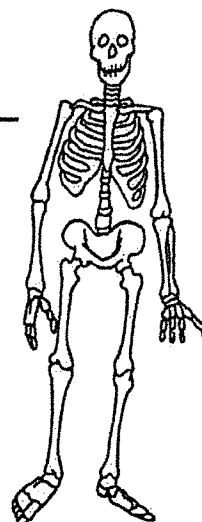


Name: _____

Your Bones

by Cynthia Sherwood



Without your bones, you would be as floppy as a jellyfish. Our bones allow us to stand up straight. They support us and help us move, but they also protect our body organs.

Our skeleton is made up of all of our bones working together. If you have ever seen a real skeleton in a science class or museum, you might think that bones are dry and dead feeling. But that is not the case. Bones are made of living, growing cells. Inside most bones is soft marrow, which is where many of our blood cells are made. As a baby, you were born with nearly 300 bones. But adults only have about 206 bones because some of the smaller ones join together to form big ones.

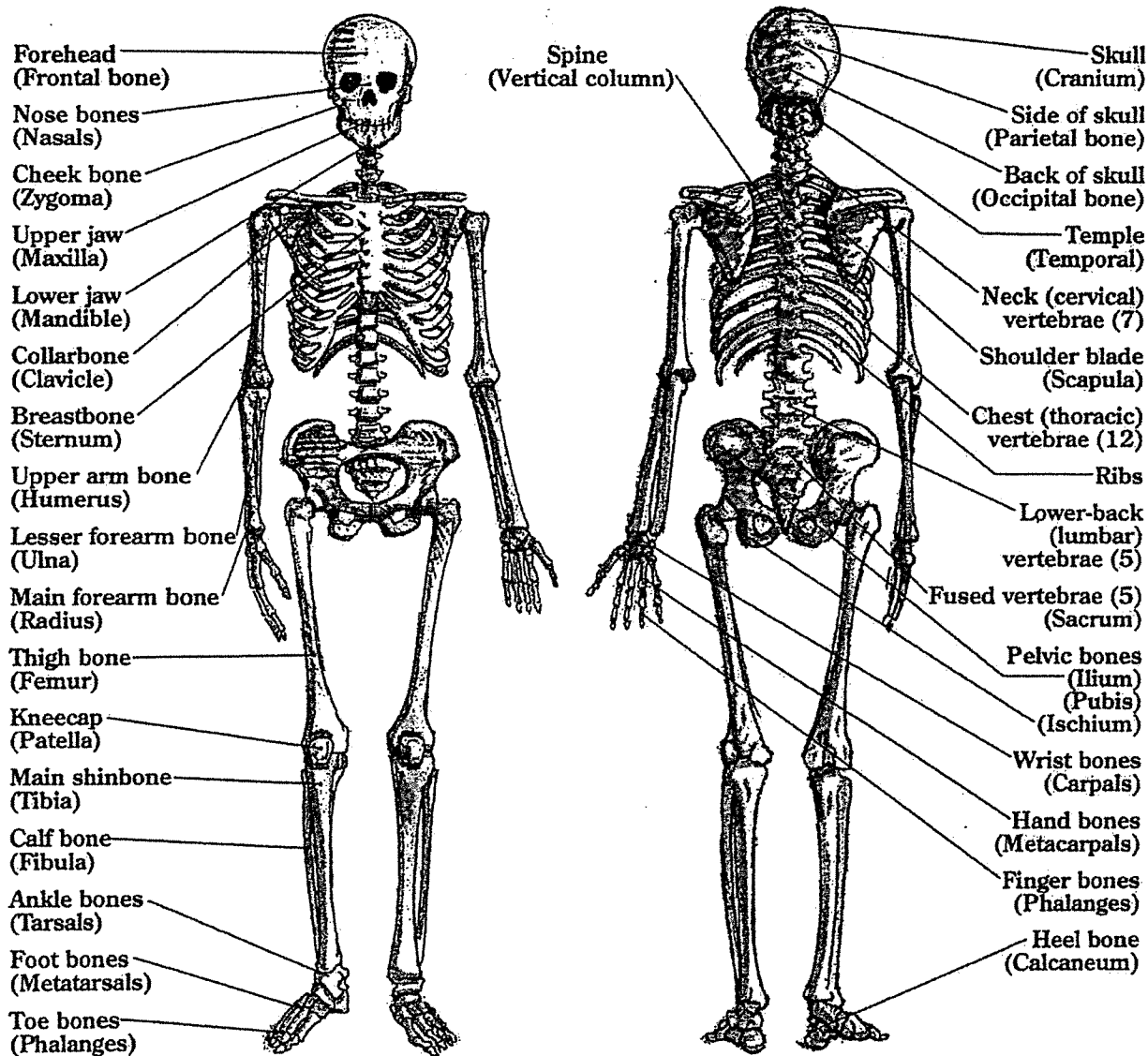
Certain bones are especially important. The skull inside your head acts like a helmet for your soft, squishy brain. Your skull helps protect you from injuries to your head. Your spine, or backbone, lets you stand up tall. Your spine also protects the spinal column with all of its nerves inside. Your ribs make a cage to protect your vital organs like the heart, lungs, and liver.

