

Life Science: Obtaining Energy and Removing Waste



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المزيد من مادة
علوم:

إعداد: Adel Rania

التواصل الاجتماعي بحسب الصف السابع



صفحة المناهج
الإماراتية على
فيسبوك

الرياضيات

اللغة الانجليزية

اللغة العربية

التربية الاسلامية

المواد على تلغرام

المزيد من الملفات بحسب الصف السابع والمادة علوم في الفصل الأول

شرح وتدريبات Organization of Levels - انسباير

1

اختبار العلوم الوحدة الثالثة عشرة

2

القياس والأدوات العلمية -بريدج

3

أنسباير - structure and support

4

ملزمة إثرائية لمنهج انسباير تحتوي على شرح دروس الفصل كامل بالإضافة الى تمارين بعد كل درس

5



Life science

Obtaining energy and removing energy



التاريخ

26/9/2026



المعلمة

Rania Adel



الصف

السابع
انسباير



المادة

Science



افهم



اكتشف



استكشف

Unit: Life Science

Lesson 3: Obtaining Energy and Removing Waste

How our bodies act like incredible factories!



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Units

Lessons

Notes

Experiments

Resources

Why Do We Eat? To Get Energy!

Every activity you do—from playing soccer to sleeping—requires energy.



1 Grape = 2 Calories

**1 Slice of Cheese Pizza
= 220 Calories!**

Calorie (Cal):
The unit we use
to measure the
amount of energy
in food.



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What Are Nutrients?

Nutrients are the parts of food used by the body to grow and survive.



Fun Facts!

- Each nutrient has its own special job!
- Protein helps build strong muscles.
- Calcium helps strengthen your bones.

Digestion: Two Ways to Break It Down

Digestion is the breakdown of food into small particles your body can absorb.

Mechanical Digestion



- Food is physically broken into smaller pieces.
- Happens when you chew, mash, and grind food with your teeth and tongue.

Chemical Digestion

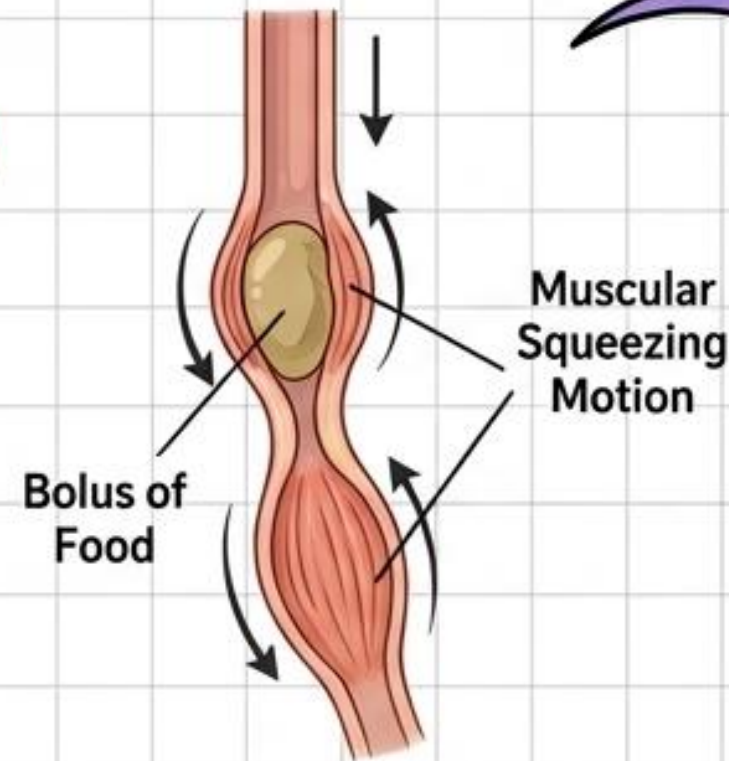


- Chemical reactions break down pieces of food into small molecules.
- Uses special fluids and acids in your body.

The Journey Begins: Mouth & Esophagus

Step 1: The Mouth

Mechanical digestion starts here! Saliva (spit) starts breaking down carbohydrates and neutralizes acidic foods.



Esophagus Diagram:
Peristalsis in Action



Visual Metaphor:
Toothpaste Tube

Step 2: The Esophagus

A muscular tube connecting the mouth to the stomach.

Peristalsis – Waves of muscle contractions that push food down the tube. Just like squeezing a tube of toothpaste!

The Mixing Tank: Your Stomach

What is it?

- A large, hollow organ that temporarily stores your food.

