CIRCULATORY AND RESPIRATORY SYSTEMS
Section 47–1: The Circulatory System

Read the passage below, which is reproduced from page 936 of your textbook. Answer the questions that follow.

Systemic circulation is the movement of blood between the heart and all parts of the body except the lungs. Oxygenated blood is pumped out of the left ventricle and into the aorta. From the aorta, blood flows into other subsystems of systemic circulation.

Coronary circulation is one subsystem of systemic circulation that supplies blood to the heart itself. The heart muscle is thick, and oxygen and nutrients must be supplied to each cell. If the blood supply to the heart is reduced or cut off, muscle cells will die. This can happen when an artery is blocked by a blood clot or by **atherosclerosis**, a disease characterized by the buildup of fatty materials on the interior wall of the coronary artery. If either type of blockage reduces the flow of blood to the heart muscle cells, a heart attack will result.

Renal circulation, another subsystem of systemic circulation, supplies blood to the kidneys. Nearly one-fourth of the blood that is pumped into the aorta by the left ventricle flows to the kidneys. The kidneys filter waste from the blood.

Hepatic portal circulation is a subsystem of systemic circulation. Nutrients are picked up by capillaries in the small intestine and are transported by the blood to the liver. Excess nutrients are stored in the liver for future needs. The liver receives oxygenated blood from a large artery that branches from the aorta.

Read each question and write your answer in the space provided.

SKILL: **Recognizing Similarities and Differences**

1. What are the three subsystems of systemic circulation?

   Coronary, Renal, Hepatic Portal

2. What are the similarities and differences between these three subsystems?

   Both Renal/hepatic are involved in filtering
   All are necessary for survival
   All start w/ oxygenated → deoxygenated

Read the question and write your answer in the space provided.

SKILL: Vocabulary Development

3. The term *renal* comes from a Latin word meaning "kidneys." How does knowledge of the origin of *renal* aid in defining *renal circulation*?

Renal heads to kidneys

Circle the letter of the word or phrase that best completes the sentence.

4. Atherosclerosis is a disease characterized by the buildup of fatty materials on the interior walls of the
   a. kidneys
   b. liver.
   c. coronary artery.
   d. aorta.

CIRCULATORY AND RESPIRATORY SYSTEMS
Section 47–2: Blood

Read the passage below, which is reproduced from page 941 of your textbook. Answer the questions that follow.

When a blood vessel tears or rips, platelets congregate at the damaged site, sticking together and forming a plug. The vessel constricts, slowing blood flow to the area. Then special clotting factors are released from the platelets. These factors begin a series of chemical reactions that occur at the site of the bleeding. The last step in this series brings about the production of a protein called **fibrin**. Fibrin molecules consist of long, sticky chains. These chains form a net that traps red blood cells, and the mass of fibrin and red blood cells hardens into a clot, or scab.

Write your answers in the spaces provided.

SKILL: Sequencing Information

1. Order the statements to show the steps of the blood-clotting process. Write "1" on the line in front of the statement that describes what happens first. Write "2" on the line in front of the statement that describes what happens next, and so on.

   5 a. Long, sticky chains of fibrin are produced.
   3 b. Platelets congregate at the site of injury.
   6 c. Fibrin chains form a net to trap red blood cells.
   1 d. A blood vessel is torn.
   2 e. The blood vessel constricts.
   4 f. Platelets release special clotting factors.

Circle the letter of the word or phrase that best completes the analogy.

2. Platelets are to plug as fibrin is to
   a. blood.
   b. red blood cells.
   (c.) net.
   d. chemical reaction.