Part 6 Circulatory System

Name:

Part 6 Lesson 1 Intro

Circulatory System: Delivers _____ and _____ to the body and carries carbon _____ and other _____ products away.

◊ Please describe what needs to enter, and what needs to leave the person below as it relates to the circulatory system

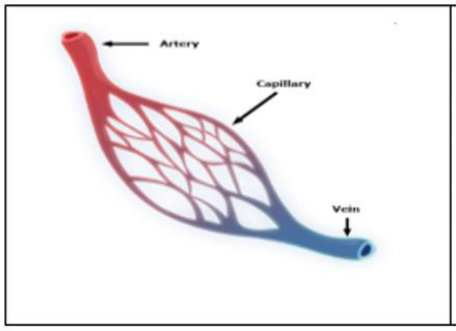
Consists of the following

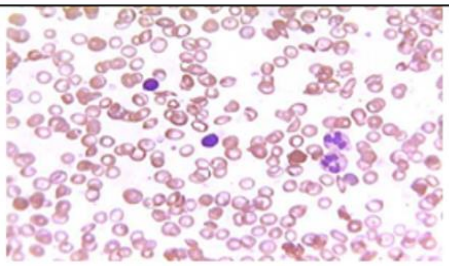
_____

_____Vessels

_____

◊ The circulatory system consists of these three…





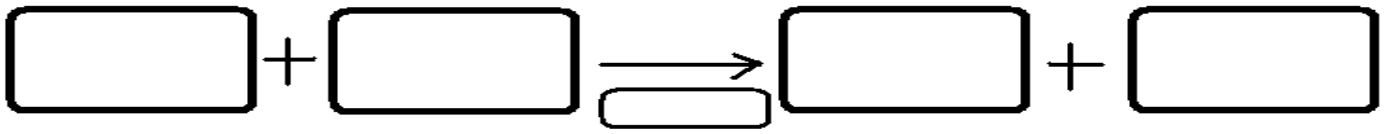
Cellular Respiration: Processes whereby certain organisms obtain _____ from organic molecules.

Cellular Respiration

-Burns _____ for energy.
-Energy is _____. ADP+P to ATP
-Occurs in most _____.
-_____ is used.
-_____ is produced.
-_____ dioxide produced. "Waste Product"

-Occurs in _____ and _____.

Write out the equation for **cellular respiration** in the boxes below.



Which of the following is the correct equation for cellular respiration?

1. A) $C_6H_{12}O_6 + 6H_2O$ = Released energy + $6CO_2 + 6H_2O$.
2. B) $C_6H_{12}O6 + 6O_2$ = Released energy + $6CO_2 + 6H_2O$.
3. C) $C_6H_{12}O_6 + 6O_2$ = Released energy + $6O_2 + 6H_2O$.
4. D) $C_{12}H_6O_6 + 6O_2$ = Released energy + $6CO_2 + 6H_2O$.
5. E) $C_6H_{12}O_6 + 6CO_2$ = Released energy + $6O_2 + 6H_2O$.

Human Heart: Important organ that provides a continuous _____of blood.

Bright Red = Oxygen Rich

Blue = Oxygen Poor

The function of the circulatory system.

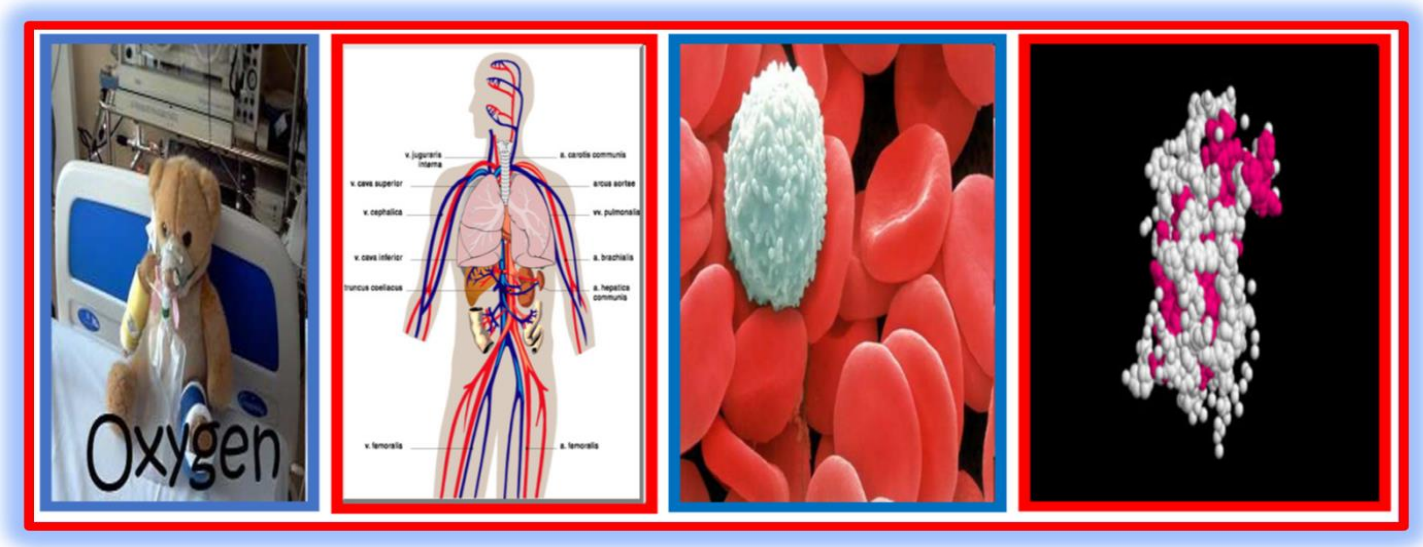
To deliver _____ and _____ to cells.

To carry away _____.

To aid in _____ prevention.

To deliver chemical messages (_____).

◊ Name the four functions of the circulatory system below?



Part 6 Lesson 2 The Heart

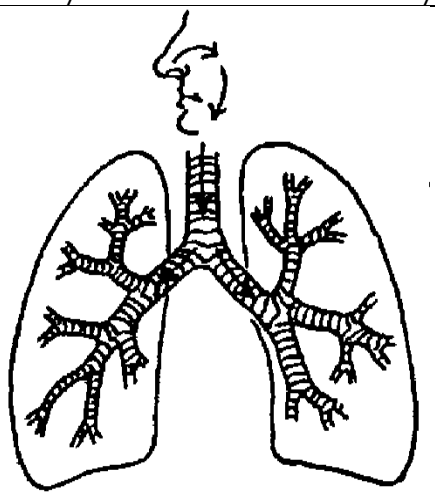
The circulatory system

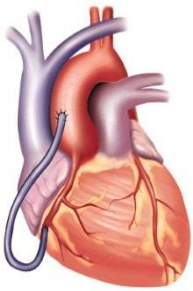
Powered by the _____.

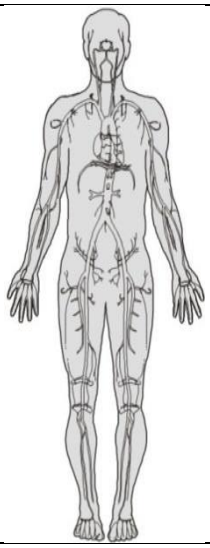
Blood carries food, oxygen, waste, chemical messages.

Blood vessels provide the _____ of _____and have unique structures.

Please place COLORED (Red and Blue) arrows to represent the flow of blood in the human body. Which arrows are oxygenated, and which are deoxygenated?







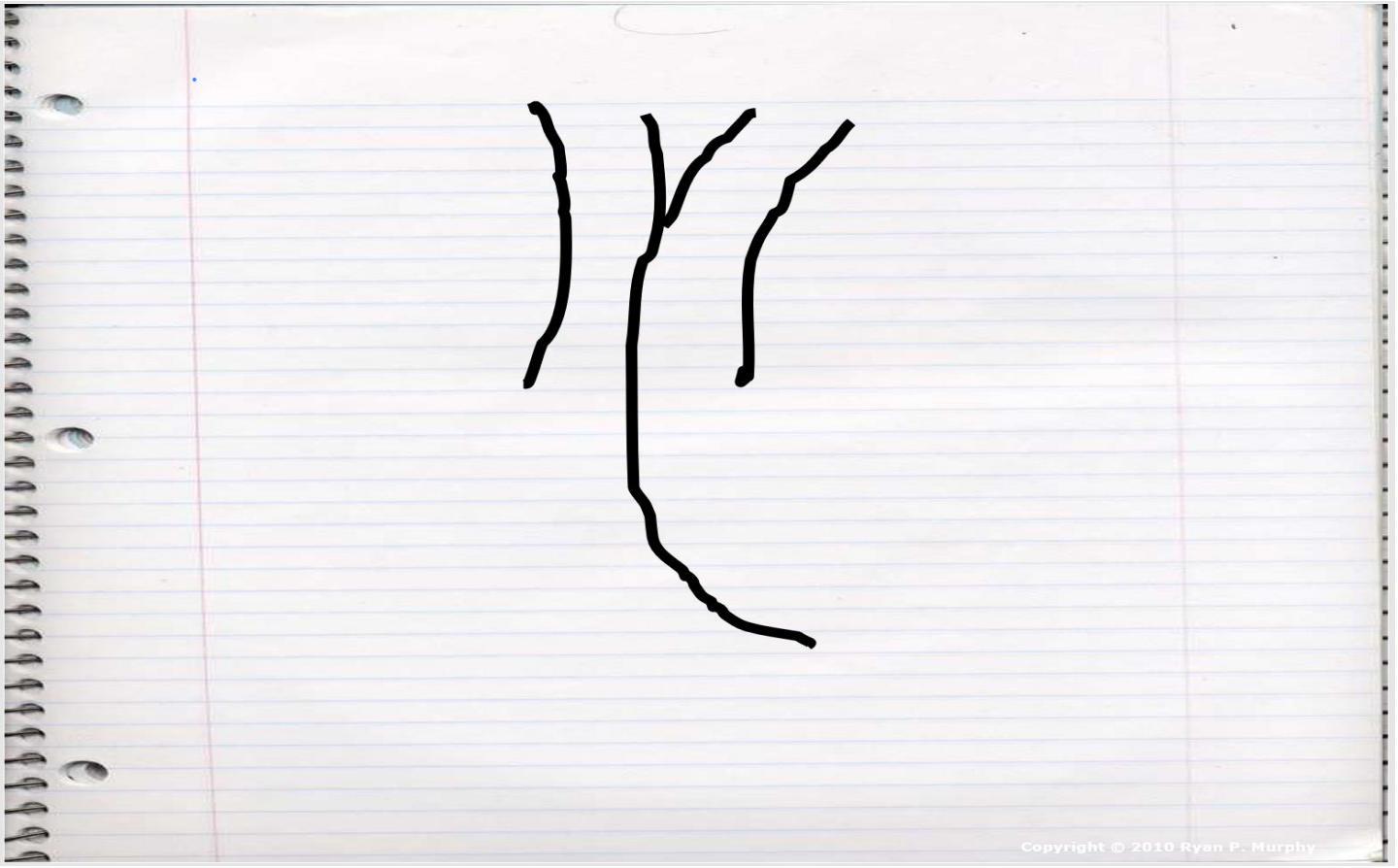
Questions to answer in work bundle to classroom simulation.

-Describe the journey of blood through the circulatory system.

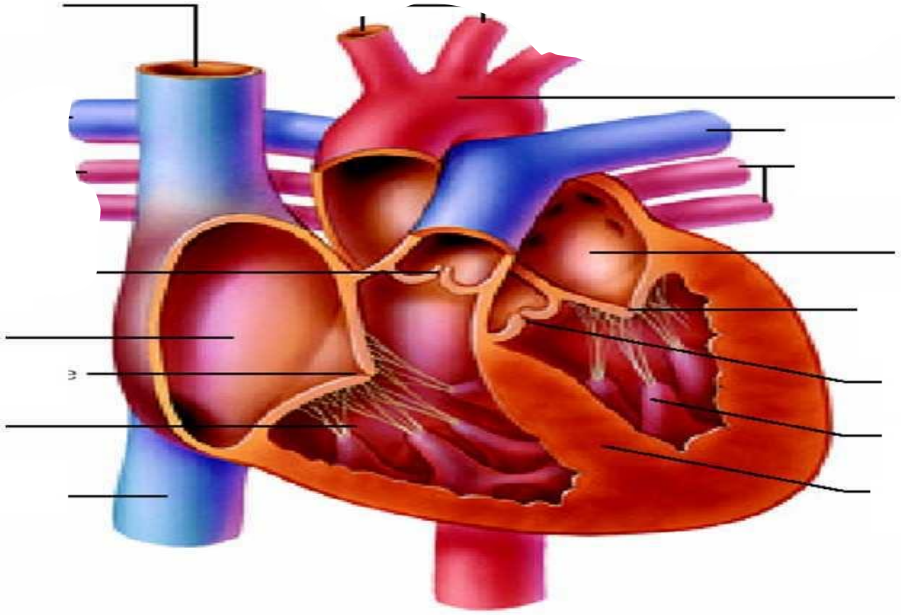
What did the colored chips represent? How did they change through your journey?

As the body uses oxygen (cellular respiration) the blood becomes depleted in oxygen. It then travels to the heart, which pumps it to the lungs to get oxygen. The blood heads back to the heart, and then gets pumped to the body.