Even though bones are very light, they are also very strong. That is why it usually takes a very bad fall or other serious accident to break a bone. If that does happen, you might wear a cast until new bone cells heal the break in a month or two.

To protect your bones, wear a helmet whenever you ride your bike or skateboard. Knee pads, wrist guards, and other safety gear for sports are a good idea too. Strong bones need the mineral calcium, so drink lots of milk and eat dairy products. Bones also need active exercise, so go out and run, jump, and dance for healthy, strong bones.

BONING UP

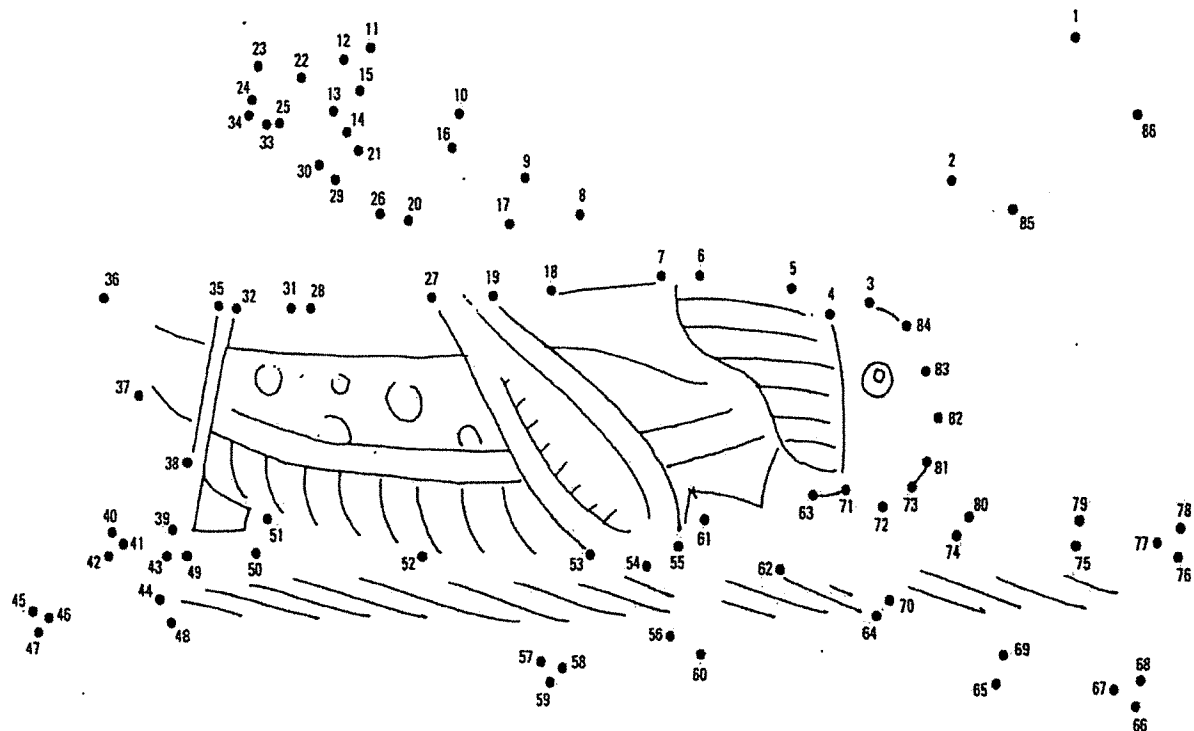
The adult human skeleton comprises more than 200 bones! The most important ones are shown here, along with their common and scientific names. Sherlock Bones wants you to know that you'll need them for clues . . .



Inside Out

Three-fourths of all the animals in the world, including insects and crustaceans, grow skeletons outside their bodies. These stiff *exoskeletons* are good for jumping and swimming, but they prohibit all the amazing twists and turns that our own skeletons permit.

Connect the dots below to find an animal that wears its skeleton on the outside.



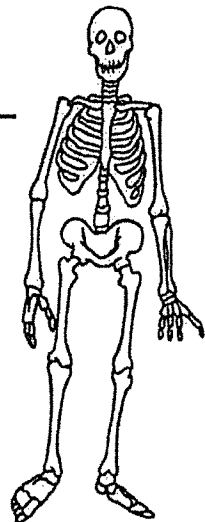
I am a _____.

Answers, page 89

Name: _____

Your Bones

by Cynthia Sherwood



1. Tell whether each statement is true or false.

- a. _____ Your bones are hollow.
- b. _____ Blood cells are made inside your bones.
- c. _____ Adults have more bones than babies do.

