SC.5.L.14.1 Identify the organs in the human body and describe their functions, including … lungs, stomach, liver, intestines, pancreas … reproductive organs, kidneys, bladder…. **SC.5.L.14.2** Compare and contrast the function of organs and other physical structures of plants and animals, including humans….

LESSON 4

ESSENTIAL **QUESTION**

What Body Parts Enable Digestion, Waste Removal, and Reproduction?

Engage Your Brain

Find the answer to the following question in this lesson and record it here.

If you could see through your body, this might be what you'd see when you look in the mirror. What is the coiled tube inside your belly, and what does it do?

_____

_____

_____

ACTIVE **READING**

Lesson Vocabulary

List the terms. As you learn about each one, make notes in the Interactive Glossary.

_____ _____

_____ _____

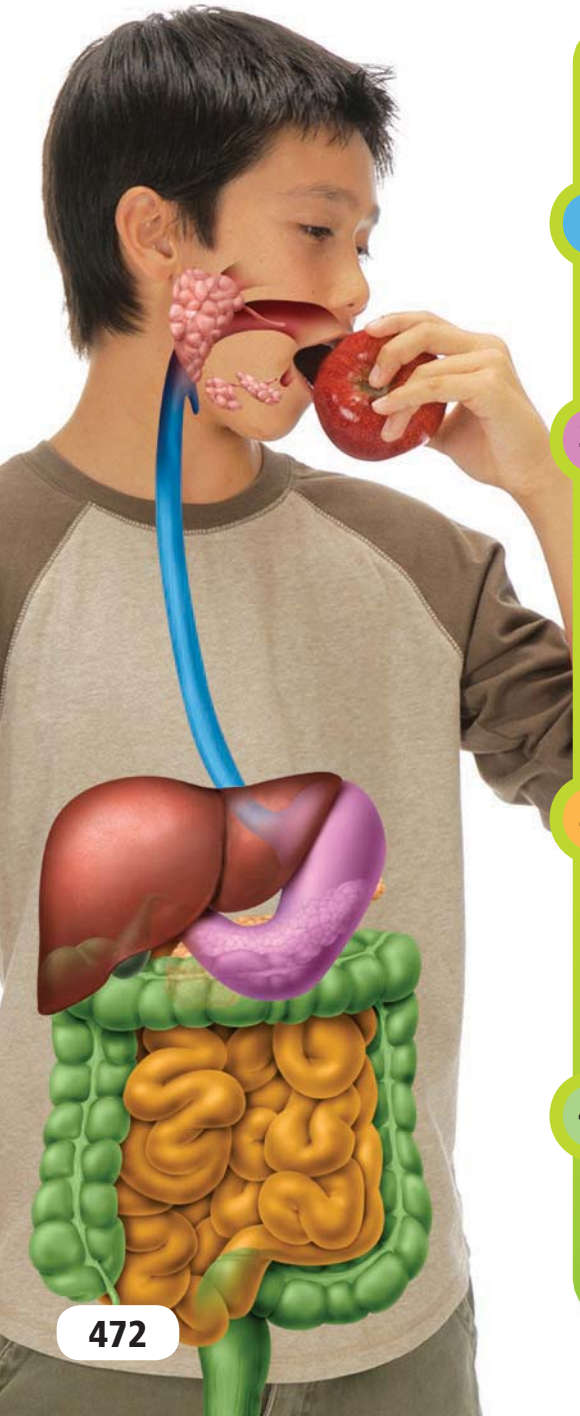
_____

Using Charts

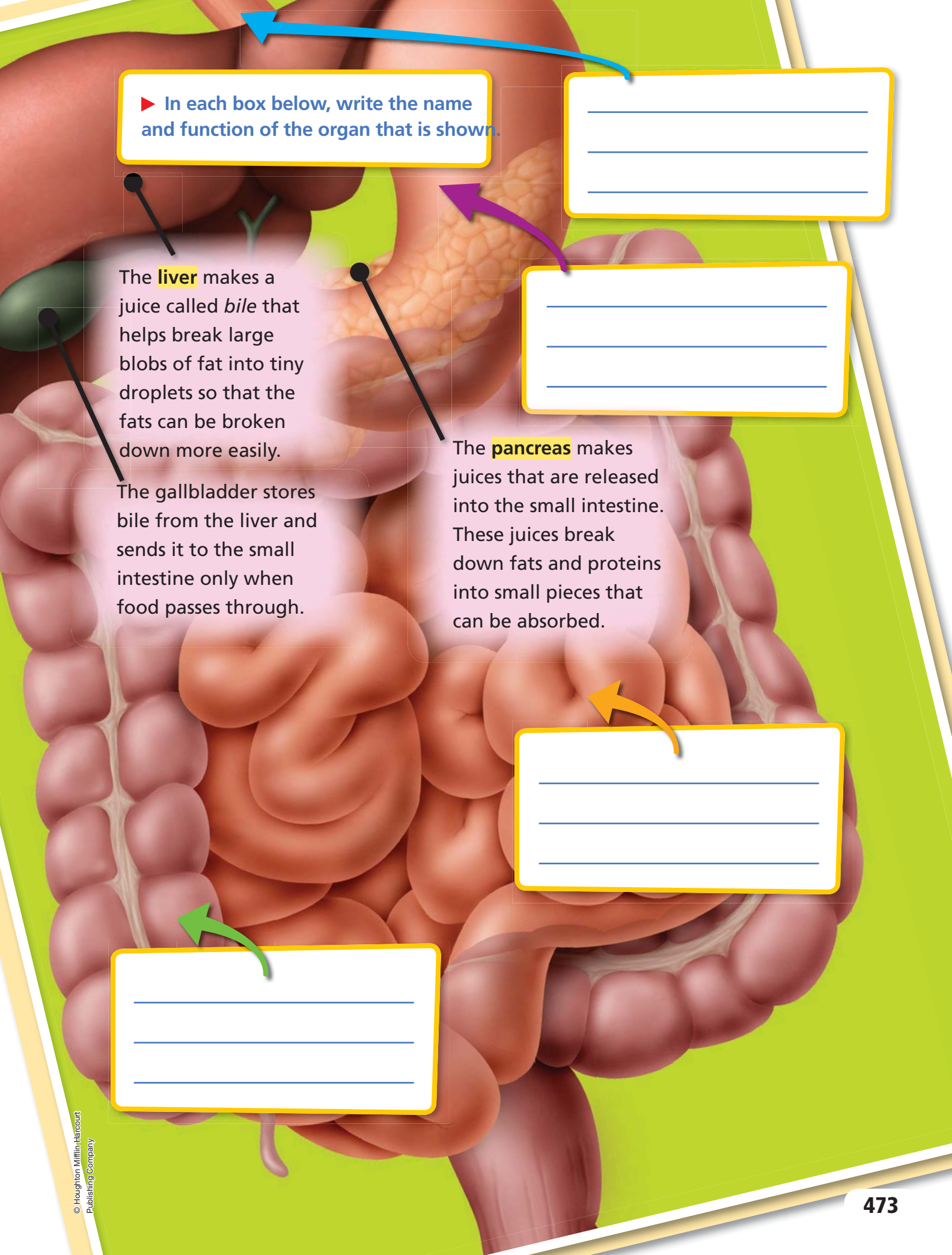
A chart adds information to the text that appears on the page with it. Active readers pause their reading to review the chart and decide how the information in it adds to what they are reading.

Down the Hatch

When you swallow food, it passes through a long tube in your body. As it travels, it is broken down into smaller pieces, and all of the useful parts are absorbed by the body. All that is left over is waste.



Organ	Job
1 esophagus	It's a long tube that begins in your throat. It moves food from the mouth to the stomach.
2 stomach	It's a muscular bag that mashes food into a liquid and mixes the food with digestive juices. These juices break down some nutrients and kill germs. Then the food, which is now liquid, goes through an opening to the small intestine.
3 small intestine	It's a long coiled tube that digests food and absorbs nutrients your body needs from the digested food. Anything not absorbed is sent to the large intestine.
4 large intestine	It's a large tube that soaks up water and minerals and leaves only the waste. Solid waste passes out of your body.



▶ In each box below, write the name and function of the organ that is shown.

The **liver** makes a juice called *bile* that helps break large blobs of fat into tiny droplets so that the fats can be broken down more easily.

