



UNITED ARAB EMIRATES
MINISTRY OF EDUCATION

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2025-2026

**Inspire
Science**

UAE Edition
Grade 7 Advanced
Student Edition



Mc
Graw
Hill

G7 ADV EOT1 COVERAGE SCIENCE

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GRADE:7A1
AL MASSA SCHOOL

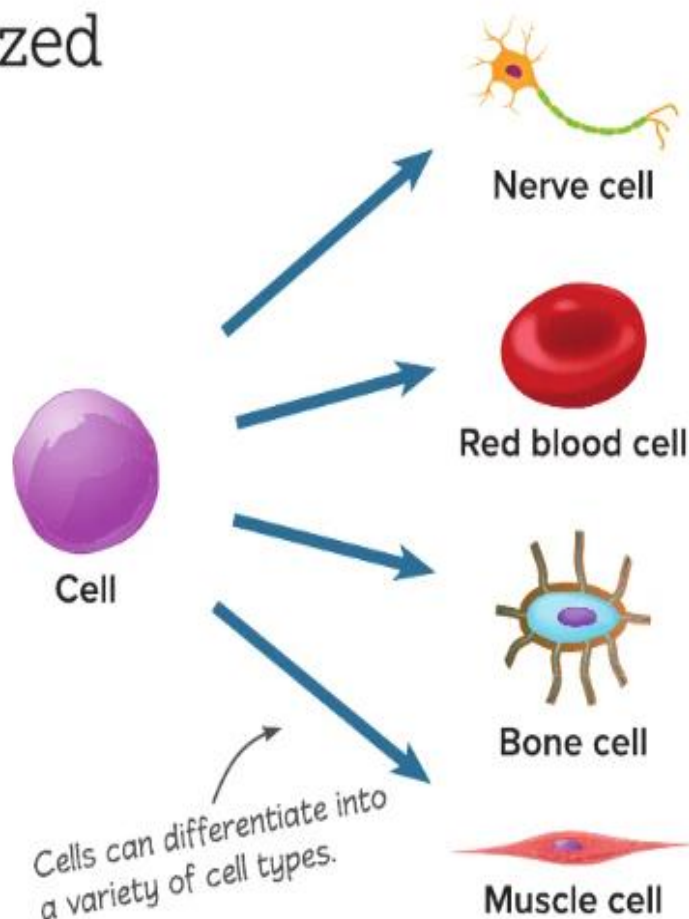
اللهم ارزقني قوة الحفظ، وسرعة الفهم، وصفاء
الذهن، اللهم ألهمني الصواب في الجواب، وبلغني
أعلى المراتب في الدين والدنيا والآخرة

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How are cells organized in the body?

Organisms can be unicellular—made of one cell, or multicellular—made of more than one cell. You’ve learned that your own body has trillions of cells! Multicellular organisms have different types of cells that each perform a specific job.

As multicellular organisms grow, cells divide to produce new cells. The first cells made can become any type of cell, such as a muscle cell, a nerve cell, or a blood cell, through the process of **cell differentiation**. As the number of cells in an organism increases, similar types of cells are organized into groups.



INVESTIGATION

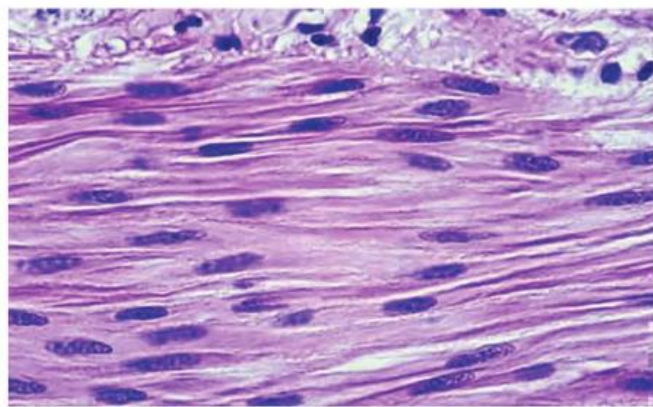
When Cells Get Together

1. Look at the cells provided by your teacher. What type of cell do you think each is? What do you think each cell does?

2. What larger part of the body do you think cells make up?

Tissues Cells group together to form tissues. **Tissues** are groups of similar types of cells that work together to carry out specific tasks. Humans, like most other animals, have four main types of tissue—muscle, connective, nervous, and epithelial (eh puh THEE lee ul). Muscle tissue, shown in the photo to the right, causes movement. Connective tissue provides structure and support and often connects other types of tissue together. Nervous tissue carries messages to and from the brain. Epithelial tissue forms the protective outer layer of the skin and the lining of major organs and internal body cavities.

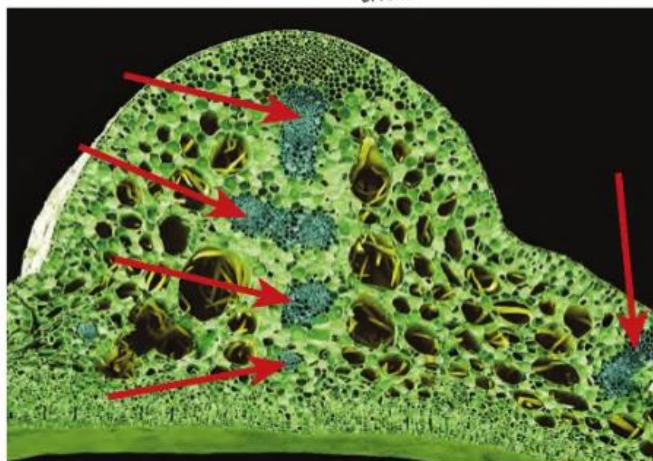
Plants also have different types of tissues. The three main types of plant tissue are dermal, vascular (VAS kyuh lur), and ground tissue. Dermal tissue provides protection and helps reduce water loss. Vascular tissue, shown in the photo to the right, transports water and nutrients from one part of a plant to another. Ground tissue provides storage and support and is where photosynthesis takes place.



LM Magnification: 250x

This muscle tissue contracts the stomach to help digestion.

What do you think these dark spots are?



Color-Enhanced SEM Magnification: 30x

Plant vascular tissue, indicated by arrows, moves water and nutrients throughout a plant.

(l)Victor P. Ereschenko, (b)Steve
Alamy Stock Photo



THREE-DIMENSIONAL THINKING

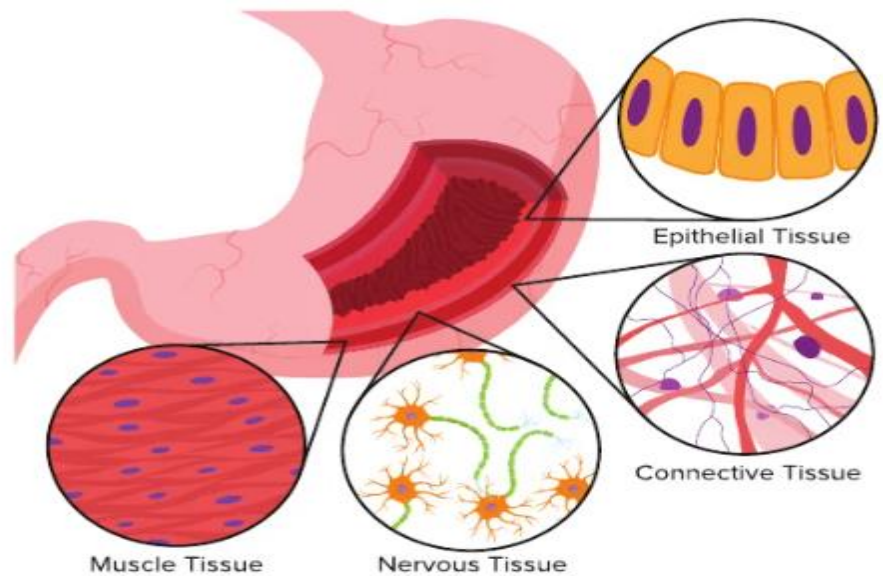
WRITING Connection Write an **argument** that **explains** which human tissue is most similar in **function** to dermal tissue in plants.