Part 6 Lesson 3 Veins and Arteries

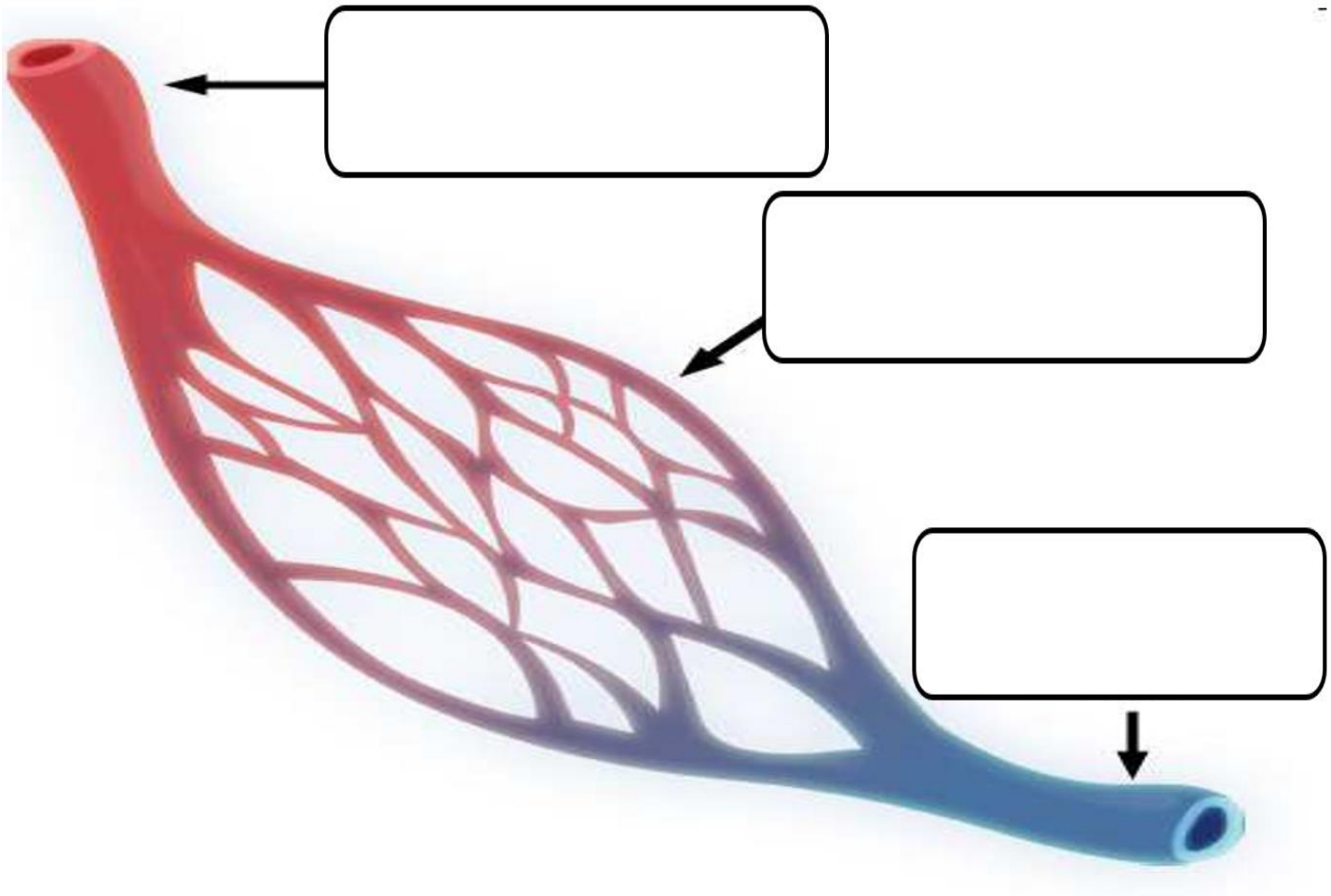


◊ Name the parts of the heart below. ◊ Also use arrows to show how bloods flows through the heart. Use terms such as "to the heart" and "To the lungs" and "To the body."



Question? Which side of your heart needs to work harder? Why?

◊ Please name the three parts of the picture below? Which one has oxygen rich blood, and which one carries oxygen depleted blood?



Quiz Wiz! 1-10 Name the parts of the heart.

1)	2)	3)	4)
5)	6)	7)	8)
9)	10)	*11)	

Part 6 Lesson 4

Blood Pressure: The _____ of blood pushing against the walls of the arteries as the heart pumps blood. Flows from _____ to _____ pressure.

Hypertension: _____ blood pressure through blood vessels. Heart must work harder to pump blood and this may cause leaks in blood vessels.

Watch _____, Reduce _____ in diet, Eat more sensibly, Exercise regularly, Medicine only after you have tried the above.

Some common diseases…

Atherosclerosis: _____ of artery walls, fats such as _____ collects on wall, over time it may _____ blood flow (heart attack).

Artery: Blood vessel that carries blood _____ from the heart.
Capillary: Extremely _____ blood vessels.
Vein: Blood vessel that carries blood _____ the heart.

Go back to the prior page and describe blood pressure as it relates to arteries, veins, and capillaries

Part 6 Lesson 5 Blood Types

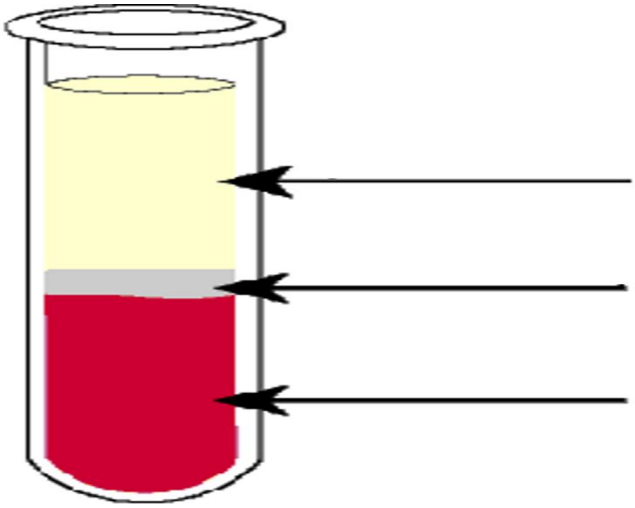
Blood: A specialized bodily _____ that delivers necessary substances to the body's cells.

- Such as _____ and oxygen – and transports _____ products away from those same cells.

Blood is made up of…

_____ Blood Cells
_____ Blood Cells
Platelets
_____

Describe what blood is made of? Name the percentages of each component?



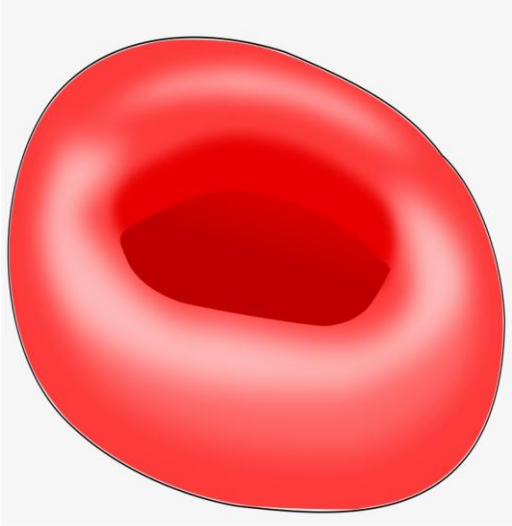
Plasma: Fluid of blood, _____ water, _____ sugars, fats, salts, gases, and proteins.

- Controls amount of _____ in blood.
- Has _____ proteins that fight off disease.
- Blood _____ agents.
- Carries _____ messages (hormones).
- Carries _____ products.

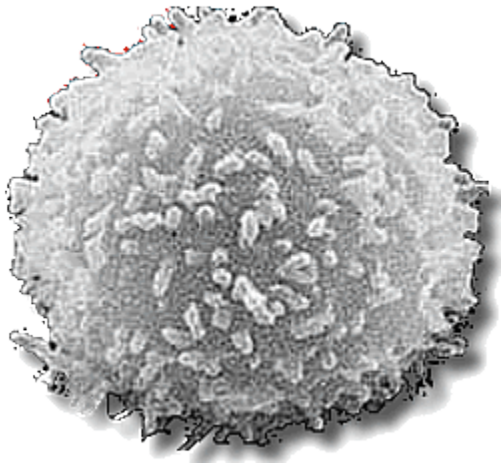
Red Blood Cells: Produced in _____ marrow, no _____ in cell (mature cell), delivers _____ to cells, carries away _____.

Hemo_____: Protein in blood that helps blood _____ with oxygen and carbon dioxide.

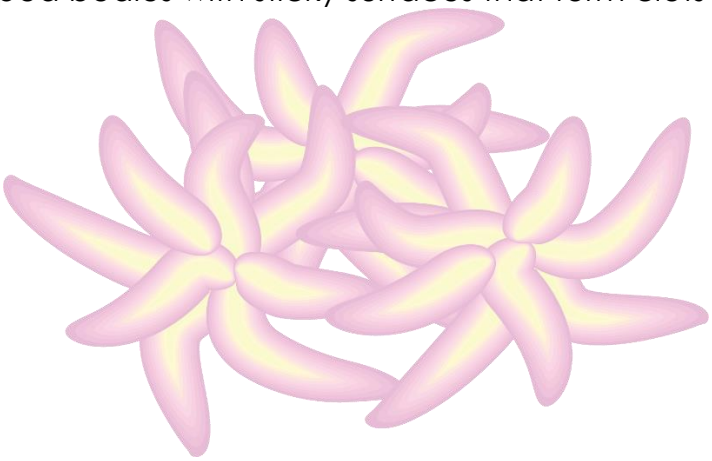
Record some information around this red blood cell? Why is shaped this way?



White Blood Cells: Circulate throughout the body providing protection against foreign organisms and matter.



Platelets: Irregularly shaped bodies with sticky surfaces that form clots to stop bleeding.



Name the blood cells below.

◊Please name the four parts of blood in the boxes below using the descriptions to help you.

-Circulate throughout the body providing protection against foreign organisms and matter.	Irregularly shaped bodies with sticky surfaces that form clots to stop bleeding.
Controls amount of water in blood. Has antibody proteins that fight off disease. -Blood clotting agents. -Carries chemical messages (hormones). -Carries waste products.	-Produced in bone marrow, no nucleus in cell (mature cell), delivers oxygen to cells, carries away CO2. -Hemoglobin: Protein in blood that helps blood bind with oxygen and carbon dioxide.

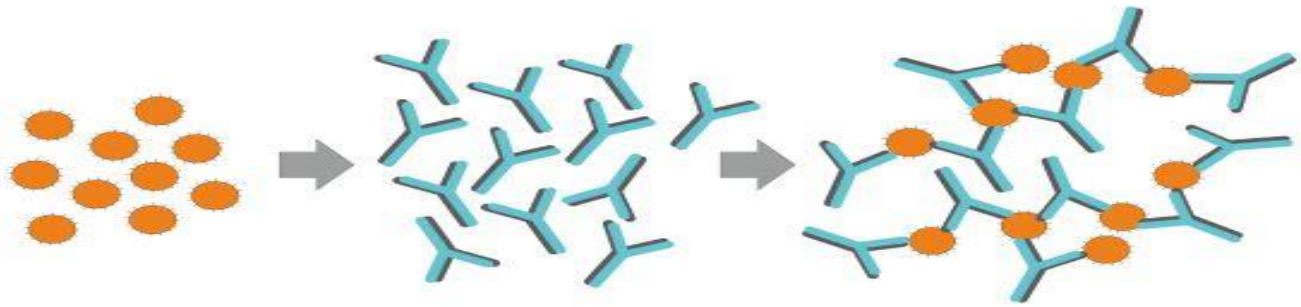
Part 6 Lesson 6 Blood Types

Can you freely exchange blood from one person to another? Explain below.

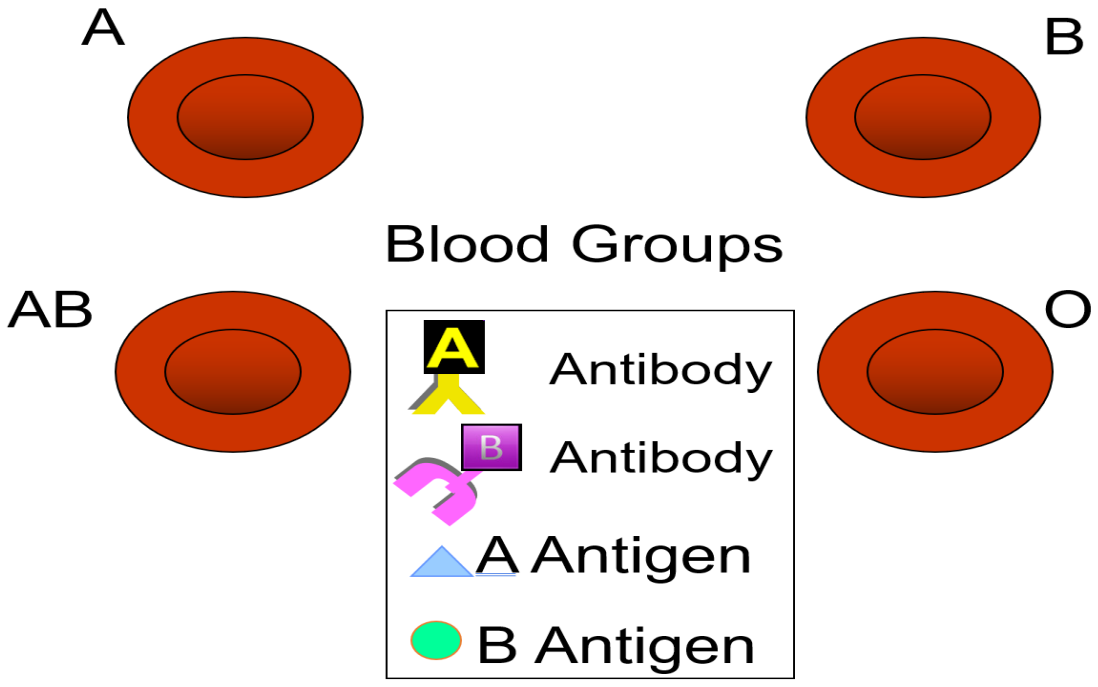
Antigen: A substance that when introduced into the body stimulates the production of an _____.

Antibody: A blood protein produced in response to and counteracting a specific _____.