2. Why are dairy products good for your bones?

3. Complete the graphic organizer.

Bone(s)	Purpose
ribs	
	helps you to stand up tall and protects the nerves in your spinal column
skull	

4. How many more bones do babies have than adults?

Use your math skills. Show your work.

Name: _____

Your Muscles

by Cynthia Sherwood

When you think of muscles, you might picture a bodybuilder with big, bulging arm and chest muscles. But your muscles do not have to look like that to work well. Every time you write your name, you use the twenty different muscles in your hand. Every time your heart beats, you use your cardiac muscle. When you chew your food, you use your tongue muscles. You're even using muscles when you blink your eyes. In fact, every time you move, you are using some of the amazing muscles in your body.



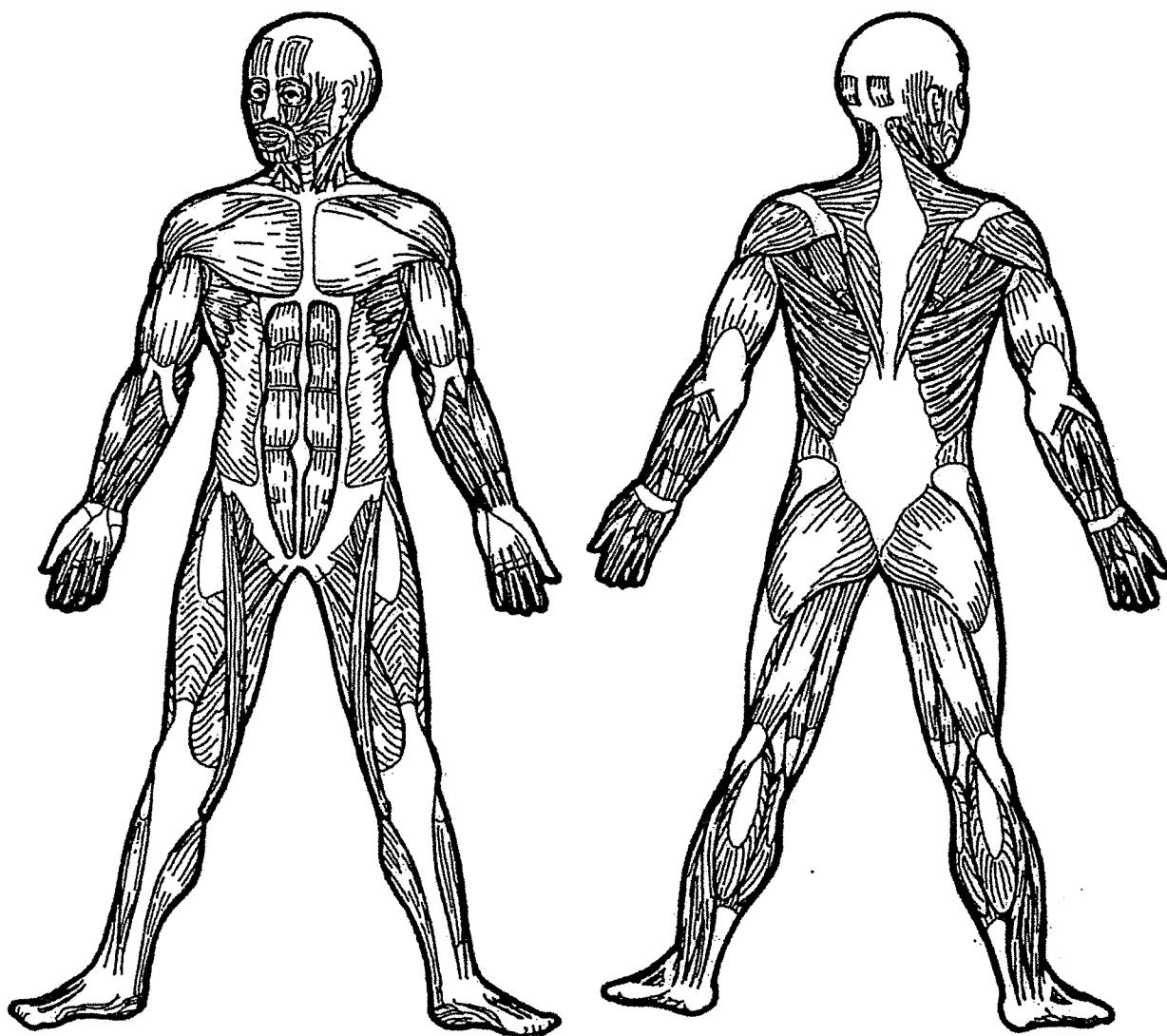
A muscle is made of tiny fibers. Fiber is a type of tissue that feels a little like a rubber band. Thousands of these fibers are packed together to make a single muscle. We all have the same number of muscles—around 700 or so. Men and women with extra-big muscles simply have thicker bundles of fibers.