COLLECT EVIDENCE

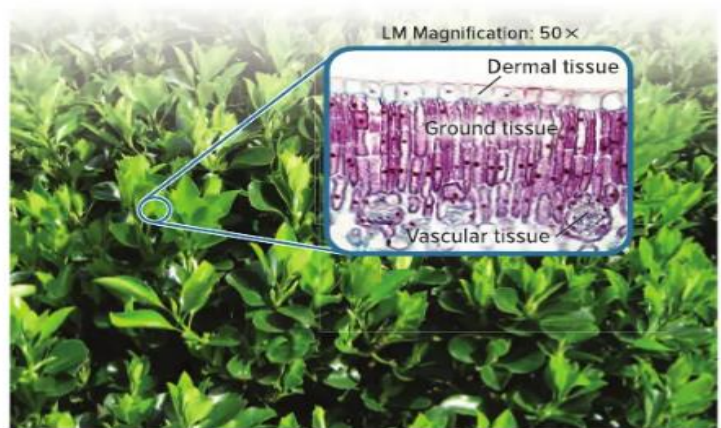
How are cells grouped together in an organism to form a larger system within the body, similar to the way dots in pointillism art are organized? Record your evidence (A) in the chart at the beginning of the lesson.

Organs Complex jobs in organisms require more than one type of tissue.

Organs are groups of different tissues working together to perform a particular job. For example, your stomach, shown in the image below, is an organ specialized for breaking down food. It is made of all four types of tissue: muscle, epithelial, nervous, and connective. Each type of tissue performs a specific function necessary for the stomach to work properly. Layers of muscle tissue contract and break up pieces of food, epithelial tissue lines the stomach, nervous tissue sends signals to indicate the stomach is full, and connective tissue supports the stomach wall.



Plants also have organs. Leaves are organs specialized for photosynthesis. Each leaf is made of dermal, ground, and vascular tissues. Dermal tissue covers the outer surface of a leaf. The leaf is a vital organ because it contains ground tissue that produces food for the rest of the plant. Ground tissue is where photosynthesis takes place. The ground tissue is tightly packed on the top half of a leaf. The vascular tissue moves both the food produced by photosynthesis and water throughout the leaf and the rest of the plant.



A plant leaf is an organ made of several different tissues.

COLLECT EVIDENCE

How are tissues grouped together in an organism to form a larger system within the body, similar to the way dots in pointillism art are organized? Record your evidence (B) in the chart at the beginning of the lesson.

Organ Systems Usually organs do not function alone. Instead, **organ systems** are groups of different organs that work together to complete a series of tasks. For example, the human digestive system is made of many organs, including the stomach, the small intestine, the liver, and the large intestine. These organs and others all work together to break down food and take it into the body.

Plants have two major organ systems—the shoot system and the root system. The shoot system includes leaves, stems, and flowers. Food and water are transported throughout the plant by the shoot system. The root system anchors the plant and takes in water and nutrients.

COLLECT EVIDENCE

How are organs grouped together in an organism to form a larger system within the body, similar to the way dots in pointillism art are organized? Record your evidence (C) in the chart at the beginning of the lesson.

How are organ systems organized in the body?

In a multicellular organism, similar cells work together and make a tissue. Tissues are organized into organs, and organs are organized into organ systems which work together to keep an organism functioning. How can you model the levels of organization in an organism?



Three-Dimensional Thinking

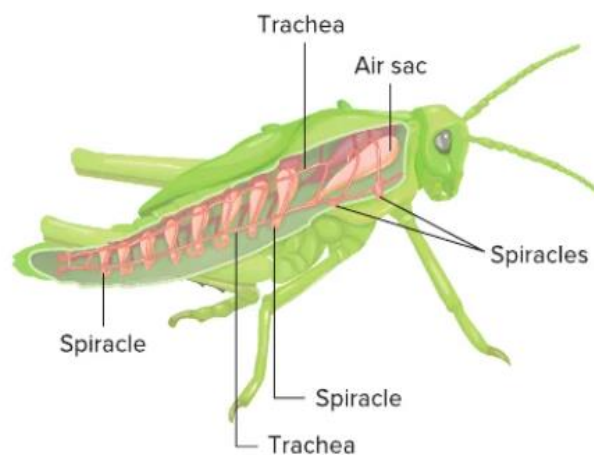
Cade is making a presentation on the way systems are organized in plants and animals for his science class. He prepared this flowchart to illustrate his presentation.



2. After further study, Cade realized his flowchart was incorrect. Which change should he make to correct the flowchart?

- A add the phrase *Cell Membranes*
- B move *Organ Systems* to the beginning
- C remove *Tissues* and *Cells*
- D switch *Organs* and *Cells*

The diagram shows the structures involved in respiration for a grasshopper.

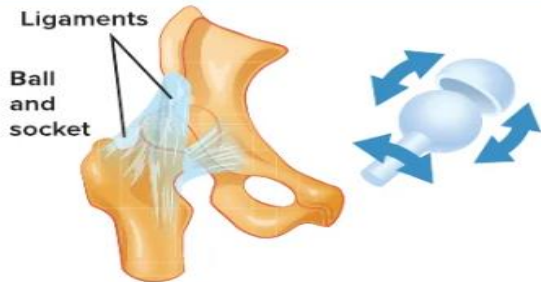
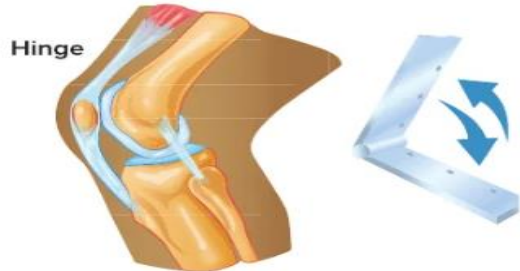


3. These structures are an example of which level of organization within an organism?

- A The structures make up an organelle.
- B The structures make up an organ system.
- C The structures make up a specialized cell.
- D The structures make up a tissue.

Joints Your bones work together at places called joints. A **joint** is where two or more bones meet. Joints provide flexibility and movement, like you saw with the girl doing a handstand at the start of the lesson. Bones are connected to other bones by tissues called **ligaments**. When the bones in joints move, ligaments stretch and keep the bones from shifting away from each other.

PHYSICAL SCIENCE Connection Your arms and legs may not seem like machines, but in fact they are. When muscles pull on bones they act like a simple machine called a lever. Levers rotate about a fixed point, which in your body are the joints. Three different types of joints enable movement—ball and socket, hinge, and pivot joints. Examine the different joints in the table.

