

Basic Level



Life Science

Plant and Animal Adaptation

How Animals Survive

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LOOK
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FOR:

Core Curriculum
Covered
•
Student Book
•
Assessments and
Reading Activities

How Animals Survive

How are animals well-suited to live in their environments?

CORE CURRICULUM STATEMENTS

Individual organisms and species change over time.

Each animal has different structures that serve different functions in growth, survival, and reproduction.

- wings, legs, or fins enable some animals to seek shelter and escape predators
- the mouth, including teeth, jaws, and tongue, enables some animals to eat and drink
- eyes, nose, ears, tongue, and skin of some animals enable the animals to sense their surroundings
- claws, shells, spines, feathers, fur, scales, and color of body covering enable some animals to protect themselves from predators and other environmental conditions, or enable them to obtain food
- some animals have parts that are used to produce sounds and smells to help the animal meet its needs
- the characteristics of some animals change as seasonal conditions change (e.g., fur grows and is shed to help regulate body heat; body fat is a form of stored energy and it changes as the seasons change)

In order to survive in their environment, plants and animals must be adapted to that environment.

- animal adaptations include coloration for warning or attraction, camouflage, defense mechanisms, movement, hibernation, and migration

Organisms maintain a dynamic equilibrium that sustains life.

Animals respond to change in their environment (e.g., perspiration, heart rate, breathing rate, eye blinking, shivering, and salivating).

Some animals, including humans, move from place to place to meet their needs.

Particular animal characteristics are influenced by changing environmental conditions including: fat storage in winter, coat thickness in winter, camouflage, shedding of fur.

Some animal behaviors are influenced by environmental conditions. These behaviors may include: nest building, hibernating, hunting, migrating, and communicating.

Plants and animals depend on each other and their physical environment.

When the environment changes, some plants and animals survive and reproduce, and others die or move to new locations.

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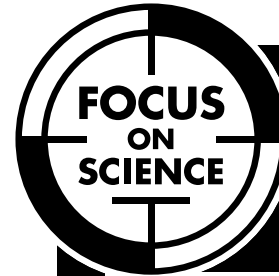
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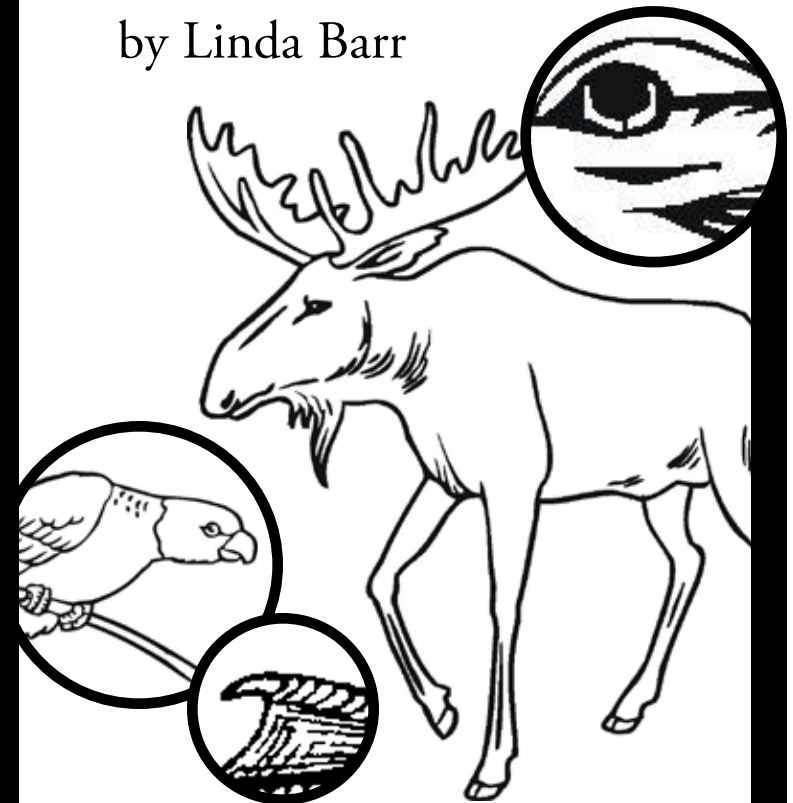


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by Linda Barr





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Curriculum materials for **your** content standards

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INTRODUCTION

Classifying Animals

Scientists classify animals into two groups—vertebrates and invertebrates.

