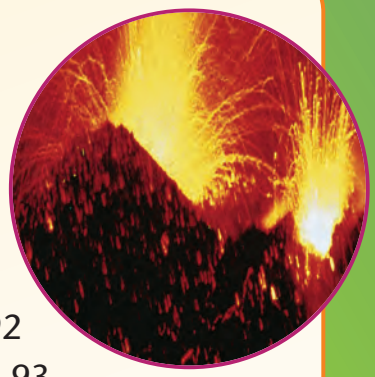
Table of Contents

Table of Contents (continued)



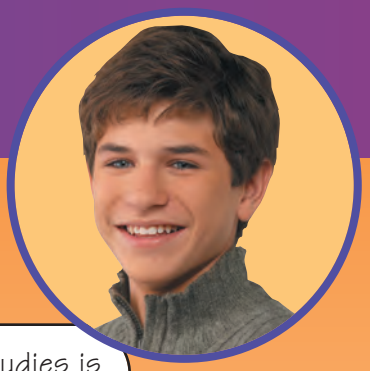
Unit 3: Shake, Rattle, and Roll

Unit 4: Space Careers

Unit 5: Riding the Rails

Unit 6: Tights, Paints, and Chisels

Hi! We're your READ FOR REAL Reading Team Partners!



Have you noticed that the reading you do in science and social studies is different from reading stories and novels? Reading nonfiction is different. When you read nonfiction, you learn new information. We'll introduce you to some strategies that will help you read and understand nonfiction.

In each unit, you'll learn three strategies—one to use **Before** you read, one to use **During** your reading, and one to use **After** you read. You'll work with these strategies in all three reading selections in each unit.

In the first selection, you'll **Learn** the unit strategies. When you see a red button like this, read "My Thinking" notes to see how one of us modeled the strategy.

In the second selection in each unit, you'll **Practice** the strategies by jotting down your own notes about how you used the same unit strategies. The red button will tell you where to stop and think about the strategies.

When you read the last selection in each unit, you'll **Apply** the strategies. You'll decide when to stop and take notes as you read.

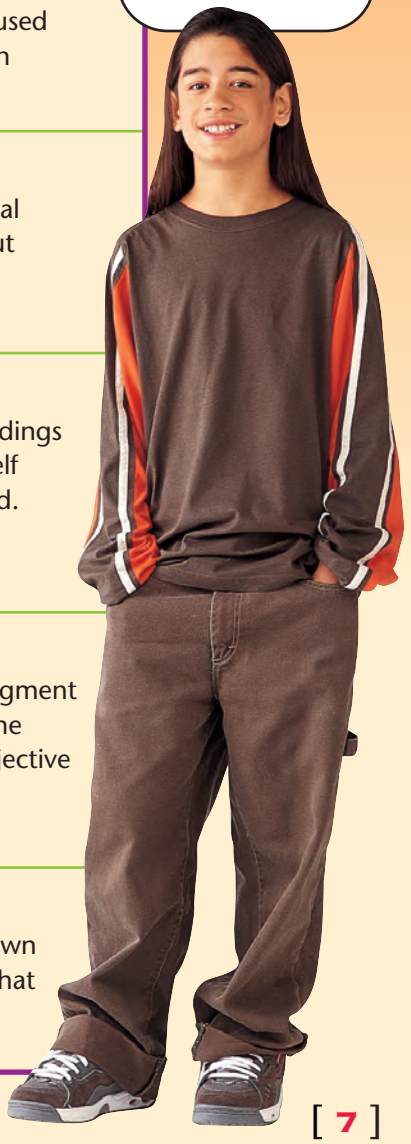
Strategies

Here they are—the **Before, During,** and **After** Reading Strategies.

Use these strategies with all your nonfiction reading—social studies and science textbooks, magazine and newspaper articles, Web sites, and more.

	BEFORE READING	DURING READING	AFTER READING
UNIT 1	**Preview the Selection** by looking at the title and headings to predict what the selection will be about.	**Make Connections** by relating information that I already know about the subject to what I'm reading.	**Recall** by summarizing the selection in writing or out loud.
UNIT 2	**Activate Prior Knowledge** by looking at the title, headings, pictures, and graphics to decide what I know about this topic.	**Interact With Text** by identifying the main idea and supporting details.	**Evaluate** by searching the selection to determine how the author used evidence to reach conclusions.
UNIT 3	**Set a Purpose** by using the title and headings to write questions that I can answer while I am reading.	**Clarify Understanding** by using photographs, charts, and other graphics to help me understand what I'm reading.	**Respond** by drawing logical conclusions about the topic.
UNIT 4	**Preview the Selection** by looking at the photographs, illustrations, captions, and graphics to predict what the selection will be about.	**Make Connections** by comparing my experiences with what I'm reading.	**Recall** by using the headings to question myself about what I read.
UNIT 5	**Activate Prior Knowledge** by reading the introduction and/or summary to decide what I know about this topic.	**Interact With Text** by identifying how the text is organized.	**Evaluate** by forming a judgment about whether the selection was objective or biased.
UNIT 6	**Set a Purpose** by skimming the selection to decide what I want to know about this subject.	**Clarify Understanding** by deciding whether the information I'm reading is fact or opinion.	**Respond** by forming my own opinion about what I've read.

Now that you've met the team, it's time to get started.



Unit 1 Strategies

BEFORE READING

Preview the Selection

by looking at the title and headings to predict what the selection will be about.

DURING READING

Make Connections

by relating information that I already know about the subject to what I'm reading.

AFTER READING

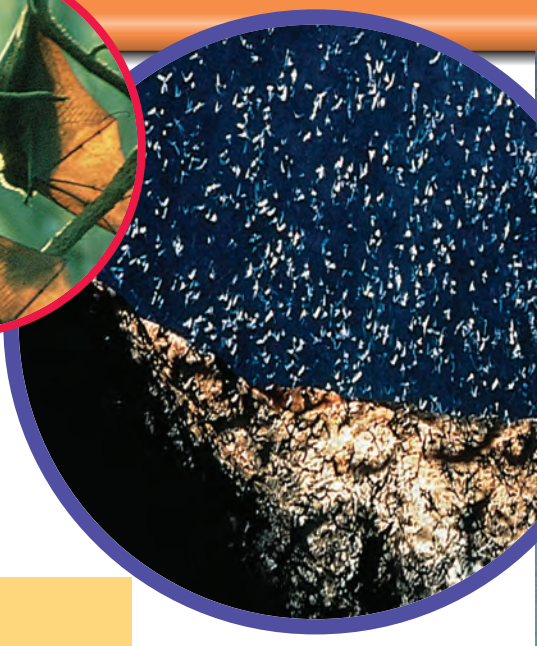
Recall

by summarizing the selection in writing or out loud.

LEARN
the **strategies**
in the selection
All About Bats
page 11

PRACTICE
the **strategies**
in the selection
The Scoop on Scorpions
page 23

APPLY
the **strategies**
in the selection
Deep-Sea Dangler
page 33



Think About the Strategies

BEFORE READING

Preview the Selection

by looking at the title and headings to predict what the selection will be about.

My Thinking

The strategy says to preview the selection by looking at the title and headings to predict what the selection will be about. The title is "All About Bats." I looked at the headings, and they all refer to something about bats. I predict that this selection will tell about different kinds of bats and how bats are helpful. Now I'm ready to read and see if I'm right.

