UNIT 8 - BLOOD / LYMPHATIC / CARDIOVASCULAR SYSTEMS

WORKSHEET - The Blood

Name: James Collins  Period: 5

1. List and describe the four components of blood.
   a. Plasma
   b. Erythrocytes
   c. Leukocytes
   d. Thrombocytes

2. In an adult, where are blood cells made?  Flat bones. Red blood marrow

3. Describe the appearance of a mature erythrocyte and why this occurs.
   Biconcave disks. Four places for oxygen to bind to.
   Flexible to squeeze through capillaries.
   Have no mitochondria or other organelles

4. What two parts make up a hemoglobin molecule?
   b. Globes --- protein portion

5. How are leukocytes classified?
   By their nucleus. No hemoglobin. Granulocytes are lobed. Agranulocytosis have no lobes.

6. Plasma or Serum. Which one is whole blood minus cells and the clotting elements such as fibrinogen?  Plasma

7. What term refers to the stoppage of bleeding?
   Hemostasis

8. List and describe the three steps associated with blood clotting.
   a. Vascular spasm:
   b. Platelet Plug Formation: platelets go to the site, fibrinogen helps form a clot.
   c. Coagulation Clotting

9. What is the basic event in the creation of a blood clot?
10. A **Thrombus** is a stationary blood clot while a **Embolus** is a traveling clot.

11. The four blood types in humans are determined by the presence or absence of **Antigons** on the surface of the erythrocytes. **Agglutinogens** is another term for antigens and **Aglutanins** is another term for antibodies.

12. Complete the following chart on blood types.

<table>
<thead>
<tr>
<th>Blood Type</th>
<th>Antigen</th>
<th>Antibody</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type A</td>
<td>A</td>
<td>Anti B</td>
</tr>
<tr>
<td>Type B</td>
<td>B</td>
<td>Anti A</td>
</tr>
<tr>
<td>Type AB</td>
<td>AB</td>
<td>Neither anti A or B</td>
</tr>
<tr>
<td>Type O</td>
<td>None</td>
<td>Both anti A and B</td>
</tr>
</tbody>
</table>

13. What might be indicated by an excess of white blood cells in the blood?
   **Infection**

14. What problems might you have if you had no platelets in your blood?
   **Bleed out easily, no blood clotting**

5. As you increase altitude, there is less oxygen in the air. How might this affect your blood?
   **By making your body making more red blood cells.**

16. How can blood clotting be bad for you?
   **Thrombosis which goes to embolus.**

17. What does Rh positive mean?
   **Additional Antigone on the surface of their blood.**

18. Type AB blood has often been called the universal recipient meaning a person with this blood type could receive a transfusion of any other blood type. Explain why this phrase is misleading.
   **Because there are many more antigens than just A, B, or +**
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ACTIVITY - Cardiovascular Worksheet

Name ____________________________________  Period __________

1. Name six things transported by the cardiovascular system.
   a. Blood    d. Nutrients
   b. Oxygen   e. Waste
   c. Co₂      f. Hormones & enzymes

2. What chambers of the heart receive blood from veins?
   Atria ____________________________

3. What chambers of the heart are known as pumping chambers?
   ____________________________

4. What is the name of the blood vessel that brings venous blood from the head, neck, and arms into the right atrium?
   Superior vena cava ____________________________

5. What is the name of the blood vessel that bring venous blood from the abdomen and legs into the right atrium?
   Inferior vena cava ____________________________

6. What is the name of the blood vessels that take deoxygenated blood from the right ventricle to the lungs?
   Pulmonary arteries ____________________________

7. What is the name of the blood vessels that take oxygenated blood from the lungs to the left atrium? Pulmonary veins ____________________________

8. The largest artery in the body extends from the left ventricle and is called the Aorta ____________________________. The first branch feeds the myocardium with blood and are the Coronary arteries _____________. The next branch Brachiocephalic ____________________________ takes blood into the right arm and the right side of the head. The next branch, Left subclavian ________________, supplies blood to the left arm. The next branch, Left common carotid artery ____________, supplies blood to the left side of the head.

9. The valves are formed from the most inner heart layer or the Endocardium ____________.

10. The valve between the right atrium and the right ventricle is known as the Tricuspid ____________________________. The valve between the left atrium and the left ventricle is known as the Bicuspid -- mitral ____________________________.
11. The valves between the ventricles and blood vessels are known as the **Semi-lunar** valves.

12. Complete flow of blood through the heart. Blood entering the **Right atrium** flows through the tricuspid valve and into the **right ventricle**. From there, the deoxygenated blood flows past the pulmonary semilunar valve and into the **pulmonary artery**, then into the **lungs**.

Oxygenated blood leaves the lungs through the **pulmonary vein** and enters the **left atrium** of the heart. Blood continues to flow through the **mitral valve** and into the **left ventricle**. From there, blood will flow past the aortic semilunar valve and into the **aorta**.