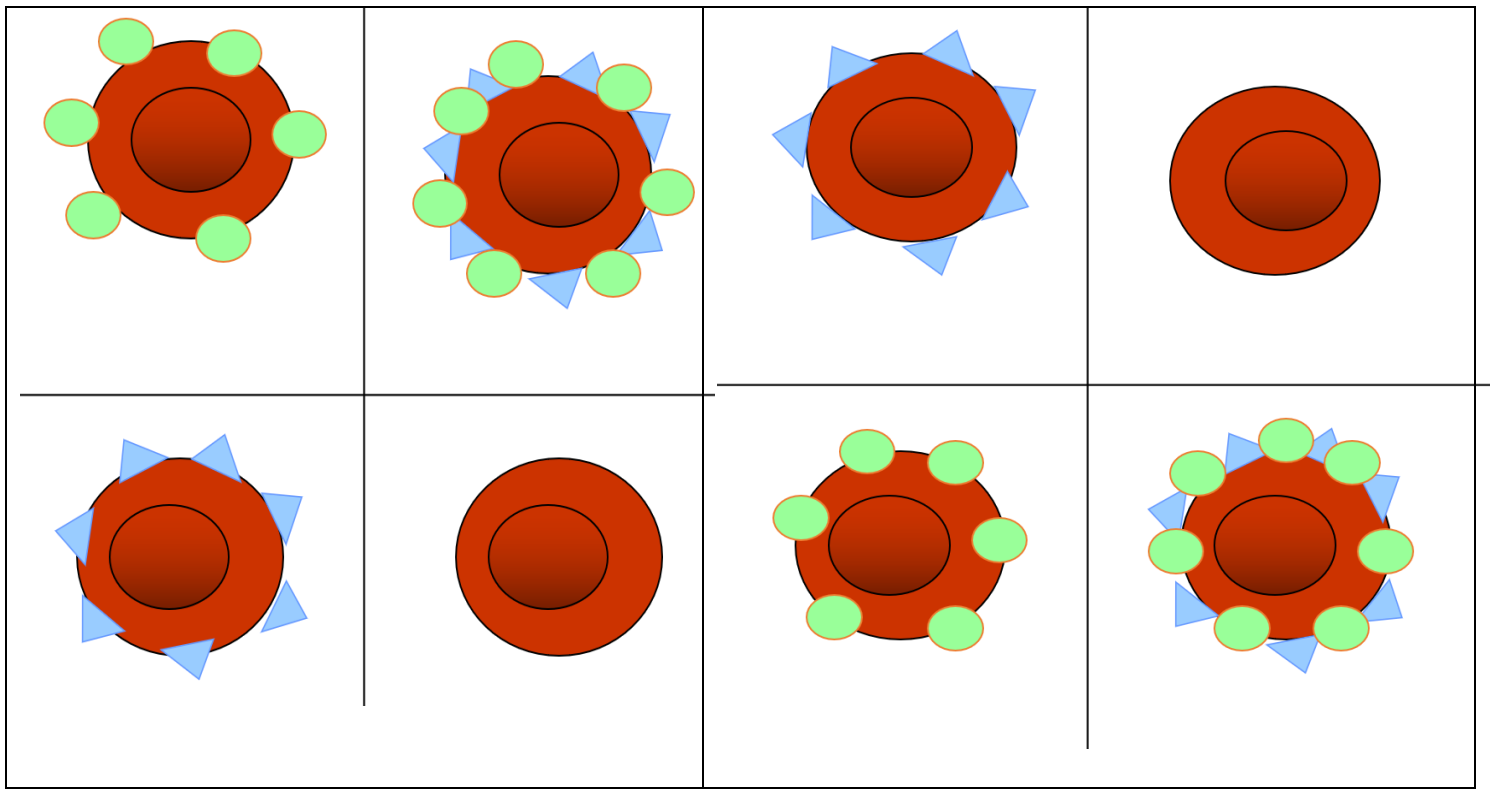
Which is the antigen, and which is the antibody below.



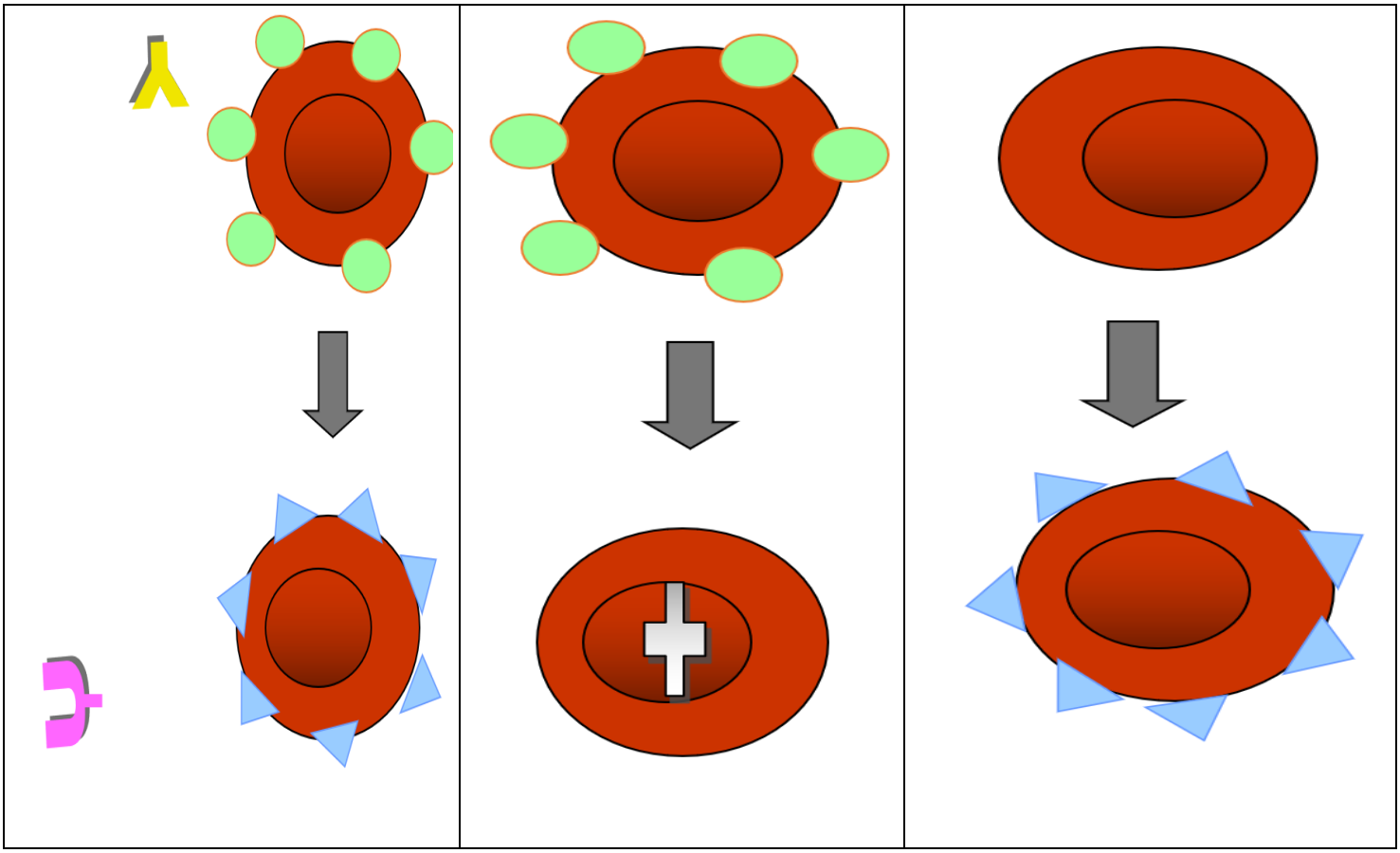
Please complete the sketch of the blood groups as described in the slideshow.



Name the correct blood types below.



Will the transfusion below be a safe one?



There is another antigen that some people may have.

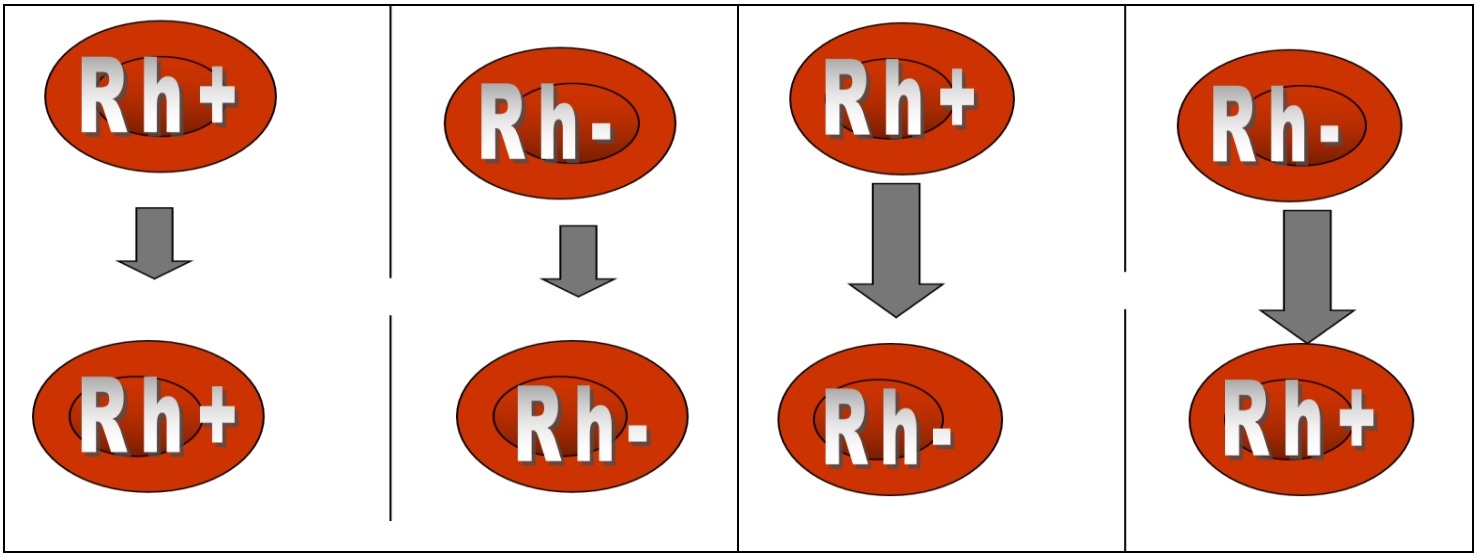
If you have it your… Rh+

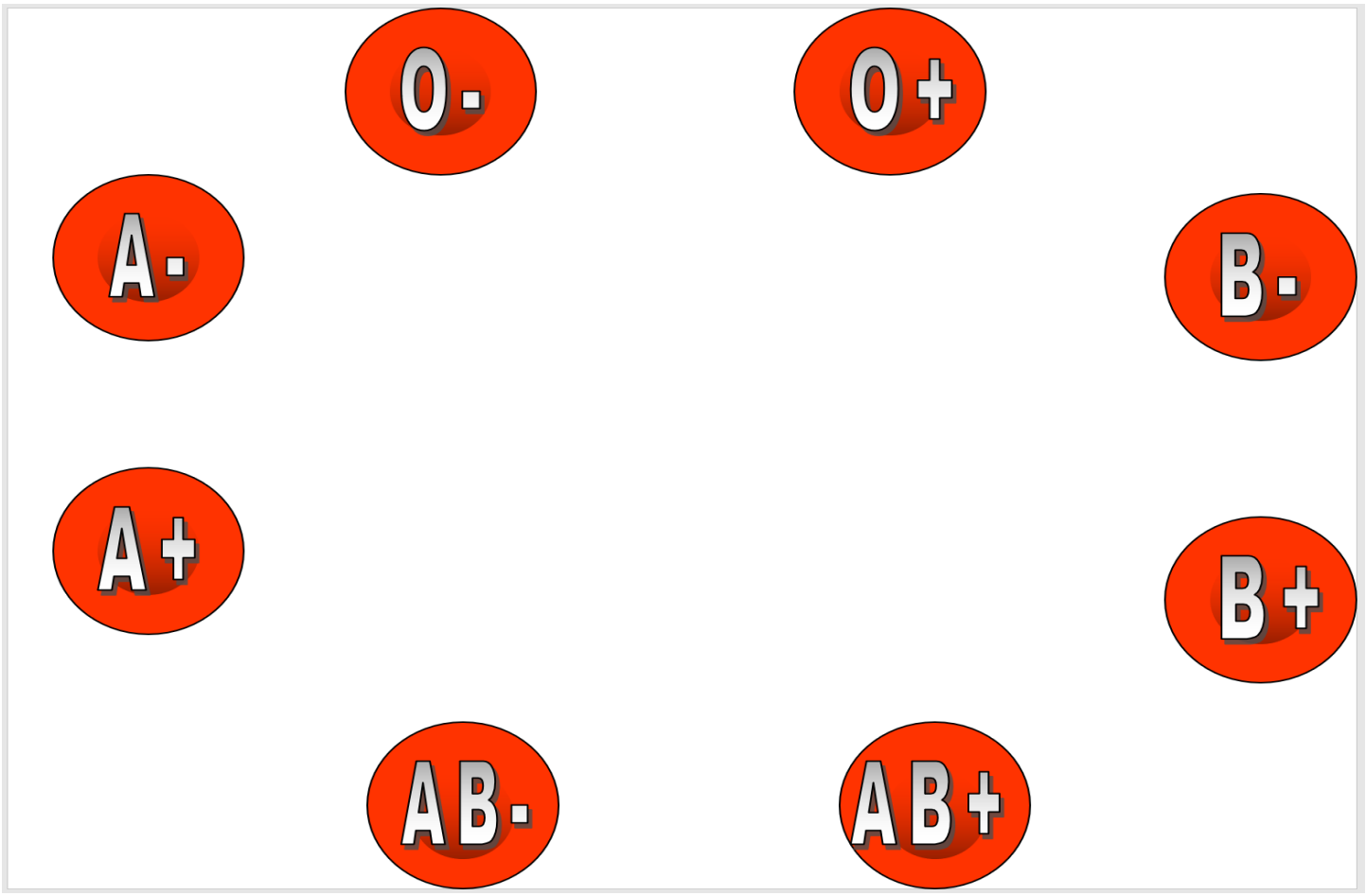
If you don't your… Rh-

Rh+ should _____ share blood with someone who is Rh-

Rh- can _____ to a person who is Rh+

Describe if each transfusion below is safe or will cause harm?

