Below Level

SCIENCE • GRADE 5

California Content Standards
Life Sciences: 2.A
Life Sciences: 2.B
Life Sciences: 2.C
Life Sciences: 2.D

Internal Structures of Animals

LOOK INSIDE FOR:

- California's Academic Content Standards Covered
- Reproducible Student Book
- Reproducible English-language Arts Activities

FOCUScurriculum

Curriculum materials for **your** content standards

33 Milford Drive, Suite 1, Hudson, OH 44236

866-315-7880 • www.focuscurriculum.com

Internal Structures of Animals

California's Content Standards Met

GRADE 5 SCIENCE

LIFE SCIENCES: 2—Plants and animals have structures for respiration, digestion, waste disposal, and transport of materials. As a basis for understanding this concept:

- **a**. Students know many multicellular organisms have specialized structures to support the transport of materials.
- **b**. Students know how blood circulates through the heart chambers, lungs, and body and how carbon dioxide (CO_2) and oxygen (O_2) are exchanged in the lungs and tissues.
- **c**. Students know the sequential steps of digestion and the roles of teeth and the mouth, esophagus, stomach, small intestine, large intestine, and colon in the function of the digestive system.
- **d**. Students know the role of the kidney in removing cellular waste from blood and converting it into urine, which is stored in the bladder.

GRADE 5 ENGLISH LANGUAGE ARTS

2.0 READING COMPREHENSION

Structural Features of Informational Materials 2.1—Understand how text features (e.g., format, graphics, sequence, diagrams, illustrations, charts, maps) make information accessible and usable.

Structural Features of Informational Materials 2.2—Analyze text that is organized in sequential or chronological order.

Comprehension and Analysis of Grade-Level Appropriate Text 2.3—Discern main ideas and concepts presented in texts, identifying and assessing evidence that supports those ideas.

Expository Critique 2.5—Distinguish facts, supported inferences, and opinions in text.

Below Level

SCIENCE • GRADE 5

California Content Standards
Life Sciences: 2.A
Life Sciences: 2.B
Life Sciences: 2.C
Life Sciences: 2.D

Student Book

Internal Structures of Animals

Print pages 5–18 of this PDF for the student book.

How to Make the Student Book

- **The student book is contained on pages 5–18 of this PDF. It begins on the next page.**
- **To make one student book, or a two-sided master copy that can be photocopied, you will print on both sides of seven sheets of 8.5" x 11" paper.**
- **Do a test printout of one book first to familiarize yourself with the procedure.**
- **Follow these instructions carefully.**

First–Select the Paper

Since you will be printing on both sides of the sheets of paper, select a good quality white paper. We recommend using at least a 22 lb sheet.

Second–Check Printer Settings

Be sure you have the correct page setup settings for your computer and printer. You will print these pages in landscape format.

Third–Print EVEN Pages

Open the PDF of the book you want to print. Select print from your file menu. In your printer's dialogue box enter pages 5–18 to print. Then select EVEN pages only. It is important to print only the EVEN pages first. Click "Print" to print the even pages. (**Important note**: The first page that prints will be blank. DO NOT discard this page. It will be needed to print the cover in the next step.)

Fourth–Print ODD Pages

When the even pages have printed, flip the stack of pages over to print the odd pages. Place the stack back in your printer. Select print from the file menu again. In your printer's dialogue box, select pages 5–18 to print. Then select ODD pages. Click "Print" to print the odd pages.

Fifth–Fold the Book

You now have a complete book. Check to be sure the pages are in the correct order with the book's cover as the top page. Then fold the stack of paper in half.

Sixth–Staple the Book

Use an extended-length stapler to staple the pages together. Place two staples in the spine of the book.

Please Note

Printers vary in how they output pages. Do a test printing of one book and adjust the procedure as necessary.

If you want to make a one-sided master copy, print ALL pages 5–18 at once. Then select "one-sided to two-sided" on the copy machine.

Internal Structures of Animals

BL

California's Content Standards Met

GRADE 5 SCIENCE

LIFE SCIENCES: 2—Plants and animals have structures for respiration, digestion, waste disposal, and transport of materials. As a basis for understanding this concept:

- **a.** Students know many multicellular organisms have specialized structures to support the transport of materials.
- **b.** Students know how blood circulates through the heart chambers, lungs, and body and how carbon dioxide (CO_2) and oxygen (O_2) are exchanged in the lungs and tissues.
- **c.** Students know the sequential steps of digestion and the roles of teeth and the mouth, esophagus, stomach, small intestine, large intestine, and colon in the function of the digestive system.
- **d.** Students know the role of the kidney in removing cellular waste from blood and converting it into urine, which is stored in the bladder.

GRADE 5 ENGLISH LANGUAGE ARTS

2.0 READING COMPREHENSION

***Structural Features of Informational Materials 2.1*—**Understand how text features (e.g., format, graphics, sequence, diagrams, illustrations, charts, maps) make information accessible and usable.

