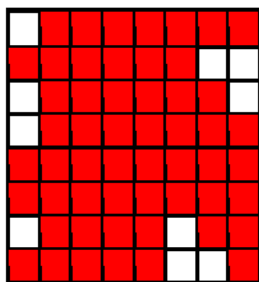
Materials

- One shoebox per group
- Plastic building blocks (Lego™) or other craft/modeling supplies
- Ruler (cm)
- Tape
- Knife or scissors
- Bamboo skewer

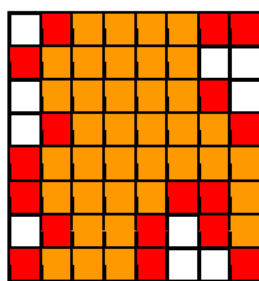
Teacher Setup

1. Use the grids below to build three-dimensional topographic maps with five layers: red being the lowest layer, then orange, yellow, green, and blue being the highest. Each layer should be about 1cm thick

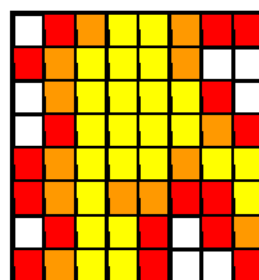
1st layer - red



2nd layer - orange



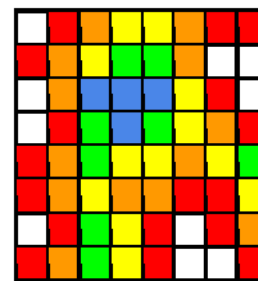
3rd layer - yellow



4th layer - green



5th layer - blue



2. Build an additional map for each additional group of students.
3. Place each structure in a shoebox and use tape to make sure they will not slide.
4. Puncture a grid of holes, eight rows by eight columns, directly above the map structure. The holes should be just large enough to fit a bamboo skewer through; use a skewer to test hole diameter.
5. Review the five sections of the Soil Geography section beginning at <https://iastate.pressbooks.pub/introsoilscience/chapter/mapping-methods/>.

Advanced Applications

Choose from the following options, assign different students to each option, or allow students to choose options to complete on their own. Assume the following:

- The landform is in Iowa; the climate is similar to where you live.
- The elevation is greatly exaggerated - the elevation on the model landform is more drastic than the actual land it represents.
 - Each square on the grid represents an area 100 feet wide and 100 feet long.
 - Each level/color represents a 10-foot rise in elevation.
- One acre = 43,560 square feet
- The formula for slope is $\text{slope (\%)} = \text{rise (feet)} / \text{run (feet)} \times 100$

Advanced Application: Watersheds

1. Remove the landform from the box and place it in a shallow tray.
2. Cover the landform with plastic wrap, keeping the surface relatively smooth.
3. Use a blue marker to trace where you think water will flow from the highest points on the landform to the lowest.
4. Use a pipette and water to add water to the highest point(s) on the landform. Compare the water flow to your predictions.

Advanced Application: Slope

1. Recreate a true scale model of the landform using modeling clay.
2. Where would the steepest slope(s) be on the landform? Why?
3. Review the information about Land Capability Classes at <https://iastate.pressbooks.pub/soiljudgingiowa/chapter/land-capability-class/>.
4. Which class(es) do you think are represented on the landform? Why?
5. What limitations can you find on the landform which affect the land capability class?

Advanced Application: Erosion

1. Review the chapter section on erosion at <https://iastate.pressbooks.pub/introsoilscience/chapter/soil-erosion/>.
2. Which area(s) of the landform are at highest risk of soil being washed away (eroded) during precipitation events? Why?
3. Is there a risk of other types of erosion? Why or why not?
4. Review the chapter section on erosion prevention at <https://iastate.pressbooks.pub/introsoilscience/chapter/erosion-control-strategies/>.
5. How could soil erosion be prevented for this land?

Advanced Application: Agricultural Applications

You hope to use this land for a business related to economically valuable crops (grain, vegetable, fruit, flowers, trees) or animals (domesticated or harvestable species only). Create a plan, accompanied by a simple map and key OR replica/model, which shows how the land could be used to produce food, feed, fiber and/or biofuels. Include any of the following which apply:

- Include structures, fields, fences, roads/paths as needed.
- Include practices to conserve soil (erosion prevention).
- Soil type, slope, land capability class, watershed and erosion could limit activities.
- If you raise animals, you will need to stay within carrying capacity. For example, in Iowa, one beef or dairy cow, one horse, or one buffalo require about two full acres of grass for grazing, plus hay stored for winter use.

Advanced Application: Outdoor Recreation

You hope to use this land for outdoor recreation (any combination of the following: hiking, biking, hunting, fishing, horseback trail riding, ATV/UTV trails, birdwatching, event/wedding venue, camping). Create a plan, accompanied by a simple map and key OR replica/model, which allows others to enjoy the land. Include any of the following which apply:

- Trails, paths, roads
- Plantings
- Structures
- Water features
- Infrastructure (electricity, septic, water lines)
- Water drainage (surface or sub-surface) for flood mitigation
- Reduce negative human impacts (littering, habitat destruction, erosion) while still allowing humans to enjoy the land

Student Documents



Background

Throughout this lesson, learn about how soils in Iowa were formed, how topography impacts human activities, and the many native plant and animal species that exist in Iowa.

Learning Objectives:

- Construct explanations for soil formation processes in Iowa.
- Create and analyze topographic maps representing landforms in Iowa.
- Categorize native plants and animals in Iowa ecoregions.

Essential Questions

- Why do different soils exist?
- How does topography impact human activities?
- What significant differences exist between Iowa ecoregions?

Key Terms:

Alfisol – a soil of an order comprising leached basic or slightly acid soils with a clay-enriched B horizon (subsoil)

Alluvium – clay, silt, sand, gravel, or similar detrital material deposited by running water

Biodiversity – biological diversity in an environment as indicated by numbers of different species of plants and animals

Climate – the weather conditions prevailing in an area in general or over a long period

Colluvium – highly variable soils found on current or former footslopes

Deposition – something deposited

Ecoregion – a major ecosystem defined by distinctive geography and receiving uniform solar radiation and moisture

Elevation – the height above the level of the sea

Entisol – a soil of an order comprising mineral soils that have not yet differentiated into distinct horizons

Eolian – borne, deposited, produced, or eroded by the wind

Fauna – the animals of a region, period, or special environment

Flora – plant, bacterial, or fungal life of a region or special environment

Food chain – a hierarchical series of organisms each dependent on the next as a source of food

Habitat – the place or environment where a plant or animal naturally or normally lives and grows

Horizon – any of the reasonably distinct layers of soil or its underlying material in a vertical section of land

Inceptisol – soils that exhibit minimal horizon development

Laclustrine – materials deposited in lake environments

Loess – a loosely compacted yellowish-gray deposit of windblown sediment of which extensive deposits occur

Mollisol – a soil of an order comprising temperate grassland soils with a dark, humus-rich surface layer containing high concentrations of calcium and magnesium

Outwash – material carried away from a glacier by meltwater and deposited beyond the moraine

Parent material – the underlying geological material—unconsolidated mineral matter or organic matter—from which soil horizons develop

Till – unstratified glacial drift consisting of clay, sand, gravel, and boulders intermingled

Topography – the configuration of a surface including its relief and the position of its natural and constructed features

Vertisol – a clayey soil with little organic matter which occurs in regions having distinct wet and dry seasons



Materials and Resources to Gather

- ☐ Required Texts/Readings:
 - [Introduction to Soil Science](https://iastate.pressbooks.pub/introsoilscience/) (https://iastate.pressbooks.pub/introsoilscience/)
- ☐ Multimedia and Technology:
 - Internet
 - Stop-motion video production app
- ☐ Supplies and Equipment:
 - Modeling clay
 - Shoebox with mystery map inside
 - Bamboo skewer
 - Colored pencils
 - Ruler



Step-by-Step Instructions

Task 1: Soil Formation Stop-Motion Video

1. Your teacher will assign you to a group and a parent material to research.
2. Access the text, [Introduction to Soil Science](https://iastate.pressbooks.pub/introsoilscience/) (<https://iastate.pressbooks.pub/introsoilscience/>).
3. Read the *Parent Materials* section of the text (<https://iastate.pressbooks.pub/introsoilscience/chapter/parent-materials/>) and begin research on your assigned parent material; record information about the parent material and soil formation processes in the table
 - a. Alluvium (IA)
 - b. Eolian (IA)
 - c. Glacial till (IA)
 - d. Glacial outwash (IA)
 - e. Laclustrine (IA)
 - f. Loess (IA)
 - g. Colluvium (IA)
 - h. *Marine*
 - i. *Organic accumulation*
 - j. *Residuum*
 - k. *Volcanic*
4. Review the soil forming factors in the *Soil Development* section of the text (<https://iastate.pressbooks.pub/introsoilscience/chapter/soil-development/>) and record information about each in the table.
5. Review the list of soil orders below and read the *Soil Orders* section of the text (<https://iastate.pressbooks.pub/introsoilscience/chapter/soil-orders/>); select one that is most likely to be formed from the assigned parent material.
 - a. Alfisol (IA)
 - b. Entisol (IA)
 - c. Inceptisol (IA)
 - d. Mollisol (IA)
 - e. Vertisol (IA)
 - f. *Andisol*
 - g. *Aridisol*
 - h. *Gelisol*
 - i. *Histosol*
 - j. *Oxisol*
 - k. *Spodosol*
 - l. *Ultisol*
6. Review expectations for the project using the **Stop-Motion Video Rubric**.
7. Use the modeling clay to create a series of images depicting how the assigned parent material is deposited, and then how the identified soil order might be formed from the parent material.
8. Stitch the images together to create a stop-motion video. Your teacher may suggest an app to use to create the video. The video should include the following:
 - a. A short introduction
 - b. Callouts or captions with parent material, depositional force and soil order.
 - c. A short summary,
 - d. Credits including producer (student) names and resources used
9. Submit the video to your teacher according to instructions.

Task 2: Topographic Maps

1. Use the bamboo skewer and ruler to measure the depth (in centimeters) of the first location (1A) on the grid.
2. Write the measurement for the location in the grid.
3. Repeat steps 1 & 2 for all locations in the grid.

4. Convert your measurements from depths (distance from the box lid to the landform) to elevation (distance from the lowest layer to the top of the landform). The lowest points on the landform should be zero and the highest at about 5cm.
5. Use colored pencils to color in the grid according to the key below.

a. 0cm white	d. 3cm yellow
b. 1cm red	e. 4cm green
c. 2cm orange	f. 5cm blue
6. Compare your map to other groups' maps.
7. Check your map by opening the lid of your box and comparing your map to the actual landform.
8. Optional: your teacher may assign or allow you to complete advanced applications related to this topic.

Task 3: Prairie Species

Look up the five common prairie species listed in the table and sketch each using colored pencils. Include the shape of the plant and roots as well as the typical plant height and root depth for each.

Look up the nine common prairie fauna species listed in the table and sketch each using colored pencils. Include identifying markings, size and a common footprint or track for each.

Task 4: Native Iowa Flora & Fauna

1. Your teacher will assign you one of Iowa's Ecoregions to research at <https://programs.iowadnr.gov/bionet/Docs/Ecoregions>.

a. Des Moines Lobe	f. Paleozoic Plateau
b. Iowan Surface	g. Rolling Loess Prairies
c. Loess Flats and Till Plains	h. Steeply Rolling Loess Prairies
d. Missouri Alluvial Plain	i. Upper Mississippi Alluvial Plain
e. Northwest Iowa Loess Prairies	j. Western Loess Hills
2. Access the iNaturalist website (www.inaturalist.org/guides) You will need to set up an account school email account to search for plant species (flora) typical to the ecoregion.
3. Access www.prrcd.org/habitat-and-wildlife/ to find a short list of animal species (fauna) commonly found in different habitats. Record as many species as you can find for your ecoregion or habitat. Be sure to include at least one species for each category in the table. Also, research and record at least two other species that each animal eats.

a. Amphibian
b. Bird
c. Fish
d. Insect
e. Mammal
f. Reptile

4. Use the species listed and the internet to create one food chain, beginning with one producer species, followed by one wildlife species that eats the producer species, followed by another wildlife species that eats the first wildlife species, and so on until you reach a level of consumer that has no predator. Sketch each species in the space provided in the table

Advanced Applications:

- Make your video available to educate a broader audience about soil formation processes in Iowa.
- Prepare for and participate in the Iowa FFA Soils Evaluation Career Development Event (www.iowaffa.com/cde.aspx).
- Prepare for and participate in the Envirothon competition sponsored by Conservation Districts of Iowa (<https://cdiowa.org/get-involved/envirothon/>).
- Start native plants from seed to be transplanted, donated, or sold.
- Visit a local native ecosystem to record footage of the natural area to share.
- Promote the benefits of native plantings to local land- and homeowners.
- Interview a biologist, conservationist, or naturalist to learn more about local native ecosystems, including soil parent materials, topography and geology, flora and fauna species, and the values and benefits of restoring or conserving natural areas.

Student Work for Lesson 2: Iowa's Landscape

Name: _____



Before Class

Summarize the class discussion about the topographic map of Iowa below.



During Class

Task 1: Soil Formation Stop-Motion Video Project

Properties	Description
Parent Material Name:	
Depositional Force:	Transported Water Gravity Wind
Most Likely Conditions:	
Description of Resulting Material Properties:	
Description of the Process in Your Own Words:	

Properties	Description
Material	
Topography	
Organisms	
Climate	
Time	

Task 2: Topography Maps

Initial Measurements (Depth)

	A	B	C	D	E	F	G	H
1								
2								
3								
4								
5								
6								
7								
8								

Topographic Measurements (Elevation)

	A	B	C	D	E	F	G	H
1								
2								
3								
4								
5								
6								
7								
8								

Task 3: Prairie Species

Plant Species

	Species	Big bluestem	Indiangrass	Compass plant	Rattlesnake master	Prairie tickseed	Leadplant
		<i>Andropogon gerardi</i>	<i>Sorghastrum nutans</i>	<i>Silphium laciniatum</i>	<i>Eryngium yuccifolium</i>	<i>Coreopsis palmata</i>	<i>Amorpha canescens</i>
10'	Above Ground						
9'							
8'							
7'							
6'							
5'							
4'							
3'							
2'							
1'							
1'	Root Zone						
2'							
3'							
4'							
5'							
6'							
7'							
8'							
9'							
10'							
11'							
12'							
13'							
14'							
>15'							

Animal, Reptile, Insect, and Bird Species

Species	Bison (<i>Bison bison</i>)	White-tailed deer (<i>Odocoileus virginianus</i>)
Sketch and Print		

Species	Coyote (<i>Canis latrans</i>)	Badger (<i>Taxidea taxus</i>)
Sketch and Print		

Species	Ornate box turtle (<i>Terrapene ornata</i>)	Thirteen-lined ground squirrel (<i>Ictidomys tridecemlineatus</i>)
Sketch and Print		

Species	Common garter snake (<i>Thamnophis sirtalis</i>)	Monarch butterfly (<i>Danaus plexippus</i>)
Sketch and Print		

Species	Regal fritillary (<i>Speyeria Idalia</i>)	Meadowlark – choose one: Western (<i>Sturnella neglecta</i>) Eastern (<i>Sturnella magna</i>)
Sketch and Print		

Species	Bobolink (<i>Dolichonyx oryzivorus</i>)	Red-tailed hawk (<i>Buteo jamaicensis</i>)
Sketch and Print		

Task 4: Native Iowa Flora and Fauna

Ecoregion Research

Properties	Description
Ecoregion Name:	
Landform Description:	
Surficial Materials:	
Soils:	
Climate:	
Potential Vegetation:	
Predominant Land:	
Water Resources: (specific rivers, lakes, other water sources within the ecoregion)	

Species Research

Properties	Description
Typical Plant Species (Producers):	
Typical Wildlife Species (Consumers) and What Species They Eat:	Amphibians: Birds: Fish: Insects: Mammals: Reptiles: Other/Unknown:

Food Chain

Category	Producer	Primary Consumer	Secondary Consumer	Tertiary Consumer	Quaternary Consumer
Sketch:	→	→	→	→	
Common Name:					
Scientific Name:					



Reflect on Learning

What is the most important information you learned during this lesson, and why?

1.

What two pieces of information were surprising to you, and why?

1.

2.

What three questions do you still have about any of these topics?

1.

2.

3.



After Class

How could you use the information above to inform others or to further your understanding of the subject?

Evaluation Rubric: Stop-Motion Video

Expectation	★★★	★★★	★★★	★★★	Feedback
Scientific Accuracy Demonstrates a thorough and accurate understanding of soil formation; clearly explains processes such as weathering, erosion, and organic matter accumulation.					
Representation of Parent Material Clearly and creatively shows how different parent materials influence soil types; visual details support scientific concepts.					
Storytelling & Sequence Logical, engaging, and well-organized sequence showing the transformation from parent material to soil horizons.					
Creativity & Visuals Highly creative use of materials, camera angles, and animation; visuals enhance understanding.					
Technical Quality Smooth animation, steady camera work, and clear focus; excellent pacing and editing.					
Narration & Text Explanation Narration or captions are clear, accurate, and enhance understanding of the process.					
Engagement & Effort Shows exceptional effort, creativity, and attention to detail.					
Totals					Points Possible = _____

Other Comments:

Lesson 3: Indigenous Impact on the Land

Teacher Outline

Continuing from the geological history of Iowa's landscape, students research Indigenous nations' dependence and impacts on the land and connect practices and food security issues to modern food production systems.



Background

Duration

4 – 5 class periods

Learning Objectives

- Compare Indigenous and modern agricultural production practices.
- Describe Indigenous cultures connected to Iowa's landscape.
- Compose a model agricultural system using Indigenous crops and cultivation methods.

Essential Questions

- How did Indigenous peoples in Iowa use agriculture to sustain their communities?
- How did Indigenous land management practices impact Iowa's landscape?
- How can Indigenous farming practices be applied to modern food production?

Supplies and Materials

- Devices with Internet access
- Optional: modeling, display, and poster materials
- Optional: device with video production or electronic exhibit apps

Key Terms

Archaeology – the scientific study of material remains (such as tools, pottery, jewelry, stone walls and monuments) of past human life and activities

Crop – a plant or animal or plant or animal product that can be grown and harvested for profit or subsistence

Cultivate – to prepare or prepare and use for the raising of crops; to foster the growth of

Ecosystem – the complex of a community of organisms and its environment functioning as an ecological unit

Food security – the fact or an instance of being able to consistently access or afford adequate food

Food sovereignty – the right of peoples to healthy and culturally appropriate food produced through ecologically sound and sustainable methods, and their right to define their own food and agriculture systems

Habitation – a dwelling place, settlement, colony

Indigenous – of, relating to, or descended from the earliest known inhabitants of a place and especially of a place that was colonized

Monoculture – the cultivation or growth of a single crop or organism especially on agricultural or forest land

Nation – a tribe or federation of tribes

People – human beings forming a body and united by a common culture or tradition, and typically having common language, institutions and beliefs

Polyculture – the usually simultaneous cultivation or growth of two or more compatible plants or organisms and especially crops or fish in a single area

Reciprocity – a mutual exchange of privileges; a recognition by one of two countries, states, or institutions of the validity of licenses or privileges granted by the other

Resilience – an ability to recover from or adjust easily to misfortune or change

Seed rematriation – the return of ancestral seeds and agricultural traditions to Indigenous communities

Stewardship – the careful and responsible management of something entrusted to one's care

Sustainable – of, relating to, or being a method of harvesting or using a resource so that the resource is not depleted or permanently damaged

Three sisters – corn, beans, and squash grown together

Tribe – a community composed chiefly of numerous families, clans, or generations who have a shared ancestry, culture, and language



Teacher Preparation

Complete the following tasks prior to instructional time:

- ☐ Collect supplies and materials
- ☐ Determine local expectations for the project and modify documents as needed
- ☐ Prepare documents and resources for student access



Getting Started

Display an image for students to view, such as that shown at right. (from https://commons.wikimedia.org/wiki/File:Three_Sisters_companion_planting_technique.jpg) Discuss the following questions.

