Name _____ **Period** _____

AP Biology **Date** _____

RAVEN CHAPTER 44 GUIDED NOTES: CIRCULATION & RESPIRATION

Circulation

1. Why aren't diffusion and active transport sufficient for transport in multicellular animals?

_____

_____

2. Briefly describe circulation in the cnidarians and flatworms

3. Compare the circulatory systems of higher animals.

   a. Open _____

   _____

   Who has one? _____

   b. Closed _____

   _____

   Who has one? _____

4. List and describe the three principal functions of the vertebrate circulatory system.

   a. _____

   _____

   _____

   b. _____

   _____

   _____

   c. _____

   _____

5. Briefly describe the components of the blood.

   a. Plasma _____

   b. Erythrocytes _____

   c. Leukocytes _____

   d. Platelets _____

6. Compare the structure of each vessel. Pay particular attention to structure-function correlations:

   a. Artery _____

   _____

   b. Capillary _____

   _____

   c. Vein _____

   _____

7. How do precapillary sphincters help regulate capillary blood flow, blood pressure, and body temperature?

   _____

   _____

8. What happens to blood pressure and velocity as the blood flows through:

   a. Artery _____

   b. Capillary _____

   c. Vein _____

9. If blood pressure in veins is so low, how does blood return to the heart from the legs?

   _____

   _____

10. Discuss the role of the lymphatic system in returning interstitial blood to the circulatory system. Discuss the role of osmosis in the movement of fluid between capillaries and interstitial fluid

