

Lesson 3—What Other Factors Affect Characteristics?

1. Inquiry Skill Practice—Infer

In their early history, Labrador retrievers helped people in the fishing industry. Doug's dog swims to fetch a stick, rolls over on command, naps when he is tired, and turns off the bedroom light at night. Infer which behaviors are instinctive and which are learned.

2. Use Vocabulary

Match the characteristic on the left to the term on the right that explains it. Write the letter in the blank.

- | | |
|---|---------------------|
| ___ A frog has body defects due to pollution. | A. instinct |
| ___ A cat grooms itself. | B. environment |
| ___ A child eats with a fork. | C. learned behavior |

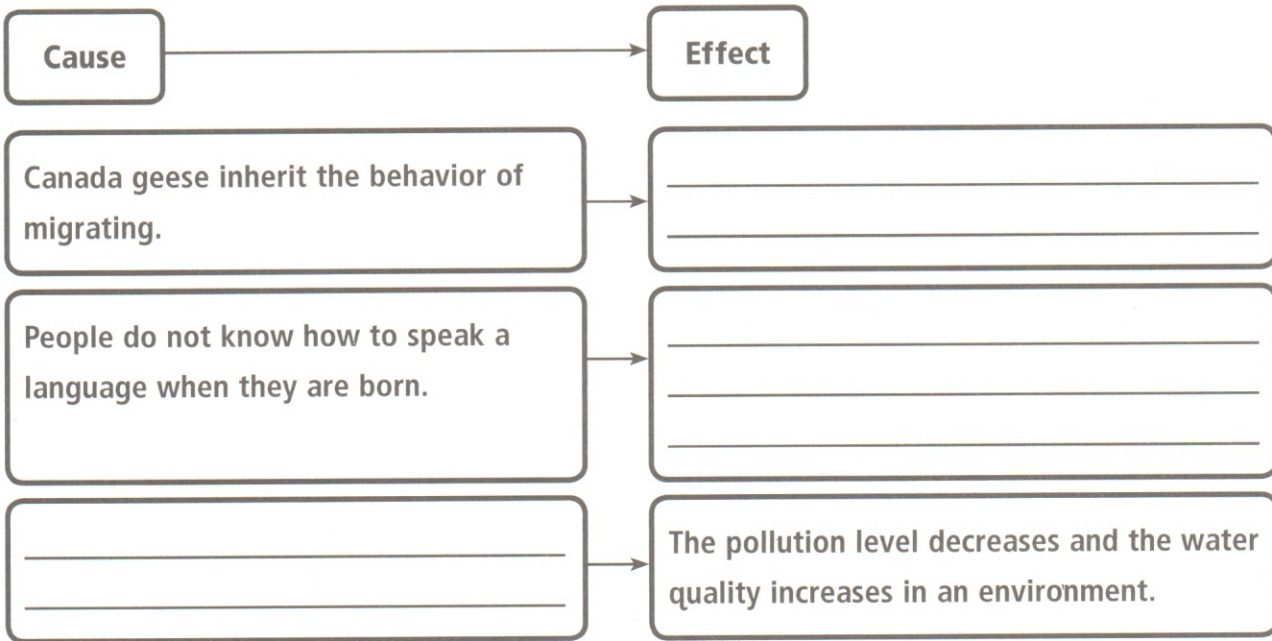
3. Reading Skill Practice—Cause and Effect

Read the selection. Identify cause and effect in this description of instinctive behavior.

Kendra's cat spends some time outdoors and some time indoors. While outdoors, the cat will stalk, chase, and catch field mice. The cat doesn't have to catch prey to survive, because Kendra feeds it twice a day. The cat's hunting and chasing behavior is instinctive.

4.  **Cause and Effect**

Complete the graphic organizer.



5. **Critical Thinking and Problem Solving**

Many northern birds migrate south to warmer climates in winter. How do you think this instinctive behavior helps them survive?

