Forensic Science: Blood Basics Notes

Name _____

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 and 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= _____ %

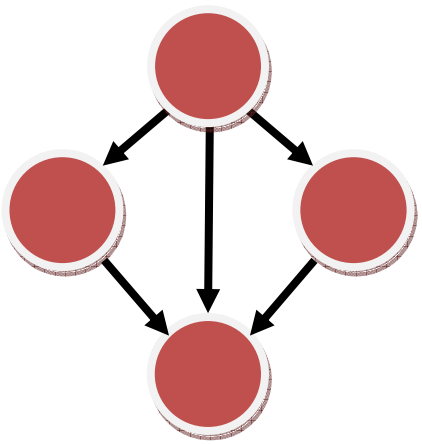
6. Blood Transfusions

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.

9. Online Activity: Blood Typing Game

Go to the Forensic Science page of the Kid Zone at http://sciencespot.net/ and click the link for the Blood Typing Game. Use your notes and what you learned about blood transfusions to complete the game.

Directions:
1 - Drag the syringe to the patient's arm (near the elbow) to draw blood and then hold it over each test tube. Use the reactions to determine the blood type.
2 - Decide which bags of blood the patient can receive and then drag the bags of blood to the pole to give it to the patient.

Patient #1 –Man with purple hair

NOTE: A Rh + should be written as A+.

What was his blood type? _____

Which bags of blood did you give to him? _____ _____

Patient #2 – Older man with white hair

What was his blood type? _____

Which bag of blood did you give to him? _____

Patient #3 – Young lady with red hair

What was her blood type? _____

Which bags of blood did you give to her? _____ _____ _____ _____