Blood Basics Assignment

Name _______________________

1. What makes up the blood in our bodies?
   a. __________ __________ __________ (erythrocytes) – The most abundant cells in our blood; they are produced in the bone marrow and contain a protein called hemoglobin that carries oxygen to our cells.
   b. __________ __________ __________ (leukocytes) – They are part of the immune system and destroy pathogens.
   c. __________ – The yellowish liquid portion of blood that contains electrolytes, nutrients and vitamins, hormones, clotting factors, and proteins such as antibodies to fight infection.
   d. __________ (thrombocytes) – The clotting factors that are carried in the plasma; they clot together in a process called coagulation to seal a wound and prevent a loss of blood.

2. The average adult has about __________ liters of blood inside of their body, which makes up 7-8% of their body weight.

3. This red liquid has living __________ that carry oxygen and __________ that carries nutrients to all parts of the body. These carry carbon dioxide and other waste products back to the lungs, kidneys and liver for disposal. It also fights against __________ and helps heal __________.

4. There are about __________ red blood cells in two to three drops of blood. For every __________ red blood cells, there are about ______ platelets and ______ white blood cells.

5. Identify each part of blood based on the descriptions. Use P for plasma, R for red blood cell, W for white blood cell, and PLT for platelet.
   a. ______ A mixture of water, sugar, fat, protein, and potassium and calcium salts.
   b. ______ Contains a special protein called hemoglobin, which carries oxygen & causes these cells to be red.
   c. ______ More than 92% of this substance is water.
   d. ______ Produce proteins called antibodies that help our bodies fight infection
   e. ______ Contains chemicals that helps blood form clots
   f. ______ Fragments of cells that gather at a cut or other wound and stick to the edges
   g. ______ Makes up 55% of the blood
   h. ______ Makes up 45% of the blood
   i. ______ Makes up 0.1% of the blood
   j. ______ Makes up 0.17% of the blood

6. Your blood type is established before you are __________, by specific __________ inherited from your parents.

7. These two genes - one gene from your __________ and one from your __________ - determine your blood type by causing proteins called __________ to exist on the surface of all of your red blood cells.

8. There are three alleles or genes for blood type: __________, __________, and __________.

9. Give all of the possible genotypes for each of the four blood types: Type A = ______ ______
   Type B = ______ ______ Type AB = ______ Type O = ______

10. How common are the four blood types? A = ____ % B = ____ % AB = ____ % O= ____ %

11. In order for a transfusion to work, the agglutinogens on the surface of the __________ blood cells must match the agglutinogens on the surface of the __________ blood cells. This means that the blood type of the __________ and the blood type of the person receiving the transfusion must be __________.
12. If the blood types don't match, special antibodies in the recipient's blood, called ______________, will attack the donated blood causing blood clots to form in a reaction called ________________.

13. What blood type is known as the "Universal Donor"? __________

14. What blood type is known as the "Universal Recipient"? __________

15. A person with Rh + blood may receive blood that is ___ or ____, while a person with Rh - blood can only receive _____ blood.

16. What animal helped scientists discover Rh proteins in blood? ____________________ ___________________

17. If someone has the Rh protein, they are said to have Rh ________________ blood. If someone does not have this protein, they have Rh ________________ blood.

18. Complete the chart below based on your understanding of how blood types work:

<table>
<thead>
<tr>
<th>Patient</th>
<th>Blood Type</th>
<th>Agglutinogens on Red Blood Cells</th>
<th>Antibodies Carried in Blood</th>
<th>Blood they can be Transfused with</th>
</tr>
</thead>
<tbody>
<tr>
<td>#1 with a GSW.</td>
<td>Type A+</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>#2 with a Stab Wound</td>
<td>Type B-</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>#3 with Blunt Force Trauma</td>
<td>Type O+</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>#4 with Internal Bleeding</td>
<td>Type AB-</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>#5 with Lost Limb</td>
<td>Type A-</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>#6 with Multiple Injuries</td>
<td>Type AB+</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**How can blood be used as evidence in a crime?**

19. Blood samples – Can be analyzed to determine ___________ and ____________, which can be matched to possible suspects.

20. Blood droplets – Can be analyzed to give clues to the location of a ________________, movement of a ________________, and type of ________________.

21. Blood spatter – Can be analyzed to determine ____________ that give investigators clues to how a crime might have happened.