There are three different types of muscles. *Smooth muscles* are ones you cannot control. They work behind-the-scenes to keep your body running. Smooth muscles include the ones that help you digest your food. The *cardiac muscle* makes the heart pump blood in and out. *Skeletal muscle* is the kind you can control. These are the muscles you use to raise your hand, swim laps, or ride your scooter. Usually, a skeletal muscle is attached to the end of a bone. Muscles and bones work together to give your body power, strength, and movement. In fact, every year, your leg muscles help you take about five-million steps!

Even your face uses muscles. But if you want to save your energy, try smiling instead of frowning. It takes seventeen muscles in your face to smile, but forty-three muscles to frown!

Check Out Those Muscles

To the Teacher: Make a transparency of this page and project it for the students to look at as they feel and move their muscles. Have them begin with the jaw and neck, then continue to the upper and lower arm, and finally to their thigh and leg muscles.



Name: _____

Your Muscles

by Cynthia Sherwood



1. Which statement is true?

- a. Muscles in your brain help you think.
- b. All of your muscles are attached to bones.
- c. Muscles help you digest food.
- d. All of these statements are true.

2. What are muscle fibers?

3. How are smooth muscles different from skeletal muscles?

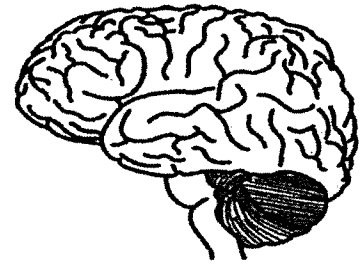
4. Draw straight lines to match each fact on the left with the correct number on the right.

- | | | |
|----|-------------------------------------|-----------|
| a. | Number of muscles it takes to frown | 17 |
| b. | Number of muscles it takes to smile | 20 |
| c. | Number of muscles in your body | 5 million |
| d. | Number of steps you take in a year | 700 |
| e. | Number of muscles you use to write | 43 |

Name: _____

Your Brain

by Cynthia Sherwood



You may not realize that you have a boss, just like adults do at work. But when it comes to your body, your brain is your boss! It is in charge of just about everything you do. When you remember what you ate for breakfast, you use your brain. When you jump up and down, you use your brain. When you draw a picture, you use your brain. Even when you are dreaming, you use your brain.

The brain looks like a wrinkled, wet sponge. In adults, it weighs only about three pounds, but it is made up of billions of nerve cells. These cells send and receive electrical signals that direct all of your body's activities. Sometimes, like when you are learning at school, you know you are using your brain. Many times, though, your brain controls your body without you even thinking about it. The "brain stem" takes care of things your body does automatically, like breathing air, pumping blood, and digesting food.

The biggest part of your brain is called your "cerebrum" (suh-ree-brum). This is the thinking part of your brain. It controls your memory, the movements you choose to make, your ability to figure things out, and your imagination. The cerebrum is made up of two halves. It may sound mixed up, but the left side controls the right side of your body and the right side controls your left side.

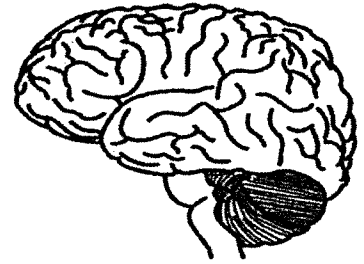
Even your feelings come from your brain. Scientists think emotions are controlled by a part of your brain called the "amygdala" (uh-mig-duh-luh). It is shaped like an almond and is only an inch long. So next time you get in a bad mood, you can blame it on your brain.

You should be glad you have a human brain. It is very complex, which means we can think in different, more complicated ways than other animals. In fact, every day your brain produces about 70-thousand thoughts. No wonder your head hurts when you have too much homework!

Name: _____

Your Brain

by Cynthia Sherwood



1. According to the information in the article, what does your brain look like and how much does it weigh?

2. Which part of your brain controls your memory?

3. Which part of your brain automatically controls parts of your body without you having to think about them?

4. Which part of your brain controls feelings, like happiness, sadness, frustration, and anger?

5. Why does the author say that your cerebrum seems "mixed up"?

6. Your brain is made of nerve cells. What do nerve cells do?

7. Which statement from the article is an opinion?

- a. Even your feelings come from your brain.
- b. Sometimes, your brain controls your body without you even thinking about it.
- c. You should be glad you have a human brain.
- d. Every day your brain produces 70-thousand thoughts.