Types of Movable Joints		
Joint	Description	Example
 Ligaments Ball and socket	allows bones to move and rotate in nearly all directions	hips and shoulder
 Hinge	allows bones to move back and forth in a single direction	fingers, elbows, knees
 Pivot	allows bones to turn	neck, lower arm below the elbow

Analyze and Conclude

6. Infer which function of the skeletal system this experiment modeled.

Bones provide support. They help you sit up, stand, and raise your arm over your head to ask a question. What else can the skeleton do for the body?

Protection Feel your head, and then feel your stomach. Your stomach is softer than your head. The hard, rigid structure you feel in your head is your skull. It protects the soft, fragile tissue of your brain from damage. Other bones protect the spinal cord, heart, lungs, and other internal organs.

Production and Storage Another function of bones is to produce and store materials needed by your body. Red blood cells are produced inside your bones. Bones store fat and calcium. Calcium is needed for strong bones and for many cellular processes.

**THREE-DIMENSIONAL THINKING**

Use an **argument** to support or refute the following claim: Your body would be able to **function** without your skeletal **system**.

What about organisms that don't have bones, such as worms? What provides them with structure, and how do they move?

Data and Observations

Observations of Three Types of Muscle Cells			
Cell Characteristics	Skeletal	Cardiac	Smooth
Shape and color			
Nucleus location and number			
Arrangement patterns			

Analyze and Conclude

8. How do the characteristics of each cell type differ?

9. Based on your observations of the structure of each type of cell, can you infer any of their functions?

You just examined three types of muscle cells. Read about each type to learn more!

Skeletal Muscle The type of muscle that attaches to bones is skeletal muscle. Skeletal muscles are also called voluntary muscles, which are muscles that you can consciously control. The contractions of skeletal muscles can be quick and powerful, such as when you run fast.

Cardiac Muscle Your heart is made of **cardiac muscles**, which are found only in the heart. A cardiac muscle is a type of involuntary muscle, which is muscle you cannot consciously control. When cardiac muscles contract and relax, they pump blood through your heart and through blood vessels throughout your body.

Smooth Muscle Blood vessels and many organs, such as the stomach, are lined with smooth muscles. **Smooth muscles** are involuntary muscles named for their smooth appearance.

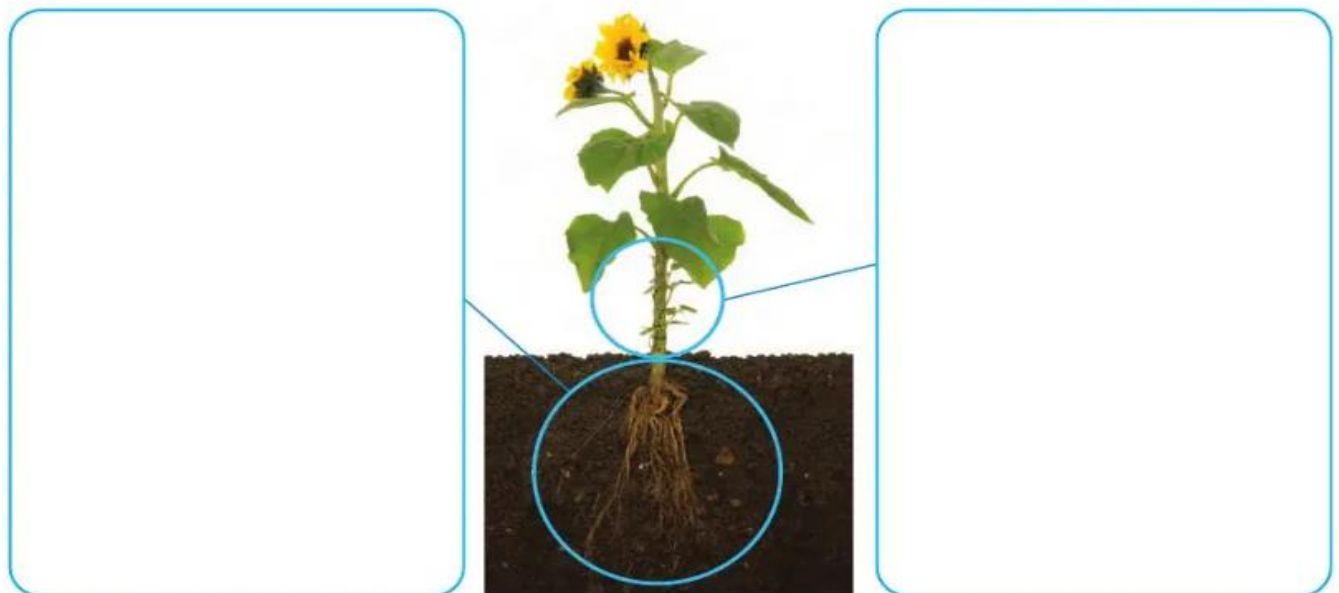
What systems do plants have that give them structure and support?

Many animals use muscles to move while bones offer support and structure. Do plants have similar structures that give them support?

INVESTIGATION

Plant Posture

Take a look at the image of plant structures below. Use what you know about animal bodies to infer how the indicated structures support the plant.



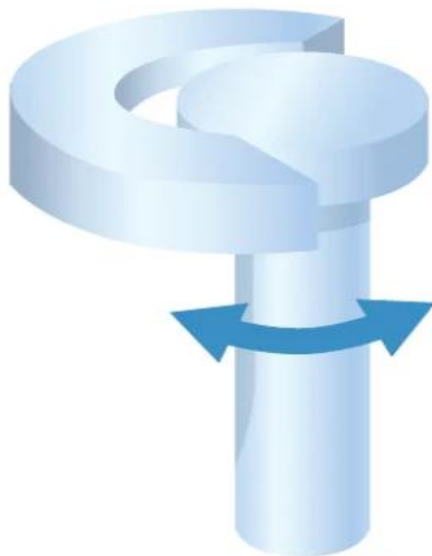


Three-Dimensional Thinking

3. Why do muscle cells have so many mitochondria?
- A Muscle cells are bigger than every other cell and can fit more mitochondria.
 - B Muscle cells need to quickly respond to energy needs.
 - C The mitochondria in muscle cells are smaller so more are needed.
 - D There are more mitochondria only because there are more nuclei.

4. What is the effect when a muscle contracts?
- A The muscle lengthens.
 - B The muscle pushes on a bone.
 - C The muscle pushes on another muscle.
 - D The muscle shortens.

Use the diagram below to answer question 5.



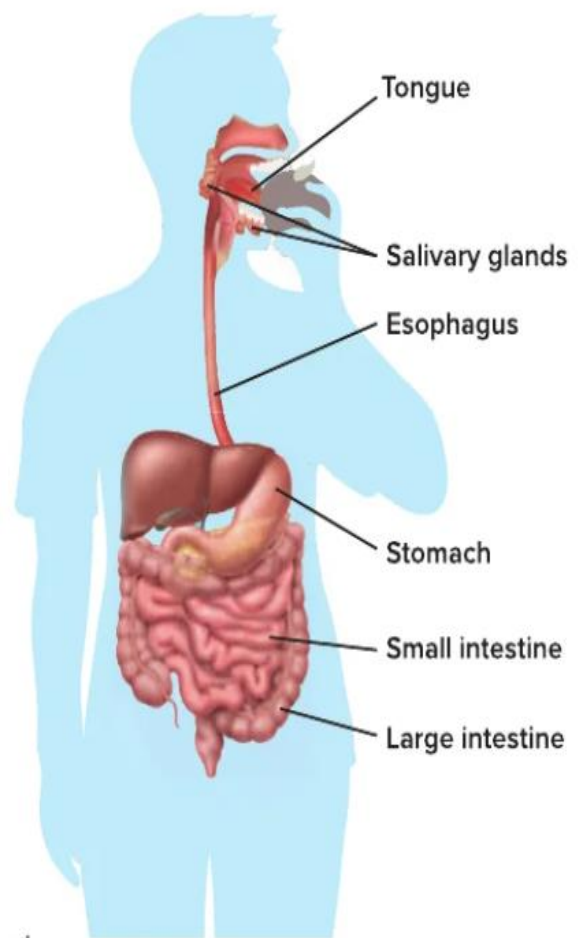
5. The image above represents a joint that would be found in which structure?
- A finger
 - B knee
 - C neck
 - D shoulder

Obtaining Energy and Removing Waste

The Stomach Once your partially digested bread leaves the esophagus, it enters the stomach. The stomach is a large, hollow organ. One function of the stomach is to temporarily store food. Another function of the stomach is to aid in chemical digestion. The stomach contains an acidic fluid called gastric juice. Acid helps break down some of the structures that hold plant and animal cells together, including those in the bread.

