Chapter 1, Section 1: Introduction to the Human Body

Organization of the Human Body

Human Cells

1. Explain how cells are the basic building blocks of life.

2. The human body has many specialized cells. Specialized cells perform specific functions for the body. Match the type of cell with its function to help the body maintain homeostasis.

   - skin cell: carries electrical messages form the brain to body
   - red blood cell: fights bacteria in body
   - muscle cell: carries oxygen from lungs to rest of body
   - nerve cell (neuron): covers and protects the body from the outside
   - white blood cell: contracts and allows for movement

Human Tissues

3. What is a tissue?

4. Fill in the chart below describing the four types of tissue found in the body:

<table>
<thead>
<tr>
<th>Type of Tissue</th>
<th>Description</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>Epithelial</td>
<td>Made of layers of tightly packed cells that line the surfaces of the body.</td>
<td>skin, lining of mouth and nose, lining of the digestive system</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Human Organs

5. What is an organ?
6. Describe the role of each type of tissue in the organ of the heart. (Figure 1.3)
   - nervous tissue – sends messages to control the beating of the heart
   - epithelial tissue –
   - connective tissue –
   - muscle tissue –

Human Organ Systems

7. What is an organ system?

8. List 4 examples of organ systems?

How Human Organ Systems Work Together

9. What is homeostasis?

10. Homeostasis is controlled with feedback loops like in the picture below. Fill in the missing parts of the feedback loop below. The book explains this example and can help to fill in the blanks.

   ![Feedback Loop Diagram]

   **Example 2**
   - **Stimulus**
     - Rise in blood sugar level.
   - **Receptor**
     - Skin and brain sense change
   - **Signal**
     - Command from the brain
   - **Response**

Lesson Summary

- The basic building blocks of the human body are ____________. Human cells are organized into ____________, tissues are organized into ____________, and organs are organized into ____________
  ____________.

- The organ systems of the body work together to carry out life ________________ and maintain ________________.
Chapter 1, Section 2: The Integumentary System

Introduction

1. What are the three major parts of the Integumentary System?

Structure of the Skin

2. What are the two major layers of the skin?

Epidermis

3. Describe the structure of the epidermis.

4. Explain how new cells are created on the epidermis?

5. What is melanin?

Dermis

6. What structures are located in the dermis?

7. Oil glands make sebum. What does sebum do for the body?

8. Sweat glands make sweat. What does sweat do for the body?

Skin Functions

9. Describe how your skin performs the following functions for your body:
   - My skin provides a barrier by
   - My skin helps control body temperature by
   - My skin helps me gather information from my environment by
   - My skin acts as a sun block by
Keeping Skin Healthy

10. List two ways to prevent sun from damaging your skin?

11. Too much sebum in the sebaceous glands create ________________.

Hair and Nails

12. Hair and nails are made of a protein called ________________.

13. List three functions of hair.

14. List two functions of nails.

15. Fill in the diagram.

Lesson Summary

- The integumentary system consists of the ____________, ____________ and ____________. All three organs provide a ________________ covering for the body to help maintain ________________. 
- The skin consists of ___________ distinct layers, an outer layer called the ________________, and an inner layer called the ________________. The epidermis is constantly being renewed as ___________ cells on the surface are shed. This layer contains melanin-producing ________________. The dermis contains ___________ vessels, ___________ endings, ___________ follicles, and ___________ and ___________ glands. 
- The skin prevents the loss of ___________ from the body and keeps out ________________. ________________ in the epidermis protects the dermis from damaging ________________ light. By dilating or contracting blood vessels and releasing ____________, skin helps maintain a constant body ________________. 
- The most important way to keep your skin healthy is to protect it from ________________ light. Over-exposure to ultraviolet light can cause skin ________________. Keeping the skin clean can help prevent ____________. 
- Head hair protects the ________________ from ultraviolet light exposure and loss of body ____________. Hair in eyelashes, eyebrows, and nostrils traps water, dust, and other ________________. Nails protect the ends of fingers and toes and enhance the sense of ____________. 
Chapter 1, Section 3: The Skeletal System