_____

_____

_____

_____

11. What is the adaptive value of the four chambered heart?

_____

_____

12. Answer the following regarding the structure of the human heart.

    a. Which side is oxygen rich _____ ...oxygen poor_____

    b. Which chambers create the blood pressure in the arteries? _____

    c. What causes the heart sounds? _____

    _____

13. How is heart rate regulated? _____

_____

_____

14. Discuss the homeostatic regulation of blood pressure and the role of:

    a. baroreceptor reflex _____

    _____

    b. ADH_____

    _____

    c. aldosterone _____

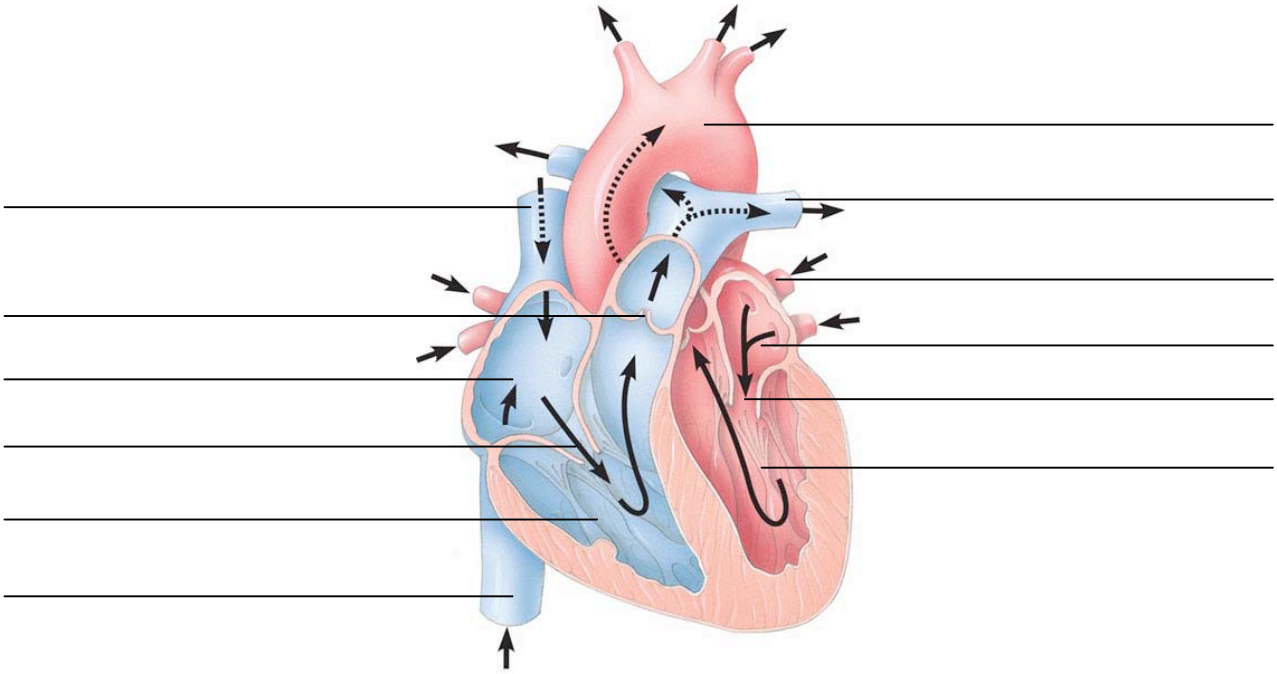
d. atrial natriuretic hormone _____

_____

e. nitric oxide _____

_____

15. Label the diagram of the heart.



16. Describe the types of **<u>cardiovascular diseases</u>** that are leading causes of death in US:

a. Stroke _____

_____

b. Heart attack _____

_____

c. Atherosclerosis _____

_____

d. Arteriosclerosis _____

_____

17. Discuss the role of zymogens in blood clotting. _____

_____

18. Hypothesize why clotting is referred to as a “cascade reaction”.

_____

_____

Gas Exchange

19. Describe the relationship of the respiratory surface to the transport (circulatory) system.

_____

_____

20. Through what process do gases move across the cell membrane?

_____

21. What are two characteristics typical of a respiratory surface?

a. _____

b. _____

22. Why must all animals constantly move either water (for aquatic animals) or air (for terrestrial animals) across their respiratory surface

