1. __________________ pressure is the force due to fluid pressing against a vessel wall.

OPPOSING PRESSURES:

2. _____________________________ pressure is the pressure of blood in the capillaries against the capillary wall.
   This pressure pushes fluid ____________ capillaries. (into or out of)

3. _____________________________ pressure is the pressure due to interstitial fluid against the capillary wall.
   This pressure pushes fluid ____________ capillaries. (into or out of)

NET HYDROSTATIC PRESSURE

4. Give the equation for net hydrostatic pressure. _________________________________

************************

5. _________________ is the force due to nondiffusible molecules in fluids.

OPPOSING PRESSURES:

6. ____________________________ pressure is due to a large number of plasma proteins.
   This pressure moves water __________ capillaries. (into or out of)

7. _________________________________ pressure is due to only a few plasma proteins.
   This pressure moves water _________ capillaries. (into or out of)

NET COLLOID OSMOTIC PRESSURE

8. Give the equation for net colloid osmotic pressure. _______________________________

************************

HYDROSTATIC PRESSURE – OSMOTIC PRESSURE INTERACTIONS

9. __________________________ pressure is the balance between hydrostatic and osmotic pressures, and is responsible for movement of fluids into or out of capillaries.

10. Give the equation for net filtration pressure_____________________________________

11. If NHP > NCOP, fluids move __________ (into or out of) capillary because ___________ forces dominate.
    This is called ____________________.

12. If NCOP > NHP, fluids move __________ (into or out of) capillary because ___________ forces dominate.
    This is called ____________________.

13. Which hydrostatic pressure is normally higher, and causes filtration? (BHP or IHP) ______

14. Which osmotic pressure is normally higher, and causes reabsorption? (BCOP or ICOP) ____

15. What happens if the capillary fluid and interstitial fluid are isotonic? _________________
16. Which process (filtration or reabsorption) increases interstitial fluid? ________________
   Excess interstitial fluid is called ________________.
   This excess fluid is picked up by ________________________________ and transported
to the __________________ system, and is eventually excreted by the _____________.

17. List some things that will increase blood pressure. _______________________________
   ________________________________________________________________________

18. List some things that will decrease blood pressure._____________________________

CARDIOVASCULAR REFLEXES

19. ________________ are pressure receptors located in the carotid and aortic sinuses.
   ________________________________________________________________________

20. Baroreceptors are _____________ by decreased blood pressure.
    How does this affect these centers in order to increase the blood pressure?
    Cardioinhibitory centers__________________;
    Cardioacceleratory centers______________; ____________ cardiac output.
    Vasomotor centers________________________: ________________ occurs.

21. Baroreceptors are _____________ by increased blood pressure.  Fig 21-14
    How does this affect these centers in order to decrease the blood pressure?
    Cardioinhibitory centers__________________;
    Cardioacceleratory centers______________; ____________ cardiac output.
    Vasomotor centers________________________: ________________ occurs.

22. ________________ are located in the carotid and aortic bodies.  Fig 21-15

23. Chemoreceptors are _________________ by decreased pH and elevated CO₂.
    How does this affect these centers in order to increase pH and O₂, and decrease CO₂?
    Cardioinhibitory centers__________________;
    Cardioacceleratory centers______________; ____________ cardiac output & BP.
    Vasomotor centers________________________: ________________ occurs and ↑ CO & BP.

24. How does hyperventilation affect CO₂? _______________________________________

25. How does hypoventilation affect CO₂? ________________________________________

26. What is the body's short term response to decreased blood pressure and blood volume?
    ________________________________________________________________________
27. What is the body's long term response to decreased blood pressure and blood volume?

Fig 21-15a

____________________________________________________________________
____________________________________________________________________
____________________________________________________________________

28. What is the body's response to increased blood pressure and blood volume?

Fig 21-15b

____________________________________________________________________
____________________________________________________________________
____________________________________________________________________

DISTRIBUTION OF BLOOD DURING EXERCISE

29. What is the effect of strenuous exercise on blood distribution to these organs?

Skeletal muscles __________________
Heart__________________________
Brain__________________________
Kidney_________________________

CARDIOVASCULAR RESPONSE TO HEMORRHAGING AND BLOOD LOSS

30. What is the body's short term response to decreased blood pressure and blood volume?

Fig 21-17

____________________________________________________________________
____________________________________________________________________
____________________________________________________________________

31. What is the body's long term response to decreased blood pressure and blood volume?

Fig 21-17
1. hydrostatic
2. blood hydrostatic; out of
3. interstitial fluid hydrostatic; into
4. NHP = BHP - IHP
5. osmotic
6. blood colloid osmotic; into
7. interstitial fluid colloid osmotic; into
8. NCOP = BCOP - ICOP
9. Net filtration
10. NFP = NHP - NCOP
11. out of; hydrostatic; filtration
12. into; osmotic; reabsorption
13. BHP
14. BCOP
15. no net water movement
16. filtration; edema; lymphatic capillaries; venous system; kidneys
17. epinephrine, norepinephrine, renin-angiotensin system, erythropoietin, aldosterone
18. stress, trauma, extreme heat, ANP, BNP
19. baroreceptors; aortic sinus baroreceptors; carotid sinus baroreceptors
20. inhibited; inhibited; stimulated; increased; stimulated; vasoconstriction
21. stimulated; stimulated; inhibited; decreased; inhibited; vasodilation
22. chemoreceptors
23. stimulated; inhibited; stimulated; increased; stimulated; vasoconstriction; increases
24. increases CO₂ because not getting enough O₂
25. retain CO₂, pH decreases; may pass out; respiratory centers increase breathing rate
26. sympathetic nervous system increases cardiac output and vasoconstriction
27. kidney activates renin-angiotensin system which stimulates cardiac output, aldosterone and ADH secretion, and increases thirst; kidney produces erythropoietin which increases RBCs → blood pressure and blood volume increase
28. ANP and BNP are released by the heart which increase Na and water loss in urine, decreases thirst, stops production of ADH, aldosterone, epinephrine and norepinephrine, causes vasodilation → blood pressure and blood volume decreased
29. skeletal muscles (increased); heart (increased); brain (stays same); kidney (decreased)
30. baroreceptors and chemoreceptors stimulate cardiovascular centers; higher brain centers stimulate cardiovascular centers and sympathetic nervous system; also short term effects of ADH, angiotensin II, epinephrine and norepinephrine → increased cardiac output and vasoconstriction
31. hormonal control via ADH, angiotensin II, aldosterone and EPO → increased blood volume → increased cardiac output