- What crops are shown in this image?
- What do these crops have in common?
- How might growing multiple crops in one place be beneficial?
- What might be some challenges associated with growing multiple crops in one place?

Introduce the Three Sisters growing method. Explain that it reflects ecological balance and mutual support. Ask students to discuss and conduct research to answer the following questions using the think, pair, share method.

- What is the Three Sisters method?
- How does the Three Sisters method compare to modern agricultural production?
- What other crop species might benefit from groupings similar to Three Sisters?



Instructional Strategies and Activities

Task 1: Map of Indigenous Settlements in Iowa

- Students review a map (from <http://iowahild.com/>) of Iowa showing locations of historical indigenous settlements by nation, tribe, or group.
- Students should quickly reflect on the map, recording all impressions and questions that they have. Below are a few think-aloud prompts you could use to get started.
 - I noticed that many tribes lived in settlements close to one another:
 - Meskwaki settlements were clustered along eastern and central Iowa rivers.
 - The Ho-Chunk were mostly clustered in northeast Iowa.
 - Dakota settlements were concentrated in western and northern Iowa, but I noticed they were also in central and eastern Iowa.
- Next, students look at a map showing Iowa's land cover and vegetation in 1830 (from <https://naturalresources.extension.iastate.edu/lowas-Nature/educational-graphics>) and answer more questions. Below is a think-aloud prompts you could use to get started.
 - I notice many tribal settlements are located along rivers. I wonder if this was because rivers offered drinking water, irrigation for crops, and transportation.

Task 2: Indigenous Peoples Throughout Iowa's History

- Divide students into groups and assign each group one of the Indigenous communities found in Iowa's history (groups are listed with resources below).
- Students research basic information about the group and record the information.
- Suggest the use of "EBSCO" in the search engine for best results, or simply direct students to the following websites to start.

(1) Sauk (see also Meskwaki): EBSCO page: www.ebsco.com/research-starters/history/sauk

(2) Fox (see also Meskwaki): EBSCO page: www.ebsco.com/research-starters/history/fox-native-american-tribe

(1&2) Meskwaki (Sac & Fox of the Mississippi in Iowa)

- Tribe website: www.meskwaki.org/
- agriculture: www.meskwaki.org/red-earth-gardens/, www.youtube.com/watch?v=Jq8-zfsjbhs&t=448s, and www.youtube.com/watch?v=vTwBTfBDeHI&t=134s

(3) Iowa (Ioway)

- EBSCO page: www.ebsco.com/research-starters/agriculture-and-agribusiness/iowa-indian-tribe
- Tribe website: <https://iowanation.org/>
- agriculture: www.lhf.org/hours-and-admission/about-the-farms/1700-ioway-indian-farm/ and <https://iowatribeofkansasandnebraska.com/ioway-farms/>

(4) Dakota (Sioux)

- EBSCO page: www.ebsco.com/research-starters/language-and-linguistics/sioux
- Tribe website: www.oqlala.gov/
- agriculture: <https://storymaps.arcgis.com/stories/c16c5fd863264e4e9095e045caaf43f5>

(5) Ho-Chunk (formerly Winnebago)

- EBSCO page: www.ebsco.com/research-starters/politics-and-government/ho-chunk
- Tribe website: <https://ho-chunknation.com/>
- agriculture: www.youtube.com/watch?v=zmtllv-v0n4

(6) Otoe-Missouria

- EBSCO page: www.ebsco.com/research-starters/language-and-linguistics/otoe
- Tribe website: www.omtribe.org/
- agriculture: <https://nebraskapublicmedia.org/en/news/news-articles/indigenous-garden-serves-as-next-step-in-reconciliation-for-otoe-missouria-tribe/> and www.omtribe.org/who-we-are/enterprises/7c-land-cattle-co/

(7) Omaha of Nebraska

- EBSCO page: www.ebsco.com/research-starters/earth-and-atmospheric-sciences/omaha-tribe
- Tribe Website: www.omahatribe.com/
- agriculture: <https://nebraskapublicmedia.org/en/news/news-articles/bringing-indigenous-foods-back-to-the-table/>

(8) Potawatomi

- EBSCO page: www.ebsco.com/research-starters/agriculture-and-agribusiness/potawatomi
- Tribe website: www.potawatomi.org/
- agriculture: www.potawatomi.org/blog/2018/11/19/finding-food-on-the-prairie/

(9) Optional: for a larger class, advanced students, or students with connections outside of Iowa, consider offering other tribes/nations connected to central U.S.: Apache, Arapaho, Caddo, Cheyenne, Chippewa, Comanche, Crow, Kickapoo, Kiowa, Mandan, Menominee, Miami, Munsee, Ojibwe, Oneida, Ottawa, Pawnee, Ponca, Potawatomi, Shawnee

Task 3: Agricultural Model

- Students research traditional crops and production methods, then design a project of their choice (see options below) to share with classmates.
 - Model garden (physical or digital)
 - Farm map (physical or digital)
 - Sustainability proposal for a school or community garden (written)
 - Interactive exhibit (poster, artifacts, and exploration)
 - Mini documentary (video)
 - Digital story (any format)
 - Other idea(s) approved by the teacher
- Review expectations for student projects using the **Agricultural Model Evaluation Rubric** and clarify any student questions.
- As students prepare to share their projects, discuss how to make the sharing interactive (walk-throughs, role-plays, Q&A, other ideas) to hold classmates' interest.
- Encourage students to take their ideas and implement them in authentic ways.

Advanced Applications:

- Invite a representative of an Indigenous culture to share about food sovereignty, seed rematriation, and land stewardship practices with students.
- Establish a garden featuring Indigenous crop species and cultivation practices.
- Partner with a local garden or cultural organization.
- Integrate practices to include soil health, ecosystems, and/or climate resilience into your agricultural model.
- Compare Indigenous production agriculture to modern farm production practices.
- Prepare recipes typical to Indigenous cultures studied during class.
- Students interested in this topic should prepare for and participate in the National History Day event (State Historical Society of Iowa).
- Students interested in this topic could prepare for and participate in the Food Science CDE (Iowa FFA Association).
- Students interested in this topic could prepare for and participate in the Nursery & Landscaping CDE (Iowa FFA Association).



Assessment and Evaluation

Formative Assessment:

- Task 1: Examine student reflections and questions about the map.
- Task 2: Review accuracy of student research for the assigned Indigenous peoples.
- Task 3: Ensure student data is appropriate and accurate before students begin designing their agricultural models.

Summative Assessment:

- Evaluate Task 3 using the Agricultural Model Evaluation Rubric.



Resources

La via campesina. (2025). What is Food Sovereignty? Retrieved from <https://viacampesina.org/en/what-is-food-sovereignty/>

Merriam Webster. (2026). Merriam-Webster Online Dictionary. Retrieved from www.merriam-webster.com/

Seed Savers Exchange. (2026). Seed Rematriation. Retrieved from <https://seedsavers.org/seed-rematriation/>

Student Document



Background

Research Indigenous nations associated with Iowa's landscape, including agricultural and land management practices, typical crops and food security issues.

Learning Objectives

- Compare Indigenous and modern agricultural production practices.
- Describe Indigenous cultures connected to Iowa's landscape.
- Compose a model agricultural system using Indigenous crops and cultivation methods.

Essential Questions

- How did Indigenous peoples in Iowa use agriculture to sustain their communities?
- How did Indigenous land management practices impact Iowa's landscape?
- How can Indigenous farming practices be applied to modern food production?

Key Terms

Archaeology – the scientific study of material remains (such as tools, pottery, jewelry, stone walls, and monuments) of past human life and activities

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Three sisters – corn, beans, and squash grown together

Tribe – a community composed chiefly of numerous families, clans, or generations who have a shared ancestry, culture, and language



Materials and Resources to Gather

- ☐ Multimedia and Technology:
 - Internet
 - Graphic design or video production apps (optional)
- ☐ Supplies and Equipment:
 - Poster-making supplies (optional)



Step-by-Step Instructions

Task 1: Agricultural Heritage Events

1. Look at the map of Iowa Tribal Habitations, All Periods and answer the questions on the student document.
2. Next, look at the map of Iowa Land Cover in 1830 and answer the questions on the student document.

Task 2: Indigenous People Throughout Iowa's History

Your teacher will assign you an Indigenous people from Iowa or the Central U.S. to learn more about, either independently or in groups.

Search for information about the assigned people and record what you learn on the student document. Your teacher may provide some websites to help you get started.

Task 3: Agricultural Model

1. Research at least three traditional crops grown by Indigenous people in Iowa.
 - Species
 - Seasonal cycles (planting, harvest)
 - Planting and cultivation methods
 - Tools used for crop production, harvest, and processing
 - At least one traditional meal or recipe using each crop
 - Cultural values connected to agriculture (community, respect for land, reciprocity, food sovereignty)

2. Review expectations for the project using the Agricultural Model Evaluation Rubric.
3. Design one of the following using all three species (and others if desired).
 - Model garden (physical or digital)
 - Farm map (physical or digital)
 - Sustainability proposal for a school or community garden (written)
 - Interactive exhibit (poster, artifacts, and exploration)
 - Mini documentary (video)
 - Digital story (any format)
 - Other idea approved by the teacher
4. Share your project with your classmates using one of the following interactive elements:
 - A “walk-through” of the garden or map
 - A short role-play of a planting season
 - Q&A where classmates act as community members or elders
 - Other idea approved by the teacher

Advanced Applications:

- Invite representative of an Indigenous nation to share about food sovereignty, seed rematriation, and land stewardship practices with students.
- Establish a school garden featuring Indigenous crop species and cultivation practices.
- Partner with a local garden or cultural organization.
- Integrate practices to include soil health, ecosystems, and/or climate resilience into your agricultural model.
- Compare Indigenous production agriculture to modern farm production practices.
- Prepare recipes typical to Indigenous cultures studied during class.
- Prepare for and participate in the National History Day event (State Historical Society of Iowa).
- Prepare for and participate in the Food Science CDE (Iowa FFA Association).
- Prepare for and participate in the Nursery & Landscaping CDE (Iowa FFA Association).

Student Work for Lesson 3: Indigenous Impact on the Land

Name: _____



Before Class



(Image from https://commons.wikimedia.org/wiki/File:Three_Sisters_companion_planting_technique.jpg)

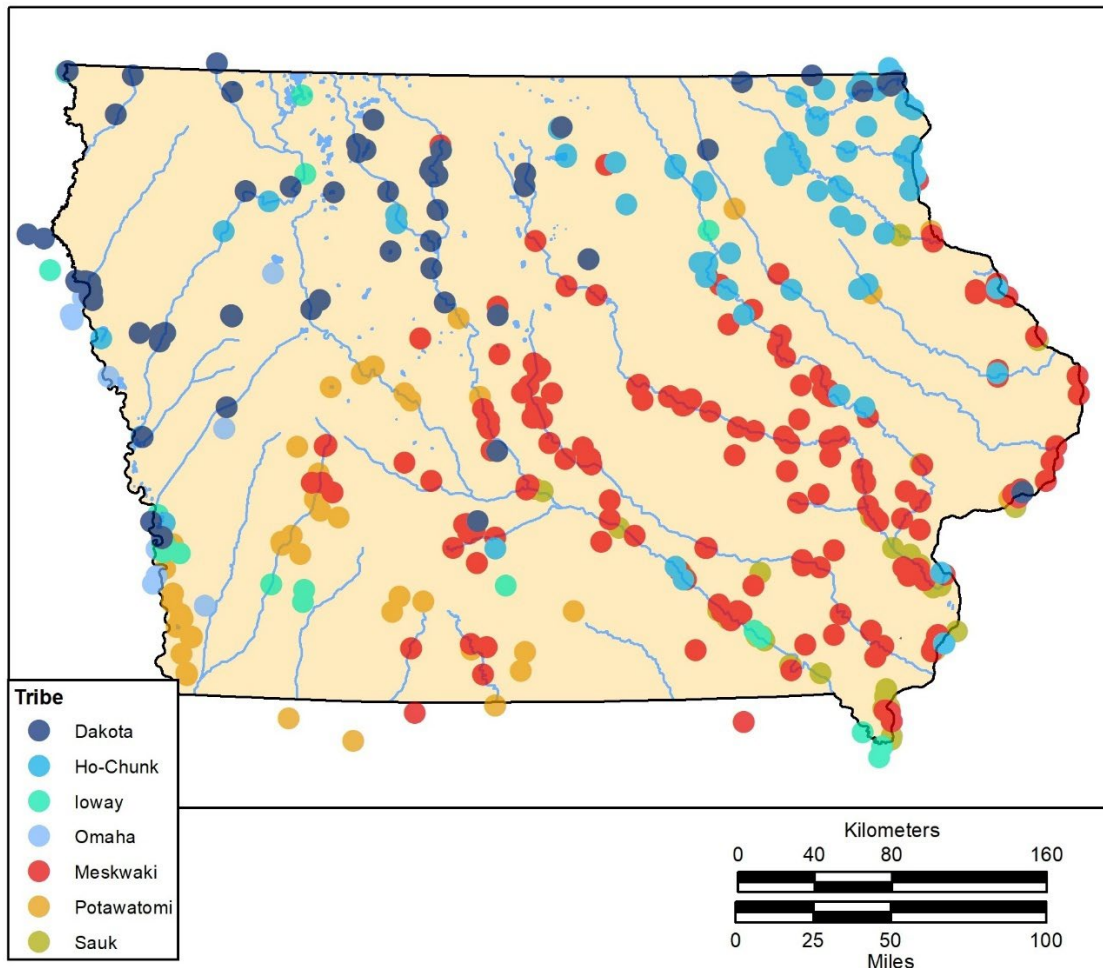
Summarize class discussion:



During Class

Task 1 Map of Indigenous Settlements in Iowa

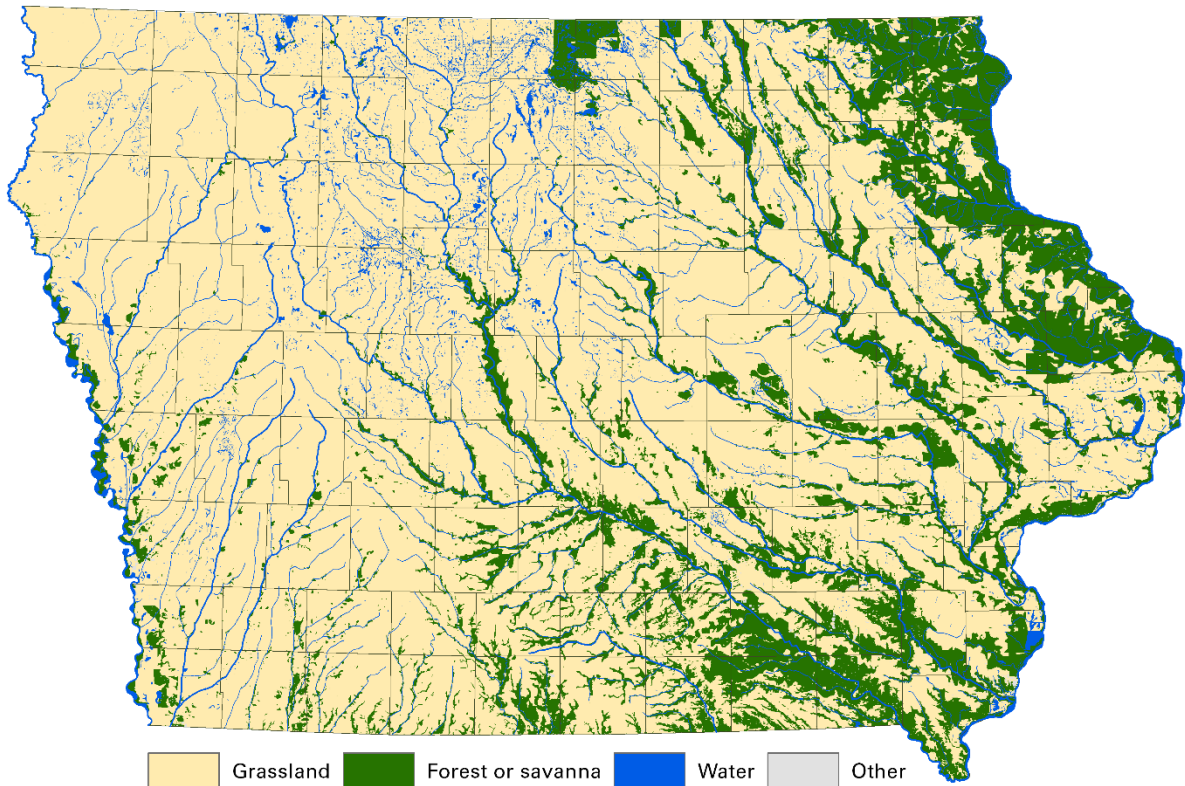
All Tribal Habitations, All Periods



(Image from <http://iowahild.com/>)

- What do you notice or wonder about the arrangement of tribal habitations?
- How are groups distributed across the state? What patterns do you notice? Are groups clustered in the same areas? Where/why? Are groups dispersed across the state? Where/why?
- What other natural features occur with settlements? What else is near it?
- Are there any signs of interaction among groups of settlements? How are they connected? Why are some settlements more connected than others?

Land Cover Map of Iowa (1830)



(Image from <https://naturalresources.extension.iastate.edu/lowas-Nature/educational-graphics>)

- What geographic features might have attracted people to live there?
- What patterns do you notice about where people settled and the natural features located there?
- How might the natural features affect the kinds of crops that were grown?

Task 2: Indigenous Peoples Throughout Iowa's History

- Assigned Indigenous group
- Name in the group's own language (and how to pronounce it!)
- Category (people, tribe, nation, other)
- Culture area
- Language or language group
- Which other Indigenous group(s) do they have connections to?
- Current location(s)
- Current population size
- Historical significance related to Iowa's landscape
- Land use and management
- Historical food and agriculture information
- Interesting information including society, culture, and religion
- Artifacts left behind
- Contemporary life, focusing on current food and agriculture activities
- Modern food security issues facing the Indigenous people

Task 3: Agriculture Model Project

	Species 1	Species 2	Species 3
Crops			
Seasonal Cycles			
Planting and Cultivation Methods			
Tools Used			
Traditional Meal or Recipe			
Cultural Values Reflected			

Discussion Questions

- How did agriculture support food security and trade?
- How did farming reflect Indigenous relationships with the land?
- What lessons apply to climate and sustainability challenges today?



Reflect on Learning

What surprised you most about Indigenous agriculture in Iowa?

How does this knowledge challenge your beliefs about both farming and history?

What responsibility do we have when learning from Indigenous cultures?



After Class

How could you use the information above to inform others or to further your understanding of the subject?