13. The body’s entire blood supply is circulated every **1** per minute.

14. a. What is the pacemaker of the heart? **S.A. node**

   b. What is the back-up pacemaker of the heart? **A.V. node**

15. List and describe the heart’s cardiac conduction system.
   a. S.A. node
   b. Atria
   c. A.V. node
   d. Ventricles
   e. Returns

16. a. What is systole? **Pressure of ventricle contraction**

   b. What is diastole? **'Relaxation'**

17. a. What causes the lub sound? **Systole ventricle**

   b. What causes the dub sound? **Diastole Atria**

18. a. What is the stroke volume? **________________________**

   b. What is the heart rate? **________________________**

19. What is cardiac output? **________________________**
20. a. What vessel carries blood away from the heart?
   
   b. What vessel carries blood to the heart?
   
   c. What vessel is responsible for gas and nutrient exchange with each of the body’s cells?

21. List and describe each of the layers of the arteries and the veins.
   
   a.______________________________________________________________
      _________________________________
   
   b.______________________________________________________________
      _________________________________
   
   c.______________________________________________________________
      _________________________________

22. What is a pulse? ____________________________

23. Identify the location of the following pulse points:
   
   a. What pulse is felt on the upper surface of the foot? __________
   
   b. What pulse is felt in the antecubital space? ________________
   
   c. What pulse is felt in the groin? ____________________________
   
   d. What pulse is found in the neck? ____________________________
   
   e. What pulse is found on the wrist side of the arm? __________

24. Answer the following questions on blood pressure.
   
   a. What is the first measurement of blood pressure? ______________
   
   b. What does it measure? ____________________________
   
   c. What is the second measurement of blood pressure? ______________
   
   d. What does it measure? ____________________________

25. a. What circulation route takes deoxygenated blood to the lungs where it can pick up oxygen?
   
   b. What circulation route takes oxygenated blood through the body?
UNIT 8 - BLOOD / LYMPHATIC / CARDIOVASCULAR SYSTEMS
WORKSHEET – Go with the Blood Flow - Blood Vessel

Name ___________________________________________   Period ______

Using schematic drawings of the heart, arteries, and veins of the body, complete the following:

1. Trace a drop of blood from the temporal lobe of the brain to the right atrium.

2. Trace a drop of blood from the lungs to the right great toe.

3. Trace a drop of blood from the right atrium to the kidney.

4. Trace a drop of blood from the superior vena cava to the left thumb.

5. Trace a drop of blood from the lungs to the diaphragm.
UNIT 8 - BLOOD / LYMPHATIC / CARDIOVASCULAR SYSTEMS

ACTIVITY - Lymphatic System Worksheet

Name ____________________________________________ Period ________

1. Identify the six structures most commonly associated with the lymphatic system and
describe their location and role in preventing illness and/or disease.

<table>
<thead>
<tr>
<th>Organ/Structure</th>
<th>Location</th>
<th>Role/Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. Lymph node</td>
<td>Everywhere: armpits &amp; groin</td>
<td>Remove foreign material</td>
</tr>
<tr>
<td>B. Spleen</td>
<td>LUQ near the pancreas</td>
<td>Blood filter &amp; reservoir</td>
</tr>
<tr>
<td>C. Thymus gland</td>
<td>Thoracic cavity: above heart</td>
<td>Where t-cells mature</td>
</tr>
<tr>
<td>D. Tonsils</td>
<td>Mouth &amp; throat</td>
<td>Pathogen destroyer</td>
</tr>
<tr>
<td>E. Red bone marrow</td>
<td>Spongy bone tissue</td>
<td>B-cell mature station</td>
</tr>
<tr>
<td>F. Peyer's patches</td>
<td>Walls of small intestine</td>
<td>Kill stuff trying to escape the small intestine.</td>
</tr>
</tbody>
</table>

Identify the most appropriate answer for the following questions pertaining to the
Lymphatic System.

2. The lymphatic network begins with microscopic tubes known as:
   a. Lymph vessels
   b. **Lymphatic capillaries**
   c. Protein filaments
   d. Lymphatic ducts

3. The lymphatic capillaries are found:
   a. **Among vascular capillary beds**
   b. In the brain
   c. In the spinal cord
   d. In bone tissue

4. What prevents lymph from leaking into extracellular spaces?
   a. Valves
   b. Overlapping endothelial cells
   c. Low pressure in the capillaries
   d. Gaps between the endothelial cells
5. Which of the following is most like lymphatic vessels in structure:
   a. Capillaries
   b. Veins
   c. Venules
   d. Collecting ducts

6. Which of the following is NOT true of lymph nodes?
   a. They gradually increase in size and eventually merge into collecting ducts
   b. They are small
   c. They are generally oval in shape
   d. They receive and pass on lymph by way of lymphatic vessels

7. Numerous lymphatic vessels merge to form:
   a. Lymphatic capillaries
   b. Lymphatic nodes
   c. Collecting ducts
   d. Peyer’s patches

