

NATIONAL GEOGRAPHIC

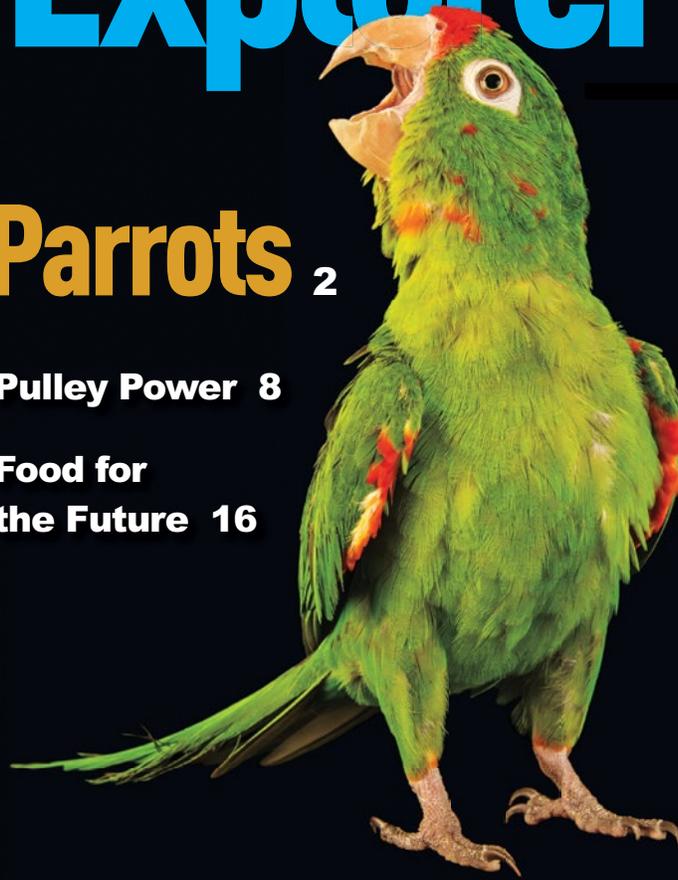


# Explorer

## Parrots 2

**Pulley Power 8**

**Food for the Future 16**



## TEACHER'S GUIDE Pathfinder and Adventurer 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

#### Pathfinder

Parrots in Peril .....	800
Pulley Power .....	600
Food for the Future.....	790

#### Adventurer

Parrots in Peril .....	890
Pulley Power .....	690
Food for the Future.....	810

### Standards Supported

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



Looking for a fun way to test your student's recall? Each story in this issue of Explorer has an accompanying Kahoot! quiz.

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



#### 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.



#### 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.



#### 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.

**Fourth Grade Standard Supported**

• **CCSS Reading Informational Text:** Determine the main idea of a text and explain how it is supported by key details; summarize the text. (4–2)

**Fifth Grade Standard Supported**

• **CCSS Reading Informational Text:** Determine two or more main ideas of a text and explain how they are supported by key details; summarize the text. (5–2).

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

**What You'll Need**

**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 title 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 long tunnel, the pipes overhead pushing out cold air, the ice-covered door, and rows and rows of shelves holding boxes and boxes of seeds. That is really fascinating, and 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 protect and store as many unique kinds of seeds as possible. If anything should happen to harm our current crops, we might not be able to replenish them. With the seed vault, we would still have a large supply of seeds available. This insures the future of global agricultural.*

**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?*

**Say:** *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.*

**Say:** *Kids should note that an important idea is that the pool of plants is shrinking, and we are beginning to lose different kinds of seeds. 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 foods, and yet our food supplies are always at risk of things like disease and drought. That’s why storing seeds is a smart 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:

- While there are other seed banks, no other seed bank protects its seeds as well as Svalbard. That’s partly because of its construction and its location inside a mountain, packed in rock and ice.
- Only those who deposit seeds in the seed bank are able to take seeds out. Any seeds donated to the bank are owned by those who deposited them.
- The seed bank can help with future problems, too. Having the seeds in the seed bank offers protection against crop loss and loss of crop diversity. And having the seeds in the seed bank buys us time to solve problems that are currently killing crops.

**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 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.

<b>Important Information</b>	<b>Interesting Details</b>	<b>My Thinking</b>

## 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 Crosscutting Concepts: Cause and Effect:** Cause and effect relationships are routinely identified and used to explain change. (4-ESS3-1)
- **NGSS ESS3.C: Human Impacts on Earth Systems:** Human activities in agriculture, industry, and everyday life have had major effects on the land, vegetation, streams, ocean, air, and even outer space. But individuals and communities are doing things to help protect Earth's resources and environments. (5-ESS3-1)

### Resources

- Content Assessment Master (page 9)
- Article Test (page 16)

### 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 on each foot. Two of the toes point forward and two point backward. 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. Encourage students to brainstorm ideas about why parrots might be in peril.