The Small Intestine Most chemical digestion occurs in the small intestine, a long tube connected to the stomach. It is also where nutrient absorption occurs. The folds of the small intestine are covered with fingerlike projections called **villi** (VIH li) (singular, villus). Each villus contains small blood vessels. Nutrients in the small intestine enter the blood through these blood vessels.

The Large Intestine Most of the water in ingested foods and liquids is absorbed in the small intestine. As the bread travels through the large intestine, even more water is absorbed. Materials that pass through the large intestine are the waste products of digestion. The waste products become more solid as excess water is absorbed. Then the semisolid waste is eliminated from the body.



THREE-DIMENSIONAL THINKING

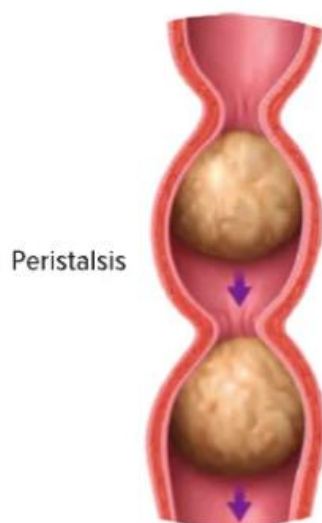
As the bread was digested, it interacted with other body **systems**.

Explain how the different body **systems** were involved in the digestion of the bread.



Three-Dimensional Thinking

2. Peristalsis occurs in the esophagus and helps food travel from the mouth to the stomach. Which of the following explains the cause of peristalsis?



- A** The skeletal system presses into the esophagus, moving food downward.
- B** When the lungs inhale and exhale, it can force the esophagus to move.
- C** Peristalsis is the persistent movement of the esophagus; it is not caused or triggered by any one body system.
- D** Waves of muscle contractions help push food down the esophagus toward the stomach.
-
3. What would be the effect on your body if you did not have kidneys—important organs in the excretory system?
- A** My body would not absorb nutrients.
- B** Waste would collect in the blood and become toxic.
- C** I could not eat gluten.
- D** Saliva could not be produced.

How do humans transport materials?

Breathing is the movement of air into and out of the lungs. Breathing enables your respiratory system to take in oxygen and to eliminate carbon dioxide.

Read a Scientific Text

HISTORY Connection Harry Houdini was a world renowned magician and escape artist who lived from 1874–1926. Houdini routinely performed daring escapes that involved being handcuffed, locked in a container, and submerged in water. How was he able to survive long enough to escape?



CLOSE READING

Inspect

Read the interview with a former employee of Harry Houdini.

Find Evidence

Reread the passage. Circle any words that refer to breathing. Write a sentence on the line below explaining the cause and effect of controlling your breathing.

Make Connections

Collaborate With your partner, discuss how you think it is possible to hold your breath for extended periods of time.

PRIMARY SOURCE

Folklore of Stage People

"Maybe you were too young, but do you remember [Houdini's] famous burying himself alive trick? He used to have himself buried under sand, or in a glass coffin in a tank of water, and when they would pull him up 35 minutes later he was alive. He did that by breath control."

"You see, there's a [certain] amount of oxygen in that coffin. If you have breath control and breathe very slowly and calm all the time, there will be enough oxygen there for 35 minutes. But say you're excited and you start [gasping] for breath, why then the oxygen is used up in a [couple of] minutes. That's all there was to it. But it takes a man of iron nerves and a tremendous amount of control to be able to do it"

Terry Roth (Interviewer) & George Nagle (Interviewee), 1939

Source: Library of Congress

The Respiratory System Gases are exchanged between the body and the environment. The parts of the respiratory system, shown to the right, work together and supply the body with oxygen. They also rid the body of wastes, such as carbon dioxide.

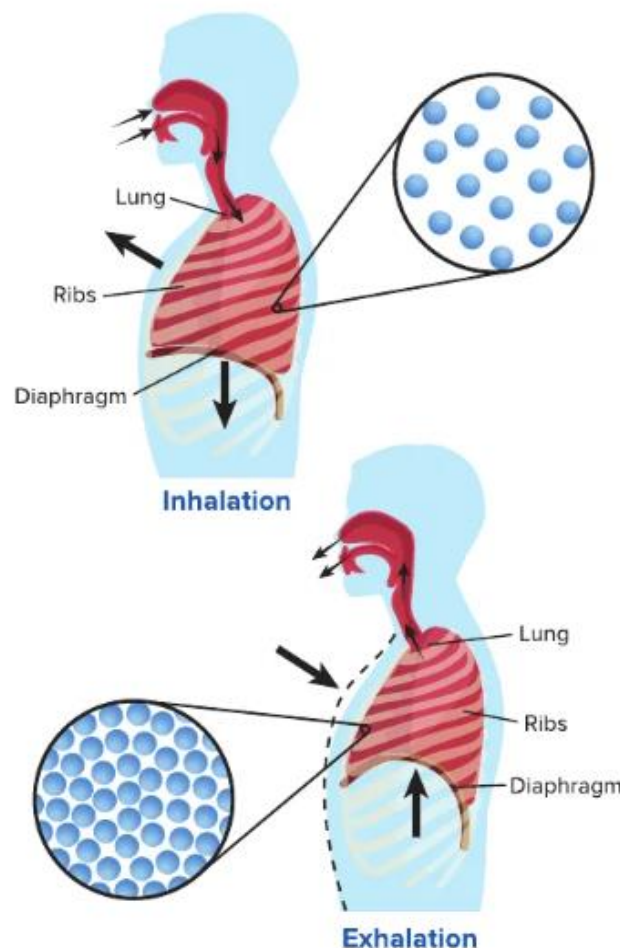
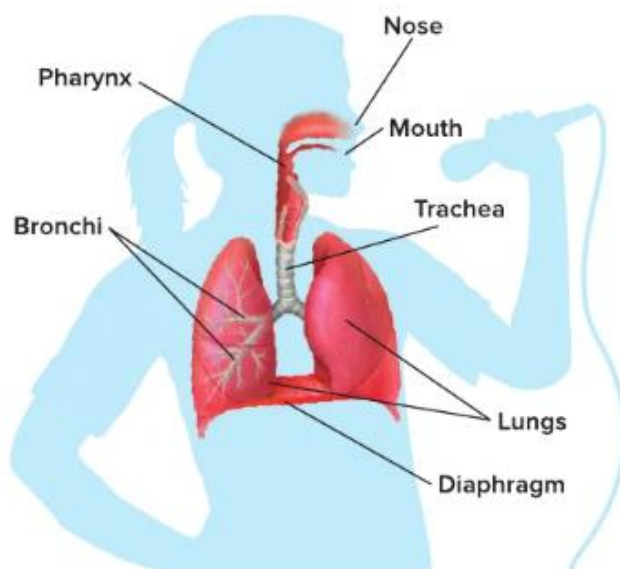
Oxygen enters the body when you inhale, or breathe in. Carbon dioxide leaves the body when you exhale. When you inhale, air enters the nostrils and passes through the pharynx. The **pharynx** is a tubelike passageway at the top of the throat that receives air, food, and liquids from the mouth or nose.