The gallbladder stores bile from the liver and sends it to the small intestine only when food passes through.

The **pancreas** makes juices that are released into the small intestine. These juices break down fats and proteins into small pieces that can be absorbed.

Food for Thought

You have two boxes of cereal in your hand. How do you know which is the healthier choice? You can read their food labels to help you decide.

ACTIVE READING As you read these two pages, draw a star next to what you consider to be the most important sentence, and be ready to explain why.

Packaged foods must have a label that gives you information about what is inside the package. This is called nutrition information. Learning how to use nutrition information can help you make healthy food choices.

Each part of a nutrition label has different information. For example, you can learn how many servings are in the box. You can also learn how many Calories [KAL•uh•reez] each serving has. Calories are a way to measure how much energy your body will get from your food. Carbohydrates, proteins and fats are used by the body for energy.

The nutrition label has information about more than just energy. It also lists the amounts of important nutrients that the food contains. Bones need calcium for strength. Sodium is used by the nerves to send signals. Vitamin A helps with your eyesight. Protein is used to build muscle. Fats are used to make important chemical signals and to store energy. As you can see, reading food labels can help you make choices that fulfill all of your body's nutrition needs.

DO THE MATH

Solve Word Problems

One serving of this cereal provides you with 160 mg of sodium. This is 7% of your body's daily needs. How many milligrams of sodium equal 100%?

Nutrition Facts

Serving Size ¾ cup (30g)
Servings Per Container About 14

Amount Per Serving	Corn Crunch	with ½ cup skim milk
Calories	120	160
Calories from Fat	15	20
		% Daily Value**
Total Fat 2g*	3%	3%
Saturated Fat 0g	0%	0%
Cholesterol 0mg	0%	1%
Sodium 160mg	7%	9%
Potassium 65mg	2%	8%
Total Carbohydrate 25g	8%	10%
Dietary Fiber 3g		
Sugars 3g		
Other Carbohydrate 11g		
Protein 2g		

*Amount in Cereal. A serving of cereal plus skim milk provides 2g fat, less 5mg cholesterol, 220mg sodium, 270mg potassium, 31g carbohydrate (19g sugars) and 6g protein.

**Percent Daily Values are based on a 2,000 calorie diet. Your daily values may be higher or lower depending on your calorie needs:

	Calories	2,000	2,500
Total Fat	Less than	65g	80g
Sat Fat	Less than	20g	25g
Cholesterol	Less than	300mg	300mg
Sodium	Less than	2,400mg	2,400mg
Potassium		3,500mg	3,500mg
Total Carbohydrate		300g	375g
Dietary Fiber		25g	30g

The serving size will help you make smart decisions about how much of a food you should eat to get the right amount of nutrients in your diet.

The "% Daily Value" tells you what percent of this nutrient a serving of this food will provide compared to how much you should get in a full day.

This section shows how many grams (g) or milligrams (mg) of each type of nutrient you should get each day, depending on how many Calories you need.

▶ How many Calories are in 1 serving, with $\frac{1}{2}$ cup skim milk?