***Structural Features of Informational Materials 2.2*—**Analyze text that is organized in sequential or chronological order.

***Comprehension and Analysis of Grade-Level Appropriate Text 2.3*—**Discern main ideas and concepts presented in texts, identifying and assessing evidence that supports those ideas.

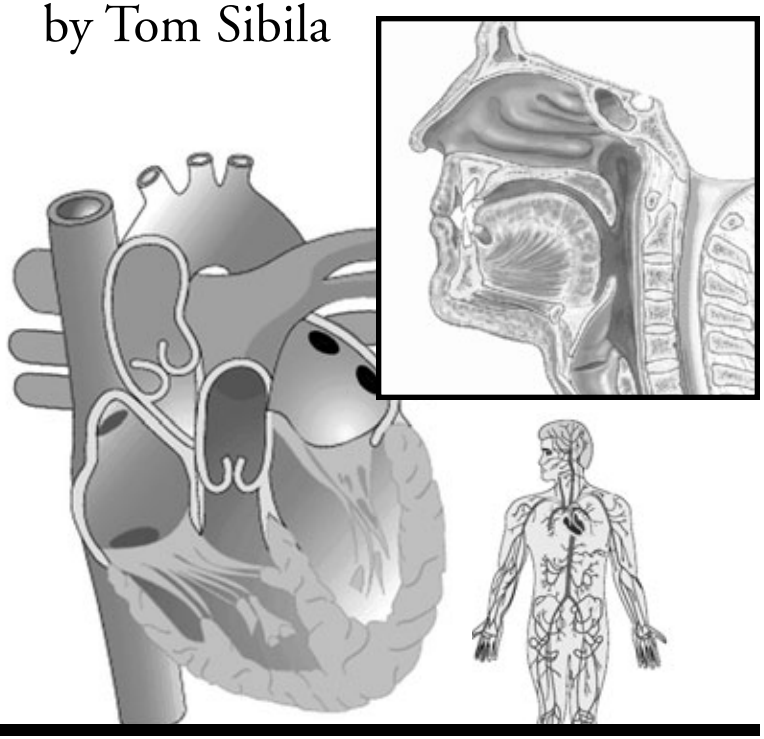
***Expository Critique 2.5*—**Distinguish facts, supported inferences, and opinions in text.

FOCUS ON CALIFORNIA STANDARDS

California Content Standards
Life Sciences: 2.A
Life Sciences: 2.B
Life Sciences: 2.C
Life Sciences: 2.D

Internal Structures of Animals

by Tom Sibila



SCIENCE • GRADE 5

California Content Standards
Life Sciences: 2.A
Life Sciences: 2.B
Life Sciences: 2.C
Life Sciences: 2.D

Internal Structures of Animals

by
Tom Sibila

FOCUScurriculum

Curriculum materials for **your** content standards

Published by FOCUScurriculum
33 Milford Drive, Suite 1
Hudson, OH 44236
866-315-7880
www.focuscurriculum.com

Order Number: CASC-53BL

Created by Kent Publishing Services, Inc.
Designed by Signature Design Group, Inc.

Table of Contents

Transportation Systems

All animals need food, water, and oxygen to survive. The food and water animals take in has to be carried to all parts of the body. The oxygen animals breathe in also has to be carried throughout the body.

When the body uses food, water, and oxygen to create energy, waste is created. This waste has to be carried out of the body.

In this book, you will learn how the body takes in what it needs and gets rid of what it does not need.

CHAPTER 1

The Respiratory System

To survive, animals must breath in oxygen from the air. They must also breath out a gas called carbon dioxide. This gas is a waste product created when the body makes energy. The system that **exchanges** these gases is called the respiratory system.

Animals have different types of respiratory systems. For example, animals that live in water use gills to exchange these gases. Animals that live on dry land, including you, use lungs.