DURING READING

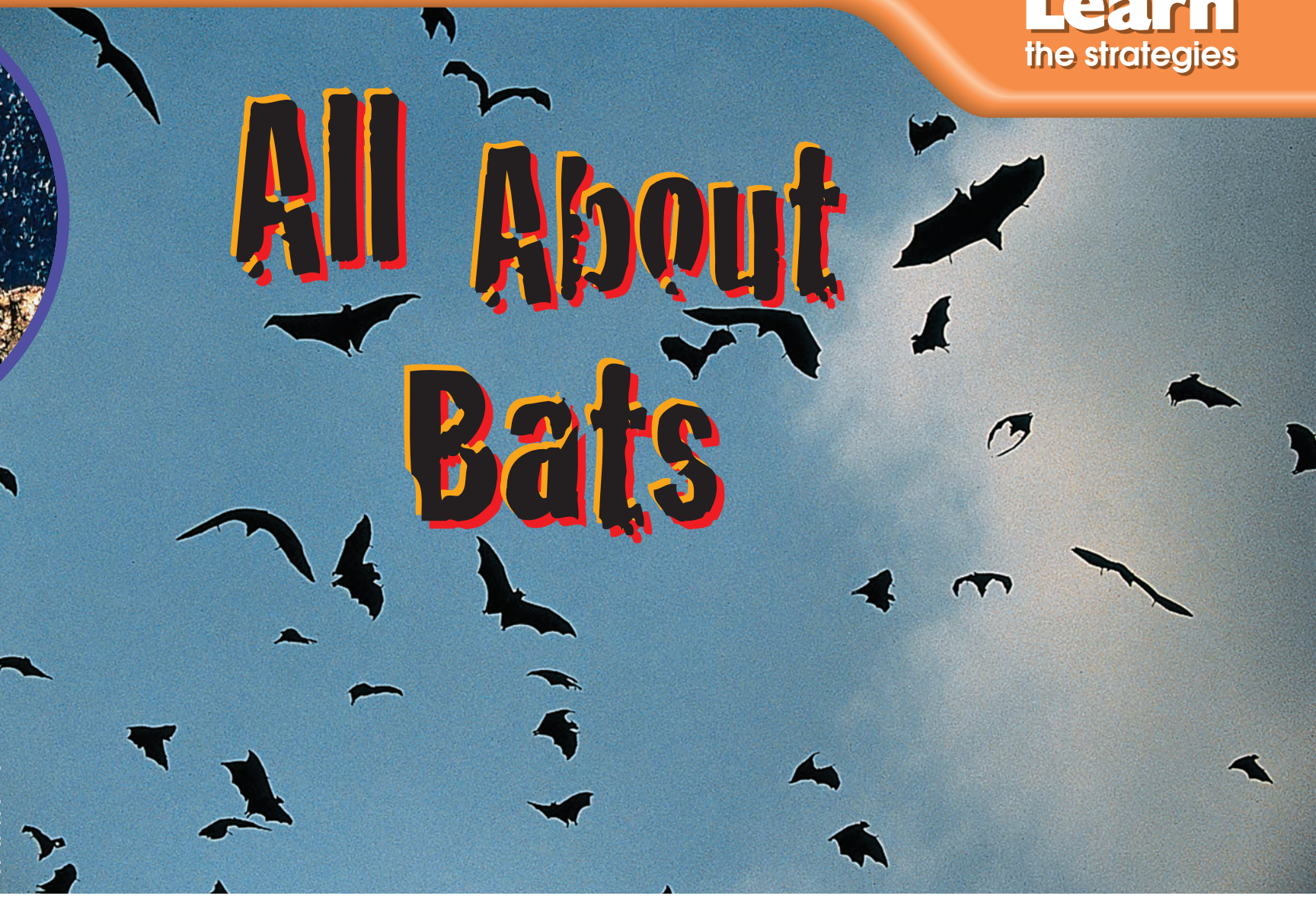
Make Connections

by relating information that I already know about the subject to what I'm reading.

My Thinking

The strategy says to make connections by relating information that I already know about the subject to what I am reading. I will stop and think about this strategy every time I come to a red button like this .

All About Bats



Flying foxes (megabats) at dusk

What flies like a bird, can see with its ears, has fur like a mouse, and works nights? It's a bat! Bats fly through the night using sound to find their way. During the day, they hide in trees and caves with their wings folded neatly.

You may hear people say things about bats that may or may not be true. You may hear that bats are blind. And they suck blood from animals, including humans. You may hear that they will get tangled in your hair. What IS true about bats?

What Is a Bat?

Bats are mammals. Mammals are animals that have hair. They give birth to live babies. They feed milk to their young. Bats meet all of those requirements, so they are mammals. So are dogs, gerbils, antelopes, and humans.

Bats are the only mammals that can fly. Some other mammals, such as flying squirrels, can glide. But only bats can truly fly. They use wings just as birds do. Birds' wings are covered with feathers. Birds have strong chest muscles to move their wings with enough force for flight. But bat wings are made of two thin layers of skin. The skin stretches between their finger bones at the top. It attaches to their ankles at the bottom.

Bats feed at night. Have you ever tried to walk through your house in the dark? If so, you know that seeing is not as useful in the dark as it is in the daytime. Bats are **nocturnal** animals. Nocturnal animals are active at night instead of during the day.

Strategy

Make Connections by relating information that I already know about the subject to what I'm reading.

My Thinking

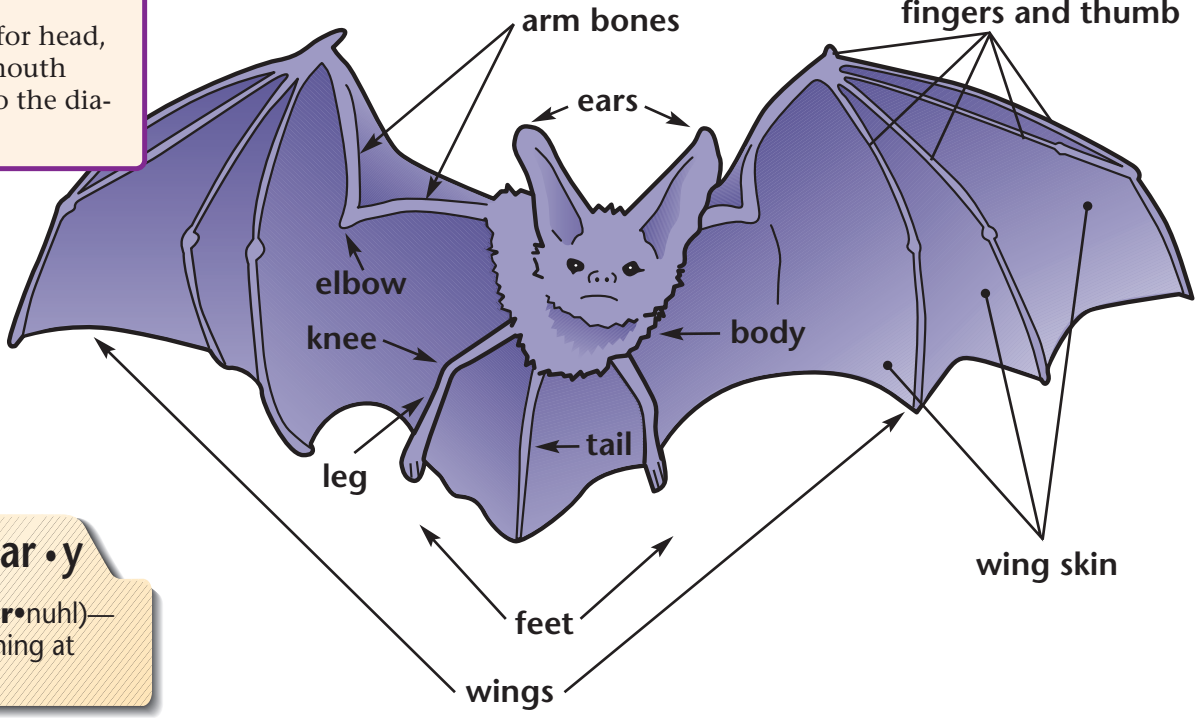
I knew that bats have wings and can fly, but I didn't know how the wings are made.

