

NATIONAL GEOGRAPHIC



Explorer

Parrots 2

Pulley Power 8

Food for the Future 16



TEACHER'S GUIDE Pioneer and Trailblazer Vol. 18 No. 6

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Educational consultant **Stephanie Harvey** has helped shape the instructional vision for this Teacher's Guide. Her goal is to ensure you have the tools you need to enhance student understanding and engagement with nonfiction text.

Lexile® Framework Levels

Pioneer

Parrots in Peril 530
Pulley Power 500
Food for the Future.....500

Trailblazer

Parrots in Peril 670
Pulley Power 530
Food for the Future.....690

Standards Supported

- Common Core State Standards (CCSS)
- Next Generation Science Standards (NGSS)
- C3 Framework for Social Studies State Standards (C3)

For additional resources to extend your students' learning, visit EXPLORER's website:

NATGEO.ORG/EXPLORERMAG-RESOURCES

INTRODUCTION

BACKGROUND

Since 1888, the National Geographic Society has funded scientists and explorers and shared their findings with the world. To support educators who use our resources, we have created a Learning Framework, which lays out what we believe students should learn from their experiences with the Society.

PURPOSE

The Learning Framework was designed to convey the Society's core beliefs and values. It is built around a set of attitudes, skills, and knowledge that embody the explorer mindset.

To determine the learning outcomes within the Learning Framework, we dug deep into national standards in key subject areas. We also sought advice from subject matter and child development experts, along with the combined expertise of NG instructional designers, researchers, and content developers. To learn more, go to: <https://www.nationalgeographic.org/education/learningframework/>.

IMPLEMENTATION

Each article in this magazine has a knowledge-based link to the Learning Framework.

MINDSET OF AN EXPLORER

KEY FOCUS AREAS

A — Attitudes

National Geographic kids are:

CURIOS about how the world works, seeking out new and challenging experiences throughout their lives.

RESPONSIBLE, with concern for the welfare of other people, cultural resources, and the natural world. NG kids are respectful, considering multiple perspectives, and honoring others regardless of differences.

EMPOWERED to make a difference. NG kids act on curiosity, respect, and responsibility. They are adventurous and persist in the face of challenges.

S — Skills

National Geographic kids can:

OBSERVE and document the world around them and make sense of those observations.

COMMUNICATE experiences and ideas effectively through language and media. They are storytellers!

COLLABORATE with others to achieve goals.

SOLVE PROBLEMS by generating, evaluating, and implementing solutions after identifying alternatives, weighing trade-offs, and making well-reasoned decisions.

K — Knowledge

National Geographic kids understand:

THE HUMAN JOURNEY is all about where we have been, where we live now (and why), and where we are going.

OUR CHANGING PLANET encompasses all that coexists on our planet—interconnected through systems that generate and nurture each other.

WILDLIFE AND WILD PLACES inhabit our planet—from the butterflies in our backyards to the lions in Africa.

Second Grade Standard Supported

• **CCSS Reading Informational Text:** Identify the main topic of a multiparagraph text as well as the focus of specific paragraphs within the text. (2–2)

Third Grade Standard Supported

• **CCSS Reading Informational Text:** Determine the main idea of a text; recount the key details and explain how they support the main idea. (3–7).

What You'll Need

- “Food for the Future” (*Explorer*, pages 16–23)
- Think Sheet (Teacher’s Guide, page 5)
- Clipboards and pencils

CONNECT & ENGAGE (5 minutes)

Kids are in a group on the floor in front of you. Sit on a low chair and hold up pages 16–17 in the magazine.

Say: *We are going to learn a lot in this article, “Food for the Future.” To help us sort out the information, we’re going to use a Think Sheet with three columns.*

Say: *It’s impossible to remember absolutely everything we read. That’s why we want to figure out what the most important ideas are so we can make sense of what we are reading and build our knowledge. The first column of the Think Sheet is where we’ll write the important ideas—the important information we want to remember about the topic.*

Say: *Details may not be the most important information, but they are interesting and can really engage us while we are reading. We can add those interesting details to the second column of the chart.*

Say: *Another necessary part of reading is thinking about what we are reading. Thinking can include responses, questions, or opinions. We can add our thinking to the third column of the chart.*

Read the headline of the article and the text on page 16.

Say: *Turn and talk about what important information and interesting details you think we might learn about in this article.*

MODEL (10 minutes)

Kids sit in a group on the floor with you in a low chair in front of them.

