



TEACHER'S GUIDE
Pioneer and Trailblazer
Vol. 18 No. 5

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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

Lions on the Loose..... 580
 Round and Round..... 550
 Saving History 500

Trailblazer

Lions on the Loose..... 700
 Round and Round..... 610
 Saving History 710

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



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.

Second Grade Standard Supported

- **CCSS Reading Informational Text:** Explain how specific images (e.g., a diagram showing how a machine works) contribute to and clarify a text. (2–7)

Third Grade Standard Supported

- **CCSS Reading Informational Text:** Use information gained from illustrations (e.g., maps, photographs) and the words in a text to demonstrate understanding of the text (e.g., where, when, why, and how key events occur). (3–7).

What You'll Need

- “Round and Round with Wheels and Axels” (*Explorer*, pages 10–17)
- 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 10–11 in the magazine.

Say: *Reading is thinking. And thinking is our inner voice. When we read, listen to, or view something our inner voice is kind of how we talk to ourselves about what we are reading, hearing, or seeing. We start connecting what we already know about the subject to the new things we are learning. That’s pretty fascinating, isn’t it?*

Say: *Let’s explore this inner voice a little more. For instance, when I look at the beginning of the article “Round and Round with Wheels and Axels,” my inner voice says, “Take a look at all the pictures, words, and graphics on these pages. I bet I can find lots of information here. These pages have so much they want to tell me.”*

Say: *Go ahead and look at these pages. What do you see here? What are the words and pictures saying to you? Turn and talk about what your inner voice is telling you about these pages.*

Kids turn and talk and then share out their thinking.

MODEL (10 minutes)

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

Say: *When we are reading and taking in the other information on the pages, such as the pictures and graphics or diagrams, it’s helpful to engage that inner voice by thinking about the connections we can make to our own life. We call these text-to-self connections.*

Say: *I’ll show you what I mean by that. When I look at pages 10–11, I see a connection to myself. I see the picture of the bikes and the wheels on the bikes.*

Say: *I know what it is like to ride a bike, and I start making that connection. That is a text-to-self connection. I’m going to write this connection on my chart in the “My Connections” column. When I read the information on page 11, I can understand the “ease of motion” that the text mentions, because I have ridden a bike. I know how a bike can make going places easier and faster. I’m going to write that in my chart in the “How They Help Me Understand” column.*

My Connection	How It Helps Me Understand
riding a bike (text to self)	I know how a bike makes getting places easier and faster.

Say: *Another type of personal experience that we can use to make connections is to connect what we are reading now to things we have read in the past. We call these text-to-text connections. For example, when I look at the Simple Machines feature on page 10, it reminds me of information we’ve read and learned about in our science textbook. Some of these types of simple machines are familiar to me because I have read about them. I’m going to write this on my chart, too.*

My Connection	How It Helps Me Understand
reading about simple machines in our science textbook (text to text)	Some of the information is familiar to me.

Say: *Remember that making connections as we read and listening to our inner voice is a way to better understand what we are reading. Also, we can make connections as we read to all sorts of things, not just to ourselves and other texts. Some other things are movies, television, and other media we’ve heard and seen. We can even make connections to the world at large. Turn and talk about how all of these different connections can help us better understand what we are reading.*

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: *Now it's your turn to try this. As I read pages 12–13, listen to your inner voice and think about any text-to-self, text-to-text, or any other connection you might have to the text. Remember to look at the pictures, too. When you have a connection, be sure to draw it or write it down on your Think Sheet chart in the "My Connections" column.*

Read pages 12–13 aloud. You might want to read each section and stop at the end of each one to have kids turn and talk and record their connections.

Say: *Did you have some interesting connections? Who can share a connection with us?*

Let a few kids share their connections with the class.

Say: *The reason we use our inner voice to make these connections is to help us better understand what we are reading. Now take some time to record on your Think Sheets how the connections you made help you understand. Then turn and talk again about your connections and how they help you understand what we are reading about in the article.*

Kids record on their Think Sheets and turn and talk.

COLLABORATE (25 Minutes)

Say: *Now you are ready to work with a partner. You can take turns reading the rest of the article. Write or draw your connections in the first column of your chart. You and your partner will have different connections. You can discuss your different connections. Be sure to also take time to write on your Think Sheet chart how these connections help you understand.*

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

Partners work together. 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.

TEACHER TIP: The sharing phase is done in a circle, so that the focus is on one another rather than the teacher.