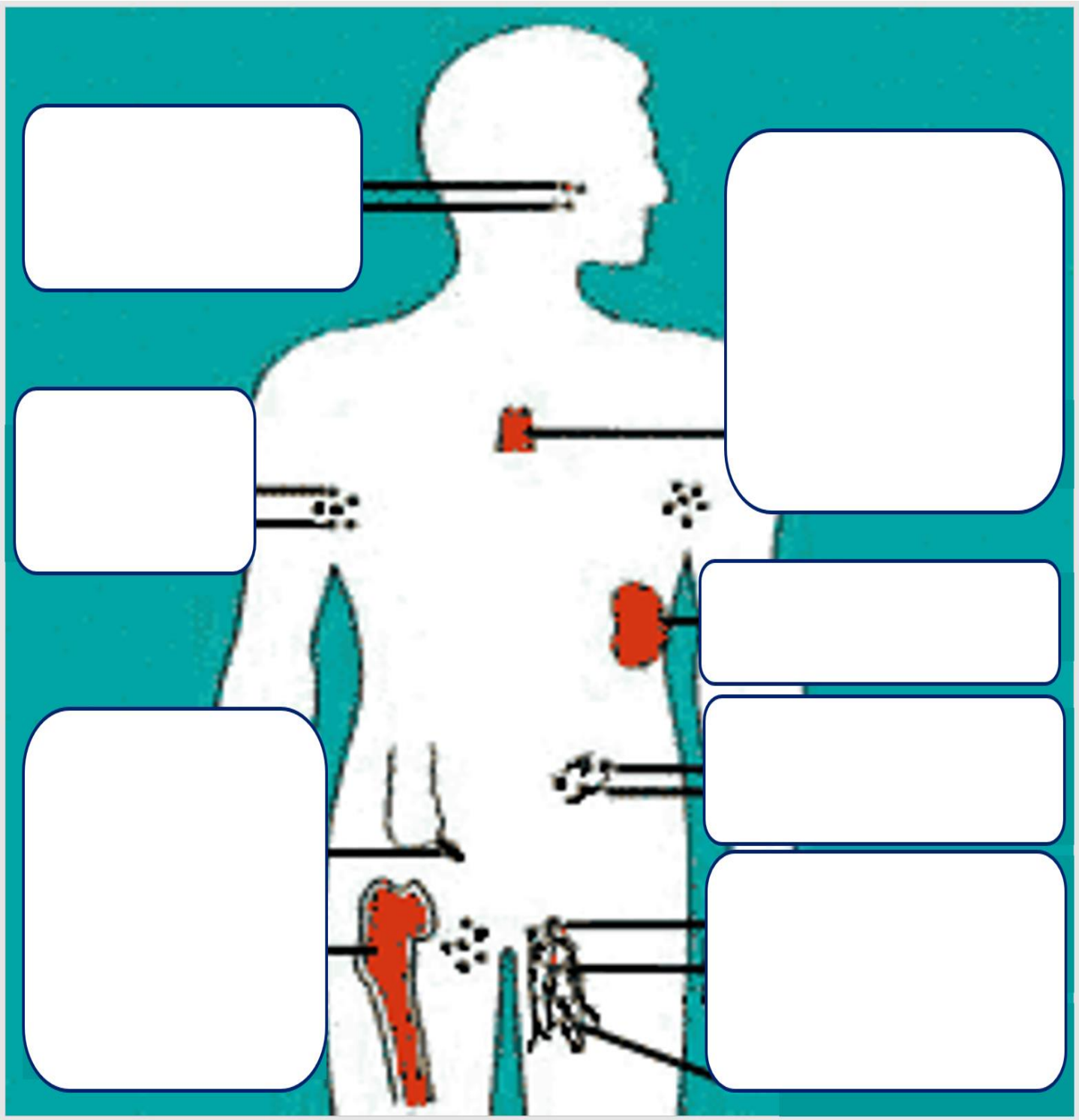




Part 6 Lesson 7 The Lymphatic System

Lymphatic System: A part of the circulatory system, comprising a _____of lymphatic vessels that carry a clear fluid called _____.

Lymph contains _____ blood cells.
Helps to rid the body of _____, waste, and unwanted materials.
Lymph is essentially _____ blood plasma.



Across

2. A blood protein produced in response to and counteracting a specific antigen
6. _____ System: A part of the circulatory system, comprising a network of lymphatic vessels that carry a clear fluid called lymph
8. Blood vessel that carries blood toward the heart.
9. ____ Blood Cells: Produced in bone marrow, no nucleus in cell (mature cell), delivers oxygen to cells, carries away CO2.
10. Protein in blood that helps blood bind with oxygen and carbon dioxide.
13. High blood pressure through blood vessels. Heart must work harder to pump blood and this may cause leaks in blood vessels.
16. Cellular _____: Processes whereby certain organisms obtain energy from organic molecules.
18. The function of the circulatory system. To deliver _____ messages (hormones).
20. A substance that when introduced into the body stimulates the production of an antibody.
22. _____ Blood Cells: Circulate throughout the body providing protection against foreign organisms and matter.

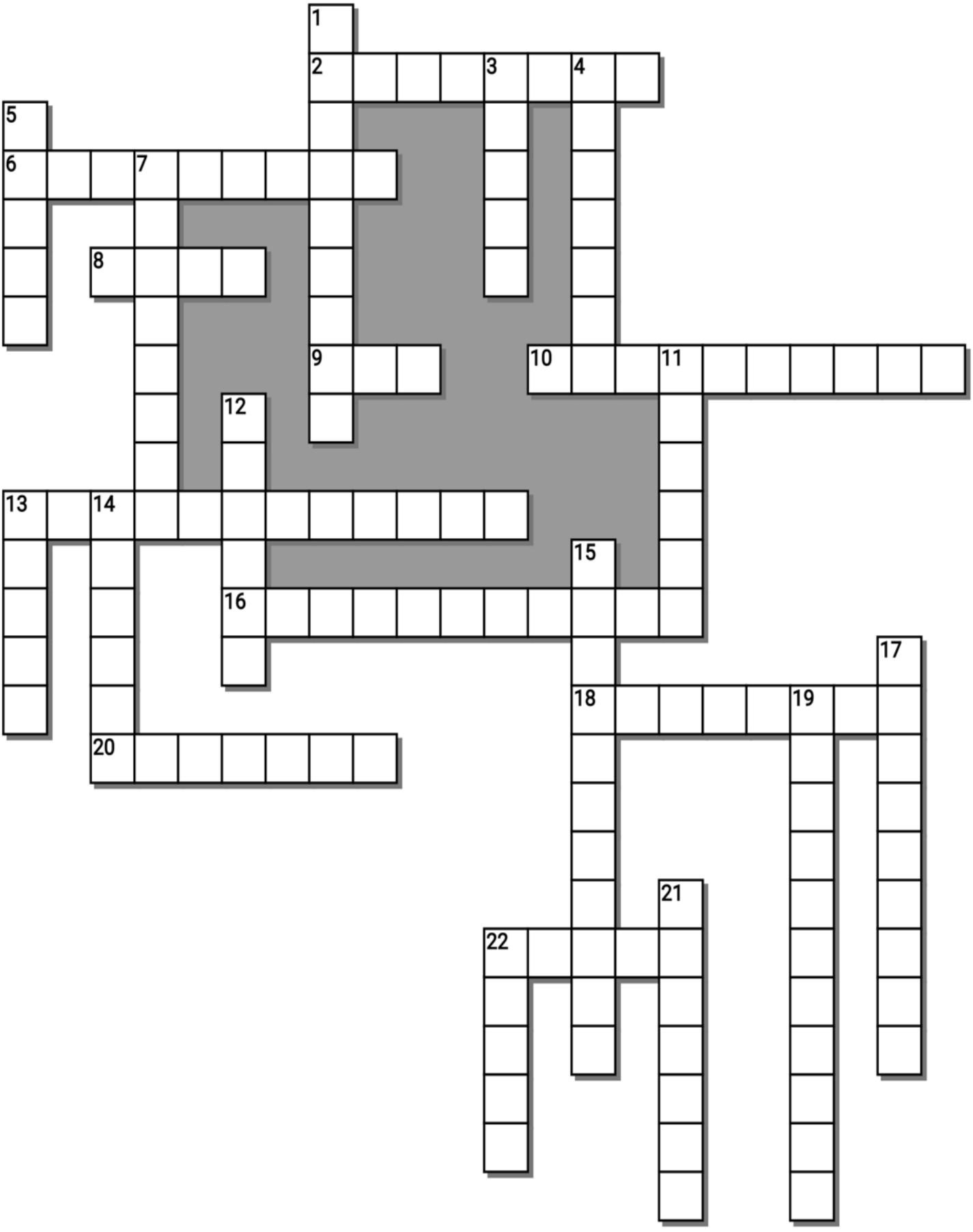
Down

1. Extremely thin blood vessels.
3. The circulatory system consists of the following Heart, Blood Vessels, _____
4. The function of the circulatory system. . To aid in _____ prevention.
5. A specialized bodily fluid that delivers necessary substances to the body's cells.
7. Blood _____: The force of blood pushing against the walls of the arteries as the heart pumps blood. Flows from high to low pressure.
11. The function of the circulatory system. To deliver food and _____ to cells.
12. Blood vessel that carries blood away from the heart.
13. The circulatory system consists of the following _____, Blood Vessels, Blood
14. Fluid of blood, 90% water, 10% sugars, fats, salts, gases, and proteins.
15. Human Heart: Important organ that provides a continuous _____ of blood.
17. Irregularly shaped bodies with sticky surfaces that form clots to stop bleeding
19. _____ System: Delivers food and oxygen to the body and carries carbon dioxide and other waste products away.
21. The circulatory system consists of the following Heart, Blood _____, Blood
22. The function of the circulatory system. To carry away _____.

----------Teacher can remove word bank to make more challenging----------

Possible Answers

ANTIBODY, ANTIGEN, ARTERY, BLOOD, BLOOD, CAPILLARY, CIRCULATORY, HEMOGLOBIN, HYPERTENSION, LYMPHATIC, PLASMA, PLATELETS, PRESSURE, RED, RESPIRATION, VEIN, VESSELS, WHITE, CHEMICAL, CIRCULATION, DISEASE, HEART, OXYGEN, WASTE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Part 6 Review Game

Name:

1-20 = 5 pts Part 6 Lesson 6
*20-*25 * = Bonus + 1 pt,
(Secretly write owl in correct space +1 pt)
Final Question = 5 pt wager

Score ____ / 100

THERE AND BACK AGAIN	LUB-DUB	HEART FELT	RED HOT	VALENTINES Bonus round 1 pt each
1)	6)	11)	16)	*21)
2)	7)	12)	17)	*22)
3)	8)	13)	18)	*23)
4)	9)	14)	19)	*24)
5)	10)	15)	20)	*25)

Final Question Wager _____/5 Answer: _____

Part 6 Circulatory System

Name:

Part 6 Lesson 1 Intro

Circulatory System: Delivers food and oxygen to the body and carries carbon dioxide and other waste products away.

◊ Please describe what needs to enter, and what needs to leave the person below as it relates to the circulatory system

IN:

Food and oxygen

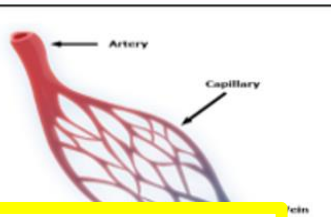
OUT:

Carbon dioxide (CO_2) and waste

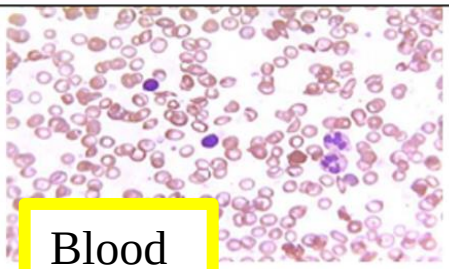
Consists of the following

- Heart
- Blood Vessels
- Blood

◊ The circulatory system consists of these three…



Blood vessels



Blood

Heart

Cellular Respiration: Processes whereby certain organisms obtain energy from organic molecules.

Cellular Respiration

- -Burns sugar for energy.
- -Energy is used. ADP+P to ATP
- -Occurs in most cells.
- -oxygen is used.

-water is produced.
-carbon dioxide produced. "Waste Product"
-Occurs in light and dark.

Write out the equation for **cellular respiration** in the boxes below.

$C_6H_{12}O_6 + O_2 \xrightarrow{\text{Energy}} CO_2 + H_2O$

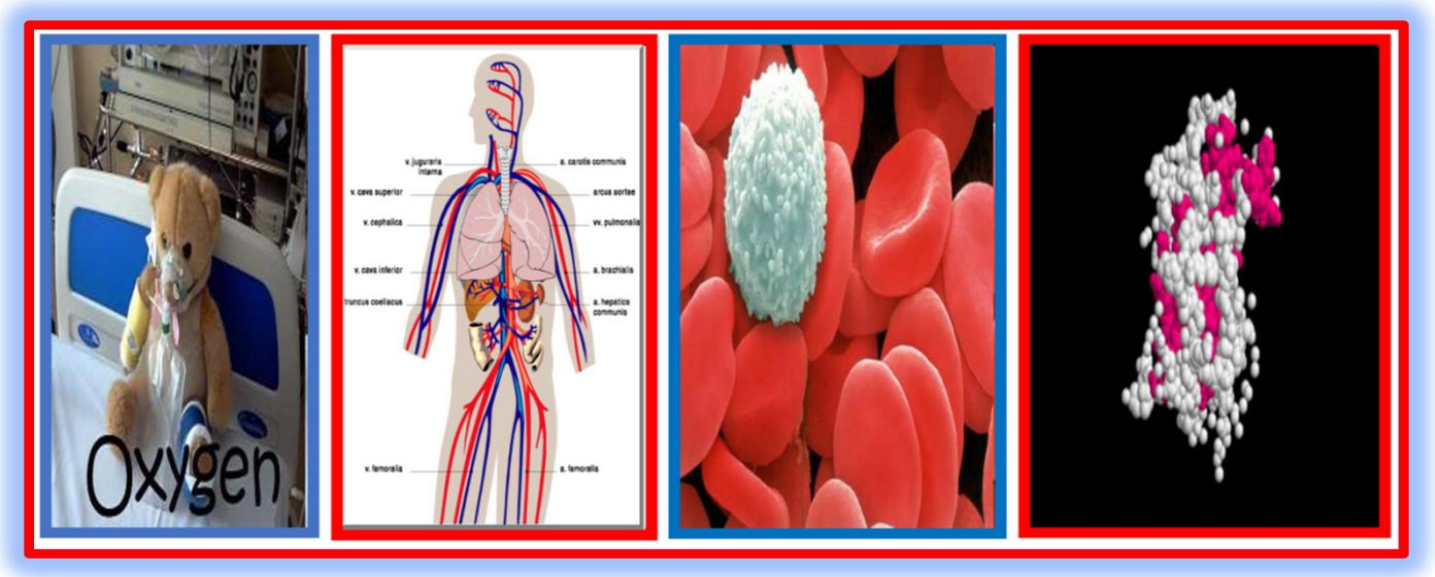
Which of the following is the correct equation for cellular respiration?