exchange: to give and receive similar things

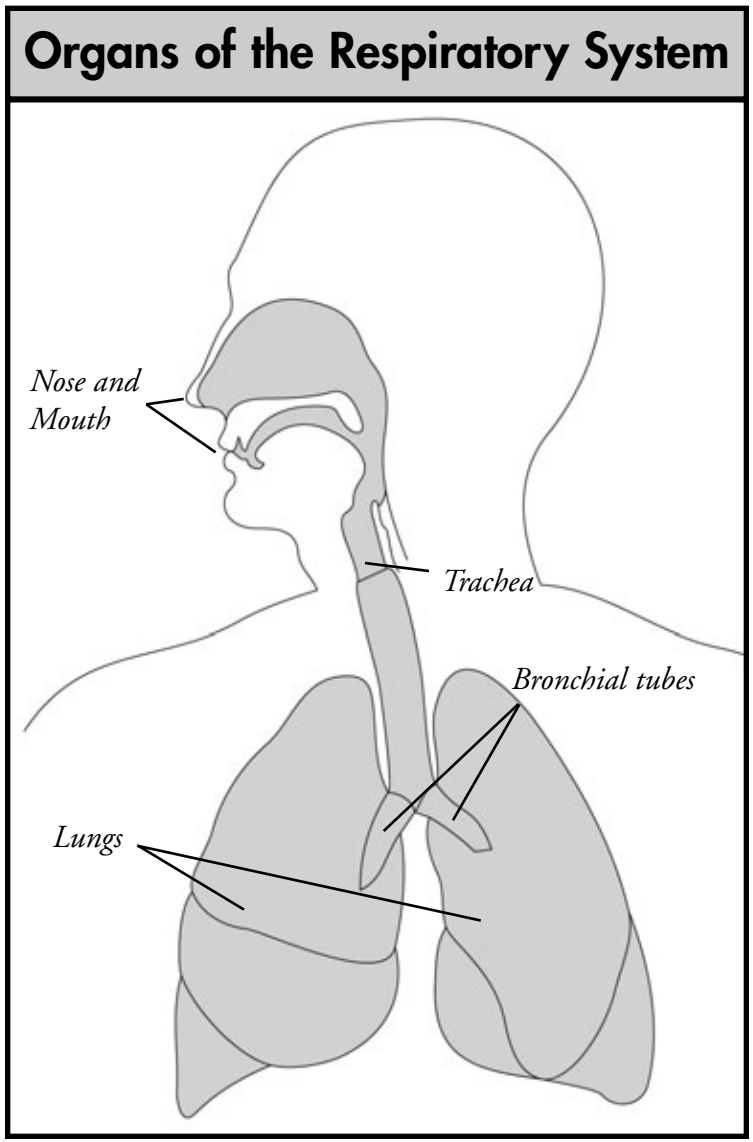
Lungs

The main organ of the respiratory system in most animals is the lungs. Air with oxygen is **inhaled** into the lungs. Air with carbon dioxide is then **exhaled** out of the lungs.

When we inhale, red blood cells in the lungs pick up oxygen and carry it through the body. The red blood cells drop off the oxygen in the body and then pick up carbon dioxide. This gas is then brought back to the lungs to be exhaled.

Explain how lungs help animals survive.

inhale: to breathe in
exhale: to breathe out



Humans have two lungs inside their bodies. The lungs pick up inhaled oxygen and drop off carbon dioxide to be exhaled.

Trachea

The trachea, or windpipe is in the back of your throat. You can feel the rings of it on the front of your neck. The rings keep your trachea open when you turn or bend your neck.

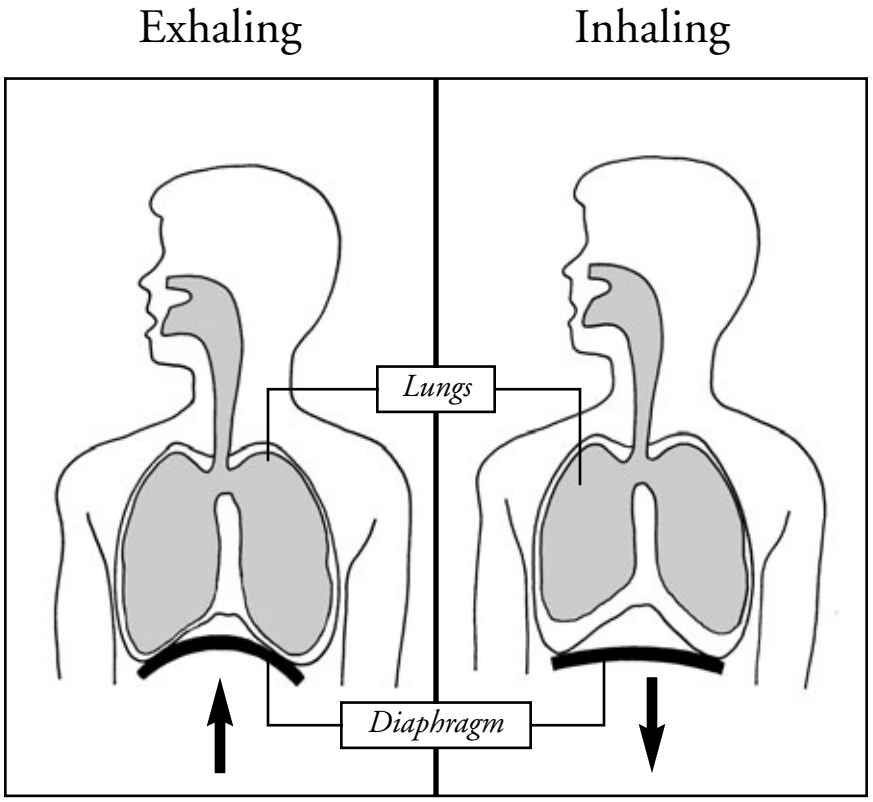
Bronchial Tubes

The bronchial tubes are two tubes that branch off the trachea and carry air into the lungs.

