

Extreme

EXPLORER

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Dear Educator:

From a space base on the moon to the rain forests of wild Borneo, our May issue keeps readers on the go.

In "Return to the Moon," students will rocket to the moon to 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, create a moon base, and use the moon as a launch pad to Mars. Use the blackline master on p. T3 to check students' comprehension of the story's main ideas.

Next, students see some "Really Wild Life!" through the lens of National Geographic photographer Mattias Klum. Readers will be introduced to the wonder of Borneo's eye-popping biodiversity as well as the loss of crucial habitat caused by deforestation. The story presents some good news—local governments and individual people like Klum are fighting to save Borneo's unique plants and animals. The blackline master on p. T5 will support students in making inferences as they read.

Finally, readers will need to fasten their seat belts for a high-speed ride through history to learn about one of the most life-changing inventions: the car. "Start Your Engines!" traces the evolution of the automobile from the first steam-powered contraption, built in 1769, to today's hybrids and tomorrow's flying cars. Students will learn about the social impact of cars—the ways cars have changed how and where we live. Use the blackline master on p. T7 to help students make connections between information in the story and their lives.

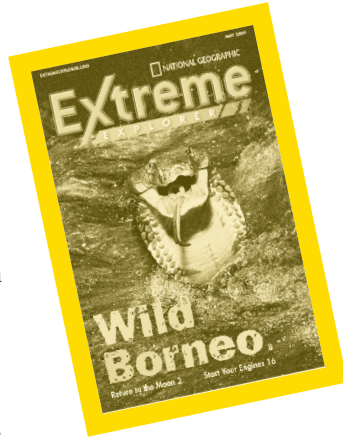
It's been great exploring with you and your students this year. We look forward to new journeys together in September! To make sure that happens, please call 1-888-915-3276 or visit NGSP.com to renew today.

Best wishes for a summer full of adventure and fun.

Sincerely yours,



Jacalyn Mahler
Editor in Chief



In This Issue

RETURN TO THE MOON

PP. 2-7

Curriculum Connections

- Language Arts • Space Science

Standards Correlations

- **Language Arts:** Self-monitoring comprehension strategies
- **Space Science:** Research and exploration of space

Literacy Skills

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

BORNEO

PP. 8-15

Curriculum Connections

- Language Arts • Life Science • Geography

Standards Correlations

- **Language Arts:** Infer meaning from expository text
- **Life Science:** Environmental factors and diversity of organisms

Literacy Skills

- **Reading Strategy:** Make Inferences
- **Vocabulary:** Multiple-Meaning Words
- **Visual Literacy:** Interpret Maps
- **Writing:** Interview Questions

CARS

PP. 16-23

Curriculum Connections

- Language Arts • Social Studies • Technology

Standards Correlations

- **Language Arts:** Connect text to experiences
- **Social Studies:** Impact of inventions

Literacy Skills

- **Reading Strategy:** Make Connections
- **Vocabulary:** Prefixes and Suffixes; Portmanteau Words

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. Learn more about Earth; may find useful minerals or gases. 3. Getting materials to the moon; getting power; working in a place without air. 4. Gravity is much weaker on the moon than on Earth, so launching rockets is easier.

Borneo • Teacher's Guide, p. T5

Model making an inference. Say: *The text says the king cobra is growling. I know dogs do that when they feel threatened. So I think the snake feels threatened even though the authors don't tell me that directly.*

Cars • Teacher's Guide, p. T7

Answers will vary depending on students' personal experiences.

Review • Teacher's Guide, p. T8

1. b 2. c 3. c 4. d 5. c 6. b 7. b 8. a 9. c 10. b

Next Issue

This is our last issue for 2008-2009.
EXTREME EXPLORER returns 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 technical challenges it faces to do so. The 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 to launch missions to Mars.

Fast Facts

Why return to the moon? NASA has identified six Lunar Exploration Themes that it believes define the value of going to the moon:

- **Human Civilization:** Enable future settlements;
- **Scientific Knowledge:** Gather information about the solar system and universe;
- **Exploration Preparation:** Develop techniques that will allow future planetary exploration;
- **Global Partnerships:** Provide a peaceful, challenging activity that can unite nations;
- **Economic Expansion:** Expand Earth's economic sphere and conduct lunar activities that may benefit life on Earth; and
- **Public Engagement:** Engage the public, encourage students, and develop a high-tech workforce that can meet future challenges.

Vocabulary

Acronyms: Display and read aloud the acronym NASA. Then ask: *Does anyone know what NASA means?* (National Aeronautics and Space Administration) Explain that this is a special kind of abbreviation called an acronym. Instead of pronouncing each letter individually, people read the acronym as a word.