What happens here?

- The stomach is a master of chemical digestion.

The Secret Weapon!

- Gastric Juice! This highly acidic fluid helps break down the plant and animal cells you eat into tiny, usable pieces.

Gastric Juice!

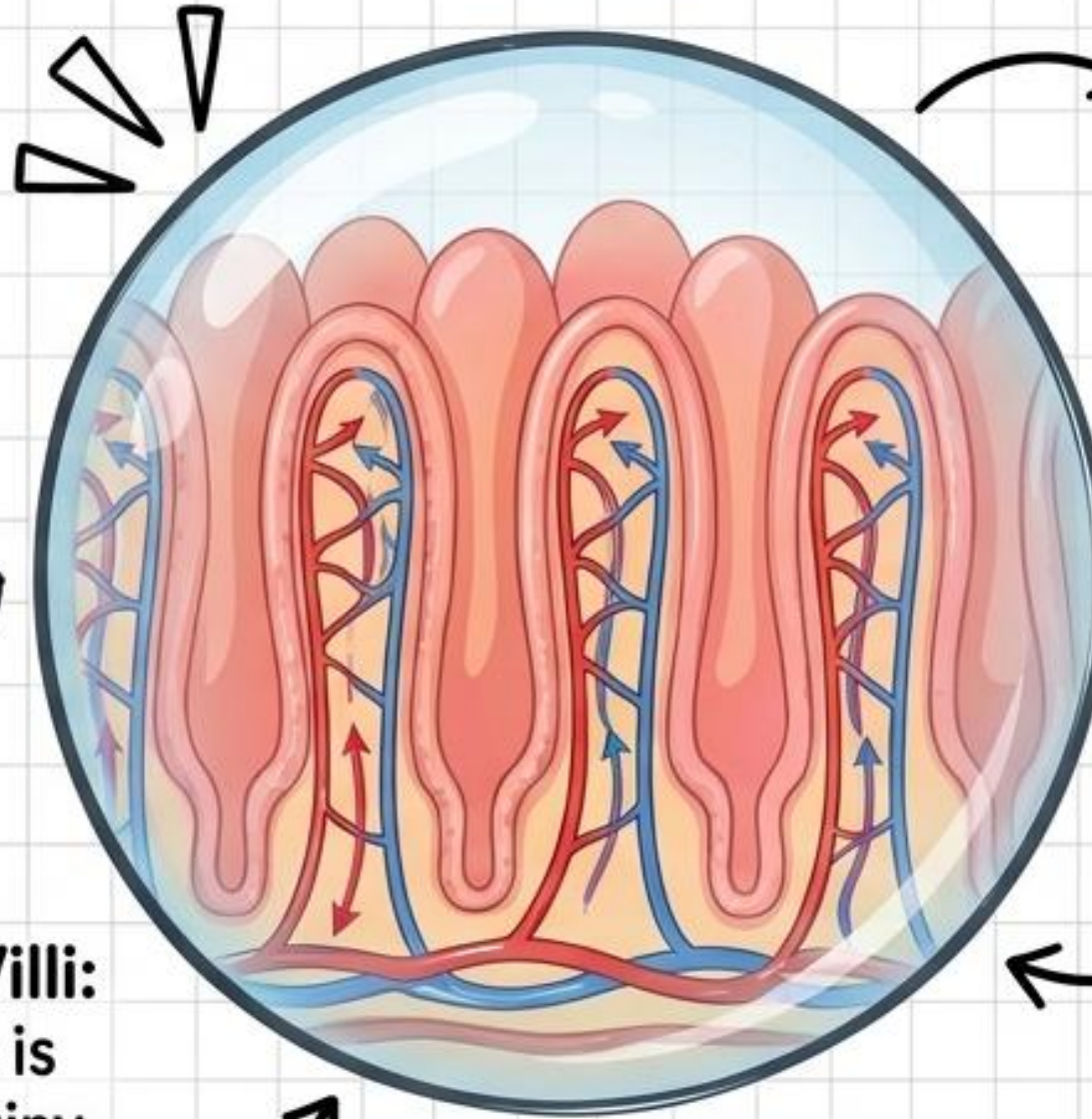
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The Absorbers: The Small Intestine

The Main Event: This long tube is where most chemical digestion and nutrient absorption happens!



Meet the Villi:
The inside is covered in tiny, fingerlike projections called villi.