Because the pharynx is part of the throat, it is a part of both the digestive and respiratory systems. Food goes through the pharynx to the esophagus. Air travels through the pharynx to the **trachea**, a tube that is held open by C-shaped rings of cartilage. The trachea is also called the windpipe because it is a long, tubelike organ that connects the pharynx to the bronchi.

The **bronchi** are two narrower tubes that lead into the lungs. **Lungs** are the main organs of the respiratory system. Inside the lungs, the bronchi continue to branch into smaller and narrower tubes called bronchioles.

PHYSICAL SCIENCE Connection When high levels of carbon dioxide build up in your blood, the nervous system signals your body to breathe out. How does this happen?

The **diaphragm**, (DI uh fram) is a large muscle below the lungs that contracts and relaxes as air moves into and out of your lungs. The movement of your diaphragm causes changes in the air pressure inside your chest. Breathing occurs because of these changes in air pressure. For example, when your diaphragm contracts and moves down as you inhale, air rushes in to equalize air pressure. The diaphragm relaxes and moves up when you exhale. Air then rushes out to equalize the pressure.



How do humans transport materials?

Breathing is the movement of air into and out of the lungs. Breathing enables your respiratory system to take in oxygen and to eliminate carbon dioxide.

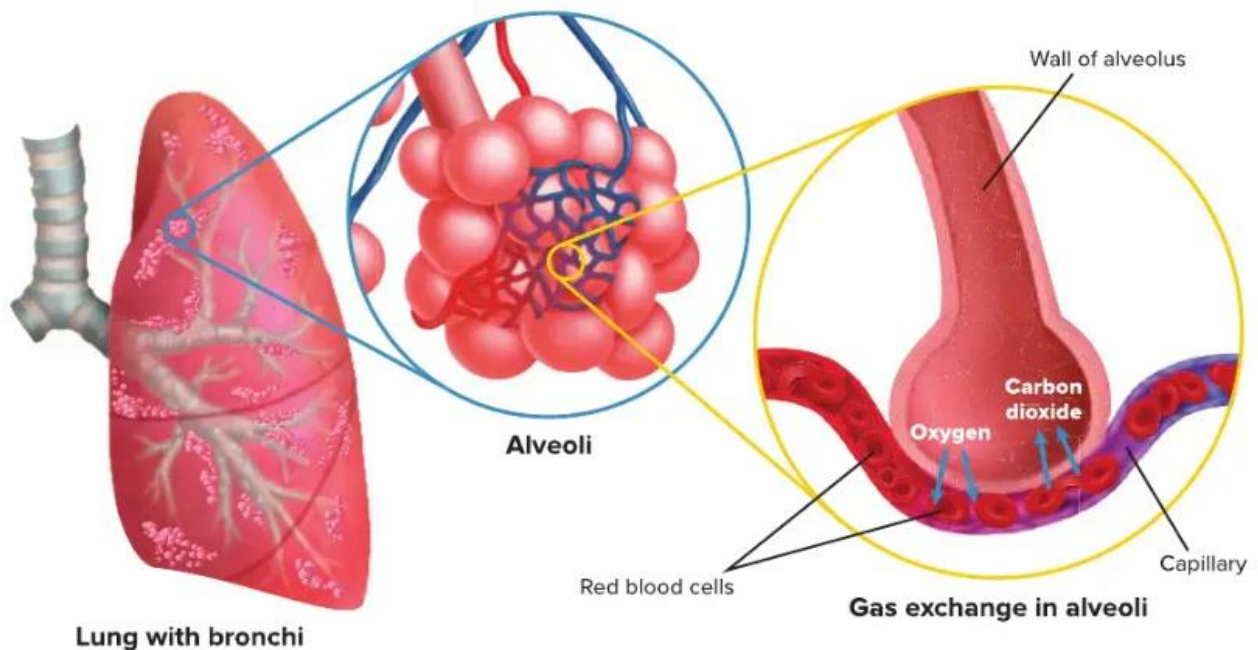


PHYSICAL SCIENCE ➔ **Connection** When high levels of carbon dioxide build up in your blood, the nervous system signals your body to breathe out. How does this happen?

What happens to oxygen after it enters the lungs?

In the lungs, the bronchioles end in microscopic sacs, or pouches, called **alveoli** (al VEE uh li; singular, alveolus), where gas exchange occurs. During gas exchange, oxygen from the air you breathe moves into the blood, and carbon dioxide from your blood moves into the alveoli.

Alveoli look like bunches of grapes at the ends of the bronchioles. Like tiny balloons, the alveoli fill with air when you breathe in. They contract and expel air when you breathe out. Notice in the image below how blood vessels surround an alveolus.



The walls of alveoli are only one cell thick. The thin walls and the large surface areas of the alveoli enable a high rate of gas exchange. Every time you breathe, your alveoli enable your body to take in billions of molecules of oxygen and get rid of billions of molecules of carbon dioxide.

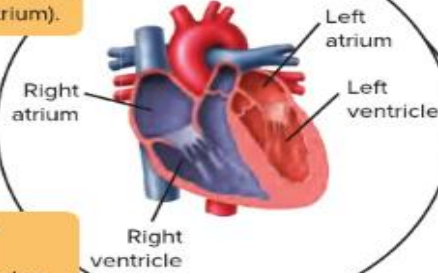


THREE-DIMENSIONAL THINKING

WRITING Connection Your friend says that blood has no role in breathing. Construct an **argument** to refute his claim. Provide **evidence** to support your **argument**.

Blood enters the heart through two upper chambers called atria (singular, atrium).

Blood leaves the heart through two lower chambers called ventricles.



The Circulatory System The heart, blood, and blood vessels make up the circulatory system. It transports nutrients, gases, wastes, and other substances through the body.