Explain that some acronyms become new words in our language. At that point, people spell them with lowercase letters. Challenge students to look up the meanings of the following acronyms: *laser* (light amplification by stimulated emission of radiation), *radar* (radio detecting and ranging), and *scuba* (self-contained underwater breathing apparatus).

Before Reading

Preview and Set a Purpose: Tell students that good readers preview nonfiction stories to get an idea of what they will be learning and 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. You also may want to invite the class to debate the value of NASA's six exploration themes.

Reading Strategy

Ask and Answer Questions: Explain to students that some texts give us a lot of new information. One way to make sure we “get it” is to ask ourselves questions as we read. Encourage students to ask themselves two questions as they read each section: “What are the key words in this section?” and “What should I remember from this section?” Suggest that they reread any section if they have trouble answering the two questions.

After Reading

- **Content Literacy:** Remind students of their purpose for reading. Ask them if their purpose was met. Distribute the blackline master on p. T3 for students to complete. Invite volunteers to share their responses. Note differences and similarities, especially for item 4.
- **Acronyms:** Using newspapers or magazines, have students search for acronyms. (Remind them that abbreviations are not acronyms.) Create a classroom list of acronyms in alphabetical order. Each entry should include the acronym, the spelled out words, and the source where it was found.
- **Critical Thinking:** Ask students to brainstorm a list of 15 or more “must have” items moon colonists would need.
- **Creative Writing:** Invite students to pretend they are the first astronauts on Mars. Have them write a five-day journal about their experiences and discoveries on the red planet.

Return to the Moon

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

1. Explain what NASA plans to do in its Constellation Program.

2. How could exploring the moon benefit people on Earth?

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

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

REALLY WILD LIFE!

About the Story

With more than 16,000 species of animals and plants, Borneo is one of the most biodiverse places on Earth. That biodiversity is threatened by rapid deforestation. In this story, students have a chance to compare Borneo's past with its present, as seen through the eyes—and photographs—of wildlife photographer Mattias Klum.

Fast Facts

- Students and their families can read more about Borneo in “Borneo’s Moment of Truth” in the November 2008 NATIONAL GEOGRAPHIC.
- According to the World Wildlife Fund, about 1.3 million hectares (3.2 million acres) of rain forest are destroyed each year in Borneo.

Vocabulary

Multiple-Meaning Words: Display the word *inches*. Invite students to use the word in a sentence and explain what it means. Then read the first sentence from “Really Wild Life!” on p. 10: “Mattias Klum inches along the forest floor on his belly.” Ask: *What does the word inches mean here?* (to move slowly). Explain that one way to determine a word’s meaning is to figure out its part of speech. Is it a noun? A verb? An adverb? Depending on its use, a word may have a different meaning. Encourage students to use parts-of-speech and other context clues to figure out other multiple-meaning words in the text. Examples: *eyes, back, brushed, find, draws*.

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Before Reading

Build Background: Use the “Borneo’s Bounty” poster to introduce students to the concepts of habitat and biodiversity. The map shows Borneo’s primary habitats, from its coastal mangrove forests to its mountainous rain forests. Link that idea to biodiversity by saying: *Borneo’s varied habitats have helped make it one of the most biodiverse places on Earth. That means that many different kinds of plants and animals live and thrive on Borneo.* Discuss with students how the plants and animals pictured are examples of that biodiversity and the connection between varied habitats and diverse wildlife.

Reading Strategy

Make Inferences: Tell students that they can get more out of what they read by reading “between the lines.” By combining ideas in the text with what they already know, they can discover ideas that the writer is not stating explicitly. To model this, preview the story with students. Ask why they think Mattias Klum is so passionate about photographing Borneo’s wildlife. Accept all reasonable answers. To encourage students to make inferences as they read, have them complete the blackline master on p. T5.

After Reading

- **Make Inferences:** Ask volunteers to share the inferences they recorded in column 3 of the blackline master. Then work together to answer the last question: *What is the author’s message?* (Possible response: The story says the animals Klum photographs tell Borneo’s story. His message is that Borneo’s forests and animals are worth protecting.)
- **Research:** Suggest students research an animal shown in the story or poster, and make an original poster with photos, drawings, and cool animal facts.
- **Interview:** Invite students to imagine they are journalists interviewing Mattias Klum about his experiences in Borneo. Ask them to write five interview questions. Then students can role-play the interview and use the answers to write a short news story.

REALLY WILD LIFE!

As you read "Really Wild Life!" in NATIONAL GEOGRAPHIC EXTREME EXPLORER, combine what's in the text with what you know to read between the lines.

- In column 1, record what the authors tell you directly.
- In column 2, write what you know from your own experience.
- In column 3, write what the authors lead you to think.

Inference Chart

I read . . .	I know . . .	And so . . .

