

# NATIONAL GEOGRAPHIC Explorer!

“FOR THE INCREASE AND DIFFUSION OF GEOGRAPHIC KNOWLEDGE.”

## Dear Teacher:

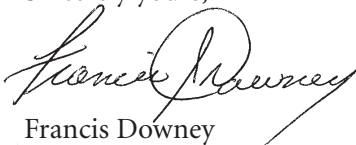
Our cover story this month rockets students toward a truly hot topic. Serene and steady though it may look, “The Sun: Our Stormy Star” is actually a nuclear reactor. Scientists are only beginning to grasp its powerful secrets and cycles. A supersize diagram highlights main parts of the familiar yet mysterious star that makes life on Earth possible.

April also brings the 140th anniversary of a key point in American history—the end of the Civil War. For a fresh perspective on “this terrible war,” as Lincoln called it, we journey to a battlefield in Virginia. There thousands of painstakingly accurate reenactors, including kids, bring the past to life by “Fighting for History.”

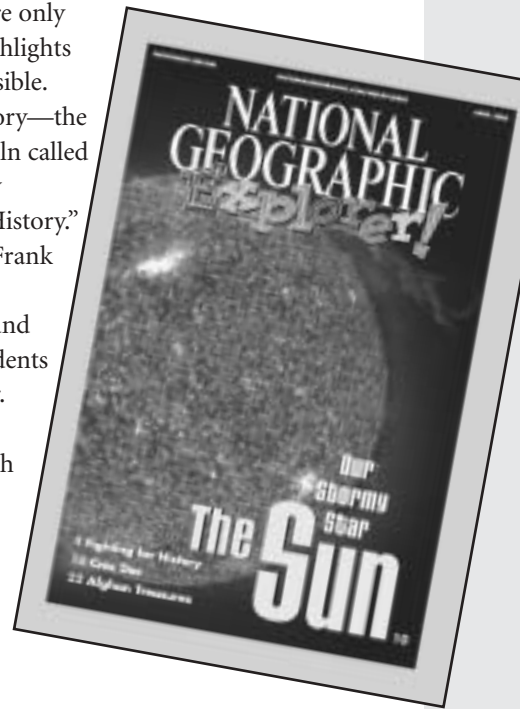
We end by sloshing through the Everglades in the wake of “Croc Doc” Frank Mazzotti, a wildlife ecologist working to study and conserve the American crocodile. This giant reptile is just one of many species literally losing ground to South Florida’s swelling human population. A sidebar chart teaches students how to distinguish the croc from its famous cousin, the American alligator.

These subjects are rich and rewarding, so I urge you and your pupils to explore beyond the printed page. Toward that end, we harvest links for each article. Find them and more at [nationalgeographic.com/ngexplorer/teachers](http://nationalgeographic.com/ngexplorer/teachers).

Sincerely yours,



Francis Downey  
 Executive Editor  
 NATIONAL GEOGRAPHIC EXPLORER



## Answer Key

### STUDENT EDITION

**Divided Nation** Page 24

1. true, 2. false, 3. false, 4. true

### TEACHER'S GUIDE

**Time Travel** Page 3

a. 8, b. 4, c. 5, d. 6, e. 3 f. 7, g. 1, h. 2

**Review** Page 8

1. photosphere, 2. species, 3. reptile, 4. rebel,  
 5. reenactor, 6. canal, 7. astronomer, 8. corona,  
 9. a, 10. b, 11. c, 12. b, 13. c, 14. b

## Issue at a Glance

Teaching Unit	Reading	Writing	Science	Soc. Studies	Math	Curriculum Connections	
						Literacy Skills	Topics
<b>Fighting for History</b> pp. 4–9	■	■		■		<ul style="list-style-type: none"> <li>● Genre: journalistic account</li> <li>● Material gathered from interviews</li> <li>● U.S. Civil War</li> <li>● Historical interpretation</li> </ul>	
<b>The Sun</b> pp. 10–15	■	■	■		■	<ul style="list-style-type: none"> <li>● Scientific vocabulary</li> <li>● Text features: diagram and labels</li> <li>● Sun: structure and importance</li> <li>● Star types: blue, yellow, red</li> </ul>	
<b>Croc Doc</b> pp. 16–21	■	■	■			<ul style="list-style-type: none"> <li>● Causes and effects</li> <li>● Text feature: comparison chart</li> <li>● American crocodiles</li> <li>● Human impact on environment</li> </ul>	



# Fighting for History

## Vocabulary

Page six explains that the North was *industrial* while the South was *agricultural*. Discuss those two adjectives, then read aloud each item below. Ask which adjective better describes the activity.