1. A) $C_6H_{12}O_6 + 6H_2O$ = Released energy + $6CO_2 + 6H_2O$.
2. B) $C_6H_{12}O6 + 6O_2$ = Released energy + $6CO_2 + 6H_2O$.
3. C) $C_6H_{12}O_6 + 6O_2$ = Released energy + $6O_2 + 6H_2O$.
4. D) $C_{12}H_6O_6 + 6O_2$ = Released energy + $6CO_2 + 6H_2O$.
5. E) $C_6H_{12}O_6 + 6CO_2$ = Released energy + $6O_2 + 6H_2O$.

Human Heart: Important organ that provides a continuous circulation of blood.
Bright Red = Oxygen Rich
Blue = Oxygen Poor

The function of the circulatory system.
To deliver food and oxygen to cells.
To carry away waste.
To aid in disease prevention.
To deliver chemical messages (hormones).

◊ Name the four functions of the circulatory system below?



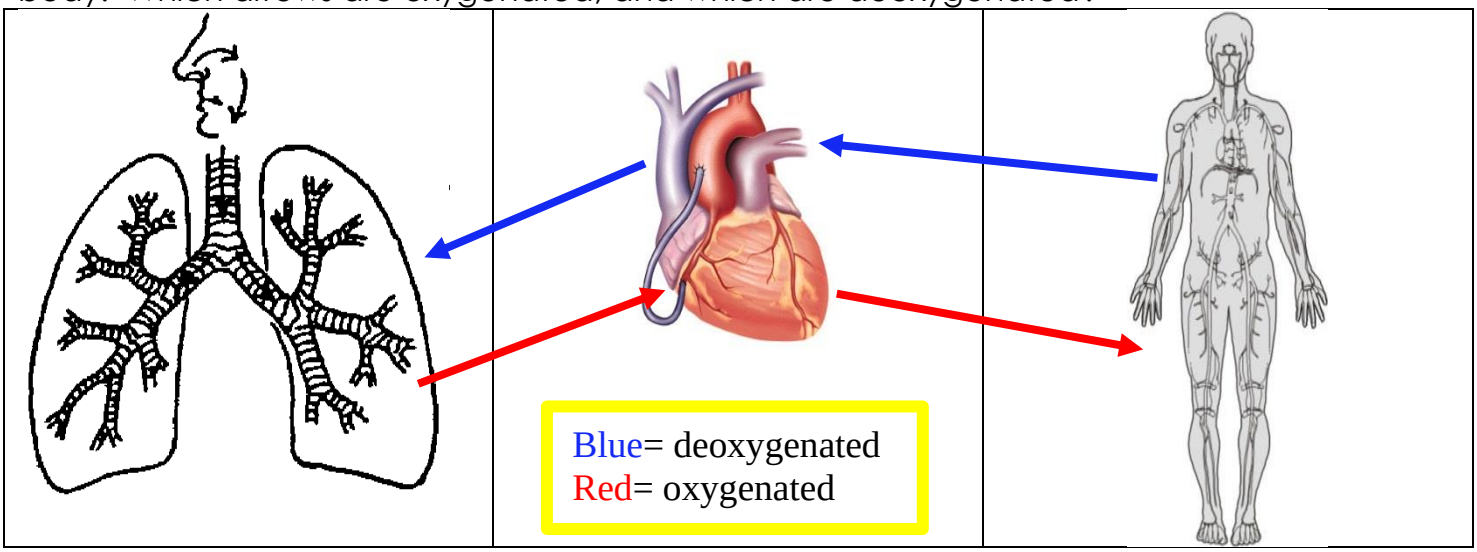
Deliver food and oxygen to cells	Carry away waste	Aid in disease prevention	Deliver chemical messages (hormones)

Part 6 Lesson 2 The Heart

The circulatory system

Powered by the heart.
Blood carries food, oxygen, waste, chemical messages.
Blood vessels provide the paths of travel and have unique structures.

Please place COLORED (Red and Blue) arrows to represent the flow of blood in the human body. Which arrows are oxygenated, and which are deoxygenated?



Questions to answer in work bundle to classroom simulation.

-Describe the journey of blood through the circulatory system.

Blood traveled from the body into the heart. The heart pumped the blood to the lungs, and then back to the heart. The heart then pumped blood to the body and back to the heart.

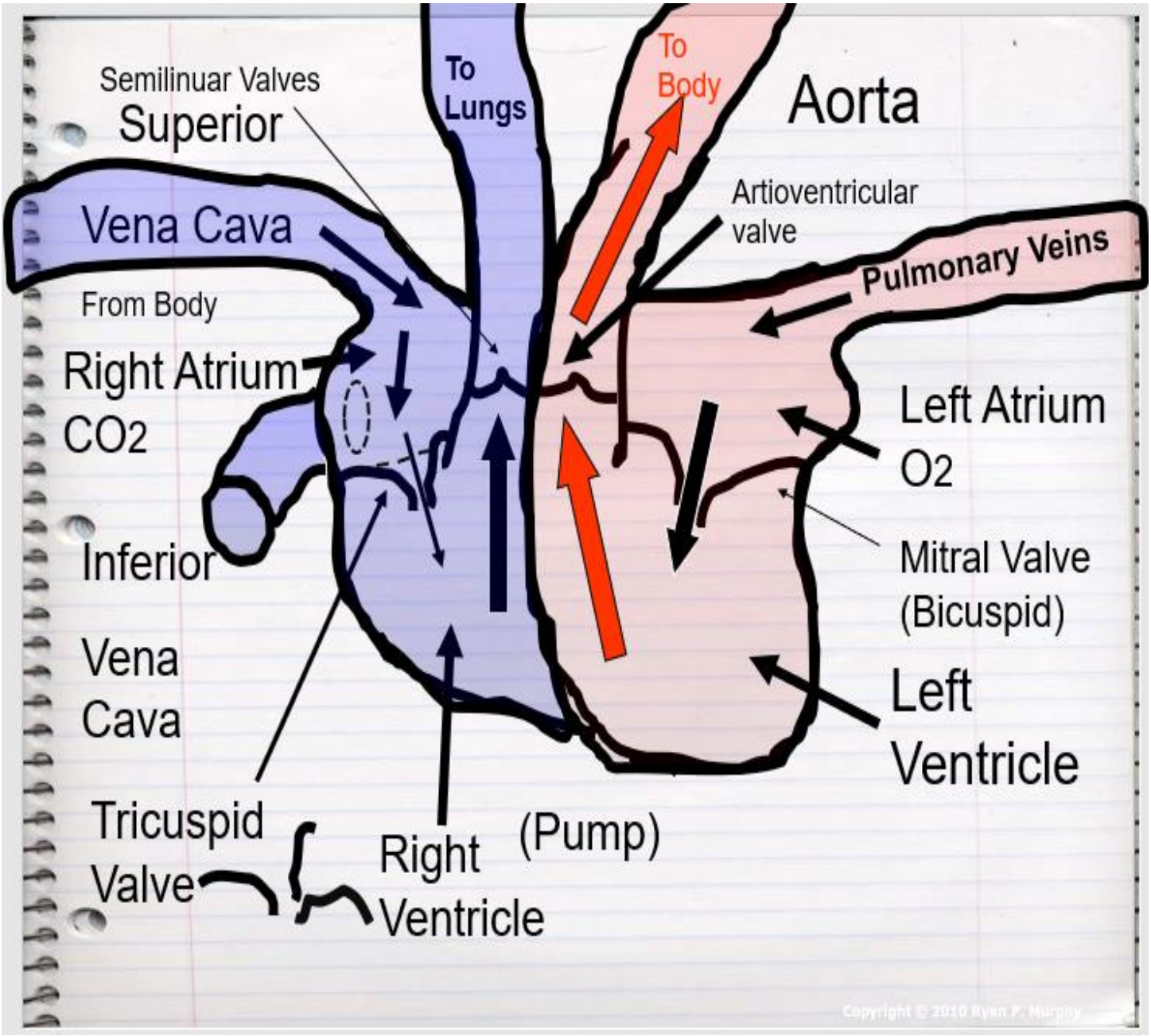
What did the colored chips represent? How did they change through your journey?

The blood lost its oxygen (red chip) and became a blue chip (carbon dioxide) near the halfway point of its journey through the body. This low in oxygen, high in carbon dioxide blood traveled through the heart. It was then pumped to the lungs where it lost its CO_2 (blue chip) and picked up O_2 (red chip) for the rest of its journey through the heart, and to the cells in the body.

As the body uses oxygen (cellular respiration) the blood becomes depleted in oxygen. It then travels to the heart, which pumps it to the lungs to get oxygen. The blood heads back to the heart, and then gets pumped to the body.

Part 6 Lesson 3 Veins and Arteries

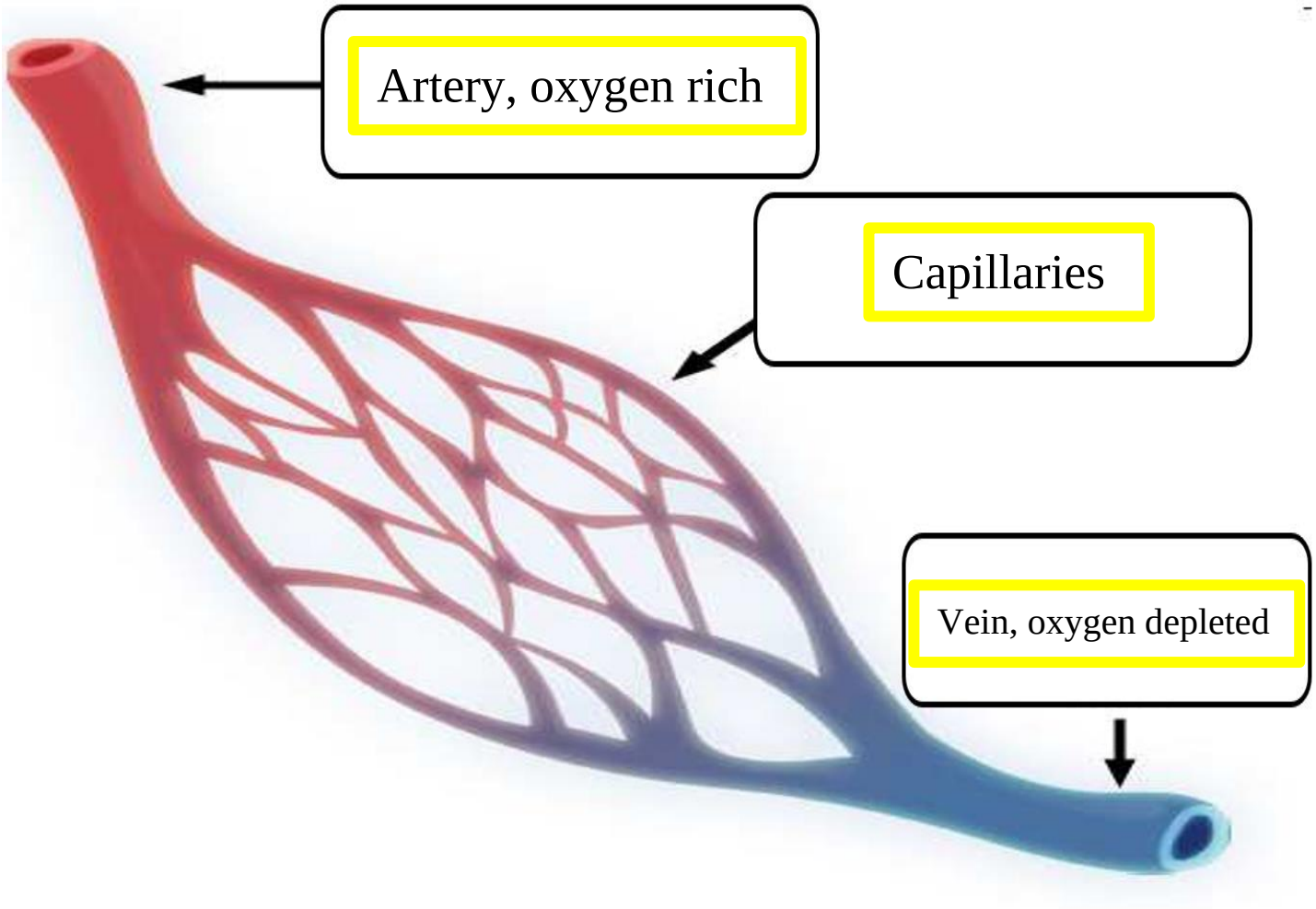
◊ Name the parts of the heart below. ◊ Also use arrows to show how bloods flows through the heart. Use terms such as "to the heart" and "To the lungs" and "To the body."



Question? Which side of your heart needs to work harder? Why?

The left ventricle works harder because it has to pump blood out to the entire body, whereas the right ventricle only pumps blood to the lungs.

◊ Please name the three parts of the picture below? Which one has oxygen rich blood, and which one carries oxygen depleted blood?



Quiz Wiz! 1-10 Name the parts of the heart.