Components of the Skeletal System

1. The main organs of the skeletal system are the ____________________. How many are in the human body? __________

2. What is cartilage?

3. What are ligaments?

Functions of the Skeletal System

4. List the four functions of the skeletal system:
   a. 
   b. 
   c. 
   d. 

Bones

5. Describe the two main types of bone found in the body.

6. Describe the two types of marrow found in the body.

7. Label and color the picture of the femur.
8. Describe how bones of a human fetus and baby are different from adults.

9. Bones change from babies to adults. What is this process called? _______________________

Joints

10. Complete the table

<table>
<thead>
<tr>
<th>Joint Type</th>
<th>How they work</th>
<th>Examples in Human Body</th>
</tr>
</thead>
<tbody>
<tr>
<td>Immovable Joints</td>
<td>Do not allow movement in bones at all, they are fused.</td>
<td>Between bones in skull</td>
</tr>
<tr>
<td>Partly Movable Joints</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Movable Joints (Ball and Socket, pivot, hinge, gliding)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Skeletal System Problems and How to Prevent Them

11. As a teen it is important to get plenty of _________________ and _________________ for strong bones.

12. Fill in the chart below with characteristics of each skeletal system problem

<table>
<thead>
<tr>
<th></th>
<th>Osteoporosis</th>
<th>Fractures</th>
<th>Sprains</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Lesson Summary

- _________________ are the main organs of the skeletal system. The skeletal system also includes _________________ and _______________.
- Functions of the skeletal system include _________________ and shaping the body, allowing _________________, producing _________________ cells, and _________________ calcium.
- Bones consist of four different types of tissue: _________________, _________________ bone, _________________ bone, and bone _________________. ________________________ gradually changes the cartilage skeleton of the fetus to the bony skeleton of the adult.
- Joints may be _________________, partly _________________, or _______________. Types of movable joints include __________ and __________, __________, and __________ joints.
- Skeletal system problems include _________________, and related bone _________________. Following safe practices may also reduce the risk of _________________ as well as sprains.
Chapter 1, Section 4: The Muscular System

What are Muscles?

1. Long, thin cells that are able to contract are called muscle _____________________.

How a Muscle Contracts

2. What are the two muscle filaments involved in muscle contractions?

3. What is the three letter abbreviation for the energy required to make muscles move? __________

Types of Muscle Tissue

4. Fill in the chart below to describe the three types of muscles.

<table>
<thead>
<tr>
<th>Type of Muscle</th>
<th>Voluntary/Involuntary</th>
<th>Location in Body</th>
<th>Job</th>
</tr>
</thead>
<tbody>
<tr>
<td>skeletal</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>involuntary</td>
<td></td>
<td>move food through the digestive system</td>
<td></td>
</tr>
<tr>
<td>heart</td>
<td></td>
<td>pump blood through body</td>
<td></td>
</tr>
</tbody>
</table>

5. Below are pictures of muscle cells. Write the type of cells below each picture:

___________________  ____________________  ____________________
Structure and Function of Skeletal Muscles

6. What is a tendon?

Skeletal Muscles Work in Pairs

7. Explain how skeletal muscles work in pairs.

8. List two examples in the body where muscles work in pairs (list 2 muscles for each example)

Keeping Muscles Strong and Preventing Muscle Injuries

9. Fill in the chart below to describe three types of exercise

<table>
<thead>
<tr>
<th>Type of Exercise</th>
<th>Purpose</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>aerobic</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>increase muscle strength</td>
<td>stretching</td>
</tr>
</tbody>
</table>

Lesson Summary

- _____________ are the main organ of the muscle system. They consist primarily of long, thin cells called ____________ fibers.
- A muscle fiber contracts when ____________ filaments pull on ____________ filaments in ____________ throughout the fiber.
- There are three types of muscle tissues: ____________, ____________, and ____________ muscle tissues.
- Most muscles are ____________ muscles, which are attached to bones by ____________. Skeletal muscles work in ____________ to move bones back and forth at ____________.
- Regular resistance exercise and ____________ exercise, preceded by warming up and stretching, can help keep the muscular system ____________ and ____________.
Chapter 2, Section 1: The Digestive System

