

NATIONAL GEOGRAPHIC Explorer!

"FOR THE INCREASE AND DIFFUSION OF GEOGRAPHIC KNOWLEDGE."

Dear Teacher:

This is your final EXPLORER magazine for 2004-2005. We've enjoyed exploring with you and your students, and we're confident that the magazine enriched your classroom this year.

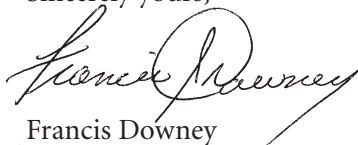
Our first May article, "Shark Tales," gives students a real bite of life science. Sleek and superbly adapted, sharks ruled the seas long before the first dinosaurs. And they swim into our deepest fears. Yet humans are actually far more dangerous to sharks (and to one another) than sharks are to us.

Next, students can sink their teeth into "A Slice of History." Over the centuries, diverse cultures have seasoned the evolution of pizza.

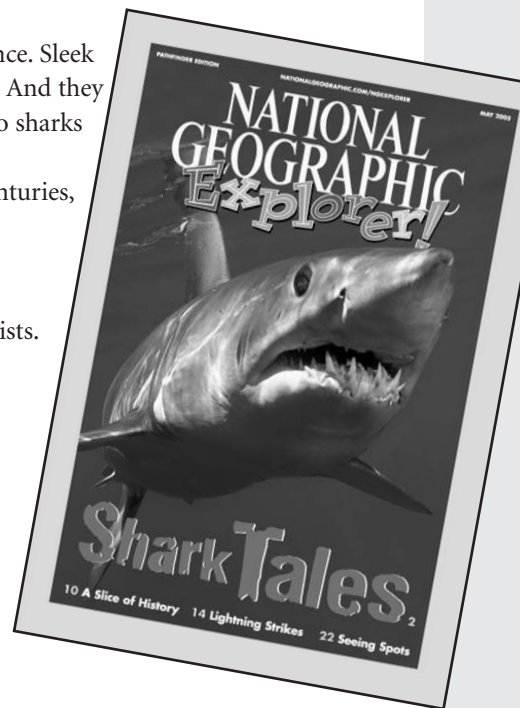
For an electrifying end to the year, we look at human efforts to protect ourselves when "Lightning Strikes." That challenge famously attracted the attention of Benjamin Franklin, and it now engages rocket and laser scientists.

We look forward to seeing you again next fall. Till then, everyone at EXPLORER wishes you a happy and well-earned summer vacation.

Sincerely yours,



Francis Downey
 Executive Editor
 NATIONAL GEOGRAPHIC EXPLORER



New

For more exciting National Geographic supplemental materials for your classroom, explore the new National Geographic School Publishing website at ngschoolpub.org

Answer Key

TEACHER'S GUIDE

Fishing for Facts Page 3

1. F, 2. O, 3. O, 4. F, 5. O, 6. F, 7. O, 8. O, 9. F, 10. O

Tasty Time Line Page 5 (*Key points*)

about 1523. tomato reaches Europe, **1830.** first pizza shop in Naples, **1889.** Margherita pizza, **1905.** first U.S. pizza shop, **1940s.** World War II spreads pizza

Review Page 8

1. cartilage, 2. molecule, 3. chum, 4. ingredient,
 5. basil, 6. meteorologist, 7. laser, 8. prey,
 9. c, 10. c, 11. a, 12. b, 13. a, 14. b

Issue at a Glance

Teaching Unit	Reading	Writing	Science	Soc. Studies	Math	Curriculum Connections	
						Literacy Skills	Topics
Shark Tales pp. 2-9	■	■	■		■	<ul style="list-style-type: none"> ● Text feature: size comparisons ● Distinguishing facts from opinions ● Predators and prey ● Human interactions with wildlife 	
A Slice of History pp. 10-13	■	■		■	■	<ul style="list-style-type: none"> ● Sequential/chronological order ● Text feature: illustrations ● Spread of cultural traits ● Effects of European exploration 	
Lightning Strikes pp. 14-21	■	■	■			<ul style="list-style-type: none"> ● Specialized vocabulary ● Text feature: scientific diagram ● Severe weather: causes and effects ● Natural hazards and human safety 	

Shark Tales

Vocabulary

Remind students that an **adjective** is a word that describes a person, animal, place, or thing. Direct students to skim the article and identify adjectives used to describe sharks. These include *big, dangerous, deadly, endangered, fearsome, magnificent, nasty, overhunted, threatened, toothy,* and *ugly*. Ask students if they've noticed a pattern to these words. (*Likely answer: Shark adjectives are often negative.*)

Before Reading

- Ask students to vote on whether sharks or humans are more dangerous. Record the results on the board to revisit later.