Evaluation Rubric: Agricultural Model

Expectation	★★★	★★★	★★★	★★★	Feedback
Indigenous Ag Knowledge & Representation Demonstrates understanding of Indigenous ag practices, including why crops and methods were used together. Names Indigenous nation(s) connected to the practices, demonstrates respect for the culture.					
Sustainability & Modern Connections Applies Indigenous ag practices to a modern project including sustainability and environmental issues.					
Project Design & Creativity Engaging, well-organized and visually compelling.					
Collaboration & Process Group members worked together using clear roles and shared responsibility.					
Presentation & Communication Ideas are communicated clearly and confidently, using appropriate vocabulary. An interactive element enhances understanding.					
Totals					Points Possible = _____

Other Comments:

Lesson 4: Lines on the Land

Teacher Outline

Through readings and sketchnotes, students learn about land surveys and legal description in Iowa, then produce mini documentaries tailored to local applications of the readings.



Background

Duration

10 – 12 class periods

Learning Objectives

- Demonstrate the rectangular survey method used in Iowa.
- Interpret legal descriptions of land.

Essential Questions

- How was Iowa's land divided into the tracts we see on maps today?
- How is legal description used?

Supplies and Materials

- Highlighters
- Colored pencils
- County and township plat maps
- Devices with internet and video editing apps
- Compasses
- Handwarmers
- Ice packs
- Strong magnets
- Empty cardboard tubes, such as paper towels
- Markers
- Scissors
- Measuring tools representing 66' measuring tape/chain, rings to tally chains, and flags/markers

Key Terms

Baseline – a line serving as a basis; one of known measure or position used (as in surveying) to calculate or locate something

Chain – a unit of length equal to 66 feet (about 20 meters)

Cardinal direction – the four main points of a compass: north, south, east and west which are also known by the first letters: N, S, E and W

Compass – a device for determining directions by means of a magnetic needle turning freely on a pivot and pointing to the magnetic north

Correction line – one of a set of parallels of latitude used for laying out nominally square sections and townships in the public land survey

County road – a highway maintained by a county

Documentary – a presentation (such as a film or novel) expressing or dealing with factual events

Highway – a public way, a main direct road

Legal description – a precise, formal written statement that defines the exact boundaries and location of a piece of real property

Meridian – the half of a great circle on the surface of the earth passing through the poles numbered for longitude on a map or globe

Metes and bounds – the boundaries of a tract of land as described by reference to lines and distances between points on the land

Mile – a unit of length equal to 5,280 feet

Obstacle – something that impedes progress or achievement

Plat – a piece of ground

Plumb bob – the metal bob of a plumb line

Plumb line – a cord that has at one end a plumb bob and is used especially to determine verticality

Quarter-section – a tract of land that is half a mile square and contains 160 acres in the U.S. government system of land surveying

Rectangular survey – a 1785 U.S. method for surveying and identifying land using a grid of 6x6 mile townships, divided into 36 one-mile-square sections. It uses principal meridians and baselines to standardize property descriptions

Rectilinear – characterized by straight lines

Secondary road – a road not of primary importance; a feeder road

Section – a piece of land one square mile in area forming especially one of the 36 subdivisions of a township

Section line – the boundary line of a section in surveying

Square mile – a unit of area equal to a square one mile long on each side

Survey – to determine and delineate the form, extent, and position of a tract of land by taking linear and angular measurements and by applying the principles of geometry and trigonometry

Surveyor – one whose occupation is surveying land

Tally – a recorded reckoning or account

Township – a division of territory in surveys of U.S. public land containing 36 sections or 36 square miles



Teacher Preparation

Complete the following tasks prior to instructional time:

- ☐ Collect supplies & materials
- ☐ Review the reading and sketchnote documents (1-15) from the Hokanson text; determine which to complete. Each requires from 10 minutes to several class periods to complete, depending on how deeply you delve into the topics. Physical copies of the text can be ordered from the University of Iowa Press (<https://uipress.uiowa.edu/books/reflecting-prairie-town>).
- ☐ If you've never used the sketchnote process before, review suggestions at www.colorincolorado.org/teaching-ells/ell-classroom-strategy-library/sketchnotes. *Most of the notations completed by students for this project fall under the Entering/Emerging or Developing levels to simplify the acquisition of information prior to the mini documentary production.*
- ☐ Determine how readings and sketchnotes will be completed. The best results are typically achieved by providing physical paper copies. Several options exist:
 - Option 1: reading the selected passages as a class, stopping to discuss subjects, with students completing sketch-notes as they read and discuss
 - **Read-aloud by teacher** where you could - but would not have to - provide the text passages for students to read along
 - **Read-aloud as a class** with students taking turns reading
 - **Small group reading**, predicting how notes might be completed
 - **Individual reading**, predicting how notes might be completed
 - Option 2: chunk the material, asking groups of students to read, summarize, and help other students to complete the sketchnotes for one section
 - To focus solely upon the major lesson learning objectives, use only Topics 5-9 (surveying) and 12-14 (legal description)
- ☐ Select and make available to students a historical map of Iowa (1850s-1920s):
 - 1855 Rail Map (Iowa DOT): <https://iowadot.gov/media/5534/download?inline>
 - Map of the Iowa Central Air Line Rail Road and its connections – 1857 (Library of Congress): www.loc.gov/item/98688686/
 - Iowa History Course (State Historical Society of Iowa): <https://history.iowa.gov/learn/k-12-education/professional-learning/iowa-history-course>
 - 1856 Map of Iowa (Map Geeks): <https://mapgeeks.org/wp-content/uploads/1856-Map-of-Iowa.jpg>
 - Map showing location of lands belonging to [various railroad companies] – 1871 (Library of Congress): www.loc.gov/item/98688687/
 - Galbraith's railway mail service maps, Iowa – 1898 (Library of Congress): www.loc.gov/item/98688481/
 - Railroad map of Iowa – 1881 (Library of Congress): www.loc.gov/item/98688480/
 - Map of Iowa, issued by the Board of Railroad Commissioners – 1915 (Iowa University Libraries): <https://digital.lib.uiowa.edu/node/286430>
 - Historic Maps – various dates (Iowa Department of Transportation): <https://iowadot.gov/modes-travel/rail/iowa-passenger-rail/historic-maps>
- ☐ Run copies of student documents, plat/township/county maps, and other items
- ☐ Prepare documents and resources for student access



Getting Started

Display the historical map of Iowa (selected above) and lead students, arranged in groups of two to four, through the questioning process using the Question Formulation Technique (www.teachthought.com/project-based-learning-posts/qft/) prompts below.

- Students spend 1-2 minutes individually looking at the map.
- Next, arrange students in groups of 3-4.
- In their groups, students write down every question they can think of on the paper provided in the time allowed. Remind students of question stems (who, what, when, where, why, how) to help with questioning.
- Students need to analyze the questions they wrote:
 - Highlight open-ended questions.
 - Place a star next to closed-ended questions.
- Lead the class in a discussion about the processes of questioning:
 - Which type of question (open- or closed-) when answered, will yield more helpful information about the map? Why do you think this is so?
 - Which questions might produce more quantitative information?
 - Which questions might produce more qualitative information?
- Direct each group to choose four questions to revise to gain better information.
- Ask student groups to discuss why they think the map is important to study.
- Finally, each group should circle the five most important questions to answer.
- Ask students:
 - Do you think you could find answers to those five questions?
 - Where could you find credible information?
 - Who could you ask?



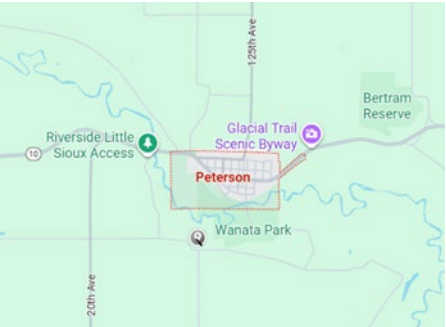
Instructional Strategies and Activities

Task 1: Reading and Sketchnotes

The following readings are taken from the Hokanson text, *Reflecting a Prairie Town: a Year in Peterson*. Lead students through readings and the sketchnote processes, summarized below. Additional context and background information for each reading is provided.

Chapter 4 Alioth and Polaris

Page(s)	Topics	Topics to Review and Other Background Information
46	1 – Introduction	- The Louisiana Purchase Survey: www.pointtopointsurvey.com/2016/07/louisiana-purchase-survey/ - Iowa Specific Land Surveying Exam Syllabus: https://dial.iowa.gov/media/4301/download?inline - Which U.S. government contract surveyors worked in your county?
46-47	2 – Accurate Measurements	- Imagine surveying in virgin prairie - How did surveyors adjust their compasses for magnetic variation?
48	3 – Distance From Settlements	- Did you know George Washington began his career as a surveyor? - What surveying crews traveled with, and how they traveled? - Carried by surveyors: tents, provisions, personal possessions, cook pots, bedrolls, provisions, shovels, axes, 66' measuring chain, flags, tally pins, compass and sighting monopod, field notebook, ink quills - An average day: 12 miles per day on foot
49	4 – Surveyor's Tasks	- Introduction to township plats – more in later readings - One township = 36 sections = 36 square miles - One section = 36 square miles - Surveyors also reported detailed notes about every measurement; landscape characteristic; existing settlements, roads and trails
49	5 – Rectangular Survey	- Map of U.S. by rectangular survey: https://www.familysearch.org/en/wiki/Rectangular_Surveys - Look at metes & bounds maps and legal description of parcels, such as those owned by Thomas Jefferson: www.monticello.org/research-education/for-scholars/archaeology-daacs/archaeology-blog/seac24-wheelersattes/ and https://founders.archives.gov/documents/Jefferson/98-01-02-5963 - Study rectangular survey map; describe any farm in your county - First used in 1785 in Ohio and about 69% of the U.S. (2,000,000 mi²) was platted using rectangular survey - What about in cities & towns? communities used different methods – check out your local community history

Page(s)	Topics	Topics to Review and Other Background Information
51	6 – Township Identification	- Meridians and baselines: https://www.familysearch.org/en/wiki/Rectangular_Surveys - Townships in your county - names - Which township do you live in? - Numbering sections within a township (KEY): - A = T-4-N, R-3-W - B = T-6-N, R-5-W - C = T-7-N, R-3-W - D = T-5-N, R-3-E - E = T-2-S, R-3-W - F = T-2-S, R-3-E - Look up and calculate township numbers and approximate mileage from baseline and meridian for the township where your school is located (a standard township is 6 mi. x 6 mi.)
51-52	7 – Roles Within a Survey Crew	- Ask student volunteers to “act” the role of each surveyor to pantomime how the work gets done - Surveyor (Temple) - Chainmen (2) - Axmen (2) (1: flagman) - Location of Temple’s crew starting point September 18, 1856 - marker on the map at right (from https://maps.app.goo.gl/WwNKDZU3KoSYDExG6) 
53	8 – Measurements and Accuracy	- Have students role-play survey crew roles to demonstrate how chains, tally pins, and rings were used - Calculations from the reading: 1 mile = 8 rings x 660' = 5,280' 1 ring = 10 chains x 66' = 660' 1 chain = 66'
56-57	9 – Section Corner Markers	- Before reading the specific description of the pyramid and stake, ask students if they have ideas how to mark the section corners. - Ask four student volunteers to stand at the four corners of the pyramidal dimensions and reach across the square to show the height of the mounded soil (5'x5' square, 2.5' tall) - On a cardboard stake, ask students to use their numbered township diagrams to predict the notches in each corner and the section numbers carved into the flat sides.

Chapter 5 Plain Geometry

Page(s)	Topics	Topics to Review and Other Background Information
58-60	10 – Road Today	• Present-day section lines; ½ chain on each side of dead center for right-of-way (ditches & road) • Property taxes - road maintenance, legal right-of-way for ditches • Town road layouts/grids • Review the following sites for local and county information: ◦ Iowa County Engineers Association: About Secondary Roads ◦ County Roads of Iowa ◦ Rules of the Road: Highway Safety from Iowa PBS
61-63	11 – Exceptions to the Rule	• Non-linear road variations: ◦ Surveyor error ◦ Magnetic variation ◦ Landform obstacles ◦ Iron-bearing rock confusion of the compass • Test the non-solar compass problems: (1) check the reading on a compass, then use a hand-warmer and an ice pack to heat, re-read, cool, and re-read a compass, recording temperature readings at each reading; (2) read the compass with strong magnets held at different distances from the compass; (3) read the compass at the exact same location at different times of the day or over a week's time • Find crooked roads on plat/county map • Find irregular (non-perfect-square) sections on a township map and theorize why the section is not perfectly square or the section lines are crooked
63-64	12 – 2D Grid on a 3D Globe	• Surveying order of sections within a township: ◦ Section 1 in NE corner ◦ 1-6 toward the NW corner ◦ Section 7 directly below 6 ◦ 7-16 to the E ◦ Back and forth to Section 36 in SE corner • 1 section = 640 ac. • 1 township = 36 sections x 640 acres = 23,040 acres • Section 6 typically has the most variation since surveyors started with Section 36 in the SE corner and surveyed a column of six to Section 1, then surveyed each column of six sections moving westward, ending with Section 6 in the NW corner • Find “short” sections on a township map (<640 acres)

Page(s)	Topics	Topics to Review and Other Background Information
64	13 – Legal Description	- Label basic subdivisions of a section: - Half-sections: 320 acres (E, N, S, W $\frac{1}{2}$) - Quarter-sections: 160 acres (NE, NW, SE, SW $\frac{1}{4}$) - Eighties: 80 acres (E, N, S, W $\frac{1}{2}$ of NE, NW, SE, SW $\frac{1}{4}$) - Forties: 40 acres (NE, NW, SE, SW $\frac{1}{4}$ of NE, NW, SE, SW $\frac{1}{4}$) - Then challenge students to practice describing, locating, and calculating acreage for more complex land parcels: - A = NW $\frac{1}{4}$ - B = S $\frac{1}{2}$ of SW $\frac{1}{4}$ - C = E $\frac{1}{2}$ of SE $\frac{1}{4}$ - D = N $\frac{1}{2}$ of NW $\frac{1}{4}$ - E = NE $\frac{1}{4}$ - F = W $\frac{1}{2}$ of SW $\frac{1}{4}$ - G = W $\frac{1}{2}$ - H = S $\frac{1}{2}$ of NE $\frac{1}{4}$ - I = SE $\frac{1}{4}$ of SE $\frac{1}{4}$ - J = W $\frac{1}{2}$ of NW $\frac{1}{4}$ AND NW $\frac{1}{4}$ of SW $\frac{1}{4}$ - K = NE $\frac{1}{4}$ of NW $\frac{1}{4}$ AND NW $\frac{1}{4}$ of NE $\frac{1}{4}$ - L = S $\frac{1}{2}$ of NE $\frac{1}{4}$ AND N $\frac{1}{2}$ of SE $\frac{1}{4}$ - M = SW $\frac{1}{4}$ of SE $\frac{1}{4}$ - Plat books - locate land parcels - Plat books - describe land parcels
64-65	14 – Correction Lines	- Two correction lines in Iowa, running east to west: - From Dubuque County to Woodbury County - From Scott County to Harrison County - Locate obvious correction lines on a map of Iowa and observe how N-S roads line up (ex: between Correctionville and Early on Hwy 20)

Page(s)	Topics	Topics to Review and Other Background Information
66	15 – Rectilinear Counties	- Which counties in Iowa are rectilinear & uniform in size? Students guess before reading, then correct after reading using different-colored pencils. - Below is a partial listing for example purposes only: - NW: O'Brien, Clay, Palo Alto, Cherokee, Buena Vista, Pocahontas, Sac, Calhoun - NC: Hancock, Cerro Gordo, Wright, Franklin, Hamilton, Hardin - NE: Butler, Black Hawk, Buchanan, Delaware, Jones - SW: Crawford, Carroll, Greene, Shelby, Guthrie, Cass, Adair, Page, Taylor, Ringgold - SC: Boone, Story, Marshall, Dallas, Polk, Madison, Warren, Marion, Decatur, Wayne, Appanoose - SE: Poweshiek, Iowa, Cedar, Mahaska, Keokuk, Washington, Davis, Van Buren - Dimensions of a rectilinear county: ~576 square miles (24 mi. x 24 mi.) 16 townships = (4 townships x 4 townships)

Task 2: Mini Documentary

- Watch and discuss How to Make a Documentary for a School Project (www.youtube.com/watch?v=3SYDqUtKGiY).
- Allow students to select one of the topics listed.
- Students should utilize the corresponding readings and potential interview sources.
- Review expectations using the **Mini Documentary Evaluation Rubric**.
- Students should outline at least nine elements to be included using the storyboard template provided.
- The mini documentary may require several additional class periods pending student proficiency with videography and documentary production.

Advanced Applications

- Share documentaries with your school, community members, or the public.
- National / Iowa History Days (State Historical Society of Iowa)
- Soils Evaluation Career Development Event (Iowa FFA Association)



Assessment and Evaluation

Formative Assessments:

- Each reading and sketchnote document contains many opportunities to assess student understanding of concepts – see information in the table above

Summative Assessments:

- Every reading and sketchnote document in Task 1 also includes advanced application ideas for students to pursue which could be assessed for understanding
- Use the Mini Documentary Project Evaluation Rubric to evaluate student videos from Task 2.



References and Resources

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- Wisconsin Historical Society (2026). History of the U.S. Rectangular Survey. Retrieved from www.wisconsinhistory.org/Records/Article/CS1609#:~:text=The%20rectangular%20survey%2C%20also%20called,west%20line%20called%20a%20baseline

Student Documents



Background

During this lesson, learn about boundaries for counties, townships, sections, and plats which all show up as lines on Iowa's land.

Learning Objectives

- Demonstrate the rectangular survey method used in Iowa.
- Interpret legal descriptions of land.

Essential Questions

- How was Iowa's land divided into the tracts we see on maps today?
- How is legal description used?