### EXPLAIN

After reading, remind students that parrots are social and intelligent birds. That is why people like to have them as pets. **Ask:** *How is the demand for parrots as pets putting these birds in peril?* (Traffickers are taking them illegally from the wild to sell them as pets.) *Why are they doing this?* (Some parrots are worth a lot of money on the black market.) *How is it impacting parrot populations?* (Today, all but three of the 350 parrot species qualify for protection as endangered species.) Have students turn and talk as they discuss what people are doing to stop this practice and bring about change. Encourage students to identify the solutions they think could be the most effective for protecting parrots. Challenge them to explain why.

### 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. Encourage students to conduct research to learn more about the organizations that are working to protect parrots. Then have students brainstorm ideas about other ways they could 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.



Click here for the Kahoot! quiz:

[https://play.kahoot.it/#/k/](https://play.kahoot.it/#/k/7d0d174a-0062-48ee-8919-78ea00116aea)

[7d0d174a-0062-48ee-8919-78ea00116aea](https://play.kahoot.it/#/k/7d0d174a-0062-48ee-8919-78ea00116aea)

## CONTENT ASSESSMENT: Parrots in Peril

Identify five cause-and-effect relationships that explain why parrots are in peril.

Cause	→	Effect
	→	
	→	
	→	
	→	
	→	
	→	

Create an advertisement that will educate people about the problem parrots face. Base your ad on one of the cause-and-effect relationships you identified above.

### Standards Supported

- **NGSS ETS1.A: Defining and Delimiting Engineering Problems:** Possible solutions to a problem are limited by available materials and resources (constraints). The success of a designed solution is determined by considering the desired features of a solution (criteria). Different proposals for solutions can be compared on the basis of how well each one meets the specified criteria for success or how well each takes the constraints into account. (3-5-ETS1-1)
- **NGSS Crosscutting Concepts: Cause and Effect:** Cause and effect relationships are routinely identified, tested, and used to explain change. (5-PS1-4)

### Resources

- Content Assessment Master (page 11)
- Article Test (page 17)

### 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.



Click here for the Kahoot! quiz:

<https://play.kahoot.it/#/k/a0d93d61-1268-4417-9537-298704e63e07>

### 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, point out to students that a pulley is a type of simple machine. **Ask:** *What are the basic parts of a pulley?* (a wheel and a rope) *How does a pulley work?* (It changes the direction of force. When you pull down one end of a rope that is wrapped around a wheel, the other end of the rope moves up, lifting the load.) Have students turn and talk as they discuss the difference between fixed and moveable pulleys. Challenge them explain why using more than one pulley decreases the amount of effort needed to lift a heavy load. Then have students identify the trade-offs of using multiple pulleys. (As you add more pulleys, you pull the rope a greater distance but use less force to move the load.) As a class, make a list of pulleys students use each day.

### ELABORATE

Divide the class into pairs. Have partners preview the activity on pages 14-15 of their student magazines. Provide supplies and have partners complete the activity on their own. Instruct them to write a scientific explanation that tells why Polly Penguin's compound pulley worked. Challenge them to find a new method that works even better. .

### EVALUATE

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

## CONTENT ASSESSMENT: Pulley Power

Use facts from the article to explain why each sentence is true.

Sentence	Explanation
1.  A pulley is a simple machine.	
2.  A pulley makes it easier to lift objects.	
3.  It is easier to lift a heavy load if you use two pulleys instead of one.	
4.  There are trade-offs to using multiple pulleys.	
5.  There is a difference between a fixed pulley and a moveable pulley.	
6.  A pulley does not do the work for you.	

### Standards Supported

- **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. (4-ESS3-2)
- **NGSS ESS3.C: Human Impacts on Earth Systems:** Human activities in agriculture, industry, and everyday life have had major effects on the land, vegetation, streams, ocean, air, and even outer space. But individuals and communities are doing things to help protect Earth's resources and environments. (5-ESS3-1)

### Resources

- Content Assessment Master (page 13)
- Article Test (page 18)

### 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.



Click here for the Kahoot! quiz:

[https://play.kahoot.it/#/k/](https://play.kahoot.it/#/k/9e28463b-c1dd-47e8-93de-5a3c71e20dd9)

[9e28463b-c1dd-47e8-93de-5a3c71e20dd9](https://play.kahoot.it/#/k/9e28463b-c1dd-47e8-93de-5a3c71e20dd9)

### 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, whatever it is, it may be our future food supply.

### EXPLAIN

After reading, remind students that the Svalbard Global Seed Vault was created to protect and store as many unique kinds of seeds and crop plants as possible. **Ask:** *Why is this necessary?* (As the world changes, crops fail for a variety of reasons. We need to ensure that we have seeds that will grow in the new 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. Encourage them to identify reasons why it is a secure place to store the seeds. Challenge students to explain why research is still a necessary part of the seed bank's mission.