Say: *Okay, flip through the article and consult your Think Sheet to choose a connection you would like to share. I am going to invite _____ to share a connection. We are going to share using respectful language. So when I ask: "_____, would you like to share a connection?" You need to say: "Yes thank you." Then you can share your connection. After you share, ask if anyone has any comments or questions. Then 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 important information being shared. Also, everyone likes to be listened to when they share out, so remember to pay attention to the person who is sharing.*

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 that reading is thinking and that we use our inner voice to make connections that help us understand what we are reading. Turn and talk about some of the important connections you made.*

Several kids share out.

Say: *Everyone, you did a great job using your inner voice to make connections today!*

Name _____

Date _____

THINK SHEET

Use this chart to write your connections and how they help you understand.

My Connections

How They Help Me Understand

LESSON FRAME Make Connections to Better Understand

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.

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 _____.

Say: *Reading is thinking. And thinking is our inner voice. When we read, listen to, or view something our inner voice is kind of how we talk to ourselves about what we are reading, hearing, or seeing. We start connecting what we already know about the subject to the new things we are learning. That's pretty fascinating, isn't it?*

Say: *Let's explore this inner voice a little more. For instance, when I look at these pages my inner voice says, "Take a look at all the pictures, words, and graphics on these pages. I bet I can find lots of information here. These pages have so much they want to tell me."*

Say: *Go ahead and look at these pages. What do you see here? What are the words and pictures saying to you? Turn and talk about what your inner voice is telling you about these pages. (Kids turn and talk and then share out their thinking.)*

MODEL (10 minutes)

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

Say: *When we are reading and taking in the other information on the pages, such as the pictures and graphics or diagrams, it's helpful to engage that inner voice by thinking about the connections we can make to our own life. We call these text-to-self connections.*

What You'll Need

- Nonfiction text
- Think Sheet template
- Clipboards and pencils

Say: *I'll show you what I mean by that. When I look at pages _____, I see a connection to myself. I see _____ and I start making that connection. That is a text-to-self connection. I'm going to write this connection on my chart in the "My Connections" column. When I read the information on page _____, I can understand _____ because _____. I'm going to write that in my chart in the "How They Help Me Understand" column.*

Say: *Another type of personal experience that we can use to make connections is to connect what we are reading now to things we have read in the past. We call these text-to-text connections. For example, when I look at _____ on page _____, it reminds me of _____ because I read about this before. I'm going to write this on my chart, too.*

Say: *Remember that making connections as we read and listening to our inner voice is a way to better understand what we are reading. Also, we can make connections as we read to all sorts of things, not just to ourselves and other texts. Some other things are movies, television, and other media we've heard and seen. We can even make connections to the world at large. Turn and talk about how all of these different connections can help us better understand what we are reading. (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: *Now it's your turn to try this. As I read pages _____, listen to your inner voice and think about any text-to-self, text-to-text, or any other connection you might have to the text.*

LESSON FRAME Make Connections to Better Understand

Say: Remember to look at the pictures, too. When you have a connection, be sure to draw it or write it down on your Think Sheet chart in the “My Connections” column. (Read pages _____ aloud. Have kids turn and talk and record their connections.)

Say: Did you have some interesting connections? Who can share a connection with us? (Let a few kids share their connections with the class.)

Say: The reason we use our inner voice to make these connections is to help us better understand what we are reading. Now take some time to record on your Think Sheets how the connections you made help you understand. Then turn and talk again about your connections and how they help you understand what we are reading about. (Kids record on their Think Sheets and turn and talk.)

COLLABORATE (25 Minutes)

Say: Now you are ready to work with a partner. Continue reading pages _____. You can take turns reading. Write or draw your connections in the first column of your chart. You and your partner will have different connections. You can discuss your different connections. Be sure to also take time to write on your Think Sheet chart how these connections help you understand. I’m going to move around the classroom, so let me know if you need help. (Partners work together. 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: Okay, flip through the article and consult your Think Sheet to choose a connection you would like to share. I am going to invite _____ to share a connection. We are going to share using respectful language. So when I ask: “_____, would you like to share a connection?” You need to say: “Yes thank you.” Then you can share your connection. After you share, ask if anyone has any comments or questions. Then 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 important information being shared. Also, everyone likes to be listened to when they share out, so remember to pay attention to the person who is sharing. (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 that reading is thinking and that we use our inner voice to make connections that help us understand what we are reading. Turn and talk about some of the important connections you made. (Several kids share out.)

Say: Everyone, you did a great job using your inner voice to make connections today!