Invertebrates are animals with no bones. They include spiders, insects, jellyfish, and earthworms. Vertebrates are animals that have bones.

There are two types of vertebrates—warm-blooded and cold-blooded. A warm-blooded animal is like you and me. It keeps its body temperature the same. A cold-blooded animal doesn't keep its body temperature the same. It changes according to how hot or cold its surroundings are.

Warm-Blooded Vertebrates	
Mammals	Have hair or fur Breathe air Feed their young milk
Birds	Have wings and feathers Breathe air Lay eggs
Cold-Blooded Vertebrates	
Fish	Have scales, fins, and tails Breathe underwater using gills
Reptiles	Have dry skins and scales Breathe air Lay eggs
Amphibians	Have smooth, wet, or slimy skins Spend part of their life in water and part on land

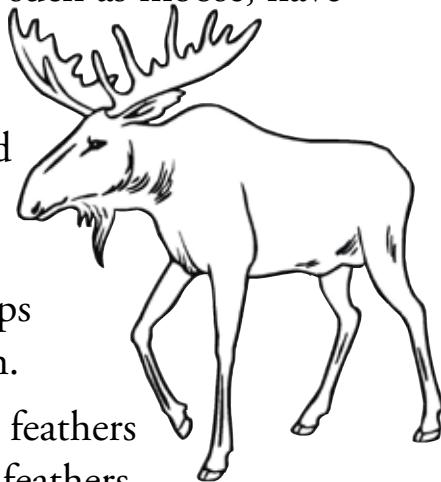
You and every animal have the same basic needs—food, water, oxygen, space, and shelter. How do animals meet these needs? It's not easy! In this book, you will find out ways that animals **survive**.

survive: to remain alive

Body Parts for Survival

Fur and Feathers

Body coverings help animals meet their needs. Many animals, such as moose, have thick fur. It protects them from cold weather. Walruses and other animals have a thick layer of fat under their fur. It helps to keep in the warmth.



Birds fluff up their feathers when it's cold. Fluffy feathers trap air, like a sleeping bag. That helps keep the birds warm.

—Transfer—
How does your body covering help you survive?

In the desert, animals must survive with very little water. Snakes and lizards are covered with scales. These scales help keep water in their bodies.

Body covering helps animals hide, too. Many birds and insects are green or brown. They blend in with the grass and trees. It's hard for **predators** to spot them.

Body covering also helps predators. Many of them are colored like their surroundings. That makes it hard for their **prey** to see them coming.

predator: an animal that eats other animals; examples: lion, wolf, hawk

prey: an animal that is eaten by other animals; examples: mouse, rabbit, bird

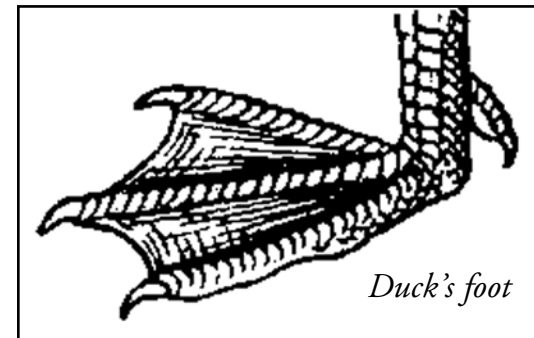
Body covering protects animals from predators. An armadillo is covered with bony plates. Most predators cannot bite through them. Insects, snails, turtles, and lobsters have shells or hard body coverings, too. Porcupines have sharp quills.