Key Terms

Baseline – a line serving as a basis; one of known measure or position used (as in surveying) to calculate or locate something

Chain – a unit of length equal to 66 feet (about 20 meters)

Cardinal direction – the four main points of a compass: north, south, east, and west which are also known by the first letters: N, S, E, and W

Compass – a device for determining directions by means of a magnetic needle turning freely on a pivot and pointing to the magnetic north

Correction line – one of a set of parallels of latitude used for laying out nominally square sections and townships in the public land survey

County road – a highway maintained by a county

Documentary – a presentation (such as a film or novel) expressing or dealing with factual events

Highway – a public way, a main direct road

Legal description – a precise, formal written statement that defines the exact boundaries and location of a piece of real property

Meridian – the half of a great circle on the surface of the earth passing through the poles numbered for longitude on a map or globe

Metes and bounds – the boundaries of a tract of land as described by reference to lines and distances between points on the land

Mile – a unit of length equal to 5,280 feet

Obstacle – something that impedes progress or achievement

Plat – a piece of ground

Plumb bob – the metal bob of a plumb line

Plumb line – a cord that has at one end a plumb bob and is used especially to determine verticality

Quarter-section – a tract of land that is half a mile square and contains 160 acres in the U.S. government system of land surveying

Rectangular survey – a 1785 U.S. method for surveying and identifying land using a grid of 6x6 mile townships, divided into 36 one-mile-square sections. It uses principal meridians and baselines to standardize property descriptions

Rectilinear – characterized by straight lines

Secondary road – a road not of primary importance; a feeder road

Section – a piece of land one square mile in area forming especially one of the 36 subdivisions of a township

Section line – the boundary line of a section in surveying

Square mile – a unit of area equal to a square one mile long on each side

Survey – to determine and delineate the form, extent, and position of a tract of land by taking linear and angular measurements and by applying the principles of geometry and trigonometry

Surveyor – one whose occupation is surveying land

Tally – a recorded reckoning or account

Township – a division of territory in surveys of U.S. public land containing 36 sections or 36 square miles



Materials and Resources to Gather

- ☐ Required Texts/Readings:
 - Hokanson, D. (1994). *Reflecting a Prairie Town: a Year in Peterson*. Iowa City, IA: University of Iowa Press. ISBN-13 9780877454663.
- ☐ Multimedia and Technology:
 - Internet
 - Video production app)
- ☐ Supplies and Equipment:
 - Highlighters
 - Colored pencils
 - Compass
 - Handwarmer
 - Ice pack
 - Strong magnet
 - Empty cardboard tube
 - Markers
 - Scissors
 - Surveying tool kit



Step-by-Step Instructions

Task 1: Sketchnote Readings

Your teacher will provide a set of sketchnote documents. Annotate the readings and complete the related activities as directed by your teacher

Task 2: Mini Documentary

1. Watch and discuss How to Make a Documentary for a School Project (www.youtube.com/watch?v=3SYDqUtKGiY).
2. Select one of the following topics or others that arose during class discussions. Topics include reading passage title(s) and suggested sources for more information.
 - a. **Calibrating a compass for magnetic variation using astronomy:** *Accurate Measurements and Measurement Accuracy* (science teacher, astronomer)
 - b. **Surveying crew roles** – chains, rings, and tallies: *Introduction, Settlements and Surveying Crews, Surveyors' Tasks, and Roles Within a Survey Crew* (history teacher, industrial technology or ag teacher, local historian or re-enactors)
 - c. **How land is surveyed today now – “modern” stakes used for property boundaries:** *Rectangular Survey* (modern surveyor, real estate developer)
 - d. **Legal description – metes & bounds vs. rectangular survey:** *Rectangular Survey* (real estate agent, farmer, land manager, lawyer, agronomy applicator, FSA agent)
 - e. **Legal description – lots and blocks in cities:** *Rectangular Survey* (real estate agent, lawyer, city manager)
 - f. **Standard townships & township governance today:** *Township Identification* (county government, lawyer, township trustee)
 - g. **How section corner markers were built, carvings on the stake and where section corner markers are today:** *Section Corner Markers* (historian, modern surveyor)
 - h. **Measure road widths (dirt, gravel, blacktop, and highway) & right-of-way:** *Roads Today* (landowner, lawyer, real estate agent, state/county road maintenance)
 - i. **Exceptions to the square-grid – reasons for crooked roads and their management:** *Exceptions to the Rule* (state/county road maintenance, county/highway engineer)
 - j. **Irregular sections:** *2D Grid on a 3D Globe* (farmer, land manager, real estate agent)
 - k. **Legal land descriptions, how they're written, and why they're important:** *Legal Description* (modern surveyor, real estate developer, lawyer)
 - l. **Correction lines:** *Correction Lines* (state/county road maintenance, transportation director, county/highway engineer)
 - m. **Is your county rectilinear?:** *Rectilinear Counties* (county government or historian)
 - n. **Other topics uncovered throughout the lesson approved by your teacher**
3. Review expectations for the project using the **Agricultural Heritage Events Rubric**.
4. Refer to the sketchnote sheet(s) associated with your documentary topic as you begin to brainstorm ideas that will be helpful for this project.
5. Mini documentaries should include the following elements:
 - a. An interview with an expert. Interview footage should be recorded and used in the documentary. Include the person's correctly written name and job title using a label.
 - b. B-roll footage for interest: visuals, pictures, maps, graphs, charts, timelines, and video.

- c. Explanations, demonstrations, examples, and/or artifacts related to the topic.
 - d. Narration includes pertinent quotes (sentences/paragraphs) from the reading.
 - e. Text to introduce key terms and subjects
 - f. An introduction, or “teaser” to catch the audience’s attention
 - g. A summary of the everyday importance of the topic
 - h. Credits at the end: producers, interviews, image, video, and informational resources
 - i. Total length: 4-8 minutes
6. Use the **Interview Guide** to list potential experts, create a basic script for contacting experts, and brainstorm 3-5 questions to ask the expert and record their answers.
 7. Use the **Storyboard Template** to organize at least nine elements for your documentary. Use additional space or paper if you need more elements. The storyboard should be reviewed by your teacher before final video production.
 8. Complete your documentary and submit to your teacher according to instructions.

Advanced Applications

- Share mini documentaries with a broader audience.
- Participate in National History Days (State Historical Society of Iowa).
- Participate in the Soils Career Development Event (Iowa FFA Association).

Student Work for Lesson 4: Lines on the Land

Name: _____



Before Class

Use the space below to record all questions you have about the map.



During Class

Task 2: Mini Documentary Interview Guide

Expert to interview

Collect ideas of people to interview and find contact information to schedule a time to record the interview.

Name	Job Title	Email	Phone

Script for email or phone request for interview:

Questions to ask your expert:

- 1.
- 2.
- 3.
- 4.
- 5.

Task 2: Mini Documentary Storyboard Template

Scene/Shot	Visual(s) (video, photo, map, graph, slide, labels, other)	Audio (narration, quote, interview, music, other)
1 – Introduction		
2 –		
3 –		
4 –		

Scene/Shot	Visual(s) (video, photo, map, graph, slide, labels, other)	Audio (narration, quote, interview, music, other)
5 –		
6 –		
7 –		
8 – Summary		
9 – Credits		



Reflect on Learning

What is the most important information you learned during this lesson, and why?

1.

What two pieces of information were surprising to you, and why?

1.

2.

What three questions do you still have about any of these topics?

1.

2.

3.



After Class

How could you use the information above to inform others or to further your understanding of the subject?

Evaluation Rubric: Mini Documentary

Expectation	★★★	★★★	★★★	★★★	Feedback
Content Accuracy & Depth Information is accurate, detailed, and demonstrates understanding of the topic. Includes insightful analysis or connections.					
Historical / Scientific Accuracy All facts, events, data, and explanations are historically/scientifically correct and well-supported by credible sources.					
Research & Sources Uses multiple, high-quality sources. All sources are cited correctly (on screen or in credits).					
Career Connection Connects the topic to a real-world career. Explains the career's role, importance and how it relates to the documentary topic.					
Interview Component Includes at least one relevant and well-prepared interview. Responses are integrated effectively into the documentary.					
Storytelling & Organization Storyline is engaging, logical, and flows smoothly. Strong introduction, middle, and conclusion.					
Creativity & Presentation Highly creative use of visuals, sound, and narration to tell the story; captivates the audience.					
Technical Quality Excellent video and audio quality. Smooth editing, appropriate transitions and clear narration or captions.					
Teamwork & Effort All members contributed equally and collaborated effectively. Roles and responsibilities were clear.					
Length Requirement Meets all project requirements and falls within the targeted 4-8-minute time frame.					
Totals					Points Possible = _____

Other Comments:



Excerpts from

Reflecting a Prairie Town: a Year in Peterson

By Drake Hokanson

Edited by Wayne Franklin

Part of the American Land and Life Series

Copyright © 1994. Modified with permission by Drake Hokanson.

Image: Burgeson cottonwoods at the corner of Clay, Buena Vista, Cherokee, and O'Brien counties, September. (Drake Hokanson © 1993)

"For I am writing of the Ancient Greek period of midwestern life, where communities were set out as our farmers planted trees, by thrusting twigs of cottonwood or willow or Lombardy poplar into the soil, and watching them as they shot up to tempt the forest birds and check the blizzards." - Herbert Quick, *The Hawkeye*, 1923

Citation: Hokanson, D. (1994). *Reflecting a Prairie Town: a Year in Peterson*. Iowa City, IA: University of Iowa Press. ISBN-13 9780877454663

Introduction (1)

Chapter 4: Alioth & Polaris (pgs. 45-46)

The most prominent marks on the local area, and perhaps the most enduring, were initiated by a man about whom we know almost nothing. His effect here was monumental, yet he was armed with nothing more powerful than a compass, was assisted by only four men, and completed his job in only a few weeks. The change he wrought on the landscape was complete and revolutionary, and the marks he made on the land will remain as long as human beings are the measure of this place.

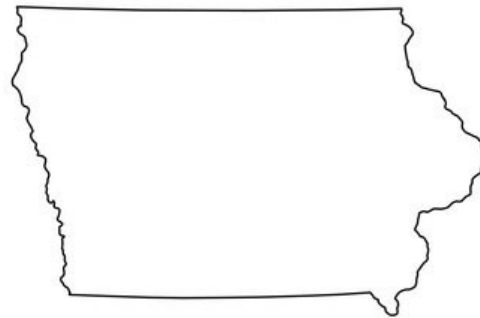
George Temple arrived here in September 1856 and immediately began the pivotal work in transforming the postglacial landscape in what would become Peterson Township. His title was deputy surveyor, and his work was to make square miles out of unsurveyed prairie, to take land that had heretofore been without limit or precise boundary, and enmesh it in a set of points, lines, and numbers. Temple - along with thousands of other U.S. government contract surveyors - engraved a grid of square miles onto the landscape of much of the United States, creating uniform parcels of land for quick sale and linear farming. His lines engendered the geography of this place, and their effects are as pronounced today in southwest Clay County as those of any other lines, either natural or human-made. No single event has had greater effect on this place, and if we are to understand the landscape here, all events both before and since must be seen in its light.

Reading from Hokanson, D. (1994). *Reflecting a Prairie Town: a Year in Peterson. Iowa City, IA: University of Iowa Press. ISBN-13 9780877454663*

Instructions: Complete the prompts as indicated.

Pre-reading: Have you ever visited a prairie? Can you draw or describe it?

From the Reading: Where is Peterson, Iowa on the Iowa map? Draw or describe the location.



After Reading: Can you find the names of government contract surveyors who worked in your county?

Advanced Application: Visit a prairie to help understand the setting of the readings. Record footage of the prairie area.

Accurate Measurements (2)

Chapter 4: Alioth & Polaris (pgs. 46-47)

Early on the morning of September 18, 1856, George Temple and his four assistants rolled up their bedding, ate their breakfast, and made ready for another day of work. Temple began by adjusting his large brass compass for magnetic variation: the angular difference between magnetic north and true north. As was the practice in those days, Temple had used Polaris - the NorthStar - to determine true north. He would have made his observations during the night before, and now, perhaps while his men had their last smoke around a dying campfire, he compared his nighttime observations with the need of his instrument.

Instructions: Complete the prompts as indicated.

Pre-reading: If you were in a large natural space (prairie or forest) with no markings or structures, how could you create a straight line?

From the Reading: Given the tools they had at the time, how do you think surveyors made straight lines?

Temple may have been tired, for on this date his stellar observation would have to have been made in the small hours of the morning. Polaris does not hang motionless at true north but over a 24-hour period describes a small circle, crossing the meridian of true north twice. One September 18, Polaris would have crossed the meridian at a few minutes after one in the morning. Temple knew that when Polaris and Alioth, the third star in the handle of the Big Dipper, rotated into a vertical line, Polaris would be at exactly true north. Using a crude but straightforward arrangement of stakes, boards, a candle, and a plumb bob dangled in a bucket of water (to prevent oscillation), Temple had carefully made his observation of the North Star and Alioth, and when they both disappeared behind the string attached to the plumb bob, he had marked his sighting. Leaving his apparatus fixed until day's light, Temple could then compare the meridian of the North Star with that defined by his compass, and could adjust the latter. Now, in daylight, Temple calculated the variation, and in his field notes wrote 11 degrees, 30 minutes east.

Reading from Hokanson, D. (1994). *Reflecting a Prairie Town: a Year in Peterson*. Iowa City, IA: University of Iowa Press. ISBN-13 9780877454663

After Reading: How did surveyors like George Temple adjust their compasses? Sketch the setup, including the stars (stick people are fine!).

Advanced Application(s):

- In a natural area, work with two other students using a 20' rope to make a straight line at least 60' in length.
- Interview a science teacher or astronomer to learn about compass calibration and the use of stars like Alioth and Polaris in surveying and early navigation.

Settlements and Surveying Crews (3)

Chapter 4: Alioth & Polaris (pg. 48)

Exactly where Temple's camp was situated is not recorded; it may have been near the river, maybe close to one of two newly built cabins in the arena, possibly on the upland prairie. But two things are certain: it was a simple, primitive camp, and it was a considerable distance from what Temple and his men would have called civilization. In 1856, the closest settlement consisting of more than scattered cabins was the village of Fort Dodge, 70 miles southeast across prairie and slough as high as a horse's back. That these surveyors lived simply and at a great distance from home comforts was made clear by Ira Cook, a government surveyor who did identical work in counties just to the south: "Except immediately along the Mississippi and in a few localities on some of the larger streams, these surveys preceded the settlement of the county, so that the deputy surveyor who had a contract to survey a given district generally found himself beyond any settlement, and, as a consequence, must carry with him his house (tent) and his supplies of provisions and complete outfit for a trip extending, in some cases, over many months. It followed, of course, that he was obliged to restrict himself and his men to the simplest necessities of food and clothing. A barrel or two of salt pork, flour in barrels, navy beans, with sugar, coffee, salt and pepper, made up the sum of our larder. With these we could keep both warm and dry."

The days were long and filled with tedious, plodding

Instructions: Complete the prompts as indicated.

Pre-reading: Use an interactive map to locate Peterson and Fort Dodge and then determine the types of native vegetation and natural landforms between the two. How would you describe the landscape the surveyors would have encountered?

From the Reading: Sketch or list everything that surveying crews traveled with.

work, the labor of measuring across nearly featureless country that, by now, in September, was deep with tangled prairie grass that impeded every step. But it was adventure as well. The days were filled with sky and space, and distant views over country new to EuroAmerican eyes. The work was like that of explorers: the long strides of white men taking the measure of new land. Certainly the surveyors had heard of Lewis and Clark, of Zebulon Pike. Secretly many may have wished to see an [American] Indian - if only from a distance - so they could spellbind those back home in the dull towns of Burlington and Dubuque with stories of these mysterious people. And there was male camaraderie, too; stories told around a campfire miles from any woman's ear.

As they broke camp that morning, Temple and his crew no doubt worked as men accustomed to certain tasks, for these men formed a qualified crew; they had been in the field surveying for more than two weeks, and their swift progress across the landscape indicated efficiency. Temple himself was an experienced surveyor, having surveyed and subdivided eight six-by-six townships the previous two years. His party packed their few personal possessions, cook pots, bedrolls, provisions, shovels and axes, a 66 foot measuring chain, flags, and tally pins. Probably they loaded their gear onto horses; by this time they were surveying an average of 12 miles per day, so it is likely that they traveled without the encumbrance of wagons. Temple would have shouldered the delicate sighting compass and its monopod "Jacob's staff," and in his coat pockets would have carried his field notebook and ink quills.

Reading from Hokanson, D. (1994). *Reflecting a Prairie Town: a Year in Peterson. Iowa City, IA: University of Iowa Press. ISBN-13 9780877454663*

After Reading: How many miles per day did surveying crews usually travel?

Advanced Application(s):

- Gather the typical provisions carried by surveying crews and research simple recipes and cooking methods that might have been used over campfires in the 1850's. As a class, "enjoy" meals using only those groceries.
- Host a cookoff using only provisions carried by surveyors; give prizes for the best or most creative recipes.
- Gather typical items transported by surveyors and set up a sample campsite in an open area.
- Interview a history teacher, your agriculture or industrial technology teacher, or a local historian to learn about how early surveying equipment (chains, rings, tally pins) were used.

Surveyors' Tasks (4)

Chapter 4: Alioth & Polaris (pg. 49)

Temple's job as a federal contract surveyor was simply described, yet it required great effort and care. He and his crew were subdividing this township - a square of six-by-six miles - into 36 one-mile-square parcels. The township boundaries here and in most of this part of the state had been surveyed the year before by another contract surveyor and were to act as the reference lines for the work of subdivision. Temple and his men were to mark out each square mile - each "section" - by measuring north and south, east and west, on foot, across prairie and through wetlands, walking each mile twice to accomplish the task. Then they were to build monuments at each point where the section lines crossed. In addition, they were to place lesser markers at half-mile intervals. When finished with this township, they would have surveyed a total distance of 120 miles and walked a good many more.

Instructions: Complete the prompts as indicated.

Pre-reading: Divide the square below into 36 equally-sized parcels.



From the Reading: Complete the following.

- In the divided square above, place larger red dots where surveyors built monuments. What are these?
- In the divided square above, place smaller yellow dots where surveyors built lesser markers. What are these?

The instructions Temple carried were issued by the Surveyor General of the United States and made clear that he was to keep detailed notes as the “the precise length of every line run, noting all necessary offsets therefrom, with the reason and mode thereof,” and to record something of the character of the landscape: land surface, soil, timber, prairie, marshes. He was to describe all streams, springs, lakes and ponds, and any mineral concentrations, list the presence of any [American] Indian villages or white settlements, and identify all “roads and trails, with their directions, whence and whither.” For Euro-Americans, this was new and uncharted territory.

Reading from Hokanson, D. (1994). *Reflecting a Prairie Town: a Year in Peterson. Iowa City, IA: University of Iowa Press. ISBN-13 9780877454663*

Next, record the correct names and sizes for the items listed below:

Large square →

_____ = _____ square mile(s)

Small squares →

_____ = _____ square mile(s)

After Reading: How did surveyors like George Temple adjust their compasses? Sketch the setup, including the stars (stick people are fine!).

Advanced Application(s):

- Locate a journal entry by a surveyor in your area and read the descriptions of the landscape.
- Interview a modern surveyor, civil engineer, real estate agent, or industrial technology or agriculture teacher to learn about how land is surveyed today.

Rectangular Survey (5)

Chapter 4: Alioth & Polaris (pg. 49)

First proposed by Thomas Jefferson, the rectangular land survey was designed as a simple system by which the vast lands of the country could be quickly measured, divided, described - in a legal sense - and sold. First applied in 1785 in what came to be called the Seven Ranges of eastern Ohio, the system was a vast improvement over the traditional "metes and bounds" arrangement whereby irregularly shaped parcels of land were identified, measured, and described by elaborate written descriptions of the parcel's perimeter.

By 1856, the rectangular survey system had been perfected and was quickly becoming the measure of the new states and territories of the United States. By the time the rest of the lands that would become the lower 48 states had been surveyed, 69% of the land area would be bound by it: some 2,000,000 square miles. Governmental motivation stemmed in part from the Jeffersonian notion of the landed farmer, but more to the point, the sale of such vast lands - some not yet vacated by [American] Indian peoples - would bring considerable money to a chronically anemic federal treasury.

Reading from Hokanson, D. (1994). *Reflecting a Prairie Town: a Year in Peterson*. Iowa City, IA: University of Iowa Press. ISBN-13 9780877454663

Instructions: Complete the prompts as indicated.

Pre-reading: Think about driving around outside of town. How would you describe the shape of most fields, properties, and roads? (If you're really stuck, find a video of driving in rural Iowa and use that to help you).

From the Reading:

Rectangular survey was first used in 17 _____
in the state of _____, and _____%
of the lower 48 states was surveyed using the
rectangular survey system.

After Reading: Research the following. Most land is surveyed with metes and bounds and rectangular survey systems, but how are lots in many towns surveyed and described?

Advanced Application:

- Find and read a legal description for a piece of land in the eastern U.S. that was completed using the metes and bounds system.
- Find a legal description for a plot of land in a town.
- Interview one of the following to discuss the importance of using correct land surveying techniques: real estate agent, farmer, farm manager, lawyer, city manager, Extension agent, or Farm Service Agency (FSA) agent.