Lesson: Living Systems and the Environment

Name: _____ Date: _____

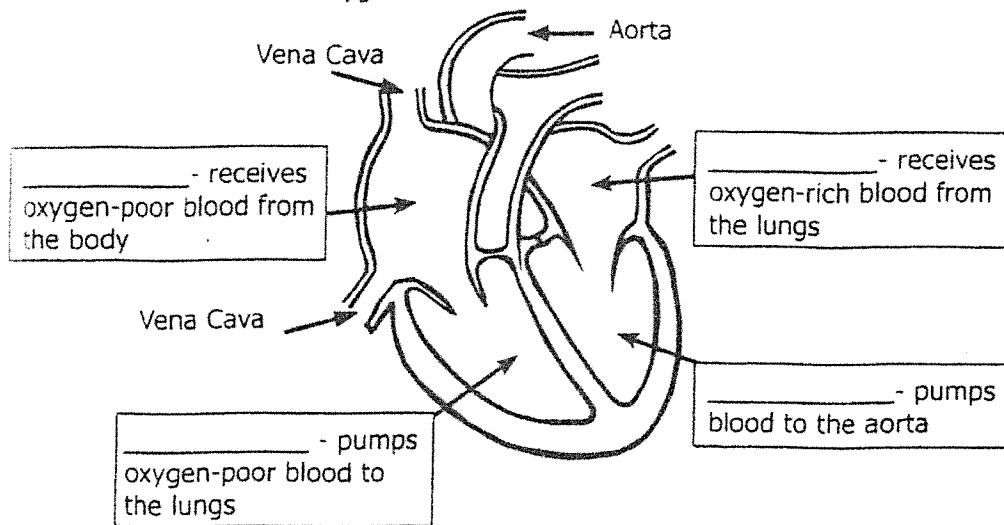
The Circulatory System

The circulatory system transports food and oxygen to cells and picks up wastes in all parts of the body. The heart, blood vessels, and blood are the three main parts of the circulatory system.

The heart is a fist-sized muscular organ that pumps blood throughout the body. The heart has four chambers:

1. The **right atrium** receives oxygen-poor blood from the body after it has delivered food and oxygen and picked up waste products.
2. The **right ventricle** receives the oxygen-poor blood from the right atrium and sends the blood to the lungs to pick up oxygen and release carbon dioxide.
3. The **left atrium** receives oxygen-rich blood from the lungs and sends it to the left ventricle.
4. The **left ventricle** contracts and sends oxygen-rich blood to the body.

Write the name of each chamber on the correct line of the diagram. Color the right chambers of the heart that receive oxygen-poor blood blue and color the left chambers of the heart that receive oxygen-rich blood red.



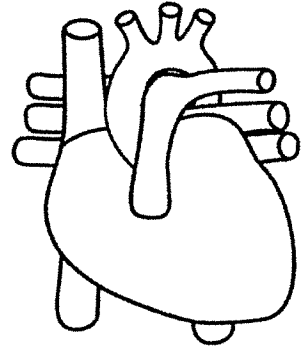
Blood travels through the body in tubes called **arteries**, **veins**, and **capillaries**. Blood flows from the heart to arteries to capillaries to veins and then back to the heart. When blood is squeezed out of the left ventricle, it leaves the heart through the aorta, which is the largest artery in the body. The blood then travels into smaller and smaller branching arteries until it enters tiny, thin capillaries. The capillaries deliver oxygen and food to the cells and pick up carbon dioxide and other waste products. The blood then travels back toward the heart. Capillaries converge, forming veins that eventually lead to the vena cava. The vena cava return blood to the right atrium.

Name: _____

Your Heart

by Cynthia Sherwood

Have you ever watched as your mom or dad pumps gas into your car? You may not realize it, but the most vital part of your body—your heart—is simply a fancy pump. It is designed to move your blood around your body. The heart is located a little to the left of the center of your chest and is about the size of your fist.



Your heart works very hard. When you run around a lot, you can feel your heart beating fast because it is pushing blood filled with oxygen and nutrients to the cells in your body. Your heart is a muscle too! It is divided into two parts. The right side receives blood from your body and pumps it into your lungs. The left side receives blood from the lungs and returns it to the rest of the body.

Your heart muscle beats between 80 and 120 times every minute. With each beat, blood is both entering and leaving your heart. The vessels that carry blood away from your heart are called arteries. The vessels that carry blood back to your heart are called veins.

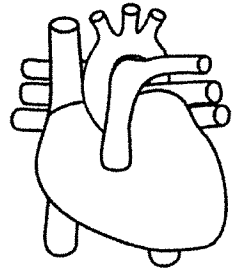
Heart disease is common among older Americans because the heart can become clogged over time. The heart will not pump as well if someone smokes or eats a lot of unhealthy fats and sugary foods. To take good care of your heart, you should eat plenty of whole grains, fruits, vegetables, and lean proteins. You should also exercise often to get your heart pumping hard. Just like other muscles in your body, your heart needs exercise to keep strong.

If you wonder why it is so important to have a strong heart, just think about this—your heart will beat about three *billion* times in your lifetime!