- designing a computer game (*industrial*)
- harvesting wheat (*agricultural*)
- making cannonballs (*industrial*)
- milking cows (*agricultural*)
- repairing a truck (*industrial*)

## Before Reading

- Ask if any students have attended Civil War reenactments. If so, invite them to tell the class about them. If not, ask students to imagine what such an event might be like.

## Fast Facts

- Nearly 50,000 soldiers fought in the Battle of Cedar Creek—at least 30,000 for the Union and about 17,000 for the Confederacy. Eight thousand soldiers died at Cedar Creek.
- Lt. Gen. Jubal Early was Confederate commander. Maj. Gen. Philip Sheridan led the Union forces.
- Future Presidents Rutherford Hayes and William McKinley fought for the Union at Cedar Creek.
- Though gray was the official Confederate color, textile shortages often led soldiers to improvise. Some wore brownish homespun. Others took blue uniforms from the bodies of Union soldiers.

## Comprehension Check

- What were the two sides of the Civil War? (*North and South or Union and Confederates*)
- When did the war begin? (*1861*)
- Who was President when the war began? (*Abraham Lincoln*)
- What did the people in this article do in the Shenandoah Valley in 2004? (*They reenacted the Battle of Cedar Creek*)
- Why was Cedar Creek important? (*It cut off the Confederates' food supplies and encouraged the war-weary North.*)
- When did the Civil War end? (*April 1865*)

## Critical Thinking Questions

- **Analysis:** On page six, the author says, “For the reenactors, the 1864 battle was as real as the white smoke.” What does that mean? How would watching or participating in a reenactment be different from simply reading about a battle?
- **Problem Solving:** Civil War reenactors need to know a great deal of history. How can they find the detailed information they need?

## Extension Activities

- **Writing:** Tell students to picture themselves taking part in the Cedar Creek reenactment. Then challenge them to write a first-person diary entry about their experiences.
- **Research:** Divide the class into small groups. Have each group research a historic site, museum, or other history attraction in your area. Instruct each group to create a poster and brochure to promote it. If time permits, groups might even script and perform “commercials” for their attractions.
- **Geography:** Visit [nationalgeographic.com/xpeditions/atlas](http://nationalgeographic.com/xpeditions/atlas) to print free maps of Arkansas, Florida, Georgia, Kentucky, Louisiana, Maryland, Mississippi, North Carolina, Pennsylvania, South Carolina, Tennessee, Virginia, and West Virginia. Give each to a student or group. Have the students research and plot Civil War battles in that state.



### Book Links

*Blue or Gray? A Family Divided* by Kate Connell  
(National Geographic Reading Expeditions, 2002)

*From Winchester to Cedar Creek: The Shenandoah Campaign of 1864* by Jeffrey D. Wert  
(Stackpole Books, 1997)

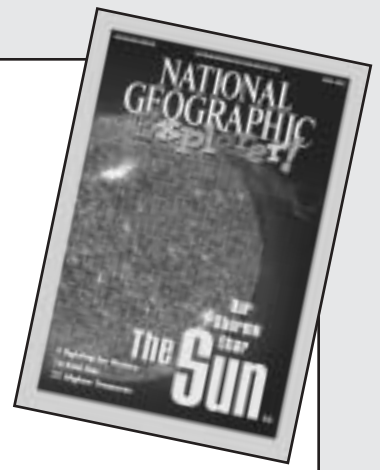


### Web Link

March into Civil War resources at  
[nationalgeographic.com/ngexplorer/teachers](http://nationalgeographic.com/ngexplorer/teachers).

Name: \_\_\_\_\_

# Put the Past in Order



Use what you have learned from reading "Fighting for History" in the April 2005 issue of NATIONAL GEOGRAPHIC EXPLORER to put these eight Civil War events in order. We've done the first one for you.

