

حل أسئلة مراجعة وفق الهيكل الوزاري منهج انسابير



تم تحميل هذا الملف من موقع المناهج الإماراتية

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المزيد من مادة
علوم:

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التواصل الاجتماعي بحسب الصف الرابع



صفحة المناهج
الإماراتية على
فيسبوك

الرياضيات

اللغة الانجليزية

اللغة العربية

التربية الاسلامية

المواد على تلغرام

المزيد من الملفات بحسب الصف الرابع والمادة علوم في الفصل الثالث

الهيكل الوزاري الجديد 2025 منهج بريدج المسار العام

1

أوراق عمل في الوحدة العاشرة تغيير الحركة والقوى والمواصلات

2

ورقة عمل درس تغيير الحركة نموذج ثاني

3

ورقة عمل درس تغيير الحركة نموذج أول

4

ورقة عمل درس القوى والمواصلات

5



EoT3_Coverage_G04_Science_Inspire

2024-2025

BY : Amal Gamal

صفحات الهيكل الوزاري لمادة العلوم (انسيير)

2025-2024

معلمة المادة : أمل جمال

MCCQ

1	Students will construct an argument to explain how plants use their structures to survive, grow and reproduce.	Label a Diagram	12
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Plant Parts

Most plants have roots, stems, and leaves. These parts, or structures, help the plant meet its needs and carry out life functions.

Roots

Plant roots take in water and dissolved nutrients from the soil. Roots also hold the plant in place. Some roots store food the plant has made.

Stem

The stem supports the plant. It is also part of a plant's transport system. There are two types of stems: soft stems and woody stems. Soft stems are green and are flexible. Woody stems are hard and are often covered in bark. Tree trunks are examples of woody stems.

Stems also allow materials to move inside the plant through a system of tubes. The tubes in the stems carry water and dissolved nutrients.

Label a Diagram: Roots, Stems, and Leaves

Label the different parts of the plant. Then describe the functions of each of the plant parts below.

Roots:

hold the plant in place,
take in water and
nutrients

Stems:

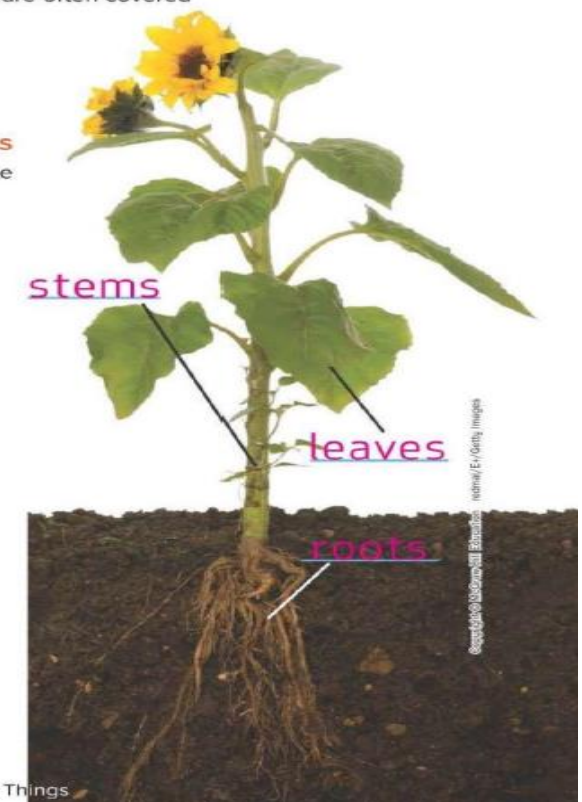
support the plant,
transport materials

Leaves:

capture light and are the
site of gas exchange

Talk About It

Use evidence to construct an argument that plant structures function to support survival.



2	Students will construct an argument to explain how plants use their structures to survive, grow and reproduce.	1	23	2
3	Students will construct an argument to explain how plants use their structures to survive, grow and reproduce.	2	23	3

Three-Dimensional Thinking

- What do plants need to survive?
 - Nutrients
 - Sunlight
 - Gases
 - All of the above
- A(n) **adaptation** is a physical trait or behavior that helps an organism survive.
- How is structure related to function?