_____

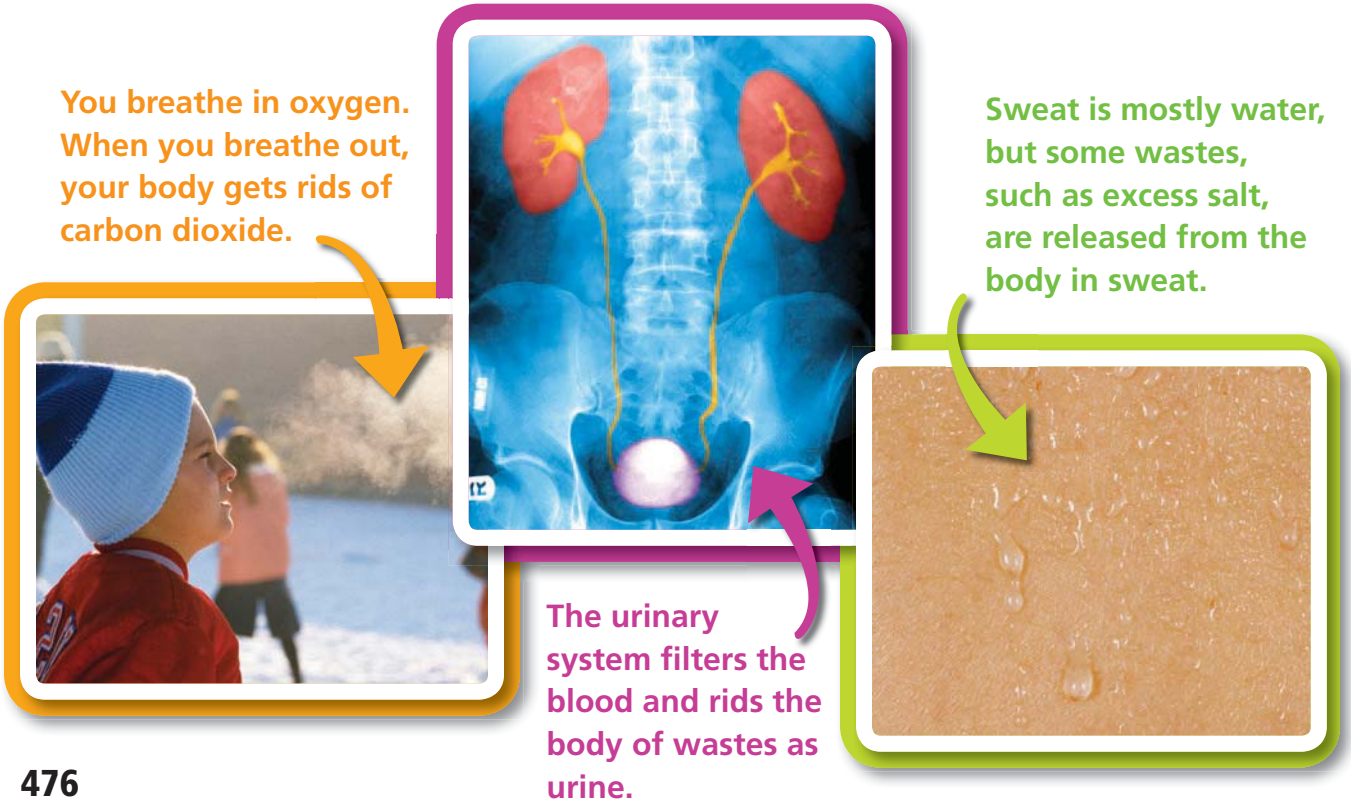
Waste Removal

Digesting food produces one kind of waste. Using the nutrients produces another. The *excretory system* rids the body of this waste and keeps your body's water and salt levels in balance.

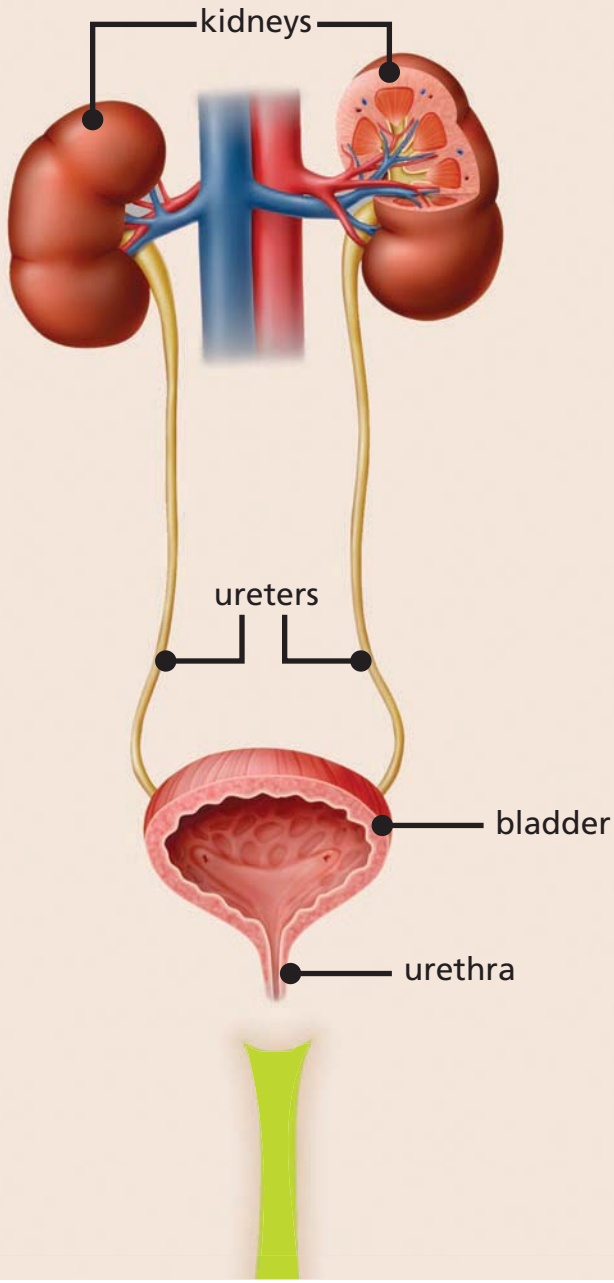
ACTIVE **READING** As you read this page, underline the different types of waste that are described.