Say: *I’m going to read page 18 aloud and then model how I sort through to determine important versus interesting information.*

Read aloud page 18.

Say: *Wow! All this information about Svalbard and the icy door and rows of shelves with seeds is really interesting. I can picture in my mind what it looks like and how cold it must be in that vault. But those are the interesting details, not the really important ideas I want to remember about this topic.*

Say: *I think the most important idea is that the seed vault was created to store seeds to protect the future of agriculture. Seeds are stored in case we need them in the future.*

Say: *I’m going to write these things in the first two columns on my Think Sheet, and I’m also going to write my thinking in the third column. One thing I’m thinking is that the cold must help protect those seeds. I’m wondering if that’s why they chose such a cold place to store the seeds. What do you think? Turn and talk with a partner.*

Kids turn and talk and then share out their thinking.

GUIDE (10 minutes)

Hand out Think Sheets and have kids attach them to their clipboards. Kids remain in a group in front of you on the floor.

Say: *Let’s try this together. As I read page 19, start to sort the important ideas from the interesting details.*

Read aloud page 19.

Say: *Who has some information they want to share? As you share the information, let us know if you think it should go in the “Important Information” or “Interesting Details” column on the chart, and let us know why you think that. Your thoughts about that should go in the “My Thinking” column.*

Kids should note that an important idea is that the number of different kinds of plants we grow for food is shrinking. On this page, there are many interesting details that support this idea, such as the decline in the number of kinds of cabbage and cucumber in the U.S. Another important idea is that we rely on only a few kinds of crops for our food energy needs, so storing seeds for the future is a good idea.

COLLABORATE (25 Minutes)

Say: *Now it's your turn. Find a partner and read the rest of the article together. Talk about what you think is the most important information and what the interesting details are. You may not agree, but talking about your ideas with your partner can help you decide. And don't forget to record your thinking in column three.*

Say: *I'm going to move around the classroom, so let me know if you need help or have any questions.*

Kids partner up and read the rest of the article. Move around the room, conferring with partners.

Some of the important ideas in the rest of the article include the following:

- Svalbard is a particularly important seed bank. Because it is inside a mountain in a cold, underground place, the seeds will be safe for a long time.
- Only those who put seeds in are able to take seeds out.
- The seed bank can help with future problems, too.

SHARE THE LEARNING (10 minutes)

Kids join a sharing circle with you and share out, using respectful language.

Say: *I am going to invite [student name] to share what you learned and what you think is important or interesting in this article. We are going to share using respectful language. So when I ask: "[student name] would you like to share what you learned and what you think is important or interesting?" you need to say: "Yes thank you." Then you can share. After you've done that, you can invite someone else to share.*

Say: *To do that, you need to call on the person by name and use the same language we just practiced. When we use polite, respectful sharing language, everyone pays closer attention to the information being shared.*

Kids share out and invite others to share, always using the respectful sharing language that was modeled. There should be time for about 3 or 4 kids to share out with the whole group. Once they are finished, have everyone turn and share with the person next to them, so that all have a chance to be heard.

Say: *You've learned a lot of important information and interesting details about the Svalbard seed bank and how it is ensuring that we will have food for the future. Can anyone remind us why we determine what the important ideas are when we are reading? And how are the important ideas different from the interesting details?*

Several kids share out.

Say: *You worked hard to sort out the important ideas from the interesting details, and you also reflected on your thinking. Great work with this strategy, everyone!*

Name _____

Date _____

THINK SHEET

Use this chart to record your thinking.

Important Information	Interesting Details	My Thinking

LESSON FRAME Determine Important Information

This frame is a kind of template of the lesson we just worked on. It has the instructional moves and language of the lesson, but the specific content has been removed. This way you can use the Lesson Frame for the other articles in the issue or for any nonfiction text you might be teaching.

What You'll Need

- Nonfiction text
- Think Sheet template
- Clipboards and pencils

MODEL (10 minutes)

Kids sit in a group on the floor with you in a low chair in front of them.

Say: *I'm going to read page(s) ___ aloud and then model how I sort through to determine important versus interesting information.*

Read aloud page(s) ____.

Say: *Wow! All this information about _____ is really interesting. But those are the interesting details, not the really important ideas I want to remember about this topic.*

Say: *I think the most important idea is that _____.*

Say: *I'm going to write these things in the first two columns on my Think Sheet, and I'm also going to write my thinking in the third column. One thing I'm thinking is _____. What do you think? Turn and talk with a partner.*

Kids turn and talk and then share out their thinking.