1) Right atrium	2) Right ventricle	3) Left ventricle	4) Tricuspid valve
5) Mitral valve	6) Left atrium	7) Aorta	8) Superior Vena Cava
9) Inferior Vena Cava	10) Septum	*11) Snuggle	

Part 6 Lesson 4

Blood Pressure: The force of blood pushing against the walls of the arteries as the heart pumps blood. Flows from high to low pressure.

Hypertension: High blood pressure through blood vessels. Heart must work harder to pump blood and this may cause leaks in blood vessels.

Watch weight, Reduce salt in diet, Eat more sensibly, Exercise regularly, Medicine only after you have tried the above.

Some common diseases…

Atherosclerosis: Thickening of artery walls, fats such as cholesterol collects on wall, over time it may block blood flow (heart attack).

Artery: Blood vessel that carries blood away from the heart.
Capillary: Extremely thin blood vessels.
Vein: Blood vessel that carries blood toward the heart.

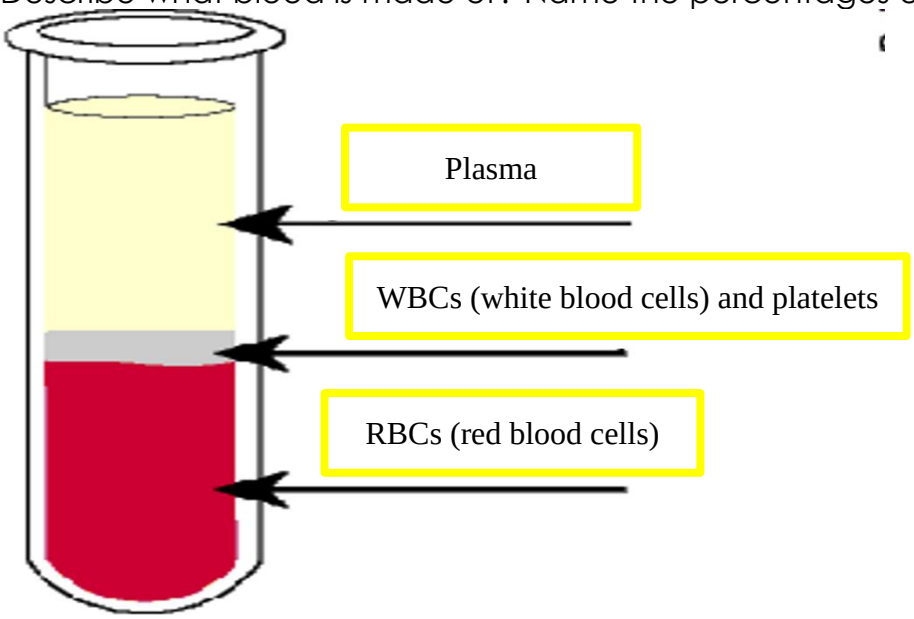
Go back to the prior page and describe blood pressure as it relates to arteries, veins, and capillaries

Part 6 Lesson 5 Blood Types

Blood: A specialized bodily fluid that delivers necessary substances to the body's cells.
- Such as nutrients and oxygen – and transports waste products away from those same cells.

Blood is made up of…
Red Blood Cells
White Blood Cells
Platelets
Plasma

Describe what blood is made of? Name the percentages of each component?



Plasma: Fluid of blood, 90% water, 10% sugars, fats, salts, gases, and proteins.
- Controls amount of water in blood.
- Has antibody proteins that fight off disease.
- Blood clotting agents.
- Carries chemical messages (hormones).
- Carries waste products.

Red Blood Cells: Produced in bone marrow, no nucleus in cell (mature cell), delivers oxygen to cells, carries away CO2.

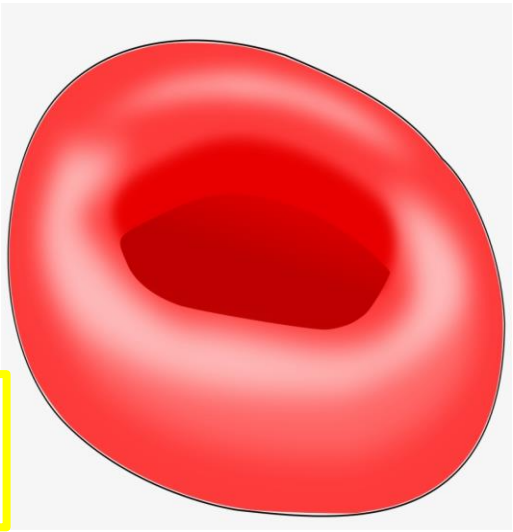
Hemoglobin: Protein in blood that helps blood bind with oxygen and carbon dioxide.

Record some information around this red blood cell? Why is shaped this way?

120 day life span and then destroyed in spleen

Mature RBC has no nucleus, which allows more room for important gases and hemoglobin.

Most numerous cell in body. 5 million RBC in one drop of blood



Shape allows cell to bend and squeeze through tight places

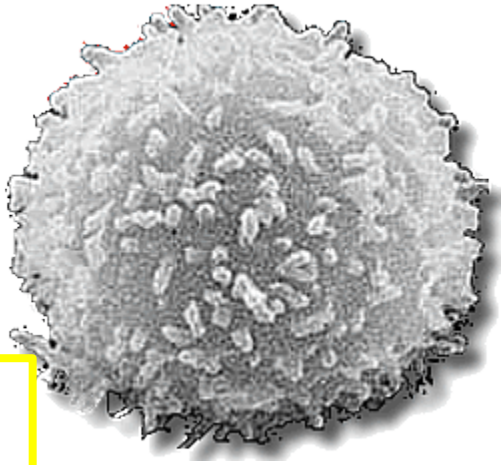
Shape allows the max amount of surface area for gas exchange

White Blood Cells: Circulate throughout the body providing protection against foreign organisms and matter.

Can surround and digest foreign organisms such as viruses and bacteria

Has a nucleus and can live considerably longer than a RBC. They can self-replicate/divide

Other WBC's can make antibodies



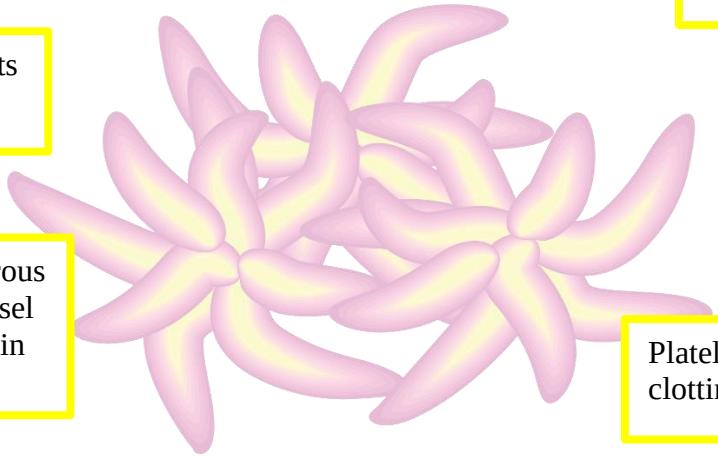
Outnumbered by RBC's 500 to 1

Twice as large as a RBC

Platelets: Irregularly shaped bodies with sticky surfaces that form clots to stop bleeding.

Only lives for 5-9 days

Not cells but tiny fragments of other cells



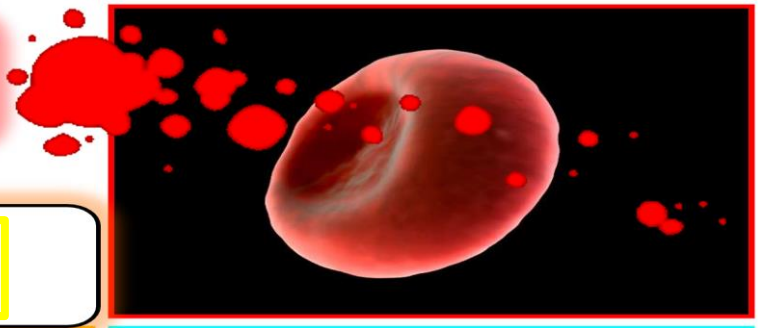
Prevents blood loss and allows homeostasis

Clots can be very dangerous if they block a blood vessel such as those in your brain (stroke)

Platelets can sense air and begin clotting a cut very quickly

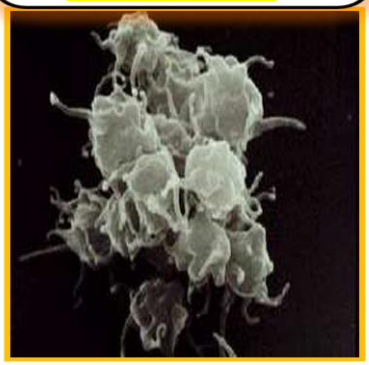
Name the blood cells below.

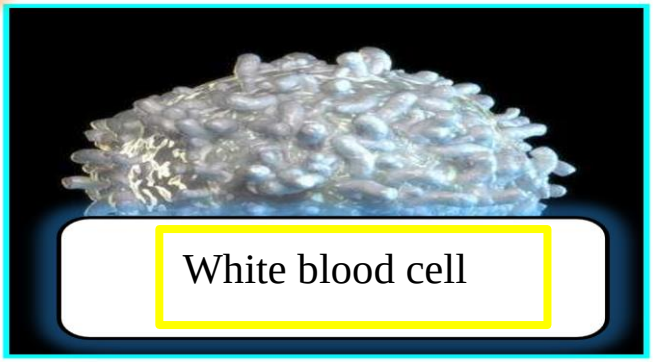
Red blood cell



Plasma

Platelets





White blood cell

◊Please name the four parts of blood in the boxes below using the descriptions to help you.

White blood cell -Circulate throughout the body providing protection against foreign organisms and matter.	Platelets Irregularly shaped bodies with sticky surfaces that form clots to stop bleeding.
Plasma Controls amount of water in blood. Has antibody proteins that fight off disease. -Blood clotting agents. -Carries chemical messages (hormones). -Carries waste products.	Red blood cell -Produced in bone marrow, no nucleus in cell (mature cell), delivers oxygen to cells, carries away CO2. -Hemoglobin: Protein in blood that helps blood bind with oxygen and carbon dioxide.

Part 6 Lesson 5 Blood Types

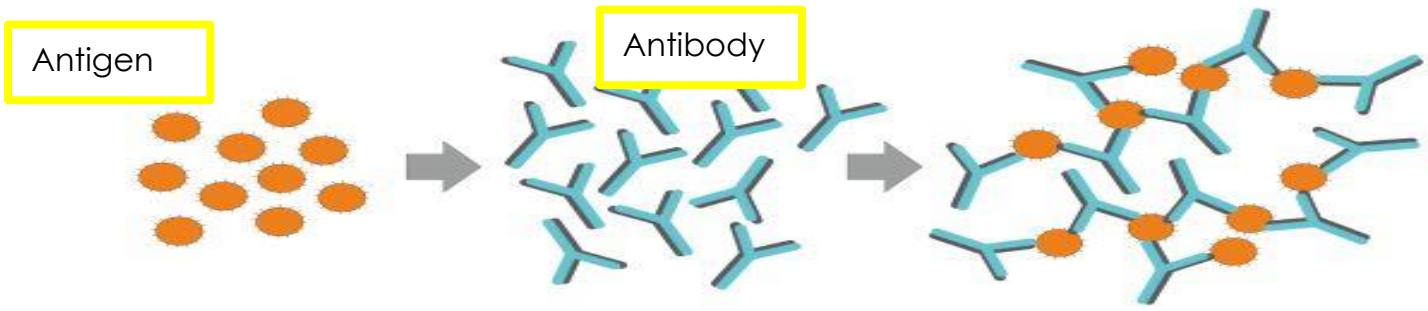
Can you freely exchange blood from one person to another? Explain below.

Yes and no. For many years, blood transfusions were unsuccessful, leading to horrible clotting and death. If you are given the wrong blood, your body attacks it as if it is a foreign invader. The differences in human blood are due to the presence or absence of certain protein molecules called antigens and antibodies. The antigens are located on the surface of the RBCs and the antibodies are in the blood plasma. Individuals have different types and combos of these molecules passed to you by your parents (genetics).

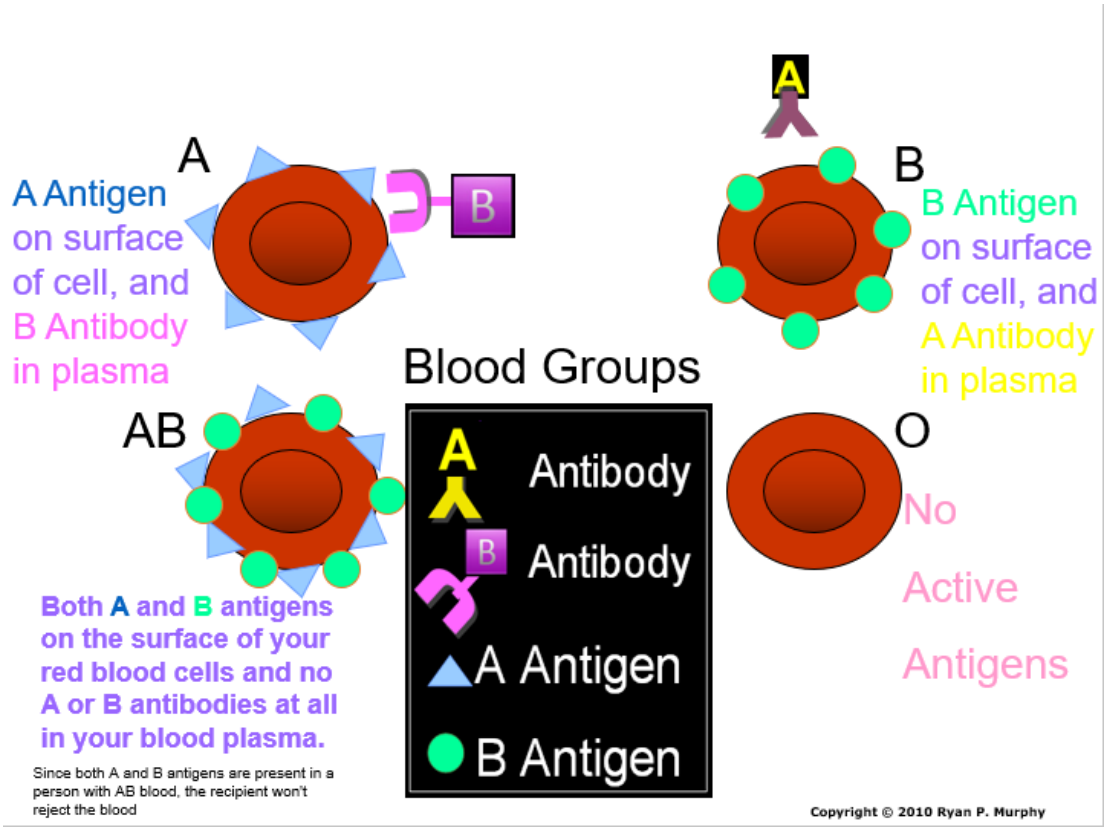
Antigen: A substance that when introduced into the body stimulates the production of an antibody.