Fast Facts

- Sharks go limp when turned upside down.
- There are roughly 400 shark species. The smallest sharks, such as the dwarf lanternfish and spined pygmy, are less than a foot long.
- Many sharks have several rows of teeth. When a tooth falls out, a replacement moves forward.
- Over a lifetime, a shark can grow, lose, and replace thousands of teeth.
- Contrary to popular belief, many sharks have keen eyesight.
- Sharks are among the oldest species on Earth. They appeared a hundred million years before the earliest dinosaurs.
- Snakes, horses, and even dogs kill more people each year than sharks do.

Comprehension Check

Write *11, 60, 80, 100, 400,* and *5,000* on the board. Then read aloud each item below and ask which number matches it.

- Aaron Perez's age when he was bitten (*11*)
- Dollars needed to buy a bowl of shark-fin soup in China (*100*)
- Endangered or threatened shark species (*80*)
- Millions of years sharks have lived on Earth (*400*)
- Sharks killed each year, in millions (*60*)
- Teeth in a great white shark's mouth (*5,000*)

Critical Thinking Questions

- **Analysis:** Cars are far more dangerous than sharks. Yet people usually love cars while fearing or even hating sharks. Why do you think that is?
- **Inference:** How might the world's oceans change if no sharks lived in them?
- **Reevaluating Ideas:** We voted earlier on whether sharks or people are more dangerous. Has reading the article changed anyone's mind? Why?

Extension Activities

- **Science:** Assign students or groups to research and report on different shark species. Reports might cover size, location, food, conservation status, and any threats the species faces.
- **Math:** Direct students to create graphs using the following statistics for shark attacks (fatal and nonfatal) in 2004:

Australia	12
Brazil	5
New Zealand	1
South Africa	5
United States	21
Elsewhere	17
- **Language Arts:** Inspire students to produce posters or brochures that aim to refocus human perceptions of sharks.



Reading Links

Uncover a Shark by David George Gordon (Silver Dolphin, 2004)

"Great White Sharks" by *Jaws* author Peter Benchley in NATIONAL GEOGRAPHIC (April 2000)



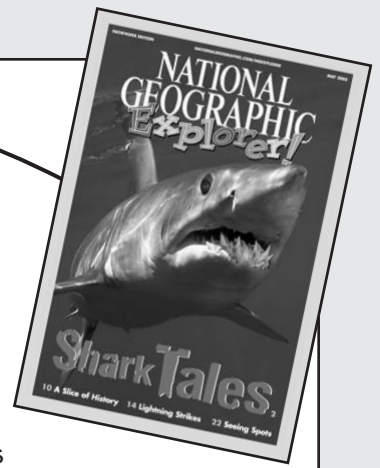
Web Link

Swim into our Shark Surfari quiz game, a Creature Feature on great whites, and links at nationalgeographic.com/ngexplorer/teachers.

Name: _____



Fishing for **Facts**

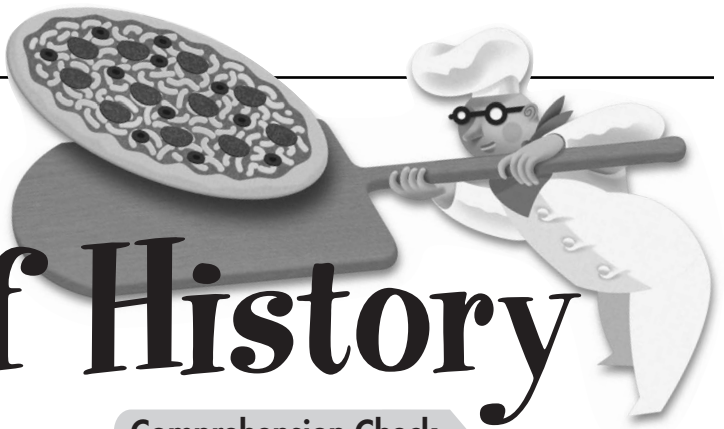


People often confuse facts and opinions. A **fact** is a true statement that one can prove. An **opinion**, in contrast, is what someone thinks or feels. Read each sentence below. Decide if it is a fact (F) or opinion (O).

1. _____ Whale sharks are the largest fish in the sea.
2. _____ Sharks are the worst animals on Earth.
3. _____ People should kill as many sharks as possible.
4. _____ Almost 80 shark species are endangered.
5. _____ Hammerhead sharks are ugly.
6. _____ Predators are animals that eat other animals.
7. _____ Predators should learn to eat plants.
8. _____ The world would be better off without sharks.
9. _____ The great white shark has about 5,000 teeth.
10. _____ The great white shark has too many teeth.