Body coverings can also fool predators. The monarch butterfly tastes bad to birds. The viceroy butterfly tastes good. These butterflies look alike. Birds can't tell them apart. So they do not eat either kind.

Fins and Feet

Fins, feet, and wings help animals survive. They help prey get away from predators. They also help predators catch their prey.

Flippers help whales and sea lions dive deep in the water. Webbed feet help frogs and ducks swim fast. Monkeys use their hands and feet to swing from branch to branch. Large back legs help rabbits and kangaroos hop fast.



*—Summarize—
Describe the ways that body coverings
help animals survive.*

Necks and Tongues

Giraffes have long necks to help them reach the highest leaves on the trees. Other plant-eaters cannot reach those leaves. Giraffes also have long tongues. Their tongues let them grab food.

An octopus doesn't have a tongue. It uses long **tentacles** to catch food. It does not have to get too close to its prey. It can let go if it feels danger.

Elephants use their trunks to grab food. Anteaters use their long noses and long, sticky tongues to get ants for food.

tentacle: a long, thin, flexible arm that can reach out and grab things; found on octopuses and squid

Eyes and Ears

Hawks can spot mice while flying far above them. Sharp eyesight helps many predators find food. It also helps prey see predators in time to get away.

Many animals can hear really high or really low sounds. This helps them know when predators are coming toward them.

–Connect–

How do your eyes and ears help you survive?

Claws and Teeth

Claws and teeth help animals protect themselves. They also help them eat food.

Wolves have sharp teeth for chewing prey. Cows have flat teeth for chewing grasses. Like a wolf, you have sharp teeth for chewing. Like a cow, you have flat teeth.

Birds have different beaks and bills. This allows them to eat different types of food.

*—Apply—
A scientist finds a new type of bird. Why must this scientist describe the bird's beak very carefully?*

Beaks and Bills

Eagle

Eagles and hawks have strong, sharp beaks. These beaks help them catch and eat small prey.



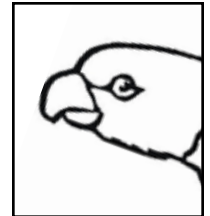
Woodpecker

Woodpeckers and many other birds eat insects. They need pointed beaks to reach the bugs crawling under tree bark.



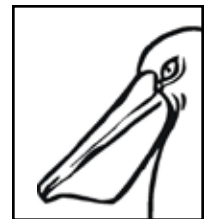
Parrot

The parrot's strong, curved bill helps it open seeds and nuts.



Pelican

Pelicans store fish in their large bills so they can feed their babies.



Behaviors for Survival

Migrating

Fur and fat helps some animals survive winter. Other animals must change their behavior. The plants or animals they eat will soon be hard to find. They do not have thick fur and fat. So they migrate to a warmer place.