### ELABORATE

Display page 23 of the projectable magazine. Review the sidebar to learn about three seeds from the Svalbard Vault. Divide the class into small groups. Have groups brainstorm a list of foods they eat that come from seeds. Which seeds do they come from? Which seeds produce the most foods? Which seeds are used the biggest variety of ways? Give students time to conduct research to learn more. Invite them to share their results with the class.

### 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>Why did people build the Svalbard Global Seed Vault?</p>	
<p>How does the seed bank protect its seeds?</p>	
<p>How can the seed bank help us with future problems?</p>	

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

1.	
2.	
3.	
4.	
5.	

# The Fertile Crescent Posters

## SOCIAL STUDIES

### Standard Supported

- **C3: History: Change, Continuity, and Context:** Generate questions about individuals and groups who have shaped significant historical changes and continuities. (D2.His.3.3-5)

### Resources

- The Fertile Crescent poster (Teacher's edition)
- Life in The Fertile Crescent poster (Teacher's edition)
- Content Assessment Master (page 15)
- Poster Test (page 19)

### Social Studies Background

Asking questions is the first step in acquiring historical knowledge. But to fully understand history, students must know which questions to ask, how to evaluate the answers, and how to use those answers to create accurate arguments about the past. Historical thinking is a process that takes time to develop. Recognizing that, each month *Explorer* magazine will introduce students to a different ancient culture. Use the accompanying lessons to guide students as they develop these skills.

### ENGAGE

Encourage students to examine the map 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 poster**. Instruct students to examine the map. Point out the area that is green. Have students brainstorm ideas about why this area was called the Fertile Crescent.

### EXPLAIN

Invite students to examine the **The Fertile Crescent poster**. Point out the area that is green. **Ask:** *Why do you think people called this area the Fertile Crescent?* (It is shaped like a crescent and all of the rivers located there made the land very fertile.) *How did the geography of this area lead it to become the home of some of the earliest civilizations?* (People succeeded in growing crops on a large scale. That meant they no longer had to live as nomads. They could settle in one area and farm the land.) Encourage students to examine the rest of the poster and share what they learned about the Fertile Crescent. Then display and review the **Life in the Fertile Crescent poster**. Have students discuss what the poster's content reveals about life in the Fertile Crescent.

### ELABORATE

Display the **Life in the Fertile Crescent poster**. Tell students that the items on this poster show why the Fertile Crescent was also known as the Cradle of Civilization. Encourage students to conduct research to identify more innovations that appeared during this time. Challenge them to explain how those innovations impact the world today.

### EVALUATE

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

## CONTENT ASSESSMENT: The Fertile Crescent Posters

Explain how geography and farming caused the Fertile Crescent to become home to some of the earliest human civilizations.

Geography	Farming

Put these events in the history of the Fertile Crescent in the correct order.

- \_\_\_\_\_ Hammurabi established a written code of laws.
- \_\_\_\_\_ People began domesticating animals in the region.
- \_\_\_\_\_ Nebuchadnezzar II built the Hanging Gardens of Babylon.
- \_\_\_\_\_ People began living in cities on the Tigris and Euphrates rivers.
- \_\_\_\_\_ Sumerians used the first wheel for making pottery.

Which innovation developed in the Fertile Crescent do you think has the biggest impact on life today? Explain.

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**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 the biggest danger for parrots today ?
  - Ⓐ habitat loss
  - Ⓑ climate change
  - Ⓒ demand for parrots as pets
  
- 2. Why do traffickers steal parrots from the wild?
  - Ⓐ That is the only place to find parrots.
  - Ⓑ Wild parrots are more sociable.
  - Ⓒ They can make lot of money selling parrots.
  
- 3. Why is the African gray the most desirable parrot species?
  - Ⓐ It is the most rare.
  - Ⓑ It is the best talker.
  - Ⓒ It is the prettiest.
  