_____

_____

23. How do partial pressures of gases influence the exchange of gas?

_____

_____

24. Why do terrestrial animals have internal respiratory surfaces?

_____

25. What is countercurrent about the function of a fish's gills?

_____

_____

26. What adaptive value is the countercurrent exchange system of gills?

_____

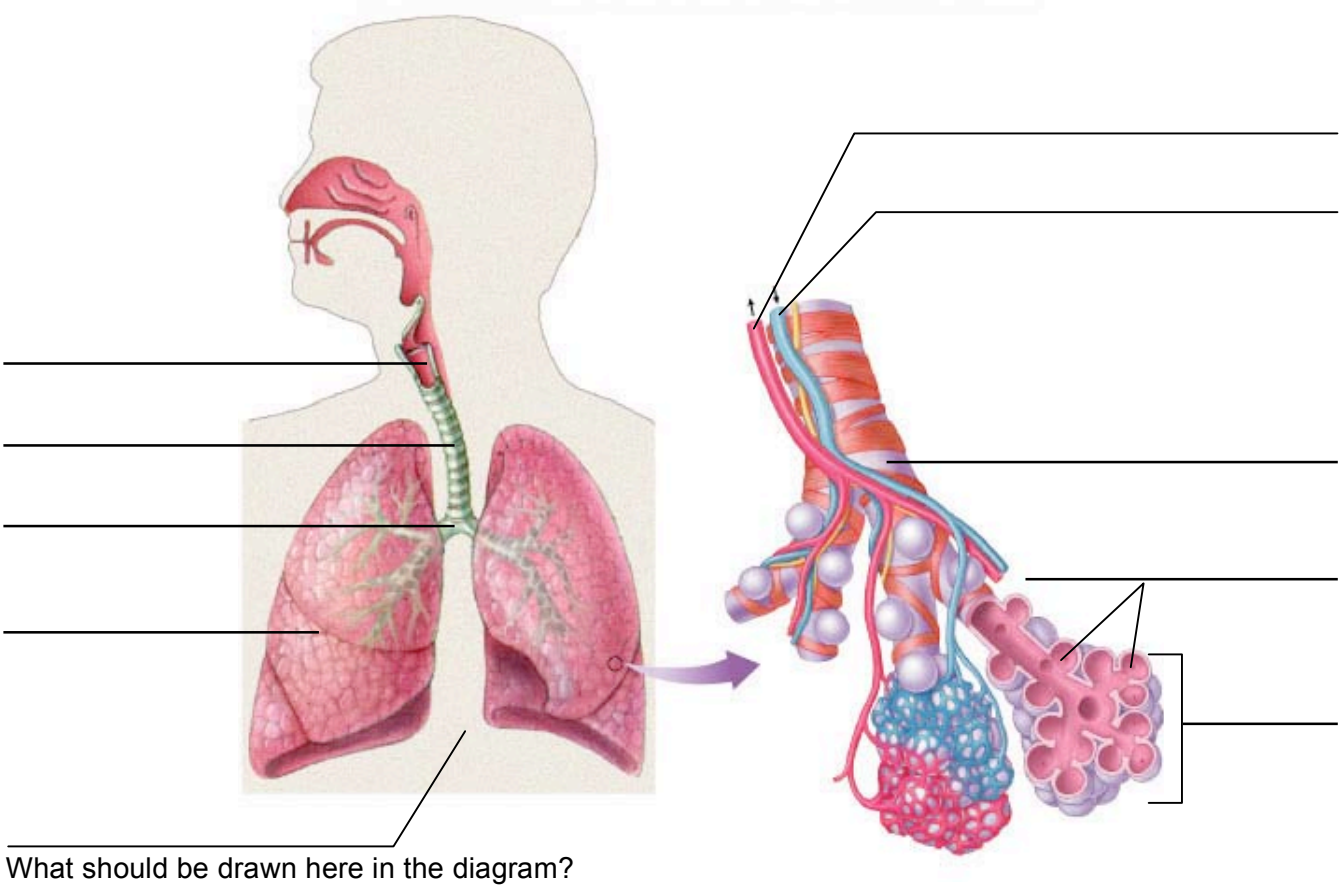
_____

27. List some features that show how tracheal tubes and lungs are adapted for gas exchange?

_____

_____

28. Label the diagram of the human respiratory system.



What should be drawn here in the diagram?

29. What is the role of the alveoli?

_____

_____

30. Describe how breathing is regulated. Include the role of each of the following.

a. medulla _____

b. pH _____

c. carotid & aortic arteries _____

_____

31. Explain the mechanics of human breathing. How does the diaphragm enable breathing?

_____

_____

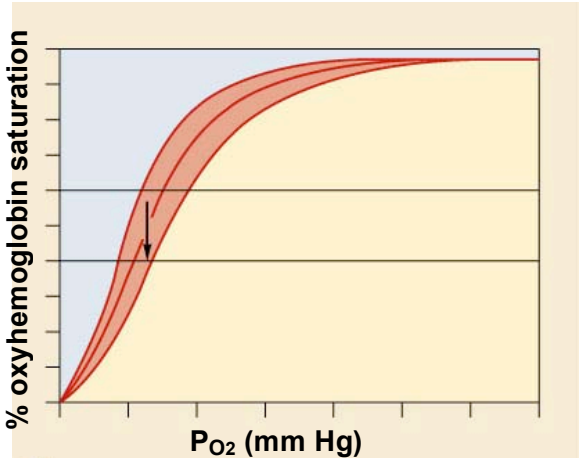
_____

32. What is the adaptive value of hemoglobin?

_____

_____

33. Review the dissociation curves for hemoglobin. Explain what they illustrate.



34. How does lowering pH influence oxygen release from the blood?

_____

_____

35. Why does oxygen leave the hemoglobin when it passes through the resting tissues?

_____

_____

36. How is CO_2 carried in the blood?

_____

_____

37. Outline the reactions showing the path of carbon dioxide produced in body cells, then transported as bicarbonate ion in the plasma, to the carbon dioxide released into the alveoli.

_____

_____

_____

_____