Lesson 3—Instincts and Learned Behaviors

A. Introduction

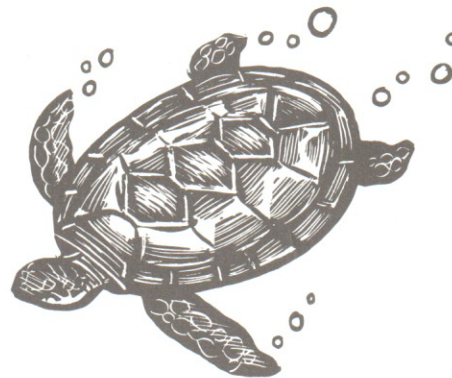
Animal behaviors are either instincts or learned. An **instinct** is a behavior that an organism inherits and does not have to learn. A **learned behavior** is a behavior that an organism must learn.

An instinct is a behavior with which an animal begins life. Instincts are adaptations that help animals meet their needs. Mammals are born with the instinct to suckle. That is the way infants meet their need for food.

B. Instincts

- **Migration**—The repeated movement of a group of one type of animal from one region to another and back again is migration. It is a behavioral adaptation. The Atlantic green turtle's instinct for travel to Ascension Island in the South Atlantic Ocean is an example of migration.

Female Atlantic green turtles go to Ascension Island to lay their eggs. They bury the eggs in the sand on the beach. After hatching, the young turtles crawl into the ocean. Then they swim toward feeding areas along the coast of Brazil, more than 1000 km (about 620 mi) away. When the female turtles become adults, they return to Ascension Island to lay their eggs. The turtles do not learn from other turtles where the feeding areas are or how to get to Ascension Island. They know by instinct where to go.



- **Web Spinning**—Some instincts are common to small groups of organisms, such as spiders. The forming of a web of any kind from silk proteins is *web spinning*. Spiders spin webs instinctively. They know what type of silk protein to use in specific places and situations. Some webs are protective homes, and other webs trap insects that the spider then eats. Without this web-spinning instinct, many spiders could not survive.

- **Communication**—**Communication** is an exchange of information between one organism and another. This behavior is very common in many types of organisms. Human infants communicate by crying and reaching to be picked up. Birds sing songs to one another. Some animals communicate through body language and sounds. *Defensive posture* is an instinct that animals may use to communicate. An animal's body language can let those around it know that it should be left alone. Dogs will growl to warn other animals. When a dog feels afraid or threatened it may hunch low to the ground, show its teeth, and growl.
- **Imprinting**—Newly hatched birds that follow the first object they see are exhibiting an instinct known as **imprinting**. They are born with this instinct.

How do you communicate your needs differently now than you did when you were a baby?

C. Learned Behaviors

Canada geese fly south for the winter, mate for life, and eat grains and water plants. These behaviors are instinctive. Squirrels instinctively bury acorns and other seeds for their winter food. Birds instinctively build nests. However, the nests are not all alike. Some birds weave their nests from twigs, while others hollow out holes in tree trunks. The types of nests depend in part on the environmental habitats of the birds.

Many animals show **learned behaviors**, which are behaviors that an organism must acquire. When someone trains a pet dog to sit or roll over, the dog is exhibiting a learned behavior. Maybe a dog can “shake hands,” or a parrot can say a few words. These are learned behaviors.

Lions, for example, are born with the instinct to kill and eat other animals. To survive, however, young lions must learn hunting skills from adult lions. Both the instinct to hunt and the learned behavior—skillful hunting—help lions survive.

Name _____

Some animals are difficult to study, so we know less about them. For example, the humpback whale makes sounds that can be heard for many kilometers underwater. Scientists think that males might use these sounds, called “songs,” to attract females or to tell other males to stay away. But is the act of singing an instinct? Does a whale learn a song by listening to the songs of other whales? Is it some of each? Scientists are trying to find out.

How do animals acquire learned behaviors?