- 4. What new solution do people hope will save parrots?
  - Ⓐ leg bands
  - Ⓑ genetic testing
  - Ⓒ stricter laws

5. What are four reasons that parrots are such popular pets?

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**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 does a pulley make it easier to do?  
Ⓐ lift things  
Ⓑ split things  
Ⓒ hold things together
  
2. What does a pulley change?  
Ⓐ the amount of friction  
Ⓑ the direction of force  
Ⓒ the weight of a load
  
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 three pulleys instead of one?  
Ⓐ You can lift loads that are farther away.  
Ⓑ You triple the amount of force used.  
Ⓒ You pull the rope a shorter distance to move the load.
  
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  
Ⓑ within the Arctic Circle  
Ⓒ near the equator
  
2. Why was it necessary to build the Seed Vault?  
Ⓐ There are too many different types of crops.  
Ⓑ The pool of plants is shrinking.  
Ⓒ People needed a place to store an oversupply of food.
  
3. What would you see if you went to the Seed Vault?  
Ⓐ growing crops  
Ⓑ germinating seeds  
Ⓒ crates full of seeds
  
4. What is the main purpose of the Seed Vault?  
Ⓐ to protect against crop loss and loss of diversity  
Ⓑ to keep seeds safe from flooding  
Ⓒ to save 2,000-year-old seeds
  
5. Why is the Svalbard Global Seed Vault the safest place to store seeds?

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**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 rivers flow through the heart of the Fertile Crescent?  
Ⓐ Amazon and Nile  
Ⓑ Tigris and Euphrates  
Ⓒ Mississippi and Missouri
  
3. What is a cuneiform?  
Ⓐ a form of writing  
Ⓑ a number system  
Ⓒ a large temple
  
4. What did Nebuchadnezzar II have created in honor of his wife?  
Ⓐ the city of Ur  
Ⓑ Hammurabi's Code  
Ⓒ the Hanging Gardens of Babylon
  
5. Why was the Fertile Crescent also known as the Cradle of Civilization?

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### Parrots in Peril

#### Assess Content, page 9

Cause-and-effect relationships will vary, though students should note that parrots are smart, sociable, and can mimic human voices (cause), which is why people like having them as pets (effect). Ads will vary but should be based on one of the cause-and-effect relationships students listed.

#### Article Test, page 16

1. C; 2. C; 3. B; 4. B; 5: Possible responses include: Parrots can sing and dance. They are sociable and intelligent. They can mimic human voices. They can create deep bonds with their owners.

### Pulley Power

#### Assess Content, page 11

Possible responses include:

1. Like all simple machines, a pulley has no more than a few parts and it helps us do jobs, usually by moving things faster, farther, or more easily than we can without the machine.
2. A pulley changes the direction of a force, making it easier to lift things.
3. Using two ropes instead of one doubles the force so it is easier to lift a heavy load.
4. When you use multiple pulleys, you need less effort but you have to pull the rope a greater distance. You trade distance for effort.
5. A fixed pulley is attached up high, such as to the top of a flag pole, and doesn't move. A moveable pulley attaches to the load and moves with the load.
6. A pulley helps you do work, but you still have to apply the effort or no work will get done.

#### Article Test, page 17

1. A; 2. B; 3. B; 4. B; 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. People built the Svalbard Global Seed Vault to protect and store as many unique kinds of seeds of crop plants as possible.
  2. The Seed Vault stores seeds in foil packages in a dormant state under specific conditions. The Seed Vault is located inside a mountain that is covered with rock and ice.
  3. It gives researchers the supplies and time they need to develop new seeds, which offers us protection against crop loss and loss of diversity.
- Facts:** Answers will vary but should come from the article.

#### Article Test, page 18

1. B; 2. B; 3. C; 4. A; 5: Possible response: The Seed Vault was built inside a stable mountain. It's above sea level to protect its contents from flooding. It is only opened three or four times a year.

### The Fertile Crescent Posters

#### Assess Content, page 15

**Geography:** The land had rich soil. Access to two major rivers made irrigation easier to use.

**Farming:** Access to good soil and irrigation allowed humans to begin experimenting with growing crops on a large scale. This meant they no longer had to live as nomads but could settle in one area and farm the land. Eventually, they grew enough food to support cities.

**Sequence of events:** 4, 1, 5, 2, 3

**Question:** Answers will vary but students should give credible reasons to support their opinions.

#### Poster Test, page 19

1. B; 2. B; 3. A; 4. C; 5: Possible response: The Fertile Crescent is regarded as the birthplace of a number of innovations used in society, including writing, the wheel, agriculture, and the use of irrigation.