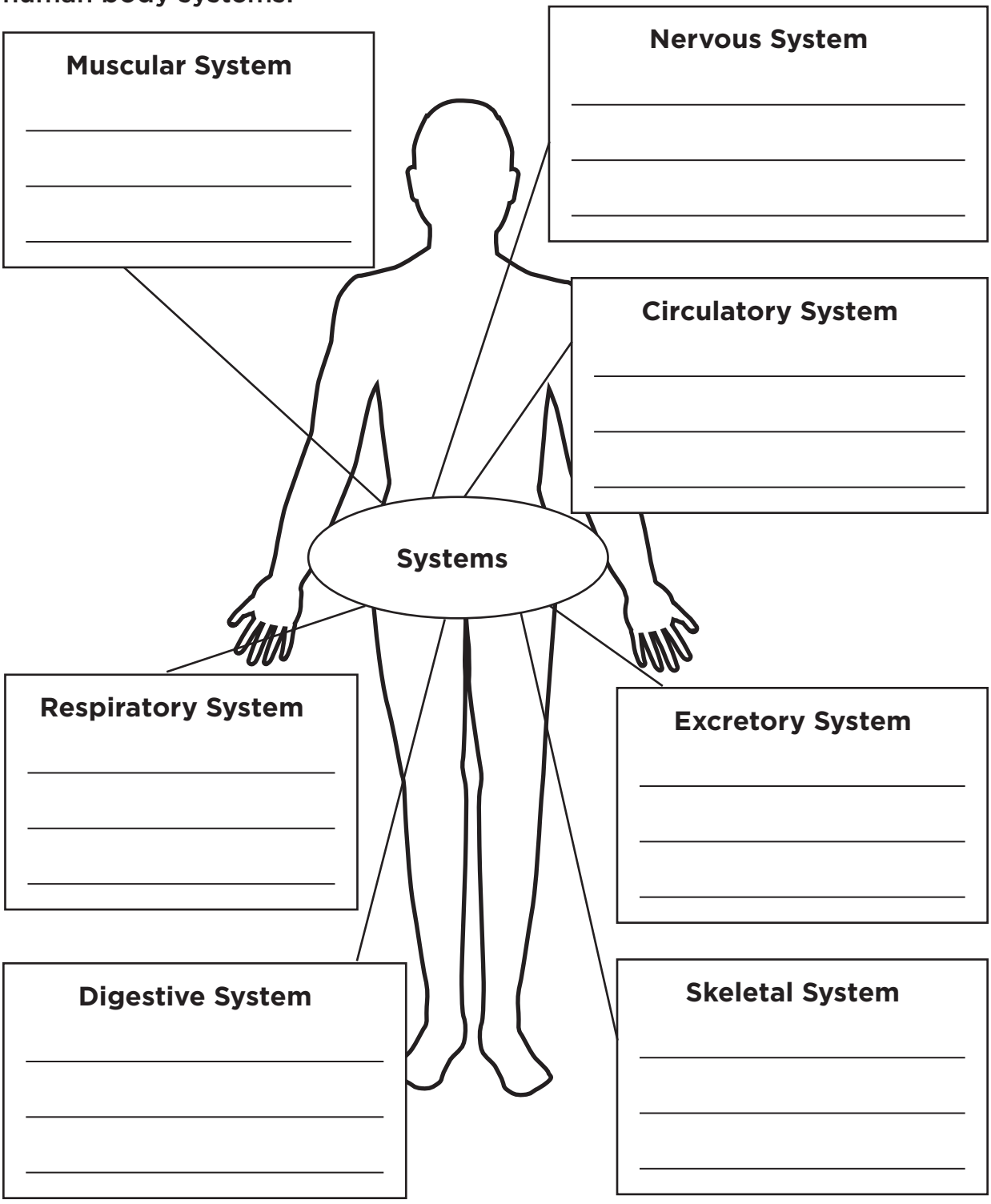
Name _____ Date _____

CHAPTER LEVEL
Concept Map

Human Body Systems

Complete the concept map with the information you learned about human body systems.



Name _____ Date _____

Bigger Muscles or a Stronger Heart?

Read the Literature feature in your textbook.