Your body "burns" nutrients much like a fire burns wood. Your body doesn't produce ash, but the "burned" nutrients do make waste products. For example, as protein is broken down, ammonia is made. Ammonia is very toxic! The liver converts ammonia to urea [yoo•REE•uh], which is less toxic. But if urea builds up it makes you sick, so your body gets rid of it as urine. A small amount of urea is also released in sweat.

Like a fire, your body uses oxygen and produces a waste gas called carbon dioxide. Carbon dioxide is released by your lungs when you breathe out.



The Urinary System



1 The **kidneys** are organs that remove waste from the blood. They also help to conserve water and to make sure the blood does not have too much or too little salt.

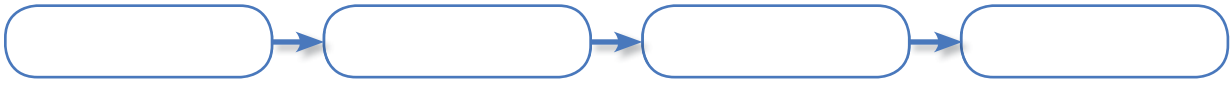
2 After the kidneys filter the blood, the waste, *urine*, collects in tubes called *ureters* [YUR•ih•tuhrz]. These take the urine to the bladder.

3 The **bladder** stores urine and then releases it from the body. The bladder can stretch like a balloon. It can hold up to a pint at a time!

4 The urethra [yu•REE•thruh] is a small tube that takes urine from the bladder to outside of the body.

Organize It—Sequence

Write the organs in order to show the path of urine through the urinary system.



Eating and Excreting

All living things use nutrients and produce waste. Living things have many ways of breaking down nutrients and getting rid of waste.

ACTIVE READING On these two pages, draw circles around descriptions of nutrient use and squares around descriptions of waste removal.

Flies spit out acids onto food. Food is partly digested outside the fly's body! Then the fly sucks up the nutrients through a straw-like mouthpart.

Bird droppings aren't made of urine. Instead, they are made of uric acid and digestive waste. Uric acid is a very powerful acid that damages statues.