- a. \_\_\_\_\_ The Civil War ended.
- b. \_\_\_\_\_ The Confederates attacked the Union at Fort Sumter.
- c. \_\_\_\_\_ The Civil War began.
- d. \_\_\_\_\_ The Union decided to cut off the Confederate food supply.
- e. \_\_\_\_\_ Some of the Southern states formed the Confederate States of America.
- f. \_\_\_\_\_ Union troops won the battle at Cedar Creek.
- g. 1 \_\_\_\_\_ Abraham Lincoln became President.
- h. \_\_\_\_\_ The state of South Carolina was the first state to leave the Union.



# THE SUN

## Vocabulary

Write *chromosphere*, *core*, *corona*, and *photosphere* on the board. Tell students that these are four parts of the sun. Then direct students to the diagram on pages 14–15 and ask the following questions.

- Which part is the center of the sun? (*core*)
- Which part can we see from Earth? (*photosphere*)
- Which part is the inner layer of the atmosphere? (*chromosphere*)
- Which part is the outer layer of the atmosphere? (*corona*)

## Before Reading

Ask students to explain what our sun is. Reinforce that it's a star. Then ask how stars and planets differ.

## Fast Facts

- Our sun is the largest object in the solar system. Its diameter is nearly a million miles. The sun is larger than all the planets in the solar system combined. A hundred Earth-size planets could be lined up across the sun's disk.
- Our sun is 93 million miles from Earth. It takes a sunbeam nearly eight minutes to travel that distance. A car traveling 55 miles an hour would need 193 years to make the same trip.
- Sunspots look dark because they are cooler than the rest of the solar surface. If a sunspot could be taken into space, it would glow much more brilliantly than the full moon.
- Sunspots always form in pairs. One has a negative charge; the other has a positive charge.
- The energy released in a single solar flare is equivalent to billions of megatons of TNT.

## Comprehension Check

- Is our sun a star or a planet? (*Star*)
- What is the sun made of? (*Hot, glowing gases*)
- Our sun is yellow. What does that tell us about it? (*The sun is several billion years old. Its surface temperature is about 10,000°F.*)
- What is the distance between Earth and the sun? (*93 million miles*)
- How long does it take a sunbeam to travel from our sun to Earth? (*About eight minutes*)
- What are those blotches on the surface? (*Sunspots*)
- Why are sunspots darker than the rest of the sun? (*They are several thousand degrees cooler.*)
- What are the other two star colors? (*Red and blue*)
- What color are the hottest stars? (*Blue*)

## Critical Thinking Questions

- **Synthesis:** Why is the sun “a huge lab” for scientists? (*It's an average star, so what we learn about it applies to countless others as well.*)
- **Inference:** What would Earth be like without the sun? (*It would be too cold and dark for any life.*)

## Extension Activities

- **Math:** Remind students that Earth and our sun are 93 million miles apart. Then ask them to imagine a (heat-resistant!) spaceship going 1,000 miles an hour toward the sun. Ask the following questions. (Note: Answers are rounded.)
  1. How many **hours** would the trip take? (*93,000*)
  2. How many **days** would the trip take? (*3,875*)
  3. How many **weeks** would the trip take? (*554*)
  4. How many **years** would the trip take? (*11*)