Diaphragm

The diaphragm is a muscle below your lungs. When you inhale, your diaphragm moves downward making your chest larger. When you exhale, it pushes up making your chest smaller.

How the Diaphragm Works



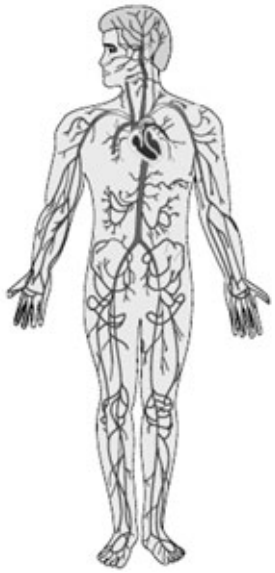
When you inhale, your diaphragm flattens and moves downward making your chest cavity larger. When you exhale, it pushes up making your chest cavity smaller.

CHAPTER 2

The Circulatory System

You learned that oxygen is carried to cells in the body through blood. Other **nutrients** are also carried by blood.

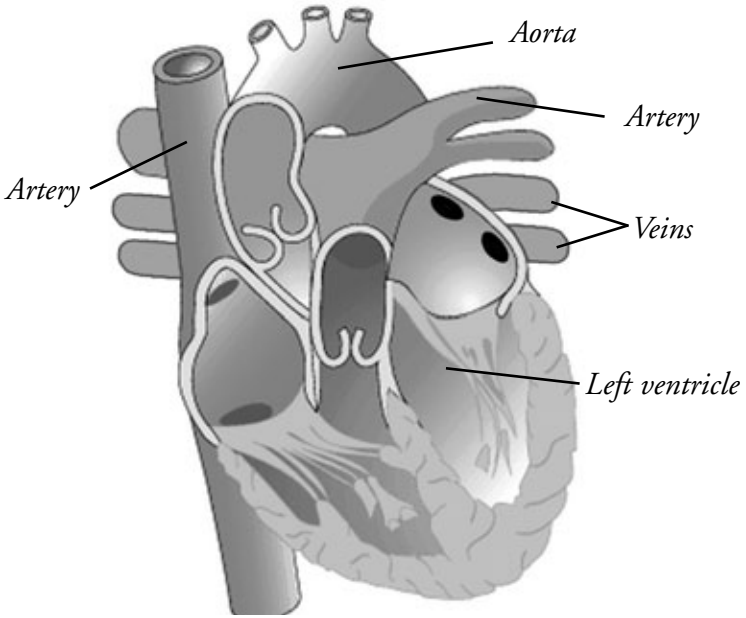
The circulatory system is what moves blood through the body. The main parts are the heart, arteries, and veins.



nutrients: any substance found in food that is needed for the life and growth of plants and animals

Heart

The heart's job is to pump blood around your body. It is divided into two sides. The right side receives blood from the body. It then pumps blood to the lungs. Here, it gets rid of carbon dioxide and picks up oxygen. The blood leaves the lungs and enters the left side of the heart and is pumped out to the body again.



The right side receives blood from the body. The left side pumps fresh blood from the lungs back to the body.

Arteries and Veins

Arteries are tubes that carry blood away from the heart. Blood leaves the heart through the aorta—the largest artery in your body.

As the arteries move throughout the body they become smaller and smaller. This allows them to carry oxygen and nutrients to all cells in the body.

After picking up waste materials from cells, the blood moves through veins on its way back to the right side of the heart.

This cycle happens thousands of time each day.

Explain the functions of the heart, arteries, and veins.

