

Name _____ Date _____ Class _____

Circulation 33

Chapter 19 Circulation

Section 1 The Circulatory System

A. Your _____ system includes the blood, heart, and blood vessels. It moves materials to all parts of your body.

1. Movement of materials into and out of your cells occurs by _____, or movement

of materials from an area of high concentration to an area of low concentration.

2. Movement also occurs by _____, which is the opposite of diffusion.

B. _____—controls blood flow through all parts of the body

1. Has four chambers

a. _____—upper two chambers

b. _____—lower two chambers

c. A one-way _____ separates each atrium from the ventricle below it.

d. Blood _____ only from an atrium to a ventricle.

e. A wall between the two atriums and the two ventricles prevents oxygen-rich and oxygen-poor blood from _____.

2. Circulatory system—divided into _____ sections

a. _____ **circulation** is the flow of blood to and from the tissues of the heart.

b. In _____ **circulation**, blood flows through the heart to the lungs, where carbon dioxide and other waste materials diffuse out, oxygen diffuses in, and the blood goes back to the heart.

c. _____ **circulation** moves oxygen-rich blood to all the organs and body tissues, except the heart and lungs, and returns oxygen-poor blood to the heart.

C. _____ carry blood to every part of your body.

1. _____ are blood vessels that carry blood away from the heart.

a. Each ventricle of the heart is connected to an artery.

b. The right ventricle connects to the _____ artery.

c. The left ventricle connects to the _____.

d. Every time your heart _____, blood is moved from your heart into your arteries.

2. _____ carry blood back to the heart.

a. _____ keep blood moving toward the heart by muscle contractions throughout the body.

b. There are two major veins, the _____ which returns blood from the

head and neck, and the _____ which returns blood from the abdomen and lower body.

3. _____ are microscopic blood vessels that connect arteries to veins.

a. Nutrients and oxygen diffuse to body cells through capillary _____.

b. Waste materials and _____ diffuse from body cells to capillaries.

D. _____ is the force of the blood on the walls of the _____.

1. Blood pressure is highest in arteries and lowest in _____.

a. A rise and fall of pressure occurs with the _____.

b. Normal pulse rates are 60–___ beats per minute for adults.

2. Measured using _____ numbers:

a. first—_____—measures pressure caused by ventricles contracting and pushing blood out of the heart

b. second—_____—measures pressure that occurs as ventricles fill with blood

3. Your brain tries to keep your blood pressure _____. Your brain sends messages to your heart to raise or lower your blood pressure by speeding up or slowing down your heart rate.

E. _____—the _____ cause of death in the United States

1. atherosclerosis—_____ build up on arterial walls and clog arteries

a. atherosclerosis can occur in any artery in the body—deposits in coronary _____ are especially serious

b. If a coronary artery is blocked, a _____ can happen.

2. hypertension—_____ blood pressure

a. When blood pressure is high, the _____ must work harder to keep blood flowing.

b. One cause of high blood pressure is _____.

3. Prevention:

a. Follow a good diet and avoid salt, sugar, cholesterol, and _____.

b. Eliminate _____, which forces the heart to pump faster.

c. Exercise strengthens the heart and lungs, helps control cholesterol, and controls _____.

d. Manage _____, which causes the heart to pump faster.

e. Avoid _____, which increases the amount of carbon monoxide in the blood and makes the heart beat faster.

Section 2 Blood

A. Functions of blood

1. Blood carries _____ from your lungs to your body cells, and carbon dioxide from your cells to your lungs to be exhaled.
2. Blood carries _____ from cells to your kidneys to be removed.
3. Blood transports _____ to your body's cells.
4. Cells and molecules in blood fight _____ and heal wounds.

B. Parts of blood

1. Plasma—_____ part of blood

- a. made mostly of _____
 - b. _____, minerals, and oxygen are dissolved in plasma.
 - c. carries wastes from _____
2. _____ supply your body with oxygen.
 - a. Red blood cells contain _____, which is a chemical that can carry oxygen and carbon dioxide.
 - b. The life span of a red blood cell is _____ days, and is then rapidly replaced.
 3. _____ fight bacteria and viruses.
 - a. Your body reacts to invaders by _____ the number of white blood cells.
 - b. White blood cells enter infected tissues, destroy bacteria and viruses, and absorb _____.

c. The life span of a white blood cell is a few days to many months.

4. _____ are irregularly shaped cell fragments that help clot blood.

a. release chemicals that help form _____ of fibrin

b. life span of five to nine _____

C. Blood clotting—platelets and _____ plug up a wound.

1. _____ stick to a wound and release chemicals.

2. Clotting factors carry out _____.

3. Threadlike fibers, called _____, form a sticky net.

4. The net traps blood cells and plasma and forms a _____.

5. _____ then begin the repair process.

D. Blood types—A, B, AB, _____

1. based partly on _____

a. chemical identification tags in the blood

b. Type _____ has no antigens, and can donate blood to any type.

2. also based on _____

a. proteins that identify substances that do not belong in the _____, such as other

blood types, and destroy them

b. Type _____ has no antibodies, so it can receive blood from any type.

3. _____ is another chemical identification tag in blood.

a. If people who lack the Rh factor (Rh-) receive Rh+ blood, they will produce

_____ against the blood.

b. Antibodies cause _____ to form in the blood vessels.

E. Blood diseases

1. Anemia affects _____ blood cells.

a. body tissues can't get enough _____ and are unable to carry on usual activities

b. causes include a loss of a large amounts of blood, diet lacking in _____, or heredity

2. Leukemia—affects _____

a. White blood cells are made in excessive numbers.

b. The excess cells are immature and don't fight _____ well.

c. Immature cells fill the _____ and crowd out normal cells.

Section 3 The Lymphatic System

A. The lymphatic system collects _____ and returns it to the blood.

1. _____—tissue fluid that has diffused into the lymphatic capillaries
 - a. contains _____ and dissolved substances
 - b. contains _____—type of white blood cell that helps the body defend itself against disease-causing organisms
2. Lymph is carried through lymphatic capillaries and vessels to large veins near the _____.
3. Lymph is moved by the contraction of _____.
4. Lymphatic vessels have _____ to keep lymph from flowing backward.

B. Lymphatic _____

1. _____ nodes
 - a. bean-shaped organs of varying size found _____ the body
 - b. filter _____ and foreign materials from lymphocytes
 2. _____ protect your body from harmful microorganisms that enter through the mouth and throat.
 3. Thymus, which is located behind the sternum, makes _____.
 4. _____—located behind the stomach, filters blood by removing damaged red blood cells from the blood stream, takes up and destroys bacteria and other invaders of the body.
- C. The HIV virus attacks** _____ called the helper T-cells.