

NATIONAL GEOGRAPHIC Explorer!

Pioneer Edition

nationalgeographic.com/ngexplorer/pioneer/teachers

Dear Educator:

From a space base on the moon to the primeval forest of the dinosaurs, our May issue keeps readers on the go.

In "Return to the Moon," students rocket to the moon as they learn about NASA's plans to build a space base on Earth's closest neighbor. The story explains how NASA intends to get people and equipment to the moon, build a moon base, and use the moon as a launch pad for Mars. You can use the blackline master on p. T3 to check students' comprehension of the story's main ideas.

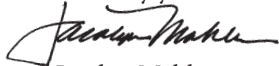
Next, students follow scientists into the African rain forest for "A Glimpse of Gorillas." Readers will meet a family of western lowland gorillas, learning how the family lives, eats, and interacts. They will also learn why these magnificent creatures are endangered. The blackline master on p. T5 supports students in summarizing the story.

Readers then pedal back in time to learn the history of one of the world's easiest and most popular forms of transportation—the bicycle. "Pedal Power" traces the evolution of the bike from the wooden hobbyhorses of the early 1800s to BMX stunt bikes. Readers will find out how changes in design and materials have led to safer, more comfortable rides for bicycle lovers everywhere. The blackline master on p. T7 helps readers use a time line to track and sequence key events.

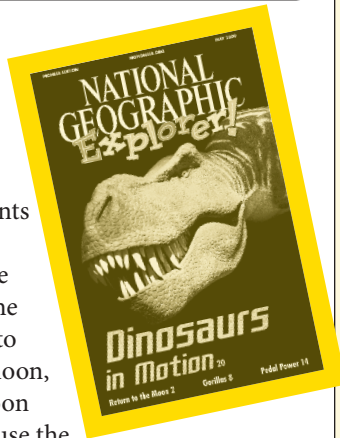
Finally, students head to the movies to see "Dinosaurs in Motion." This story explains how dinosaur model builders use fossil records, experts' advice, and imagination to construct robotic dinos and computer-generated images that show how the prehistoric giants might have looked, moved, and acted.

It's been great exploring with you and your students this year. We wish you a wonderful, restful summer. Please be sure to renew your subscription so that we can take new journeys together in September!

Sincerely yours,



Jacalyn Mahler
Editor in Chief



In This Issue

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Curriculum Connections

- Language Arts • Space Science

Standards Correlations

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- **Space Science:** Research and exploration of space

Literacy Skills

- **Reading Strategy:** Ask and Answer Questions
- **Writing:** Creative Writing

GORILLAS

PP. 8-13

Curriculum Connections

- Language Arts • Life Science

Standards Correlations

- **Language Arts:** Summarize key points of a text
- **Life Science:** Adaptations of organisms; Populations and ecosystems

Literacy Skills

- **Reading Strategy:** Determine Importance
- **Writing:** Summary

PEDAL POWER

PP. 14-19

Curriculum Connections

- Language Arts • Social Studies • Technology

Standards Correlations

- **Language Arts:** Text structure; Graphic organizers
- **Science:** Science and society

Literacy Skills

- **Reading Strategy:** Plan and Monitor
- **Writing:** Research, Personal Narrative

Answer Key

Return to the Moon • Teacher's Guide, p. T3

- 1. Phase 1:** get people to the moon and back.
Phase 2: build a base on the moon. **Phase 3:** go from the moon to Mars. **2.** Getting materials to the moon; getting power; working in a place without oxygen.
3. Answers will vary.

A Glimpse of Gorillas • Teacher's Guide, p. T5

- 1.** a family of lowland gorillas. **2.** Answers will vary. Make sure that students focus on the most important information. **3.** Answers will vary.

Pedal Power • Teacher's Guide, p. T7

- 1860s.** Bike builders add pedals to bikes. **1890s.** Bike riding is very popular. **1930s.** Cruisers have balloon tires. Classics have chrome fenders. **1960s.** V-shaped handlebars become a trend. **1970s.** Adults get back on bikes. The ten-speed is popular.

Review • Teacher's Guide, p. T8

1. b 2. c 3. d 4. a 5. a 6. c 7. b 8. d

Next Issue

This is our last issue for 2008-2009.

EXPLORER will return in September.

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Return to the Moon

About the Story

Astronauts first walked on the moon 40 years ago. In this story, students will learn about NASA’s plans to return to the moon and the challenges it faces to do so. The ambitious Constellation Program has three phases: 1) getting astronauts to the moon and back safely, 2) building a lunar space base, and 3) using the moon as a launch pad to Mars.

