

Assess Your Understanding

The Respiratory System

What Is the Role of the Respiratory System?

1a. **DEFINE** What is cellular respiration?

b. **COMPARE AND CONTRAST** How are breathing and cellular respiration different?

got it?

I get it! Now I know that the respiratory system _____

I need extra help with _____

How Do You Breathe?

2a. **IDENTIFY** Where is the larynx located?

b. **EXPLAIN** When you inhale, why does air rush into your lungs?

got it?

I get it! Now I know that I breathe when my muscles _____

I need extra help with _____

FILE THE OUTSIDE COVER, THE COVER AWAY FROM THE DOTTED LINE, IN THE CORNER OF YOUR CLASSROOM TO KEEP THE BOOKS FROM GETTING DAMAGED.

Assess Your Understanding

The Respiratory System

What Happens During Gas Exchange?

3a. **DRAW CONCLUSIONS** How do the alveoli enable people to be very active?

b. **ANSWER**  How do you breathe?

got it?

I get it! Now I know that during gas exchange _____

I need extra help with _____

Place the student corner, the corner away from the student line, in the corner of your copy machine to copy onto letter-size paper.

Key Concept Summaries

The Respiratory System

What Is the Role of the Respiratory System?

Your respiratory system moves air containing oxygen into your lungs and removes carbon dioxide and water from your body. Your lungs and the structures that lead to them make up your respiratory system. The oxygen is used by body cells during **cellular respiration**, in which the chemical energy in glucose is released.

Air, containing oxygen, enters the body through the nose and then passes into the **pharynx**, or throat. It then passes into the **trachea**, or windpipe, where tiny hairlike extensions known as **cilia** sweep mucus up to the pharynx. Air then moves into the **bronchi**, which are passages to the **lungs**, the main organs of the respiratory system. The lungs consist of **alveoli**, which are tiny sacs through which gases are exchanged with the blood.

How Do You Breathe?

Breathing is controlled by rib muscles as well as a large dome-shaped muscle called the **diaphragm**. **When you breathe, your rib muscles and diaphragm contract. As a result, your chest expands and you inhale. When these muscles relax, your chest contracts and you exhale.**

The air involved in breathing also makes speech possible. Two folds of connective tissue, known as **vocal cords**, stretch across the opening of the **larynx**, or voice box. The flow of air along with the contraction of muscles causes the vocal cords to vibrate, thereby producing sound.

What Happens During Gas Exchange?

After air enters the alveolus, oxygen passes through the wall of the alveolus and then through the capillary wall into the blood. Similarly, carbon dioxide and water pass from

the blood into the air in the alveolus. This whole process is called gas exchange. Gas exchange is aided by the tremendous surface area of the many alveoli in the lungs.

On a separate sheet of paper, trace the flow of an oxygen molecule from the air to the blood and explain what causes it to move.

Lesson Quiz

The Respiratory System

Fill in the blank to complete each statement.

1. Air is exchanged between blood and air in tiny sacs of lung tissue known as _____.
2. Cells that line the trachea have _____, which sweep mucus up to the pharynx.
3. Water and _____ pass from the blood into the air in an alveolus.
4. When you _____, your chest cavity becomes larger so air rushes into your body.
5. A(n) _____ is a small tube that connects arteries to veins.

If the statement is true, write *true*. If the statement is false, change the underlined word or words to make the statement true.

6. _____ Cellular respiration is the process through which cells release chemical energy stored in oxygen.
7. _____ Air passes from the nose into the bronchi.
8. _____ The trachea is a large, dome-shaped muscle that expands and contracts during breathing.
9. _____ The vocal cords stretch across the opening of the larynx.
10. _____ The nose produces a sticky material called mucus, which moistens the air and traps particles.

Place the outside corner, the corner away from the dotted line, in the corner of your copy machine to copy onto letter-size paper.

Assess Your Understanding

Smoking and Your Health

What Chemicals Are in Tobacco Smoke?

1a. REVIEW How does tar affect the respiratory system?

b. RELATE CAUSE AND EFFECT What long-term effects does smoking have on your heart?

got it?.....

I get it! Now I know that the chemicals in tobacco smoke include _____

I need extra help with _____

How Does Tobacco Smoke Affect Health?

got it?.....

I get it! Now I know tobacco smoke can cause _____

I need extra help with _____

Key Concept Summaries

Smoking and Your Health

What Chemicals Are in Tobacco Smoke?

Substances found in tobacco smoke get past the body's defenses and make their way into the alveoli. **Some of the most deadly chemicals in tobacco smoke are tar, carbon monoxide, and nicotine.**

The dark, sticky substance that forms when tobacco burns is called **tar**. It sticks to the cilia and makes them clump together so that they cannot

function to sweep harmful materials out of the respiratory system. **Carbon monoxide** is a colorless, odorless gas that binds to hemoglobin in red blood cells. This causes blood to carry less oxygen. **Nicotine** is a stimulant drug that increases heart rate and blood pressure. Over time, smokers can develop an **addiction**, or physical dependence, to nicotine.