Sample answer: All plants have roots, stems, and leaves. The shape of each structure helps it function. Different plants differ in the shape of their structures, but they still function the same way.

4	Students will construct an argument to explain how animals use their structures to survive, grow, and reproduce.	1	32	4
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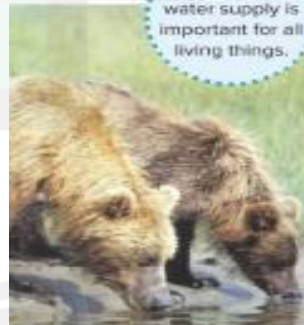
VOCABULARY

Look for these words as you read:

- external structure
- internal structure
- structural adaptation



Butterflies have a body part called a proboscis which helps them get food from flowers and fruits.



An abundant water supply is important for all living things.

Animal Needs and Structures

Animals need food, water, space, and shelter to survive. While all animals have the same needs, they meet their needs in a variety of ways and places.

Food, Oxygen, and Water

Unlike plants, which produce their own food, animals eat other organisms to get energy. Animals use the energy from food to grow, survive, and reproduce. Oxygen, a gas found in air and water, helps animals get energy from food. Water keeps the parts inside an animal's body working properly.

Some animals that live in water need to come to the surface to breathe air. However, most animals that live in water take in oxygen from the water. For example, fish are adapted to exchange gases with the water that surrounds them. They have structures called gills for this purpose.

Space and Shelter

Animals need space to hunt for food, escape from predators, and build homes. A shelter is where an animal makes its home. Shelters provide protection for the animals that live in them. They also provide a place for animals to give birth and raise their young. Birds build nests in trees and on cliffs. Woodchucks and squirrels dig burrows.

- Explain why animals need food and space.

Sample answer: Food provides energy for animals; animals need space so they can hunt for food, escape from danger, and build homes.

5	Students will construct an argument to explain how animals use their structures to survive, grow, and reproduce.	Summarize it	42	5
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LESSON 2

Review

EXPLAIN THE PHENOMENON

How do grizzly bears use their structures?

Summarize It

Explain the function of structures in animals.

Sample answer: Many animals have the same structures; however, sometimes these structures have different functions that make the animal better suited to its environment. For example, birds that spend most of their time in water have feet that help them swim. Birds that spend most of their time on land have feet suited for digging or picking things up from the ground. These adaptations help animals survive.

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REVISIT
PAGE KEELEY
SCIENCE
PROBES

Revisit Page Keeley Science Probe on page 25. Has your thinking changed? If so, explain how it has changed.

6	Students will construct an argument to explain how animals use their structures to survive, grow, and reproduce.	3	43	6
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Three-Dimensional Thinking

- Animals need certain things to survive. Circle all of the things animals need to survive.

A. Animals need food for energy.

B. Animals need water to keep their organs working properly.

C. Animals need sunlight to make their own food.

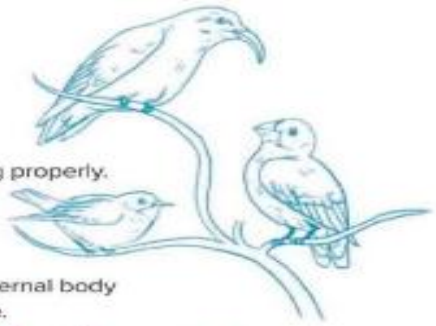
D. Animals need oxygen to raise their young.
- Use an analogy to help explain how internal and external body structures work together to help an animal stay alive.

Sample answer: An animal's body system is like a school. Each person inside the school has a specific job. The principal, like the brain, makes decisions. The janitor, like the intestines, gets rid of waste. The walls of the school are like the skin, which helps protect everything inside. Together they can make the school run properly.
- Look at the photos. What kind of adaptations does the milk snake have? Explain your answer.

milk snake

coral snake

Sample answer: The milk snake has a structural adaption known as mimicry because it has markings that resemble those on a coral snake.