SCIENCE

Standards Supported

- **NGSS ETS1.B: Developing Possible Solutions:**

Designs can be conveyed through sketches, drawings, or physical models. These representations are useful in communicating ideas for a problem's solutions to other people. (K-2-ETS1-2) (secondary to 2-LS2-2)

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 9)
- Article Test (page 16)

Science Background

The lionfish is a native predator in the Indian and South Pacific Oceans. This fish sports reddish-brown and white zebra-like stripes and has up to 18 needle-like dorsal fins filled with venom on its body.

A lionfish sting can cause a lot of pain, but this fish is causing a lot more harm just by existing where it shouldn't be. In the early the 1980s, lionfish were introduced into the Atlantic Ocean. Since then, their population has exploded.

Unlike in their native habitat, lionfish have no natural predators in the Atlantic. As a result, they are free to eat as many fish and crustaceans as they want. Fish populations are struggling to rebuild and groups of crustaceans are disappearing. Even coral reefs, which rely on plant-eating fish to survive, are suffering as those fish disappear.

People are testing several different ideas to solve this problem. But so far, the lionfish appears to have the upper hand.

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 lionfish.

EXPLORE

Display pages 2-3 of the projectable magazine. Invite students to examine the photo, headline, and text. Encourage students to brainstorm ideas about how a lionfish could change a new habitat.

EXPLAIN

After reading, remind students that lionfish are ocean animals. But they are not native to the Atlantic Ocean. **Ask:** *Why people worried that there are now lionfish in the Atlantic Ocean?* (Lionfish don't belong here. They are killing local fish and hurting the coral reef.) *Why are they causing so much harm?* (They eat a lot of fish and shrimp and have no natural predators here.) Have students turn and talk as they discuss how this problem might have started and different ideas people are trying to solve it. Encourage students to identify the solutions they think could be the most effective. Challenge them to explain why.

ELABORATE

Display the diagram "Deadly Predator" on pages 6-7 of the projectable magazine. As students review the diagram, encourage them to summarize what lionfish are like, how they have already changed Atlantic habitats, and why they it will be so difficult for people to stop them from causing more harm.

EVALUATE

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

CONTENT ASSESSMENT: Lions on the Loose

Make a list of reasons why lionfish are causing so much damage in the Atlantic Ocean.

Draw a picture of a new idea that could stop lionfish from causing more harm.

Describe how your idea works.

Standards Supported

- **NGSS ETS1.A: Defining and Delimiting Engineering Problems:** Asking questions, making observations, and gathering information are helpful in thinking about problems. (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 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 fifth of a six-part series about simple machines, students will learn about wheels and axles. A wheel and axle is basically a disc that turns around a rod. Some roll. Others turn. All make it easier to do work.

The wheel, invented about 3500 B.C., is considered to be one of the most important inventions of all time. The first wheels may have been used to raise weights or haul water buckets up from wells. Adding the axle later on led to the creation of carts and wagons, which made it easier to transport people and goods. Today, wheels and axles are found in a multitude of objects you use every day.

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 wheels and axles.

EXPLORE

Display pages 10-11 of the projectable magazine. Invite students to read aloud the headline and text. Challenge students to identify the wheels and axles in the photo. Brainstorm ideas about how wheels and axles make it easier to move things.

EXPLAIN

After reading, point out to students that a wheel and axle is a type of simple machine. **Ask:** *Why do you need both a wheel and an axle to make this simple machine work?* (The wheel goes around. The axle connects the wheel to something else. When the axle moves, so does the wheel, and so does whatever the axle is connected to.) Have students turn and talk as they discuss the difference between wheels that do and do not roll. Encourage them to use examples in the article to explain each concept. Then have students reading *TRAILBLAZER* identify the trade-offs of using wheels. (The larger the wheel, the less force you have to apply. But you have to apply that force over a greater distance.). As a class, make a list of wheels students use each day.

ELABORATE

Divide the class into small groups. Provide the necessary supplies and have groups complete the activity on pages 16-17 of their student magazines. After groups have completed the activity, challenge them to explain what happened when they added gears or changed the size of gears they were using.

EVALUATE

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

CONTENT ASSESSMENT: Round and Round

Draw a picture of a wheel and axle that rolls. Label the wheel and axle.
Explain how this simple machine works.

Draw and Label	Explain

Draw a picture of a wheel and axle that doesn't roll. Label the wheel and axle.
Explain how this simple machine works.