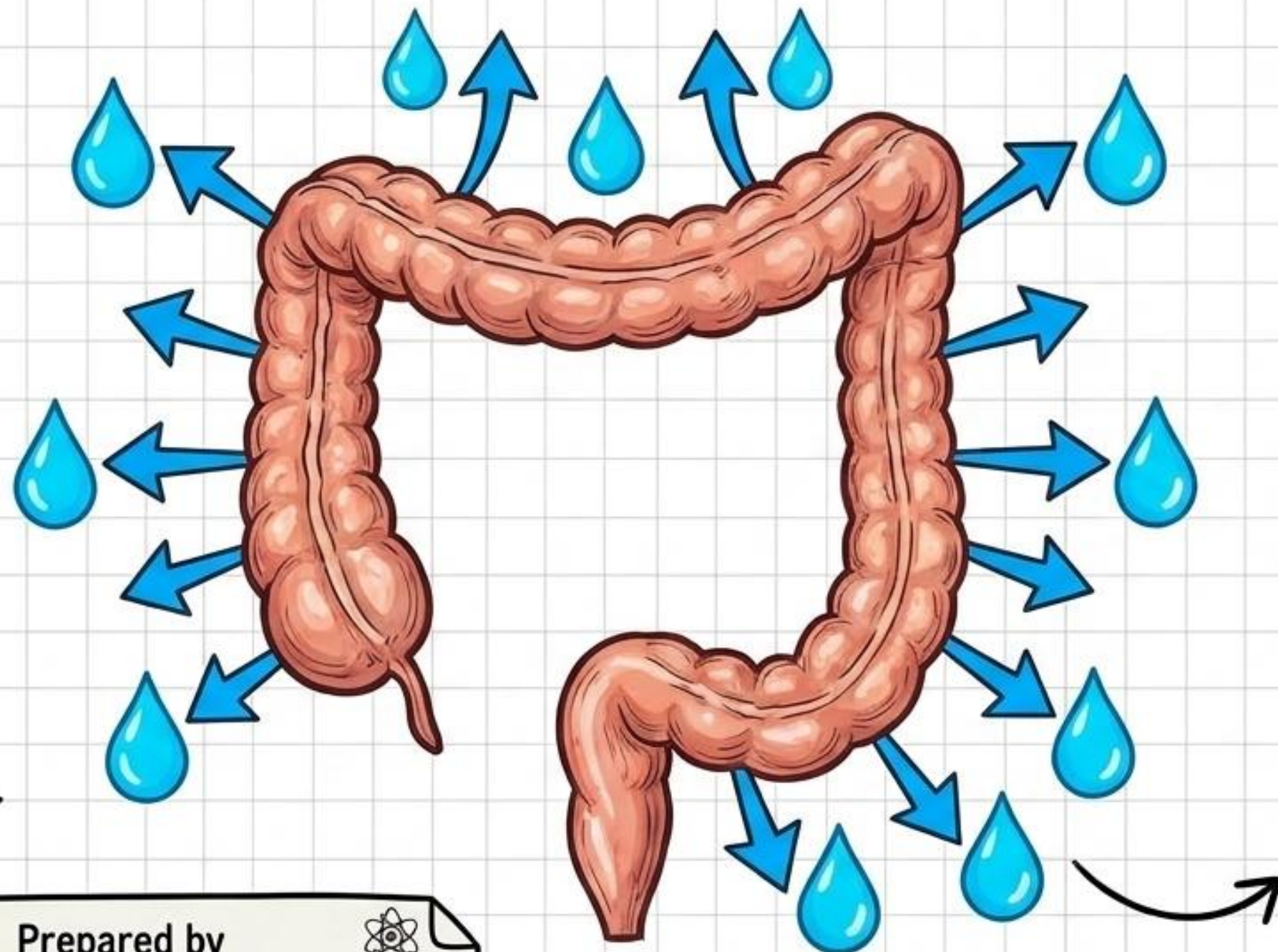
How it Works:
Each villus contains tiny blood vessels. Nutrients pass through the villi directly into your blood to travel around your body!



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The End of the Line: Large Intestine



The Cleanup Job:

Materials that pass through here are the leftover waste products of digestion.

Saving Water:

Most of the water from your food and drinks is absorbed here.

The Final Step:

As excess water is absorbed, the waste becomes solid and is finally eliminated from the body.



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The Cleanup Crew: The Excretory System

The Mission: Your body produces leftovers and waste. The excretory system collects and eliminates these wastes from the body and regulates fluid levels!