Overview of the Digestive System

1. What is the function of the digestive system?

2. What is the gastrointestinal tract (GI tract)?

3. List the major organs of the GI tract.

4. The process of pushing food through the GI tract is called ________________________.

5. Define the two types of digestion.
   a. Mechanical
   b. Chemical

6. The process of absorption takes broken down nutrients and absorbs them into the _______________.

7. Substances that cannot be digested are removed in a process called _________________.

Digestive Enzymes and Other Secretions

8. How do enzymes help with digestion?

9. Draw lines to match the enzyme with its function.
   amylase produced in the pancreas, used to break down fats
   pepsin produced in the liver, secreted into intestines, breaks down fat
   trypsin produced in the salivary glands, helps break down starches
   lipase produced in the pancreas, breaks down proteins
   bile produced in the stomach, breaks down protein

The Start of Digestion: Mouth to Stomach, Digestion and Absorption: The Small Intestine, Elimination and Other Functions of the Large Intestine

10. Describe how each part listed below contributes to the process of digestion.
   mouth –
   esophagus –
   stomach –
   small intestine –
   villus or villi –
11. List the ways bacteria in the large intestine is helpful:

- 
- 
- 

**Digestive System Health**

12. List 4 healthy practices that may decrease your risk of foodborne illness or food allergies

- 
- 
- 

**Lesson Summary**

- The digestive system is the body system that digests food and and absorbs nutrients. The digestive system also eliminates waste. The major organs of the digestive system include the , , , , and and intestines. These organs make up a long tube called the tract, which goes from mouth to .
- Chemical digestion depends on the work of enzymes and other substances. These are secreted into the GI tract by organs of the digestive system or by the , , , or .
- Digestion starts in the . When food is swallowed, it travels through the esophagus to the . In the digestion continues and a small amount of or nutrients takes place.
- Most chemical digestion and nearly all absorption of nutrients takes place in the . This organ consists of three parts: duodenum, jejunum, and ileum.
- Excess is absorbed from food waste in the large intestine before it passes out of the body through the anus as feces. Trillions of helpful bacteria also live in the large intestine. They carry out important roles, such as making .
- Common digestive system problems include foodborne illness and food . Following healthy food handling practices may your risk of foodborne illness. Food allergy symptoms can be prevented by avoiding the offending foods.
Chapter 3, Section 1: Overview of the Cardiovascular System

Introduction

1. What is the function of the cardiovascular system?

Parts of the Cardiovascular System

2. What are the three major parts of the cardiovascular system?

3. How does the heart act like a pump?

Functions of the Cardiovascular System

4. What is the primary and secondary function of the cardiovascular system?

Two Circulations

5. List the two loops of circulation in the body? _________________________ and _________________________

6. List three characteristics of each type of circulation.

_________________________ circulation   ___________________________ circulation
Lesson Summary

- The cardiovascular system consists of the ___________, a network of blood ____________, and ___________. Blood is a liquid tissue. The heart is a ___________ that keeps blood flowing through the vessels of the system.

- The main function of the cardiovascular system is ____________. It carries substances such as hormones, ____________, nutrients, and cellular wastes around the body. The cardiovascular system also helps regulate body ____________ by controlling blood flow.

- The cardiovascular system circulates blood through two different ____________. Pulmonary circulation is a loop that carries blood between the ____________ and ____________. Systemic circulation is a loop that carries blood between the ____________ and the rest of the ____________.
Chapter 4, Section 1: The Respiratory System

What is Respiration?

1. The word respiration means:

2. What is the main function of red blood cells?

3. How is pulmonary respiration (using the lungs) different than cellular respiration?

Structures of the Respiratory System

4. Label the structures of the respiratory system.

Steps in Respiration

5. List the 4 steps in respiration
   a.
   b.
   c.
   d.

Breathing

6. What is breathing? Include differences between inhaling and exhaling and the importance of the diaphragm.
7. What is the need for mucus and cilia?

Gas Exchange Between the Air and Blood

8. What are alveoli?

9. How are \( \text{O}_2 \) and \( \text{CO}_2 \) exchanged?


Gas Transport in Blood

11. What part does the heart play in respiration?

Gas Exchange Between the Blood and Cells

12. In what type of vessel does the exchange of \( \text{O}_2 \) and \( \text{CO}_2 \) occur? __________________________

Respiratory System Health

13. List three commons diseases of the respiratory system?

14. The main culprit that causes most respiratory problems is _____________________.

Lesson Summary

- The respiratory system is the body system that exchanges _____________ with the outside air. It brings air containing _____________ into the body for the cells. It also releases _____________ _____________ from the cells into the air. This exchange of gases is called ________________.