GUIDE (10 minutes)

Hand out Think Sheets and have kids attach them to their clipboards. Kids remain in a group in front of you on the floor.

Say: *Let's try this together. As I read pages(s) ____, start to sort the important ideas from the interesting details.*

Read aloud page(s) ____.

Say: *Who has some information they want to share? As you share the information, let us know if you think it should go in the "Important Information" or "Interesting Details" column on the chart, and let us know why you think that. Your thoughts about that should go in the "My Thinking" column.*

CONNECT & ENGAGE (5 minutes)

Kids are in a group on the floor in front of you. Sit on a low chair and hold up page(s) _____.

Say: *We are going to learn a lot in this article. To help us sort out the information, we're going to use a Think Sheet with three columns.*

Say: *It's impossible to remember absolutely everything we read. That's why we want to figure out what the most important ideas are so we can make sense of what we are reading and build our knowledge. The first column of the Think Sheet is where we'll write the important ideas—the important information we want to remember about the topic.*

Say: *Details may not be the most important information, but they are interesting and can really engage us while we are reading. We can add those interesting details to the second column of the chart.*

Say: *Another necessary part of reading is thinking about what we are reading. Thinking can include responses, questions, or opinions. We can add our thinking to the third column of the chart.*

Read the title of the article and the text on page ____.

Say: *Turn and talk about what important information and interesting details you think we might learn about in this article.*

LESSON FRAME Determine Important Information**COLLABORATE (25 Minutes)**

Say: Now it's your turn. Find a partner and read the rest of the article together. Talk about what you think is the most important information and what the interesting details are. You may not agree, but talking about your ideas with your partner can help you decide. And don't forget to record your thinking in column three.

Say: I'm going to move around the classroom, so let me know if you need help or have any questions.

Kids partner up and read the rest of the article. Move around the room, conferring with partners.

SHARE THE LEARNING (10 minutes)

Kids join a sharing circle with you and share out, using respectful language.

Say: I am going to invite [student name] to share what you learned and what you think is important or interesting in this article. We are going to share using respectful language. So when I ask: "[student name] would you like to share what you learned and what you think is important or interesting?" you need to say: "Yes thank you." Then you can share. After you've done that, you can invite someone else to share. To do that, you need to call on the person by name and use the same language we just practiced. When we use polite, respectful sharing language, everyone pays closer attention to the information being shared.

Kids share out and invite others to share, always using the respectful sharing language that was modeled. There should be time for about 3 or 4 kids to share out with the whole group. Once they are finished, have everyone turn and share with the person next to them, so that all have a chance to be heard.

Say: You've learned a lot of important information and interesting details about _____. Can anyone remind us why we determine what the important ideas are when we are reading? And how are the important ideas different from the interesting details?

Several kids share out.

Say: You worked hard to sort out the important ideas from the interesting details, and you also reflected on your thinking. Great work with this strategy, everyone!

Parrots in Peril

SCIENCE

Standards Supported

- **NGSS LS4.D: Biodiversity and Humans:** There are many different kinds of living things in an area, and they exist in different places on land and in water. (2-LS4-1)
- **NGSS LS4.C: Adaptation:** For any particular environment, some kinds of organisms survive well, some survive less well, and some cannot survive at all. (3-LS4-3)

Resources

- Content Assessment Master (page 10)
- Article Test (page 17)

Science Background

Parrots are group of birds that live in warm climates all over the world. There are more than 350 different species, including macaws, lovebirds, Amazons, and cockatoos.

All parrots have a curved beak. And they all have four toes, too. Two of the toes point forward and two point backward. But parrots are a diverse group, with sizes ranging from 8.7 to 100 cm (3.5 to 40 in.) and weights from 64 to 1.6 kg (2.25 to 56 oz.).

Parrots are hardy birds, able to live up to 80 years in the wild. They are also colorful, smart, and charismatic with the ability to mimic sounds they hear—including human speech and laughter. This trait makes them highly desirable as pets and frequent targets of illegal trade. Because of that, parrots are among the most threatened group of birds, with many species identified as endangered or at risk of extinction.

ENGAGE

Encourage students to flip through the article and turn and talk with a partner to discuss what they see. Invite students to ask questions or share what they already know about parrots.