Different Wastes We Must Remove:

- ☒ Liquid waste
- ☒ Carbon dioxide gas
- ☒ Excess salt and water

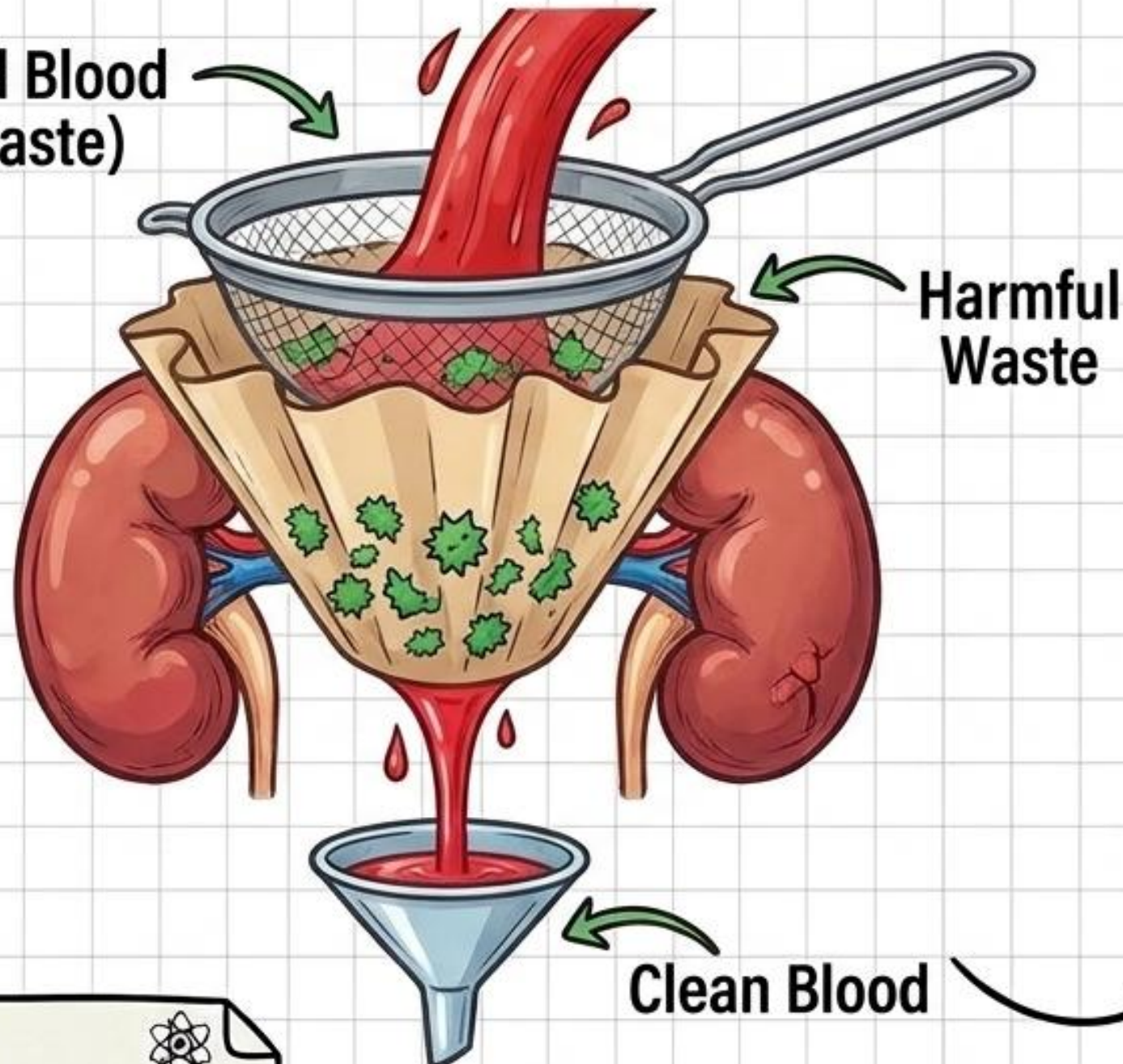


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The Ultimate Filters: Your Kidneys

Unfiltered Blood
(with Waste)



Harmful
Waste

Clean Blood

What are they?

Two bean-shaped organs, one on each side of your body.

What do they do?

They are a vital part of the urinary system. They filter, or remove, harmful waste from your blood.

