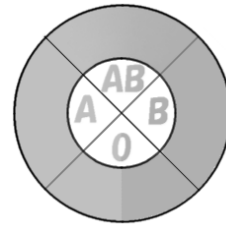


NAME: _____



Blood Type

Background Information: People can have one of four types of blood: A, B, AB, or O. A blood type is based on the presence or absence of two proteins (A, B) on the surface of the red blood cells. Because there are two proteins are involved, there are four possible combinations or blood types (ABO groups):

- Type A - Only the A protein is present.
- Type B - Only the B protein is present.
- Type AB – Both the A and B proteins are present.
- Type O - Neither protein is present

In addition to the A and B proteins, there is another protein involved called the Rh factor. The Rh factor is either present (+) or absent (-). So, blood types are described as the type and Rh factor (such as O+, A+, AB-).

When someone takes the blood of another person (during surgery, or after an accident) it is called a **transfusion**.

If two different blood types are mixed together during a transfusion, the blood cells may begin to clump together in the blood vessels, possibly causing death. Therefore, it is important that blood types be matched before blood transfusions take place.

Problem: To determine which blood types can be mixed during transfusions.

Materials:

5 clear cups or beakers	Water	Red food coloring
Blue food coloring		

Procedure:

1. Label the beakers:
 - Beaker 1- TYPE A
 - Beaker 2- TYPE B
 - Beaker 3- TYPE AB

- Beaker 4- TYPE O
 - Beaker 5- PATIENT
2. Fill beakers 1 – 4 3/4 full of water.
 3. Add 2 drops of red food coloring to beaker 1
 4. Add 2 drops of blue food coloring to beaker 2
 5. Add 1 drop of red food coloring and 1 drop of blue food coloring to beaker 3 (this will make the water purple.)
 6. Leave beaker 4 alone
 7. To determine which transfusions are safe and which are not, think of blood types as different colors. *If a color can receive another color without a color change, it is a **safe** transfusion. If a color changes when you add the other color to it, it is an **unsafe** transfusion.* Make sure to look for a color **change**, not just the color getting lighter or darker.
 8. Pour a small amount of water from beaker 1 into the **patient beaker**. The “patient” now has “Type A blood”.
 9. Add some more color from beaker 1. The “patient” is now “receiving a transfusion of blood Type A.”
 10. Record your observations as “Safe” or “Unsafe” to mix the types of blood.
 11. Rinse out the patient beaker.
 12. Pour a small amount of beaker 1 into the patient cup. The “patient”, once again, has Type A blood.
 13. Pour a small amount water from the “Type B” beaker.
 14. Record your observations.
 15. Rinse out the patient beaker.
 16. Repeat the steps for all combinations: A:A, A:B, A:AB, A:O, B:B, B:AB, B:O, AB:AB, AB:O, O:O

Data:

Safety of blood transfusions				
Blood Type	Donor Type A	Donor Type B	Donor Type AB	Donor Type O
Patient Type A				
Patient Type B				
Patient Type AB				
Patient Type O				

Data Analysis:

1. What blood types can Type A blood:
 - a. Receive? _____
 - b. Donate to? _____
2. What blood types can Type B blood:
 - a. Receive? _____
 - b. Donate to? _____
3. What blood types can Type O blood:
 - a. Receive? _____
 - b. Donate to? _____
4. What blood types can Type AB blood:
 - a. Receive? _____
 - b. Donate to? _____
5. Which blood type can give to ALL other blood types and is known as the **UNIVERSAL DONOR**? _____
6. Which blood type can receive blood from all other blood types and is known as the **UNIVERSAL RECIPIENT**? _____
7. What are the 4 parts of blood?

8. Which of these 4 parts determine a person's blood type?