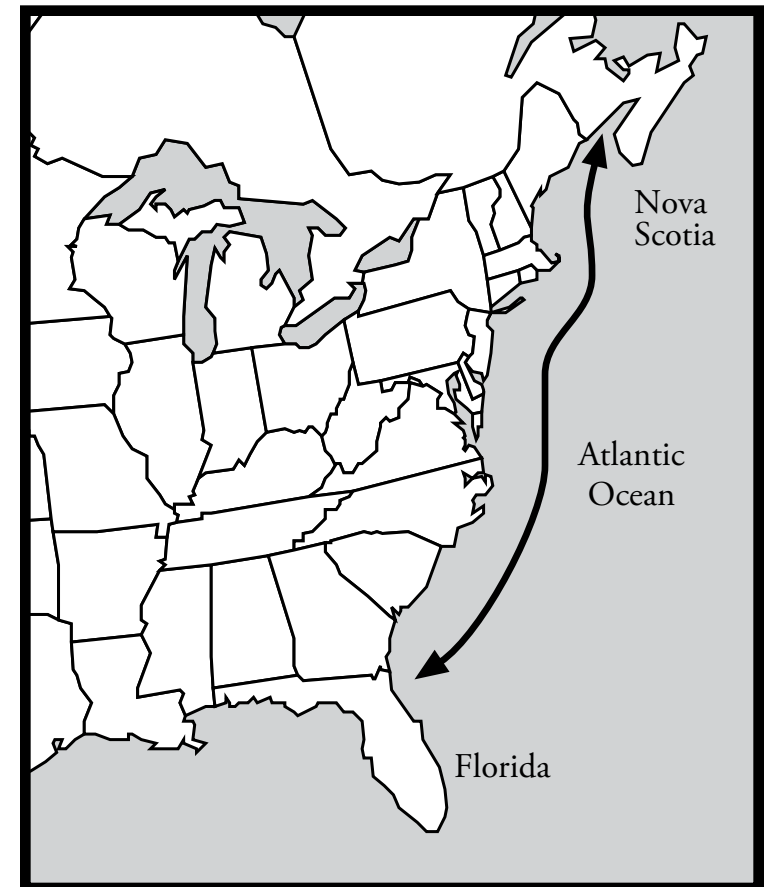
Many types of birds head to warmer areas for the winter. Butterflies, whales, and other animals migrate, too. In spring, they head back north again.

—Propose—

What types of investigations do you think scientists use to learn about the migration of whales?

migrating: traveling from one place to another and back again

The Migration of the Right Whale



The right whale was named because it was the “right” one to hunt. It is slow and big. Because of hunting, few right whales survive. Every fall, the ocean near Nova Scotia in Canada gets very cold. The northern right whales leave and swim all the way to the coast of Florida. In the warm water there, they have their babies. In the spring, these whales migrate back to the waters of Nova Scotia.

Hibernating

Some animals sleep through the winter to survive. First, they eat a lot of food. That stores fat in their bodies. Next, they find a safe place, such as a hole in a tree or in the ground. Then they hibernate, or go into a deep sleep.

Hibernation helps the animal survive. If it did not hibernate, it would starve or freeze to death. Some kinds of mice, chipmunks, squirrels, and bats hibernate.

–Evaluate–

Why don't all animals hibernate during the winter?

hibernating: going into a very deep, sleep-like state for a long while

Some animals go dormant. Most bears and frogs go **dormant** during the winter. Some snakes do, too.

When an animal is dormant, its heart slows down. It breathes less often. Its body cools off a little. Dormant animals wake up once in a while. They might eat on warm days. Some mother bears have babies while they are dormant.

–Distinguish–

What is the difference between hibernating and being dormant?

dormant: a state of being alive but not moving or growing

Hiding

Behaviors can help animals blend in with their surroundings. For example, chameleons change color. Their skin has a type of paint in it. It is red, yellow, blue, and white. In 20 seconds, they can mix these colors to match their surroundings.

Other animals hide by standing still. Predators do not see them. Opossums and many snakes pretend to be dead. They lie very still. After the predator leaves, the animal runs away.

—Predict—

What is an animal's risk of pretending to be dead?

Fighting Back

Many animals survive by fighting their predators. Some use their teeth, claws, or feet. Others use horns, antlers, or wings. Bees and wasps sting. Skunks use smell to chase predators away. Porcupines shoot their quills at predators.

The puffer fish makes itself look larger. Parrots scream. These behaviors often scare off predators.

Like you, animals must meet their basic needs. Like you, they use their body parts and behaviors to stay alive.

Disappearing Animals

Animals often adapt to their environments. But what happens when they cannot adapt?

Sometimes they move to a new location. If they are not able to move, they will die.

A few years ago, some orca whales living off the West Coast died. Fish is their main food source. But people fished too much. The whales did not have enough to eat.

Orcas are facing other threats, too. They use their hearing to find prey. But ships and other human activities are adding noise to the water. This noise makes it more difficult for orcas to find food.

It is not always easy to know why animals disappear.