Why it matters:

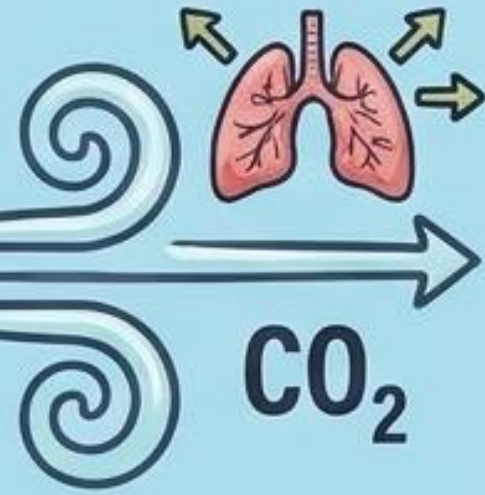
If waste built up in the blood, it would become toxic and harm your entire body!



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Other Ways We Remove Waste



Carbon
dioxide
gas

The Respiratory System (Lungs):
Releases waste in the form of a gas
called carbon dioxide every time
you breathe out.



Your Skin:
Removes waste in the form of
excess salt and water through
tiny sweat glands.



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The Green Machines: How Plants Get Energy

Light
energy

Photosynthesis:
A series of chemical reactions
in the leaves that convert light
energy, water, and carbon
dioxide into the food-energy
molecule glucose (sugar).

Water
(H_2O)

Carbon
dioxide (CO_2)

Sugar ($\text{C}_6\text{H}_{12}\text{O}_6$)

Oxygen (O_2)

Did you know?
Unlike you, plants
don't eat food—they
make their own!

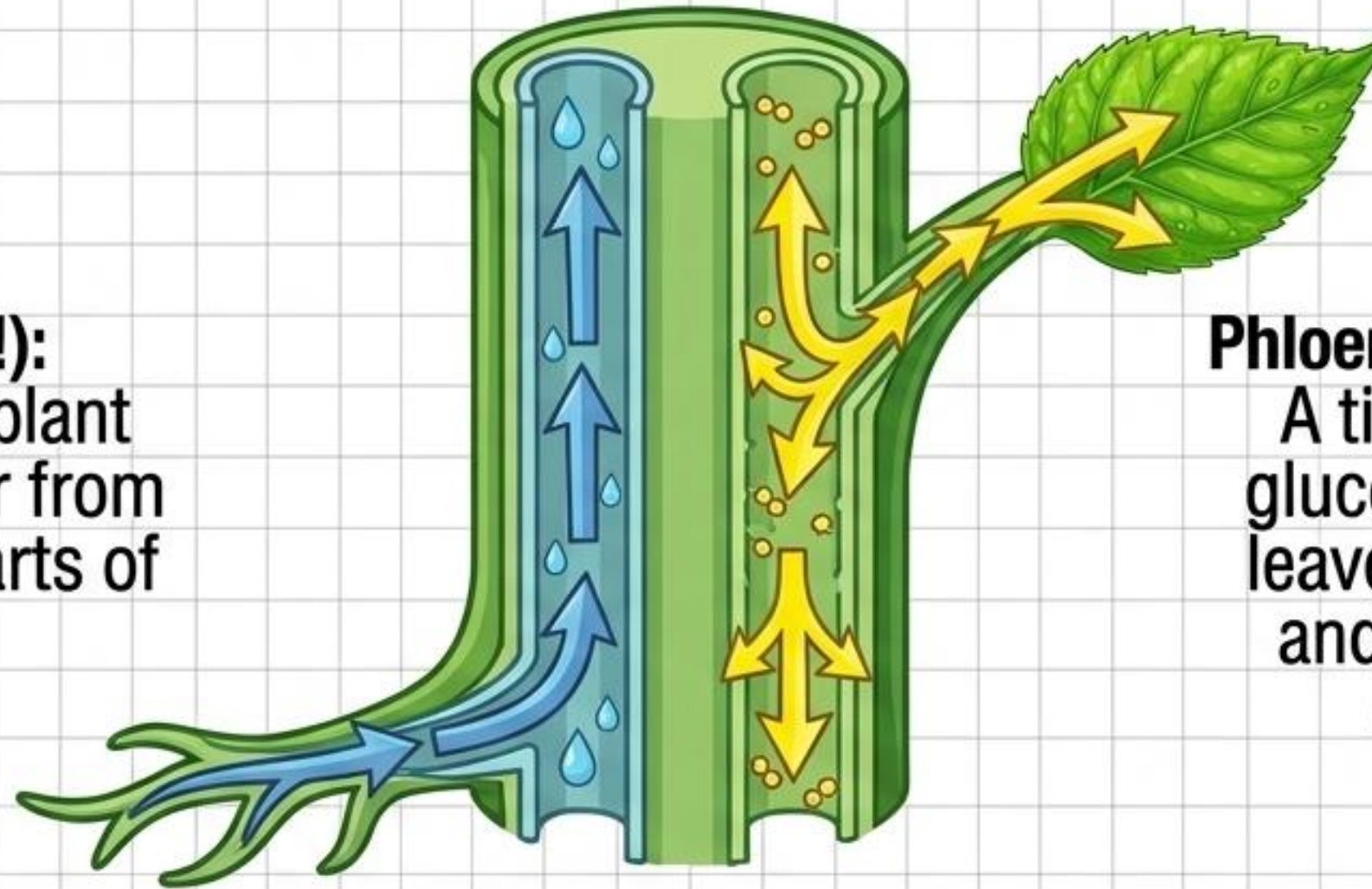
Bonus: They give off oxygen
for us to breathe!