Name: _____

Your Heart

by Cynthia Sherwood

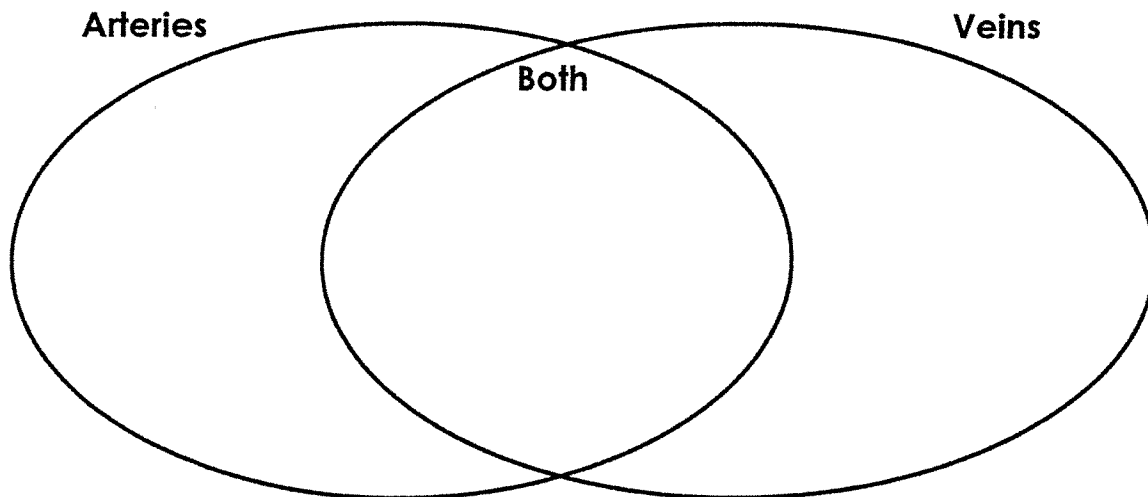


1. Where is your heart located?

2. What does your heart do for your body?

3. How is the left side of your heart different from the right side?

4. Complete the Venn diagram to compare and contrast the functions of arteries and veins.

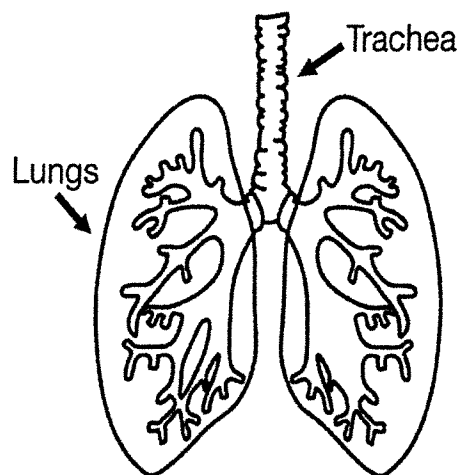


5. What are some things you can do to keep your heart healthy?

Name: _____

Your Lungs

by Cynthia Sherwood



You do something about twenty times a minute without even thinking about it—you breathe! In fact, every day you take about twenty-thousand breaths.

The organs of your body that allow you to breathe are called your lungs. You have two of them that work together, located in your chest inside the rib cage.

The main purpose of your lungs is to breathe in good air and breathe out bad air. The good air contains oxygen, which your body needs. The bad air is a gas called carbon dioxide, which your body cannot use.

When you breathe in through your nose or mouth, air travels down the back of your throat. It passes through your voice box and into your trachea, or windpipe. Your trachea is divided into two air passage tubes. One leads to your left lung. The other leads to your right lung. Inside your lungs, oxygen is removed from the air you breathe and pumped into blood cells. Your lungs also get rid of harmful carbon dioxide from these cells. This process takes place inside hundreds of millions of tiny air sacs.

Each adult lung is about the size of a football. When they are healthy, your lungs feel a little like a sponge and are pinkish-gray. When lungs are damaged by smoking, they can appear gray or have black spots on them.

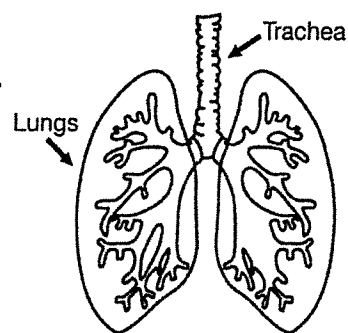
One disease that is very common in children involves the lungs. Asthma narrows the breathing tubes, making it harder to breathe. As many as nine million kids in the United States have asthma.

You probably already know that your lungs are important when you swim. But you may not know this—your lungs are the only part of your body that can float on water!

Name: _____

Your Lungs

by Cynthia Sherwood



1. Where are your lungs located?

2. Complete the graphic organizer.

Type of air that your lungs remove from your blood cells	Type of air that your lungs put into your blood cells

3. What is your trachea?

4. What do lungs look like when they've been damaged from smoking?

5. Why does asthma make it hard for people to breathe?

Name: _____

Your Digestive System

by Cynthia Sherwood

This may seem like a trick question, but are you bigger than a tennis court? The answer is no, of course not! But think about this fact—your intestines have a surface area about the size of a tennis court all coiled up inside your body. They fit inside of you because your large and small intestines are like a giant Slinky that scrunches up.