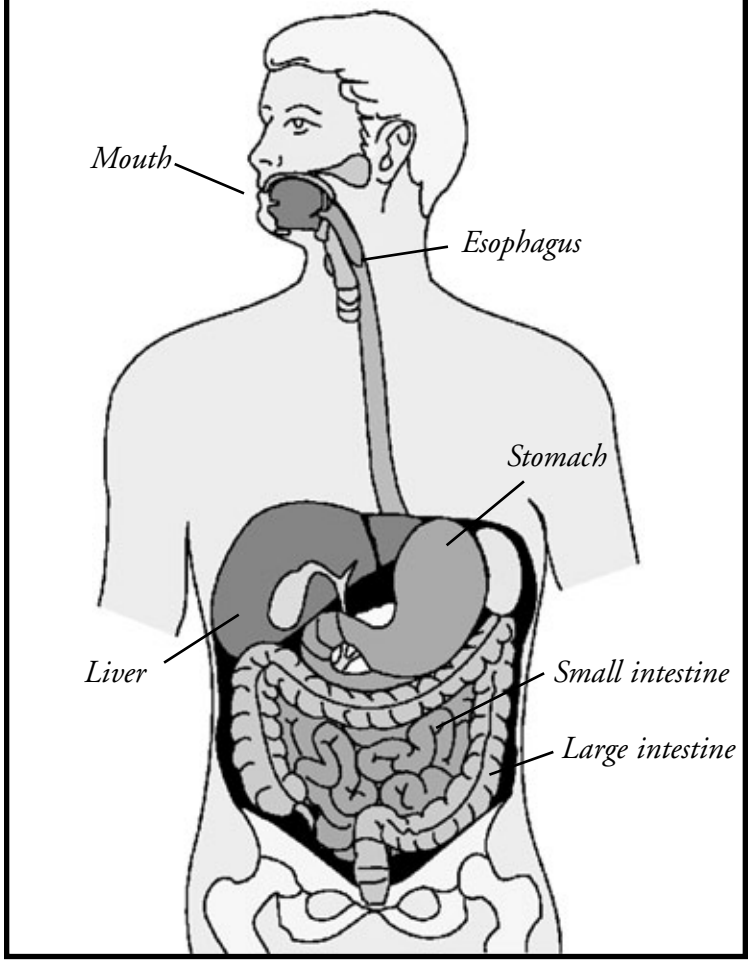
CHAPTER 3

The Digestive System

The digestive system changes the food we eat into smaller particles. This is important because the food we eat must be smaller before it can be carried by the blood to the body.

The main organs that make up the digestive system are the mouth, esophagus, stomach, small intestine, large intestine (including the colon and rectum), and anus.

The Digestive System



Mouth

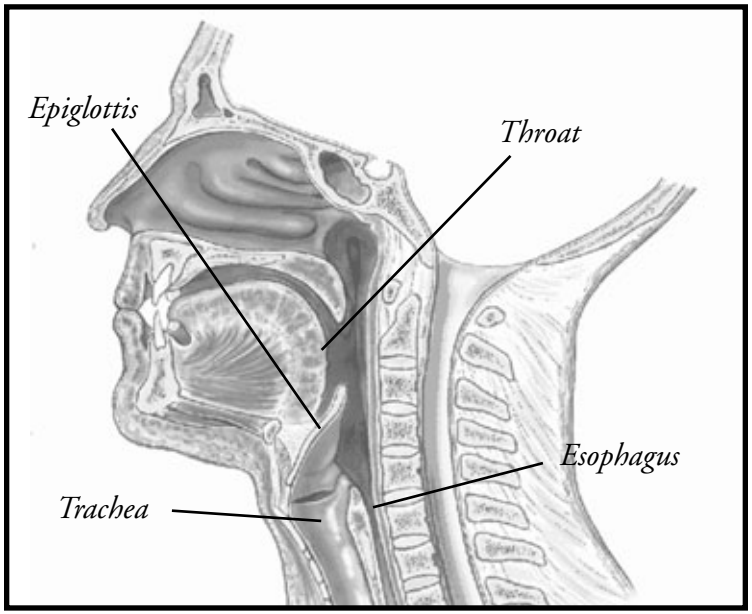
When you put food into your mouth and begin to chew, your teeth start to break the food into smaller pieces. **Saliva** in your mouth helps soften the food. When the food is small and soft enough, your tongue pushes the food into your throat to swallow.

Esophagus

Swallowed food is pushed into the esophagus. This connects the back of the throat to the stomach.

saliva: a thin, watery liquid produced in the mouth to help in swallowing and digestion

You know the trachea is in the back of your throat. It allows air to pass into the lungs. When you eat, a small flap called the epiglottis closes your trachea keeping food out. This keeps you from choking.



The epiglottis is a flap that keeps food from entering the trachea.

Stomach

The stomach receives food and liquid from the esophagus. It has three jobs.

1. It stores food and liquid.
2. It breaks down the food into a thick liquid or paste.
3. It empties the broken down food and liquid into the small intestine.

The stomach acts like a mixer and grinder. Food is usually broken down further in the stomach for about two hours. It then empties into the small intestine.

What are the three functions of the stomach?

Small Intestine

After leaving the stomach, food enters the small intestine. This is a long tube about 2 inches around and about 20 to 25 feet long.

The small intestine breaks down the food mixture even more. This allows the food to be more easily **absorbed** into your blood and carried to all the cells in the body.

Liver

Blood coming from the small intestine passes through the liver. The liver removes harmful substances and stores nutrients not immediately needed.

What is the main purpose of the small intestine?

absorb: to take in another substance

Large Intestine

The body does not **digest** all the food we eat. What is left over passes from the small intestine to the large intestine.

Undigested food enters the large intestine. It removes water and turns what is left into a solid waste.