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Plant Transport Highways



Xylem (Water Up!):
A tissue inside the plant that transports water from the roots up to all parts of the plant.

Phloem (Food Everywhere!):
A tissue that takes the glucose (sugar) from the leaves and flows it down and around to all plant cells for energy.

Plant Waste: Plants release water vapor, oxygen, and carbon dioxide through tiny openings in their leaves!



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Lesson Review (Questions 1 - 5)

1. What unit is used to measure the amount of energy in food?

(A) Degrees (B) Calories (C) Grams (D) Liters

2. What is the main function of nutrients in the body?

(A) To help the body grow and survive (B) To make food taste better
(C) To cool down the body temperature (D) To change the color of the blood

3. Which of the following is an example of mechanical digestion?

(A) Saliva neutralizing acids (B) Gastric juice breaking down cells
(C) Chewing and grinding food with teeth (D) Villi absorbing nutrients

4. What is peristalsis?

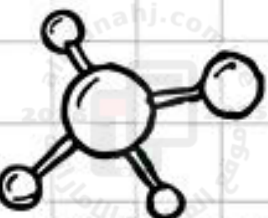
(A) The process of plants making food (B) Waves of muscle contractions that move food down the esophagus
(C) The absorption of water in the large intestine (D) The filtering of waste in the kidneys

5. Which organ temporarily stores food and uses acidic gastric juice to aid in chemical digestion?

(A) Esophagus (B) Stomach (C) Lungs (D) Heart



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Lesson Review (Questions 6 - 10)

6. Where does most chemical digestion and nutrient absorption occur in the human body?

(A) Large intestine (B) Small intestine (C) Mouth (D) Kidneys

7. What are the fingerlike projections in the small intestine called?

(A) Villi (B) Xylem (C) Phloem (D) Kidneys

8. What is the primary job of the large intestine?

(A) To chew food into smaller pieces (B) To absorb excess water from digested food
(C) To create gastric juice (D) To pump blood around the body

9. What does the excretory system do?

(A) It breaks down food into nutrients. (B) It collects and eliminates wastes from the body.
(C) It helps the body breathe in oxygen. (D) It pumps blood to the muscles.

10. Which bean-shaped organs are responsible for filtering waste from the blood?

(A) Lungs (B) Kidneys (C) Stomachs (D) Intestines



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Lesson Review (Questions 11 - 15)

11. How does the skin help remove waste from the body?

- (A) By creating saliva (B) By releasing carbon dioxide
(C) By producing sweat that contains excess salt and water (D) By filtering blood

12. What is the series of chemical reactions that plants use to convert light energy, water, and carbon dioxide into glucose?

- (A) Digestion (B) Photosynthesis (C) Peristalsis (D) Excretion

13. In a plant, which tissue transports water from the roots to all parts of the plant?

- (A) Phloem (B) Villi (C) Xylem (D) Esophagus

14. What tissue do the food-making cells in a plant use to send glucose to all other plant cells?

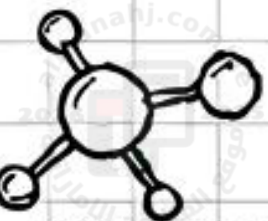
- (A) Xylem (B) Phloem (C) Gastric Juice (D) Saliva

15. Which of the following is a waste product released by plants through tiny openings in their leaves?

- (A) Water vapor (B) Gastric juice (C) Sweat (D) Blood



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Lesson Review: Answer Key

	1. B	9. B
	2. A	10. B
	3. C	11. C
	4. B	12. B
	5. B	13. C
	6. B	14. B
	7. A	15. A
	8. B	



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