

Name: Answers!

Date: _____

Blood Components and Blood types #2

Use the following legend to represent the antigens present on the red blood cells:

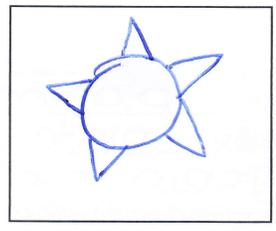
A antigen


B antigen

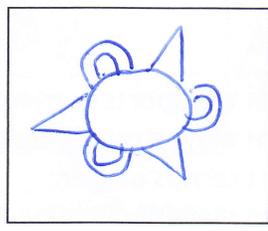

Rh antigen


1. Using the above symbols, represent the following:

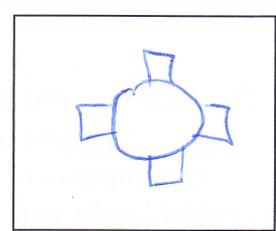
a) A red blood cell belonging to the group B-



b) A red blood cell belonging to group AB-

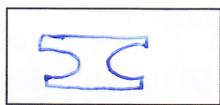


c) A red blood cell belonging to O+



2. Draw symbols that could represent antibodies for the three symbols representing antigens above:

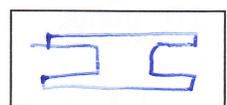
Anti-A:



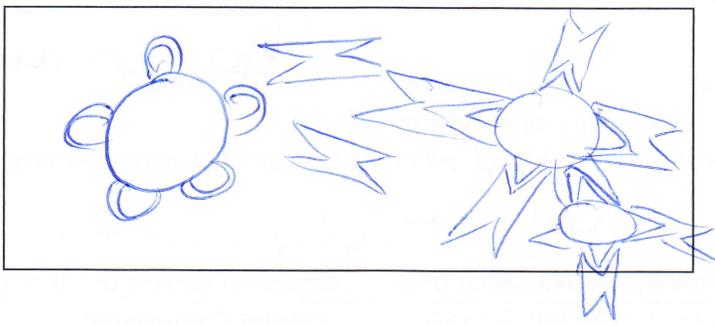
Anti-B:



Anti-Rh:



3. Models help us predict the behavior of matter. Draw what would happen if a person with A- blood type would receive blood from a person with B- blood:



4. What are the four blood types compatible with B+?

B+

B-

O+

O-

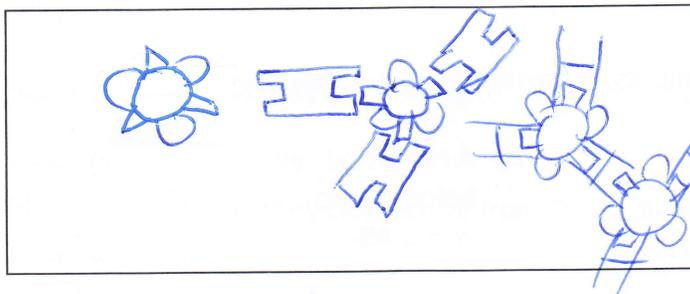
5. What blood type can we consider is the "Universal Donor"? Explain.

O⁻ no antigens so no antibodies against it.

6. What blood type can we consider the "Universal Recipient"? Explain.

AB⁺ - all antigens so no antibodies.

7. What would happen if someone with AB- blood type would receive blood from someone with A+ blood type?



8. a) Component of blood that transports nutrients and waste: plasma

b) Component of blood that plays a role in coagulation (scabs): platelets

c) Component of blood that carries oxygen: hemoglobin (rbc)

d) Component of blood that plays a role in body's defense against pathogens:

wbc

9. What antibodies are present in people who are O+? A + B

10. Donor	Recipient	Yes or No?	Reason
A+	AB-	<u>NO</u>	<u>RH antibodies</u>
O+	A-	<u>NO</u>	<u>RH + antibodies</u>
B-	O+	<u>NO</u>	<u>B antibodies</u>
A-	AB+	<u>yes</u>	<u>∅ antibodies (universal recipient)</u>
AB-	B+	<u>NO</u>	<u>A antibodies</u>

11. What is the protein in red blood cells that transports oxygen?

hemoglobin

12. In the table below, specify which blood component carries out the function described:

Function	Blood Component
Defends the body	<u>wbc</u>
Transports oxygen	<u>rbc</u>
Makes blood fluid and transports wastes, hormones and waste products	<u>plasma</u>
Helps in the blood clotting process	<u>platelets</u>