EXPLORE

Display pages 2-3 of the projectable magazine. Invite students to examine the photo, headline, and text. Discuss what the word "peril" means. Brainstorm ideas about why parrots might be in peril.

EXPLAIN

After reading, invite students to share what they learned about parrots. **Ask:** *Why do people like to have parrots as pets?* (Parrots are smart birds that can bond with their owners. Most parrots can even talk!) *How is the demand for parrots as pets putting these birds in peril?* (People, or traffickers, are stealing from the wild to sell as pets.) *Why?* (Some parrots are worth a lot of money.) Have students turn and talk as they discuss how this affects parrot populations and what people are doing to help. As a class, discuss how people are using what they know about parrots to help stop this illegal activity. (Scientists are figuring out how to test a bird's feathers to see what it eats. This tells where the bird came from and shows if it was stolen from the wild.)

ELABORATE

Display the sidebar "What Can You Do to Help?" on pages 6-7 of the projectable magazine. As students review the sidebar, instruct them to analyze each suggestion. As a class, conduct research to learn more about the organizations that are working to protect parrots. Have students brainstorm ideas about what they could do to help support the cause.

EVALUATE

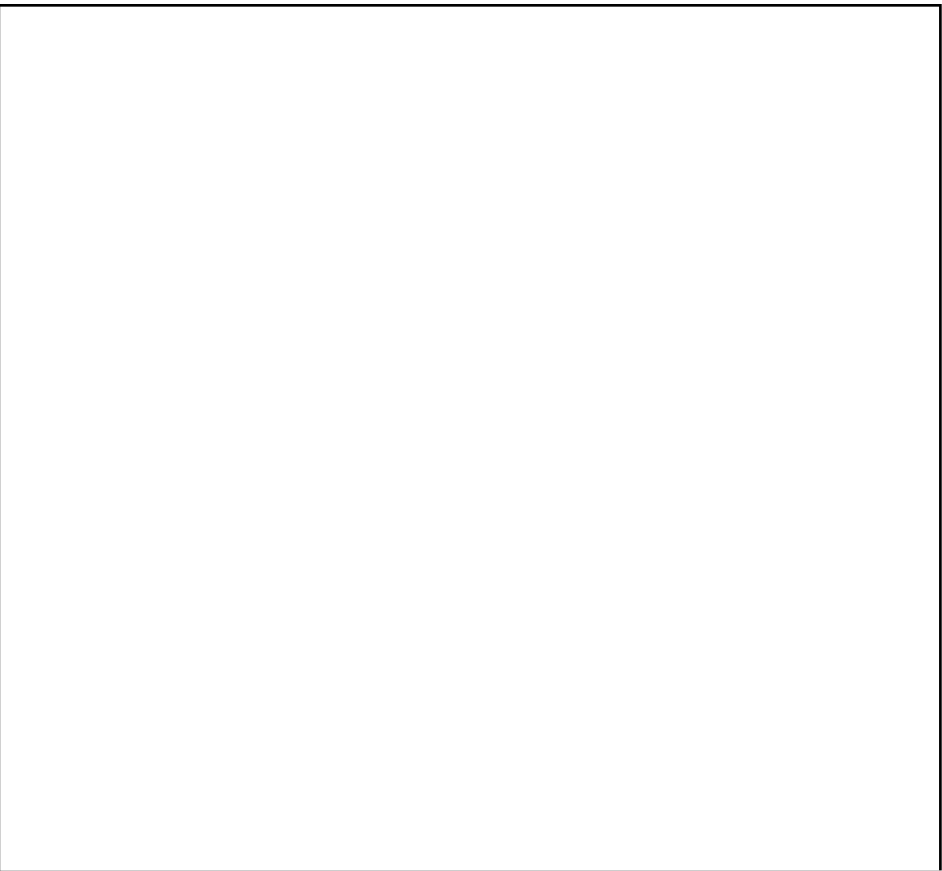
Have students complete the **Content Assessment** for this lesson. Encourage them to share and compare their results in small groups.

Name _____

Date _____

CONTENT ASSESSMENT: Parrots in Peril

Draw and color one parrot from the article. Identify the parrot. List four reasons why parrots like this are in peril. Describe one thing people are doing to save the parrots.