Scientists are studying frogs, toads, and salamanders in the Sierra Nevada Mountains. These animals seem to be disappearing. They have been on Earth since before the dinosaurs. Why are they disappearing now? Scientists ask:

- Are there really fewer frogs, toads, and salamanders? Or is this just a natural cycle?
- Have people's actions caused these animals to disappear?
- Has their habitat changed in recent years?
- How can we protect these animals?

Glossary

dormant—a state of being alive but not moving or growing

hibernating—going into a very deep, sleep-like state for a long while

migrating—traveling from one place to another and back again

predator—an animal that eats other animals; examples: lion, wolf, or hawk

prey—an animal that is eaten by other animals; examples: mouse, rabbit, or bird

survive—to remain alive

tentacle—a long, thin, flexible arm that can reach out and grab things; found on octopuses and squid

To Find Out More . . .

Want to learn more about how animals survive?

Try these books

Amazing Arctic Animals by Jackie Glassman. Grosset and Dunlap, 2002.

Armor to Venom: Animal Defenses by Phyllis J. Perry. Franklin Watts, 1998.

Claws, Coats, and Camouflage by Susan E. Goodman. Millbrook Press, 2001.

How Do Animals Adapt? by Bobbie Kalman. Crabtree, 2000.

What Are Camouflage and Mimicry? by Bobbie Kalman. Crabtree, 2001.

What Do Animals Do in Winter? by Melvin and Gilda Berger. Ideals, 1995.

What Is Migration? by John Crossingham and Bobbie Kalman. Crabtree, 1997.

Access this Web site

Amazing Animal Senses
<http://faculty.washington.edu/chudler/amaze.html>

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Assessments

How Animals Survive

Print pages 20–22 of this PDF for the assessments.

Check Understanding

Shade the circle next to the correct answer or write your answers on the lines provided.

1. Which body covering helps keep water in an animal's body?
Ⓐ fur
Ⓑ quills
Ⓒ scales
Ⓓ feathers
2. Scientists classify animals into two groups. One group is vertebrates. The other group is invertebrates. What is true of all vertebrates?
Ⓐ They migrate.
Ⓑ They have bones.
Ⓒ They have tentacles.
Ⓓ They are warm-blooded.

3. The picture below shows a moose.



Moose use their antlers to

- Ⓐ hide
- Ⓑ fight
- Ⓒ hibernate
- Ⓓ stay warm

Check Understanding

Shade the circle next to the correct answer or write your answers on the lines provided.

Note that question 4 has only three choices.

4. Sharks have sharp teeth to

- Ⓐ catch and eat prey
- Ⓑ swim quickly
- Ⓒ scare off predators

5. Describe **one** way that an animal may hide from predators.

6. In winter, some animals must change their behavior.

Identify and explain **two** behaviors that animals may use to survive winter.

(1) _____

(2) _____

Assessment Scoring Guidelines

1. Answer C is correct.
2. Answer B is correct.
3. Answer B is correct.
4. Answer A is correct.
5. An animal may use color to blend into its surroundings.
An animal may pretend to be dead.
6. An animal may hibernate. The animal eats a lot then stays in a deep sleep all through winter.
An animal may go dormant. The animal sleeps through winter but wakes up once and awhile.
An animal may migrate. The animal goes to a warmer place to find food.

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English Language Arts Activities

How Animals Survive

Print pages 24–28 of this PDF for the reading activities.

Compound Words

TRY THE SKILL

Compound words are made by joining two short words. The two short words do not always have the same meaning when they are part of a compound word. Still, understanding the two short words will help you figure out the meaning of the longer word.

For example, *earthworm* is a compound word. *Earth* means “our planet” or “soil.” *Worm* means “a long living thing that crawls and has no legs or backbone.” A computer problem is also called a worm. *Earthworm* simply means a worm that lives in soil.

Read the definition. Then choose the compound word that fits that definition.