- _________________ is the process of moving air into and out of the lungs. It depends on the muscle called the ________________.

- The _________________ are the main organ of the respiratory system. This is where gases are exchanged between the ____________ and the ________________. Gases are also transported by the ________________ and the cells of the body.

- Common diseases of the respiratory system include _________________, _________________ and _________________. All of them are diseases of the lungs. The main way to keep your respiratory system healthy is to avoid _________________ or breathing in the smoke of others.
Chapter 5, Section 1: The Excretory System

Introduction:

1. How does the body maintain homeostasis on a hot day?

Excretion

2. Define excretion.

3. The kidney is mainly responsible for excretion but other organs are involved. Match the following.

| Large Intestine | The main organs for excretion |
| Liver           | Eliminate food waste after digestion |
| Sweat Glands    | Exhale CO₂ and water as vapor |
| Lungs           | Removes excess amino acids and toxins |
| Kidney          | Uses droplets of water on skin to take out excess water and salts. |

The Urinary System

4. List the parts of the urinary system?

5. How are the kidneys like a Britta water filter?

6. A ________________ is the part of the kidney that filters blood and there are more than a ________________

7. What is the structure in the kidney where the blood is actually filtered? ________________

8. Excess water and wastes are filtered out of the blood and pass through the kidney tubule to become ________

9. Describe the path of urine as it leaves the kidney.
10. On the diagram of the kidney and nephron draw arrows showing the movement of blood and filtered fluid.

How the Kidneys Maintain Homeostasis?

11. List three ways the kidneys are used to maintain homeostasis
   a. 
   b. 
   c. 

Kidney Health and Disease

12. How many kidneys do you need to survive and filter blood? _______________
13. What can hurt the kidney and prevent it from filtering?
   a. 
   b. 
   c. 

Lesson Summary

- Excretion is any process in which excess ______________ or ______________ are removed from the body. Excretion is the job of the excretory system. Organs of excretion include the large ________________
  ________________, _______________, _______________, and _______________.
- The urinary system ______________ wastes and excess ______________ from the blood, forms ______________, and excretes urine form the body. It includes two ________________, two ________________, the urinary ________________, and the ________________. Nephrons are the tiny structures in the kidneys that ________________ blood and form ________________.
- Disease of the urinary system include kidney ________________ and urinary tract infections. Untreated diabetes may cause ________________ failure and the need for hemodialysis or a kidney transplant.
Chapter 6, Section 1: The Nervous System

Functions of the Nervous System

1. The main job of the nervous system is to carry _____________ messages.
2. Explain how the nervous system helped Hakeem, from the chapter introduction, from falling.

Neurons and Nerve Impulses

3. Neurons are ____________________________________________________________
4. Below is a picture of the neuron (nerve cells that conduct electrical signals). Define the function of each part.

5. Match the neuron with its function

<table>
<thead>
<tr>
<th>Neuron Type</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sensory</td>
<td>Carry impulses between sensory and motor neurons</td>
</tr>
<tr>
<td>Motor</td>
<td>Transmit impulses from sense organs to the brain</td>
</tr>
<tr>
<td>Interneuron</td>
<td>Transmit impulses from the brain to muscles and organs to respond</td>
</tr>
</tbody>
</table>

6. What are neurotransmitters?

7. Explain what is happening in the picture at the synapse.
Central Nervous System

8. What are the two main parts of the central nervous system? __________________ and __________________

9. Match the parts of the brain to their function.
   - Cerebrum: Controls involuntary body function
   - Cerebellum: Controls conscious functions
   - Brain Stem (medulla): Controls body position, coordination, and balance

10. A large bundle of _________________ connect the right and left hemispheres of the brain.

11. Each hemisphere controls the _________________ side.

12. List the four lobes of each hemisphere.

13. How is the spinal cord like a two-way road?

Peripheral Nervous System

14. What is the peripheral nervous system made up of?

15. Fill out the chart below

THE HUMAN NERVOUS SYSTEM

CENTRAL NERVOUS SYSTEM (CNS) [Blank]

PERIPHERAL NERVOUS SYSTEM [Blank]

SENSORY DIVISION [Blank]
- Carries messages from CNS to internal organs, glands, and muscles