Antibody: A blood protein produced in response to and counteracting a specific antigen.

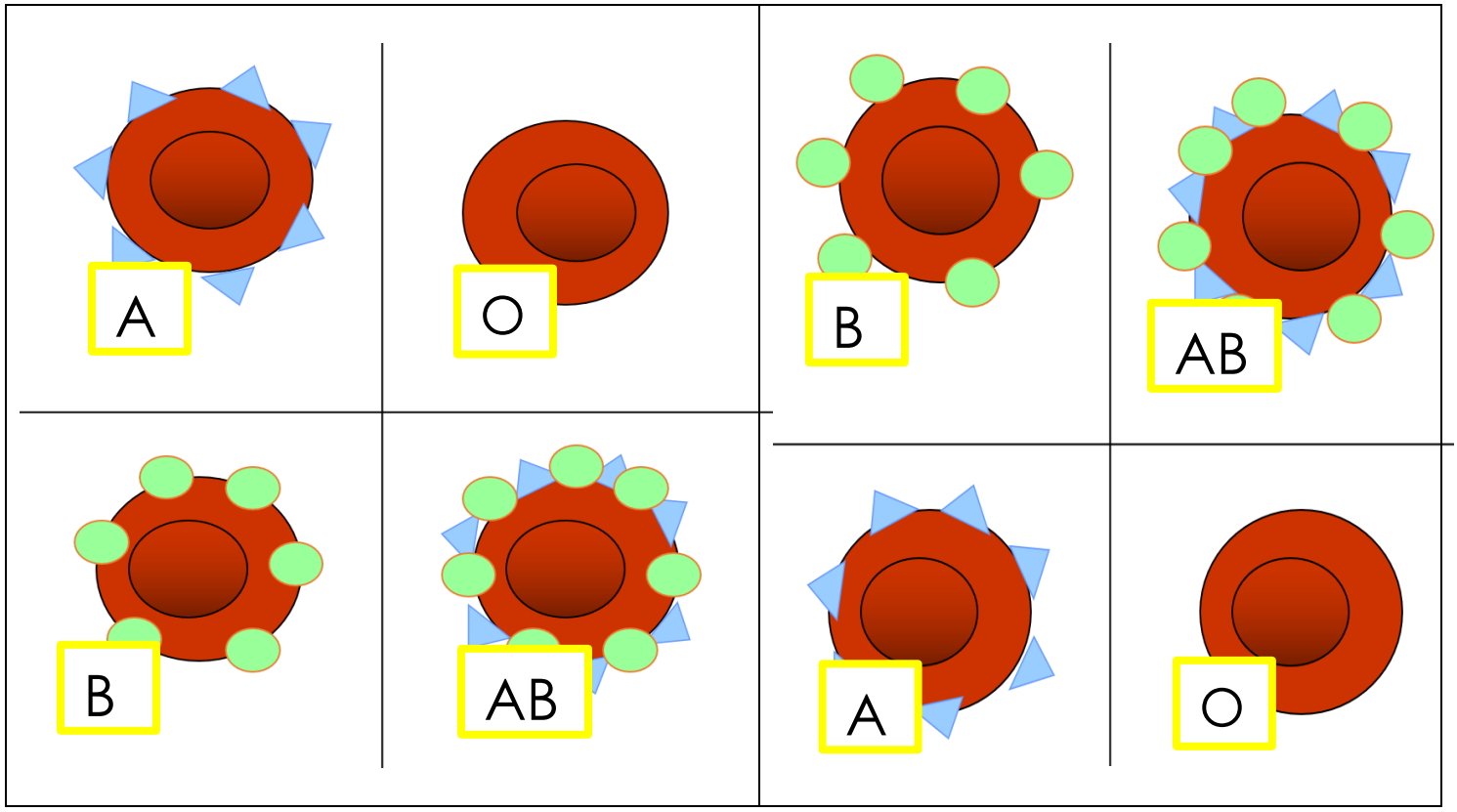
Which is the antigen, and which is the antibody below.



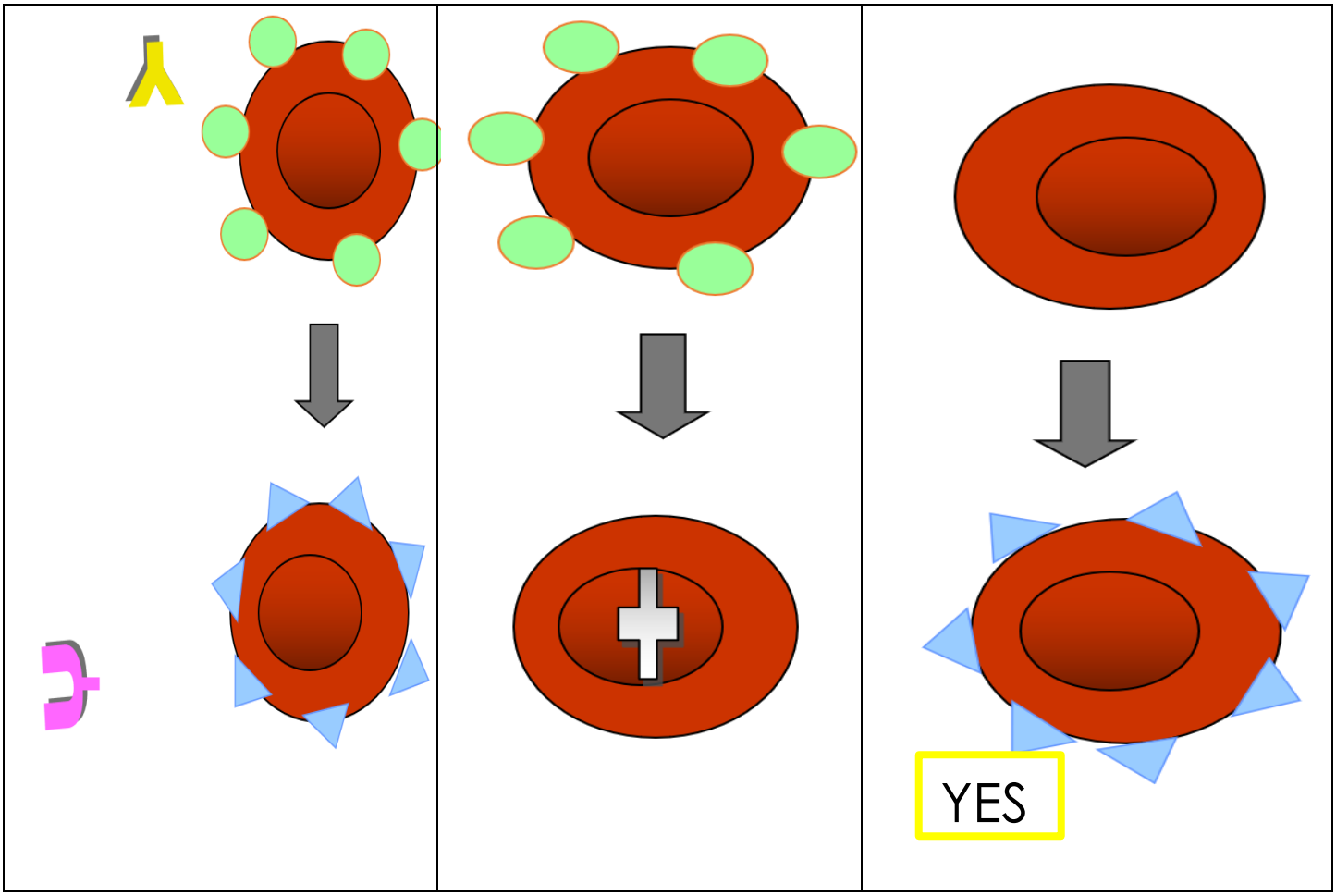
Please complete the sketch of the blood groups as described in the slideshow.



Name the correct blood types below.



Will the transfusion below be a safe one?



There is another antigen that some people may have.

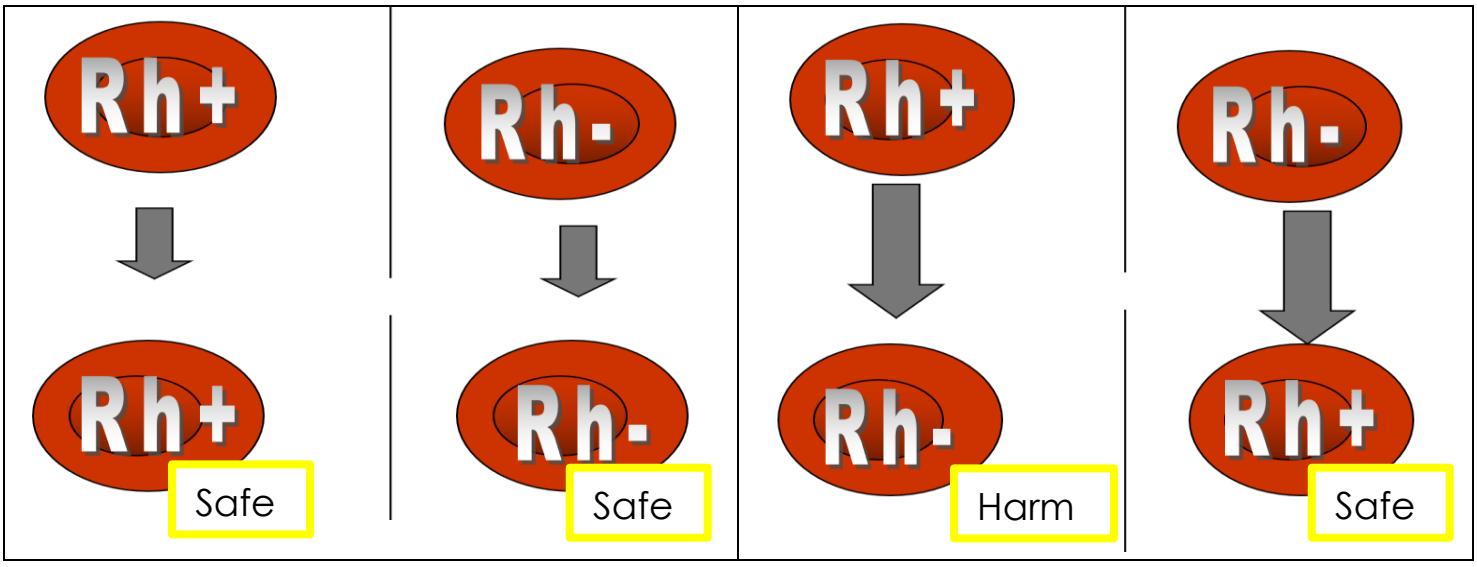
If you have it you're… Rh+

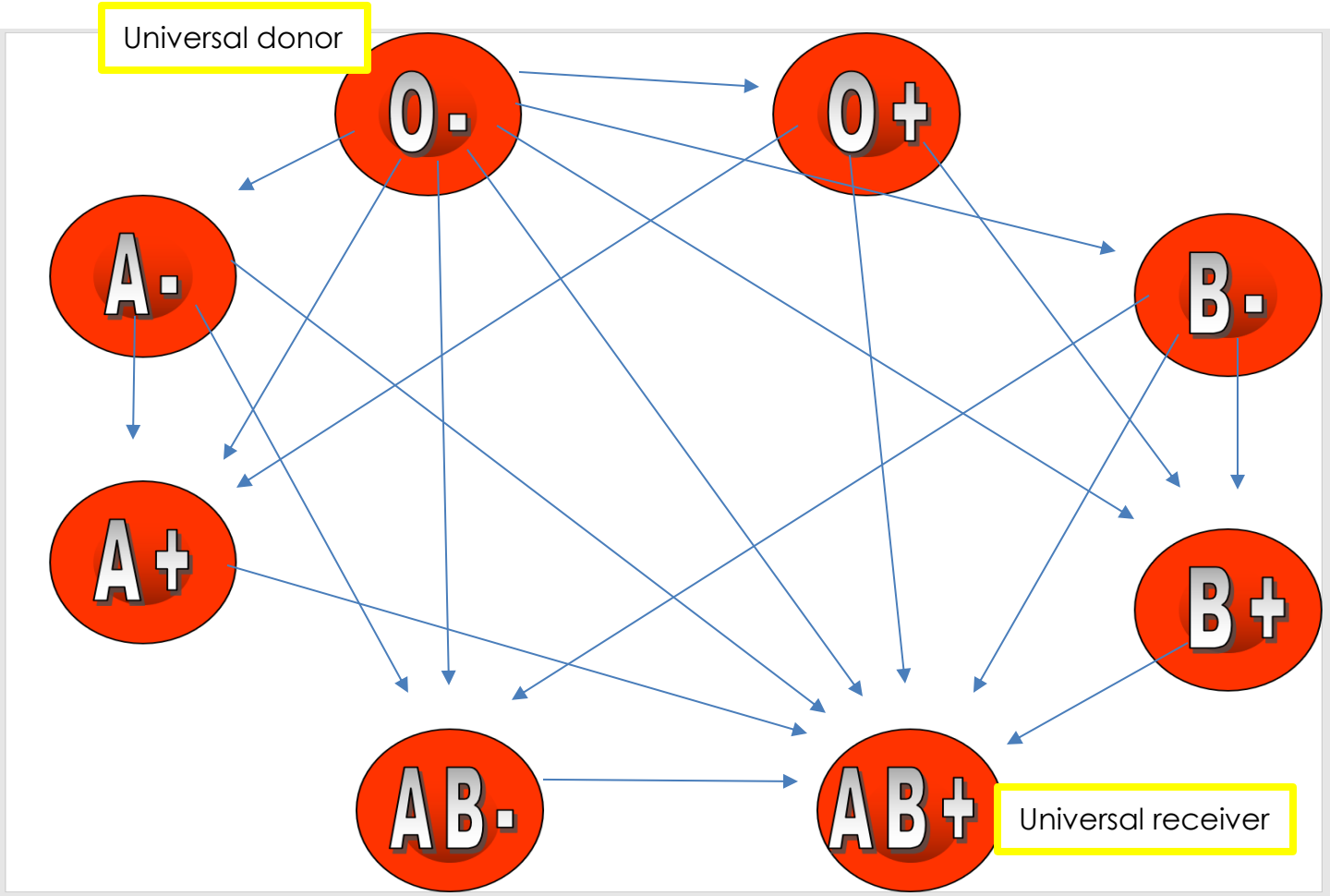
If you don't you're… Rh-

Rh+ should not share blood with someone who is Rh-

Rh- can give to a person who is Rh+

Describe if each transfusion below is safe or will cause harm?