A Slice of History



Vocabulary

Write *prehistoric*, *ancient*, and *modern* on the board. Explain that these terms are important for studying history. Then read aloud each sentence below and ask which of the three adjectives best fits it.

- The first U.S. pizzeria opened in 1905. (*modern*)
- People gathered wild grains for food. (*prehistoric*)
- About 2,000 years ago, a Roman cookbook included a pizza recipe. (*ancient*)
- Many American soldiers learned about pizza during World War II. (*modern*)
- People learned how to bake bread. (*prehistoric*)
- Persian soldiers made pizzas on their shields while marching to war. (*ancient*)

Before Reading

Invite students to identify place-names used in the article. Then challenge the class to find these locations on a classroom map or globe.

Fast Facts

- Each day, Americans eat enough pizza to cover approximately a hundred acres.
- Ninety-three percent of Americans eat at least one pizza a month.
- Half of all pizza purchases in the U.S. take place on Fridays and Saturdays.
- Super Bowl Sunday tops all other days of the year in terms of pizza purchases.
- *Guinness World Records* reports that a group of South Africans created the world's largest pizza in 1990. The pie measured 122 feet 8 inches in diameter and covered a supermarket parking lot.

Comprehension Check

Read each sentence aloud. Ask if it is true or false.

- During the Stone Age, people gathered wild grains to make dough and baked it on hot stones. (*True*)
- Pizza Margherita was named to honor the queen of Italy in 1889. (*True*)
- Lombardi's, the first pizzeria in the U.S., opened in 1805. (*False: It opened in 1905.*)
- The ancient Greeks were the first to use tomato sauce on pizza. (*False: Tomatoes, a New World crop, were unknown in Europe until the 1500s.*)

Critical Thinking Questions

- **Main Idea:** What statement best summarizes the point of this article? (*Answer: c*)
 - a. The first pizza was made in the Stone Age.
 - b. People around the world put many different toppings on their pizzas.
 - c. Pizza has changed a lot during its long history.
- **Synthesis:** The article describes how soldiers returning from World War II brought pizza from Italy to the United States. What other foods have come to America from other countries? Why do you think the United States has so many different kinds of food?

Extension Activities

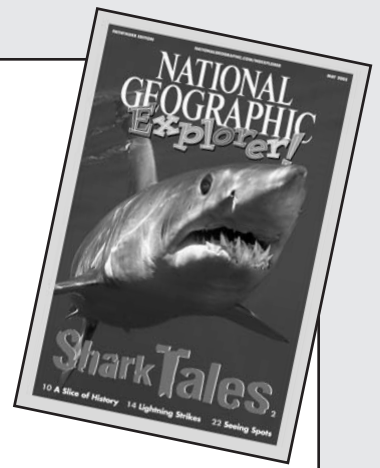
- **Social Studies:** Divide the class into six groups. Assign each a populated continent (Africa, Asia, Australia, Europe, No. America, or So. America). Then have each group research, write, and illustrate a book about that continent's food.
- **Language Arts:** Direct students to complete the "Tasty Time Line" work sheet on the next page.

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Name: _____

Tasty Time Line

Study "A Slice of History" in the May 2005 issue of NATIONAL GEOGRAPHIC EXPLORER. Then write a sentence or two for each date on the time line below.



about
1523

1830

1889

1905

1940s

Lightning Strikes

Vocabulary

Write *electrical charge*, *femtosecond*, *laser*, *meteorologist*, and *molecule* on the board. Read aloud each definition below and ask which term it defines.

- device that makes a concentrated beam of light (*laser*)
- buildup of electricity (*electrical charge*)
- tiny bit of a substance (*molecule*)
- quadrillionth of a second (*femtosecond*)
- scientist who studies weather (*meteorologist*)

Before Reading

- Ask: What kinds of problems might lightning cause? How can you protect yourself from lightning?

Fast Facts

- A typical lightning flash lasts only about a quarter of a second.
- The temperature of an ordinary lightning bolt is hotter than the surface of the sun.
- Lightning can occur during a volcanic eruption or a forest fire.
- Spider lightning, which moves horizontally along the base of a cloud, can travel up to 90 miles.
- During a lightning storm, your hair could stand up. That's a warning of potential danger.
- Americans are twice as likely to die from a lightning strike than from a hurricane, a tornado, or a flood.

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Comprehension Check

Read aloud each sentence below. Ask which lightning-safety device the problem affects.