D. Behavioral Scientists

There are many different careers in the field of instincts and learned behaviors. A behaviorist (ethologist) is a scientist who studies the behavior of animals. A naturalist studies the natural world, and a zoologist studies animals. A behaviorist is the career that best suits learning directly about animal behavior.

Jane Goodall was born in London, England, in 1934. When she was in her late twenties, she met famous anthropologist Louis Leakey and began to work as his secretary, researching great apes. Leakey chose Goodall to study chimpanzees on the Gombe National Reserve in Tanzania. She observed chimpanzees and found them to be meat eaters and tool users. These discoveries were monumental breakthroughs in understanding nonhumans. From 1964 to 1997, Goodall made more than ten major discoveries in animal behavior from learning that chimpanzees constructed tools to realizing that animals “adopt” babies.

Dian Fossey was born in 1932. She too found work with anthropologist Louis Leakey. When Leakey met Fossey, he was searching for someone to study mountain gorillas. Fossey managed to become accepted by the gorillas to the extent that they would make direct contact and play with her.



© Harcourt

Name _____

During the late 1970s, Dian Fossey worked tirelessly against poachers, or people who kill wild animals illegally. The Virunga Volcano natural habitat became unsafe for the gorilla population. Her work to understand and communicate with mountain gorillas was invaluable for behavioral science. She had been able to live with the gorillas as no other human being had in modern times.

Both Dian Fossey and Jane Goodall were pioneers in the field of animal behavior.

E. Historic Breakthroughs in Understanding Animal Behavior

- 1960: Meat-eaters—Chimpanzees seen to be meat eaters
- 1960: Toolmakers—First recorded instance of toolmaking by nonhumans
- 1970: Awe—The chimps danced at the sight of a waterfall. Goodall believed that the expression of awe in chimps resembled similar feelings in humans.
- 1973: Behaviors change—Konrad Lorenz and colleagues Karl von Frisch and Nikolaas Tinbergen won the Nobel Prize in Physiology or Medicine for their discoveries in animal behavioral patterns. Lorenz’s ideas made it possible to understand how animal behaviors can change. He proposed that behavior can change in order to maintain the survival of the species.
- 1974: Warfare—A war broke out between male chimpanzees and lasted four years. This type of violence had not been recorded previously in chimpanzees.
- 1987: Adoption—An adolescent female chimp “adopted” a baby after his mother died of pneumonia.
- 1995: Medicinal plants—Chimps were spotted chewing the plant *Aspilia*, which is thought to relieve stomach pains or reduce internal parasites.

Through careful research, such as the work done by Jane Goodall, Dian Fossey, and Konrad Lorenz, modern behaviorists and naturalists are able to add a great deal to our knowledge about nonhuman animals.

Name _____

Date _____

Activity

A. Be a Behaviorist!

Fill in the table by naming animals that fit in each category. If a behavior doesn't exist in a group of animals, shade in the box.

| | Migration | Communication | Imprinting | Hunting Skills | Using Tools |
|----------|-----------|---------------|------------|----------------|-------------|
| Mammals | | | | | |
| Reptiles | | | | | |
| Fish | | | | | |
| Birds | | | | | |
| Insects | | | | | |

B. Activity Questions

Answer the following questions.

1. Explain your choices of animals for each category.

2. Explain the difference between instincts and learned behaviors.

Name _____

Date _____

Chapter 7—Growth and Inheritance

A. Content-Area Words

The words in the box are related to heredity. Look them up in a glossary. Then write them on the lines to complete each sentence.

recessive trait inherited trait dominant trait gene

1. Each _____ contains a piece of information about the traits you will have.
2. Which hand you write with is an example of a(n) _____.
3. If a plant has purple flowers even though it has one factor for white flowers, then purple flowers must be a(n) _____.
4. If neither of your parents has blue eyes, but you do, then blue eye color must be a(n) _____.

B. Synonym or Antonym?

5. Are the terms *instinct* and *learned behavior* synonyms or antonyms? Look up both terms in a glossary. Then write your answer and explain it.