SYMPATHETIC DIVISION [Blank]
- Carries messages to organs and glands

PARASYMPATHETIC DIVISION [Blank]
- Carries messages to muscles under voluntary control
Nervous System Diseases and Injuries

16. Match the description with the disease

- Encephalitis: Older adults lose normal brain functions mainly memory loss
- Meningitis: Blood clot blocks blood flow to brain
- Epilepsy: Bruise on the surface of the brain
- Stroke: Bacterial infection of brain
- Alzheimer’s Disease: Bacterial infection of membranes covering brain and spinal cord
- Concussion: Abnormal electrical activity in brain causing seizures

Drugs and the Nervous System

17. What is a psychoactive drug and list 5 examples?

Lesson Summary

- The nervous system is a complex network of nervous tissue that carries messages throughout the body. Its functions include controlling, maintaining, sensing internal and external environment, controlling body systems to maintain, preparing the body for, and allowing higher mental functions such as thinking.
- The nervous system is made of bundles of nerves cells called neurons. Messages carried by neurons are called nerve impulses. A nerve impulse can travel very quickly because it is an electrical signal. Chemical messengers carry nerve impulses between neurons at synapses.
- The central nervous system includes the brain and spinal cord. The brain serves as the body and central nervous system is the control center of the nervous system and the body as a whole. It consists of three major parts: the cerebral hemispheres, cerebellum, and brainstem. The spinal cord carries impulses back and forth between the body and the brain.
- All other nervous tissue in the body makes up the peripheral nervous system, which has two major divisions. The sensory division carries messages from the skin and internal organs to the central nervous system. The motor division carries messages from the central nervous system to muscles, internal organs, and skeletal muscles throughout the body. The motor division is further divided into parts that control voluntary or involuntary responses.
- Diseases of the nervous system include, epilepsy, stroke, and Alzheimer’s disease. Injuries include and spinal cord damage that may cause. Most nervous system diseases can’t be prevented by following safe practices.
- Psychoactive drugs affect the brain and influence how a person perceives, reacts, or acts. They include medicines and other legal drugs as well as illegal drugs. They may affect or permanently the central nervous system. Abuse of such drugs may lead to drug addiction, overdose, and death.
Chapter 6, Section 2: The Senses

Human Vision

1. How do humans and other primates see in 3-D?

2. What is the function of the eye?

3. Some objects we see directly because they give off __________, others we see because they reflect __________.

4. Each letter is covering up one part. Identify the part and explain the path of light through each.

5. List the characteristics of each type of vision problem

<table>
<thead>
<tr>
<th></th>
<th>Myopia</th>
<th>Hyperopia</th>
</tr>
</thead>
<tbody>
<tr>
<td>A.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>B.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>C.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>D.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>E.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Other Human Senses

6. Briefly describe each of the following senses with an example for each.
   a. Hearing

   b. Balance

   c. Touch

   d. Taste

   e. Smell

Lesson Summary

- _____________ is the ability to see. Humans and other ________________ have 3-D and color vision. The eyes focus ________________, form ________________, and send nerve ________________ to the brain. The brain ________________ the images and tells us what we are seeing. Vision problems include ________________ and _________________. Both can be corrected with ________________.

- Other human senses include hearing, ________________, touch, ________________, and ________________. The ears sense ________________ and allow us to hear. They also sense body ________________ to help maintain balance. Touch ________________, mainly in the ________________, sense ________________, pressure, and _________________. Taste neurons on the tongue sense ________________ in food. Odor neurons in the ________________ sense chemicals in the ________________.
Chapter 6, Section 3: The Endocrine System

What is the Endocrine System?