Three-Dimensional Thinking

- Echolocation** is the use of echoes to navigate and to locate prey.
- The _____ form the central nervous system.
 - peripheral nerves and sensory organs
 - brain and sensory organs
 - brain and spinal cord**
 - spinal cord and peripheral nerves
- Look at the photo below. Explain how information is being processed and transferred.



Sample answer: The child is probably seeing musical notes on a piece of paper. The brain then makes sense of the notes and sends a message to his hands and arms, telling them how to move to produce the correct notes. His ears then pick up the sound, which is sent to the brain and interpreted as music.



VOCABULARY

Look for these words as you read:

brain

central nervous system

echolocation

nervous system

peripheral nerve

sensory organ

spinal cord

Animal Senses

Think about how you used your sense of touch in the Inquiry Activity, *Sense of Touch*. Animals also use their senses to learn about their environments. They have **sensory organs**, such as skin, eyes, nose, and tongue, that gather information from outside the body. Like humans, most animals can see, hear, smell, taste, and feel.

Many animals depend on their eyesight to survive. Colossal squids live in ocean waters. They have some of the largest eyes in the animal kingdom. Each eye is about 26 centimeters (10 inches) wide. Large eyes let in a lot of light. This helps the squid see in the dark depths of the ocean.



African elephants have the biggest ears of any animal. Their ears help them hear sounds from very far away. Elephants communicate by making low, rumbling noises that humans cannot hear; however, other elephants can hear them from miles away.

Some animals use different sensory organs than humans. Ants do not have noses. They use their antennae to leave a scent after finding food and to detect smells. Butterflies use their feet to taste leaves. The taste tells them if the plant is a good place to lay their eggs.

- Underline the sensory organs discussed in the paragraphs above. Circle them in the photos.
- Draw and label a diagram to show how ants use their sensory organs to learn about their environments.

Students' diagrams should include antennae labeled as a sensory organ that detects smells. Eyes might also be labeled.



Jackrabbits have long, pointy ears that give them excellent hearing.

Reflexes

The body responds in different ways to stimuli.

A reflex is a quick reaction that occurs without waiting for a message to be sent from nerves to the brain. For example, touching something hot causes the hand to quickly pull away. No conscious thought is involved in this response. Instead, this reflex is an action controlled by the spinal cord.

2. **ENGINEERING Connection** Describe a type of technology or tool that has been designed to improve a human sense.

Sample answer:
Eyeglasses are a technology that helps people see better.



Talk About It

How can memory guide your response to the environment? Discuss with a partner.



People who are visually impaired can process information by using their other senses much more efficiently.

GO ONLINE Use the Personal Tutor Reflexes to learn how reflexes work to keep you safe.

REVISIT Revisit the Page Keeley Science Probe on page 55.

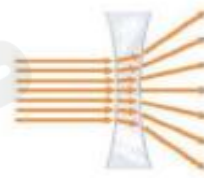


Refraction is the bending of a light wave as it changes angles passing from one substance into another. Light slows down when it moves from one material to a denser material. This decrease in speed causes the light's angle to change, or its direction to bend.

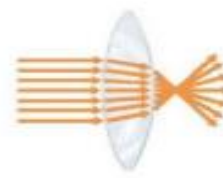
A clear piece of glass or plastic through which light travels is called a lens. If the lens is flat, the light's path shifts a little, but its final direction does not change. A lens that is thinner in the middle is a **concave lens**. Light that passes through a concave lens spreads outward. A lens that is thicker in the middle is a **convex lens**. Light that passes through a convex lens will come together at a focus point. The image you see when you look at an object through a convex lens depends on how far away the object is. Up close, the lens will cause the object to look bigger. Far away, the image will appear upside-down and smaller.



flat lens



concave lens



convex lens

2. What is the difference between refraction and reflection?

Sample answer: Refraction is bending of light as it passes from one material to another. Reflection is when light hits a surface and bounces off.

Concave lenses are used in eyeglasses for people who are nearsighted, or have trouble seeing objects that are far away. Convex lenses are needed for people who are farsighted, or have trouble seeing objects that are up close.



Talk About It

Discuss with a partner. What is the difference between a concave lens and a convex lens?