Using Text Features

Diagram The diagram shows the anatomy of a bat, with labels for the body parts. What other labels could be added to the diagram?

Answer: Labels for head, eyes, nose, and mouth could be added to the diagram.

Anatomy of a Bat



Vo • cab • u • lar • y

nocturnal (nok•**tur**•nuhl)—related to or happening at night

Free-tailed bats (microbats) leaving a cave in Carlsbad, New Mexico

Megabats and Microbats

Bats are found all over the world. There are many different types. They are usually placed in one of two groups: the **megabats** or the **microbats**.

The prefix *mega-* means "large." But megabats are large only when compared with microbats. They weigh from three to four pounds. They have wingspans of up to six feet. Megabats are sometimes called flying foxes. Their furry bodies, pointed noses, and large ears remind people of foxes. The straw-colored flying fox is an example of a megabat.

Megabats live mostly in Asia and in Central and South America. They feast on the plants that grow all year round in hot, humid climates near Earth's equator. They eat fruits, **nectar,** and pollen.

Micro- means "small." Microbats usually weigh less than two ounces. Two common microbats are the big brown bat and the silver-haired bat. The smallest microbat is called the bumblebee bat. It lives in Thailand. This bat is about the size of a jellybean. It weighs less than a penny.

Strategy

Make Connections by relating information that I already know about the subject to what I'm reading.

My Thinking

I've seen movies and TV shows that had bats in them. Those bats were usually scary. But the text says bats eat fruits, nectar, and pollen. That's not scary. I guess I need to keep reading.

Vo • cab • u • lar • y

megabats (**meg**•uh•bats)—bat species that eat mainly fruits and nectar, may grow to four pounds, may have wingspans of six feet, and live in Asia and in Central and South America

microbats (**my**•kroh•bats)—bat species that eat mostly insects and may weigh less than two ounces

nectar (**nek**•turh)—sweet liquid produced by plants

All of the bat species that live in North America are microbats. But microbat species are found all around the world. They live in caves, in attics, and under **eaves** of buildings. They may live under loose bark on tree trunks. These are places where it is safe during the daytime, when the bats sleep. Some bats are colored to look just like dead leaves. They hang from trees to rest.

Strategy

Make Connections by relating information that I already know about the subject to what I'm reading.

My Thinking

I never thought about bats around my house or hanging from tree branches and looking like leaves. I really do need to learn more about bats!

Bats at rest

Vo • cab • u • lar • y

eaves (eevz)—the overhanging parts of a roof

Most bats hang upside down while sleeping and resting. When they are ready to fly, they just relax their toes and off they go—into the night for a delicious meal of mosquitoes, moths, and other insects. Most microbats eat insects—lots and lots of insects. Other microbats eat fish, birds, and frogs.

Three species of microbats feed on blood. They're called vampire bats. But they don't suck blood like vampires in a horror movie do. Instead, they make a tiny break in an animal's skin. Their meal is the blood that flows out of the wound. None of the vampire bats feed on human blood. All three species live in Central or South America.

How Bats Use Sound

Most bats have good eyesight. To get around in the dark, though, they use their voices and ears in a special way. Bats make very high-pitched sounds through their mouths or noses. The sounds travel out from the bat until they hit something, like a yummy mosquito! The sounds bounce off the mosquito. They travel back to the bat's large ears. The bat is able to tell the mosquito's location from the strength and direction of the echo. The bat's sending and receiving of sound waves is called **echolocation**. Echolocation uses a bouncing sound wave (echo) to find (locate) something.

Bats are experts at echolocation. They can tell a mosquito from a bit of paper in the dark. They can keep from hitting each other or running into buildings, trees, and wires. So they can also keep from getting tangled in a person's hair. It is extremely rare for a bat to touch people. Their echolocation skills keep them (and your hair) safe.

How Bats Are Helpful

Bats are important to the health of the places where they live. They keep insect pests under control by eating tons of insects every night. The bats that feed on nectar and pollen help spread pollen from plant to plant. That's how plant eggs are fertilized to form seeds and fruits.

Strategy

Make Connections by relating information that I already know about the subject to what I'm reading.

My Thinking

I've heard about bats getting tangled up in people's hair, but I didn't know this isn't really true.

Vo•cab•u•lar•y

echolocation (ek•oh•loh•**kay**•shuhn)—a system of senses in which highpitched sounds are sent out and their echoes tell the animal where and how far away something is

Bats that feed on fruits spread seeds for those plants. They usually squeeze the juice out of a fruit, swallow the juice, and then spit out the seeds.

Bats rarely have contact with humans. They use echolocation to avoid humans. Any time a bat will let you get close enough to touch it, it is probably sick. That is why you should never touch a bat or other wild animal. It may carry rabies or another disease. In the United States, rabies from any source is extremely rare (fewer than 30 cases in the past 25 years). Only a small number of cases have ever been caused by bats.

These short-nosed fruit bats help with the pollination of fruit trees.

People are the main threat to bats. They fear bats and believe things about bats that aren't true. People may destroy bats and places where they live. People should learn how bats help them, not hurt them. Then maybe they'll try to protect bat caves and other places where bats live.

A Bat Invitation

Invite bats to live in your neighborhood. You can get instructions for how to build a bat house from the natural resources department of your state. You'll need a hammer, a saw, nails, some scrap lumber, and a ruler. Hang the bat house. Encourage bats to feast on the mosquitoes that want to feast on you! As you learn more about bats, you'll be glad to have them in the neighborhood.

A bat house in winter

Think About the Strategy

AFTER READING

Recall

by summarizing the selection in writing or out loud.