Identify: _____

List: 1. _____

2. _____

3. _____

4. _____

Describe: _____

Standards Supported

- **NGSS Science and Engineering Practices: Asking Questions and Defining Problems:** Define a simple problem that can be solved through the development of a new or improved object or tool. (K-2-ETS1-1)
- **NGSS Science and Engineering Practices: Asking Questions and Defining Problems:** Define a simple problem that can be solved through the development of a new or improved object or tool. (3-PS2-4)

Resources

- Content Assessment Master (page 12)
- Article Test (page 18)

Science Background

Machines can be complicated gadgets with lots of moving parts. Or, they can be quite simple. In fact, simple machines are machines that only have a few parts.

In this article, the last of a six-part series about simple machines, students will learn about pulleys. A pulley is a wheel with a cord or rope wrapped around it.

Pulleys are used to move things up and down or back and forth. They make it easier to lift heavy loads. When multiple pulleys are combined, massive amounts of weight can be lifted.

People use pulleys every day. Pulleys help us open and close window blinds and drapes. They move elevators from one floor to another. Pulleys help us raise and lower flags in our yards or sails on a ship. Pulleys attached to cranes help us load heavy cargo onto big ships.

ENGAGE

Encourage students to flip through the article and turn and talk with a partner to discuss what they see. Invite students to ask questions or share what they already know about pulleys.

EXPLORE

Display pages 8-9 of the projectable magazine. Invite students to read aloud the headline and text. Challenge students to describe what a pulley is and what a pulley does based on what they see in the illustration.

EXPLAIN

After reading, remind students that a pulley is a type of simple machine. **Ask:** *What does that mean?* (A pulley has no more than a few parts.) *What are the parts of a pulley?* (a wheel and a cord or rope) *How does a pulley work?* (The wheel turns as you pull the rope. This changes the direction of the force and helps you lift things more easily.) Have students turn and talk as they examine the examples of pulleys in the article. Challenge them explain how using more than one pulley makes it easier to lift heavier loads. (Adding pulleys multiplies the force and decreases the effort needed to lift things.) As a class, make a list of pulleys students use each day.

ELABORATE

Divide the class into small groups. Have groups preview the activity on pages 14-15 of their student magazines. Provide supplies and have groups complete the activity. Rejoin as a class to write a scientific explanation the tells why Polly Penguin's compound pulley worked. Then encourage groups to try the activity again. Challenge them to find a new method that works as good as or even better than Polly's compound pulley

EVALUATE

Have students complete the **Content Assessment** for this lesson. Encourage them to share and compare their results in small groups.

Name _____

Date _____

CONTENT ASSESSMENT: Pulley Power

Draw a picture of each simple machine. Describe a time when you would want to use each. Explain how each one works.

	Draw	Describe	Explain
one pulley			
more than one pulley			

Standards Supported

- **NGSS ETS1.A: Defining and Delimiting Engineering Problems:** A situation that people want to change or create can be approached as a problem to be solved through engineering. (K-2-ETS1-1)
- **NGSS Crosscutting Concepts: Influence of Science, Engineering, and Technology on Society and the Natural World:** Engineers improve existing technologies or develop new ones to increase their benefits, to decrease known risks, and to meet societal demands. (3-5-ETS1-2)

Resources

- Content Assessment Master (page 14)
- Article Test (page 19)

Science Background

On February 26, 2008, the Svalbard Global Seed Bank officially opened. The Seed Vault, dug into the side of a mountain on a little island that lies within the Arctic Circle, is located beneath layers of rock and ice. It protects some of Earth's most valuable resources: seeds.

The Svalbard Global Seed Vault was created to help safeguard the global food supply. It is one of some 1,750 gene banks currently operating in more than 100 countries. It holds seeds representing more than 5,000 different plant species. Crops with the most samples stored here are rice, wheat, and barley.

The Seed Vault doesn't own the seeds it stores. They remain the property of whoever deposited them. In many cases, the deposits are duplicates of seeds held in other seed banks. The Seed Vault's combination of location, construction, and technology make it a safe place to secure this most precious resource.

ENGAGE

Encourage students to flip through the article and turn and talk with a partner to discuss what they see. Invite students to ask questions or share what they already know about agriculture and seeds.

EXPLORE

Display pages 16-17 of the projectable magazine. Invite students to examine the photos, headline, and deck. Then have students brainstorm ideas about what might lie within this structure and why it is important.