These organs have a giant role to play too. They are part of your digestive system. That means they break down the food you eat. Digestion begins in the mouth when you chew and swallow. From there, your food travels through the esophagus (ee-saw-fuh-gus), which connects the bottom of your throat to your stomach. Your stomach mixes up food with liquids and then dumps it all into the small intestine.

The small intestine is a very long narrow tube. Its spongy walls soak up nutrients from your food. Then those nutrients flow into your bloodstream to be carried off to other parts of your body. Some nutrients get stored until you need them and others are used right away for all the different things your body needs to work well.

Your body cannot use every single bit of the food you eat. There will always be some that needs to be changed into waste by the large intestine. From the small intestine, leftover food gets pushed into the large intestine where it is dried up and turned into feces, or poop.

If you want to keep your digestive system healthy, you should be careful about what you eat. Healthy whole grains, fruits, and vegetables all pass through your digestive system quickly and easily. They also contain fiber, which is a nutrient that helps in digestion. Your body has a harder time digesting fatty foods, so be careful how much fat is in your diet.

Body Travelogue



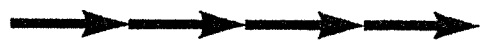
Mouth



As you place food in your mouth, the teeth bite off a piece. The tongue and teeth work together, breaking the food apart and pushing it around. Saliva pours into the mouth from the salivary glands to begin digesting the food. This liquid softens and lubricates the food to help it on its way. The tongue pushes against the roof of your mouth as you swallow, helping push the food down the...



Esophagus



which is about 10 inches (25 cm) long in an adult. It lies behind your trachea or windpipe, and is flattened from front to back when it is empty. As you swallow, you stop breathing and talking for a moment. A trap door, called the epiglottis, automatically closes the opening to your voice box and lungs. The soft palate at the back of the roof of your mouth, swings up to shut off the passage to your nose. If you swallow too fast, your epiglottis may not have time to close, causing you to automatically cough to clear out any food that might enter the trachea. The strong muscles in the esophagus move in a rippling motion pushing the food into the...



Stomach



where gastric juices, made of hydrochloric acid and enzyme pepsin, have been released and are ready to break down the protein in the food. These acids are strong enough to eat through the wall of the stomach, which can cause ulcers. Normally, these acids are not manufactured until food is in the stomach and a protective mucus coats the stomach. The stomach walls expand with the food, like a balloon. The strong muscles which surround it begin to churn the food back and forth. Carbohydrates move out first, then proteins. The fats are the last to leave the stomach. Some food may remain in the stomach for two to five hours. The food is now called chyme, and is a thick liquid. The chyme squeezes into the...



Duodenum



which is the first 10 inches (25 cm) of the small intestine, where the digestive process will now be completed by other juices. Pancreatic juice produced in the pancreas, which is like a large salivary gland. One to two pints (1/2 - 1 liter) of pancreatic juice per day pours into the duodenum through a tube to digest carbohydrates, proteins, and fats. Bile is made by the liver and stored in the gall bladder. Bile works like a detergent to break down fats so they can be dissolved in water and absorbed into the body. Pancreatic juices and bile flow into the duodenum through the bile duct. The partly digested food now moves into the...



Small Intestine



where about five pints (2.1 liters) of digestive juices enter through the walls daily. Completely digested food has been changed to nutrients which can now be absorbed through tiny fingers, called villi, that line the walls of the small intestine. Tiny blood and lymph vessels are inside the villi. They take in the vitamins, minerals, and other nutrients and carry them to all parts of the body through the blood and lymph systems. The average adult absorbs about 10 quarts (about 10 liters) of digested foods and liquids every day. The journey through the small intestine may take four to eight hours. What remains undigested passes into the...



Large Intestine



where it spends 10 to 12 hours losing large quantities of water and more nutrients. At the end, the solution is fed on by a colony of bacteria which decay the remains which are called feces. The chemical changes during this decaying process creates gases. The feces are brown because they contain dead blood cells. These last remains of your meal pass to the rectum, ready to leave the body through the opening called the anus. The entire journey lasts about 15 to 48 hours. Liquids pass through quickly. You can help your digestive system by chewing your food thoroughly and eating plenty of dietary fiber such as fresh vegetables, fruits, whole-grain breads and cereals.

Name: _____

Your Digestive System

by Cynthia Sherwood

1. What is the purpose of your body's digestive system?
 - a. to help your blood move through the body
 - b. to help you breathe
 - c. to help your body make food
 - d. to help your body break down food

2. After you swallow your food, what does it travel through to get to your stomach?

3. Which organ takes nutrients from your food and puts it in your bloodstream?
 - a. stomach
 - b. esophagus
 - c. small intestine
 - d. large intestine

4. Place these events in the correct order. Number each sentence 1 - 5.

_____ Food ends up in the small intestine.

_____ Food is chewed up.

_____ Food is in the large intestine.

_____ Food travels through the esophagus.

_____ Food waste leaves the body.

5. What is fiber?

Name: _____

Human Body

Word Bank

brain

liver

small intestine

trachea

arteries

heart

stomach

large intestine

skin

bones

lungs

kidneys

esophagus

veins

muscles

1. I have many jobs. I make bile to help your stomach break down food. I also store nutrients your body needs. I also make antibodies to help you fight disease. What am I?