Fast Facts

- To make sure all the equipment would work properly, prior to 1964 many missions to the moon were unmanned.
- On July 20, 1969, Apollo 11 landed on the moon. Neil Armstrong and Buzz Aldrin were the first men to walk on the moon’s surface.
- The Apollo Program brought back more than 363 kilograms (800 pounds) of rocks and other material from the moon to be studied.

Vocabulary

Glossary: Direct students to this sentence in the last paragraph on p. 5: *Friction between the spacecraft and the air produces a lot of heat.* Point out the word *friction* in bold print. Ask students why they think the word is made to stand out from the others. Explain that often nonfiction texts signal words that may be new to readers by printing the words in bold type. These words are then defined for the reader in a glossary that appears at the end of the story.

Have students find the three other bold words on p. 6. Then direct them to the Wordwise section. Tell students that before reading, good readers scan a story for bold words and read their meanings in a glossary like Wordwise. Ask: *Why would it be better to learn what new words mean before reading the whole story?* (Understanding what new words mean can help you understand important information in the story.) *How does a glossary compare to a dictionary?* (A dictionary includes a lot of information about a word, including all of its possible meanings. A glossary only defines the word as it’s used in the story.)

Before Reading

Preview and Set a Purpose: Tell students that good readers preview nonfiction to get an idea of what they will be learning and to set their purpose for reading. Lead students in previewing the story, focusing on the headline, pictures, subheads, and bold words. Ask, *What will you be learning about in this story?* Help students understand that their purpose for reading is to find out why and how NASA will return to the moon.

Reading Strategy

Ask and Answer Questions: Explain to students that some texts they read give a lot of new information. One way to make sure they “get it” is to ask and answer questions as they read. Encourage students to pause after each section and ask themselves two questions: “What are the key words in this section?” and “What is important for me to remember?” Have students read the story in pairs and pause at the end of each section to answer the two questions. You may want to display the questions as pairs read the story.

After Reading

- **Content Literacy:** Remind students of their purpose for reading, and ask them if it was met. Distribute the blackline master on p. T3 for students to complete. Invite volunteers to share their responses. Note differences and similarities in the responses, especially for item 3.
- **Glossary:** Students can practice using the new words they learned by role-playing a conversation between two astronauts exploring the moon. Challenge them to use all four words in Wordwise.
- **Critical Thinking:** Tell students to imagine a human colony on the moon. Ask them to brainstorm a list of ten items the colonists would need. Encourage students to focus on things they would absolutely need, not things they’d “want.”
- **Creative Writing:** Invite students to pretend they are the first astronauts on Mars. Have them write a three-day journal about their experiences and discoveries on the red planet.

Return to the Moon

Read "Return to the Moon" in NATIONAL GEOGRAPHIC EXPLORER. Then complete the items below.

1. Tell what NASA plans to do in each phase of the Constellation Program.

Phase 1: _____

Phase 2: _____

Phase 3: _____

2. Give two examples of challenges astronauts will face when building a space base on the moon.

3. What was the most surprising thing you learned from reading the story?

A Glimpse of Gorillas

About the Story

Researcher Diane Doran-Sheehy's work in equatorial Africa provides readers with a close-up look at lowland gorillas. Students learn about the gorillas' family relationships, including the dominant role played by the male silverback gorilla. Students also learn how the number of gorillas has been reduced due to the destruction of their habitat, illegal hunting, and disease.

Fast Facts

- Western lowland gorillas are one of four subspecies of gorillas.
- In August 2008, scientists announced the discovery of a population of about 125,000 western lowland gorillas in the forests of the Republic of the Congo. The new finding doubled the estimated population for this subspecies.
- Gorillas can climb trees but spend most time on the ground. Their community/family can include up to 30 gorillas.
- Gorillas are mainly vegetarian and enjoy a diet of roots, shoots, fruit, and tree bark.

Vocabulary

Access New Words: Tell students that readers always come across new words and there are things they can do to figure out a new word's meaning. Model this by reading aloud this sentence from p. 12, "He has other adaptations, too." Suggest that students ask themselves these questions. *Does the word adaptations look familiar? Is there a smaller word inside the bigger word that I know? What does the smaller word mean?*

Good readers use a number of different strategies to figure out the meaning of new words. Explain that readers can also try reading the sentences that come before and after the new word to see if they have clues to the word's meaning. Work with students to apply these strategies to determine possible meanings of **adaptation**. Point out that since the word is in bold, they know it is defined in Wordwise at the end of the story. So they can check the meaning there as well.

