

LESSON

1

Body Systems

Journal Question

**How many body systems can you name?
Which system do you think is the most
interesting? Why?**

Respiratory System

- **Organs: mouth, nose, trachea, lungs, and diaphragm**
- **Function: supplies the blood with oxygen and expels carbon dioxide**
- **Oxygen exchange occurs in the alveoli; 600 million of these air sacs are found in the lungs**

Circulatory System

- **Organs: heart, veins, arteries**
- **Function: moving blood and oxygen through the body**
- **Consists of pulmonary, coronary, and systemic circulation**
 - Pulmonary: from heart to lungs and back
 - Coronary: from heart to the heart muscle itself
 - Systemic: all other arteries and veins

Nervous System

- **Organs: brain, spinal cord, nerves**
- **Function: carries sensory information from the eyes, ears, skin, and other organs to the brain; uses electrical signals to communicate to muscles**
- **Consists of two systems**
 - Central nervous system: spinal cord and brain
 - Peripheral nervous system: all other nerves

Muscular and Skeletal Systems

Muscular System

- **Consists of over 650 muscles**
- **Allows for all movements**
- **Includes cardiac (heart), smooth (organs), and skeletal muscles**

Skeletal System

- **Includes 206 bones**
- **Provides stability and integrity to the body; allows for movement in conjunction with the muscles**

Types of Muscle Tissue

- **Cardiac muscle** is found in the heart. It is distinctive in that it contracts automatically and regularly.
- **Smooth muscle** is found in hollow organs and contract in order to reduce the size of the organ and create force or movement.
- **Skeletal muscle** controls all motor activities and is under your voluntary control.

Digestive System

- **Organs: mouth, esophagus, stomach, small intestine, large intestine**
- **Function: gets nutrients into the body**
 - Begins in the mouth with saliva
 - Most nutrients are absorbed from the small intestine

Endocrine System

- **Organs:** all major glands such as the hypothalamus, pituitary, and thyroid
- **Function:** controls hormones that influence development, metabolism, and reproduction

Hormones are chemical messengers that communicate information throughout the body and among the other body systems.

Reproductive System

- **Organs:** male and female reproductive organs
- **Function:** conception, development, and delivery of offspring

The female reproductive system includes a monthly cycle in which a mature egg is released and the uterus prepares to implant the egg if it is fertilized.

Integumentary System

- **Organs: skin and nails**
- **Function: provides a protective barrier and cushions the organs**
- **The skin has three layers:**
 - Epidermis is outermost layer including dead skin cells.
 - Dermis is middle layer with a blood supply.
 - Subcutaneous is deepest layer that includes fat tissue.

Excretory System

- **Organs: kidneys, bladder, urethra, and skin**
- **Function: elimination of metabolic wastes from the body**
- **The kidneys clean all blood of toxins and control fluid balance. One million filters called nephrons are in each kidney.**

Immune System

- **Organs: tonsils, lymph nodes, lymphatic vessels, spleen, thymus, appendix, bone marrow**
- **Function: fights off infection and disease by attacking threats with specialized responses**
- **As you go through life, you are exposed to threats such as diseases. The immune system can remember each threat and create rapid responses to each.**