Write About It

Response to Literature In this article, you learned about the difference between aerobic and anaerobic exercise. Write a summary. Start by telling the main idea of the article. Then include important facts and details. Reach a conclusion at the end.

Name _____ Date _____ **Outline**

The Human Body

Use your textbook to help you fill in the blanks.

How is the human body organized to carry out life processes?

1. A group of similar cells that work together to carry out a function make up a(n) _____ .
2. Different tissues are organized into various _____ .
3. The organs then work together as part of a(n) _____ to perform specific activities or _____ .

Which organ systems are involved in protecting the body?

4. The _____ system includes skin and hair that cover your body and act as a barrier to protect it.
5. The _____ helps your body to heal and prevents it from getting sick.

Which organ systems are involved in controlling the body?

6. The _____ carries messages from one part of the body to another and controls your senses.
7. The _____ system controls the body's growth and responses.

Which organ systems are involved with supporting and moving the body?

8. The _____ system tightens and releases _____ to move body parts.
9. The _____ gives the body its shape, protects organs, and works with muscles to move the body.

Name _____ Date _____

Which organ systems are involved in moving necessary materials into, through, and out of the body?

10. The _____ carries oxygen into the lungs where it is transferred to the blood.

11. The _____ moves oxygen and nutrients to the cells, and takes carbon dioxide and waste from the cells.

12. The _____ system moves waste materials out of the body.

13. The _____ turns the food you eat into nutrients that are suitable for use by the body's cells.

Which of the body's organ systems are activated during these activities?

14. The _____ system is activated when you are suddenly frightened; it gives you the ability to run away fast.

15. The _____ is activated when you eat an apple; it breaks down the food for use by your cells.

16. The _____ is activated when you sweat; it carries waste from your body.

17. The _____ is activated when you respond to catch a ball; it sends messages to your muscles telling you to move your hands.

Summarize the Main Idea

18. How is the body organized to carry out life processes?

_____

_____

_____

_____

_____

Name _____ Date _____

Vocabulary

The Human Body

COABNR 

ITCOYRURLAC 

SIEDEVGIT 

UENMIM 

RAIH 

Unscramble the words using the hints, then solve the puzzle.

1. The respiratory system brings in oxygen and takes out _____ dioxide.
2. The _____ system moves nutrients into cells and waste out of cells.
3. The _____ system turns food into nutrients for the cells.
4. A person with a strong _____ system does not catch many colds.
5. The body's integumentary system includes its skin and _____ .

It works like a well-oiled machine when all its systems work together. It's the 

Cloze Test

Name _____ Date _____

The Human Body

cells	excretory system	organs
circulatory system	nervous system	organ system
digestive system	immune system	respiratory system
endocrine system	integumentary system	

Fill in the blanks.

The human body is well equipped to carry out all the necessary processes of life. The body has similar _____ , which work together and make up a tissue. Different tissues are organized into _____ . A complex activity, such as the breakdown of food for use by the cells, requires a(n) _____ . This specific function is performed by the _____ . Other organ systems are involved in the transport of materials into, through, and out of the body. These systems are the _____ , the _____ , and the _____ . Two organ systems that control the body's activities are the _____ and the _____ . Two other organ systems that protect the body are the _____ and the _____ . To do all the wonderful things that humans do, it is necessary that all the body's organ systems work together.

Name _____ Date _____ **Outline**

The Digestive System

Use your textbook to help you fill in the blanks.

Where do cells get energy to do work?

1. Your cells get energy from the _____ you eat.
2. _____ breaks down big food into simple substances so that tiny _____ can use it.
3. The body breaks down food both physically and _____ .
4. The body's _____ produce chemicals to help break down food.

Where does digestion begin?

5. When you bite into food, your teeth tear and grind the food into a small ball called a(n) _____ .
6. Your _____ , attached to the back of your mouth, has many _____ that allow you to taste sweet, salty, sour, and bitter things.
7. When the bolus is moved to the _____ or throat, it is finally swallowed into the _____ , the long muscular tube that connects to the stomach.

What are the special functions of various teeth in breaking down food?

8. The teeth used for biting food are found in the front of the mouth and are called _____ .
9. The _____ , the flat teeth in the back of your mouth, are used for crushing and grinding food.