My Thinking

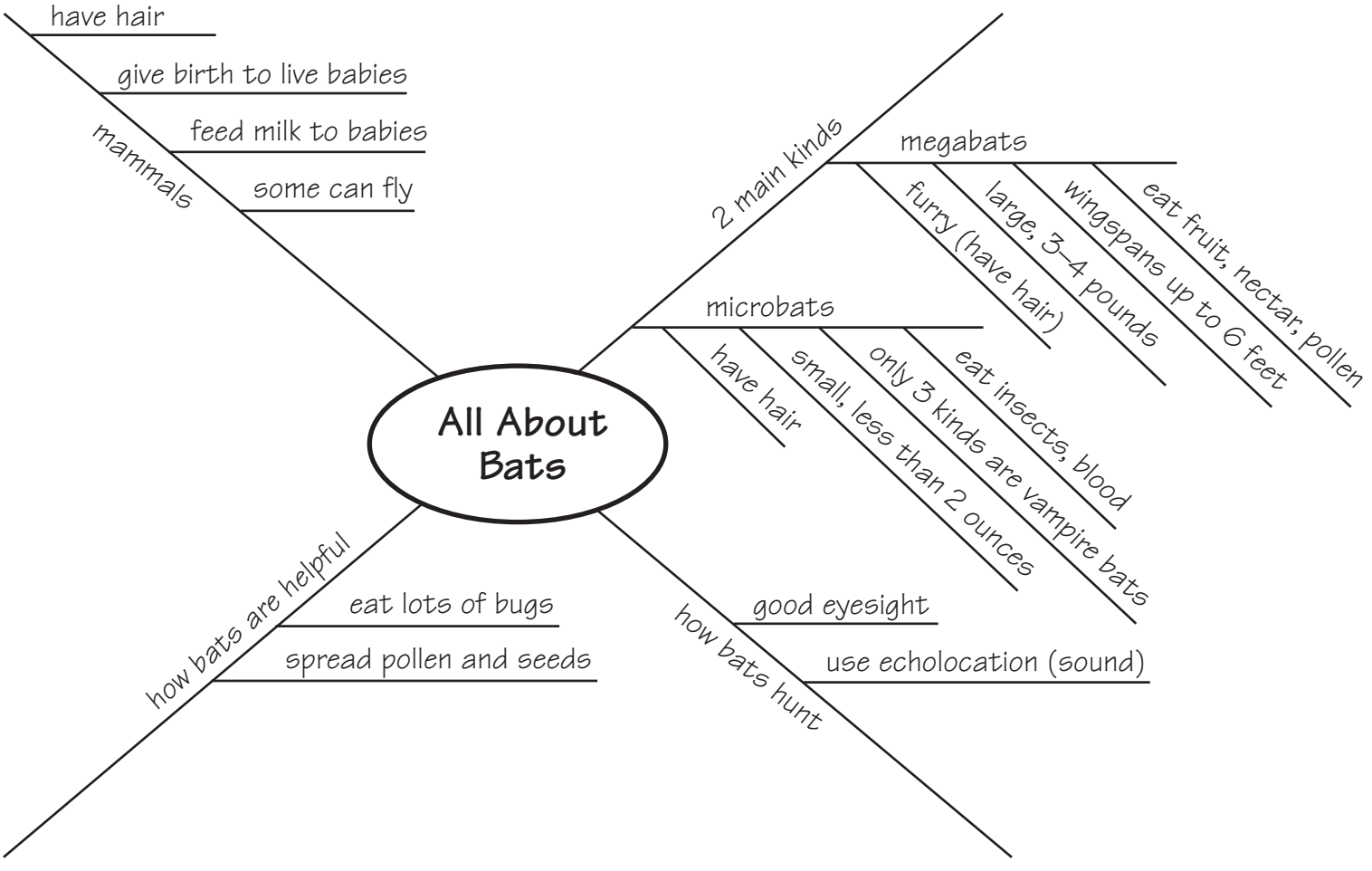
The strategy says I should recall by summarizing what I've read. I can do this by telling the main parts of what I read.

I learned that bats are mammals that fly and hunt at night. There are two main types of bats, mega-bats and microbats. Bats eat mostly fruit, bugs, pollen, and nectar. They hardly ever hurt people.

Bats are really good neighbors because they cut down on bug pests and they help plants make fruit and new plants.

Graphic organizers help us organize information. I think this article can be organized by using a spider map. Here is how I organized the information. I put my central idea in the middle. I used main ideas for the legs of the spider. I put details about the ideas on the lines coming out from the legs.

Spider Map



I used my graphic organizer to write a summary of the article. Can you find the information in my summary that came from my spider map?

A Summary of
All About Bats

Many people are afraid of bats. They have heard scary stories about them. Here is the truth: Bats are mammals, like us. They have live babies and feed milk to their babies, like us. However, bats can fly. They are the only mammals that can fly.

There are two kinds of bats: megabats and microbats. Megabats are bigger. They weigh three to four pounds. Megabats are furry and look like flying foxes. They live mostly in Asia and in Central and South America. Microbats weigh less than two ounces. They live all over the world. The bats in North America are all microbats.

Megabats eat fruit and the nectar and pollen from flowers. Microbats eat lots and lots of insects. Some microbats eat blood from animals! They are called vampire bats.

How do microbats hunt down all those insects? During the day, they can see well. During the night, they use echolocation. They send out high-pitched sounds. These sounds bounce off any insects nearby. The sounds travel back to the bats, like an echo. Then the bats know where to find the insects.

Bats are helpful. Many bats eat bugs, especially mosquitoes. Some bats spread pollen from plant to plant. Then the plants can grow seeds and fruits.

Bats are really very interesting little animals. When you know the truth about bats, they aren't scary at all!

Introduction
Here is my introduction. It tells what I will write about. The main idea is in the center of my spider map.

Body
I used information from each leg of the spider map for each paragraph in the body of my paper.

Conclusion
I summarized my paper by recalling the main ideas.

Developing Vocabulary

Prefixes

Sometimes a word part can give you a good clue about a word' s meaning. A **prefix** is a word part at the beginning of a root word. The prefix can change the meaning of the word. The prefix *mega-* at the beginning of a word means "large." Here is an example of a word with that prefix from "All About Bats":

megabats, which means "large bats"

Here are other *mega-* words with their meanings:

megahit—a big hit
megaphone—a device for making the voice sound larger
megavitamin—a large dose of vitamin

The prefix *micro-* at the beginning of a word means "small." Here is an example of a word with that prefix from "All About Bats":

microbats, which means "small bats"

Here are other *micro-* words and their meanings:

microscope—an instrument that makes small things look bigger
microcomputer—a very small computer
microbe—a germ too small to be seen without a microscope

On your own paper, write each word and then match it with its meaning. Use the word part after *micro-* or *mega-* to help. Use a dictionary if you need more help.

1. microclimate	**a.** a very large, tall building
2. microdot	**b.** a tool for measuring very small distances
3. micrometer	**c.** the climate of a small area
4. megastructure	**d.** one million dollars
5. megascopic	**e.** an image that has been reduce to a very small size
6. megabuck	**f.** large enough to be seen by the naked eye

Readers' Theater

Here is a conversation between two microbats. A narrator helps set the scene. With other students, practice reading the script aloud until you can read it with expression. When you are ready , present it to an audience.

Fluency TIP

Remember that exclamation marks show that a word or phrase should be read with more emphasis and enthusiasm than other words.

All About Bats

Narrator: Fred and Dana, two microbats, hang out together. They live in the eaves of a cozy old barn in some New Hampshire woods. One summer evening, at dusk, Dana is poking her friend with her wing. She wants him to wake up.

Dana: Come on, Fred. It's time to get up.

Fred: Go away, Dana! I'd rather sleep.

Dana: Sleep! What are you talking about? I'm hungr y, and the mosquitoes out there sound fat and tasty.

Fred: Mosquitoes! I don't think there are any left.

Dana: What are you talking about?

Fred: Don't you remember? You said that if I wanted to get as big as my hero, Manny the Megabat, I'd have to eat ever y mosquito in New Hampshire. Well, last night I flew around like crazy, and I think I ate them.

Dana: (Trying to hold back her laughter) Oh no, I was only kidding. Fred, you weigh about two ounces. Manny the Master Megabat weighs four pounds! You could never get that big.

Narrator: Poor Fred rubbed his belly, which was still as big as a walnut.

Fred: No?

Dana: No. That would be like a human who likes elephants tr ying to eat every hamburger in Ohio!

Fred: The human could never get as big as an elephant—even with all the milkshakes in Minnesota! Or ever y turnip in Texas!