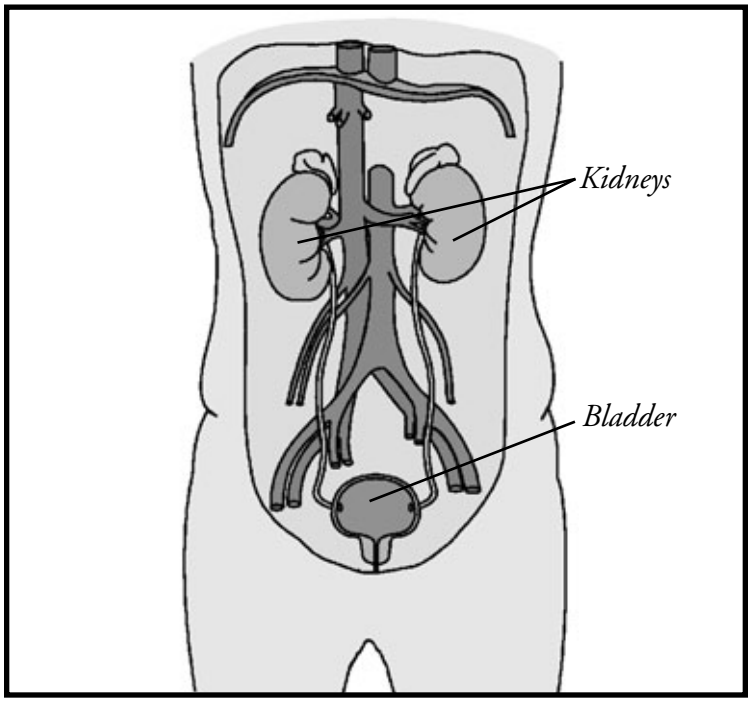
The waste then passes through a part of the large intestine called the colon. This is the body's last chance to get water and nutrients into the body.

Finally, the waste leaves the colon and is pushed into the rectum. The waste is stored there until the body is ready to get rid of it. When you go to the bathroom, you get rid of this solid waste through the anus.

digest: to change food into a form the body can use for energy

Kidneys

The kidneys also **filter** harmful waste products created by the body. Once blood is cleaned by the kidneys, the waste is moved and stored in the bladder as urine. When you go to the bathroom, you release this liquid waste.



filter: to remove waste and make clean

What Have You Learned?

You have learned that the respiratory system supplies oxygen to the body and releases carbon dioxide waste.

The digestive system allows the body to take in food for energy and get rid of waste.

The circulatory system is the engine that pumps blood through the body to carry the oxygen, food, and waste products.

Without these systems, animals could not survive. Think about it when you breathe in and out and when you eat food and drink liquids. Ask yourself how your body uses these substances to help you survive.

Name and describe the transportation systems that help animals survive.

Glossary

absorb—to take in another substance

digest—to change food into a form the body can use for energy

exchange—to give and receive similar things

exhale—to breathe out

filter—to remove waste and make clean

inhale—to breathe in

nutrients—any substance found in food that is needed for the life and growth of plants and animals

saliva—a thin, watery liquid produced in the mouth to help in swallowing and digestion

To Find Out More . . .

Want to learn more about the internal structures of animals?

Try these books

Guts: Our Digestive System by Seymour Simon. HarperCollins, 2005.

The Circulatory System (True Books-Health) by Darlene R. Stille. Childrens Press, 1998.

The Heart: Our Circulatory System by Seymour Simon. HarperCollins, 2006.

Lungs: Your Respiratory System by Seymour Simon. HarperCollins, 2007.

Access these Web sites

KidsHealth for Kids
http://kidshealth.org/kid/htbw/

Write for more information

The American Heart Association
National Center
7272 Greenville Avenue
Dallas, TX 75231

Index

ENGLISH-LANGUAGE ARTS • GRADE 5

Below Level

California Content Standards
Structural Features of Informational Materials, 2.1
Structural Features of Informational Materials, 2.2
Comprehension and Analysis of Grade-Level Appropriate Text, 2.3
Expository Critique, 2.5

English-language Arts Activities

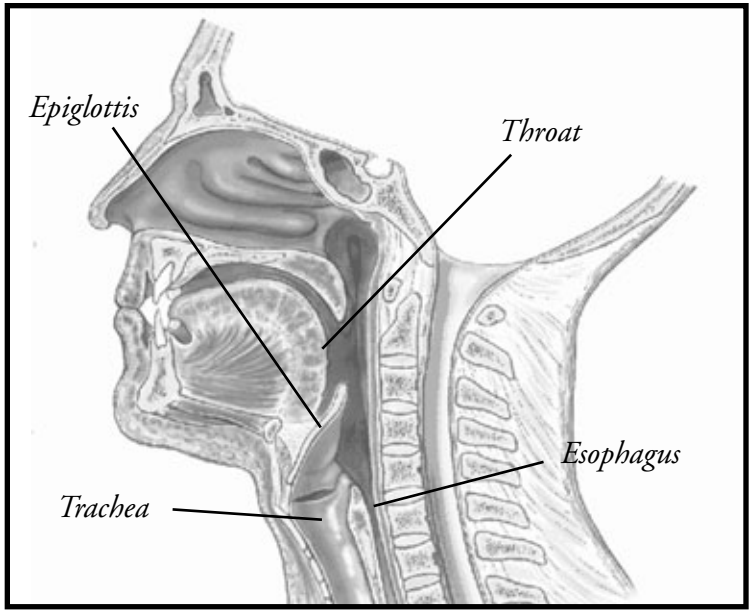
Internal Structures of Animals

Print pages 20–24 of this PDF for the reading activities.