VOCABULARY

Look for these words as you read:

- concave lens
- convex lens
- image
- opaque
- reflection
- refraction
- translucent
- transparent

A mirror that is convex, or curved outward, allows a driver to see a wide area behind the car.



Reflection and Refraction

Recall how the beam of light traveled in the Inquiry Activity *How Light Travels*. Light has the properties of reflection and refraction.

Reflection is the bouncing of light waves off a surface. Most of the light that reaches your eye is reflected light. Look at your desk. If the desk did not reflect light, you could not see it. Most surfaces reflect at least some light. **Smooth, shiny surfaces such as mirror reflect almost all of the light falling on them.** Dull, rough surfaces reflect the least amount of light. The colors that you see are the colors that are reflected from objects.

When light reflects off a surface, it changes direction. Think about the mirror and flashlight in the Explore activity. The light rays moving toward a surface are the incoming rays. The reflected light rays are the outgoing rays. The angles of the incoming and outgoing rays are always equal. This is called the law of reflection. The **image** you see in the mirror is a "picture" of the light source that light rays make when bounced off a polished, shiny surface.

1. Draw a diagram to show how light allows objects to be seen. Include the light source, the eye, and label the direction of the light rays. Use the diagram to describe what happens if the eye is closed. What happens if the light is blocked or its path is changed? What if the light source is removed?

Students could draw light coming from the Sun and traveling to an object. The light should change direction (reflect) off of the object and enter the eye.

Sample answer: If the eye is closed or the light source is removed, nothing can be seen. If the light is blocked or its path is changed, the object will not be seen because its reflected light will not enter the eye.

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Three-Dimensional Thinking

1. A design criterion for an information transfer device is the accuracy of the message received.

Information Transfer Device	Accuracy of Received Messages (%)
Design 1	89.8
Design 2	99.7
Design 3	96.4
Design 4	92.1

The table above shows the results of a test on four different designs. Order the designs from best to worst.

Design 2, Design 3, Design 4, Design 1

2. Which of the following correctly represents how cell phones work?
A. message → cell tower → phone 1 → phone 2 → cell tower → message
B. cell tower → message → phone 1 → cell tower → phone 2 → message
C. message → phone 1 → cell towers → phone 2 → message
D. phone 1 → phone 2 → messages → cell towers
3. Which is not an example of using patterns to transfer information?
A. Morse code
B. binary code
C. smoke signals
D. thermal insulators



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Digital Communication

Technology has greatly improved our ability to communicate voice, text, images, and video over long distances. Computers and phones send this information using patterns. These devices can process binary code.

Binary code is a system that represents letters, digits, or other characters using zeros and ones. Using binary code, information can be sent quickly and accurately to another device. Photos, video, text, and voice information can be sent long distances. It can be coded and decoded without affecting the original information.

Computers use binary code to store and send information.

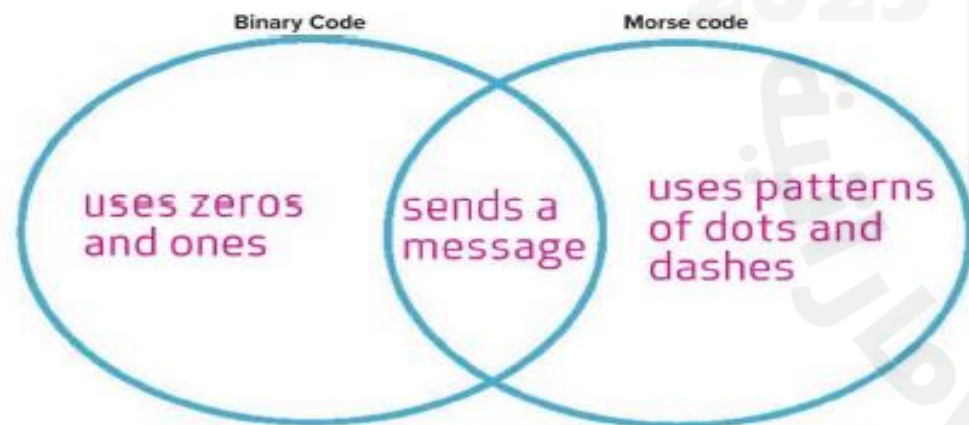


Binary Code Message

The binary code uses a series of zeros and ones to code a message. For example "I love science" is represented by the pattern below.