Outline Name _____ Date _____

What happens to food once it is swallowed and goes into the esophagus?

10. The esophagus is lined with _____ , which makes the inside slippery.

11. Muscles in the esophagus squeeze the food and move it along to the _____ .

12. After 4 to 6 hours in the stomach, the food is released into the _____ .

13. Finally the nutrients are absorbed inside the small intestine, which has hairy finger-like bumps called _____ .

What happens to the food that is not absorbed?

14. Food that could not be digested moves along to the _____ .

15. The _____ is the widest part of the large intestine.

Summarize the Main Idea

16. What are the basic steps of the digestion process?

_____

_____

_____

_____

_____

_____

_____

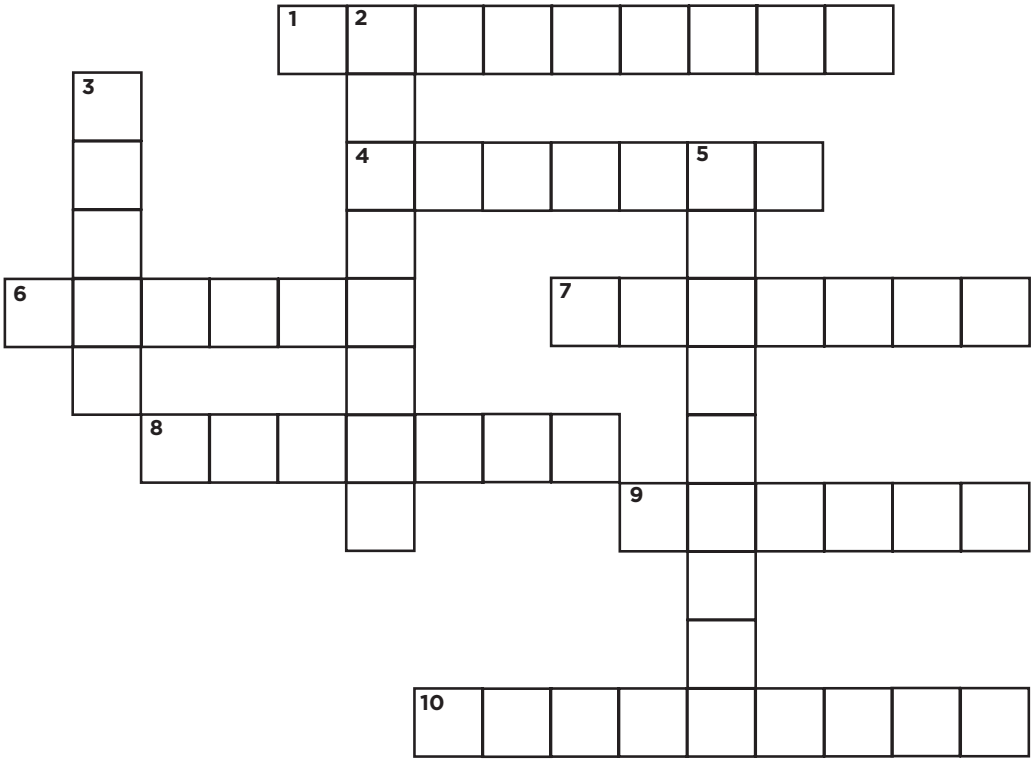
_____

Name _____ Date _____

Vocabulary

The Digestive System

Use the following hints to fill in the crossword puzzle.



Across

1. the process that breaks down food into simple substances

4. pointy teeth used for cutting and tearing food

6. flat back teeth used for crushing and grinding food

7. has muscles that squeeze and mix food, as well as acids that break it down

8. another name for throat

9. found in the mouth, it starts softening food, breaking it down chemically

10. an organ that has villi to absorb the nutrients

Down

2. front teeth used for biting food

3. the widest part of the large intestine

5. a muscular tube that connects your mouth to your stomach

Cloze Test Name _____ Date _____

The Digestive System

bile	colon	large intestine	small intestine
bolus	energy	molars	stomach
canines	esophagus	rectum	villi
chemically	incisors	saliva	

Fill in the blanks.