Understand Graphics

TRY THE SKILL

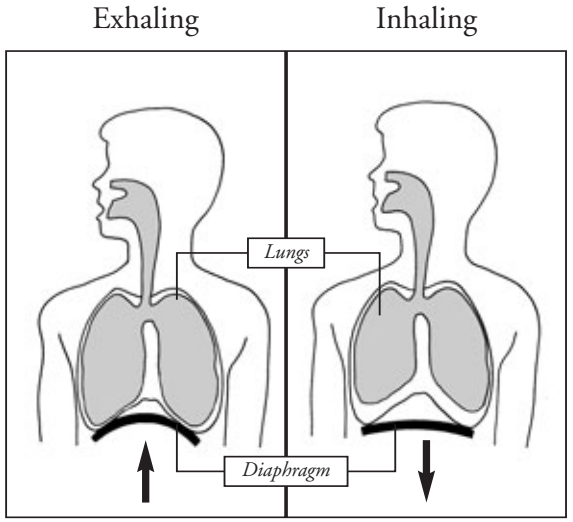
Graphics can give you information quickly. Look at this graphic showing the parts of the esophagus.



What does this graphic show you about what the epiglottis does?

The epiglottis is a flap that closes the trachea. This keeps food out of the trachea and prevents you from choking.

Study this graphic. What does it tell you about how the diaphragm works? Write about it.



Distinguish Fact from Opinion

TRY THE SKILL

A fact can be proved. For example, a scientists can say that carbon dioxide leaves the lungs when you exhale.

An opinion is what someone believes. For example, a person might say carbon dioxide is a useless gas that we don't need. However, other people might disagree with this opinion.

Being able to tell facts from opinions makes you a better reader. Opinion sentences often have words such as *better, worse, should, difficult, toughest*, and *easy*. Here are more examples:

Facts

Animals have different types of respiratory systems.

The digestive system changes the food we eat into smaller particles.

Opinions

Lungs work better than gills.

Food tastes better when it is broken down into smaller particles.

Mark each statement below *F* for fact or *O* for opinion.

1. When the body uses food, water, and oxygen to create energy, waste is created. ____

2. Taking in food and water is more important than getting rid of waste. ____

3. The main organ of the respiratory system in most animals is the lungs. ____

4. Red blood cells are the most important cells in the body. ____

5. The circulatory system is the most interesting function of the body to study. ____

6. Arteries are tubes that carry blood away from the heart. ____

7. Saliva found in the mouth is gross. ____

8. The colon is part of the large intestine. ____

On the back of this page, write one fact and one opinion about the internal structures of animals.

Sequential Order

Sequential order is the order in which something happens. Understanding order helps you understand what you read. You can describe the order with words such as, *first, then, next,* and *finally.*

Read this passage from *Internal Structures of Animals.* Put the steps in order.

When we inhale, red blood cells in the lungs pick up oxygen and carry it through the body. The red blood cells drop off the oxygen in the body and then pick up carbon dioxide. This gas is then brought back to the lungs to be exhaled.

What do red blood cells do? A graphic organizer can help you name the steps.

Step 1	Red blood cells pick up oxygen in the lungs
Step 2	Then, they carry oxygen to the body.
Step 3	Next, they pick up carbon dioxide.
Step 4	Finally, they carry carbon dioxide to the lungs.

TRY THE SKILL

Read this passage from *Internal Structures of Animals.* What is the first step in digestion?

When you put food into your mouth and begin to chew, your teeth start to break the food into smaller pieces. Saliva in your mouth helps soften the food. When the food is small and soft enough, your tongue pushes the food into your throat to swallow.

Try to name the steps in the process. Use the graphic organizer to help you.