01001001 00100000 01101100 01101111 01101110 01100101 00100000
01110011 01100011 01101001 01100101 01101110 01100011 01100101 00100001

- How is binary code similar to Morse code? How is it different?



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Telegraph

The telegraph was invented in the 19th century. Solomon Brown, the first African-American to work for the Smithsonian Institution in Washington, D.C., worked together with Samuel Morse to revolutionize communication. The telegraph provided a faster and more reliable way to communicate over long distances. Information was sent through a wire using an electric signal. Telegraph operators would send electric signals in patterns of on-off tones, or clicks. This pattern system became known as Morse code. In the late 19th century, the telegraph was improved using wireless technology called radio.



Telegraph operators used patterns of clicks to send messages. They also interpreted these patterns and translated them back into messages.

Radio

Radio is the transmission of information using a certain wavelength of electromagnetic waves. Recall that waves are disturbances that transfer energy from one point to another. A radio wave is detected by a receiver and converted to a sound wave that humans can hear.



Sonar

Sonar is a system that uses sound waves to detect objects underwater. Some sonars send a sound wave, or pulse of sound. It then listens for the returning echo. The sound data is displayed on a monitor or heard on a loudspeaker.

How did people use patterns to send messages long ago?

Sample answer: They used patterns of smoke with signal fires, patterns of clicks sent with a telegraph, and patterns of radio waves using radios.

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FRQ

16

Students will construct an argument to explain how plants use their structures to survive, grow and reproduce.

Summarize it

22

16

3

23

17



LESSON 1

Review

EXPLAIN THE PHENOMENON

Why are these trees so tall?

Summarize It

Construct an argument about how structure in plants support growth, survival, and reproduction.

Sample answer: The structure of the redwood trees helps them grow, survive, and reproduce. Their stems are very tall and woody to support them. The tall trunks also help them reach the foggy sky. Their leaves help move the moisture from the fog to the ground, where it can be absorbed by their roots. Their thick bark helps them survive forest fires.

credit: Getty Images/PhotoDisc



Three-Dimensional Thinking

1. What do plants need to survive?

- A. Nutrients
- B. Sunlight
- C. Gases
- ☒ D. All of the above

2. A(n) **adaptation** is a physical trait or behavior that helps an organism survive.

3. How is structure related to function?

Sample answer: All plants have roots, stems, and leaves. The shape of each structure helps it function. Different plants differ in the shape of their structures, but they still function the same way.

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17	Students will construct an argument to explain how animals use their structures to survive, grow, and reproduce.	Lesson 2 Launch	25	18
		2	33	19

LESSON 2 LAUNCH



Animal Parts

Animals are made up of different parts that help an animal live in its environment. Circle all of the parts that could be found on an animal.

Ear	Shell	Claw
Heart	Leaf	Feather
Tentacle	Tail	Fur
Roots	Lungs	Skin
Teeth	Antennae	Wings
Fin	Beak	Seeds

Explain your thinking. How did you decide which things are parts of an animal?

Sample answer: I think all of them could be found on an animal except the leaf, roots, and seeds. These are parts of plants, not animals. As I read each word, I tried to think of an animal that has that part.

You will revisit the Page Keeley Science Probe later in the lesson.

Lesson 2 Launch

25

18

2

33

19

Structures

Structures inside and outside animals' bodies work together to obtain nutrients, digest food, eliminate waste, and reproduce. These parts keep an animal alive and help it reproduce.

Internal structures are structures found inside an organism's body. These structures, like the major organs, have specific functions. For example, the brain's main function is to process information. The stomach helps digest food. The intestines absorb nutrients. Kidneys help eliminate waste. Lungs help with the exchange of gases. Animals can reproduce once their reproductive organs reach maturity.

External structures are found outside of an organism's body. A shark's teeth and a bird's beak are examples of external structures that help these animals get food.