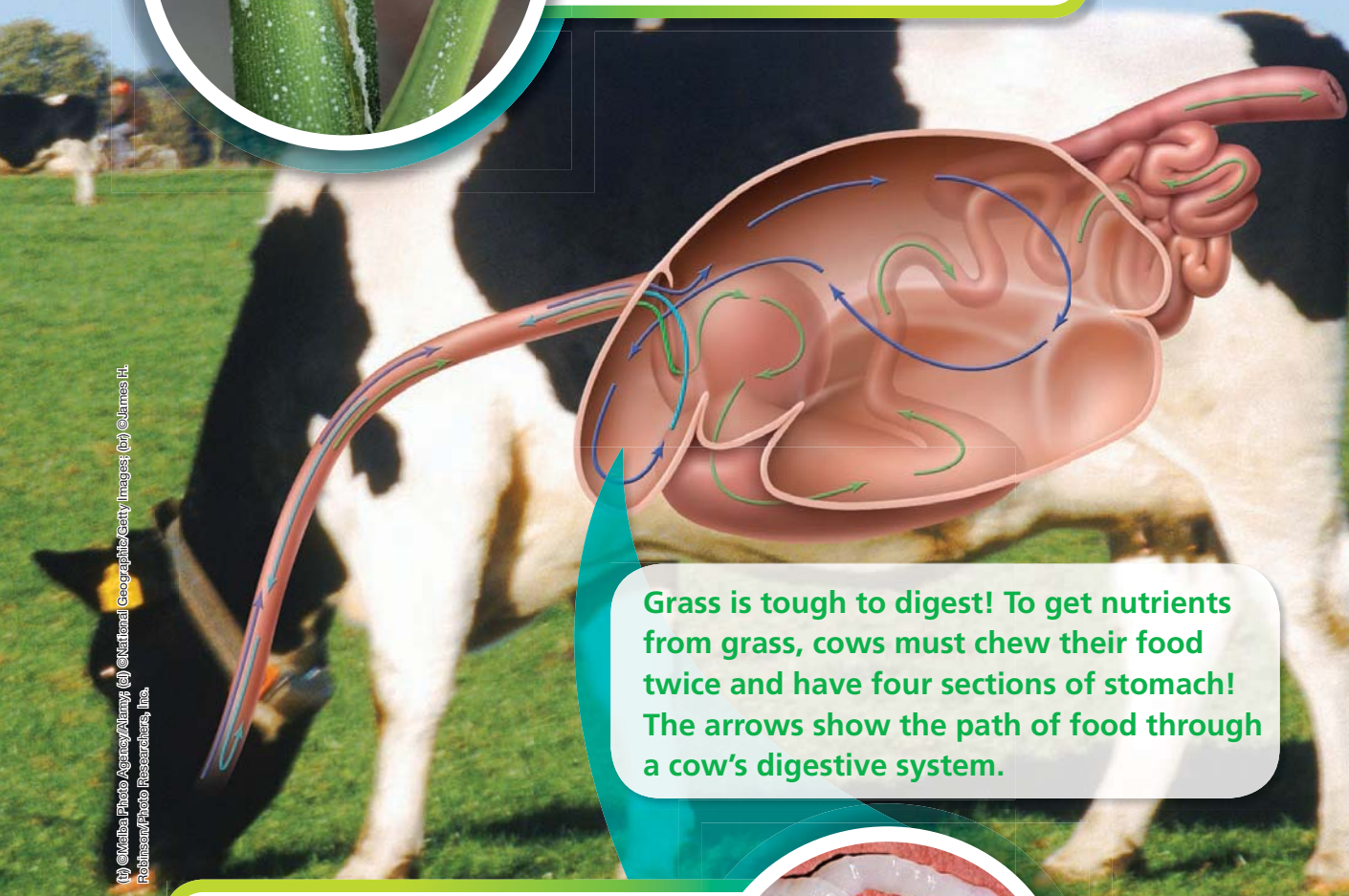
No Stomach? No Problem!

Which two organisms below have no digestive system?

_____

Jellyfish bring food into their mouths to digest it. Then they get rid of the waste by sending it back out of their mouths!

Marsh grasses live in salty areas where most plants could not survive. The leaves of marsh grasses get rid of excess salt.



Grass is tough to digest! To get nutrients from grass, cows must chew their food twice and have four sections of stomach! The arrows show the path of food through a cow's digestive system.

Tapeworms have no digestive system. Instead they live inside other animals' digestive systems. As digested food flows past, a tapeworm soaks up nutrients through its skin.

