Chapter 7 Living Systems: Human Systems

Introduction

The main idea of Chapter 7 is the complexity of the human body. The basic unit of the human body is a cell. Cells join together to form ***tissues***, ***organs***, and ***organ systems***. Organ systems work together to carry out life processes and maintain a stable internal environment, which is known as homeostasis.

All the systems in the human body are dependent on one another. There is a constant communication between systems so they can work together to maintain stability. Difficulties within one system will affect the others. The total of all of the processes in the human body used to maintain homeostasis is known as ***metabolism***.

Students Should Understand the Following Concepts

- Multicellular organisms display many layers of organization.
- The basic unit of life is the cell. When a group of cells come together and perform the same function, they form tissues. When tissues come together to carry out a life process they form organs.
- When a group of organs carry out a life process, that group is called an organ system. Different organ systems work together.
- There are a variety of tissue types in the human body. Some of the tissues of the human body are ***bone***, ***blood***, ***nerves***, ***skin***, and ***muscle***.
- Human organ systems include: muscular, skeletal, nervous, endocrine, digestive, circulatory, ***respiratory***, excretory, and reproductive.
- Organ systems are interdependent and constantly provide and receive feedback to and from one another.
- An important pair of cooperating organ systems consists of the circulatory and respiratory systems. They work together to bring oxygen to the cells of the body.

Activities to Develop the Topic

Use one or more of the following activities to help your students review this topic.

Your students should be relatively familiar with the systems of the human body at this point in their lives. Do *not* take this for granted. Just because your students know that they have a stomach does not mean that they know what it does. The best way to approach this topic is to find out what they do know. Have them generate a list of the systems with which they are familiar. Write the list on the chalkboard. Some of the systems will come very easily, such as the respiratory system and the circulatory system. But others may not come at all unless you help them along. The endocrine system and the excretory system are two systems that usually elude students at this level. Once you have the systems on the board, ask the class if they know what each system does. Expect to spend some time on this. Explain that all of these systems must be working together in harmony in order for you to be healthy. Discuss that all of the systems in the body are working toward a common goal. That goal is homeostasis, which means that the body maintains a stable internal environment. Now is a good time to give some examples of how the body maintains homeostasis. Perhaps, explain why humans sweat, the cause of diabetes, and the reason behind hunger pangs. Give any other examples that come to mind to show that the body can regulate itself.

Once you have explained homeostasis adequately, move on to exploring each body system and the organs and tissues of which they are composed.

Name _____ Date _____

Class _____

Review of Chapter 7

1. Which organ is responsible for breaking down food by physical and chemical means?
   (1) kidney
   (2) stomach
   (3) lung
   (4) gallbladder

2. Which system carries oxygen and nutrients to the cells in the body and carries waste material away from the cell?
   (1) skeletal
   (2) muscular
   (3) circulatory
   (4) excretory

3. Which two organs are included in the endocrine system?
   (1) brain, adrenal gland
   (2) lungs, pituitary gland
   (3) stomach, intestines
   (4) adrenal gland, pituitary gland

4. Which of the following muscles is considered to be involuntary?
   (1) biceps
   (2) cardiac
   (3) triceps
   (4) quadriceps

5. You have a ball-and-socket joint in your
   (1) ribcage
   (2) backbone
   (3) hip
   (4) elbow

6. A group of tissues working together form an
   (1) organ system
   (2) organ
   (3) organelle
   (4) organism

7. Going from complex to simple, which order represents the organization inside your body?
   (1) cell → tissue → organ → organ system
   (2) organ system → tissue → organelle → cell
   (3) organ → organelle → tissue → organ system
   (4) organ system → organ → tissue → cell

8. Which body system is responsible for removing the wastes of respiration from the human body?
   (1) excretory
   (2) respiratory
   (3) endocrine
   (4) digestive

9. The organ system that contains the lungs, alveoli, and bronchi is the
   (1) excretory system
   (2) endocrine system
   (3) digestive system
   (4) respiratory system

10. Which type of muscle is responsible for peristalsis?
   (1) voluntary
   (2) smooth
   (3) cardiac
   (4) intercostal

11. Which of the following is *not* considered to be an accessory organ?
   (1) pancreas
   (2) gallbladder
   (3) stomach
   (4) liver

12. Suppose you eat a handful of unsalted crackers. Where in your digestive tract would they begin to be broken down?
   (1) stomach
   (2) small intestine
   (3) large intestine
   (4) mouth

13. The blood vessels that always carry blood away from the heart are the
   (1) arteries
   (2) veins
   (3) capillaries
   (4) lymph vessels

14. The system of the body that works closely with the endocrine system to regulate the body's activities is the
   (1) excretory system
   (2) nervous system
   (3) respiratory system
   (4) circulatory system

15. The purpose of a nerve cell is to
   (1) secrete hormones
   (2) store nutrients
   (3) transmit messages
   (4) transport oxygen

16. Nutrients that are released by the breakdown of food are absorbed in the
   (1) large intestine
   (2) small intestine
   (3) stomach
   (4) esophagus

17. The lungs are considered to be a part of what two systems?
   (1) respiratory and endocrine
   (2) excretory and circulatory
   (3) excretory and respiratory
   (4) circulatory and respiratory

18. The process of cellular respiration must take place to keep an organism alive. Where does cellular respiration take place?

(1) in all the body's cells
(2) in the blood
(3) in muscle cells only
(4) in heart cells only

19. Where are eggs stored in a woman's body before they are released?

(1) uterus
(2) ovaries
(3) oviducts
(4) vagina

20. Which of the following terms describes all of the chemical reactions carried out by the human body?

(1) regulation
(2) respiration
(3) peristalsis
(4) metabolism