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Now put it all together. What is the authors' message?

START YOUR ENGINES!

About the Story

Few inventions have changed our everyday lives more than cars. “Start Your Engines!” takes readers on a road trip through time—from the first steam-powered vehicle, invented in 1769, to today’s cars that run on alternative fuels. Students will learn how cars have changed where and how we live, including the development of suburbs, highways, drive-ins, and environmental problems.

Fast Facts

- A company called Zero Pollutions Motors is building a car that runs on air.
- Drivers on U.S. highways traveled more than 381 billion kilometers (237 billion miles) in December 2008. American drivers use more than 1.5 billion liters (390 million gallons) of gasoline every day.
- Antarctica has specialized motor vehicles to get around its snow- and ice-covered roads. One, a snowcat, runs on rubber tracks instead of tires.

Vocabulary

Prefixes and Suffixes: Remind students that a prefix is a word part added to the beginning of a word that changes the word’s meaning. A suffix is a word part added to the end of a word that changes the word’s meaning. Point out the word *motorist* on p. 19. Ask students to think of a related word they know (*motor*). Then model the strategy: *I know motor can mean “a car engine.” The suffix -ist means “someone who does something.” So the word motorist must mean “a person who drives.”* Encourage students to use what they know about word parts to figure out unfamiliar words in the story. Other examples of affixed words in the story: *transportation, recharge, superhighway, kilometer.*

Before Reading

Preview and Predict: Tell students that good readers get an overview of nonfiction by previewing. Just as highway signs alert drivers to what lies ahead, headlines, subheads, and pictures can do the same for readers. Lead students in previewing “Start Your Engines!” Ask them to predict what the story will be about and the type of information they may learn. After reading, revisit the list to see if their predictions were correct.

Reading Strategy

Make Connections: As students read, suggest they ask themselves: *How does this connect to my own experience?* For example, in “Need for Speed,” the text says: “People relied on themselves ... for transportation. People walked.” A student could then make the personal connection: *I walk to my friend’s house after school because my mom is at work and can’t give me a ride.* Have students use the blackline master on p. T7 to make more personal connections as they read.

After Reading

- **Make Connections:** Ask students to share their responses from the blackline master and to share ways cars affect their lives.
- **Build Vocabulary:** Display the word *motel*. Explain that it’s a blend of two separate words: *motor+hotel=motel*. This kind of word is called a portmanteau. Encourage students to think of other portmanteaus (*electronic+mail=email*) or invent new ones.
- **Design a Dream Car:** Tell students to imagine they are car designers. Ask them to draw their dream car and label its innovations and accessories, then present it to their classmates.

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START YOUR ENGINES!

Read "Start Your Engines!" in NATIONAL GEOGRAPHIC EXTREME EXPLORER. Use the chart to connect the writer's words to your own experiences.

Writer's Words	My Experiences
"Members of a family no longer lived in the same town or city."	
People "could go many places they'd only dreamed of."	
"Cars also let people show who they are."	
"Cars can cause problems."	
"Cars define the way many of us live."	

COMPREHENSION CHECK

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

- What will happen *first* in NASA's Constellation Program?
 - Astronauts will build a space base.
 - Astronauts will fly to the moon and back.
 - The moon will become a launch pad.
 - A lunar rover will explore the moon.
- Which of the following might be used to carry large pieces of equipment to the moon?
 - lunar rovers
 - solar panels
 - unmanned rockets
 - heat shields
- What makes the moon a better launch pad than Earth for sending rockets to Mars?
 - its smooth surface
 - its large size
 - its weak gravity
 - its low temperature
- Which of these is an example of Borneo's biodiversity?
 - New species are found there every year.
 - Borneo has the largest number of animals that can glide.
 - Scientists found 1,000 species of insect in one Borneo tree.
 - all of the above
- Why does Mattias Klum go to extremes to photograph Borneo's wildlife?
 - He likes to take risks.
 - He knows how to talk to monkeys.
 - He wants to tell Borneo's story.
 - He wants to protect Borneo's oil palm trees.
- Which of the following is *not* contributing to Borneo's deforestation?
 - logging
 - animals moving through the trees
 - mining
 - oil palm plantations
- The first automobile ran on—
 - gasoline.
 - steam.
 - recycled cooking grease.
 - electric batteries.
- Henry Ford made cars that—
 - middle-class families could afford.
 - ran on electric batteries.
 - won NASCAR races.
 - could cross Antarctica.
- Which of the following is *not* a fuel source for cars today?
 - vegetables
 - dirty diapers
 - water
 - gasoline
- According to "Start Your Engines!" superhighways, motels, and gas stations are examples of—
 - places found on a road map.
 - how cars changed the way America looks.
 - things you would find in cities.
 - problems cars can cause.