The function of the digestive system is to break food down so that the cells can use it. Food supplies _____ to the cells. Digestion begins in the mouth with the teeth where _____ bite the food, and _____ cut and tear it. _____ grind and crush the food into a small ball called _____ . _____ , a liquid found in the mouth, softens the bolus and starts breaking it down _____ . Swallowed food moves down the _____ to the _____ . In the stomach the liver adds _____ and the pancreas adds other digestive juices that break food down into a soupy liquid. Then the food moves to the _____ where it can be absorbed into the body through _____ . The leftover food that could not be digested moves to the _____ , which has the _____ as its widest part. The last part of the large intestine is the _____ .

Name _____ Date _____

Reading

Meet George Barrowclough

When most people think of predators, they picture long, sharp teeth that can rip into flesh. But did you know that some predators, like owls, have no teeth at all? An owl is a predator, an animal that hunts other animals, that eat and digest their food in an interesting way.

George Barrowclough is an ornithologist at the American Museum of Natural History. An ornithologist is a scientist who studies birds. He investigates a bird called the Northern spotted owl, found only in California, Oregon, Washington, and parts of Canada. Northern spotted owls are excellent hunters. They catch mostly rodents, including flying squirrels, woodrats, and mice.

Owl Pellets

When you eat, you chew first to break the food apart before swallowing it down to your stomach. Most of the time, when an owl eats a mouse, it swallows it whole. Then it relies on a part of its stomach called the gizzard to break the food down. The gizzard has digestive fluids that dissolve all of the soft tissue of the mouse.

The skeleton, teeth, fur, and claws don't have a lot of nutrients and are very hard for the owls to digest. So instead they are squeezed into a tight ball in the gizzard. Several hours later, the owl closes its eyes, coughs it up, and spits it out. This mass of mixed-up fur and bones is called a pellet.

Owl pellets may look gross to some people, but scientists like George find them fascinating. That's because scientists get a lot of information from owl pellets. They can find out what kinds of animals the owls prey on and how they hunt. This information is especially important because the Northern Spotted Owl is an endangered species of bird. The more we learn about these owls and what they need to survive, the better we are able to protect them.

Name _____ Date _____

Main Idea and Details

- Look for the central point of a selection to find the main idea.
- Details are important parts of the selection that support the main idea.

Write About It

Main Idea Think about the article you just read. Look for the main topic or central idea of the article. Write the main idea of the article and give one detail from the article that supports the main idea.

Name _____ Date _____ **Outline**

The Respiratory System

Use your textbook to help you fill in the blanks.

What does your respiratory system do?

1. Your cells use _____ to break down nutrients and get energy.
2. Nutrients enter the blood through your digestive system, but oxygen enters through your _____ system.
3. When you breathe out, _____ , a gas waste product, is pushed out of the body.

How does the respiratory system exchange carbon dioxide and oxygen in the blood?

4. In your lungs, air is drawn down through a series of tubes surrounded by _____ , or tiny blood vessels.
5. Oxygen enters the capillaries and _____ from the capillaries passes into the lungs.
6. When you _____ , the lungs empty of air, which contains the carbon dioxide.
7. The _____ , a large flat sheet of muscle, controls movement of air in and out of the lungs.

What are the main steps in respiration?

8. Air flows in through your nose and enters your mouth. It passes through your _____ , or throat, and over your _____ , or voice box.
9. A flap of tissue that closes when you swallow to prevent food from entering the airway is called the _____ .

Name _____ Date _____

10. After passing the larynx, air enters the _____ , or windpipe, a strong tube that divides into two branches.

11. In the lungs, the branches of the trachea continue to divide into smaller and smaller branches called _____ .

12. At the end of the smallest bronchi are tiny, thin sacs called _____ , where the gas exchange takes place.

13. The walls of the alveoli are so thin that gases like oxygen and carbon dioxide can pass through them by a process called _____ .

What is cell respiration?

14. Oxygen in the bloodstream flows into the cell's _____ .

15. In the mitochondria, glucose and oxygen react to produce carbon dioxide, water and _____ .

16. Energy is stored within a cell in a substance called _____ .

17. _____ is the breaking down of glucose to release energy for the cell.