Township Identification (6)

Chapter 4: Alioth & Polaris (pg. 51)

The U.S. land survey system was simple in concept. At intervals across the country, surveyors, using equipment more sophisticated and accurate than the simple magnetic compass operated by Temple, established meridians and baselines as reference lines for the surveys. In Iowa, nearly all surveys were measured and counted from the Fifth Principal Meridian, which ran north-south at longitude 90 degrees and 58 minutes west and passed through the “nose” of eastern Iowa, and with reference to an east-west baseline in Arkansas, which passed through the middle of that state. From these two reference lines, townships in the better part of six states - Arkansas, Missouri, Iowa, Minnesota, and South and North Dakota - were indexed and surveyed, a series of columns of 164 townships stacked on the baseline from Arkansas to the Canadian border. Each township had a number that identified it by virtue of its position in relation to the two lines; the yet-unnamed township where Temple and his crew were working on September 18, 1856, was already known as Township 94 North, Range 38 West of the Fifth Principal Meridian. This township was 94 townships north of the Arkansas baseline and 38 townships, or “ranges” west of the Fifth Principal Meridian.

Instructions: Complete the prompts as indicated.

Pre-reading: Find a map of your county's townships online. Sketch the map of your county below and label the townships. Place a star on the township that you go to school in. Is that the same township that you live in?

From the Reading: Label the dark x- and y-axis on the graph below: Fifth Principal Meridian and the east-west baseline. Assume the top is north, bottom is south, right is east, and left is west. Then record the coordinates of each township labeled (A-F).

			C						
	B								
								D	
			A						
						EX			
			E					F	

Example (EX) = T - 1 - N, R - 1 - W

As surveyors did their work of subdividing townships into square miles, each of the 36 sections was given a number, starting with 1 at the northeast corner of the township and proceeding west to number 6, dropping south to the next row, and then east to the east side of the township, dropping south again, west again, back and forth like plowing oxen, to number 36 at the southeast corner of the township.

The survey system was arbitrary. It took into account neither geographic boundaries nor existing cultural landmarks. The square grid was merely etched onto the topography, and settlers were expected to operate within its confines. Such a system as this would have serious flaws later in the arid and rugged west, but here, in the undulating prairies where landmarks and possible geographical conflicts were few, this pattern that looked as though it were applied to the landscape with a rolling pin was an appropriate expedient.

Reading from Hokanson, D. (1994). *Reflecting a Prairie Town: a Year in Peterson. Iowa City, IA: University of Iowa Press. ISBN-13 9780877454663*

A = T - _____ - N, R - _____ - W

B = T - _____ - N, R - _____ - W

C = T - _____ - N, R - _____ - W

D = T - _____ - _____, R - _____ - _____

E = T - _____ - _____, R - _____ - _____

F = T - _____ - _____, R - _____ - _____

After Reading: Learn the x and y coordinates for the township where your school is located. (Reminder: a typical township is 6 miles wide and 6 miles long).

Assuming all townships are the same shape and size, about how many miles north of the east-west baseline in Arkansas is your township?

T - _____ - N → _____ miles north

About how many miles east or west of the Fifth Principal Meridian is your township?

R - _____ - E / W → _____ miles east / west

Advanced Application(s):

- Research the origin of your township's name.
- Interview one of the following to learn more about standard township management and governance in your county or township: a county supervisor, county recorder, lawyer, or township trustee.

Roles Within a Survey Crew (7)

Chapter 4: Alioth & Polaris (pgs. 51-52)

According to his field notes, Temple had four assistants: two chainmen and two axmen. The chainmen conducted the “chaining,” the actual measuring across the ground; for axmen, the title was less appropriate. On the broad Iowa prairies, men expert in wielding axes were needed no more than gravediggers on board ship. Forty or fifty years earlier, Ohio axmen earned their pay and name clearing paths through dense forest ahead of the surveyors’ chainmen, cutting trees that stood astride survey lines and blazing trees for markers at section corners. In Ohio, a tree was often close enough to a section corner to serve as the marker; in Iowa there were often no trees in sight. But in those days jobs and titles were flexible; it is likely that one axman took care of the horses while the other acted as a flagman.

Temple and his crew began this day’s work at a section corner on the south township boundary, a point and a line established the previous year by another surveyor, one who had prepared the way by surveying the larger grid of six-mile-square townships. This section corner stood partway down the south slope of the Little Sioux River valley. From this marker they would work their way due north between what would, by the end of the day, become sections 33 and 34 or Township 94 North, Range 38 West of the Fifth Principal Meridian.

Instructions: Complete the prompts as indicated.

Pre-reading: Describe or sketch, in detail, the tools used by survey crews shown by your teacher. How do you think each tool will be used by the survey crew?

From the Reading: Sketch or describe the five members of a survey crew (stick people are fine!); each one should be holding at least one unique tool showing his job on the crew. Label the roles and the tools you sketch.

The survey crew set out to follow a line of true north from the section corner into the unsurveyed landscape. Even though they were working generally downhill into the valley, their northbound course first took them over the crest of a slight rise. It is likely that an axman-now-flagman strode to the top of the short rise with flag in hand as Temple steadied his compass at the action corner marker and directed the flagman into position on an exact north-south line via its sights.

Here were the first yards of a new line on the earth.

Taking up this cardinal line, the chainmen began their work. The rear chainman held one end of the chain to the previously surveyed section corner post as the advance chainman took the opposite end and started northward. On the sloping ground that September day they probably shortened the chain to half its length in order to keep it dead level for close measurement, an unusual task for men so used to chaining across miles of level prairie. As they worked, the men made a series of steps, repeated actions with a rhythm almost like that of a dance.

As the chainmen advanced, Temple would take new positions along the line and send the flagman further into unsurveyed territory, always directing the flagman to place the flag exactly on the line by peering through his compass sights and waving his arms right or left until the flagman assumed the correct position.

Reading from Hokanson, D. (1994). *Reflecting a Prairie Town: a Year in Peterson. Iowa City, IA: University of Iowa Press. ISBN-13 9780877454663*

After Reading: If you were on the survey crew, which job do you think would be the most difficult? Why?

Which do you think would be the simplest? Why?

Which job do you think you would enjoy the most? Why?

Advanced Application(s):

- Locate equipment similar to what the surveyors might have used (66' rope, flag, compass) and work in groups of 3-4 to try to "survey" a straight line more than 200' long.
- Interview a modern surveyor, civil engineer, real estate agent, or industrial technology or agriculture teacher to learn about how land is surveyed today, the technology used, and how property boundaries are marked now.

Measurements and Accuracy (8)

Chapter 4: Alioth & Polaris (pg. 53)

At the first measure the chain was pulled taut and held level so the advance chainman could set his first tally pin. Once the pin was set, both chainmen moved ahead to measure the next length, and after doing so, the rear chainman took up the tally pin and moved ahead for the next measurement. Measure, set pin, pull rear pin, walk forward, measure, set pin, pull rear pin, walk forward, and so on, they moved quickly over the rise and down into the river valley.

At the point where the advance chainman set his tenth tally pin, he called "tally," and the call was repeated by the rear man. The rear chainman then brought the pins forward where both men counted them to ensure that no pins had been missed and that the number of chain lengths measured would be counted correctly. Both men then marked the count of ten tally pins - or ten chain lengths - by placing a ring onto a thong of leather worn on the belt, or by some similar marker. In usual surveying, each ring meant 660 feet; when eight tallies had been done and eight rings had been placed on the thong, the crew had surveyed 5,280 feet, or one mile, one side of a new section.

The men surveyed quickly; it is said that these government surveyors, who were paid by the mile, seldom looked back. Chain by chain they marked this boundary onto the landscape as their feet trampled prairie grass into a line far more straight than any this valley had ever seen. While accuracy was important, speed was essential, because settlers were pouring across the Mississippi and flowing west to take up homesteads in the new state.

Reading from Hokanson, D. (1994). *Reflecting a Prairie Town: a Year in Peterson*. Iowa City, IA: University of Iowa Press. ISBN-13 9780877454663

Instructions: Complete the prompts as indicated.

Pre-reading: Use the internet to find a video of tall-grass prairie. Imagine and describe walking through that landscape on foot with these tools to create straight lines.

From the Reading: Assume the line below is one mile (5,280 feet). Mark and label the following distances on the dotted line representing one linear mile below.

One mile = _____ rings = _____ feet

One ring ("tally") = _____ chains = _____ feet

(place larger green dots representing rings on the line above and label each with a big R for ring)

One chain = _____ feet

(place smaller purple dots representing chains on the line above, between two rings, and label with small c for chain)

After Reading: Your teacher will ask for volunteers to reenact the process of surveying a tally.

- Use colored pencils to diagram where each crew member starts and how each chainman moves in order to survey two chains (o).
- The surveyor [S] and axman-flagman [P] should not move).
- Label the actions taken by each chainman when they stop.

S → _____ o _____ o _____ P

Advanced Application: Interview a modern surveyor, civil engineer, real estate agent, or industrial technology or agriculture teacher to learn about how land is surveyed today, the technology used, and how property boundaries are marked now.

Section Corner Markers (9)

Chapter 4: Alioth & Polaris (pgs. 55-57)

These men couldn't have paused long to view their work spanning the valley nor to view this quiet river; they still had many miles to survey on foot that day, many tallies to make. They continued their work northbound for a few tallies, now on the flat plain, a prairie that swelled uninterrupted for some thirty miles to the Okoboji lakes. They could work faster here, with no climbing, no timber, merely thick prairie. At eighty chains, one mile from where they had begun that morning, they stopped to build a section corner marker.

And here is a curiosity, a logistical and spiritual dilemma for the crew: what do you use in such a trackless place to mark so microscopic and yet so monumental a point on the land as this section corner? Temple's instruction book was explicit on the importance of properly erecting these section corner markers:

"To procure the faithful execution of this portion of a surveyor's duty is a matter of utmost importance. After a true coursing, and most exact measurements, the corner boundary is the consummation of the work, for which all the previous pains and expenditures have been incurred. If, therefore, the corner boundary be not perpetuated in a permanent and workmanlike manner, the great aim of the surveying service will not have been attained."

There were marks of other peoples here, but they were faint, ephemeral, and not so precisely regulated to the heavens as this marker was to be. There were old [American] Indian village sites nearby, hidden by grass, and narrow foot trails, but they never required this sort of precision in their establishment. On such an open and nearly trackless landscape, what does one use to establish so small and so arbitrary a place as the common point among sections 27, 28, 33, and 34? What material lay at hand that would not only mark this junction but sanctify it?

This was a place made of grass and sky; grass was everywhere at their feet and the sky inescapable above. Mere grass could not make the marker; it could not provide the needed distinction from itself. The timber was too far

Instructions: Complete the prompts as indicated.

Pre-reading: Surveyors had to mark more than the boundary lines of each section. How would you mark the corners of each section to make sure they wouldn't get lost in tall grass or wooded areas?

From the Reading: Sketch a section corner marker. Include all measurements and dimensions.

away in the valley to provide a large pole, a log. There were stones about, but the crew could not see them; they rested within the soil and would emerge only after people cut the roots of the prairie with steel plows.

Temple and his crew knew their job; they had made dozens of such corner markers and doubtless without discussion fell to work digging trenches and building a pyramidal mound of the soft earth. Here was a guidon, a guide post; a marker built of the soil itself, the very resource that would soon bring thousands of men and women to the region. How much more appropriate than a staff of gold or a royal pennant was the idea of using the thing itself to mark this new point on the land.

If they followed their instructions, the mound they built had a square perimeter, about five feet on a side, and was two and a half feet high. The soil came from a trench that surrounded the heap of soil and formed pits that were dug at a greater distance on all four sides. Tamped into and protruding from the apex of the pyramid was a squared-off stake. The corners of the stake faced toward the cardinal directions and were notched to indicate the number of miles in each direction to the township boundary; hence, the south corner of the stake carried one notch, since this marker was one mile from the township line to the south. The flat sides of the stake, which faced southwest, northwest, etc., were carved with the number of the section toward which they faced. The mound was covered with sod to stabilize and protect it from erosion.

When it was finished, Temple and his crew surveyed on, now east a mile to tie in with a marker they'd placed two days earlier, then back west to this marker, then on north again a mile into new, unsurveyed territory, to make more lines, to build more markers. As if performing a complex dance, they moved across the prairie, creating, chain by chain, tally by tally, marker by marker, a new world. And at the same time they set in motion the erasure of another.

Reading from Hokanson, D. (1994). *Reflecting a Prairie Town: a Year in Peterson. Iowa City, IA: University of Iowa Press. ISBN-13 9780877454663*

After Reading: Do any of the surveyors' marks exist yet today? Why or why not?

Advanced Application(s): Fold and flatten cardboard tubes into rectangular tubes and use permanent markers to demonstrate what the stake from a section corner marker would have looked like for the corner described in the reading.

Roads Today (10)

Chapter 5: Plain Geometry (pgs. 58-60)

Today no section corner markers stand where George Temple and his assistants built them. There are no mounds, no trenches, no notched stakes; instead, at almost every point where four sections come together is another sort of monument: a cross where two yellow-gravel section line roads intersect. Where the view ahead is clear and there is no oncoming traffic, rural drivers drive down the center of a gravel road. Doing so allows traffic in either direction to pack two smooth paths for a vehicle's wheels and works the loose gravel toward the sides. At almost any crossing of two section line roads, these packed wheel paths meet at right angles and form a tic-tac-toe grid at the corner of the intersection. At the corner of that grid, right where the starting "O" might be, Temple and his chainmen and axmen once built their mounds and set their stakes.

Section line roads are just that: roads that run astride the section lines marked by the federal surveyors [of the last century]. Nearly all of them follow section lines precisely, whether the surveying work was conducted accurately or not, and today they stand as clear evidence to the quality of work done by early surveyors. Even as they worked, the surveyors knew their lines would become roads: the law stipulated that a half a chain on either side of the section line - 66 feet total - was to be left unsold and was to be considered the public right-of-way.

These roads today carry light and local traffic: dusty pickups and cars, combines, chisel plows and field cultivators (some big enough to hang over the ditches on both sides), feed salespeople and livestock buyers, [and] grain trucks[...].

Most people slow down for these intersections - especially when the corn is high and a driver can't see intersecting traffic until nearly at the crossroads. There are stories of lifelong neighbors, accustomed to untrafficked rural section line roads, who have for years ignored the intersections and have at last, against long odds, smashed together at high speed and right angles, maybe as two of only half a dozen vehicles to cross the intersection that day.

Section line roads, perhaps unlike any other rural roads, have no destination; they never directly connect any place with any other, except by

Instructions: Complete the prompts as indicated.

Pre-reading: Look at the copy of the township plat map provided by your teacher. Where do you think those section corner markers are today? Are they visible? Why or why not?

From the Reading: Sketch an overhead view of a gravel road today, from "fenceline to fenceline" and describe the sketch as described in the reading.

After Reading: Visit the Iowa County Engineers Association: About Secondary Roads site(www.iowacountyroads.org/about-secondary-roads) to learn more about categories of secondary (county) roads in Iowa. Describe each below.

- Area Service Roads - Local Access:
 - Class/Level C Maintenance:
 - Class/Level B Maintenance:
 - Class/Level A Maintenance:
- Farm to Market Network:

Find your county. Record the number of miles for each.

County: _____

Numbers of miles maintained by the county: _____

Number of county-maintained bridges: _____

Average daily traffic: _____

Now, visit County Roads of Iowa (<http://iowahighways.org/highways/countyrd.html>)

- Find the map showing the grids for county road letter names. In your county, which letters might be used to name county roads?

chance. They form a grid, a graph complete with X and Y axes - "His place is four miles north and, let me see, two miles west." Like any city streets, section line roads are used predominantly by those who live along them. Rural residents almost always recognize and wave at vehicles passing their farms. Travelers, unfamiliar with the lay of the local land, avoid them for better mapped, numbered highways. In areas of Iowa free of large streams, section line roads form a nearly uniform system of routes passing across landscape that can look all the same to unaccustomed urban dwellers, leaving them turned around and lost in a square maze of open right angles with no informational signs, and no clues about where they have been or ought to turn next.

A map of Iowa shows the entire network of roads, the section line roads and highways, looks very much like a piece of window screen. Section roads, which account for the least amount of traffic, add up to by far the greatest mileage. Peterson Township, for example, contains less than seven miles of state highway (Iowa Highway 10) and no federal highway at all, but a full 65 miles of paved and unpaved section line roads.

Clay County, like the others in the region, is beginning to abandon little-used section roads. With continued and long-term rural population loss and the abandonment of farmsteads, many miles of roads now pass only empty houses and carry only farm implements to adjacent fields and an occasional misplaced salesperson. Many miles of such roads are now posted with signs that state, "Caution: Level B Maintenance Ahead," or "Road Closed Snow Season." A good many have been allowed to deteriorate so far that "B Maintenance" means the likelihood of getting stuck after any rain or thaw.

And some are being closed altogether. With fences on either side pulled down, the embankment graded back into the ditches, topsoil smoothed over the top, a farmer can grow soybeans where only a few weeks ago the Co-op feed truck passed.

Reading from Hokanson, D. (1994). *Reflecting a Prairie Town: a Year in Peterson. Iowa City, IA: University of Iowa Press. ISBN-13 9780877454663*

- Give at least one example of an east-west county road and one example of a north-south county road in your county.
- Sketch a typical county road marker from your county, using the correct shape, colors, county name, and road name. Review the photos in the Photo Gallery linked above the map for help.

Visit Rules of the Road: Highway Safety from Iowa PBS
(www.iowapbs.org/iowapathways/mypath/2718/rules-road-highway-safety).

- When was the first mile of Iowa paved with concrete?
- What were the original speed limits for the following Iowa roads in 1904?
 - Business sections of towns:
 - Country:
- Sketch a typical Iowa primary road symbol, using a road in your area as an example. Use the correct shape, colors, and names.

Advanced Application(s):

- Cooperate with road maintenance employees, law enforcement officers, or landowners to record videos measuring various county and state road and ditch widths and right-of-ways.
- Interview a landowner, lawyer, farmer, real estate agent, county treasurer or recorder, or state or county road maintenance worker to learn more about property rights and legal control of roadways and ditches. Research the following:
 - Who actually owns or controls the land under the road and the ditches?
 - How are taxes levied?
 - How much control do landowners have over what can and cannot be done in ditches adjoining secondary roads and owned land - both by other citizens and county maintenance crews?

Exceptions to the Rule (11)

Chapter 5: Plain Geometry (pgs. 61-63)

But while the square is the rule, some squares are more square than others. The original land survey was not perfect; it was never intended to be, and any close observer of the land or reader of maps can see where compromises and errors were made.

People who have traveled very often on gravel or paved section line roads may have observed that they aren't altogether straight, that they tend to angle back and forth slightly as they make their way; they seem to "hunt" like a car with loose steering. Though these roads usually run arrow-straight between intersections, at almost every crossing with another section line road there will be a tiny kink, a perturbation left or right from the vector of the mile just driven. It may be a degree or two, or even less, but it is noticeable, and great enough that engineers laying out paving projects must often engineer them into a gentle curve smoothing the bend over a few hundred feet.

Farmers, who are among the few who ever notice them, usually attribute these jogs to the corrections necessary in surveying a two-dimensional pattern onto a spherical planet, but such corrections were handled in other ways. These jogs amount to errors - sometimes quite laughable ones - in the original survey, errors usually caused not by mistallying a chain measure or by misadjusting the survey compass, but by the limitations of equipment and by a limited understanding of magnetic variation.

By the time George Temple took up his outfit and headed to the prairie of northwest Iowa, surveyors and scientists already knew a good bit about the unpredictable nature of magnetic variation. Surveyors knew they had to take into account the difference in position of the pole of true north versus that of magnetic north, and they knew that the position of the magnetic pole varied in cycles - over decades, seasons of the year, and, most problematic for surveyors in the field, and an hourly basis. In field tests, surveyors had noticed that their compass needles changed over the course of a day and that section lines surveyed in the morning, if checked using the same compass in the afternoon, would be found to be slightly askew.