1. A word that means the same as sundown

- Ⓐ sunset
- Ⓑ sunflower
- Ⓒ sunrise
- Ⓓ sunshine

2. A fruit that is made mostly of water

- Ⓐ watercolor
- Ⓑ watermelon
- Ⓒ waterfall
- Ⓓ waterfront

3. Something a dog has, but an earthworm does not have

- Ⓐ backache
- Ⓑ backpack
- Ⓒ backbone
- Ⓓ background

4. Something that burns slowly in a fire

- Ⓐ firefighter
- Ⓑ fireplace
- Ⓒ fireworks
- Ⓓ firewood

Contractions and Abbreviations

TRY THE SKILL

A contraction is two words written as one. An apostrophe shows that one or more letters have been left out. You might have seen these contractions in your reading.

Contractions

did not . . .	didn't	they are . . .	they're
could not . .	couldn't	we are	we're
he is	he's	she had . . .	she'd
what is	what's	I had	I'd
we will	we'll	I am	I'm

An abbreviation is a short way to write a word or a phrase. Abbreviations often, but not always, end with periods. Below are the abbreviations for the names of the months. The names *May* and *June* are short, so they are not abbreviated.

Abbreviations

January . . .	Jan.	August	Aug.
February . .	Feb.	September . . .	Sept.
March . . .	Mar.	October	Oct.
April	Apr.	November	Nov.
July	Jul.	December	Dec.

Read each phrase or sentence. Underline any contraction or abbreviation you find. Then write the word or phrase that means the same.

1. Mar. 4, 2004 _____
2. Nov. 6, 1990 _____
3. Jan. 20, 2001 _____
4. Sept. 6, 1998 _____
5. Polar bears like the cold because they're ready for it. _____
6. What's hiding under that leaf? _____
7. I'm going to watch a DVD about migration. _____
8. I didn't know that monarch and viceroy butterflies look the same. _____

Predict Outcomes

TRY THE SKILL

You can use the facts you read to make predictions. Try to predict what will happen next in your reading and then see if you were correct.

If your predictions were not what you thought, perhaps you need to re-read those paragraphs. Maybe you didn't understand them well.

In this book you read how body coverings help animals survive. Let's say that brown fur helps a rabbit hide from predators most of the year. Predict what will happen to this rabbit in winter.

Its brown fur will make it stand out against the white snow. A predator is likely to spot it—and catch it.

Predict how this rabbit might change its body covering in the winter.

Arctic rabbits turn white in the winter.

Read about each animal. Then shade in the letter that correctly predicts what will happen to it.

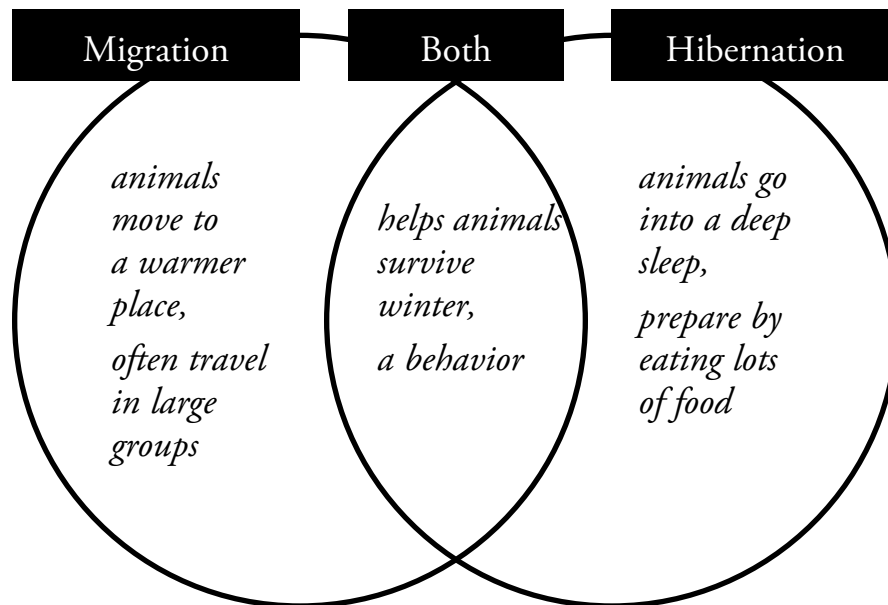
1. Hermit crabs live in empty seashells. As they grow, they must find bigger shells. Predict what might happen to a crab as it moves from its out-grown shell to a bigger one.
 - Ⓐ The crab will blend in with its surroundings.
 - Ⓑ Predators might catch the crab while it is outside a shell.
 - Ⓒ The hard shell will protect the crab from predators.
2. A zebra is born with a longer neck than other zebras. Predict how this long neck will affect this zebra.
 - Ⓐ The other zebras will make fun of this zebra's long neck.
 - Ⓑ This zebra will start hanging out with the giraffes.
 - Ⓒ This zebra will live longer because it can reach higher leaves than the other zebras.