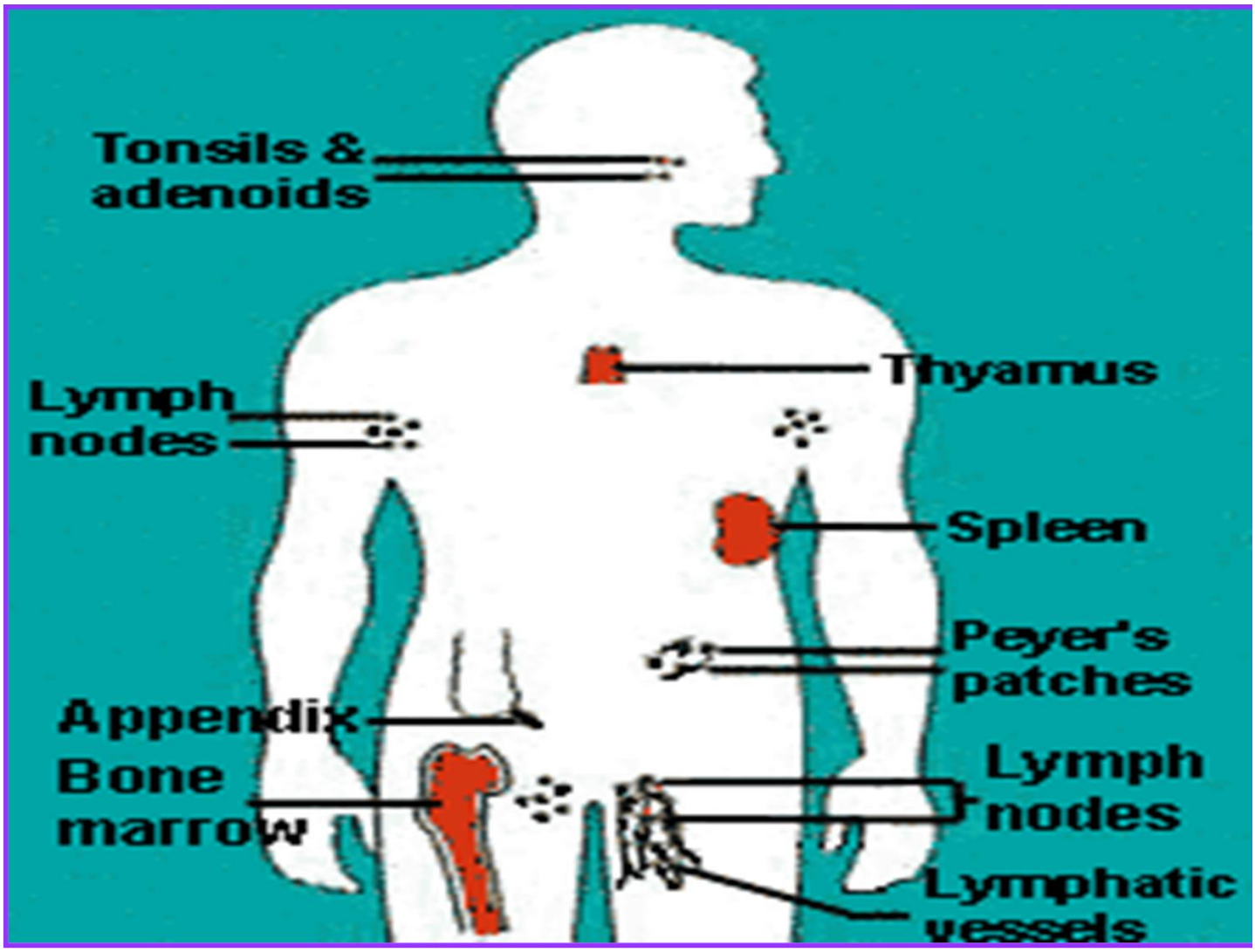




Part 6 Lesson 7 The Lymphatic System

Lymphatic System: A part of the circulatory system, comprising a network of lymphatic vessels that carry a clear fluid called lymph.

Lymph contains white blood cells.
Helps to rid the body of toxins, waste, and unwanted materials.
Lymph is essentially recycled blood plasma.


Tonsils &
adenoids
Thyamus
Lymph
nodes
Spleen
Peyer's
patches
Appendix
Bone
marrow
Lymph
nodes
Lymphatic
vessels

Across

2. A blood protein produced in response to and counteracting a specific antigen
6. _____ System: A part of the circulatory system, comprising a network of lymphatic vessels that carry a clear fluid called lymph
8. Blood vessel that carries blood toward the heart.
9. ____ Blood Cells: Produced in bone marrow, no nucleus in cell (mature cell), delivers oxygen to cells, carries away CO2.
10. Protein in blood that helps blood bind with oxygen and carbon dioxide.
13. High blood pressure through blood vessels. Heart must work harder to pump blood and this may cause leaks in blood vessels.
16. Cellular _____: Processes whereby certain organisms obtain energy from organic molecules.
18. The function of the circulatory system. To deliver _____ messages (hormones).
20. A substance that when introduced into the body stimulates the production of an antibody.
22. _____ Blood Cells: Circulate throughout the body providing protection against foreign organisms and matter.

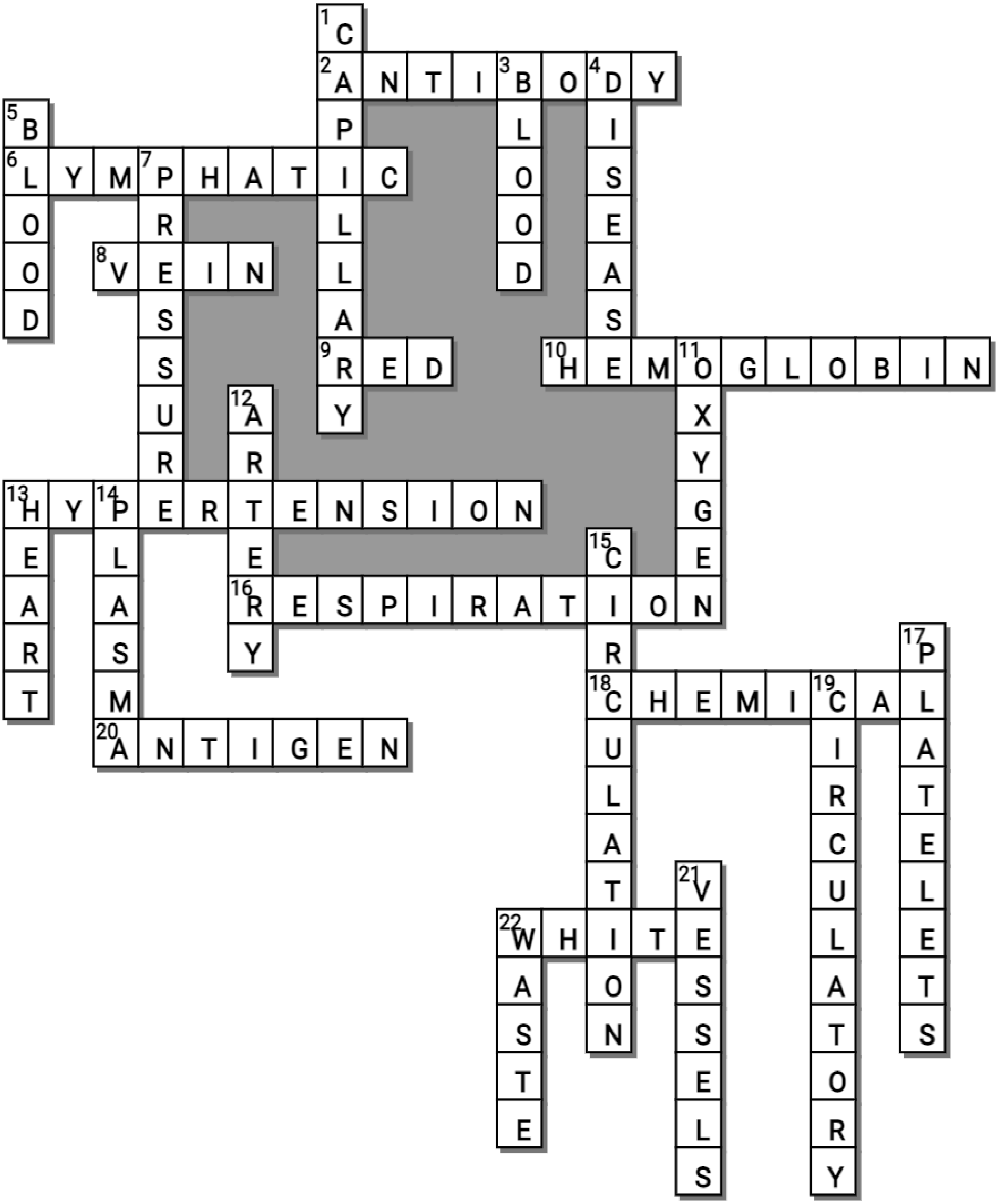
Down

1. Extremely thin blood vessels.
3. The circulatory system consists of the following Heart, Blood Vessels, _____
4. The function of the circulatory system. . To aid in _____ prevention.
5. A specialized bodily fluid that delivers necessary substances to the body's cells.
7. Blood _____: The force of blood pushing against the walls of the arteries as the heart pumps blood. Flows from high to low pressure.
11. The function of the circulatory system. To deliver food and _____ to cells.
12. Blood vessel that carries blood away from the heart.
13. The circulatory system consists of the following _____, Blood Vessels, Blood
14. Fluid of blood, 90% water, 10% sugars, fats, salts, gases, and proteins.
15. Human Heart: Important organ that provides a continuous _____ of blood.
17. Irregularly shaped bodies with sticky surfaces that form clots to stop bleeding
19. _____ System: Delivers food and oxygen to the body and carries carbon dioxide and other waste products away.
21. The circulatory system consists of the following Heart, Blood _____, Blood
22. The function of the circulatory system. To carry away _____.

----------Teacher can remove word bank to make more challenging----------

Possible Answers

ANTIBODY, ANTIGEN, ARTERY, BLOOD, BLOOD, CAPILLARY, CIRCULATORY, HEMOGLOBIN, HYPERTENSION, LYMPHATIC, PLASMA, PLATELETS, PRESSURE, RED, RESPIRATION, VEIN, VESSELS, WHITE, CHEMICAL, CIRCULATION, DISEASE, HEART, OXYGEN, WASTE



1 CAPILLARY
2 ANTIBODY
3 BLOOD
4 DISEASS
5 BLOOD
6 LYMPHATIC
7 PRESSURE
8 VEIN
9 RED
10 HEMOGLOBIN
11 OXYGEN
12 ARTERY
13 HYPERTENSION
13 HEART
14 PLASMA
15 CIRCULATION
16 RESPIRATION
17 PLATELETS
18 CHEMICAL
19 CIRCULATORY
20 ANTIGEN
21 VESSELS
22 WHITE
22 WASTE

Part 6 Review Game

Name:

1-20 = 5 pts Part 6 Lesson 6
*20-*25 * = Bonus + 1 pt,
(Secretly write owl in correct space +1 pt)
Final Question = 5 pt wager

Score ____ / 100

THERE AND BACK AGAIN	LUB-DUB	HEART FELT	RED HOT	VALENTINES Bonus round 1 pt each
1) A and C are incorrect	6) D) Oxygen rich blood travels from the lungs to the heart, to the body, back to the heart, and then to the lungs	11) A= Tricuspid valve B= Mitral valve C= Aortic valve D= Pulmonary valve	16) O-	*21) 50 First Dates
2) A= Blood vessels B= Blood cells C= Heart	7) A= Deoxygenated B= Oxygenated	12) Septum	17) NO	*22) Grease
3) Food, oxygen Waste Disease Hormones	8) B is correct	13) A= Vein, blood with depleted oxygen levels B= Artery C= Capillary	18) Lymph	*23) The Wedding Singer
4) A= Oxygen B= Carbon dioxide	9) A= Aorta B= Right atrium C=Tricuspid valve D= Right ventricle	14) A= Red blood cells B= White blood cells C= Platelets D= Plasma	19) A= Lymph node B= Lymphatic vessel	*24) Quahog
5) B) Food and oxygen is delivered to cells primarily in the heart	10) A= Aorta B= Pulmonary vein C= Mitral valve D= Left ventricle	15) Antigen, antibody	20) Spleen Bone marrow Lymph nodes Peyer's patches Thymus Tonsils Appendix Adenoids	*25) Napoleon Dynamite

Final Question Wager _____/5 Answer: A= Superior Vena Cava, B= Inferior Vena Cava