Narrator: Fred was on a roll now, and Dana's sides were splitting from laughing so hard.

Dana: Or how about all the ice cream in the world?

Fred: Ugh! That makes me sick—thinking of someone eating ice cream.

Dana: Yeah, I know. Or milkshakes! That's so sickening!

Fred: You're right. Let's go get some yummy moths!

Dana: That sounds delicious. Maybe we can find a caterpillar for dessert!

Think About the Strategies

BEFORE READING

Preview the Selection

by looking at the title and headings to predict what the selection will be about.

Write notes on your own paper to tell how you used this strategy.

DURING READING

Make Connections

by relating information that I already know about the subject to what I'm reading.

When you come to a red button like this, write notes on your own paper to tell how you used this strategy.

The Scoop on Scorpions

People who live where scorpions are common know that these animals like to hide in warm, dark places.

Many people live in parts of the country where there are scorpions. Scorpions like to hide in dark places. It is dark inside your shoes and your slippers. It's also dark under your bed covers. What would you do if you found a scorpion hiding in your room?

You may know that scorpions can sting. But did you know they are in the same animal family as spiders and ticks? And did you know that scorpions really prefer to hide than to fight with you? Read on to learn more of the scoop on scorpions.

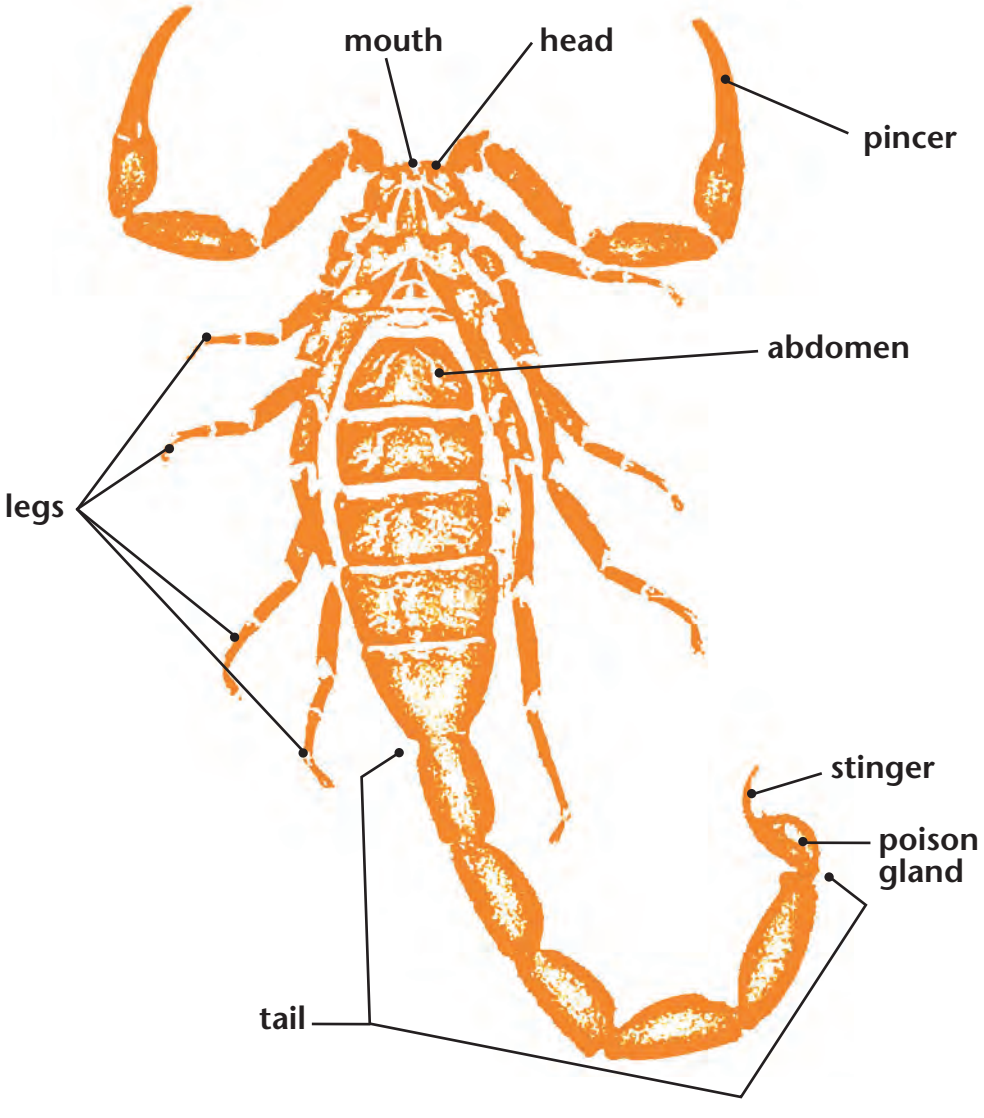
What Is a Scorpion?

Scorpions are small nocturnal animals. They have claws like lobsters. They sting with their tails. Their bodies, including their tails, are divided into eight parts called **segments**. Scorpions look like lobsters for a good reason. They are in the same family, or group, as lobsters. They are **arthropods**. Spiders are arthropods, too. Unlike insects, which have six legs, spiders have eight legs. Like scorpions, they may bite. The bodies of arthropods are covered with a hard outer shell for protection.

Using Text Features

Diagram The diagram shows the anatomy of a scorpion. Use the labels to tell what is the most dangerous part of this animal.

Anatomy of a Scorpion



Vo • cab • u • lar • y

segments (**seg**•muhnts)—parts or sections

arthropods (**ar**•thruh•podz)—cold-blooded animals with hard outer skeletons, no backbones, bodies with two or three main parts, and jointed legs

There are about 2,500 species of scorpions. They live in warm places, like deserts. But they are also found in many other **habitats**. Other scorpions live in places such as rain forests, caves, along the shore, and on mountains.

Most scorpions are small. They are less than 2 inches long. The smallest scorpions are less than ⅕ inch long. The longest scorpions grow to be 8 inches long. Scientists have found fossils of ancient scorpions that were longer than 16 inches. There have been scorpions before, during, and after the time when dinosaurs lived. They are good **survivors**.

Strategy

Make Connections by relating information that I already know about the subject to what I'm reading.

Write notes on your own paper to tell how you used this strategy.

The Scorpion Polka

Scorpions have an unusual mating dance. The male grabs the claws of the female. Next, they dance around in a sort of scorpion polka. At last, they find just the right spot for mating. Scorpions give birth to live babies. This is unusual among arthropods. Most arthropod babies hatch from eggs. Actually, scorpion babies hatch from eggs, too, but they hatch inside the mother. Then the young are born alive. A mother scorpion takes very good care of her babies. They often hitch a ride on her back.

A mother scorpion with her babies

Vo • cab • u • lar • y

habitats (**hab**•i•tats)—the places where something naturally grows and lives

survivors (suhr•**vy**•vuhrz)—ones that stay alive

Strategy

Make Connections by relating information that I already know about the subject to what I'm reading.

Write notes on your own paper to tell how you used this strategy.

Big Claws, Little Claws

The biggest scorpions are not necessarily the most dangerous. Danger depends on the type of **venom** the scorpion has. Venom is the poison that scorpions and some other animals use to kill their food and to protect themselves. Most scorpions are harmless. They may pinch you or sting you. But the pinch will be small. The sting will not be worse than a bee sting.