EXPLAIN

After reading, remind students that the Svalbard Global Seed Vault was built to store many different kinds of seeds. **Ask:** *Why is this necessary?* (As our world changes, we need to be prepared for changes and have crops that grow in different conditions so there is enough food to feed everyone on the planet.) Have students turn and talk as they discuss how the Global Seed Vault operates, why it is a safe place to store seeds, and why it is important to store so many different types of seeds in it.

ELABORATE

Display page 23 of the projectable magazine. Review the sidebar to learn about three seeds stored in the Svalbard Vault. Then, as a class brainstorm a list of seeds. Divide the class into small groups. Assign each group one seed and have them conduct research to make a list of foods that come from that seed. Invite groups to share their results with the class. Encourage students to discuss how their lives would be affected if their favorite seeds—and foods—disappeared.

EVALUATE

Have students complete the **Content Assessment** for this lesson. Encourage them to share and compare their results in small groups.

CONTENT ASSESSMENT: Food for the Future

Answer each question about the Svalbard Global Seed Vault.

<p>What is the Svalbard Global Seed Vault?</p>	
<p>Why did people build it?</p>	
<p>How does it work?</p>	

Write three other facts you learned about the Svalbard Global Seed Vault.

1.	
2.	
3.	

The Fertile Crescent Posters

SOCIAL STUDIES

Standards Supported

- **C3: History: Change, Continuity, and Context:**
Compare life in the past to life today. (D2.His.2.K-2)
- **C3: History: Change, Continuity, and Context:**
Compare life in specific historical time periods to life today. (D2.His.2.3-5)

Resources

- The Fertile Crescent Then and Now poster (teacher's edition)
- Culture and Daily Life in the Fertile Crescent poster (teacher's edition)
- Content Assessment Master (page 16)
- Poster Test (page 21)

Social Studies Background

Making comparisons is the first step toward understanding how a place has changed over time. To fully appreciate these changes, students must be able to evaluate them from different perspectives: political, economic, social, cultural, etc. This process takes time to develop. Recognizing that, each month *Explorer* magazine will introduce students to a different culture. Use the accompanying lessons to guide students as they develop these skills.

ENGAGE

Encourage students to examine the maps and turn and talk with a partner to discuss what they see. Invite students to ask questions or share what they already know about the Fertile Crescent.

EXPLORE

Display the **The Fertile Crescent Then and Now poster**. Read aloud the information at the top of the poster. Brainstorm ideas about why this area would have been home to some of the earliest human civilizations.

EXPLAIN

Invite students to examine the **The Fertile Crescent Then and Now poster**. Point out the green area on the first map. **Say:** *The green part on this map shows where the Fertile Crescent was located.* **Ask:** *Why do you think people called this area the Fertile Crescent? (It is shaped like a crescent and all of the rivers here made the land fertile.)* Discuss what "fertile" means and why fertile soil is a good place to grow crops. Encourage students to study the poster to see how the area has changed, both geographically and politically, over time. Then display and review the **Culture and Daily Life in the Fertile Crescent poster**. Encourage students to identify traces of this ancient culture that they see or experience in their lives today.

ELABORATE

Remind students that the **Culture and Daily Life in the Fertile Crescent poster** compares life in the Fertile Crescent to how people in the region live today. Brainstorm reasons why some traditions might have changed and some might have stayed the same. Encourage students to identify aspects of this culture that they experience in their own lives.