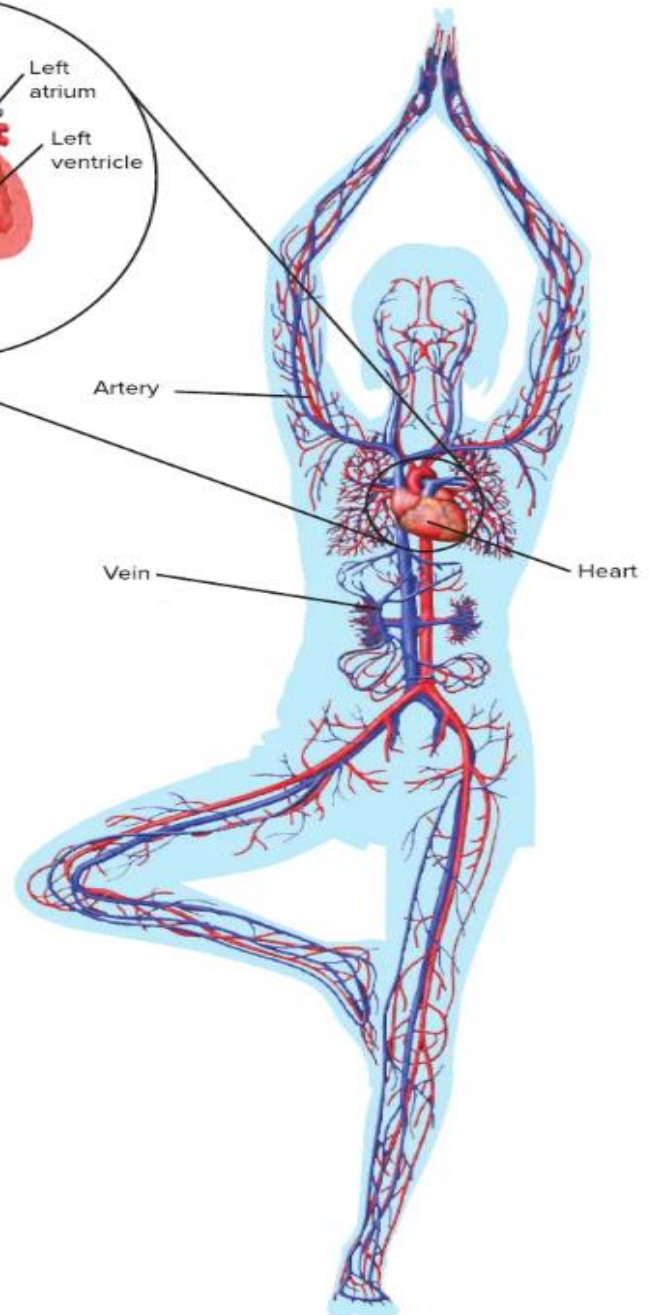
Your heart is made up of muscle cells that constantly contract and relax. Contractions pump blood in your heart out of the heart and to the rest of your body. When your heart muscles relax, blood from the rest of your body enters the heart.

Look at the figure and notice that the heart has four chambers, two upper and two lower. Blood enters the upper two chambers of the heart, called the **atria** (AY tree uh; singular, atrium). Blood leaves through the lower two chambers of the heart, called the **ventricles**.

Blood travels through your body in tiny tubes called vessels. The three main types of blood vessels are arteries, veins, and capillaries.

Arteries carry blood away from your heart.

Veins are vessels that carry blood toward the heart. **Capillaries** are very tiny vessels that enable oxygen, CO₂, and nutrients to move between your circulatory system and your entire body.

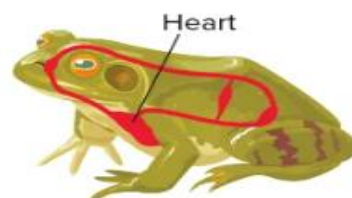
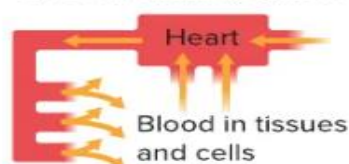
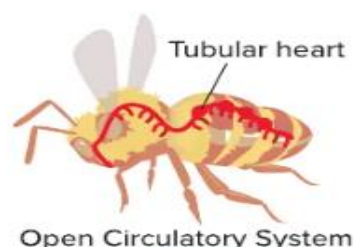


COLLECT EVIDENCE

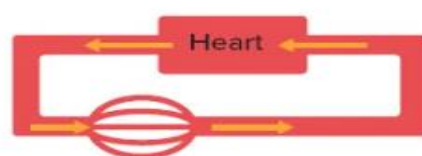
How do humans transport materials? Record your evidence (B) in the chart at the beginning of the lesson.

How do other animals transport blood throughout their bodies?

Different animals have different circulatory systems. The type of circulatory system used often determines how quickly blood moves through the animal.



Closed Circulatory System



Open Circulatory Systems Many invertebrates such as the bee shown in the figure above have open circulatory systems. An **open circulatory system** is a system that transports blood and other fluids into open spaces that surround organs in the body. In an open circulatory system oxygen and nutrients in blood can enter all tissues and cells directly.

Closed Circulatory Systems Some animals transport materials through a system called a closed circulatory system. A **closed circulatory system** is a system that transports materials through blood using vessels. Vessels help animals with closed circulatory systems move blood and other substances through the body faster than an open circulatory system. Small blood vessels called capillaries surround organs and help oxygen and nutrients move from the circulatory system to cells in organs.

Chambered Hearts Different animals have hearts with different numbers of compartments called chambers. Fish have hearts with two chambers, whereas amphibian hearts consist of three chambers. Birds and mammals such as cats, dogs, and humans have hearts with four chambers. Almost all animals with three or four chambered hearts have lungs.

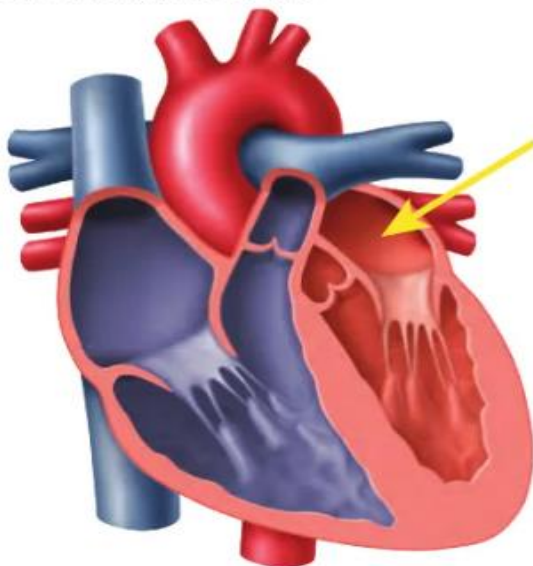
COLLECT EVIDENCE

How do other animals transport materials? Record your evidence (C) in the chart at the beginning of the lesson.



Three-Dimensional Thinking

2. The arrow in the diagram below shows where blood enters the heart through the atrium after coming from the lungs. Which best describes the function of this blood entering the heart?



- A The blood is carrying oxygen that it absorbed as it passed through the lungs.
- B The blood is carrying carbon dioxide that it absorbed as it passed through the lungs.
- C The blood is carrying nutrients that it absorbed as it passed through the small intestine.
- D The blood is carrying capillaries that it absorbed as it passed through the stomach.

3. Which best explains the function of the alveoli in the respiratory system?

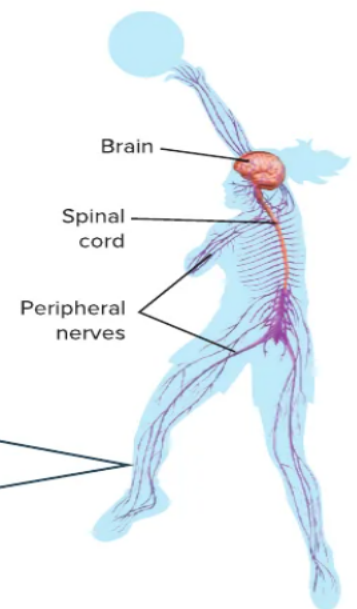
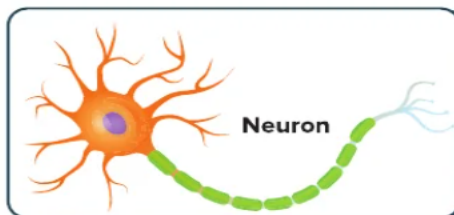
- A The alveoli help to keep the lungs healthy by providing a way for all the cells in the lungs to obtain nutrients from the bloodstream.
- B The alveoli help to keep the lungs inflated when you breathe out and make it possible to absorb oxygen when you breathe in.
- C The alveoli provide a large surface area for absorbing oxygen from the air and releasing carbon dioxide wastes from the bloodstream.
- D The alveoli provide a large surface area for absorbing oxygen from the air when you breathe in and look like a bunch of grapes.