Some scorpions do have venom that is so strong that it can kill a human being. The only deadly species is the sculptured scorpion. It lives in the United States. Its **range** is from Mexico up into Arizona and southern Utah.

Scientists have found that **pincer** (or claw) size is a good way to tell how poisonous a scorpion is. Scorpions with stronger venom depend less on their claws. Their claws tend to be smaller. Scorpions with weaker venom depend more on their claws. Their claws tend to be larger.

The scorpion above was photographed under "night light." Notice the size of the pincers on these two scorpions.

Vo•cab•u•lar•y

venom (**ven**•uhm)—a kind of poison some animals have, usually spread during a sting or bite

range (raynj)—the area in which something happens or where an animal lives

pincer (**pin**•suhr)—a special claw that can grasp and hold something

Food Comes to the Scorpion

In the desert, food is hard to find. Scorpions are very slow animals. They try to use as little energy as possible in catching their food. Although they like to eat, they can get by for more than a year without food.

A scorpion makes its desert home under a rock. It stays there during the hottest part of the day. At dusk, the scorpion and most other animals in the desert come out. The scorpion finds a good spot to wait for its **prey**—maybe a juicy spider—to come by. The scorpion stays very still until the spider is close. Then it uses its claws to grab and hold the spider while it kills it with its **fangs**. Only if the prey is large does the scorpion sting it with its tail. Stinging takes too much energy.

Strategy

Make Connections by relating information that I already know about the subject to what I'm reading.

Write notes on your own paper to tell how you used this strategy.

A scorpion eating a desert grasshopper

Vo • cab • u • lar • y

prey (pray)—an animal that is hunted or caught for food

fangs (fangz)—special tooth-like structures the scorpion uses to bite its prey

Scorpions are **nearsighted**. In the daytime, they can hardly see. But their vision is perfectly suited for the darkness. They see best just when their food is most active. Scorpions seldom drink. They get most of their liquids from the moisture in their food, such as the grasshopper pictured on page 27.

Not all scorpions live in desert areas. This scorpion is hiding under a large leaf in a tropical area. Notice the size of its claws.

Shake Your Shoes

If you live in the southwestern United States or in Mexico, you probably know how to stay safe around scorpions. You shake your shoes before you put them on. You check under your blankets before you go to bed. Scorpions that are trapped indoors seek out these dark spots. They resemble the homes scorpions naturally choose out in the desert. If you do get stung, tell an adult. If the symptoms seem worse than a bee sting, you may need to see a doctor.

Vo•cab•u•lar•y

nearsighted (**neer**•sy•tid)—not able to see things at a distance clearly

Scorpions are an important part of the food chain where they live. In that way, they help the **ecosystem**. They are food for owls, lizards, mice, bats, and sometimes even other scorpions. Scorpions are shy. If you leave them alone, they will not hurt you.

Vo•cab•u•lar•y

ecosystem (**ek**•oh•sis•tuhm)—all the various parts of an animal's environment

Think About the Strategy

AFTER READING

Recall

by summarizing the selection in writing or out loud.

Write notes on your own paper to tell how you used this strategy.

Developing Vocabulary

Context Clues

Sometimes an author's words can help you figure out the meaning of a new word. The author adds **context clues** by giving examples for the word. Often, the words *like, as, also,* and *such as* tell you that the author is giving you an example and that example is a context clue.

Read this paragraph from "The Scoop on Scorpions":

> *There are about 2,500 species of scorpions. They live in war m places, like deserts. But they are also found in many other* ***habitats****. Other scorpions live in places such as rain for ests, caves, along the shore, and on mountains.*

How can you figure out the meaning of *habitats*? Look for the clue words *like, as, also,* and *such as*. Look for context clues, or examples of the word. Examples here include *deserts, rain forests, caves,* and *mountains*. The text says, "They live in warm places, like deserts. But they are **also** found in many other habitats." *Also* is another clue that a habitat is a place where scorpions live. So now you know that *habitats* are places where animals live.

Read this excerpt from the top of page 28 in the article "The Scoop on Scorpions." Use context clues to figure out the meaning of *moisture*. Look for examples of the word. Also look for the clue words *like, as, also,* or *such as*.

> *Scorpions seldom drink. They get most of their liquids from the* ***moisture*** *in their food, such as the grasshopper pictured on page 27.*

On a separate sheet of paper, write a definition for *moisture*. Explain how clue words helped you.

Poetry

In this playful poem, a scorpion named Scoop plays with his cousin, a lobster. Read the poem several times aloud to yourself until you think you can read it with good expression and appropriate phrasing. You may want to read it with a partner so that you alternate lines or stanzas.

Fluency TIP

Poems should be read with good phrasing and a sense of rhythm. As you practice this poem out loud, try to capture in your reading the rhythm that makes the poem flow.

Scoop Scorpion

Scoop Scorpion and Lobster Boy
set out one hot, hot day.
Said Scoop to cousin Lobster Boy,
"We arthropods need to play!"

Lobster Boy took off for shore,
while Scoop did claw and climb
the tallest mountain south of here.
His tempo was slow time.

Now scorpion got hot that day
from too much desert sun.
He liked to hide beneath a rock
until the day was done.

This desert heat was way too much
for scorpion to take.
But Lobster Boy ran off to swim
and left poor Scoop to bake.

Think About the Strategies

BEFORE READING

Preview the Selection

by looking at the title and headings to predict what the selection will be about.

DURING READING

Make Connections

by relating information that I already know about the subject to what I'm reading.

AFTER READING

Recall

by summarizing the selection in writing or out loud.

Use your own paper to jot notes to apply these Before, During, and After Reading Strategies. In this selection, you will choose when to stop, think, and respond.

Deep-Sea Dangler

Giant clams, tube worms, and crabs live deep in the ocean.

Imagine the darkest darkness, the coldest cold. Think of something pressing down on you. It presses so hard that you may be crushed. But look! Off in the distance, there is a light, a tiny dot of white. It acts as a **beacon**. It is drawing you forward. You go toward the light. Suddenly you are pulled forward into the belly of a huge beast! What is this beast? Is it fact? Is it fiction? It's fiction if you're a person. It's fact if you're a fish living deep down in the ocean.

It's Fact

The creature **luring** you out of the dark with its light is called an anglerfish. It lives deep in the ocean where no light can reach. Light from the sun can reach down to only about 3,000 feet below the ocean's surface. Below that point, it is always dark. This is the home of the anglerfish. And there are more than 200 kinds of them!

Vo • cab • u • lar • y

beacon (**bee•**kuhn)—a signal fire or light

luring—pulling you into a trap

A deep-sea anglerfish

The Fishing Fish

Angler means "someone who fishes." An anglerfish, like a human angler, dangles bait in the water. All 200 kinds of anglerfish use their "bait" to attract prey. The anglerfish above has a fin on its back that sticks out like a fishing rod. The tip of the rod glows. This is an exciting sight in the darkness. The light attracts other fish. Slowly, the anglerfish pulls the bait, and its dinner, closer to its mouth. Then it opens its huge jaw. Water rushes into the anglerfish's mouth. The prey animal is caught up in the **current**. It ends up right in the anglerfish's stomach!