Summarize the Main Idea

18. What does the respiratory system do?

_____

_____

_____

_____

_____

Name _____ Date _____

Vocabulary

The Respiratory System

GIPDAAHRM

TITGIPSEOL

IFNIOSUDF

KABRE

ESLUCGO

Unscramble the words using the hints, then solve the puzzle.

1. The large flat muscle that controls your breathing is called the _____ .
2. The flap of tissue that closes when you swallow to protect you from choking is the _____ .
3. The passage of oxygen or carbon dioxide through a cell membrane is a process called _____ .
4. Cellular respiration occurs when cells _____ down nutrients to get energy.
5. _____ and oxygen react inside a cell's mitochondria to produce carbon dioxide, water, and energy.

The best advice for keeping a healthy respiratory system is:

1 2 3 4 5 6 7 8 9 !

Name _____ Date _____

The Respiratory System

alveoli	diaphragm	glucose	mitochondria
bronchi	diffusion	inhale	respiratory system
carbon dioxide	exhale	lungs	trachea

Fill in the blanks.

Your cells need oxygen to break down food for energy. Oxygen enters the body through your _____ . When you _____ , air passes through your nose and mouth and enters your _____ , or windpipe. The trachea lets air into your right and left _____ . The lungs expand as air flows into smaller branched tubes called _____ . At the end of the bronchi are tiny sacs called _____ . Here oxygen flows through the alveoli's walls into the blood cells in a process called _____ . The blood carries a waste product called _____ from the blood to the tubes of the lungs. Carbon dioxide is pushed out of the body when the lungs _____ . The muscle that controls the movement of gases through the lungs is called the _____ . Oxygen in the blood can flow into a cell's _____ , where it reacts with a type of sugar called _____ . This reaction releases energy to the cell.

Name _____ Date _____ **Outline**

The Circulatory System

Use your textbook to help you fill in the blanks.

What does your circulatory system do?

1. The circulatory system is a transport system that brings materials to and from your body's organs, tissues, and _____ .
2. The circulatory system is made up of the _____ , _____ , and _____ .
3. Blood from the heart is pumped into _____ , which carry the blood mixed with oxygen from the heart to the body.
4. Oxygen and nutrients pass from the blood to the body's tissues through the thin walls of the _____ .
5. The _____ take the blood that carries carbon dioxide back from the body to the heart.

How does carbon dioxide leave the blood and how does oxygen enter?

6. The blood is pumped to the _____ , where carbon dioxide is exhaled, and oxygen is inhaled.

What are the parts of the heart and what are their functions?

7. The heart, a fist-sized muscle, is located behind a bone called the _____ in the center of your chest.
8. _____ , a protective sac of tissue, surrounds the heart.
9. Each side has two chambers; the upper chamber, or _____ , and the lower chamber, or _____ .

Name _____ Date _____

10. Blood coming from the body is _____ – poor and _____ – rich.

11. The heart pumps the blood to the lungs through the _____ .

12. Blood comes back from the lungs to the left side of the heart through the _____ .

13. Blood leaves the heart through the _____ , an artery, and is pumped to the body.

14. The heart has _____ that automatically close to stop blood from flowing in the wrong direction.

What are the parts of the blood and what are their functions?

15. _____ carry oxygen and carbon dioxide to and from the lungs and the rest of the body.

16. _____ are large blood cells that fight germs entering the body; they also break down dead cells.

17. _____ are cell fragments that prevent blood from leaking through capillaries.

Summarize the Main Idea

18. What does the circulatory system do?

_____

_____

_____

_____

_____

_____

_____

Name _____ Date _____ **Vocabulary**

The Circulatory System

MIRTUA 

NILRECTEV 

NOXYGE 

TASLELPTE 

RAIESRET 

LILPIASACRE 

Unscramble the words using the hints, then solve the puzzle.

1. The upper chamber of the heart is called the _____ .

2. The lower chamber of the heart is called the _____ .

3. Blood is _____ – poor coming into the right side of the heart from the body.

4. _____ are part of the blood formed of small cell fragments. They form clots to stop bleeding.

5. _____ are thick-walled blood vessels that carry blood away from the heart.

6. _____ are tiny blood vessels that have walls thin enough for carbon dioxide and oxygen to be exchanged.

A strong cardiovascular system is developed through regular _____ .