1. What is a hormone?

2. How do hormones move to the correct location in the body?

Glands of the Endocrine System

3. How are endocrine glands different from a sweat gland?

4. List four endocrine glands in the human body.

5. Why is the hypothalamus a special gland?

6. Why is the pituitary gland called the master gland?

7. List 5 target glands the pituitary can control.

8. Match the function of the endocrine glands below

<table>
<thead>
<tr>
<th>Gland</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thyroid Gland</td>
<td>The master gland that controls most other endocrine glands</td>
</tr>
<tr>
<td>Pancreas</td>
<td>Secrete sex hormones to allow for puberty to occur.</td>
</tr>
<tr>
<td>Adrenal Glands</td>
<td>Secretes insulin to help absorb glucose</td>
</tr>
<tr>
<td>Gonads</td>
<td>Part of the brain that sends hormones to pituitary gland</td>
</tr>
<tr>
<td>Hypothalamus</td>
<td>In the neck and helps increase metabolism in cells</td>
</tr>
<tr>
<td>Pituitary</td>
<td>Secretes the hormone adrenaline to prepare for emergencies.</td>
</tr>
</tbody>
</table>

How Endocrine Hormones Work

9. Are hormones general or specific? Explain.
10. Describe an example of a negative feedback loop.

11. How is a thermostat in your house like a negative feedback loop in your body?

Endocrine System Diseases

12. Why does an endocrine gland start producing too much or too little of a hormone?

13. Explain how the endocrine disease of type I diabetes works.

Lesson Summary

- The endocrine system is a system of _______________ that release _______________ messenger molecules called _______________ into the _______________ stream. Endocrine hormones travel _______________ slowly than nerve impulses, but can reach _______________ anywhere in the body.

- The _______________ is part of the brain and also secretes _______________, this controlling the nervous and _______________ systems. The _______________ gland is the master gland of the _______________ system and controls other endocrine glands. Endocrine glands also include the _______________ gland, _______________ glands, _______________ and _______________.

- Each endocrine hormone affects only certain cells, called _______________ cells. A target cell has _______________ on its surface to which a given hormone can _______________. Most endocrine hormones are controlled by _______________ feedback loops. Negative feedback occurs when _______________ levels of a hormone feed back to _______________ its secretion – and vice versa.

- Endocrine system diseases are fairly _______________. An endocrine disease usually involves the secretion of too _______________ or not _______________ hormone by an endocrine gland. Examples of endocrine disease are _______________ and type I _______________.

Chapter 7, Section 1: Infectious Diseases

What Causes Infectious Diseases?

1. Define pathogen.

2. Fill in the blanks in the table

<table>
<thead>
<tr>
<th>Type of Pathogen</th>
<th>Description</th>
<th>Human Disease from Pathogen</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bacteria</td>
<td>Thread like particles that reproduce by taking over living things</td>
<td>Ringworm, athlete’s foot, histoplasmosis, mushroom poisoning.</td>
</tr>
<tr>
<td></td>
<td>Single celled organism with a nucleus.</td>
<td></td>
</tr>
</tbody>
</table>

3. List five ways that pathogens can spread from place to place or human to human.

   a. 
   
   b. 
   
   c. 
   
   d. 
   
   e. 
Preventing the Spread of Infectious Diseases

4. What body system is responsible for fighting off infectious diseases? ________________________

5. What are vaccines?

6. List a few ways to prevent the spread of infectious diseases.

Lesson Summary

- Infectious diseases are diseases that are caused by ________________. Human pathogens include ________________, ________________, ________________, and ________________. Different pathogens spread in different ways. Pathogens may spread through ________________ food or water, ________________ contact, droplets in the air from ________________ or ________________, contaminated objects or ________________, or vectors.
- To avoid infectious diseases, eat well and get plenty of ________________ to keep your immune system _________________. Get recommended ________________, and follow good ________________ practices such as frequent hand washing. Also, avoid contact with ________________ such as ticks and mosquitoes.
Chapter 7, Section 2: Noninfectious Diseases

Introduction

1. What is the difference between an infectious disease and a noninfectious disease?

Cancer

2. Define cancer.

3. How does cancer spread to other parts of the body?

4. __________________________ causes cancer and can mostly come from ____________________________ factors, with only a few cancers being inherited.

5. List five things in the environment to avoid that may cause cancer at some point in life.
   a. 
   b. 
   c. 
   d. 
   e. 

6. For males ____________________________ is the most common type of cancer, and for females ____________________________ is the most common type of cancer.