Dinner in the Deep

All the food in the deep ocean comes from above. No plants can grow where there is no sunlight. This means that deep-sea fish are in one of two groups. They are **predators,** which catch and eat other animals. Or they are **scavengers,** which eat dead matter that drifts down from high up in the ocean. The scavengers are eaten by predators, which in turn eat each other. Some fish feed

Vo•cab•u•lar•y

current (**kur**•uhnt)—moving water in a larger body of water

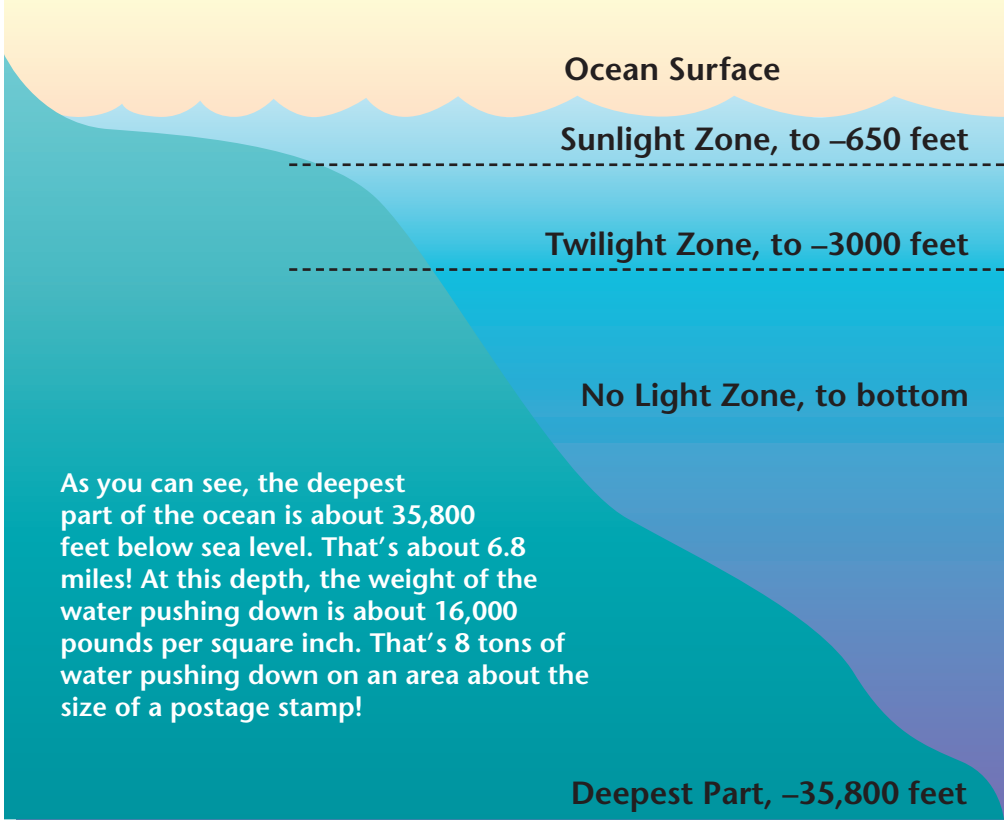
predators (**pred**•uh•tuhrz)—animals that live by hunting and eating other animals

scavengers (**skav**•uhn•juhrz)—animals that live by eating dead or decaying matter

near the surface at night. But they spend the day in the **depths**. They are eaten by fish like the anglerfish, which stay below 3,000 feet all the time. Either way, the food comes from the part of the ocean where sunlight reaches and plants can live.

Anglerfish have huge jaws compared with the rest of their bodies. If you were an anglerfish, your mouth and jaw would take up almost your entire head! Why do so many deep-sea fish have huge mouths? Well, food is so scarce that a fish can't let any food go by—even food that seems too big. Some fish mouths are lined with teeth that slant backward. Dinner can't get back out once it is caught! Many of these fish have stomachs that stretch, too. The fish may also use the currents caused when they open their mouths. The currents pull in their prey. They don't have to use energy chasing their food. The anglerfish, in fact, is a very slow fish. It rests in the water, dangling its light. The curious fish drawn by the light do all the work.

Ocean Depths



Vo • cab • u • lar • y

depths—deep places in a body of water

Glowing From Within

Many sea animals glow. In fact, below 6,000 feet, most animals glow in some way. The anglerfish dangles its light. The lanternfish has glowing lights under its eyes. They beam like a flashlight. The viperfish has a row of lights inside its mouth. Other fish come to check out these lights. Then the viperfish just closes its mouth, a well-lit trap. Living things that glow are **bioluminescent**. *Bio-* means "life," and *luminescent* means "producing light."

A saber-toothed viperfish

Bioluminescent light is cold light. It isn't like electric light, which makes light and heat. In bioluminescence, four **substances** work to make light with no heat. Some animals, such as fireflies, make the substances in their bodies. They make their own light. Other animals, such as most of the bioluminescent fish, farm the work out. The dangling light of the anglerfish, for example, is caused by glowing bacteria. The fish supplies food to the bacteria. The bacteria glow for the fish.

Vo • cab • u • lar • y

bioluminescent (by•oh•loo•muh•**nes**•uhnt)—able to produce light

substances (**sub**•stuhns•ez)—certain kinds of matter or material

A glowing (bioluminescent) anglerfish

Anglerfish Life Cycle

An anglerfish lays her eggs deep down in the ocean. They float to the surface. In time, they hatch. That's the last light the anglerfish will see. As they grow, they drift downward. By the time they are young adults, they are **submerged** in darkness.

Female anglerfish grow 8 to 12 inches in length. Some species grow as long as 40 inches. Only female anglerfish glow. Male anglerfish are small compared with the females. In most of the 200 kinds of anglerfish, the male attaches to the side of the female. In the deep darkness, this is a way for the fish to make sure it will always have a mate. The female does the fishing and eating for both of them. The male gets food from the female's blood.

It's Fiction

The scene in the first paragraph is fiction for you. You, a person, will never be threatened by an anglerfish. For one thing, the weight of the water is great. At 3,000 feet below the surface, where the anglerfish live, the water is so heavy a person would be crushed. For another thing, you are a lot bigger than an anglerfish. Thank goodness! Let's keep fish that eat humans where they belong—in books and movies.

Vo•cab•u•lar•y

submerged (suhb•**murjd**)—covered with water

Developing Vocabulary

Multiple Meanings

Many words have more than one meaning. You can understand the correct meaning by seeing how the word is used in the selection. For example, reread this passage from "Deep-Sea Dangler":

> *Water rushes into the anglerfish's mouth. The prey animal is caught up in the* ***current****.*

The word *current* has more than one meaning. It can mean:

- happening at this moment
- moving water within a larger body of water

How can you tell which meaning fits this passage? The passage is about what happens underwater. So the meaning for *current* in this passage is the second definition, "moving water within a larger body of water." When you know multiple meanings for words, you can avoid confusion when you read.

On a separate sheet of paper, write sentences that show you understand at least two different meanings for each of these words. Use a dictionary if you need help.

1. page
2. face
3. spring
4. trim
5. bat
6. hand
7. foot
8. run
9. back
10. leg

Poetry

This poem is about how an anglerfish uses its own light to attract its dinner. Practice the poem several times until you think you can read or say it smoothly to an audience. You might present it with a partner, taking turns saying the chorus and the verses.

Fluency TIP

Poems should be read with good phrasing and a sense of rhythm. As you practice this poem, try to make the poem flow, much as a song flows.

The Anglerfish Song

Chorus
Angler
dangler
bangles
and beam.

Verse
Down in the deep, deep dark,
Down in the deepest sea,
Anglerfish dangle their light,
Bright for their prey to see.

Chorus
Angler
dangler
bangles
and beam.