- WRITING Connection** Revisit the Explore activity. Research the two different animals that you compared, focusing on their internal structures this time. Write a short summary explaining how these structures help each animal survive its environment. Use a separate piece of paper if needed.

Sample answer: Both mountain lions and lizards have many organs in common such as a brain to help process information, intestines to absorb nutrients, and kidneys to eliminate waste from their system.

GO ONLINE Watch the video *Animal Structures* to learn more about animal structures.



Orangutans move by swinging from tree to tree. They need plenty of space to find shelter and food.



Robins build nests that are high off the ground so that they can safely lay eggs and raise their young.



Fish take in oxygen from the water through their gills.

LESSON 1

Review

EXPLAIN THE PHENOMENON

How do animals learn about their environments?

Summarize It

Explain how animals sense, process, and respond to different types of information.

Sample answer: Animals use their sensory organs to gather information about the environment. Different sensory organs are used to gather different types of information. The information is sent through the peripheral nerves, to the spinal cord, and then to the brain. The brain makes sense of the information and sends a response.



Revisit the Page Keeley Science Probe on page 55. Has your thinking changed? If so, explain how it has changed.

The Nervous System

Sensory organs are part of the nervous system. The nervous systems of many animals are similar to the human nervous system. The **nervous system** is the set of organs that uses information from the senses to control all body systems. The **central nervous system** is the part of the nervous system made up of the brain and spinal cord.

The **brain** is an organ that interprets messages received from and sends messages to other body organs. The **spinal cord** is a thick band of nerves inside the spine. It carries messages to and from the brain. Nerves branch off from the spinal cord to all parts of the body. A nerve that is not part of the central nervous system and receives sensory information from other parts of the body is called **peripheral nerve**.

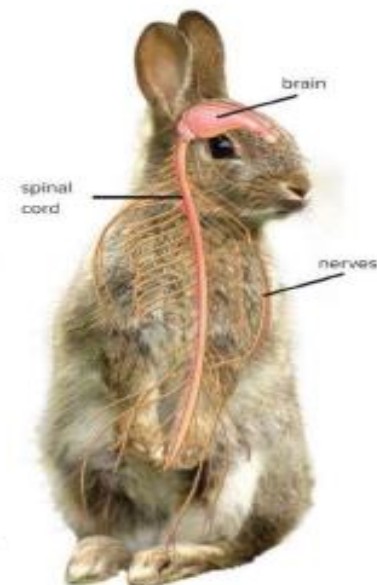
Stimulus and Response

Sensory organs have structures called sensory receptors. Different receptors help detect different types of stimulus from the environment. A stimulus is a thing or event that causes a given response. The process of recognizing and interpreting a stimulus is called perception. The brain then makes sense of the information and tells the body how to respond. Sensory information can be stored as memories that can guide future responses.

1. A rabbit sees a fox. Use the diagram to describe what happens in the rabbit's body that causes the rabbit to run away and hide.

Sample answer: The information travels from the eyes, to the nerves, to the spinal cord, and then reaches brain. The brain sends back a respond through the nerves, to run and hide.

GO ONLINE Explore the *Brain Illumination* simulation to learn more about how your brain interprets stimuli.



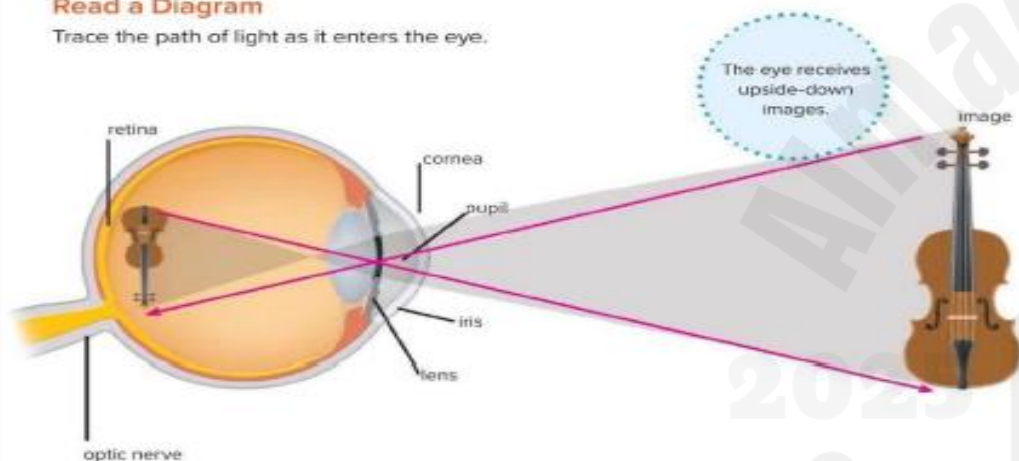
GO ONLINE Explore *The Brain and Nervous System* to learn about systems of information transfer.