2. I take and absorb the nutrients that your body needs from your food and I put it in your bloodstream so your body can use it. What am I?

3. I am a muscle located behind your lungs. I am always moving, and I never get tired. I pump blood to all parts of your body. What am I?

4. When you eat, I mix your food with chemicals made by your body, then I churn up your food into smaller parts. What am I?

5. Your body can't use every part of the food you eat. The waste comes to me, and I dry it out so it can leave your body. What am I?

6. We are a pair of filters that clean your blood. We take liquid waste from your bloodstream and we send it down to your bladder. What are we?

7. We take oxygen that your body needs from the air and put it in your bloodstream. We also take carbon dioxide that is in your blood and send it out of your body. What are we?

8. I hold your body parts in. I have pores so sweat can escape your body. I am filled with nerves that help you to sense temperature and feel the things around you. What am I?

Human Body - Continued

Word Bank

brain

liver

small intestine

trachea

arteries

heart

stomach

large intestine

skin

bones

lungs

kidneys

esophagus

veins

muscles

9. I control your muscles and all of the organs in your body. I make sure you breathe automatically, ensure your heart beats properly, and remind you to blink your eyes. I even hold all of your thoughts and memories. What am I?

10. We give your body support and structure. We also protect your delicate organs, like your brain, liver, and lungs. We are filled with a substance called marrow. What are we?

11. We are blood vessels that send blood back towards your heart. Most of the blood we carry doesn't have much oxygen left in it. What are we?

12. We are blood vessels that send blood away from your heart to all different parts of your body. We have thicker, stronger walls than veins. What are we?

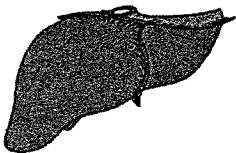
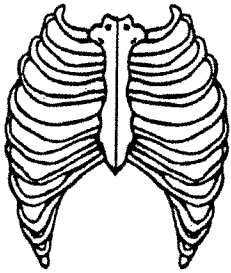
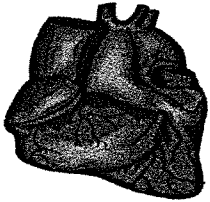
13. I am sometimes called your "windpipe." When you breathe, air travels through me to your lungs. What am I?

14. We work in pairs to pull your bones in different directions. We also help move food and blood through your body. Without us, you'd wouldn't be able to move at all. What are we?

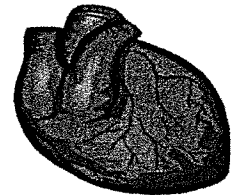
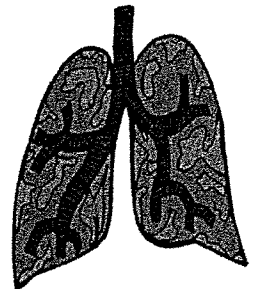
15. I am a tube in your throat. When you swallow, food or drink travels down through me into your stomach. What am I?

Name: _____

Human Body Word Search Puzzle



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



APPENDIX

ARTERY

BLOOD

BONES

BRAIN

EARS

ESOPHAGUS

EYES

GLANDS

HEART

JOINT

KIDNEY

LARGE INTESTINE

LIGAMENT

LIVER

LUNGS

MOUTH

MUSCLE

NERVES

NOSE

PANCREAS

RIBS

SKIN

SMALL INTESTINE

SPINE

SPLEEN

STOMACH

TONSILS

TRACHEA

VEIN

Name: _____

A-Maze-ing Organs of the Human Body

Puzzle by Guy Belleranti

First: Find your way through the maze by connecting letters to spell out the names of ten different organs in the human body.

BLADDER,	BRAIN,	HEART,	INTESTINES,	KIDNEYS,
LIVER,	LUNGS,	PANCREAS,	SPLEEN,	STOMACH

You may move forward, backward, up, or down, but no letter may be connected more than once.

Second: Write the remaining unconnected letters in the blank spaces to learn an interesting fact about the human body.

Start →

B	E	R	B	O	E	A	R	T	I	U
L	D	R	R	S	H	K	I	N	N	T
A	D	I	A	I	N	S	T	H	E	E
L	Y	E	N	A	R	G	N	I	T	S
L	S	E	D	I	K	S	E	S	T	O
I	R	L	U	R	G	A	S	P	O	M
V	E	N	N	G	I	A	S	L	T	A
N	O	U	P	S	R	E	R	E	S	C
B	O	A	N	C	D	Y	E	N	H	

Finish

Write the unused letters on the lines to learn two interesting facts about the human body.
