

6-12. THE BLOOD VESSELS

Instructions: (1.) Read the text carefully. (2.) Use the text and the diagrams to help you to answer the questions.

Blood travels through a network of arteries (which send blood away from the heart) and veins (which return blood to the heart).

When the heart contracts, blood is pumped into the aorta under pressure. This pressure, which causes the walls of the aorta to bulge slightly, helps to push blood through this large artery.

The aorta, the main passageway through which blood travels, leaves the heart through the left ventricle and curves upward to form a large arc called the "aortic arch." Smaller arteries called "distributing arteries" branch from the aortic arch and carry blood to the upper parts of the body (brain, arms, etc.).

(Note: Every section of every artery has its own name, so that a scientist can be extremely accurate in his or her descriptions. But nonscientists use a somewhat simpler approach and think of an entire branch that sends blood to the brain, for example, as a "carotid artery," and the branch that sends blood to the right arm as the "right subclavian artery.")


The aorta then curves downward behind the heart to form the descending aorta; distributing branches from the descending aorta travel to the stomach, liver, spleen, and so forth. Then the aorta divides to send blood to the legs. The branches travel through the pelvic region as the iliac arteries, branching further as they go; the large branch that travels through the thigh is called the "femoral artery."

The distributing arteries, in turn, branch into still smaller blood vessels called "arterioles"; they direct blood into the capillaries, where the most important work of the circulatory system is done. With the high power of magnification of an electron microscope, a capillary looks like a net made of extremely small tubes. The thin walls of these tiny tubes allow two-way traffic: oxygen and nutrients leave the blood and go to the cells, while carbon dioxide and other cellular wastes leave the cells and combine with the blood.

The waste-carrying, deoxygenated blood then leaves the capillary through an exit tube called a "venule." The venule will carry the blood a short distance before joining a larger branch called a "vein." This vein will eventually drain into the vena cava, which in turn will direct the blood into the right side of the heart; there it is pumped to the lungs, where it is replenished with oxygen. The wastes travel in the blood until they reach other specialized organs and tissues that remove them from the body.

While completing this worksheet, you will learn the names of some of the major arteries and veins of the human body.

To complete this project—

- Obtain your map pencils.
- Use a red pencil to color the arteries on the artery diagram.
- Use a blue pencil to color the veins on the vein diagram. 

Level One Questions:

1. _____ are tubes that send blood away from the heart.
2. _____ are tubes that return blood to the heart.

6-12. THE BLOOD VESSELS, continued

3. The _____ serves as the main passageway through which blood travels.
4. Branches of the aorta are collectively called _____.
5. Distributing arteries branch to make smaller arteries called _____.
6. Arterioles direct blood into the _____.
7. Where is the real work of the circulatory system done?

8. What does a capillary look like?

9. Blood leaves the capillary through a tube called a _____.

Use the diagram to help you answer the following Level One questions:

10. Name the arteries that send blood to the brain.

11. Name the veins that return blood from the brain.

12. Name the artery that sends blood to the left arm.

13. Name the vein that returns blood from the left arm.

14. Name the artery that sends blood to the left leg.

15. Name the vein that returns blood from the left leg.

16. Which arrow indicates the gastric artery, which sends blood to the stomach?

A B C (Circle one.)

17. Which arrow indicates the hepatic artery, which sends blood to the liver?

A B C (Circle one.)

18. Which arrow indicates the splenic artery, which sends blood to the spleen?

A B C (Circle one.)