The Human Eye

You see an image when light reflects off an object and enters your eye. The diagram shows the different parts of the eye that light passes through. Light passes through the cornea and the pupil in your iris. The lens refracts the light so that it hits the retina on the back of the eye. The retina sends signals to the brain, and the brain interprets the signals as images. The eyes of other animals work in a similar way.

Read a Diagram

Trace the path of light as it enters the eye.



1. How do reflection and refraction allow animals to see?

Sample answer: Animals rely on reflection of light to be able to see objects. If light did not reflect off an object, the object would not be visible unless it gave off its own light. Light entering the eye is refracted. Without refraction, vision would be blurry.

REVISIT Revisit the Page Keeley Science Probe on page 73.

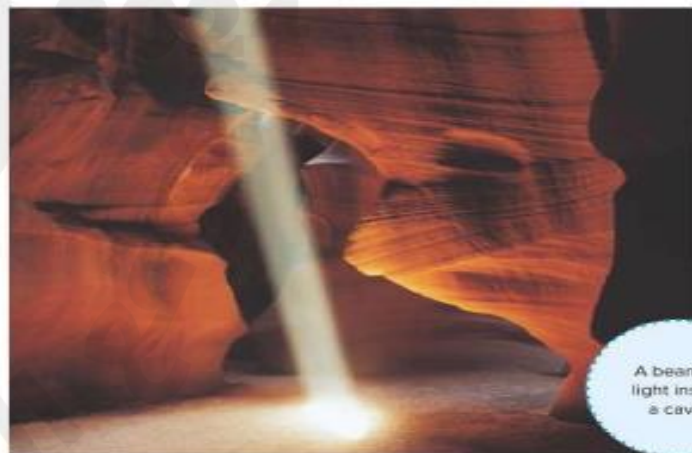


Three-Dimensional Thinking

- _____ is the bending of light waves as they change angle passing from one substance into another.
 - Reflection
 - Refraction**
 - Translucent
 - Retention
- Most predators have eyes on the **front** of their heads.
- Explain how cataracts can have a negative effect on the role of animal eyes.



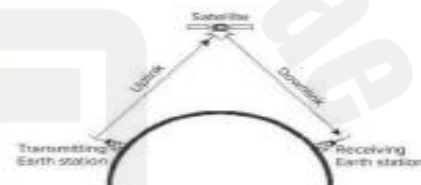
Sample answer: Animal eyes are very important for finding food and for survival. If an animal cannot see as well because of cataracts, the animal may not be able to find food as easily. It can also put the animal in harm's way if it can't see a predator in time.



A beam of light inside a cave.

Communications Satellites

Radio waves are also used by communications satellites. Communications satellites orbit Earth. These satellites can receive signals and then transmit them over long distances. Information is sent by radio waves to the satellite using a transmitting station. This is called an uplink. The uplink could be carrying phone calls, Internet information, or video information. Once the satellite receives the signal, it makes it stronger before transmitting it back to Earth. This is called a downlink. The re-transmitted signal is then picked up by a receiving station. Communications satellites allow information to be sent to places where cell phones or other methods of communication do not work.



Over 1,000 working satellites currently orbit Earth.

2. What are the advantages of using a communications satellite?

Sample answer: Communications satellites can be used in areas where there are no phone lines. They can send information to the other side of Earth quickly.