7. For both genders the second most common cancer is ____________________________.

8. What are three ways to treat cancer in the body?

Diabetes

9. What is insulin and how does it work?
10. List a few characteristics of each type of diabetes

<table>
<thead>
<tr>
<th>Type 1 Diabetes</th>
<th>Type 2 Diabetes</th>
</tr>
</thead>
</table>

**Immune System Diseases**

11. What is an autoimmune disease?

12. List and explain two types of autoimmune diseases.

13. List five of the most commons types of allergens.

14. How would you prevent allergies?

**Lesson Summary**

- Noninfectious diseases are not ____________________ because they are not caused by _______________. Instead, they are caused by such factors as ________________ choices, ________________ toxins, or ________________.
- Most cancers are caused by ____________________. Anything that causes mutations leading to cancer is called a _________________. Examples include ________________ in tobacco smoke and ________________ radiation.
- Diabetes is a disease in which ____________________ fails to keep blood ________________ levels within a healthy range. In type _________ diabetes, the ________________ doesn’t produce insulin. In type _________ diabetes, body cells do not respond normally to ________________.
- Autoimmune diseases occur when the immune system attacks the body’s ________________ cells. Type 1 diabetes is an example. ________________ occur when the immune system attacks a harmless substance such as ________________ as though it was a _________________. 
Chapter 7, Section 3: First Two Lines of Defense

First Line of Defense

1. What are the three barriers to stop disease from getting in our body?

2. Identify the barriers below as physical, chemical, or biological.
   a. The skin: _________________________
   b. Enzymes in tears: __________________________
   c. Hair (Cilia): __________________________
   d. Bacteria on your skin: ______________________________
   e. Mucus membranes: __________________________
   f. Lysozymes: _________________________
   g. Stomach Acid: _____________________________
   h. Bacteria in your intestine: ________________________

Second Line of Defense

3. How does inflammation attack any pathogen that may have entered the body?

4. What type of cells in the immune system are responsible for destroying and “eating” pathogens?

5. When the pathogens are engulfed and then destroyed it is called: ___________________________

6. Why is a fever helpful to slow infection?

Lesson Summary

- The body’s first line of defense against __________________ includes physical, chemical, and biological _________________. These __________________ keep most __________________ out of the body.
- If pathogens do manage to enter the body, the body’s second line of defense ________________ them. The second line of defense includes ___________________________ and _________________________________.


Chapter 7, Section 4: Immune System Defenses

What is the Immune System?

1. Why is the immune system the final line of defense?

2. Which of the following would you consider to describe the immune system?

   General Defense                  Specific Defense

3. Why did you choose your answer above?

4. Match the organ with the job in the immune system.

   Bone Marrow trap pathogens that enter the body
   Thymus Gland produces white blood cells called lymphocytes
   Spleen Stores lymphocytes while they mature
   Tonsils Filters pathogens out of the blood.

5. What is lymph?

6. How are lymph vessels similar and different from the blood in the circulatory system?

   Similar:

   Different:

7. What is the main function of lymph nodes?

8. A _________________________ is a white blood cell involved in an immune response.

9. Where are B and T cells made?

10. Why don't B and T cells target and destroy our own cells, like blood cells?
11. Explain this B cell response below in the picture?

12. Explain what this helper T cells will do next?

13. Fill in the missing parts of the chart:

<table>
<thead>
<tr>
<th>Type of Lymphocyte Cell</th>
<th>Order of Attack in Immune Response</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>Killer T-Cell</td>
<td>2</td>
<td>Sends out antibodies to attach to specific antigens on pathogens.</td>
</tr>
<tr>
<td>Memory Cell</td>
<td>4</td>
<td>Release chemical to control B cells and Killer T-cells</td>
</tr>
</tbody>
</table>
Immunity and Vaccination

14. What are memory cells?

15. How does a vaccination use the memory cells of an immune system? Explain the whole process of creating memory cells?

Lesson Summary

- The immune system is the body system that ___________ to _____________ the body from specific ______________. The immune system’s specific reaction to a pathogen is called ________________ response. The immune system includes several ____________ and a system of ______________ that carry ________________.

- White blood cells called ________________ are the key cells involved in an immune response. There are two main types of lymphocytes, called ________________ and ________________. B cells respond to pathogens in the blood and lymph by making ________________ against them. Killer T cells kill ________________, ________________, or ________________ cells. Helper T cells release chemicals that control other ________________

- Immunity is the ability of the immune system to launch a rapid attack against a particular ________________ because it ________________ it. Immunity prevents the pathogen from making you _____________. It can come about by having a prior ________________ with the pathogen or by receiving a ________________ for it.