Level Two Questions:

19. What does the blood entering the capillary contain?

20. What does the blood leaving the capillary contain?

21. What is the difference between a vein and a venule?

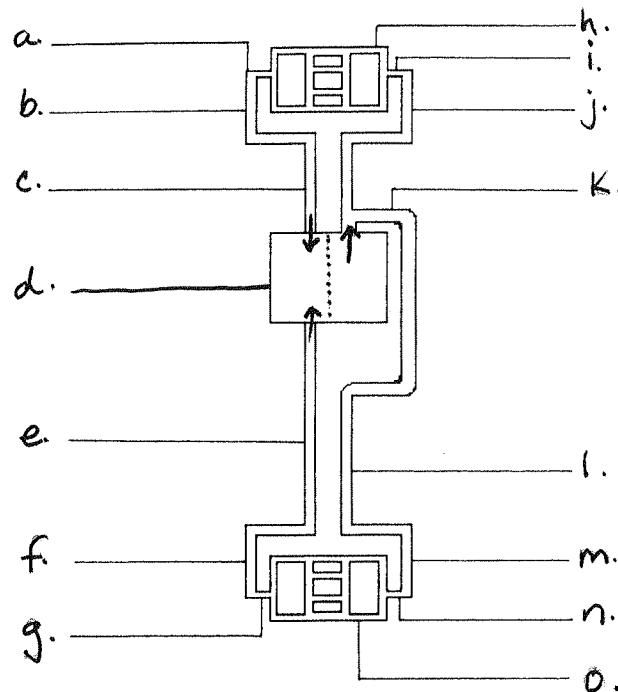
Level Three Questions:

22. Why are the arteries that branch from the aorta called “distributing” arteries?

23. Explain the name of the femoral artery.

24. Blood leaves the heart under pressure. When the blood reaches the capillary, this pressure has been greatly reduced. Why is this reduction of pressure important?

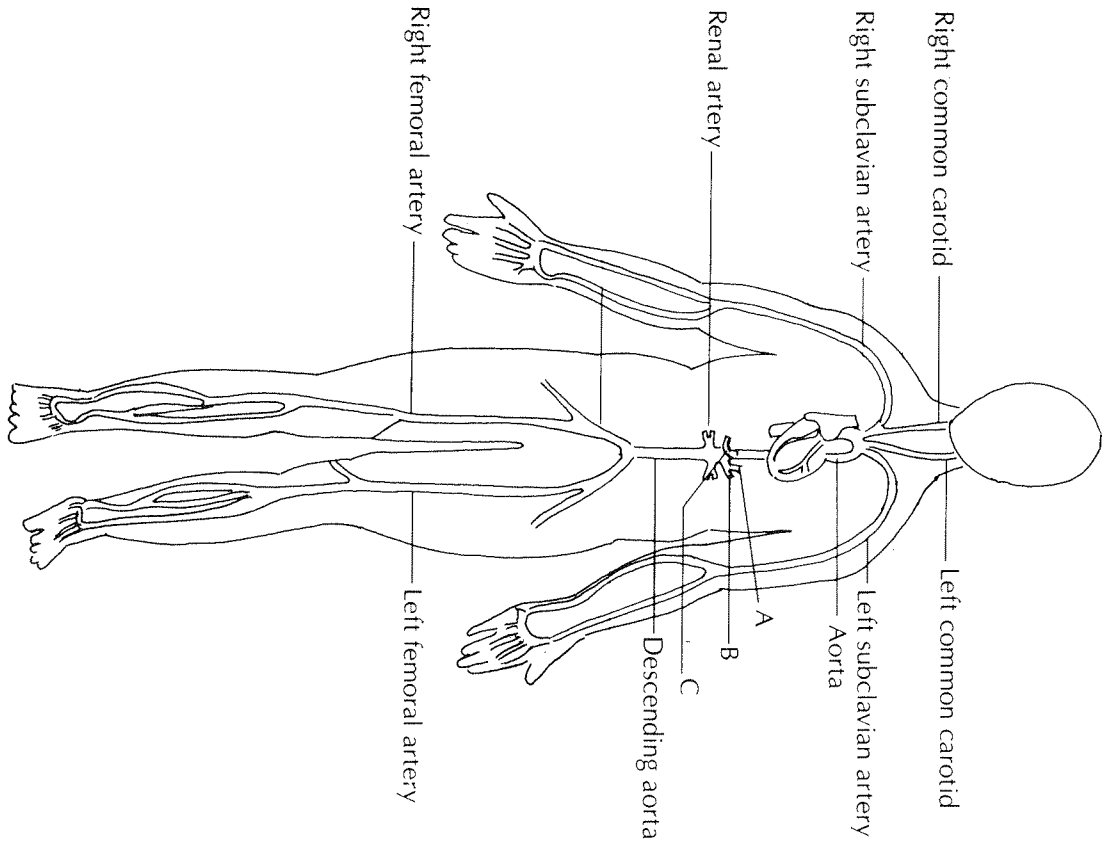
25. The following diagram is a stylized representation of the human circulatory system. Use the diagram showing the veins and arteries and what you have learned about the circulatory system to help you to write the labels.