EVALUATE

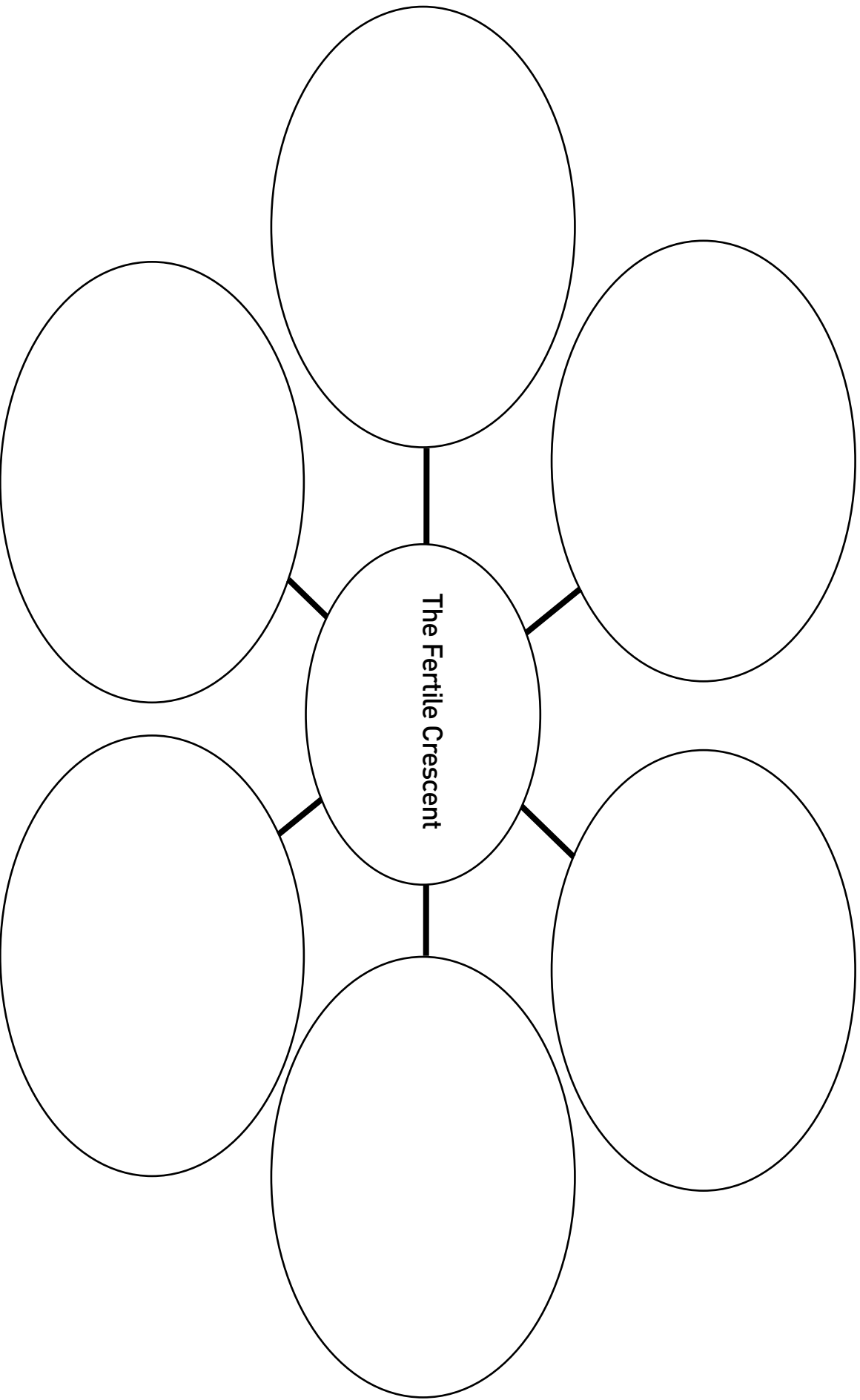
Have students complete the **Content Assessment** for this lesson. Encourage them to share and compare their results in small groups.

Name _____

Date _____

CONTENT ASSESSMENT: The Fertile Crescent Posters

Write or draw the most interesting things you learned about the Fertile Crescent.



ARTICLE TEST: Parrots in Peril

Read each question. Fill in the circle next to the correct answer and then write your response on the lines.

- 1. What is one reason parrots are popular pets?
 - Ⓐ They are easy to take care of.
 - Ⓑ They come from zoos.
 - Ⓒ They are smart animals.

- 2. What kind of parrot should not end up as a pet?
 - Ⓐ a parrot that talks
 - Ⓑ a parrot born in the wild
 - Ⓒ a parrot raised in captivity

- 3. Which continent has the biggest number of parrot species?
 - Ⓐ North America
 - Ⓑ South America
 - Ⓒ Europe

- 4. What do laws make people do before they can sell a parrot?
 - Ⓐ prove the parrot can talk
 - Ⓑ prove the parrot is valuable
 - Ⓒ prove the parrot was raised in captivity

5. How can testing a parrot's feathers tell people where the parrot was born?

ARTICLE TEST: Pulley Power

Read each question. Fill in the circle next to the correct answer and then write your response on the lines.