Compare and Contrast

TRY THE SKILL

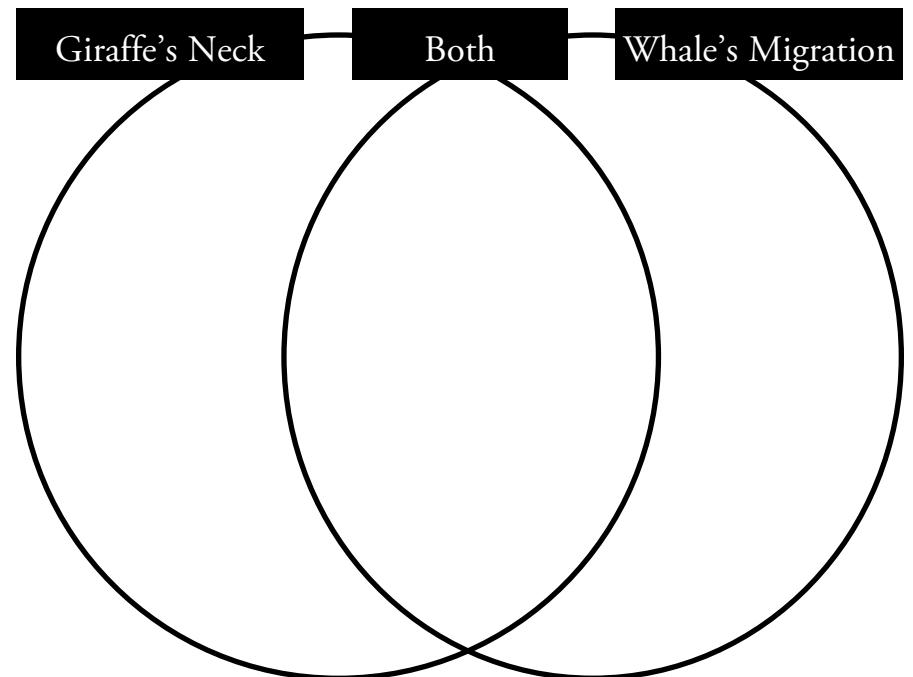
When you compare two things, you tell how they are alike. When you contrast them, you tell how they are different.

A Venn diagram is made of overlapping circles. It can help you compare and contrast. This Venn diagram compares and contrasts migration and hibernation.



Use this Venn diagram to compare and contrast a giraffe's neck and a whale's migration. Use the phrases in the box.

- a body part
- helps it avoid the cold
- helps it survive
- a behavior
- helps it get food that other animals can't reach



Answer Key

Compound Words

1. A
2. B
3. C
4. D

Contractions and Abbreviations

1. March
2. November
3. January
4. September
5. they are
6. what is
7. I am
8. did not

Predict Outcomes

1. B
2. C

Compare and Contrast

Giraffe's Neck

helps it get food that other animals can't reach
a body part

Whale's Migration

helps it avoid the cold
a behavior

Both

helps it survive