Hemostasis
8. 1. A or break. 2. E or platelets. 3. G or serotonin. 4. I or tissue factor. 5. F or prothrombin.
6. H or thrombin. 7. D or fibrinogen. 8. C or fibrin. 9. B or erythrocytes.
9. 1. 3-6 min. 2. Heparin. 3. T.

Blood Groups and Transfusions
10. | Blood type | Agglutinogens or antibodies in plasma | Can donate blood to type | Can receive blood from type |
    |-------|-------------------------------------|--------------------------|---------------------------|
    | 1. Type A | A | anti-B | A, AB | A, O |
    | 2. Type B | B | anti-A | B, AB | B, O |
    | 3. Type AB | A, B | none | AB | A, B, AB, O |
    | 4. Type O | none | anti-A, anti-B | A, B, AB, O | O |

11. Type O is the universal donor. AB is the universal recipient.

12. A reaction during which plasma antibodies attach to and lyse red blood cells different from your own.

Developmental Aspects of Blood
9. Leukemia.

The Incredible Journey

At the Clinic
15. Hemolytic disease of the newborn.
16. Its RBCs have been destroyed by the mother’s antibodies; therefore the baby’s blood is carrying insufficient oxygen.
17. She must have received mismatched (Rh+) blood previously in a transfusion.
18. Give the mother RhoGAM to prevent her from becoming sensitized to the Rh+ antigen.
19. Fetal progress will be followed in expectation of hemolytic disease of the newborn; intratuneral transfusions will be given if necessary, as well as complete blood transfusion to the newborn.
20. No; A+.

21. The stem cells for hematopoiesis in red bone marrow are a rapidly dividing cell population. Hence, they would be targeted (along with other rapidly dividing cells) by chemotherapeutic drugs.
22. Virtually all bones contain red marrow and functional hematopoietic tissue in young children, but in adults only the sternum, ilium, and a very few long bone epiphyses contain red marrow.
23. Erythrocytes, which account for nearly half of blood volume, will be produced in the largest numbers.

Chapter 11 The Cardiovascular System

Cardiovascular System: The Heart

In Figure 11-1 on p. 327, the white areas represent regions transporting O2-rich blood. The gray vessels transport O2-poor blood.

4. Figure 11–3:


6. Figure 11–4: Red arrows should be drawn from the left atrium to the left ventricle and out the aorta. Blue arrows should be drawn from the superior and inferior vena cavae into the right atrium, then into the right ventricle and out the pulmonary trunk. Green arrows should be drawn from #1 to #5 in numerical order.


7. C or electrocardiogram.  2. F or P wave.  3. H or T wave.  4. G or QRS wave.  5. B or bradycardia.  6. D or fibrillation.  7. I or tachycardia.  8. E or heart block.  9. A or angina pectoris.

8. Figure 11-5:


10. Check 1, 2, 4, 5, 6, 8, and 10.

11. 1. Fetal.  2. Rate of contraction.  3. Left.  4. T.  5. T.

12. 1. Left side of heart.  2. P wave.  3. AV valves opened.  4. Aortic semilunar valve.  5. Tricuspid valve.

Cardiovascular System: Blood Vessels


14. Arteries are high-pressure vessels. Veins are low-pressure vessels. Blood flows from high to low pressure. The venous valves help to prevent the backflow of blood that might otherwise occur in those low-pressure vessels.