5. Take two more students out of the middle of the line, making the line only two cells long—the fish's head and tail. Stand so that the head and tail are next to one another and hold hands. Now how long does it take to send a message to swim away from the shark? Why does the message move more quickly?

The Nervous System The part of an organism that gathers, processes, and responds to information is called the **nervous system**. The basic functioning units of the nervous system are called nerve cells, or **neurons**. The nervous system receives information from the senses, such as vision, hearing, smell, taste, and touch. Sense receptors respond to stimuli by sending signals that travel along neurons to the brain. The brain is the control center of your body. Your brain receives information, processes it, and sends out a response. The brain also stores some information as memories.

Your nervous system has two parts. The **central nervous system** (CNS) is made up of the brain and the spinal cord. The CNS receives, processes, stores, and transfers information. The **spinal cord** is a tubelike structure of neurons. The neurons extend to other areas of the body. This enables information to be sent out and received by the brain.

The **peripheral nervous system** (PNS) has sensory neurons and motor neurons that transmit information between the CNS and the rest of the body.



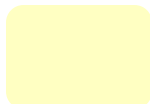
COLLECT EVIDENCE

How does the nervous system enable a surfer to balance, move and react? Record your evidence (A) in the chart at the beginning of the lesson.

- Central nervous system (CNS)
- Peripheral nervous system (PNS)

3. **MATH Connection** The formula for speed is:

$$\text{Speed (m/s)} = \frac{\text{Distance (m)}}{\text{Time (s)}}$$



The speed a sound wave travels depends on the type and temperature of the medium through which it is traveling. In air that is 68°F, the speed of sound is about 343 meters per second. Write the equation for the speed of sound using two variables.

4. How long would it take sound waves traveling through air that is 68°F to travel 1,372 meters? Use an equation to solve the problem.

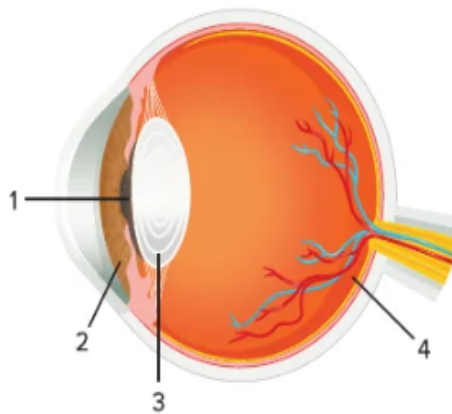
5. How long would it take sound waves traveling through air that is 68°F to travel 2,058 meters? Use an equation to solve the problem.

6. Create a table below showing distance and time using the equation.



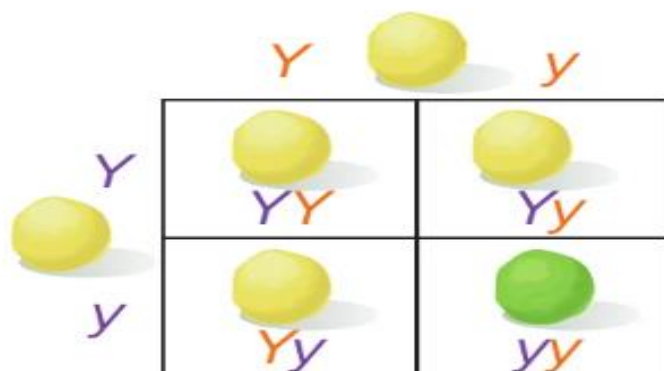
Three-Dimensional Thinking

Use the diagram below to answer question 2.



2. Which numbered structure focuses the light on the retina, where it is detected by photoreceptors?
- A 1
 - B 2
 - C 3
 - D 4
-
3. A doctor sees a patient who has a loss of balance from an illness. The doctor thinks injury to the sense receptors for balance might be causing this effect. In which structure are they located?
- A inner ear
 - B middle ear
 - C nasal cavity
 - D spinal cord

So, how did you do? Your completed Punnett square should look like this:



Geneticists, or scientists who study genetics, use Punnett squares to explain how traits are inherited from one generation to the next. Now that you know how to fill in a Punnett square, use the Punnett square below to predict the offspring of two fruit flies with different genotypes.

INVESTIGATION

Fruit Fly Traits

1. Use the Punnett square below to complete a cross between a female fruit fly with straight wings (cc) and a male fruit fly with curly wings (CC).



Curly wings (CC)

Straight wings (cc)



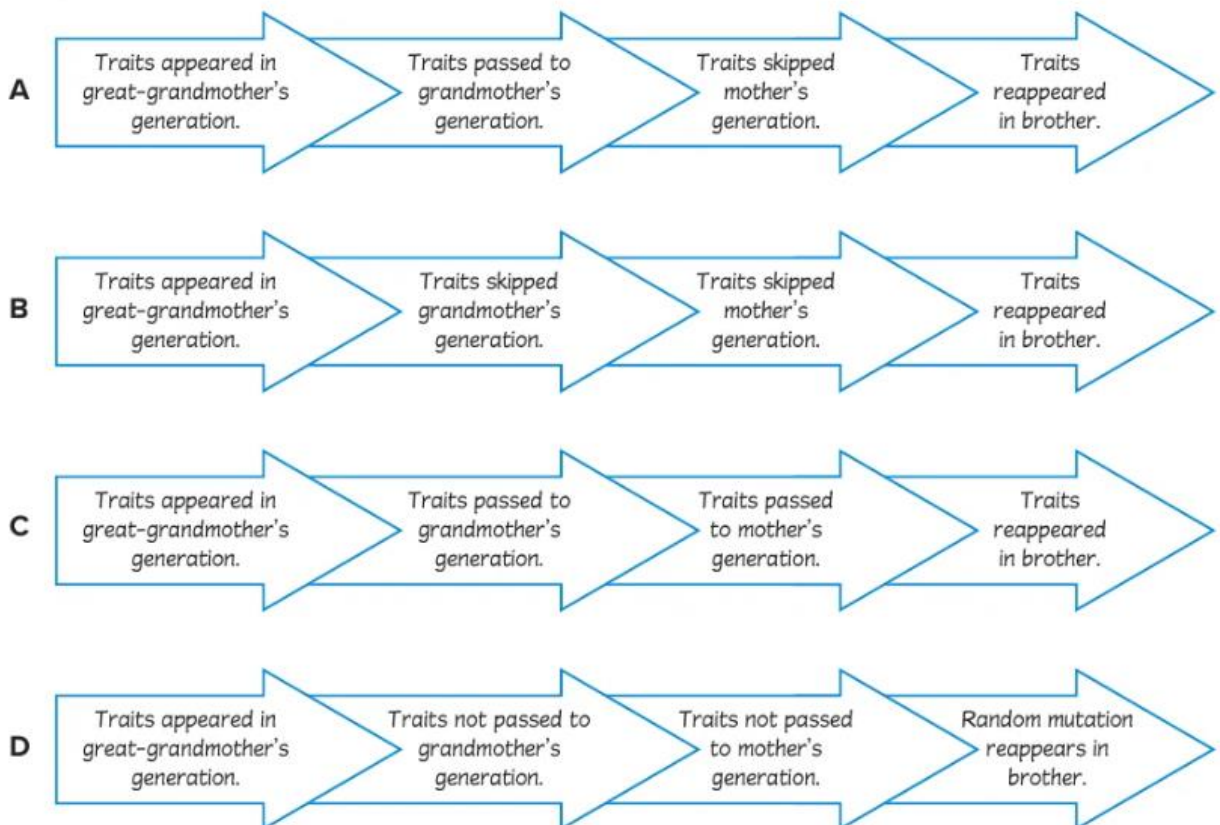
2. According to your Punnett square, which genotypes are possible in the offspring?