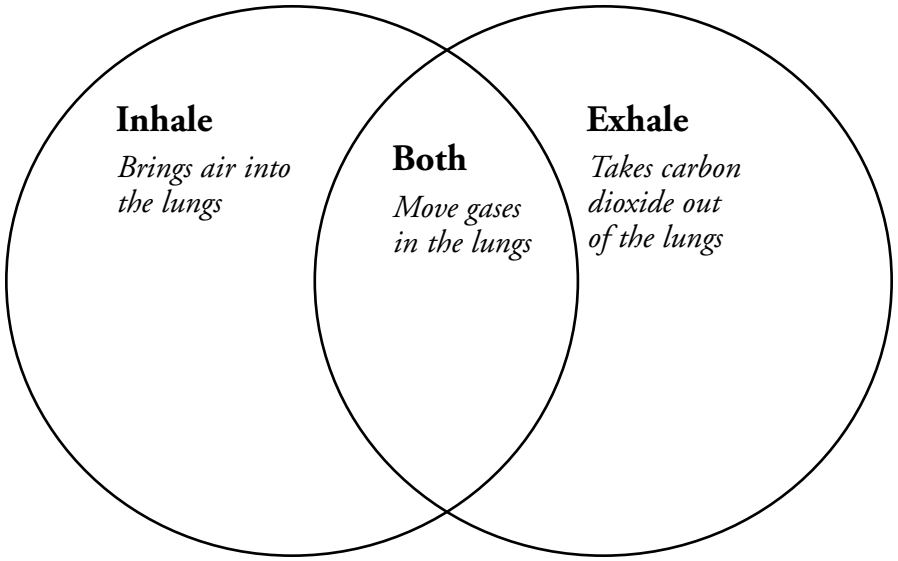
Step 1	
Step 2	
Step 3	
Step 4	

Compare and Contrast

Comparing and contrasting can help you understand what you read. Comparing tells how things are alike. Contrasting tells how things are different.

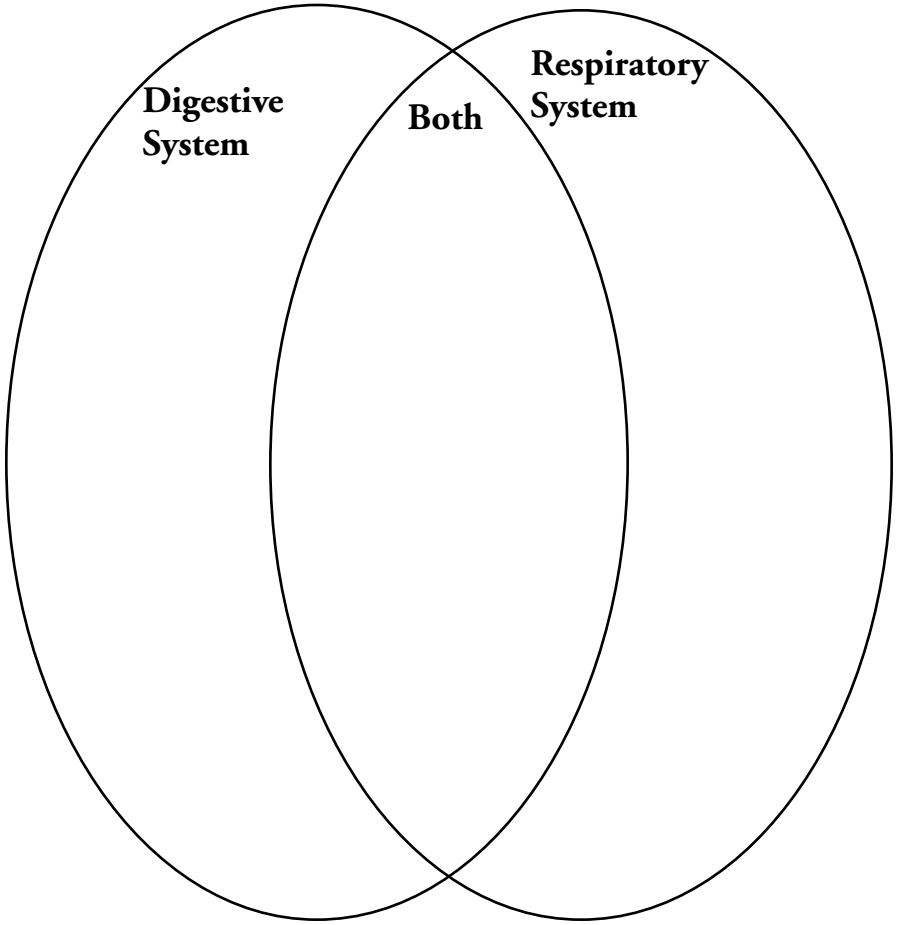
Read this passage. Then, read the Venn diagram that compares and contrasts.

The main organ of the respiratory system in most animals is the lungs. Air with oxygen is inhaled into the lungs. Air with carbon dioxide is then exhaled out of the lungs.



TRY THE SKILL

How is the digestive system different from the respiratory system? How are they the same? Use the Venn diagram to compare and contrast.



Answer Key

Understand Graphics

The diaphragm is a muscle below your lungs. When you inhale, your diaphragm moves downward making your chest larger. When you exhale, it pushes up making your chest smaller.

Distinguish Fact from Opinion

1. F
2. O
3. F
4. O
5. O
6. F
7. O
8. F

Sequential Order

Step 1: Teeth break down the food into smaller pieces.

Step 2: Saliva helps to soften the food.

Step 3: The tongue pushes the food into the throat.

Step 4: You swallow the food.

Compare and Contrast

Digestive System: Changes food we eat into smaller particles. Rids the body of extra food and waste.

Respiratory System: Brings oxygen into the body and rids carbon dioxide from the body.

Both: Are necessary for organisms to survive. Use the circulatory system to deliver energy to the body.