15. Skeletal muscle activity and breathing (respiratory pump).

16. 1. A or tunica intima.  2. B or tunica media.  3. A or tunica intima.  4. A or tunica intima.  5. C or tunica externa.  6. B or tunica media.  7. C or tunica externa.  8. D or brachiocephalic.  9. A or anterior tibial and R or posterior tibial.  10. M or hepatic portal.  11. F or cephalic.  12. J or gonadal.  13. B or azygos.  14. O or inferior vena cava.  15. L or hepatic.  16-18. I or gastric, N or inferior mesenteric, and V or superior mesenteric.  19. K or great saphenous.  20. G or common iliac.  21. H or femoral.
19. Figure 11-9:

20. 1 and 2. F or common carotid and W or subclavian. 3. H or coronary. 4 and 5. P or internal carotid and Y or vertebral. 6. B or aorta. 7. J or dorsalis pedis. 8. I or deep femoral. 9. S or phrenic. 10. C or brachial. 11. C or brachial. 12. N or inferior mesenteric. 13. Q or internal iliac. 14. L or femoral. 15. C or brachial. 16. X or superior mesenteric. 17. G or common iliac. 18. E or celiac trunk. 19. K or external carotid. 20–22. (in any order): A or anterior tibial, R or peroneal, T or posterior tibial. 23. U or radial. 24. B or aorta.

21. Figure 11-10:

22. Figure 11-11:
23. 1. C or circle of Willis. 2. J or umbilical vein. 3. E or ductus venousus. 4. A or anterior cerebral artery. G or middle cerebral artery. 5. B or basilar artery. 6. D or ductus arteriosus. 7. F or foramen ovale.

24. The fetal lungs are not functioning in gas exchanges, and they are collapsed. The placenta makes the gas exchanges with the fetal blood.


26. 1. H or pulse. 2. B or blood pressure. 3 and 4. C or cardiac output and F or peripheral resistance. 5. D or constriction of arterioles. 6. J or systolic blood pressure. 7. E or diastolic blood pressure. 8. A or over arteries. 9. G or pressure points. 10. I or sounds of Kerckhoff.

27. 1. G or interstitial fluid. 2. C or diffusion. 3. E or fat soluble. 4-6. (in any order): B or capillary clefts; D or fenestrations; I or vesicles. 7. D or fenestrations. 8-9. B or capillary clefts; D or fenestrations. 10. F or hydrostatic pressure. 11. H or osmotic pressure. 12. G or interstitial fluid. 13. A or blood.


Developmental Aspects of the Cardiovascular System


The Incredible Journey


At the Clinic

33. Zero, myocardial infarction. The posterior interventricular artery supplies much of the left ventricle, the systemic pump.

34. Bradycardia, which results from excessive vagal stimulation of the heart, can be determined by taking the pulse.

35. Peripheral congestion due to right heart failure.

36. Thrombosis, atherosclerosis; an arterial anastomosis (circle of Willis), e.g. (1) Left internal carotid artery to left anterior cerebral artery. Then through anterior communicating branch to right anterior cerebral artery and (2) vertebral arteries to basilar artery to right posterior cerebral artery through the posterior communicating branch to right middle cerebral artery.

37. High; polycythemia increases blood viscosity (thus peripheral resistance), which increases blood pressure.

38. The stiffened valve flaps would not close properly and the valve would become incompetent. A heart murmur would be heard after the valve had (supposedly) closed and blood was backflowing through the valve.

39. Thrombophlebitis occurs when a thrombus (clot) forms in an inflamed blood vessel (a vein). The danger is that the clot may detach, leading to a pulmonary embolism.

40. An ECG only reveals electrical problems. It is not useful for revealing valvular problems.

41. If anything, exercise extends life by making the cardiovascular and respiratory systems more efficient. Heart rate drops and stroke volume increases.

42. When the environmental temperature is high, blood vessels serving the skin vasodilate and much of the blood supply will be found in dermal blood vessels. Then when you stand suddenly, there will initially be inadequate blood volume in the larger, more central blood vessels to ensure that the brain receives a normal blood supply; thus the dizziness.

43. A drug that blocks calcium channels will decrease the force of heart contraction. Because contractile force is directly related to stroke volume, the SV will decrease.

44. Acetylcholine slows heart rate (this is the neurotransmitter released by the vagus nerves). Thus, with a longer filling time the heart's stroke volume will increase.