- It isn't practical to put one of these on every building. (*Lightning rod*)
- So far, this method has only been tested in a scientist's lab. (*Laser*)
- You'd have to use a new one of these every time. That could get very expensive. (*Rocket*)

Critical Thinking Questions

- **Analysis:** Lightning rods, rockets, and lasers can seem quite different. Yet each handles lightning in the same way. How? (*Each directs the lightning bolt to the ground.*) Why is that important? (*That keeps the bolt from hitting anything or anyone.*)

Extension Activities

- **Health/Safety:** Form small groups. Direct each group to research ways that kids can protect themselves from lightning. Each group should use what it learns to create a safety poster.
- **Science:** Invite students to brainstorm other ideas for guiding lightning safely to the ground.
- **Language Arts:** Have students write plays about how neighbors react when an 18th-century person installs a lightning rod.



Book Links

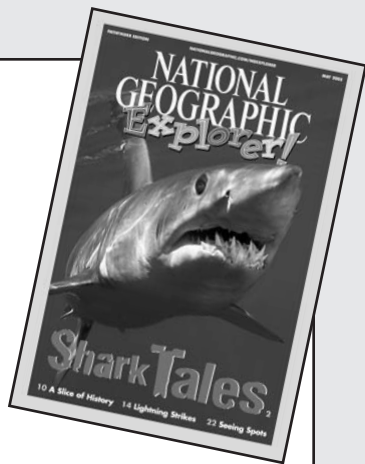
How Ben Franklin Stole the Lightning by Rosalyn Schanzer (HarperCollins, 2003)

The Weather Channel Presents: Lightning and Thunderstorms by Mike Graf (Simon Spotlight, 1998)



Web Link

Get a jolt out of the lightning resources at nationalgeographic.com/ngexplorer/teachers.



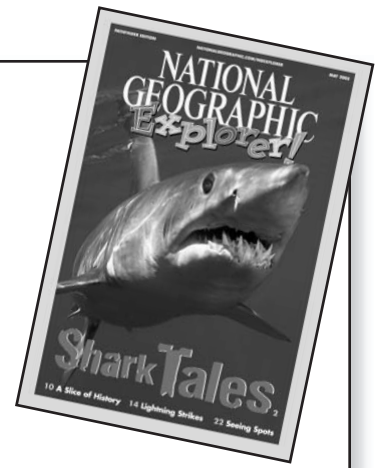
Name: _____

Striking Results

Study "Lightning Strikes" in the May 2005 issue of NATIONAL GEOGRAPHIC EXPLORER. Then complete the cause/effect chart below. To do so, use what you learned—plus your common sense!

Cause	Possible Effects
Lightning strikes a dry forest.	
Lightning hits an unprotected building.	
Lightning strikes a building with a lightning rod.	
A rocket carries a wire into a storm cloud.	
Scientists fire a laser into a storm cloud.	
Lightning hits a person.	
Kids climb a tree during a storm.	

Name: _____



VOCABULARY

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

basil chum laser molecule
 cartilage ingredient meteorologist prey

1. The soccer player tore the _____ in her knee.
2. A water _____ contains hydrogen and oxygen.
3. Don't swim near anyone throwing _____ into the water!
4. Carrots are Peter's favorite salad _____.
5. Fran added _____ to the spaghetti sauce.
6. Maya wants to be a _____ on TV.
7. The worker used a _____ to cut a sheet of metal.
8. Hammerhead sharks use their strange heads to trap _____.

COMPREHENSION CHECK

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

- | | |
|---|---|
| <p>9. Roughly how many sharks do humans kill in an average year?</p> <p><input type="radio"/> a. 60</p> <p><input type="radio"/> b. 60,000</p> <p><input type="radio"/> c. 60 million</p> | <p>12. What was the first pizza shop in the United States?</p> <p><input type="radio"/> a. Anita's</p> <p><input type="radio"/> b. Lombardi's</p> <p><input type="radio"/> c. Mamma Leone's</p> |
| <p>10. Which shark is the largest of all fish?</p> <p><input type="radio"/> a. great white shark</p> <p><input type="radio"/> b. tiger shark</p> <p><input type="radio"/> c. whale shark</p> | <p>13. Who invented the lightning rod?</p> <p><input type="radio"/> a. Benjamin Franklin</p> <p><input type="radio"/> b. George Washington Carver</p> <p><input type="radio"/> c. Thomas Edison</p> |
| <p>11. How did European explorers affect the history of pizza?</p> <p><input type="radio"/> a. They brought tomatoes back from the Americas.</p> <p><input type="radio"/> b. They discovered basil plants in Antarctica.</p> <p><input type="radio"/> c. They learned how to make cheese from Native Americans.</p> | <p>14. How might rockets and lasers help protect us from lightning someday?</p> <p><input type="radio"/> a. The rocket or laser would act like a shield to block lightning.</p> <p><input type="radio"/> b. The rocket or laser would lead lightning safely to the ground.</p> <p><input type="radio"/> c. The rocket or laser would make storm clouds explode.</p> |