Forensic Science: Blood Basics Notes

1. What makes up the blood in our bodies?
   - ____________ ____________ ____________ (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.
   - ____________ ____________ ____________ (leukocytes) – They are part of the immune system and destroy pathogens.
   - ____________ – The yellowish liquid portion of blood that contains electrolytes, nutrients, vitamins, hormones, clotting factors, and proteins such as antibodies to fight infection.
   - ____________ (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. Blood Facts
   A. The average adult has about ____________ liters of blood inside of their body, which makes up 7-8% of their body weight.
   B. This red liquid is living ____________ that carries oxygen and nutrients to all parts of the body, and carries carbon dioxide and other waste products back to the lungs, kidneys, and liver for disposal. It fights against ____________ and helps heal ____________.
   C. There are about one ____________ red blood cells in two to three drops of blood. For every _______ red blood cells, there are about _______ platelets and _______ white cell.

3. Genetics of Blood
   Your blood type is established before you are ____________, by specific ____________ inherited from your parents. 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.

4. Blood Types
   A. There are three alleles or genes for blood type: ___, ___, and ___.
   B. What are the four types of blood? Give the genotypes for each.
      Type A = ____  ____      Type B = ____  ____      Type AB = ____      Type O = ____

5. How common are the four blood types?
   A = _____ %   B = _____ %   AB = _____ %   O = _____ %
6. Blood Transfusions
A. What blood type is known as the "Universal Donor"? __________
B. What blood type is known as the "Universal Recipient"? _________
C. Complete the diagram using the class notes.
D. Complete this statement: A person with Rh + blood may receive blood that is ____ or _____. while a person with Rh - blood can only receive _____ blood.

7. Rh (Rhesus) Factors
What animal helped scientists discover Rh proteins in blood? ____________________
If someone has the Rh protein, they are said to have Rh ________________ blood. If someone does not have this protein, they have Rh ________________ blood.

8. How can blood be used as evidence in a crime?
• Blood samples – Can be analyzed to determine __________ __________ and __________, which can be matched to possible suspects.
• Blood droplets – Can be analyzed to give clues to the location of a __________, movement of a __________, and type of __________.
• Blood spatter – Can be analyzed to determine __________ that give investigators clues to how a crime might have happened.