8. The main collecting vessel for the lymphatic network draining lymph from the left side of the body is the:
   a. Thoracic duct
   b. Right lymphatic duct
   c. Squamous lymphatic duct
   d. Cranial duct

9. Which lymphatic duct empties into the left subclavian vein?
   a. Thoracic duct
   b. Right lymphatic duct
   c. Cerebral aqueduct
   d. Choroid plexus

10. Which of the following statements is FALSE concerning movement of lymph through the body?
    a. Pressure gradients are essential in the movement of lymph
    b. The accumulation of protein in interstitial fluid affects lymph movement
    c. Lifting weights affects lymph movement
    d. Blood pressure is a major factor in the movement of lymph
11. Identify and describe three mechanisms of movement of lymph through the lymphatic vessels.

   A. Gravity
   B. Natural skeletal muscle movement
   C. Blood gradient and pressure

12. Arrange the following lymphatic vessels in sequences from smallest to largest or most distal to most proximal within the lymphatic system.
   Collecting ducts      Lymphatic capillaries      Lymphatic vessels

13. Define Antigens
   Any foreign substance that stimulates an immune response in the body.

14. Define Antibodies
   Proteins that bind to foreign objects in the body.
Aids- takes out t-cells, t-cells can't respond to other diseases, other diseases kill you. No cure. Abstinence is best.

Measles-- same symptoms as flu, virus highly contagious.

Mumps -- inflammation of salivary glands, contagious, can cause sterility.

Rubella -- short term, no rashes for adults, non fatal

Tetanus -- bacteria in soil, lockjaw and muscle paralysis
Structure of the Heart

Label the components of the heart

- Superior vena cava (h)
- Pulmonary arteries (k)
- Right atrium (a)
- Tricuspid valve (e)
- Inferior vena cava (i)
- Right ventricle (b)
- Aorta (g)
- Left pulmonary artery (j)
- Pulmonary veins (c)
- Bicuspid (f)
- Left ventricle (d)
- Septum (k)
Pathway of Blood through the 4-Chambered Heart

Deoxygenated venous blood from enters the Right atrium through the superior and inferior Vena cava. The blood flows through the Tricuspid valve and into the Right ventrical. From the Right ventrical it passes through the pulmonary Semi lunar valve into the pulmonary trunk, then into the pulmonary Arteries, which carry the blood to the Lungs.

In the lungs, the blood releases carbon dioxide and picks up a new supply of oxygen: then the Pulmonary veins carry the blood to the Left atrium.

From the Left atrium, it flows through the Bicuspid (mitral) valve into the Left ventrical and then through the aortic valve and into the ascending Aorta. Oxygen-rich blood flowing through the Aorta is distributed to all parts of the body through systemic circulation.
Pathway of Blood

Arteries carry away from the heart
Veins carry toward the heart
Blood -- Biconcave disks
Hemoglobin is the main protein
4 sites for binding oxygen
Carbon monoxide bonds stronger
Normal white blood cell count 4,500 -- 10,000 per micro liter
Anemia is when not enough red blood cells are around
Platelets are for clotting.
Cyanosis -- deoxy hemoglobin
Puss -- white blood cells and bacterial waste, fragments
Diapedesis -- swelling, walls become thin and hunters squeeze out and kill bacteria
Erythropoietin -- tells body to make more blood
Edema -- tissues swell with fluid
Clotting factors -- vitamin k, fibrinogen, prothrombin, calcium
Four blood types -- a, ab, o
7000 liter of blood pumped in a day
Pulmonary -- brings blood in
Systemic -- oxygenated
Tricuspid, pulmonic semi lunar
Bicuspid
Angina pectoris -- heart pain
SA node -- top of the right atrium
Bradycardia -- slow heart
tachy cardia -- fast heart
Arteries and oxygenated, go away from heart, thicker walls
Veins go to the heart, one way valves,
Pulses are taken from corated artery, radial, temple, femoral, pedal, brachial
Fibrillation -- when the heart spaces out
Shock to reset
Arthro-- blood vessels get hard over time
Spigominominer -- pressure gage
Pathogen -- anything that causes disease
Lymphatic system -- filtering,
Subclavian is where lymph is collected
Largest lymph node is the spleen
Innate, attacks everything
Phago cells -- eats anything, monocytes, nurtophylls, macrocytes
Cytotoxic cells kill other cells
First Barrie's of the body -- skin, sweat, tears, saliva, stomach acid
Fever used to kill bacteria
Colostrum -- immune system from first milk
Most lymph nodes around armpit, groin, stem cells, can turn into any typed of cell
Memory cells, MADD from t and B cells
AIDS damages T cells, so the body dies from some other disease
HIV found in blood, semen, breast milk, vaginal fluids
Thymus makes T cells, B cells made in bone marrow but mature in thymus
Baby's thymus is huge
Normally 5 liters of blood in an average human
Universal donor is O- and universal receiver is ab+
PQRS, beginning of electrical compression across nodes, t resends it.