Cloze Test Name _____ Date _____

The Circulatory System

arteries	capillaries	platelets	white
atrium	carbon dioxide	red	
blood	heart	veins	
blood vessels	oxygen	ventricle	

Fill in the blanks.

The circulatory system carries needed supplies like food and oxygen to various organs and tissues, and it takes away wastes. The circulatory system consists of the _____ , _____ and _____ . The heart itself is divided into four chambers the upper left and right _____ and lower left and right _____ . There are three types of blood vessels: the _____ that carry blood to the heart from the body, the _____ that carry blood from the heart to the body and the _____ that connect the two. An important station in the blood's trip through the body is the lung where _____ blood cells get _____ and leave _____ . The blood's _____ cells fight germs and break down dead cells. _____ keep blood from leaking through the thin walls of the capillaries. They also form scabs that stop cuts from bleeding.

Name _____ Date _____

Reading

Meet Adriana Aquino

Water covers about two-thirds of the Earth's surface, and fish live in almost every corner of it. In tropical seas where coral reefs are found, the water is warm. In oceans near the poles, the water is below freezing. How do fish survive in these different conditions?

Adriana Aquino is a scientist at the American Museum of Natural History. She's studied several fish species from around the world. The fish she studies are from many different environments. Adriana specializes in their body structure and form. Some of the fish she is interested in have developed amazing adaptations to their circulatory systems that allow them to live in these different environments.

One of these adaptations allows fish to live in some of the coldest places on Earth, like the icy cold waters of the Arctic and Antarctic oceans. You might think that the fish swimming in water below 0˚C would freeze solid, but they do not. What stops them from freezing?

These fish have a special protein in their blood. This "antifreeze" protein in the circulatory systems of these fish stops the blood from freezing. Even a single ice crystal can be deadly to a fish. Once one crystal grows, others can cluster around it, eventually freezing the blood. If the blood freezes, the circulatory system fails. The frozen blood stops circulating and no longer carries oxygen and nutrients to cells. The antifreeze proteins stop this from happening by surrounding any ice crystals and binding to their sides. This stops the crystals from clustering. And that's how these fish can survive in the coldest waters of the world.

Name _____ Date _____

Main Idea and Details

- Look for the central point of a selection to find the main idea.
- Details are important parts of the selection that support the main idea.

Write About It

Main Idea Tell how the fish that live in the Arctic and Antarctic oceans are able to keep from freezing. Explain what would happen if a fish did not have this adaptation to the cold water. Research and explain other adaptations fish in cold environments use to survive.

Name _____ Date _____ **Outline**

The Excretory System

Use your textbook to help you fill in the blanks.

What does the excretory system do?

1. The excretory system removes _____ from your body.

2. Solid waste leaves the body through the _____ system. Carbon dioxide leaves the body through the _____ system. Urine leaves through the _____ system, and sweat leaves through the _____ system.

3. The urinary system includes the _____ , the _____ , and the _____ .

What organs filter your blood?

4. Before blood moves into the _____ , it must pass through the liver, which helps the body break down food by producing _____ .

5. The liver removes unnecessary or even _____ substances from the blood and converts the food parts it cannot break down into _____ .

6. When blood leaves the liver, it contains wastes that need to be _____ or separated out.

7. The kidneys are _____ organs that _____ substances from the blood that the body does not need, and they also _____ substances to the blood that the body does need.

Name _____ Date _____

How does the kidney filter blood?

8. _____ are individual, tiny filters in the kidneys that separate waste from the useful materials in the blood.

9. Each nephron has a _____ tube that has a _____ membrane.

10. As this membrane allows some things to pass but stops others, it gathers all of the unusable waste in a collecting _____ .

11. The collected wastes are _____ and other unusable products, which the kidneys later turn into _____ .

12. The _____ is the tube that carries urine from the bladder to the outside of the body.

What does sweat do?

13. Sweat helps the body get rid of wastes and _____ by pushing sweat collected in sweat glands up into the pores and then onto the surface of the skin.