They didn't know why their needles flickered, and

Instructions: Complete the prompts as indicated.

Pre-reading: Look at the copy of the township plat map provided by your teacher. Highlight or color any roads that deviate from the straight lines and square-mile grids. What reasons can you think of that might cause these deviations?

they had no reliable way of adjusting for changes that might amount to half a degree over the course of seven hours. Surveyors noticed that the daily variation was greater in the summer than in the winter. The General Land Office, source of instructions to the deputy surveyors, boasted of solving the problem in 1855 when it announced, "It has been found by observation, that heat and cold ostensibly affect the magnetic needle, and that the same needle will, at the same place, indicate different lines at different hours of the day."

Logical enough, but within a few years the bugbear was back; it wasn't merely heat and cold, it had something to do with the sun. Elaborate compensation tables were established and published in instructions to surveyors charting the wanderings of the magnetic variations hour by hour, but they weren't of much use. Finally, by 1881, scientists had determined that the annoying diurnal wandering of the needle was caused by the effect of solar magnetism on the earth's magnetic fields, that it was strongest during summer and during years of greatest sunspot activity, and that there really wasn't much to be done about it since the amount of effect on a compass needle at any given time was impossible to predict.

But by the time scientists figured it out, varying variation had nearly ceased to be a problem; most surveys on new land were being done with solar compasses. A solar compass makes use of the sun's daily arc across the sky to establish a much more accurate meridian of true north, with no need of Polaris, plumb bobs, midnight observations, or magnetic needles at all. The solar compass was in use elsewhere even as Temple was surveying parts of Clay County in 1856; surveyors were using them on state border and major baseline surveys. The Surveyor General knew of their superior accuracy, but in 1856 there were relatively few of them, and few surveyors were trained in their use. Quite simply, the errors of the magnetic needle were known and accepted; the need to survey great swaths of land expeditiously outweighed the need for exactitude.

George Temple did a good job taking his sightings of Polaris and Alioth and translating them to his instrument; he made the best of the clumsy compass and its inherent limitations, and his men pulled and marked their chain lengths with care. The square miles he scribed are reasonably square, and the jogs in his section lines are minor. The river valley along the south side of Peterson

From the Reading: Below, sketch and label the different reasons given in the reading for the non-linear roads or grids.

Surveyor errors

Magnetic variation in a compass

Landform obstacles

Iron-bearing rock confusing the compass

Township apparently did cause some trouble; the sections in the western tier are slightly rhomboid.

During Temple's short time in northwest Iowa, he subdivided three adjacent townships [in Clay and Buena Vista Counties]: Brooke, Peterson, and Clay, aligned north to south like three blocks amid hundreds of others in the state, thousands in the nation. He and his men built some 75 section corner markers in the course of their work. [...] [A]ll three are about as square as a magnetic compass could make them.

Other surveyors weren't so skilled - or lucky. At the northeast corner of Clay County, in the corner opposite to Peterson Township, is Lake Township, and as the name might suggest, there were certain obstacles to making a clean, square survey. But just what happened in this 36-square-mile area isn't clear. Was it the especially swampy ground, chainmen who couldn't count or a surveyor who couldn't properly adjust his compass, or, as a survey examiner called in to make sense of the mess suggested, was it some sort of local iron-bearing rock that threw off the needle? Whatever the case, today the entire township has but a half-dozen miles of cardinal section line roads and hardly a right angle where any two of them meet. Many section line roads are so far offset as to have 20 degree bends in them in order to make them line up with the roads of adjoining townships.

All of the surveyors made errors, but usually they were quite small. Considering the difficulty of the work, the small magnitude of the resulting errors, the wanderings, is surprising. Directing a flagman with an instrument having only a monopod, doing it in wind, rain, and tall grass, dragging a 66-foot chain across rough landscape, trying to keep it both level and taut, and keeping count of the chains and tallies, are tasks that could breed inaccuracy like wet ground does willows.

Reading from Hokanson, D. (1994). *Reflecting a Prairie Town: a Year in Peterson. Iowa City, IA: University of Iowa Press. ISBN-13 9780877454663*

After Reading: Refer to your highlighted road on the map from before reading. For each deviation, label the reasons given in the reading for the non-linear roads or grids on the map.

Next, use the following materials to test a compass, then report back to your classmates on your findings.

1. check the reading on a compass, then use a hand warmer and an ice pack to heat, re-read, cool, and re-read a compass, recording temperature readings at each reading
2. read the compass with strong magnets held at different distances from the compass
3. read the compass at the exact same location at different times of the day or over a week's time
4. other investigation approved by your teacher

Advanced Application(s):

- Acquire a solar compass to repeat the experiments from above and compare the results.
- Interview a county or state road engineer or road maintenance employee to learn about how crooked or non-linear roads are managed today, including bridges.

2D Grid on a 3D Globe (12)

Chapter 5: Plain Geometry (pgs. 63-64)

Though sections were numbered with number one at the northeast corner of a township and number 36 at the southeast, they were not surveyed in numerical order. Temple's instructions, and those of all the government surveyors of the time, made clear that he was to start his surveying in the southeast corner - in what would become section 36 - and finish in the northwest corner in what would become section six. Beginning at the southeast corner of the township, he surveyed the lines to make section 36, then moved immediately north to establish section 25, north again to the next section, 24, and so on, until he had reached the north boundary of the township and had lined out a six-mile north-to-south block of sections.

He then checked his work by surveying six miles straight south to the south boundary of the township, then measured west one mile along that boundary, and began the next south-to-north block of sections by working generally northbound again, lining out sections 35, 26, 23, etc., to the top boundary of the township. He stacked new sections one on top of another in a column of six, then stepped over a mile west to build the next column of six, and so on until he finished in the northwest corner of the township in section six.

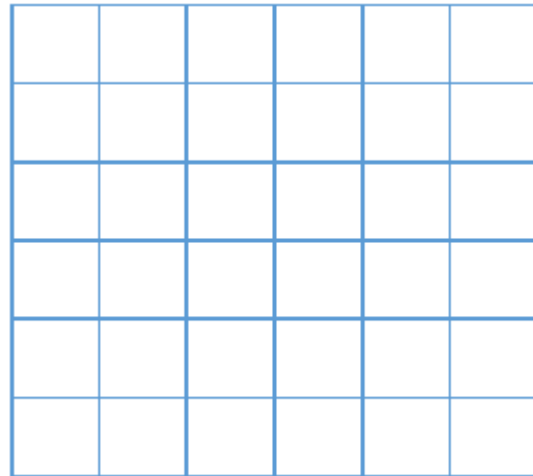
By this method, working generally from the southeast to the northwest, any measurement errors accumulated against the already established north and west boundaries of the township at the northwest corner of the township in section six. And many farmers can confirm the fact. The ideal square mile should contain 640 acres; most contain a few more or a few less. In most townships, the biggest variations are in section six. Farmers who own or rent land in section six of a standard township know that fence lines are often crooked here and that field sizes vary a great deal more than they do elsewhere.

Reading from Hokanson, D. (1994). *Reflecting a Prairie Town: a Year in Peterson. Iowa City, IA: University of Iowa Press. ISBN-13 9780877454663*

Instructions: Complete the prompts as indicated.

Pre-reading: Look at the copy of the township plat provided by your teacher. How would you explain the precise location of a specific property? Write your best guess below.

From the Reading: Correctly number the sections in the township below from 1-36, according to the descriptions in the reading.



Now draw arrows showing the order followed by surveyors when platting new sections and townships.

After Reading: Answer the following questions.

How many acres are found in one ideal square mile, or section?

_____ acres

How many acres would be found in one standard township?

_____ acres

On the township diagram on the previous page, circle the section that typically has the greatest variation in field sizes and the number of acres.

How would you describe the precise location of a property?

Advanced Application: Interview a farmer or farm manager to learn more about managing non-square properties, whether the odd angles are due to the 2D map on a 3D surface, or other landform features

Legal Description (13)

Chapter 5: Plain Geometry (pg. 64)

Across Iowa and much of the agricultural regions of the United States, the square mile, though it is sometimes irregular, is the common unit of reference. Section lines enclose them, pickup truck odometers count them, distances between towns are measured by the lengths of their sides.

As George Temple and thousands of other federal contract surveyors measured them, the sections could later be divided into fourths by means of the smaller half-mile markers placed midway between the section markers. This subdivision produced the “quarter,” a square parcel of 160 acres which would soon become the basic unit for a farm. Later, as the land was settled and surveyed in greater detail, further subdivisions were possible and practiced. Thus a pioneer could buy a half of a quarter, or an “eighty” as it came to be called, or even a quarter of a quarter, known as a “forty.”

A parcel of land could thus be described as the “SW $\frac{1}{4}$ of the NW $\frac{1}{4}$ of Section 12, Township 94 North, Range 38 West of the Fifth Principal Meridian” and leave no dispute about just what 40-acre postage stamp of blowing grass was under discussion.

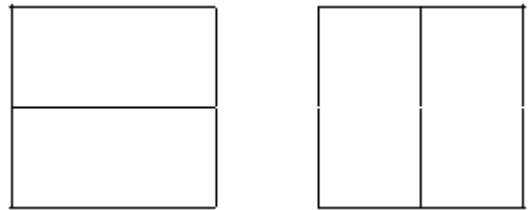
Reading from Hokanson, D. (1994). *Reflecting a Prairie Town: a Year in Peterson. Iowa City, IA: University of Iowa Press. ISBN-13 9780877454663*

Instructions: Complete the prompts as indicated.

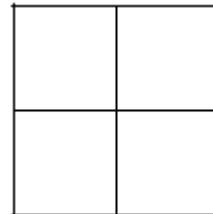
Pre-reading: Look at the copy of the township plat provided by your teacher. Of the sections shown, how many are unbroken, or owned by the same owner with no subdivisions?

From the Reading: Label the following subdivisions of a square section, using only $\frac{1}{2}$ or $\frac{1}{4}$ and the cardinal directions (E, N, S, W, NE, NE, SE, and SW).

Half-sections: N $\frac{1}{2}$, S $\frac{1}{2}$, E $\frac{1}{2}$, and W $\frac{1}{2}$

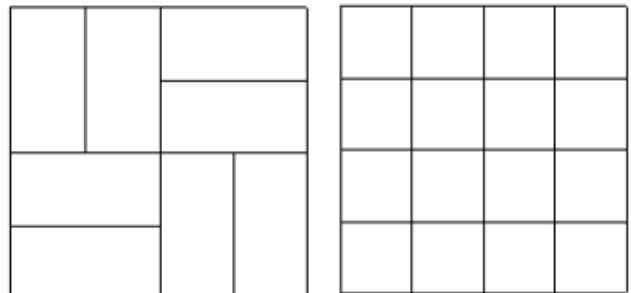


Quarter-sections: NE $\frac{1}{4}$, NW $\frac{1}{4}$, SE $\frac{1}{4}$, and SW $\frac{1}{4}$



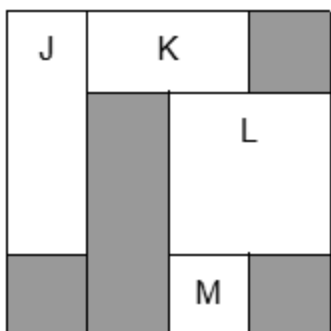
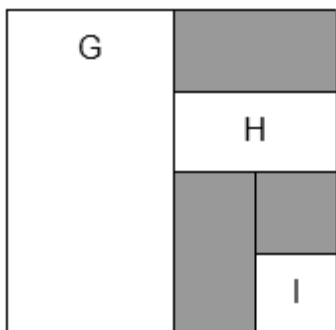
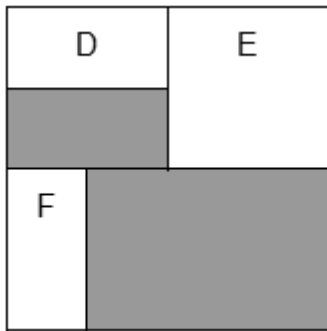
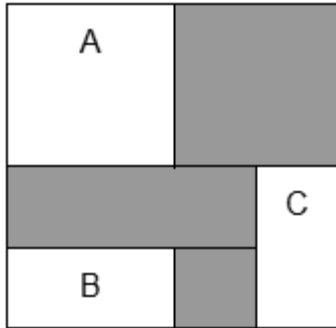
Acres in a quarter section: _____ ac.

Eighties: $\frac{1}{2}$ of $\frac{1}{4}$ | **Forties:** $\frac{1}{4}$ of $\frac{1}{4}$



Acres in an eighty: _____ Acres in a forty: _____

After Reading: For all of the pieces of land identified below, write the correct legal description. Remember, only use the two fractions ($\frac{1}{2}$ or $\frac{1}{4}$) and the cardinal directions (E, N, S, W, NE, NW, SE, or SW).



A:

B:

C:

D:

E:

F:

G:

H:

I:

J:

K:

L:

M:

Advanced Application:

- Research upcoming land auctions or recent sales and find the legal descriptions. Locate the properties in the plat maps.
- Interview a real estate agent, a farmer, a farm manager, a lawyer, an applicator for a cooperative elevator or agronomy supply company, or an FSA agent to discuss the importance of using correct legal descriptions, both in the country and in town.

Correction Lines (14)

Chapter 5: Plain Geometry (pgs. 64-65)

Quite apart from the errors made in surveying are the adjustments in the survey made necessary by the curve of the earth. After all, the surveyors were attempting to inscribe a two-dimensional grid onto a sphere. Meridians, which form the eastern and western boundaries of townships, converge as they go north - they meet at the North Pole - and either townships would shrink in width as they were created northward or a system of adjustment must be implemented. Even in Iowa, more than three thousand miles from the Pole, the convergence in a 60-mile stretch is about 450 feet, a substantial adjustment.

The need to account for convergence was not lost on the surveyors or on the Surveyor General. After clumsy errors accumulated on lands surveyed earlier in Ohio, the General Land Office built into the Iowa surveys two correction lines, each running east and west, and each being the baseline for the measurement of the width of sections to the north of it. As its name implies, the town of Correctionville, some 40 miles southwest of Peterson, sits astride one of these correction lines; north-south streets in town are offset where they cross the line, and the sign at the edge of town encourages travelers to, "Jog Down Our Main Street."

Instructions: Complete the prompts as indicated.

Pre-reading: Given that meridians eventually converge at the poles, how do you think square sections and townships and counties fit together on the curved surface of the globe?

From the Reading: Use a colored pencil to draw two east-west lines on the map below where you believe Iowa's two correction lines are located.



Between Correctionville and Early, U.S. Highway 20 runs on a correction line; driving down the road gives one the impression that the road runs on some sort of geologic fault and that somehow the land has slipped in some fashion. Neither fence lines nor section roads, nor even power lines on one side of the road, align across the correction. Even the county boundaries are skewed. Any map showing county lines clearly marks the westerly offset through the middles of some 20 counties.

Reading from Hokanson, D. (1994). *Reflecting a Prairie Town: a Year in Peterson*. Iowa City, IA: University of Iowa Press. ISBN-13 9780877454663

After Reading: Describe driving along on a correction line road. What evidence would you see that proves you were on a correction line?

Advanced Application(s):

- Interview a county or state road engineer or road maintenance employee to learn about how correction lines and the associated roads are managed today.
- Collect photo and video evidence of correction lines, including maps and driving experiences.

Rectilinear Counties (15)

Instructions: Complete the prompts as indicated.

Pre-reading: Use a colored pencil to lightly shade all of the counties you think look like a standard, rectilinear county. Explain why you think these fit this description.



Rectilinear Counties (15)

Chapter 5: Plain Geometry (pg. 66)

Most of the counties that were drawn are as rectilinear and uniform as surveyed lines and right angles could make them; none but those on the western border of the state, formed by the Missouri and Big Sioux Rivers, took into account any topographic considerations, and all of the new counties were piled one on another like a stack of packing crates on a depot platform.

The ideal county was a square 24 miles on a side, to accommodate 16 townships in a total of 576 square miles. Clay County fits the ideal; so do the other three counties around Peterson: O'Brien, Cherokee, Buena Vista. Because of state boundaries, correction lines, and the need to align with counties established earlier, some counties varied from the ideal, and several underwent later adjustment.

Reading from Hokanson, D. (1994). *Reflecting a Prairie Town: a Year in Peterson*. Iowa City, IA: University of Iowa Press. ISBN-13 9780877454663

From the Reading: Now, shade, with a darker color, all counties that seem to fit the “rectilinear” and ideal description.

After Reading: What are the dimensions of a rectilinear county?

Rectilinear county = _____ square miles (mi²)

(____ mi. wide by ____ mi. long)

Rectilinear county = _____ townships

(____ townships wide by ____ townships long)

Sketch a sample rectilinear county below, labeling the measurements above.

Advanced Application: Interview a county recorder, county engineer, history teacher, or local historian to learn more about your county's shape or size, especially if it is not a true rectilinear county.

Lesson 5: Advocacy in Agriculture

Teacher Outline

Lead students through the causes and effects of the 1980s Farm Crisis. Discuss how advocacy stemming from the Farm Crisis shaped changes in agricultural policies and management. Finally, help students develop deeper understandings of current agricultural issues.



Background

Duration

6 – 8 class periods

Learning Objectives

- Explain the causes and effects of the 1980s Farm Crisis.
- Analyze primary sources to better understand an issue.
- Define a modern agricultural issue of choice.
- Construct persuasive arguments about an agricultural issue of choice.

Essential Questions

- What was the significance of the 1980s Farm Crisis?
- How can people on opposing sides of an issue work together?
- Why are problems and issues often so difficult to solve?
- How can students participate in advocacy and activism?

Supplies and Materials

- Analyze a Video worksheets
- Farm Crisis student letters
- Analyze a Written Document worksheets

Key Terms

Activism – a doctrine or practice that emphasizes direct vigorous action especially in support of or opposition to one side of a controversial issue

Advocacy – the act or process of supporting a cause or proposal; the act or process of advocating something

Bankrupt – an individual or an organization whose property is subject to voluntary or involuntary administration under the bankruptcy laws for the benefit of the debtor's creditors

Career – a profession for which one trains and which is undertaken as a permanent calling

Commodity – an economic good such as a product of agriculture or mining

Community – a unified body of individuals such as the people with common interests living in a particular area; a group of people with a common characteristic or interest living together within a larger society

Consolidated – joined together into a coherent, compact or unified whole

Expertise – the skill of an expert; expert opinion or commentary

Inflation – a continuing rise in the general price level usually attributed to an increase in the volume of money and credit relative to available goods and services

Infrastructure – the system of public works of a country, state or region

Integrate – to incorporate into a larger unit

Issue – a vital or unsettled matter

Media – forms of communication designed to reach many people; the newspapers, radio and television stations, websites, etc.