Draw and Label	Explain

SOCIAL STUDIES

Standards Supported

- **C3: History: Historical Sources and Evidence:** Identify different kinds of historical sources. (D2.His.9.K-2)
- **C3: History: Historical Sources and Evidence:** Summarize how different kinds of historical sources are used to explain events in the past. (D2.His.9.3-5)

Resources

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

Social Studies Background

On April 14, 1865, President Abraham Lincoln and his wife, Mary, attended the nighttime performance at Ford's Theatre in Washington, D.C. Today, artifacts left behind help us remember what happened that fateful evening.

An artifact is an object of cultural or historical significance. Some artifacts set the stage for Lincoln's last evening. The playbill, for example, tells us the president was watching *Our American Cousin*, starring Laura Keene. Some artifacts tell us about Lincoln himself. As usual, the president was wearing a white shirt and black pants, hat, and coat. But this coat, made for his second inauguration, had the words "One Country, One Destiny," stitched into the lining. And his top hat was rimmed with a black mourning band in honor of his son Willie, who had died three years earlier.

Other artifacts reveal the tragic fate the president met as he sat above the stage and watched the play below: locks of Lincoln's hair; pieces of Laura Keene's bloodstained costume; the bullet; the gun; the reward poster; and the diary that traces the assassin's thoughts as he plotted to kill the president.

Artifacts are a link to the past. Protecting and preserving them helps us learn, remember and maybe prevent similar actions in the future.

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 President Abraham Lincoln.

EXPLORE

Display pages 18-19 of the projectable magazine. Invite students to examine the photos, headline, and deck. Then have students brainstorm ideas about what the items shown tell readers about Lincoln.

EXPLAIN

After reading, remind students that an artifact is an object of cultural or historical interest. **Ask:** *Why are all of the items in these pictures considered to be important artifacts?* (They help us understand what Lincoln was like (PIONEER) and what happened when he was assassinated (TRAILBLAZER).) Have students turn and talk as they discuss what they learned about Lincoln and his death after studying the objects. Challenge students reading TRAILBLAZER to explain how curators protect and preserve different types of artifacts.

ELABORATE

Point out to students that most of the items identified as artifacts in the article are everyday objects. But because they belonged to Abraham Lincoln or are connected to his assassination, they important parts of history. Pick another important historical event. Then divide the class into small groups. Challenge groups to conduct research to identify three or more important artifacts related to that event. Rejoin as a class. Invite groups to share their results. Discuss what the collection of artifacts reveals about this historical event.

EVALUATE

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

CONTENT ASSESSMENT: Abraham's Artifacts/Saving History

Draw a picture of three different artifacts from the article. Explain what each artifact tells you about Abraham Lincoln or his assassination.

Draw	Explain

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

- China Then and Now poster (teacher's edition)
- Culture and Daily Life in China poster (teacher's edition)
- Content Assessment Master (page 15)
- Comprehension Check (page 19)

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 China.

EXPLORE

Display the **Ancient China poster**. Read aloud the information at the top of the poster. Brainstorm ideas about how one of the oldest and longest-lasting civilizations could have grown into the world's most populous country today.

EXPLAIN

Invite students to examine the **China Then and Now poster**. Point out that ancient China was bordered by the Gobi and Taklimakan deserts and the Himalayas. Discuss how these natural barriers could keep the country isolated from most of the world. **Ask:** *What did the ancient Chinese people do when they were threatened by invaders from the north?* (They built the Great Wall of China.) Have students review the two maps as well as the timeline. Encourage them to compare ancient China to China today. Then display and review the **Culture and Daily Life in China poster**. Encourage students to identify traces of ancient Chinese culture that they see or experience in their lives today.

ELABORATE

Remind students that China has one of the oldest and longest-lasting civilizations in the world. Because of that, the **Culture and Daily Life in China poster** shows just a few ways Chinese culture touches our lives today. Divide the class into small groups. Have groups conduct research to learn more about China. Challenge them to find three more ways Chinese culture affects their lives today.

EVALUATE

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

CONTENT ASSESSMENT: China Posters

Make a checkmark to show if you think each sentence is true or false.

Use information from the posters to explain your answers.

Sentence	True	False	Explanation
1. Rivers were important to ancient Chinese people.			
2. Today, China is ruled by an emperor.			
3. The Great Wall of China is very big.			
4. Buddhism teaches that people should be one with nature.			

ARTICLE TEST: Lions on the Loose

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

1. Why is the lionfish a fish out of its waters in the Atlantic Ocean?

- Ⓐ It looks like a zebra.
- Ⓑ It is an invasive species.
- Ⓒ It is a predator.

2. How did lionfish most likely get in the Atlantic Ocean?

- Ⓐ People put them there.
- Ⓑ They swam there.
- Ⓒ They have always been there.