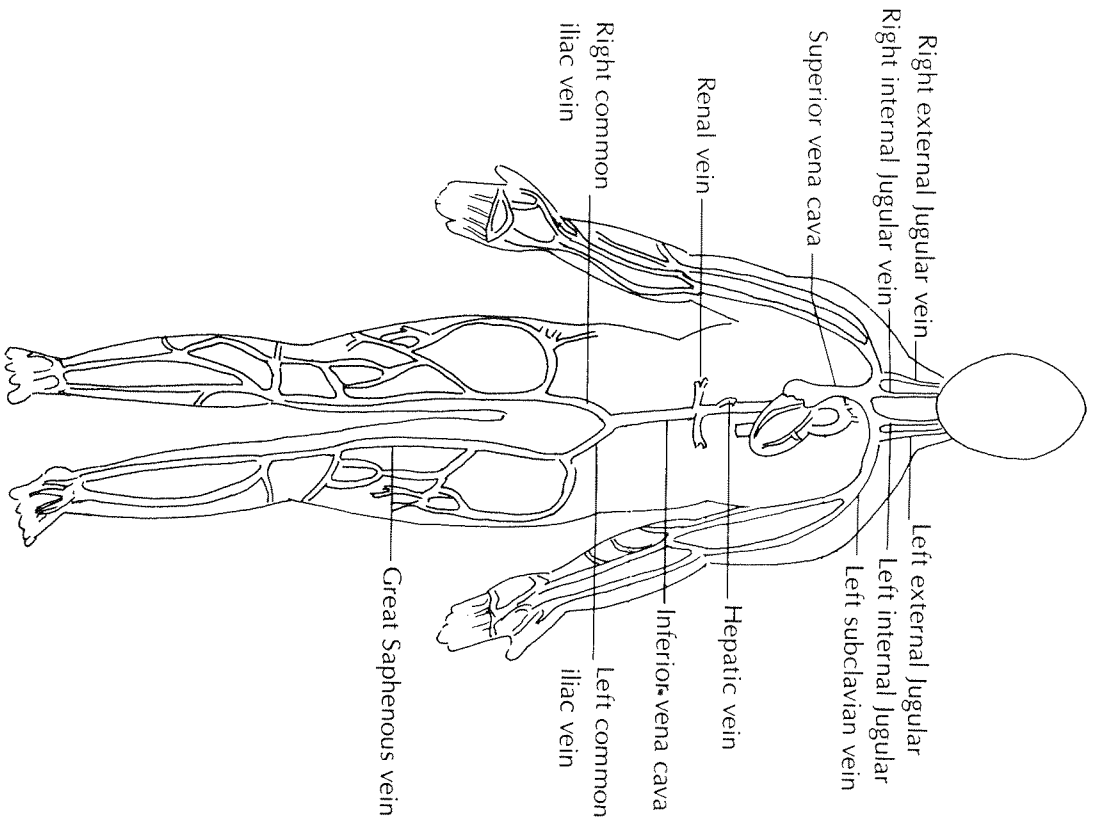
WORD BANK

**the flow of blood is shown by arrows*

- Arteriole
- Aorta
- Capillary net
- Carotid artery
- Descending aorta
- Femoral artery
- Great saphenous vein
- Heart
- Inferior vena cava
- Jugular vein
- Superior vena cava
- Venule



The arteries



The veins