Migrate – to move from one country, place, or locality to another

Mitigate – to make (something) less severe, painful or intense

Private – carried on by the individual independently of the usual institutions (i.e. non-government organization)

Policy – a definite course or method of action selected from among alternatives and in light of given conditions to guide and determine present and future decisions

Skill – a learned power of doing something competently; a developed aptitude or ability

Specialized – designed, trained, or fitted for one particular purpose or occupation

Supply chain – the chain of processes, businesses, etc. by which a commodity is produced and distributed; the companies, materials, and systems involved in manufacturing and delivering goods

Urbanization – the process of becoming urbanized (characteristic of a city)



Teacher Preparation

Complete the following tasks prior to instructional time:

- ☐ Review the instructions for document analysis from the National Archives Document Analysis site (www.archives.gov/education/lessons/worksheets)
- ☐ Review the Farm Crisis (www.iowapbs.org/shows/farmcrisis) documentary site and determine which video clips to use
- ☐ Determine which worksheets to use – either **Novice** (younger students or those learning English) or **Intermediate or Secondary** and prepare copies to use:
 - Video (one for the class; one copy per group of 3-4 students)
 - Written Document (two per pair of students)
- ☐ Review the Branstad/Heffernan letter files to determine which letters to assign for student analysis – letters and postcards vary in voice, experience, complexity, and tone
- ☐ Review how to write issues as questions from the Writing as Inquiry chapter (<https://opentext.uoregon.edu/writingasinquiry/chapter/developing-questionsatissue/>)
- ☐ Prepare documents and resources for student access



Getting Started

Ask the students to brainstorm the challenges facing themselves, their families, and their local communities.



Instructional Strategies and Activities

Task 1: The Farm Crisis

- Watch the Overview of the Farm Crisis (2:09) from the Farm Crisis (www.iowapbs.org/shows/farmcrisis) documentary, then complete the Analyze a Video worksheet from the National Archives as a class. *Note that the video's page also provides the transcript if students wish to reference specific information.*
- Next, break students into small groups to complete the same process for one of the following video segments.
 - *Causes of the Farm Crisis* (4:16)
 - *Farm Crisis Impact on Rural Communities* (3:41)
 - *Debating Farm Crisis Causes and Solutions* (3:15)
 - *The Farm Crisis Divides Rural Communities* (3:30)
 - *Factors Leading to the Farm Crisis* (3:35)
- Each group shares a short summary of what they learned from their video segment.
- As groups share, students record all causes and effects discussed in the T-chart on the student worksheet.

Task 2: Engaging in Action

- First, watch the *Activism During the Farm Crisis* (3:44) videos (www.iowapbs.org/shows/farmcrisis); discuss how people worked to raise awareness about the Farm Crisis. If students struggle, use the following prompts.
 - Who – individuals or groups – did you notice being involved?
 - Why do you think these people wanted to improve awareness?
 - Who – individuals or groups – do you think they were trying to reach?
 - What tactics were used to raise awareness about the Farm Crisis?
 - Do you think these tactics would be effective today?
 - What would you do differently to raise awareness about the Farm Crisis?
- Provide a copy of one letter written to Governor Branstad during the Farm Crisis (1980s) along with two copies of the National Archives Analyze a Written Document form (provide the Novice form to younger or English learner students or the Intermediate form to advanced readers and writers) to each pair of students.
- Students should read the letter and complete the analysis form in pairs.
- Next, students share what they learned with their classmates. Students will record any themes found throughout the letters in the student document. A few sample themes are listed below to help start the discussion if students struggle.
 - Tone and language used

- Statistics or other information shared
 - Requests made
- Next, watch the *Farm Families Changed by the Farm Crisis* (4:55) and/or *Agriculture Changes as a Result of the Farm Crisis* (2:44) videos; discuss the effects that students experience in Iowa today because of the Farm Crisis. Optionally, invite a guest speaker to share the changes witnessed in the community because of the Farm Crisis and have students create a list. Below is a list of potential effects.
 - Abandoned farmsteads and acreages
 - Bankruptcies (i.e., banks, grocers, hardware, grain elevators)
 - Disappearance of small towns
 - Increased specialization/decreased diversification in farm businesses
 - https://drive.google.com/file/d/10I2Colj5IK_5uHK4uKrF4iFi5hAZ4fQ6/view?usp=sharing Labor shifts in rural areas
 - Lower economic activity in rural areas
 - Population migration away from rural Iowa
 - School consolidations
 - Superintegration: consolidation of both horizontal and vertical integration
 - Horizontal integration: owning a larger market share
 - Vertical integration: owning many parts of the supply chain
 - Urbanization
- Then, students read the corresponding response letter from Governor Branstad's office and repeat the analysis process.
- Lead a discussion for students to share what they learned with the class. A few sample themes are listed below to help start the discussion if students struggle.
 - Tone and language used
 - Repeated statements
 - Statistics or other information shared
 - Resources suggested
- Watch *Private Assistance During the Farm Crisis* (4:40) and/or *Federal Policy Changes During the Farm Crisis* (3:27) videos; discuss how the effects of the Farm Crisis were mitigated. If students struggle, use the following prompts.
 - Who – individuals or groups – worked on this??
 - What were some of the methods used for this??
 - Do you have any ideas of better methods for this?
 - What do you think might have happened if these actions had not been taken? Why?

Task 3: Deconstruct an Issue

- Students review a list of agriculturally related topics facing Iowans today and choose one to learn more about. Students could narrow their focus to a local version of the issue or to include a smaller population directly related to the issue. See the examples below:
 - Food insecurity in your local community
 - Food sovereignty for an immigrant population
 - Farmland ownership by foreign investors

- Understanding meat label definitions of by local consumers
- Acceptable water uses by agriculture/industry/residents during droughts
- Water quality within a local watershed/ecosystem
- Students research the issue. Begin by defining what they already know or think about the issue, then interview someone who is familiar with the issue, and then use the internet.
- Students review the Writing as Inquiry resource from the University of Oregon (<https://opentext.uoregon.edu/writingasinqury/chapter/developing-questionsatissue>), then write their chosen issue as a question. The question must induce disagreement, be important to answer, be specific enough to answer, and require evidence-based support to answer. If students struggle with this step, provide the following or other examples to help them brainstorm.
 - Is the world flat? (question of fact)
 - Should exotic animals be allowed as pets? (question of definition)
 - Is Spider-Man a hero? (question of interpretation)
 - How should misbehavior at school be handled? (question of value)
 - Do anti-vaping campaigns discourage teens from trying vape devices? (question of consequence)
 - Would increasing time spent on mathematics in elementary school produce high school students with higher mathematics scores on state assessments? (question of consequence)
 - Is it wrong to limit portions for school lunches? (question of policy)

Task 4: Viewpoints

- Students review the list of careers provided and make a short list of any careers or roles that might be interested in the issue chosen in Task 3.
- Students choose one career or role, and brainstorm the important facts, concerns, or arguments from that perspective.
- Next, students identify a target audience. Some ideas are listed below.
 - local, county, state, or federal policymakers or agencies
 - media outlets for publication
 - corporate and business entities
 - residents or landowners
 - other recipients as appropriate
- Students prepare an outline of a letter related to the issue, then conduct a peer review before finalizing the outline.

Advanced Applications

- Share student letters with the identified audience.
- Students interested in this topic should prepare for and participate in the Iowa FFA Agricultural Issues and Perceptions Leadership Development Event (www.iowaffa.com/lde.aspx).
- Students interested in this topic should prepare for and participate in National History Day event sponsored by the State Historical Society of Iowa (<https://history.iowa.gov/learn/national-history-day>).



Assessment and Evaluation

Formative Assessments:

- Tasks 1 and 2: Ensure student analyses and themes are reasonable and accurate.
- Task 3: Review student research, interview information and issues.
- Task 4: Verify that perspectives chosen by students are appropriate and that information used for the letter outline matches the perspective.

Evaluation Criteria:

- Evaluate analysis worksheets completed by students during Tasks 1 and 2 for completeness and correctness.
- Evaluate the issue written as a question and research for Task 3.
- Evaluate Task 4 using the Issue Outline Evaluation Rubric.



Resources

Clevinger, K, & Rust, S. (2021). Writing as Inquiry. University of Oregon. Creative Commons Attribution-NonCommercial-ShareAlike 4.0 International License. Retrieved from <https://opentext.uoregon.edu/writingasinquiry/chapter/developing-questionsatissue>

Iowa Public Broadcasting System. (2013). The Farm Crisis. Retrieved from www.iowapbs.org/shows/farmcrisis

Merriam Webster. (2026). Merriam-Webster Online Dictionary. Retrieved from www.merriam-webster.com/

State Archives of Iowa. (1986). RG 43 Governor Terry Branstad, Keith Heffernan Files re: Agriculture, Box 90.

U.S. National Archives and Records Administration. (2023). Document Analysis. Retrieved from www.archives.gov/education/lessons/worksheets

Student Documents



Background

Learn about the issues surrounding the Farm Crisis of the 1980s and learn how advocacy led to policy changes. Choose a current agricultural issue of interest to learn more about.

Learning Objectives

- Explain the causes and effects of the 1980s Farm Crisis.
- Analyze primary sources to better understand an issue.
- Define a modern agricultural issue of choice.
- Construct persuasive arguments about an agricultural issue of choice.

Essential Questions

- What was the significance of the 1980s Farm Crisis?
- How can people on opposing sides of an issue work together?
- Why are problems and issues often so difficult to solve?
- How can students participate in advocacy and activism?

Key Terms

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Specialized – designed, trained, or fitted for one particular purpose or occupation

Supply chain – the chain of processes, businesses, etc. by which a commodity is produced and distributed; the companies, materials, and systems involved in manufacturing and delivering goods

Urbanization – the process of becoming urbanized (characteristic of a city)



Materials and Resources to Gather

- ☐ Required Texts/Readings:
 - Farm Crisis student letters and corresponding response letters
- ☐ Multimedia and Technology:
 - Internet
 - Farm Crisis documentary (www.iowapbs.org/shows/farmcrisis)
 - Video and document analysis worksheets from the National Archives (www.archives.gov/education/lessons/worksheets)



Step-by-Step Instructions

Task 1: The Farm Crisis

1. As a class, watch Overview of the Farm Crisis (2:09) from the Farm Crisis documentary (www.iowapbs.org/shows/farmcrisis).
2. As a class, work together to discuss the video and complete an Analyze a Video worksheet from the National Archives (www.archives.gov/education/lessons/worksheets).
3. Your teacher will assign you to a small group and one of the following video segments. Complete steps 1 & 2 with your small group.
 - a. *Causes of the Farm Crisis* (4:16)
 - b. *Farm Crisis Impact on Rural Communities* (3:41)
 - c. *Debating Farm Crisis Causes and Solutions* (3:15)
 - d. *The Farm Crisis Divides Rural Communities* (3:30)
 - e. *Factors Leading to the Farm Crisis* (3:35)
4. Share a summary of what you learned from your assigned video segment with the rest of the class.
5. Summarize the causes and effects of the Farm Crisis in the t-chart.

Task 2: Engaging in Action

1. Watch *Activism During the Farm Crisis* (3:44) from the Farm Crisis documentary (www.iowapbs.org/shows/farmcrisis).
2. Your teacher will provide a letter written by an Iowan to the Governor's office during the Farm Crisis. With a partner, read the letter carefully and complete the *Analyze a Written Document* worksheet together (www.archives.gov/education/lessons/worksheets).
3. Share your analysis with your classmates when your teacher asks you to do so.
4. As other students share their analyses, record themes and repetitive statements that you hear.
5. Watch *Farm Families Changed by the Farm Crisis* (4:55) and/or *Agriculture Changes as a Result of the Farm Crisis* (2:44) from the Farm Crisis documentary.
6. Brainstorm any long-lasting effects of the Farm Crisis that we see or observe or experience in Iowa yet today and record in the space provided.
7. Next, with your partner, read a second letter, the corresponding reply to the earlier letter from the Governor's office during the Farm Crisis, and complete a second *Analyze a Written Document* worksheet together.
8. Again, share your analysis and record themes observed by your classmates.
9. Finally, watch *Private Assistance During the Farm Crisis* (4:40) and/or *Federal Policy Changes During the Farm Crisis* (3:27) from the Farm Crisis documentary. As a class, discuss how the effects of the Farm Crisis were mitigated - and what could have been done differently or better - and record any actions taken and ideas you have in the space provided.

Task 3: Deconstruct an Issue

1. Review the topics below, related to agriculture, which may challenge Iowans today. These topics often challenge smaller populations (ex: a specific urban community, an Indigenous community, an immigrant population, a specific rural community) as well as the entire state's population. Several topics have been introduced throughout the course. Alternatively, you may select another agriculturally related topic to learn more about.

a. Commodity production	k. Land use
b. Conservation of natural resources	l. Land ownership
c. Farm bill	m. Land values
d. Food deserts	n. Livestock production
e. Food insecurity	o. Local food movements
f. Food sovereignty	p. Opportunities for youth
g. Ground water availability	q. Rematriation
h. Habitat biodiversity	r. Soil degradation
i. Infrastructure maintenance and improvement	s. Surface water resources
j. Labor shortage (skilled or professional)	t. Sustainable agriculture
	u. Water quality
2. Organize what you already know (or think you know) about the topic.
3. Write five questions that you have about the topic (who, what, when, where, why, how) and then research each.
4. Interview someone who knows something about the topic and summarize their experience, using the questions you wrote in Step 3 or other appropriate questions.

5. Use the internet to research any questions or ideas you still have about the issue and summarize in the space provided.
6. Review instructions about rewriting your topics as an issue, using a question format, from the Writing as Inquiry chapter (<https://opentext.uoregon.edu/writingasinquiry/chapter/developing-questionsatissue>).
7. Write a one-sentence question summarizing the topic you chose in Step 1. A well-written question should fulfill the requirements below.
 - a. Induce disagreement
 - b. Important to answer
 - c. Specific enough to answer (but has multiple answers)
 - d. Require answers that include logical, evidence-based support

Task 4: Viewpoints

1. Review the list of careers from the **Agricultural Careers List**.
2. Make a list of all careers that might have some relevance to the issue researched in Task 2. Give at least one reason for interest in the issue for each career.
3. Select one career of interest to you and prepare a list of talking points using the prompts in the space provided.
4. To raise awareness about this issue, select an audience from the list below that you could communicate with.
 - a. local, county, state, or federal policymakers or agencies
 - b. media outlets for publication
 - c. corporate and business entities
 - d. residents or landowners
 - e. other recipients as appropriate
5. Develop an outline for a letter, such as those read in Task 2.
6. Trade outlines with another student and review their perspective, target audience, and letter outline. Provide feedback.
7. Make any adjustments necessary and submit your letter outline to your instructor.

Advanced Applications

- Use your outline to write and share a letter with your target audience.
- Participate in the Iowa FFA Association's competitive Ag Issues and Perceptions Leadership Development Event.
- Participate in the State Historical Society of Iowa's National History Day events.

Student Work for Lesson 5: Advocacy in Agriculture

Name: _____



Before Class

List as many challenges you can think of which you, your family, and your community face.



During Class

Task 1: The Farm Crisis

Causes	Effects

Task 2: Engaging in Action

Observations about awareness efforts related to the Farm Crisis:

Themes from student letters:

Effects of the Farm Crisis today:

Themes from response letters:

Observations about the efforts to mitigate the Farm Crisis and its' effects:

Task 3 Deconstruct an Issue

Description of the specific issue:

What you already know and understand about the issue:

Five questions you have about the issue:

- 1.
- 2.
- 3.
- 4.
- 5.

Interview summary:

Final issue, written as a question:

Task 4 Viewpoints

1. What expertise, skills, and information would someone in that role bring to help others understand the issue better?
2. What one cause of the issue would someone in that role be interested in?
3. Which potential effects or outcomes would someone in that role be most interested in? Why?
4. Which one historical example might be relevant to this issue?
5. Any other interesting information that you think is important to include.



Reflect on Learning

What is the most important information you learned during this lesson, and why?

1.

What two pieces of information were surprising to you, and why?

1.

2.

What three questions do you still have about any of these topics?

1.

2.

3.



After Class

How could you use the information above to inform others or to further your understanding of the subject?

Evaluation Rubric: Letter Outline

Expectation	★★★	★★★	★★★	★★★	Feedback
Issue Identification & Context Identifies a specific issue and provides relevant background that frames the perspective.					
Perspective Clarity Perspective is stated, consistent throughout, and well-aligned with the purpose of the letter.					
Letter Structure Organization A logical outline includes all key components of a formal letter (introduction, body points, conclusion); ideas flow clearly.					
Use of Research & Evidence Integrates multiple relevant, credible sources; evidence strongly supports the perspective.					
Reasoning & Argument Development Arguments are logical, well-developed, and clearly connected to evidence and perspective.					
Audience Awareness & Tone Tone and approach are highly appropriate for the intended audience; persuasive and purposeful.					
Outline Detail & Completeness Thorough outline with bullet points or sections; includes key ideas, supporting details, and transitions.					
Totals					Points Possible = _____

Other Comments:

Agricultural Careers

Visit <https://agexplorer.ffa.org/> to search for most careers listed below.

Animal

- Animal breeder
- Animal caretaker
- Animal geneticist
- Animal pathologist
- Animal scientist
- Animal welfare specialist
- Herd nutritionist
- Veterinarian

Business

- Accountant
- Agribusiness manager
- Agribusiness/export manager
- Agricultural loan officer
- Certified appraiser
- Grain marketing specialist
- Economist
- Real estate manager
- Supply chain manager
- Trade manager
- Transportation manager
- Environmental & Natural Resources
- Biological technician
- Climate change analyst
- Conservation officer
- Conservationist
- Ecologist
- Environmental compliance officer
- Environmental engineer
- Environmental scientist
- Fisheries technician
- Game warden
- Geologist
- Hydrologist

Business (continued)

- Integrated pest management specialist
- Marine biologist
- Naturalist
- Nutrient management / waste management specialist
- Pest control advisor
- Soil scientist
- Sustainability specialist
- Toxicologist
- Water quality technician
- Water resource engineer
- Water treatment technician
- Wildland firefighter
- Wildlife biologist
- Wind turbine technician

Education & Communications

- Agricultural literacy and advocacy specialist
- Agricultural science teacher
- Agriculture journalist
- Extension agent
- Extension youth program coordinator
- International development specialist
- Social media strategist

Food Sciences

- Food processor
- Food safety specialist
- Food scientist
- Food sovereignty coordinator
- Food technologist
- Nutritionist
- Produce buyer
- Produce inspector
- Product development food scientist
- Slaughter processor (any)

Plants

- Agronomy applicator
- Crop advisor
- Crop scout
- Entomologist
- Greenhouse manager
- Harvester/picker
- Irrigation specialist
- Landscape designer
- Plant biologist
- Plant breeder
- Plant geneticist
- Plant pathologist
- Sales agronomist
- Seed production technician
- Weed scientist

Policy & Law

- Advisor: government / stakeholder relations
- Agriculture lawyer
- Agriculture legislative assistant
- Agriculture lobbyist
- Policy analyst
- Safety director or manager

Power, Structural, & Technical Systems

- Agricultural engineer
- Alternative energy specialist
- Civil engineer
- Computer programmer
- Computer system analyst
- Data processor
- Design engineer
- Electrical engineer
- Geospatial analytics scientist
- Heavy equipment operator
- Information technology (any)
- Land surveyor
- Mechanic
- Mechanical engineer
- Precision ag technician or specialist
- Sales representative: equipment and agricultural systems

Production Ag

- Community/urban farmer
- Farm program coordinator
- Herdsperson
- Hydroponics producer
- Row crop producer / farmer

Research & Development

- Laboratory technician
- Product development manager
- Research and development
- Research scientist
- Research station manager
-

General / Other

(Not found in AgExplorer)

- Consumer / resident
- Astronomer
- City manager
- County recorder
- County supervisor
- Historian
- State/county maintenance worker
- Township trustee

1980s Farm Crisis Letters

Student Letter (Todd)

Governor Terry Branstad
State Capital
Des Moines, IA 50319

Mr. Branstad

I am a high school senior from Osage IA. I am planning to go into farming as soon as I Graduate. The way things are going I am very scared. My father is in farming, right now the way the prices are going, you can not make it.

What I can't understand is how every thing else is going up and the farm prices are going down. Please try to help use young farmers.