3. Why are lionfish causing so much damage?

- Ⓐ They are venomous.
- Ⓑ They have no natural predators in the Atlantic.
- Ⓒ They only eat certain types of fish.

4. Why aren't Atlantic cleaning stations "safety zones" anymore?

- Ⓐ Lionfish are stinging all of the fish.
- Ⓑ Lionfish are poisoning the water.
- Ⓒ Lionfish are eating fish that go there.

5. What are three things people are doing to solve the lionfish problem?

ARTICLE TEST: Round and Round

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

1. What does a wheel do?
Ⓐ slide up and down
Ⓑ turn round and round
Ⓒ switch off and on

2. Where is the axle located?
Ⓐ at the center of the wheel
Ⓑ around the wheel
Ⓒ under the wheel

3. What happens when you use wheels to pull a heavy load?
Ⓐ You need more effort.
Ⓑ There is less friction.
Ⓒ You have to push harder.

4. Which of these has a wheel that doesn't roll?
Ⓐ a bicycle
Ⓑ a wagon
Ⓒ a Ferris wheel

5. How do a wheel and axle make a doorknob work?

ARTICLE TEST: Abraham's Artifacts/Saving History

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

1. What do artifacts help people understand?
Ⓐ the past
Ⓑ the present
Ⓒ the future

2. What does *preserve* mean?
Ⓐ to protect or maintain something in its original or existing state
Ⓑ to recreate something so it looks new
Ⓒ to draw a picture or make a model of something

3. What Abraham Lincoln artifact did people preserve?
Ⓐ his last meal
Ⓑ his hat
Ⓒ his toothbrush

4. Which of these statements is true?
Ⓐ Only expensive artifacts are valuable.
Ⓑ Artifacts tell us very little about Abraham Lincoln.
Ⓒ Artifacts tell us how Abraham Lincoln lived and died.

5. What do the artifacts identified in the article tell you about Abraham Lincoln?

POSTER TEST: China Posters

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

1. Why did the ancient Chinese people build the Great Wall?

- Ⓐ to attract tourists
- Ⓑ to honor their emperor
- Ⓒ to keep out invaders

2. Who was the first emperor of China?

- Ⓐ Genghis Khan
- Ⓑ Qin Shi Huang
- Ⓒ Confucius

3. What is the art of handwriting called?

- Ⓐ pagoda
- Ⓑ calligraphy
- Ⓒ Taoism

4. How many written languages are there in China today?

- Ⓐ 290
- Ⓑ 100
- Ⓒ 1

5. What are two similarities and two differences between ancient China and China today?

Pioneer and Trailblazer

ANSWER KEY

Lions on the Loose

Assess Content, page 10

Reasons: Students may note that lionfish have no natural predators in the Atlantic Ocean, they eat everything, they have huge appetites, they can live up to 15 years, and a female can lay more than two million eggs per year.

Students' drawings will vary, but they should relate to solving the lionfish problem. In their explanations, students should connect to the issues related in the article.

Article Test, page 17

1. B; 2. A; 3. B; 4. C; 5: Possible response: People are trapping lionfish, hunting them in lionfish "derbies," and coming up with new recipes so people will eat them. Students reading TRAILBLAZER may also note that divers have speared lionfish and tried to teach other predators to hunt them.

Round and Round

Assess Content, page 12

Answers will vary depending on which wheel and axle students draw. But students should draw a wheel and axle that rolls and one that doesn't roll, label the wheel and axle in each picture, and explain how each simple machine works.

Article Test, page 18

1. B; 2. A; 3. B; 4: C; 5: A knob is a wheel connected to a rod—the axle. When you use force to turn the knob, the knob turns the axle. The axle moves the latch in and out so the door opens.

Abraham's Artifacts/Saving History

Assess Content, page 14

Answers will vary depending on which artifacts students choose to draw.

Article Test, page 19

1. A; 2. A; 3. B; 4: C; 5: Answers will vary.

China Posters

Assess Content, page 16

1. True: Ancient Chinese civilization first formed along the Yellow River. And the Yangtze River created a border between northern and southern China.
2. False: Ancient China had an emperor. In 1912, the Chinese formed a republic. Today, the country is under Communist rule.
3. True: The Great Wall is more than 21,000 kilometers (13,000 miles) long and is the largest man-made structure in the world.
4. False: Taoism teaches that people should be one with nature. Buddhism teaches a "rebirth" of the self.

Poster Test, page 20

1. C; 2. B; 3. B; 4: C; 5: Answers will vary, but information should come from the posters.