How Does Tobacco Smoke Affect Health?

Smokers face many health problems related to both the respiratory and circulatory systems. **Over time, smokers can develop diseases including chronic bronchitis, emphysema, lung cancer, and atherosclerosis.**

An irritation of the breathing passages in which the small passages become narrower and clogged with mucus is known as **bronchitis**. Bronchitis that occurs over a long period of time and may involve permanent damage is chronic bronchitis.

Emphysema occurs when lung tissue is damaged and breathing becomes difficult. Lung cancer involves the formation of tumors that take up space needed for gas exchange in the lungs.

Atherosclerosis is a buildup of fatty material in the blood vessel walls. People who do not smoke but who are exposed to smoke can also suffer from health problems.

On a separate sheet of paper, explain how smoking can damage the lungs.

Lesson Quiz

Smoking and Your Health

Fill in the blank to complete each statement.

1. Tar causes _____ in the breathing airways to clump together.
2. Carbon monoxide binds to _____ in red blood cells.
3. Heart rate and blood pressure rise because of _____, which is a stimulant drug in tobacco.
4. People with _____ are always short of breath because their lung tissue is damaged.
5. A nonsmoker who inhales smoke from other people's cigarettes is involved in _____ smoking.

If the statement is true, write *true*. If the statement is false, change the underlined word or words to make the statement true.

6. _____ Nicotine is a dark, sticky substance that forms when tobacco burns.
7. _____ When tobacco is burned, carbon monoxide is produced.
8. _____ Over time, smokers can develop an addiction to nicotine.
9. _____ People with atherosclerosis have narrow or clogged breathing passages over a long period of time.
10. _____ Because cilia cannot function properly, smokers have a frequent headache.

Assess Your Understanding

The Excretory System

What Is the Role of the Excretory System?

- 1a. **NAME** The chemical _____ comes from the breakdown of proteins.
- 1b. **DRAW CONCLUSIONS** Why is it important for a kidney to have many nephrons?

got it?.....

- I get it! Now I know that the excretory system is to _____
- I need extra help with _____

How Does Excretion Help Your Body?

got it?.....

- I get it! Now I know that excretion helps _____
- I need extra help with _____

Place the outside corner, the corner away from the dotted line, in the corner of your copy machine to copy onto letter size paper.

Key Concept Summaries

The Excretory System

What Is the Role of the Excretory System?

Excretion is the process of removing waste. **The excretory system collects the wastes that cells produce and removes them from the body. The system consists of the kidneys, ureters, urinary bladder, and urethra.** One waste the body must eliminate is **urea**, which is a chemical that comes from the breakdown of proteins.

Urea, water, and other wastes are eliminated in a fluid called **urine**. The process through which urine

is produced takes place in the **kidneys**, which are the major organs of the excretory system. **Nephrons** in the kidneys filter materials from the blood. They remove the wastes in urine and return any needed materials back to the blood. Urine then flows from the kidneys through two narrow tubes called **ureters**, which carry urine to a saclike organ known as the **urinary bladder**. Urine leaves the body through a small tube called the **urethra**.

How Does Excretion Help Your Body?

Excretion helps to maintain homeostasis by keeping the body's internal environment stable and free of harmful levels of chemicals. The organs of excretion include kidneys, lungs, skin, and liver. The kidneys filter blood. They regulate the amount of water in the body. The lungs and skin

also remove wastes. The lungs, for example, remove carbon dioxide and some water. The skin removes some water and urea through perspiration. The liver produces urea and breaks down some wastes into forms that can be excreted.

On a separate sheet of paper, explain the importance of the excretory system in the human body.

Lesson Quiz

The Excretory System

Write the letter of the correct answer on the line at the left.

1. ____ What is the chemical that comes from the breakdown of proteins and must be eliminated?
A nephron
B salt
C water
D urea
2. ____ What substance is produced by sweat glands in the skin?
A carbon dioxide
B perspiration
C urine
D protein
3. ____ In which structure is blood filtered within the kidneys?
A nephron
B ureter
C bladder
D gland
4. ____ What is the process through which the body maintains stable internal conditions?
A gas exchange
B circulation
C homeostasis
D recycling

Fill in the blank to complete each statement.

5. The process of removing waste is called _____.
6. Water, urea, and other wastes are eliminated in a fluid called _____.
7. Two _____ connect the kidneys to the urinary bladder.
8. Nephrons are located within the _____, which are the two main organs of the excretory system.
9. Urine flows through the _____ and out of the body.
10. The _____ makes urea and breaks down old red blood cells.

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