Sincerely yours,

Todd
Todd

RECEIVED
SEP 17 1985

OFFICE FOR PLANNING
AND PROGRAMMING

Student Letter (Todd) Text

Governor Terry Branstad

State Capital

Des Moines, IA 50319

Mr. Branstad

I am a high school senior from Osage IA. I am planning to go into farming as soon as I Graduate. The way things are going I am very scared. My father is in farming, right now the way the prices are going, you can not make it.

What I can't understand is how every thing else is going up and the farm prices are going down. Please try to help use young farmers.

Sincerely yours,

Todd (signature)

Todd (printed)

Stamp text: Received Sep 17 1985 Office for Planning and Programming

Young Farmer Letter (Scott)

Thursday Jan 1986

Please if some else reads this PLEASE give to the Governor.

Dear Governor

1986 JAN 20 PM 3:33

GOVERNOR'S OFFICE

RECEIVED
JAN 21 1986

OFFICE FOR PLANNING
AND PROGRAMMING

I am a 21 year old farmer or maybe somebody who wishes to be one. I will tell you a story about me and others like me. Two years Before I even graduated I was I hired man for a farrow to finish Hog Operation and learned the skills of a Hog man. But declining prices and a divorce and all of this, then I started working for a well established farmer who was doing extremely well. But winter came and work ended. So I went to the winter Farm Operation At ISU. But when spring arrived you gave us the PIK program so I was out of a job. then I got a job at Arts WAY MFG INC. and work for 2 years. I finally got layed off But recieved a job that very night from a local Farmer. He lived a mile south of Fenton and thats where I work presently. I make enough money to pay the bill but there is no extra money to do anything. All in All I Have 2 years in Hogs and in MFG. and 4 years as a dision making, hired man. But thats where the Problem starts. I can walk into any Hog operation and take over and turn a profit, I can fix anything because I Have made everything from, Grinder mixers, silage Blowers

to airline baggage carts. And add 4 years of actual field experience and the growing up on my dad's farm I have a very good back ground. I started plowing at 10 and was combining at 13. I walk down the street and can get a job on my above experiences. I even get paid better than most hired men, but I still can't get ahead. It take 4 years to get a Bachelors degree and 2 more to get a masters and 2 more for a PhD. well that make 8 year of college. well I have 8 years of of Hands on training with a 1 to 1 student to teacher ratio, I dare say that's Betted then any other college or university anywhere. But when I go to a bank to get a loan they laugh at me. I can't even get a dime. so what do people like me do. I Have the skill and the experience to do anything But don't Have the old Family money Be kind me. You see my father is in poor financial shape, and probably won't Be farming anymore. in a few years. But I am total independent of this and it has no bearing on me. I Have made an observation ~~that~~ and summed up that the people going out first are the people who had it Handled to them, They Never learned the most important thing, how to learn and remember from others mistakes I Have learned and also taught others from my experiences and feel I could start and run a farm only Because I have the past experiences. Now It's your turn where

do I get started, where do I find the money to start. Do you want Farming to be big Buissness OR a Buissness of some who knows what He is doing. I Have no college degree but Have Hands on training. After all a child can't learn how to ride a bike from a book the only way He can learn is to do it ~~at~~^{is} falling down, well I Have fell and learned over again. I won't starve but I can't even feed a family and Have NO future. Again I ask is there money for me and others like me. If there isn't there should be. Please guide me to an answer. All I need is a start. then I will begin to feed the world. After all when the Government gave the Chrystler Corp. all that money that paid it Back in 3 years well farmers Have paid there loans back every ^{year} ~~year~~. How you ask? Every Time anyone sits down to the 3 meals a day he is getting a loan payment. we don't pay it back to the Government we pay it back to the people. Can we afford to loose people like me, or should we find a way to Help them start.

Thank You for listening.

Sincerely

Scott.

Farmer

Young Farmer Letter (Scott) Text

Thursday Jan 1986

Please if some else reads this PLEASE give to the Governor.

Dear Governor:

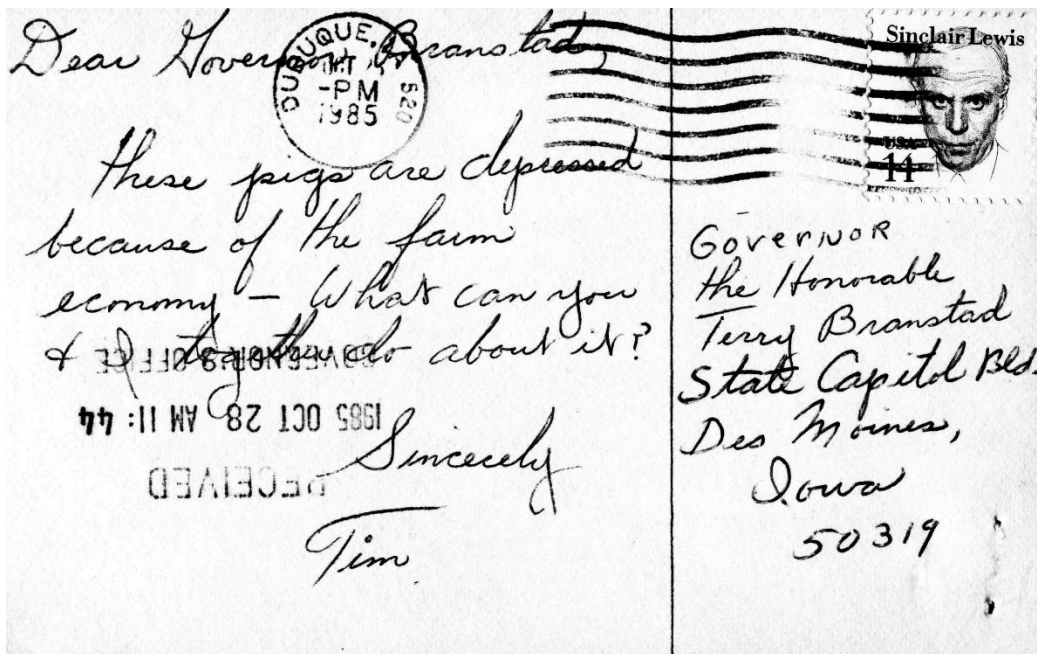
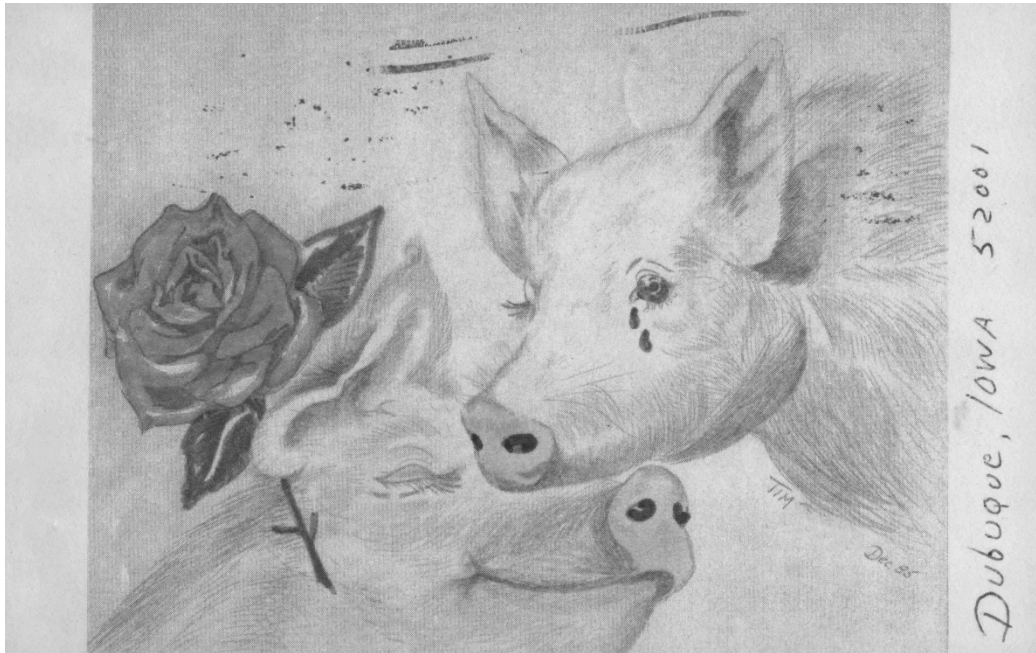
I am a 21 year old farmer or maybe somebody who wishes to be one. I will tell you a story about me and others like me. Two years before I even graduated I was I hired man for a farmer to finish hog operation and learned the skills of a Hog man. But declining prices and a divorce and all of this, then I started working for a well established farmer who was doing extremely well, But winter came and work ended. So I went to the winter Farm Operation At ISU, But when spring arived you gave us the PIK program so I was out of a job. Then I got a job at Art's Way Mfg. Inc. and work for 2 years. I finally got layed off. But recieved a job that very night form a local farmer. He lived a mile south of Fenton and thats where I work presently. I make enough money to pay the bill but there is no extra money to do anything. All in All I Have 2 years in Hogs and in Mfg. and 4 years as a dision making hired man. But thats where the problem starts. I can walk into any Hog operation and take over and turn a profit. I can fix anything because I Have made everything from, Grinder mixers, silge Blowers to airline baggage carts. And add 4 years of actual field experience and the growing up on my dads farm I Have a very good back ground. I started plowing at 10 and was combining at 13. I walk down the street and can get a job on my above experiences. I even get paid better then most hired men, but I still can't get ahead. It take 4 years to get a Bachlars degree and 2 more to get a masters and 3 more for a PHD. well that make 8 year of college. well I have 8 years of of Hands on training with a 1 to 1 student to teacher ratio, I dare say thats Better then any other college or university anywhere. But when I go to a bank to get a loan they laugh at me. I can't even get a dime, so what do people like me do. I Have the skill and the experience to do anything But don't Have the old family money Be Hind me. You see my father is in poor financial shape, and probably won't Be farming anymore in a few years. But I am total independent of this and it has no bearing on me. I Have made an observation and summed up that the people going out first are the people who had it Handed to them, They Never learned the most important thing, thats to learn and remember from others mistakes. I Have learned and also taught others from my experiences and feel I could start and run a farm only Because I have the past experiences. Now It's your turn where do I get started, where do I find the money to start. Do you want Farming to be big Buisness or a Buisness of some who knows what He is doing. I Have no college degree but Have Hands on training. After all a child can't learn how to ride a bike from a book the only way he can learn is to do it by falling down, well I Have fell and learned over again. I won't starve but I can't even feed a family and Have NO Future. Again I ask is there money for me and others like me. If there isn't there should be. Please guide me to an answer. All I need is a start. then I will begin to feed the world. After all when the Government gave the Chrysler Corp. all that money that paid it Back in 3 years well farmers Have paid there loans back every year. How you ask? Every time anyone sits down to the 3 meals a day he is getting a loan payment. we don't pay it back to the Government we pay it back to the people. Can we afford to loose people like me, or should we find a way to Help them start.

Thank You for listening,
Sincerely
Scott.
Farmer

Stamp text: Received 1986 Jan 20 PM 3:33 Governor's Office

Stamp text: Received Jan 21 1986 Office for Planning and Programming

Postcard (Tim)



Postcard (Tim) Text

Governor
The Honorable
Terry Branstad
State Capitol Bld.
Des Moines
Iowa

50319

Dear Governor Branstad,

These pigs are depressed because of the farm economy – What can you & I together do about it?

Sincerely

Tim

Stamp text: Received 1985 Oct 28 AM 11:44 Governor's Office

Bankrupt Farmer Letter (Sandra)

RECEIVED

1985 OCT -3 AM 10:33

GOVERNOR'S OFFICE

RECEIVED

OCT 4 - 1985

Maplewell, Iowa
Sept. 30, 1985

OFFICE FOR PLANNING
AND PROGRAMMING

Dear Gov. Branstad,

Today was the day to call you, if we were about ready to file bankruptcy. How can we call & talk to you, when we can't even talk to each other without yelling or crying?

My husband and I were born and raised on a farm. That's all we know. My husband is up by 6:00 A.M. and doesn't get to bed until 11:00 P.M. or later. Have you ever watched a man stagger across the field to work on his broken down combine? No, he wasn't drunk, he's just worn out at 2:00 A.M. and he's handicapped.

We bought our farm in the fall of '77. The house is small and the foundation in need of repair. We had hopes of building a new house someday, but we can't even afford to remodel.

Our youngest child 3 yrs. sleeps on a mattress that we pull out from under another bed. It isn't that we don't have a bed for her, it's because the bedroom

is too small for another bed. We are using the same furniture we have had ever since we were first married. (19 yrs)

Our oldest child a senior in school has had to get a job just so she could buy her senior pictures & announcements etc. She bought her own car because if we had the money we'd buy a car or pickup for ourselves. (We drive an '75 Pontiac & '71 Chevy pickup. It really hurts to think that this year should be one of the happiest & best of her school years.

As I lay in bed at night & hear my husband talking to God or himself. (I don't know which) what can he do to save the farm or buy food for us. Asking himself where he went wrong? What can he do? I think to myself so this the land of the free. Wouldn't we be better off on welfare? They at least have food & a decent house and they probably don't work as hard as we do.

The other day we went to get groceries

and our son said, "Please bring home Mc Donalds sandwiches for supper." Little did he know that we took the money from his bank. If we have to take money from our children, who will we be taking it from next.

I brought home new coats for the kids. As I gave them to them I told them they were early Xmas presents. We might not be able to afford clothes or gifts by Xmas. Who knows maybe we won't even be here by then. Maybe we'll be in heaven or hell, but what is hell when we got it here on earth!

Yes, it's great being an American & it's even better being a poor worn out farmer!

Sincerely,
Sandra

Bankrupt Farmer Letter (Sandra) Text

Maxwell, Iowa

Sept. 30, 1985

Dear Gov. Branstad,

Today was the day to call you, if we were about ready to file bankruptcy. How can we call & talk to you, when we can't even talk to each other without yelling or crying?

My husband and I were born and raised on a farm. That's all we know. My husband is up by 6:00 A.M and doesn't get to bed until 11:00 P.M. or later. Have you ever watched a man stagger across the field to work on his broken down combine? No, he wasn't drunk, he's just worn out at 2:00 A.M and he's handicapped.

We bought our farm in the fall of '77. The house is small and the foundation is need of repair. We had hopes of building a new house someday, but we can't even afford to remodel.

Our youngest child 3 yrs. sleeps on a mattress that we pull out from under another bed. It isn't that we don't have a bed for her, it's because the bedroom is too small for another bed. We are using the same furniture we have had ever since we were first married (19 yrs)

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The other day we went to get groceries and our son said, "Please bring home McDonalds sandwiches for supper." Little did he know that we took the money from his bank. If we have to take money from our children, who will we be taking it from next,

I brought home new coats for the kids. As I gave them to them I told them they were early X-mas presents. We might not be able to afford clothes or gifts by X-mas. Who knows maybe we won't even be here by then, Maybe we'll be in heaven or hell, but what is hell when we got it here on earth!

Yes, it's great being an American & it's even better being a poor worn out farmer!

Sincerely,

Sandra

Stamp text: Received 1985 Oct 3 AM 10:33 Governor's Office

Stamp text: Received Oct 4 1985 Office for Planning and Programming

Support Letter (Sister Mary Anastasia)

August 31, 1985

RECEIVED

1985 SEP -3 PM 2:13

GOVERNOR'S OFFICE

Governor Terry Branstad
State Capital Bldg.
Des Moines, Iowa 50319

Dear Governor Branstad:

I am writing an SOS letter for the farmers. Thank you for your past efforts, but do keep on even more vigorously.

Many of the fathers of our students who live on farms not only in Iowa but other states are at the end of their rope. Surely our good farmers deserve better treatment because they provide much of our food for survival. My own nephew just told me today the price for his hogs was so bad, he might as well kill them. Pretty soon the corn will be ready after the farmers worked so hard to grow it, and what price will it bring? Our family farms must be saved! As a loyal Iowan, I feel sure you will do all you can - and soon.

Hopefully yours,
Sister Mary Anastasia

Support Letter (Sister Mary Anastasia) Text

August 31, 1985

Governor Terry Branstad
State Capital Bldg.
Des Moines, Iowa 50319

Dear Governor Branstad:

I am writing an SOS letter for the farmers. Thank you for your past efforts, but do keep on ever more vigorously.

Many of the fathers of our students who live on farms not only in Iowa but other states are at the end of their rope. Surely our good farmers deserve better treatment because they provide much of our food for survival. My own nephew just told me today the price for his hogs was so bad; he might as well kill them.

Pretty soon the corn will be ready after the farmers worked so hard to grow it, and what price will it bring? Our family farms must be saved! As a loyal Iowan, I feel sure you will do all you can — and soon.

Hopefully yours,
Sister Mary Anastasia

Stamp text: Received 1986 Feb 19 PM 1:54 Governor's Office

Response to Anniversary Letter (Esther and Lee)



TERRY E. BRANSTAD
GOVERNOR

OFFICE OF THE GOVERNOR

STATE CAPITOL
DES MOINES, IOWA 50319
515 281-5211

RECEIVED
FEB 21 1986

RECEIVED
1986 FEB 19 PM 1:54
GOVERNOR'S OFFICE

February 4, 1986

OFFICE OF THE GOVERNOR
AND DEPARTMENT OF AGRICULTURE

Dear Esther and Lee:

It has come to my attention that you are celebrating your 63rd Wedding Anniversary on February 19th. Anniversaries are important occasions for both reminiscing and looking forward to the future.

I wish to extend to both of you my sincere congratulations and best wishes for future happiness and companionship.

Warmest personal regards.

Sincerely,

Handwritten signature of Terry E. Branstad in cursive.

Terry E. Branstad
Governor

TEB/c Dear Governor:

Thank you for thinking of us. But really, it can't be to happy as we are farmers we bought this 80 acres in 1926 & moved here in 1927 have raised 4 children here, we finally got over 1100 acres but due to the hard over

times and the ones we have lost
over 500 acres of this, now how
are we to hang on to this??
we are both depressed we made it
three the 29 & 30 and raised the
children. Now we never hunted
one bit of this we both work
He has some chow for some
hogs and we have cows of
our own. I also have chicken
I take care of myself at 80 yrs old
He soon be 82. Now ~~at~~ but
there some way you can help
us farmers our social security not
enough to live on & pay our
utilities. Thank You

I got several good Pictures of you
and your family at ~~that~~ days
on wintered covered bridge

Response to Anniversary Letter (Esther and Lee) Text

Office of the Governor
State Capitol
Des Moines, Iowa 50319
515 281-5211

Terry E. Branstad, Governor

February 4, 1986

Dear Esther and Lee:

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Warmest personal regards.

Sincerely,

Terry E. Branstad
Governor

TEB/c

[Handwritten note at bottom:]

Dear Governor!

Thank you for thinking of us. But really it cant be to happy as we are farmers we bought this 80 acres in 1926 & moved here in 1927. Have raised 4 children here. We finally got over 1100 acres but due to the hard

over

times and the prices we have lost.over 500 acres of this. Now how are we to hang on to this?

We are both depressed we made it thru the 29 & 30 and raised the children. Now we never inherited one bit of this we both work He has some chores for sons hogs and we have cows of our own. I also have chickens. I take care of myself at 80 years old. He soon be 82. Now isn't there some way you can help us farmers our social security not enough to live on & pay our utilitys.

Thank you

I got several good Pictures of you and your family at [crossed out] days covered bridge in Winterset.

Stamp text: Received 1986 Feb 19 PM 1:54 Governor's Office

Stamp text: Received Feb 21 1986 Office for Planning and Programming