1. What is a pulley?
 - Ⓐ a tool with one pointed end and one thicker end
 - Ⓑ a simple machine made up of a ramp wrapped around a rod
 - Ⓒ a wheel with a cord wrapped around it

2. What does a pulley help you do?
 - Ⓐ lift things
 - Ⓑ split things
 - Ⓒ hold things together

3. What do you trade when using a pulley?
 - Ⓐ load for distance
 - Ⓑ distance for effort
 - Ⓒ force for a load

4. What happens when you use more than one pulley?
 - Ⓐ You pull a greater distance but use less force.
 - Ⓑ You pull a shorter distance and use more force.
 - Ⓒ You need one person to pull each pulley.

5. Identify one thing you use that has a pulley. Explain how that pulley works?

ARTICLE TEST: Food for the Future

Read each question. Fill in the circle next to the correct answer and then write your response on the lines.

1. Where is the Svalbard Global Seed Vault?
Ⓐ on an African island
Ⓑ inside the Arctic Circle
Ⓒ near the equator

2. What happens at the Svalbard Global Seed Vault?
Ⓐ People grow seeds.
Ⓑ People sell seeds.
Ⓒ People store seeds.

3. Who can take seeds out of the Svalbard Vault?
Ⓐ anybody who wants to
Ⓑ anybody who needs the seeds
Ⓒ anybody who put seeds in the vault

4. Which of these sentences is true?
Ⓐ Nobody has ever taken seeds out of the Svalbard Vault.
Ⓑ The Svalbard Vault is one of many seed banks around the world.
Ⓒ Some seeds in the Svalbard Vault can still grow 2 million years from now.

5. Why is the Svalbard Global Seed Vault a safe place to store seeds?

POSTER TEST: The Fertile Crescent Posters

Read each question. Fill in the circle next to the correct answer and then write your response on the lines.

1. Where is the Fertile Crescent?

- Ⓐ China
- Ⓑ Middle East
- Ⓒ Africa

2. What is the area there like today?

- Ⓐ grasslands
- Ⓑ rain forest
- Ⓒ desert

3. What is a cuneiform?

- Ⓐ a form of writing
- Ⓑ a number system
- Ⓒ a large temple

4. What religion do most people who live there practice today?

- Ⓐ Islam
- Ⓑ Christianity
- Ⓒ Buddhism

5. How did farming change the way people lived in the Fertile Crescent long ago?

Pioneer and Trailblazer

ANSWER KEY

Parrots in Peril

Assess Content, page 9

Student should draw and identify one parrot from the article.

List: habitat loss; deforestation; climate change; people want parrots as pets

Describe: Students may note that people are passing laws to protect parrots, scientists are creating genetic tests to find parrots that were born in the wild, or any of the items in the sidebar on page 7 of the article.

Article Test, page 16

1. C; 2. B; 3. B; 4. C; 5: When you test a parrot's feathers, it shows what a parrot eats. This tells where the parrot comes from.

Pulley Power

Assess Content, page 11

Draw: Students drawings should resemble the illustrations in the sidebar on page 12 of the article.

Describe: Student should note that they would use a simple machine with one pulley to lift something light. They would need more pulleys to lift something heavier.

Explain: Students should note that pulley works when you pull a rope around a wheel. As you pull, the direction of the force changes and you can lift the load. When you use multiple pulleys, you multiply the force making it easier to lift heavier objects.

Article Test, page 17

1. C; 2. A; 3. B; 4. A; 5: Students must identify an object with a pulley, such as a flag pole, window blind, or elevator. The pulley works when a rope looped around a wheel is pulled, changing the direction of the force. This helps you lift the object.

Food for the Future

Assess Content, page 13

1. The Svalbard Global Seed Vault is a seed bank. It is a safe place to store many kinds of seeds..

2. People built it to protect future agriculture. Our climate is changing. Crops can fail. Pests can damage them. The number of different plants we grow for food is shrinking. We need to store seeds in case we need them in them future.

3. Seeds are stored in glass tubes or foil packets. The packets are put in crates and labeled by country. The crates are shipped to the vault and put on shelves. Only people who put seeds in can take seeds out.

Facts: Answers will vary but should come from the article.

Article Test, page 18

1. B; 2. C; 3. C; 4. B; 5: Possible response: The Svalbard Vault was built inside a mountain. It is underground. It is cold.

The Fertile Crescent Posters

Assess Content, page 15

Students may write or draw. Their answers should reflect content presented on the posters.

Poster Test, page 19

1. B; 2. C; 3. A; 4. A; 5: Possible response: When people succeeded at farming, they no longer had to live as nomads to find food. They could settle in one area and farm. They produced a surplus of food and part of the population could then develop other trades. Cities grew.