



Activity 4

Observe Like a Scientist

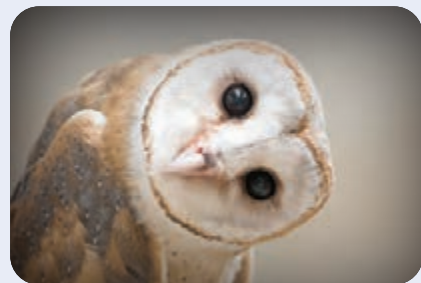
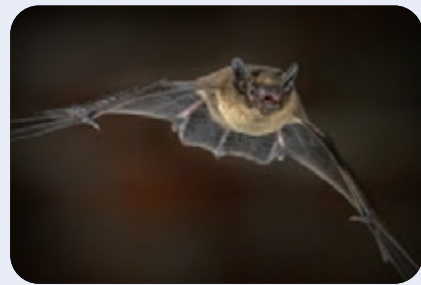
Senses for nocturnal

Have you ever struggled to see something but found that you could use another sense to help you find it? **Read** the text that follows. **Find** evidence to explain how snakes, bats, and owls use their senses to find food, even when they cannot see it. Use what you learn to **answer** the questions that follow.

Have you ever been outside at night? It probably looked very different than it does during the day.

Animals that are most active at night are called nocturnal. There are several reasons why some animals are active at night. In extremely hot places, the best time to look for food is nighttime, when it is cooler. Some animals hunt food that is only available at night. Other creatures rely on the cover of darkness to surprise their prey.

How do these animals hunt without much available light? Super sensory adaptations allow these animals to navigate the darkness safely and find food sources. Bats rely on echolocation. Like dolphins, bats bounce sounds off objects to find food and get around. Unlike dolphins, bats must hunt in the dark. Using the “echo” that returns, bats are able to find insects at night. Owls have both extraordinary sight and hearing. Bowl-shaped faces and specialized head feathers direct distant sounds directly into the owl’s ears. Sometimes animals making noises are hidden in the grass or beneath the snow. Large eyes allow the owl to see tiny, far-away movements. The ability to turn their heads nearly all the way around lets owls search for prey in every direction.



How do bats catch gnats in the dark? _____

How does the shape of an owl’s head help it hear what it cannot see? _____

Life Skills I can identify problems.

How Do Animals Sense Their Environment?



Activity 5

Analyze Like a Scientist

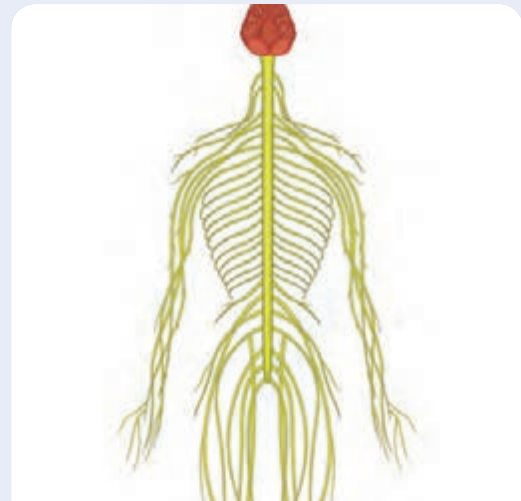
The Nervous System

Imagine you are standing outside a kitchen or restaurant. If you cannot see what is being cooked, how do you think your senses could help you figure out what food is being prepared? **Read** the passage to find out.

The Nervous System

In mammals, such as elephants, humans, and dogs, the nervous system is made up of the **brain**, the nerves, and the spinal cord. The brain is connected to a big **nerve** that runs through the backbone, called the spinal cord. The spinal cord branches out into smaller and smaller nerves that are distributed throughout the body. A few nerves, such as those from the eyes and heart, connect directly to the brain.

The sense organs receive **information** from the environment. Nerves in the body connect the sense organs to the brain. Nerves are constantly receiving information from the senses and sending the information to the brain. For instance, if you smell a pizza, that information is detected by your nose. Then, nerves at the back of the nose send a specific signal to your brain. The signals travel from the sense organ along the nerves to the brain. The brain can determine what to do with the information, including how to react.



The Nervous System

Identify and **list** the parts of the nervous system. Briefly **describe** the function of each.

How Can Different Parts of the Body Work Together As a System?



Activity 6

Evaluate Like a Scientist

Sensing the Environment

Read the following passage to learn more about an extra-small animal with extra-large ears, the Egyptian jerboa. **Consider** the different body systems that work together to help this animal stay alive. **Think** about what you know about the human nervous system's role in responding to danger and how this compares to the jerboa reaction. **Record** your thoughts and findings.

Jumping Jerboa

Evening in the desert means it is time for many animals to wake up and hunt. For some creatures, searching for food can also mean becoming someone's dinner. Luckily, keen senses and well-adapted body parts work together to help animals survive.

The Egyptian jerboa is a desert rodent. It has long hind legs that enable it to jump a long distance. The hair on its feet and toes help grip the sand as the jerboa hops and jumps. As the jerboa hops in zigzag patterns, it can quickly escape danger.

While the jerboa looks for food, it stays alert. Vipers also search the desert for rodents to eat. Luckily, the jerboa's sensitive ears can detect even a quiet snake. When the snake makes noise, sensory **receptors** in the jerboa's ears send a message through a network of nerves to the brain. The jerboa's brain translates the message and alerts the jerboa's legs to move. This entire process happens in a fraction of a second. How long it takes the jerboa to react to danger is called reaction time. The jerboa's sharp sense of hearing and its strong legs for jumping work together with its nervous system. The way in which its senses, physical adaptations, and nervous system work together help it survive.

How does the jerboa's physical response to danger, compare to that of a human?



The Egyptian Jerboa

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