

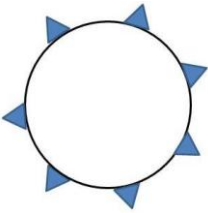
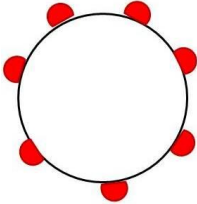
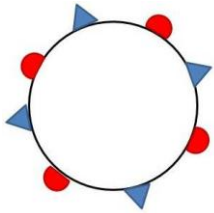
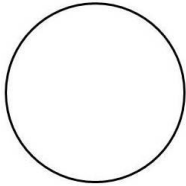




Blood Plasma
Student Activity Sheet

Part 1: Read “Fact Sheet: Blood Plasma.” Respond using complete sentences.

1. List the four human blood types. _____
2. Which component of blood determines blood type? Describe.
3. Which blood type can be safely transfused into any patient? Explain.
4. Does blood plasma have a type? Why or why not?
5. How did medics administer plasma transfusions on the battlefield?
6. Contrast the benefits of using plasma for blood transfusions with the benefits of using whole blood.
7. Summarize Dr. Charles Drew’s contribution to the field of emergency medicine.
8. How did the development of blood plasma revolutionize the treatment of injured soldiers on the battlefield?
9. What did Owens-Corning develop to improve plasma transfusion?
10. Evaluate the plasma advertisement heading, “a new war weapon to save lives.” Do agree or disagree? Explain.

Certain blood types do not mix because of antibodies carried in our blood stream. Antibodies are part of our immune system which defends our bodies from invading substances like viruses and bacteria. If incompatible blood is transfused, the donor red blood cells are treated as foreign invaders and the recipient's immune system mounts a huge response. This response and the associated blood clotting that results can be life threatening.

Part 2: Observe the patterns in the table below and use the information to predict if a blood transfusion is safe or dangerous. Circle your choice and respond using complete sentences, when appropriate.

	Type A	Type B	Type AB	Type O
Red Blood Cell with Antigens				
Recipient Antibodies			none	 

11. A patient with blood type B receives a transfusion of type O blood. Circle one **SAFE** or **UNSAFE**
12. A patient with blood type AB receives a transfusion of type A blood. **SAFE** or **UNSAFE**
13. A patient with blood type O receives a transfusion of type B blood. **SAFE** or **UNSAFE**
14. A patient with blood type A receives a transfusion of type AB blood. **SAFE** or **UNSAFE**
15. A patient with unknown blood type receives a transfusion of type A blood. Luckily, no complications occur. Which two blood types could the patient have? _____

Explain your choices.

16. Type O blood is called the “universal donor” because it can be safely donated to anyone, regardless of the recipient’s blood type. Why is this safe? Include the terms antigen and antibody in your answer.

17. On the other hand, type AB blood is called the “universal recipient.” Explain why, including the antigen/antibody response.

Blood Plasma
Student Activity Sheet KEY

Part 1: Read “Fact Sheet: Blood Plasma.” Respond using complete sentences.

18. List the four human blood types. A B AB O

19. Which component of blood determines blood type? Describe.

Antigens covering the surface of red blood cells determine blood type.

20. Which blood type can be safely transfused into any patient? Explain.

Type O can be safely transfused into any patient. Because type O blood carries no antigens, the immune system does not recognize the transfused red blood cells as foreign.

21. Does blood plasma have a type? Why or why not?

No. Blood plasma does not have a type because it does not carry antigens.

22. How did medics administer plasma transfusions on the battlefield?

Medics reconstituted dried plasma with water before administering a transfusion.

23. Contrast the benefits of using plasma for blood transfusions with the benefits of using whole blood.

Plasma can be stored for long periods without refrigeration. It is highly portable in dried form and can be transported long distances. Whole blood, on the other hand, must be refrigerated and stored in its liquid form making transportation difficult.

24. Summarize Dr. Charles Drew’s contribution to the field of emergency medicine.

Dr. Charles Drew pioneered the use of plasma as an alternative to emergency blood transfusion.

25. How did the development of blood plasma revolutionize the treatment of injured soldiers on the battlefield?

Blood plasma was used to treat blood loss in injured soldiers. By replacing lost fluids, transfused blood loss prevented low blood pressure and the danger of shock.

26. What did Owens-Corning develop to improve plasma transfusion?

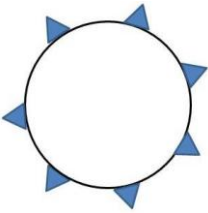
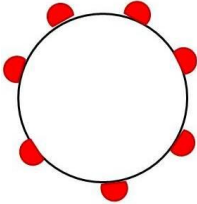
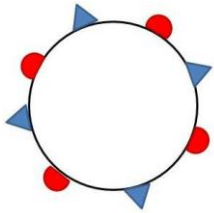
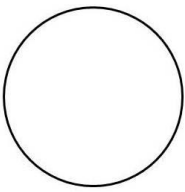



Owens-Corning developed tiny glass filters for the transfusion apparatus to replace gauze filters, allowing plasma to pass through the filter quickly.

27. Evaluate the plasma advertisement heading, “a new war weapon to save lives.” Do you agree or disagree? Explain.

Responses will vary.

Certain blood types do not mix because of antibodies carried in our blood stream. Antibodies are part of our immune system which defends our bodies from invading substances like viruses and bacteria. If incompatible blood is transfused, the donor red blood cells are treated as foreign invaders and the recipient's immune system mounts a huge response. This response and the associated blood clotting that results can be life threatening.

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30. A patient with blood type O receives a transfusion of type B blood. **SAFE** or **UNSAFE**
31. A patient with blood type A receives a transfusion of type AB blood. **SAFE** or **UNSAFE**
32. A patient with unknown blood type receives a transfusion of type A blood. Luckily, no complications occur. Which two blood types could the patient have? A AB

Explain your choices.

Because the patient must have no anti-A antibodies, the recipient must carry the A antigen. The two human blood types with the A antigen are type A and type AB.

33. Type O blood is called the “universal donor” because it can be safely donated to anyone, regardless of the recipient’s blood type. Why is this safe? Include the terms antigen and antibody in your answer.

Type O is the universal donor because no antigens are carried on the red blood cells. Therefore, there is no antigen to bind with antibodies and trigger an immune response.

34. On the other hand, type AB blood is called the “universal recipient.” Explain why, including the antigen/antibody response.

Type AB is the universal recipient because no antibodies are present in the plasma. No antibodies mean no immune response, regardless of the type of blood transfused.