

ADVISORY 1, UNITS 1-2, LESSON 3 CELLS AND BODY SYSTEMS

Summary

- In this lesson, students will read "Seeing Eye to Eye" (pp. 24-31) and "Can You Hear Me Now?" (pp. 40-47) to understand how eyes and ears help animals collect light and sound energy so they can make sense of the world around them.

Science Background

Light and sound are forms of energy that travel in waves. Using their eyes and ears, humans and other animals can capture those waves and transmit the information to their brains. This allows them to interpret the sights and sounds in their environment.

An eye has many parts that work together so we can see. The cornea is a see-through dome that helps focus light. It lies in front of the iris, which is the colored part of the eye. Muscles attached to the iris help it change shape and control how much light enters the pupil, or the black circle in its middle. The lens lies behind the iris. It focuses light onto the retina at the back of the eyeball. The retina contains millions of light-sensitive cells. It captures light and sends messages to the brain.

Ears allow us to hear when they capture sound waves. The waves enter the large, curved outer ear, called the pinna and are then channelled into the ear canal where they strike the eardrum, causing it to vibrate. Those vibrations are transferred to three small bones in the middle ear, the hammer, anvil, and stirrup. Then they are transferred to the cochlea, a coiled, fluid-filled tube in the inner ear that is lined with thousands of tiny hairs. As the hairs sway, they pass onto nerves. The nerves connect to the brain and turn the vibrations into messages the brain can understand.

ENGAGE

Encourage students to flip through the articles and turn and talk with a partner to discuss what they see. Invite students to ask questions or share what they already know about eyes and ears.

EXPLORE

Instruct students to read the headline and deck for these articles on pages 24-25 and 40-41 of their Readers. Point out that the first deck says eyes turn light into sight. The second says your ears pick up sounds. As a class, brainstorm ideas about how eyes and ears make it possible for people to see and hear what is going on around them.

EXPLAIN

Point out to students that light and sound are both forms of energy. **Ask:** *How do eyes turn light into sight?* (They collect light, which stimulates nerve cells in the eye. The cells pass the signals onto the brain, which interprets the information.) *How do ears make it possible for you to hear sounds?* (They capture sound waves. Sound vibrations move into the inner ear where they are transferred to nerves. The nerves connect to the brain and turn the vibrations into messages the brain can understand.) Have students turn and talk as they review the articles for more details about how sight and sound work. Then encourage students to identify differences in anatomy that affect how and what various animals can see and hear.

ELABORATE

Invite students to watch the National Geographic video "Eyes: The Windows to Your Health" (www.video.nationalgeographic.com/video/news/140408-eyes-health-vin) to learn how doctors can examine eyes to find early warning signs for a host of systemic health issues.

EVALUATE

Have students complete the **Content Assessment** for this lesson. Encourage them to share and compare their results in small groups.

Name _____

Date _____

CONTENT ASSESSMENT: Cells and Body Systems, Lesson 3

Create diagrams of an eye and an ear. Label each part.

Eye	Ear

Identify three animals from each article. Explain how their eyes or ears are unique.

Eye

Identify	Explain

Ear

Identify	Explain

© 2018 National Geographic Society. All rights reserved. Teachers may copy this page to distribute to their students.