Read pages 170-179 of SP to help you answer the following questions:

1. Your circulatory system carries __________ and nutrients (both necessary for __________ respiration) to your cells and __________ away from your cells.

2. Blood is carried to within ____cm or each and every cell in the body.

3. What could happen to cells in a body part if the blood was cut off for a period of time?

4. The liquid portion of blood is called __________________ it is about 92% ______ and 8% ______________ dissolved in water.

5. Name five substances or types of substances that are dissolved in the liquid portion of our blood.

6. People with hemophilia have blood that does not clot properly. Explain why this is so.

7. What is the function of antibodies that are carried in the blood? ____________________________
8. Adrenalin is a type of blood protein called a _______________________. It is produced in the ____________________ gland just above the kidney. However, it acts on different parts of the body like the respiratory system and the heart. How does it move in the body?

_______________________________________________________________________

9. About _____% of your blood’s volume is liquid (plasma) and about _____% is solids, which consist of blood ________ and _______________ (see margin page 172)

10. Red blood cells contain the protein called _________________________ which grabs oxygen and carries it to the cells of the body where it is used.

11. Your red blood cells pick up oxygen in the _______________________ in the lungs and release it near the cells of the body.

12. The mineral ___________ is needed by the body to make hemoglobin. Adults don’t need as much iron as teenagers because some of the iron is ___________________ when the red blood cells die.

13. Your body contains approximately ________________ red blood cells. The average lifetime of a red blood cells is about ______ days ( _____ months).

14. Where are red blood cells manufactured? ________________________________

15. Your body replaces red blood cells at a rate of about _____________________ per second.

16. An organ called the ________________________ breaks down dead red blood cells.
   Where does the hemoglobin go? ________________________________
   Where does the iron go? ________________________________

17. What is the main function of white blood cells? ________________________________

18. Name three places in the body where white blood cells are produced? ______________
   ______________
   ______________
19. What happens to a person’s “white blood cell count” during a bacterial infection somewhere in the body? _________________________________________________________________

Why does the body do this? ________________________________________________
________________________________________________________________________

20. A very high white blood cell count may also indicate a type of cancer called _______________________.

21. When there is damage to a blood vessel, __________________ collect where the damage is. They release chemicals that cause _________________________________________________________________
________________________________________________________________________

22. These are called __________________________

They release __________________________
________________________________________________________________________

They are (larger/smaller) ______________ than other types of blood cells.

23. These are called __________________________

________________________________________________________________________

They contain __________________________
which helps transport oxygen. These are the most numerous type of blood cell.
24. This is an example of a __________________________

Their main function is to __________________________

and kill __________________________

25. Any blood vessels that carry blood **away from** your heart are called ________________

26. Blood vessels which return blood **to** the heart are called __________________________

27. What are **capillaries**? __________________________

28. Which type of blood vessels have thick muscular walls? __________________________

Why do you think these vessels need thick walls? __________________________

What do the muscles in the walls of these vessels do? __________________________

29. Which type of blood vessels get closest to all of your cells? __________________________

30. Which type of blood vessels have the thinnest walls? __________________________

What passes through these walls? __________________________

________________________________________________________________________

31. After your heart pumps blood into the arteries, why doesn’t it go right back into the

heart? __________________________

32. The rhythm of the pumping of your heart can be felt in the arteries which come close to

the surface of your skin. This rhythm is called your __________________________

33. What is meant by heart rate? __________________________

34. What is your resting heart rate (measure it) __________________________

35. How can a doctor or first aid attendant tell when an artery has been severed? ________

________________________________________________________________________
36. Do nutrients and oxygen pass through the walls of your arteries and into your cells? __________
   Explain why or why not. __________________________________________________
   _______________________________________________________________________

37. What type of blood vessels do oxygen and CO₂ easily pass through? _________________

38. The walls of your ________________ are elastic. They stretch when they are full of blood.

39. The picture is a cross section of a blood vessel called ______________________________.
   **Label** the two layers in the diagram.

40. This type of blood vessel is called a
   _______________________________________________________________________

   They have very ________________
   walls, which ________________.
   ______________ & ______________
   can pass through.

41. A blood vein has ________________ layers.
   
   One is very stretchy to allow for expansion.
   
   In the space to the right, draw a diagram showing the cross section of a vein. Label the layers.
   
   **A vein**
42. Do the walls of veins help push blood back to the heart? ________________ Why or why not? ____________________________________________

43. How do the muscles of the body help blood get back to the heart? ________________

___________________________________________________________________

44. What is the purpose of one-way valves in the veins? ________________

___________________________________________________________________

45. Draw a diagram showing a one way valve open and the same valve closed, showing the direction of blood flow in each case. See the pictures on the top of page 176 of SP.

46. After blood comes from the lungs, it is rich in the gas ________________

and is called ________________ blood.

47. Coming from the lungs, blood comes into the (left/right) ________________

side of the heart. From here it is pumped into the large ________________

that go to all the other parts of the body.

48. In the cells of your body, the blood loses ________________ and

becomes ________________ated blood.
49. Deoxygenated blood from your body cells moves through vessels called ______ back to the (left/right) __________________ side of the heart. From here, it is pumped to the ________________, where it picks up oxygen, and again becomes oxygenated blood. Blood from the lungs goes back to the (left/right) __________________ side of the heart, and the cycle starts over.

50. The right side of the heart pumps blood to the (lungs/rest of the body) ________________ The left side of the heart pumps blood to the (lungs/rest of the body) ________________

51. Which do you think needs to have stronger muscles, the left side of the heart or the right side of the heart? __________________________ Explain your answer __________________________________________________________________________________________

52. Fill in the blanks in the following diagram of the circulatory system:

Explain why the “left side” is shown on the right side of the diagram!

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________
53. Your circulatory system transports _______________ energy throughout your body.

54. Why does warming up your feet or hands seem to make your whole body feel warmer? ____________________________________________________________________________

55. The heat energy that gets into the bloodstream comes from the process of _______________ _______________ in your body cells.

56. When the capillaries in a certain area of the body receive a higher volume of blood, the area gets (warmer/cooler) __________________

57. Your body gets rid of excess heat by warming the skin so that the heat can escape into the surroundings. What is another body process that helps get rid of excess heat? __________________________________________________________

58. When the body gets very cold, the capillaries near the outside of the body, especially in the fingers, toes etc. constrict (get smaller) while the blood flow to the inner organs remains at a high volume. Suggest a reason why the body would do this when it gets very cold. __________________________________________________________

59. What happens when a person is suffering from hypothermia? __________________

_________________________________________________________________________________________