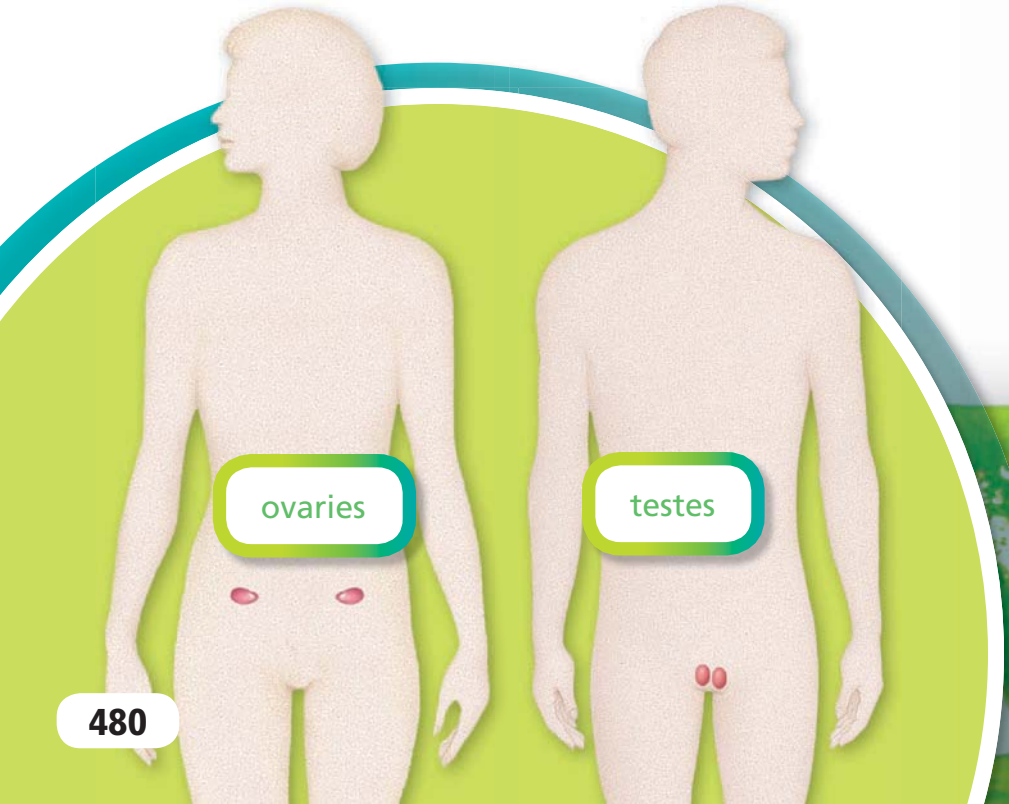
Cycles of Life

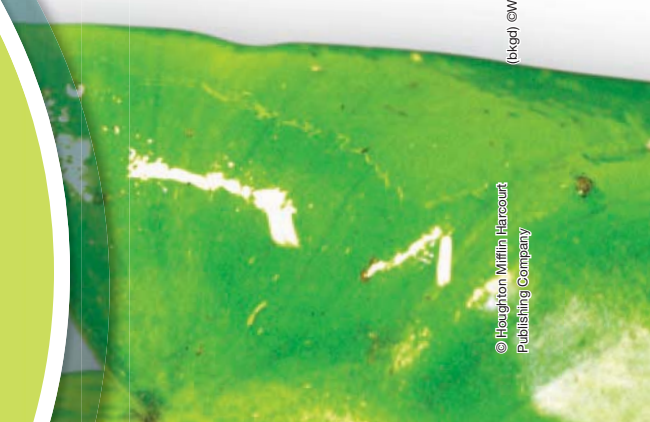
What do babies, plantlets, tadpoles, and larvae have in common? They're all organisms that came from other organisms.

ACTIVE **READING** As you read these two pages, find and underline the different names for young organisms.

Animals and plants all have *reproductive systems*. This system has one very important job: to make new organisms.

Human males and females have reproductive organs that make special cells. The male reproductive cells are made in the testes [TES•teez]. Female reproductive cells are made in the ovaries [OH•vuh•reez]. These reproductive cells join to form an embryo [EM•bree•oh]. The embryo develops in the mother's body for nine months. It grows and changes until it can survive outside the mother's body. At this time, a baby is born.





A spider plants grows little "plantlets" at the end of some stems. These plant buds can be broken off to grow new plants.

Insects lay eggs that hatch into larvae [LAR•vee], like the ones shown here. Insects go through several stages before they reach adult form.

Many plants make seeds. Male plant reproductive cells join with female reproductive cells and develop into a seed. Dandelion seeds are carried by wind. If they land in soil, they begin to grow and develop into a new plant.

Many frogs lay their eggs in a jelly-like pile. The eggs must stay wet, or they will die. Tadpoles hatch from the eggs. Tadpoles start out looking like fish with large heads. Slowly they grow legs and their tails become smaller and smaller. Little by little they turn into adult frogs.