13. Fill in the chart (try not to use your notes for this).

	Donate	Receive
A+	A ⁺ AB ⁺	A ⁺ A ⁻ O ⁺ O ⁻
B+	B ⁺ AB ⁺	B ⁺ B ⁻ O ⁺ O ⁻
AB+	AB ⁺	O ⁺ O ⁻ A ⁺ A ⁻ B ⁺ B ⁻ AB ⁺ AB ⁻
O+	AB ⁺ O ⁺ A ⁺ B ⁺	O ⁺ O ⁻
A-	A ⁻ A ⁺ AB ⁻ AB ⁺	O ⁻ A ⁻
B-	B ⁻ B ⁺ AB ⁻ AB ⁺	B ⁻ O ⁻
AB-	AB ⁻ AB ⁺	A ⁻ B ⁻ AB ⁻ O ⁻
O-	ALL	O ⁻

14. What are the three types of antigens that exist? What are the three types of antibodies a person may produce? A B O Anti-A Anti-B Anti Rh

15. There are 4 sisters in the Ippolito family. Pina is AB+, Carmy is O+, Rosie is B+ and Antonella is B+. Which statement is correct about blood donations?

- a) Pina can give blood to Antonella and Rosie but not to Carmy
- b) Antonella and Rosie can give blood to Carmy and Pina
- c) Carmy can accept blood from all the other members in the family
- d) Carmy can donate blood to all the other members in the family

16. Cathy has had a serious car accident and needs blood. The doctor wants someone in her family to donate blood to her. If Cathy is A+, use the following information to determine who she can receive blood from.

Mother: A+ ✓ Brother: AB+ Sister: O+ ✓

- a) Her mother
- b) Her mother, brother and sister
- c) Her mother and sister
- d) All of them

17. Explain what occurs when an antigen (foreign substance enters our body.)

clotting - agglutination - antibodies surround foreign substance

18. Explain what a blood antigen is, if everyone must have it and how a person gets it.

protein on surface of rbc, hereditary, passed by parents
O- blood has no antigen

19. Why can a person who is B+ not give to a person who is B- but, the B- can give to the B+ person?

The person with B- has anti Rh so the + blood would be foreign

20. Why is O- the universal donor and AB+ the universal recipient?

no antigens so no antibodies against it
all antigens + no antibodies

21. Three people test their blood type in a blood typing lab. What is the blood type for each person?

Person 1

Anti A Anti B Rh
● 0 ●

Person 1 A⁺

Person 2

Anti A Anti B Rh
0 ● 0

Person 2 B⁻

Person 3

Anti A Anti B Rh
● ● ●

Person 3 AB⁺

22. What is occurring in number 21 that allows you to determine what the person's blood type is?

agglutination

23. What is a person's blood type if they can donate to A⁺ and AB⁺ but they can receive from O⁻, O⁺, A⁺ and A⁻? A⁺

24. What is a person's blood type if they can receive from O⁻, A⁻, B⁻ and AB⁻ but, they can donate to AB⁺ and AB⁻? AB⁻

25. What is a person's blood type if they can receive from B⁻ and O⁻ but, can donate to AB⁻, AB⁺, B⁻, B⁺? B⁻

26. If a person can donate blood to you, can you necessarily donate blood back?

NO - it is possible that you have antigens that they have antibodies for

27. Even though O⁻ people are not the lowest percentage of the population why is it more important for them to donate blood? Because they are universal donors + in an emergency the most used blood type.

28. The antigens present at the surface of the red blood cells determine the blood type of a person. With the ABO and Rhesus systems, what are the eight possible blood types?

A⁺ A⁻ B⁺ B⁻ AB⁺ AB⁻ O⁺ O⁻

29. Which blood type is the universal donor? Explain why. Use words like antigens and antibodies.

O⁻ - There are no antigens on the surface of the blood cell so no antibodies against

30. Which blood type is the universal recipient? Explain why. Use words like antigens and antibodies.

AB⁺ it has all the antigens + therefore no antibodies for any blood.

31. If a person has AB⁺ blood type, what antigens do they have on their red blood cells? Which blood type can they give to and why?

A, B, + they can only give to AB⁺ because they have all the antigens so other blood types may have antibodies.