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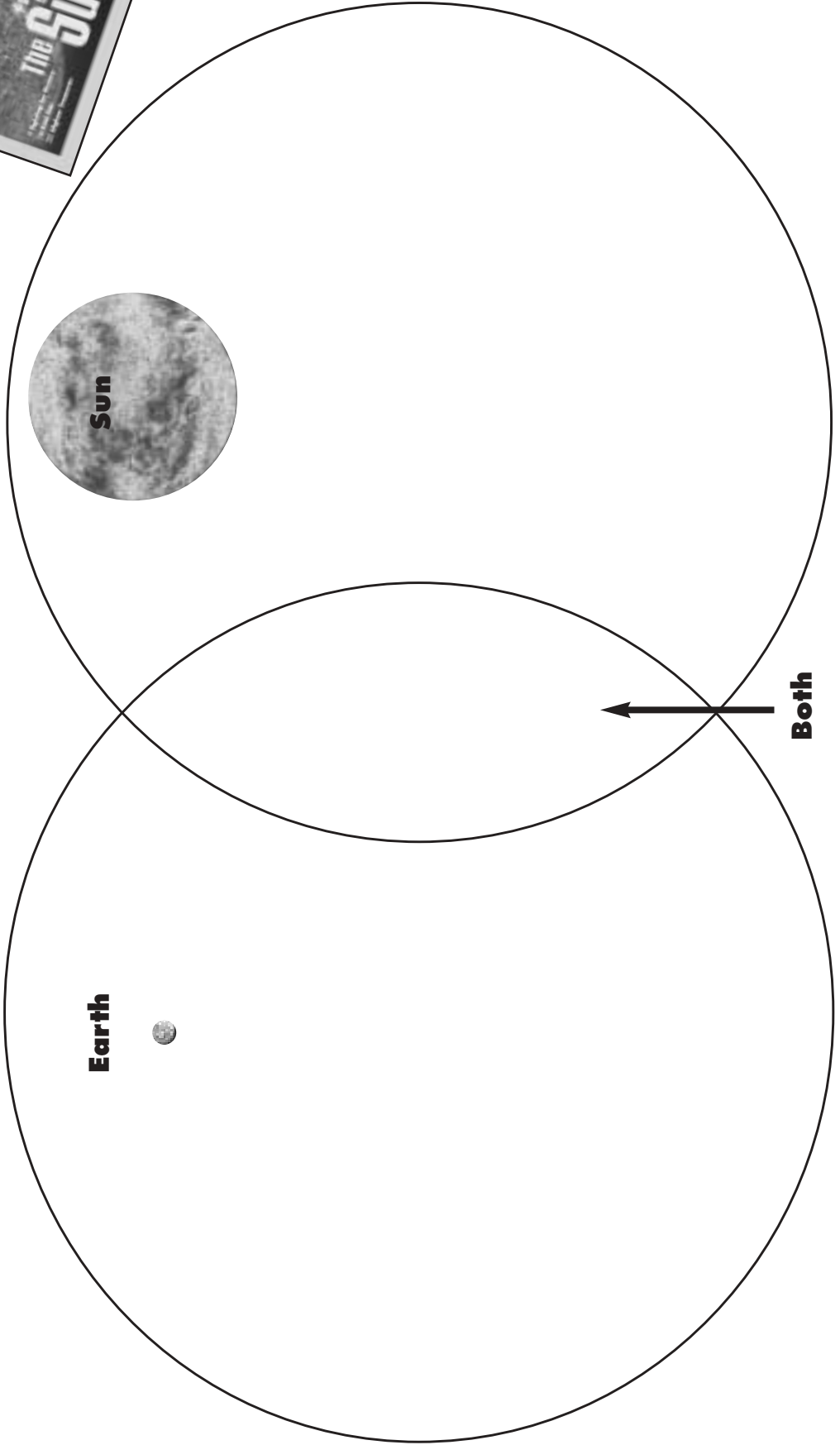
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# Cool Planet, Hot Star

Use the Venn diagram to compare our sun to Earth.  
How are they alike? How are they different?





# Croc Doc



## Vocabulary

Form small groups. Assign each group to create an illustrated dictionary that includes the terms below.

- alligator
- reptile
- canal
- species
- crocodile
- swamp
- panther
- wetland

## Before Reading

Invite students to think about a habitat that they have visited. Ask how people affect that habitat.

## Fast Facts

- The Everglades is the only place in the world where alligators and crocodiles live side by side.
- Half the original Everglades ecosystem has been lost to development, and the remainder has been drastically changed by canals and levees.
- Seventy percent less water flows through the Everglades now than did 60 years ago.
- The Comprehensive Everglades Restoration Plan, a mix of federal and state projects, has been described as “the world’s largest ecosystem restoration effort.”
- The United Nations has designated the Everglades a World Heritage Site and an International Biosphere Reserve.

## Comprehension Check

Ask students the following questions.