Summarize the Main Idea

14. Briefly explain the basic jobs of the kidneys, the nephrons, the bladder, and the urethra.

_____

_____

_____

_____

_____

_____

_____

Name _____ Date _____ **Vocabulary**

The Excretory System

K	B	Q	C	J	B	U	D	Y	K
I	S	L	Z	A	R	M	R	B	I
L	N	G	A	E	E	O	X	Q	D
Z	Z	Q	T	D	T	R	C	U	N
B	F	H	Y	E	D	O	U	C	E
J	R	G	R	V	D	E	Z	G	Y
A	P	C	R	D	S	N	R	H	S
I	X	N	E	P	H	R	O	N	S
E	Y	R	A	N	I	R	U	J	D
A	R	W	H	V	R	V	Z	H	A

Use the clues below to help you find the words hidden in the puzzle.

1. An organ that temporarily stores urine and stretches from the size of a plum to the size of a grapefruit depending on how full it is. _____

2. The system that removes waste products from the body. _____

3. Bean-shaped organs that filter wastes out of the blood, send useful particles back to the blood, and produce urine. _____

4. Individual, tiny filters that separate wastes from useful materials in the blood, and number more than 1 million in each kidney. _____

5. What the parts of food that the liver cannot break down are converted into. _____

6. The tube that carries urine from the bladder to the outside of the body. _____

7. The system that includes the kidneys, bladder, and urinary tract. _____

Name _____ Date _____

The Excretory System

artery	kidneys	returned	ureters
bile	nephrons	sweat	useful
ducts	pores	tubes	

Fill in the blanks.

The job of the excretory system is to get rid of wastes. In the integumentary system, sweat glands push _____ that contains wastes to the surface of the skin through _____ . In the urinary system, waste products are filtered, and useful products are _____ to the blood. The process of the urinary system starts when the liver produces _____ to break down food. Whatever broken-down food the body cannot use leaves the liver as urea. Next, the blood containing urea flows into the bean-shaped _____ through a(n) _____ and then to capillaries. Once the blood reaches the _____ , or individual, tiny filters, it will be separated so that _____ materials are sent back to the blood. Wastes will get caught up in _____ with semipermeable membranes and then will be held in collecting _____ . The urea and other wastes reach the bladder through tubes called _____ . A signal goes to the brain to indicate that the bladder needs to be emptied.

Name _____ Date _____ **Writing**

Dr. Kolff Great Inventor

Read the Writing in Science feature in your textbook.

Write About It

Persuasive Writing Suppose your school wants to give someone an award. Write a letter that persuades your principal to give the award to Dr. Kolff. Use convincing facts and details to back up your arguments.

Planning and Organizing

Gloria plans to include her opinions or arguments about Dr. Kolff, and then back them up with facts. Here are five sentences that she wrote. Write O by each sentence that gives her opinion. Write F by each statement that gives a fact.

1. _____ Dr. Kolff is a dedicated humanitarian whose life demonstrates his concern for human welfare.

2. _____ In the midst of the horrors of World War II, Dr. Kolff started the first blood bank on the continent of Europe.

3. _____ After the war, he sent free dialysis machines to England, Canada, and the United States.

4. _____ Dr. Kolff's two life-saving machines are among the most important inventions ever.

5. _____ Working with Dr. Robert Jarvik and Dr. Don Olsen, he developed the mechanical heart.

Now write an opinion you could use in your editorial. Then, write two facts that back it up.

1. Opinion: _____

2. Fact: _____

3. Fact: _____

Name _____ Date _____

Now write the first draft of your editorial on a separate sheet of paper. Begin by clearly stating your position. Present the facts and evidence in a logical order. End with your strongest reason.

Revising and Proofreading

Read this passage from Gloria's report. There are eleven errors. Proofread this passage and correct the errors.

When willem kolff was a young boy growing up in the netherlands he decided he didnt want to be a doctor because doctors have to see people dye every day. However, he did become a doctor, studing at the university of leiden. As a result of his invention of the artificial kidney machine and the artificial heart many people now live longer lifes.

Now revise and proofread your editorial. Ask yourself:

- Have I clearly stated why Dr. Kolff should receive a lifetime achievement award?
- Have I supported my arguments or opinions with convincing facts and reasons?
- Have I included evidence from research on the subject?
- Have I presented evidence in logical order?
- Have I shown that I understand the purpose and format of an editorial?
- Have I corrected all grammar errors?
- Have I corrected all errors in spelling, punctuation, and capitalization?