Before Reading

Build Background: Begin a class KWL chart. Ask students what they know about gorillas. Record responses in the KNOW section of the chart. Then ask students what they would like to learn about gorillas from reading the story. Record responses under the WHAT section.

Reading Strategy

Determine Importance/Summarize: Explain that when you read nonfiction, it helps to summarize, or tell the main points of a story in a short and direct way. Use the blackline master on p. T5 to support students in applying these steps:

- 1) Identify the topic. First, preview the story, including looking for repeated words. Then identify what the story is mostly about.
- 2) Pay attention as you read. Write down the facts that seem to be the most important.
- 3) Sum up the main points that the story makes about the topic.

After Reading

- **Determine Importance/Summarize:** After students have read the story, have them use their responses on the blackline master to orally retell the story to a partner.
- **Revisit the KWL Chart:** Invite volunteers to write three things they learned from the story.
- **Science:** Have students design a flyer that will inform the public about gorillas. The flyer should include five important facts and a picture of lowland gorillas in their habitat.

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A Glimpse of Gorillas

Before You Read

1. Preview "A Glimpse of Gorillas" in NATIONAL GEOGRAPHIC EXPLORER. Then identify the topic and complete the sentence below.

This story is about _____.

While You Read

2. Write down important facts about the big ideas in the story.

After You Read

3. Sum it up! In your own words, tell a partner what you learned from the story.

PEDAL POWER

About the Story

A billion people worldwide ride bikes for fun or transportation. This story traces the evolution of this popular invention, from the first hobbyhorses and early “boneshakers” to today’s cutting-edge bikes that are used for racing and riding over rugged mountains.

Fast Facts

- Bike helmets have become a regular piece of cycling gear as children and adults have sustained many serious head injuries from falls.
- Most Americans ride bikes for pleasure. In China, riding bikes for transportation is as common as driving a car is in the United States.
- Bicycle sharing is catching on in Europe and in some U.S. cities. Older bicycles are left in designated areas for anyone to use to get to another location. Then the rider leaves it in a bicycle rack for someone else to use.

Vocabulary

Hyphenated Adjectives: Display the phrases *pizza-eating monster* and *three-legged dog*. Tell students that these hyphenated, two-word adjectives each describe a noun (*monster* and *dog*). Explain that in these examples, two words are connected to make one idea. Model how to interpret a hyphenated adjective: *I know what pizza is, and I understand what eating is. Putting them together like this gives me a vivid picture of a monster that eats pizza.*

Give students a few minutes to scan p. 18 of the story for hyphenated adjectives. (Examples: *V-shaped, ten-speed, teeth-jarring, fold-up.*) Ask them to practice the strategy to figure out the meanings and share their responses.

Before Reading

Text Structure: Tell students that good readers try to figure out how a story is organized before they start reading. Just as highway signs alert drivers to what lies ahead, headlines, subheadings, and pictures can do the same for the reader. Lead students in previewing the story, helping them to see that it is written in chronological order. Point out that the dates mentioned move from long ago to the present day. The author is telling about events in the order in which they happened.

Reading Strategy

Plan and Monitor: Distribute the blackline master on p. T7. To track the main events in the history of bicycles, have students use the time line template as they read. You may want to read the “Bumpy Beginnings” section together and model filling in the time line for the 1860s.

After Reading

- **Time Line:** Have students compare their completed time lines with a partner’s and make corrections, if necessary. Discuss how filling in the time line helped them follow and remember events in bicycle history. Ask them what other types of texts they could read with a time line.
- **Research:** Have student pairs select a mode of transportation (such as cars, motorcycles, boats, or trains). Tell students to research significant dates related to their topic and create a time line that shows key events.
- **Writing:** Tell students to think about a fun or special bicycle ride they have had. They can write a story about where the ride took place, making sure to describe the place, who was there, and what made it a ride to remember.