- What has “Croc Doc” Frank Mazzotti noticed about crocodiles in the Everglades? (*They are not growing as fast or living as long as they should.*)
- What is happening to the crocodiles’ habitat? (*It’s shrinking as people develop the Everglades.*)
- List three ways that people have changed the Everglades. (*Building canals. Building farms and towns. Using water.*)
- What plan have lawmakers approved for the Everglades? (*Many canals will be removed in order to restore the flow of water.*)
- How will people know if the plan works? (*Crocodiles will grow larger and live longer.*)

## Critical Thinking Questions

- **Main Idea:** Which statement best summarizes the point of the article? (*Answer: b*)
  - a. The “Croc Doc” has a tough job.
  - b. Changes that people made to the Everglades are affecting plants and animals.
  - c. There are now only about 80 Florida Panthers in the Everglades.

## Extension Activities

- **Research and Writing:** Have students plan an imaginary trip to Everglades National Park.
- **Science:** Encourage students to learn about wetlands near your school. Are they endangered? If so, how can students help conserve them?

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### Book Link

*Liquid Land: A Journey Through the Florida Everglades* by Ted Levin (University of Georgia Press, 2003)



### Web Link

Paddle into Everglades links at [nationalgeographic.com/ngexplorer/teachers](http://nationalgeographic.com/ngexplorer/teachers).

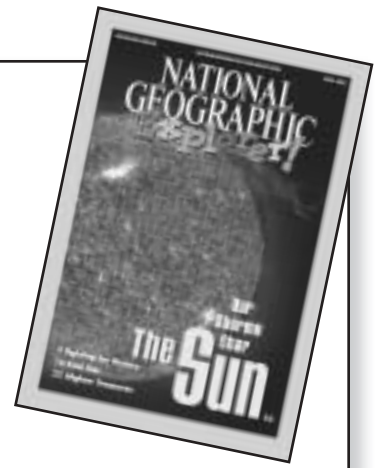


Name: \_\_\_\_\_

## VOCABULARY

Use the words below to fill the blanks in these sentences.

astronomer	corona	rebel	reptile
canal	photosphere	reenactor	species



- We can see the sun's \_\_\_\_\_ from Earth.
- There are nearly 400 bird \_\_\_\_\_ in the Everglades.
- Our classroom pet is a lizard. That means it's a \_\_\_\_\_.
- The British thought of George Washington as a \_\_\_\_\_.
- Margaret is a \_\_\_\_\_ at Revolutionary War battlefields.
- Rex learned to canoe at a \_\_\_\_\_ near Washington, D.C.
- An \_\_\_\_\_ visited our school to talk about Jupiter.
- The \_\_\_\_\_ of the sun is hotter than the surface.

## COMPREHENSION CHECK

Fill in the oval before the correct answer to each question below.

- |                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                                                                                    |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>9. Which of these is <i>not</i> a part of the human eye?</p> <p><input type="radio"/> a. cerebrum</p> <p><input type="radio"/> b. iris</p> <p><input type="radio"/> c. retina</p>                                                                                       | <p>12. Which part of the sun is farthest from the center?</p> <p><input type="radio"/> a. chromosphere</p> <p><input type="radio"/> b. corona</p> <p><input type="radio"/> c. photosphere</p>                                                                                                                                                      |
| <p>10. When was the Battle of Cedar Creek?</p> <p><input type="radio"/> a. October 1863</p> <p><input type="radio"/> b. October 1864</p> <p><input type="radio"/> c. October 1865</p>                                                                                      | <p>13. Where would you find the Everglades?</p> <p><input type="radio"/> a. Alabama</p> <p><input type="radio"/> b. California</p> <p><input type="radio"/> c. Florida</p>                                                                                                                                                                         |
| <p>11. How can a flare from the sun affect Earth?</p> <p><input type="radio"/> a. It can't. The sun is too far away.</p> <p><input type="radio"/> b. It can give people a really bad sunburn.</p> <p><input type="radio"/> c. It could damage phone and power systems.</p> | <p>14. Why did museum workers in Afghanistan hide precious objects?</p> <p><input type="radio"/> a. The objects needed repairs, so they weren't on display.</p> <p><input type="radio"/> b. The workers hoped to keep them from being destroyed.</p> <p><input type="radio"/> c. They planned to sell the items to raise money for the museum.</p> |