Three-Dimensional Thinking

Susana visits with four generations of her family. Her great-grandmother shows her an old family photo of Susana's great-aunts and great-uncles when they were children. Susana is surprised to see that one of the great-uncles looks almost exactly like her younger brother does now. They have the same distinctive hairline and eye shape. Her great-grandmother tells her that it is the result of heredity.

2. Which is the best explanation that shows the sequence of inheritance that led to Susana having a brother who has the same hairline and eye shape as her great-uncle?



3. When Mendel crossed a true-breeding plant with purple flowers and a true-breeding plant with white flowers, ALL offspring had purple flowers. The best explanation for this data is that the white flowers are

- A** dominant.
- B** heterozygous.
- C** recessive.
- D** neutral.

How do other organisms reproduce asexually?

You just discovered asexual reproduction in plants. Different types of plants, animals, and other organisms can reproduce asexually. However, not all asexually reproducing organisms follow the same type of reproduction. Take a look at the hydra below to see how it reproduces.

INVESTIGATION

Break Off a Piece



1. Examine the pictures of the hydra above. What evidence do you observe that the hydra reproduced?

2. What are some advantages and disadvantages of this type of reproduction?

The hydra seen in the photos is budding. **Budding** is a form of asexual reproduction where an organism grows on the body of its parent.

COLLECT EVIDENCE

How can one organism such as the sea star produce offspring that are identical to itself? Record your evidence (A) in the chart at the beginning of the lesson.

What are the advantages and disadvantages of sexual and asexual reproduction?

	Asexual Reproduction	Sexual Reproduction
Advantages	Asexual reproduction enables organisms to reproduce without a mate. Searching for a mate takes time and energy. Asexual reproduction also enables some organisms to rapidly produce a large number of offspring.	Genetic variation occurs in all organisms that reproduce sexually. Due to genetic variation, individuals within a population have slight differences, which might be an advantage if the environment changes. Some individuals might have traits that enable them to survive unusually harsh conditions such as a drought or severe cold. Other individuals might have traits that make them resistant to disease.
Disadvantages	Asexual reproduction results in little genetic variation within a population. Genetic variation can give organisms a better chance of surviving if the environment changes. Another disadvantage of asexual reproduction involves genetic changes, called mutations. If an organism has a harmful mutation in its cells, the mutation will be passed to asexually reproduced offspring. This could affect the offspring's ability to survive.	Sexual reproduction takes time and energy. Organisms have to grow and develop until they are mature enough to produce sex cells. Then the organisms have to form sex cells—either eggs or sperm. Before they can reproduce, organisms usually have to find mates. Searching for a mate can take a long time and requires energy. The search for a mate might also expose individuals to predators, diseases, or harsh environmental conditions.



THREE-DIMENSIONAL THINKING

A fatal disease is spreading through an aquarium containing both fish, which reproduce sexually, and sponges, which reproduce asexually. The disease has been identified in both species. **Construct an explanation** that states which species would be more likely to survive. Write your answer in your Science Notebook.



COLLECT EVIDENCE

What are the advantages and disadvantages of the different types of reproduction, such as that of the sea star at the beginning of the lesson? Record your evidence (C) in the chart at the beginning of the lesson.



Reproduction and Growth of Animals

How do animals find mates?

Most animals are selective about who they choose as a mate. They want to pass certain traits on to their offspring. What are some strategies animals use to attract and select a mate?



These elegant terns are offering gifts of fish to potential mates.

INVESTIGATION

Animal Attraction

Animals attract mates in a variety of ways. Depending on the type of animal, these mating rituals can look very different. In what ways do animals “show off” to attract mates?

 **GO ONLINE** Watch the *Finding the Right One* videos.

Record your observations about how the animals in the videos try to attract mates. What behaviors do you observe?

Courtship Behaviors In the videos you observed animals engage in different behaviors in order to find a mate. A **behavior** is the way an organism reacts to other organisms or to its environment. The behaviors you observed in the videos are a form of communication. Animals attract mates by communicating in a variety of ways, including the use of sound, light, chemicals, and body language. Often times animals compete with others of the same species for a mate. Sometimes animals even bring gifts to each other in hopes of getting the attention of one another. What are some examples of these courtship behaviors? Let's investigate!



These sandhill cranes are performing a courtship dance.

Show Off

In order to attract a mate, animals (most often males), frequently “show off” for the other sex. In this activity, your team will investigate an example of an animal reproductive strategy, focusing on external stimuli, sensory receptors, behavioral response, and memory.

1. With your team, choose one of the examples of an animal reproductive strategy provided by your teacher that you would like to investigate, or research and choose one of your own, and record it below.

2. **READING Connection** Use the spaces below to take notes as you conduct your research. Make sure that you use multiple print and digital sources and cite them in your Science Notebook using the format provided by your teacher. For each of the sources used, explain how you assessed its credibility, accuracy, and any possible bias, and cite specific evidence to show that the claims in the sources are supported.

Stimuli:

How are young animals protected?

You've learned about courtship behaviors that increase the probability of finding a mate, but what are behaviors that increase the chance that offspring will survive after animals reproduce?



A Western gull and her chicks

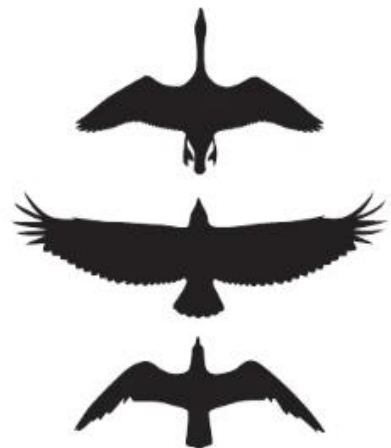
Staying Safe

When goslings, or baby geese, see a bird in the air that has a different wingspan or shape than the parent goose, they duck down.

1. Look at the images of the three birds in flight. Describe the differences between each silhouette.

2. Choose at least two characteristics that are different for each bird.

3. How could recognizing differences help a gosling survive?



INNATE v. LEARNED BEHAVIORS

Parents and offspring both engage in certain behaviors that increase the probability that young animals will survive. Some are inherited and some are learned.

INNATE BEHAVIOR

is a behavior that is inherited rather than learned.

SPIDERS

Spiders instinctively know how to build webs in order to catch food.

TADPOLES

When tadpoles hatch, they already know how to swim. They can avoid danger as soon as they are born.

LEARNED BEHAVIOR

is a behavior that develops through experience or practice.

BIRDS

Birds learn how to fly through trial and error and reinforcement from their parents.

TURTLES

Female sea turtles return to the beach where they were born to lay their eggs. These turtles imprinted on the beach.