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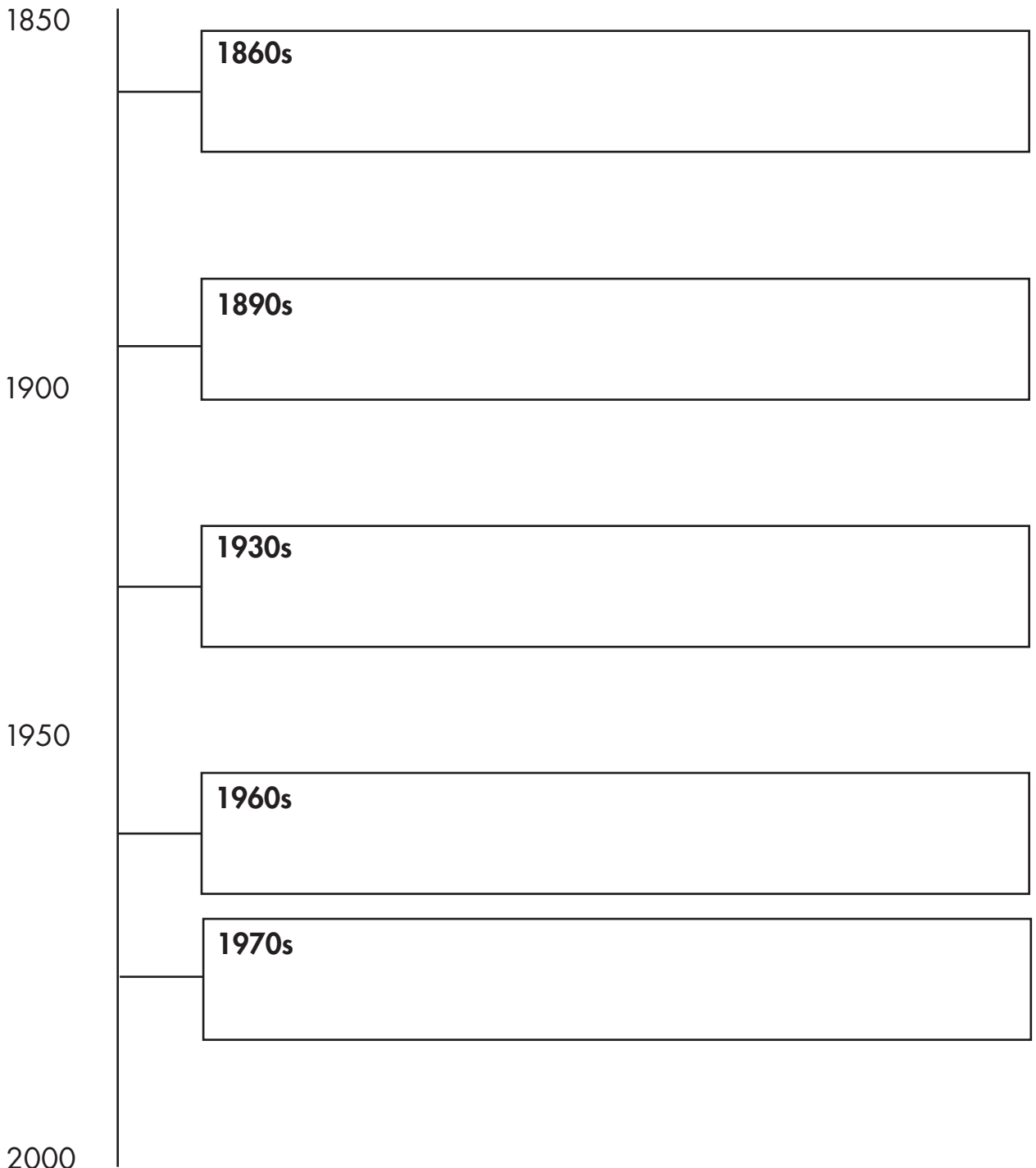
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PEDAL POWER

As you read "Pedal Power" in NATIONAL GEOGRAPHIC EXPLORER, use the time line to write down important events in the history of bicycles.



COMPREHENSION CHECK

Answer each question. Fill in the circle by the correct answer.

1. What is part one of NASA's Constellation Program?
 - a) build a space base
 - b) get to the moon and back
 - c) use the moon as a launch pad
 - d) send people to Mars
2. To build a space base, what might scientists use?
 - a) lunar rovers
 - b) gases from the moon
 - c) unmanned rockets
 - d) special shields
3. What is the boldest part of the Constellation Program?
 - a) building a lunar rover
 - b) sending people to the moon
 - c) putting RV campers on the moon
 - d) sending rockets to Mars
4. What makes Kingo special in his family group?
 - a) He is the leader.
 - b) He has short hair.
 - c) He walks on his knuckles.
 - d) He can communicate.
5. What will Kusu probably do when he grows up?
 - a) start his own family
 - b) stay with his mother
 - c) go with the scientists
 - d) leave the forest
6. What do *loggers* do?
 - a) study wild animals
 - b) hunt wild animals
 - c) cut down trees
 - d) save endangered creatures
7. What important part was added to boneshakers?
 - a) wheels
 - b) pedals
 - c) seats
 - d) gears
8. What kind of bike was built from old Cruisers and Classics?
 - a) Sting-Ray
 - b) ten-speed
 - c) BMX
 - d) mountain bike