Verse
Swim and swim to the light.
Light is bright and clear
Down in the deep, dark sea.
Anglerfish dangle right here!

Verse
Snap!
Anglerfish grabs that swimmer!
The big jaw opens wide,
And prey becomes good dinner!

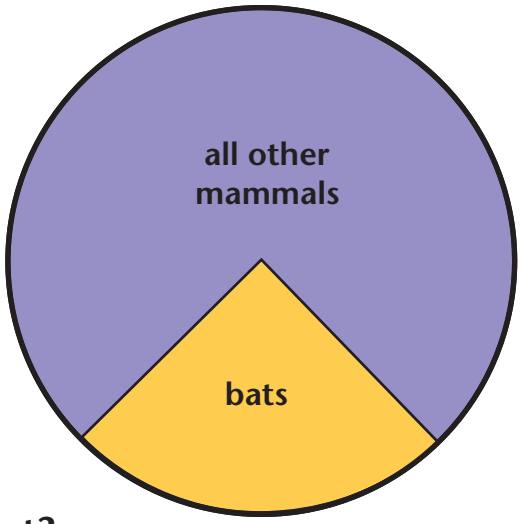
Chorus
Angler
dangler
bangles
and beam.

READING in the Real World

Circle Graphs

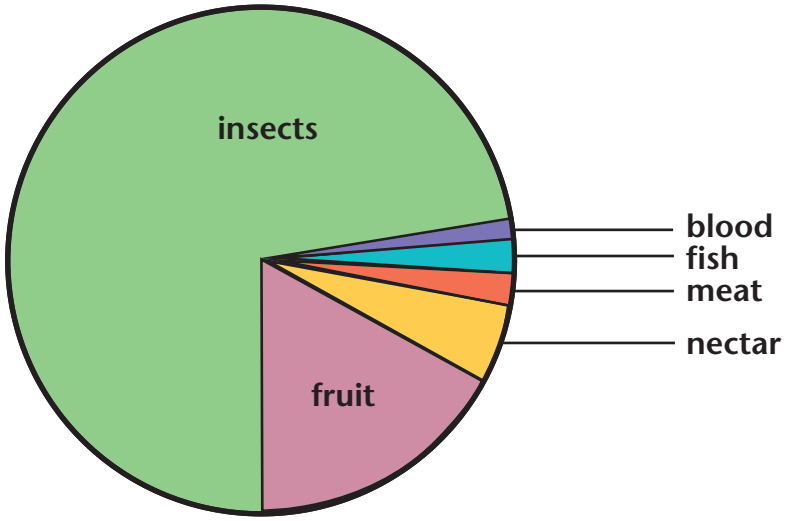
How Many Mammals Are Bats?

Bats are mammals. People are, too. About 4,000 species (kinds) of mammals live on Earth. Of these 4,000 species, 1,000 are bats! This circle graph shows how many mammals are bats.



What Do Bats Eat?

Most bats eat insects. Some eat fruit and nectar . A few bats eat fish and small animals. Three kinds of bats drink the blood of animals. This circle graph shows how many bats eat each kind of food.



Discussion Questions

Answer these questions with a partner or on a separate sheet of paper .

1. What does the top graph show?

a. Most of the mammals on Earth are bats.
b. Most of the bats on Earth are mammals.
c. One of every four kinds of mammals is a bat.
d. One of every four kinds of bats is a mammal.

2. In the top graph, where would people be?

3. Look at the bottom graph. What does the "insects" part show?

a. There are many insects on Earth.
b. Most bats eat insects.
c. Some bats eat fruit.
d. Bats help us by eating insects.

4. Look at the bottom graph. What do the smallest number of bats eat?

5. What does the bottom graph tell you about the bats near your home?

6. After people use sprays to kill mosquitoes, what happens to bats?

a. The bats have an easier time catching the mosquitoes.
b. The bats find something else to eat.
c. The bats start drinking blood.
d. The bats go hungry.

7. How could your community attract more bats?

a. Spray to kill the mosquitoes.
b. Do not spray to kill the mosquitoes.
c. Plant fruit trees.
d. Plant more flowers.

8. Mosquitoes can carry diseases, such as the West Nile virus. Should communities spray to kill mosquitoes? Explain your answer .

CONNECTING to the Real World

EXPLORE MORE

Make a Display

Prepare a visual display of information about bats. This might be of one bat, showing its physical characteristics. Or it might be of several bats, comparing and contrasting their physical characteristics, habits, and habitats.

Make a Diorama

Build a diorama to display the special habitat of one of the animals presented in this unit.

Write a Play

Write a short play about a family that lives where scorpions are common. Have the characters talk about what they do when they find a scorpion in the house. Include tips on how they make visitors feel safe there.

Compare Bats and Scorpions

Develop a visual presentation of a bat and a scorpion. Compare and contrast the physical characteristics of the mammal and the arthropod.

Write a Report

Research and write a report on other animals that depend on bioluminescence as part of their life and survival.

Write Diary Entries

Imagine that you are on an expedition that is traveling to the deepest part of the ocean. Write diary entries for at least three days. Describe what you see outside the porthole and what you hear from the underwater microphone. Tell how the increasing depth makes you feel.

Related Books

Braun, Eric, and Sandra Donovan. *Bats.* Steck-Vaughn Company, 2002.

Clarke, Penny. *Spiders, Insects, and Minibeasts.* Franklin Watts, 2003.

Green, Tamara. *Scorpions.* Gareth Stevens Publishing, 1996.

Haffner, Marianne, and Hans-Peter B. Stutz. *Bats! Amazing and Mysterious Creatures of the Night.* Blackbirch Press, Inc., 1999.

Halfmann, Janet. *Scorpions: Nature's Predators.* Kidhaven Press, 2003.

Harman, Amanda. *Scorpions.* Grolier Educational, 2001.

Lassieur, Allison. *Scorpions: The Sneaky Stingers.* Franklin Watts, 2000.

Markle, Sandra. *Outside and Inside Bats.* Atheneum Books for Young Readers, 1997.

Pringle, Laurence. *Bats! Strange and Wonderful.* Boyds Mills Press, 2000.

— *Scorpion Man: Exploring the World of Scorpions.* Charles Scribner's Sons, 1994.

Richardson, Adele. *Scorpions.* Capstone Press, 2003.

Sherrow, Victoria. *Bats.* Lucent Books, Inc., 2001.

Taylor, Leighton. *Creeps From the Deep.* Chronicle Books, 1997.

Whitehouse, Patricia. *Bats.* Heinemann Library, 2003.

Interesting Web Sites

Bats: Learn more about these helpful creatures.

http://www.batcon.org
http://www.eparks.org/wildlife_protection/wildlife_facts/bats/
http://www.bats4kids.org
http://www.batconservation.org

Scorpions: Find out more information on these animals.

http://animals.nationalgeographic.com/animals/bugs/scorpion.html
http://animal.discovery.com/invertebrates/scorpion.html
http://kidshealth.org/kid/ill_injure/bugs/scorpion.html

Anglerfish: Explore pictures, information, and more about life in the deep sea.

http://animals.nationalgeographic.com/animals/fish/anglerfish.html
http://animals.howstuffworks.com/fish/anglerfish-info.htm
http://www.seasky.org/deep-sea/anglerfish.html

Web sites have been carefully researched for accuracy, content, and appropriateness. However, teachers and caregivers are reminded that Web sites are subject to change. Internet use should always be monitored.