

Name: _____ Date: _____ Pd: _____

HEART AND CIRCULATORY SYSTEM – TEACHER NOTES

(textbook pages B65-B71)

Where asked for a term's definition, please use the **GLOSSARY** definition. You can add to it from the reading text as needed.

Circulatory System – (definition) The group of organs, consisting of the heart and blood vessels, that circulates blood through the body. Transports materials from the digestive system and the respiratory system to the cells all over the body.

What two main body structures make up the Circulatory System? Heart and Blood Vessels

THE HEART

What is the main function of the **heart**? Pushes blood throughout the circulatory system. (Contractions of the heart muscles – cardiac muscle.)

The human heart functions as two pumps – the right side and left side.

The right side of the heart pumps blood to: the lungs to receive oxygen

The left side of the heart pumps blood to: the entire body

Each side of the heart is divided into two areas called “ chambers .”

What does “oxygen-poor” blood mean? Blood from the body with less oxygen

What does “oxygen-rich” blood mean? Blood from the lungs after it has picked up more oxygen

Which type of blood flows INTO the RIGHT side of the heart? Oxygen-poor blood

What is that section of the chamber called? Right Atrium

Next, the blood flows into a pumping chamber called the "right ventricle" and is pumped from there into the lungs.

What is absorbed and what is released when blood reaches the lungs? Blood absorbs oxygen from the lungs and releases waste carbon dioxide.

Where does blood go after it has picked up oxygen from the lungs? Blood is pushed back into the heart.

When oxygen-rich blood returns to the heart, which part of the heart is it entering? Left atrium

Blood then moves into a pumping chamber called the "left ventricle," and is pumped from there to the rest of the body.

TRUE or FALSE? Both oxygen-rich and oxygen-poor blood is actually red in color.

TRUE or FALSE? Oxygen-rich blood is a much brighter and lighter shade than is oxygen-poor blood.

Diagrams of the heart and circulatory system usually show oxygen-rich blood with the color RED, and oxygen-poor blood with the color BLUE.

BLOOD

Blood – (definition) A fluid in the body that delivers oxygen and other materials to cells and removes carbon dioxide and other wastes.

Red Blood Cells – (definition) A type of blood cell that picks up oxygen in the lungs and delivers it to cells throughout the body.

White Blood Cells – (What is their function?) Help your body fight infection by attacking disease-causing organisms.

Blood is a tissue that is made up of these four things: Plasma, Red Blood Cells, White Blood Cells, Platelets

About 60% of your blood is “plasma.” What substances is plasma mostly made of? Proteins, glucose, hormones, gases, and other substances dissolved in water. (Mostly water.)

Platelets – (What are they and what is their function?) Large cell fragments that help form blood clots when a blood vessel is injured.

When you get a cut, what does your body do to help it heal? Nearby platelets begin to enlarge and become sticky. They stick to the injured area of the blood vessels and release chemicals that result in blood clotting. A scab forms.

The Lymphatic System is associated with our Immune System and depends heavily on the Circulatory System. (We will learn more about it later.) What is the name of the main lymphatic fluid that travels with the blood?
Lymph

BLOOD VESSELS

What are **blood vessels**? Tube-shaped structures (similar to drinking straws) through which blood travels.

Arteries – (definition) Blood vessels with strong walls that carry blood away from the heart.

Veins – (definition) A blood vessel that carries blood back to the heart.

Capillaries – (definition) A narrow blood vessel that connects arteries with veins.

***** DID YOU KNOW?** Capillaries are so narrow that blood cells have to travel through them single-file.

*(From the Bill Nye Science Guy video.)****

How are pulmonary arteries and veins different from other arteries and veins?

Most arteries carry oxygen-rich blood AWAY from the heart, and most veins carry oxygen –poor back TO the heart. However, with pulmonary blood vessels, it is the OPPOSITE.

Pulmonary Arteries carry oxygen-poor blood from the heart to the lungs. Pulmonary Veins carry oxygen-rich blood from the lungs to the heart.

BLOOD PRESSURE

Blood pressure is the force of pressure that blood pushes against the walls of the blood vessels.

What can happen to your body if your blood pressure is too low? Some cells will not get oxygen and other needed materials.

What can happen to your body if your blood pressure is too high? The force may weaken the blood vessels and require the heart to work harder to push blood through the blood vessels.

BLOOD TYPES

There are four different blood types. List each of the four below: A, B, AB, O

What determines the type of blood? A particular type of protein on the surface of the blood cell, which we have classified as A or B.

What is a blood “transfusion?” A procedure in which one person receives blood donated by another.

Explain why someone with type A blood cannot donate blood to someone with Type B blood.

The body's immune system will not recognize blood that does not match its own type and will therefore attack it. (Kind of how it attacks germs in the bloodstream.)

Explain why someone with Type O blood can donate to anyone with any blood type, but can only receive blood from someone who also has Type O blood. Type O blood has no special protein on its surface (neither A nor B), so the A and B bodies do not notice it as a "foreign invader" that needs to be attacked. Therefore, "O" blood is safe to donate to any other type.

The body of a person with "O" blood will see the other blood types (those that do have a special protein on the surface) as a foreign invader and will attack it. People with type O blood can only receive transfusions from other people with Type O blood.

Blood Type	Can Donate Blood to:	Can Receive Blood from:
A	A, AB	A, O
B	B, AB	B, O
AB	AB	A, B, AB, O
O	A, B, AB, O	O