

HS-EHS-4 Cardiovascular System

90 min classes		Cardiovascular System Unit Pacing Guide			
	Day	Intro	Instruct	Assess	Homework
Components of Whole Blood	1	Students add to prefix/suffix flashcards: • <u>Erythro</u> , <u>cyte</u> , <u>leuko</u>	<ul style="list-style-type: none"> Blood PPT- Section 1 & Section 2 Cornell Notes (Blood composition & plasma, Blood Formed Elements) 	<ul style="list-style-type: none"> Cornell Notes summaries Informal discussion and questions 	
	2	Prefix/suffix flashcards: • <u>Thrombo</u> , <u>penia</u> , <u>anti</u>	<ul style="list-style-type: none"> Blood PPT- Section 3 Cornell Notes (Blood Formed Elements: Part 2) Components of Blood Lab Materials: blood smear and microscopes or virtual slide	<ul style="list-style-type: none"> Cornell Notes summaries Informal discussion and questions Informal questioning during lab activity Graded lab questions 	<u>Honors:</u> Digging Deeper: Artificial Blood
Hemostasis	3	Prefix/suffix flashcards: • <u>Hemo/hemato</u> , <u>poiesis</u> , <u>blast</u> , <u>pluri</u> , <u>potent</u> , <u>stasis</u>	<ul style="list-style-type: none"> Blood PPT- Section 4 & 5 Cornell Notes (Blood Processes, Blood Groups) 	<ul style="list-style-type: none"> Cornell Notes summaries Informal discussion and questions 	<u>All:</u> Homeostasis in the Blood <u>Honors:</u> Data Analysis: Blood Volume Digging Deeper: Erythrocyte Life Cycle
Components of Whole Blood, Anatomy of the Heart	4	Discuss/review homework	Cardiovascular System Lab Materials: stopwatch or wall clock with secondhand, computers, sphygmomanometer (optional), stethoscope (optional), colored pencils	<ul style="list-style-type: none"> Collect Cardiovascular System Lab Worksheet (25 pts) 	<ul style="list-style-type: none"> Study for Blood Quiz
	5	Prefix/suffix flashcards: • <u>Sept</u> , <u>eosin</u> , <u>granulo</u>	<ul style="list-style-type: none"> Online Blood Quiz (need computers) Heart PPT- Section 1 Cornell Notes (Intro to the Heart) 	<ul style="list-style-type: none"> Cornell Notes summaries Informal discussion and questions 	
Physiology of the Heart	6	Prefix/suffix flashcards: • <u>Myo</u> , <u>endo</u> , <u>peri</u> , <u>epi</u> , <u>cardio</u>	<ul style="list-style-type: none"> Heart PPT- Sections 2 & 3 Cornell Notes (Anatomy of the Heart, Physiology of the Heart) 	<ul style="list-style-type: none"> Cornell Notes summaries Informal discussion and questions 	

Coincide with State Standards document in Unit Planning Folder

***Bold items** must be photocopied.



This icon is found on the top right corner of Honors pages for easy identification.



Students learn abnormal and normal ranges for blood pressure and practice multiple times. Also students learn how to interact with patients.

	Day	Intro	Instruct	Assess	Homework
Anatomy & physiology of the heart	7	Put away all belonging to prepare for dissection lab	Sheep Heart Dissection	<ul style="list-style-type: none"> Collect Lab Worksheet (25 pts) 	<u>Honors:</u> An Erythrocyte's Story (graded for 20 pts- 14 terms accurately used + 6 pts for creativity)
Blood vessels	8	Prefix/suffix flashcards: <ul style="list-style-type: none"> vascul, ven, athero, 	<ul style="list-style-type: none"> Blood Vessels PPT Cornell Notes (Blood Vessels) Major Blood Vessels Diagram (for reference) Blood Vessel Microscopy Lab 	<ul style="list-style-type: none"> Cornell Notes summaries Informal discussion and questions Blood vessel microscopy lab (completion check) 	<u>All:</u> Study for Heart Quiz <u>Honors:</u> Digging Deeper: Vital Signs
Pathology	9	Prefix/suffix flashcards: <ul style="list-style-type: none"> Athero, emia/ema 	<ul style="list-style-type: none"> Heart Online Quiz (need computers) Disease Infographic research (need computers) 	<ul style="list-style-type: none"> Informal observation of student progress Student planning pages (simply observe for progress) 	
	10	Review prefix/suffix flashcards	Finish Disease Infographics	<ul style="list-style-type: none"> Infographic grading rubric (20 pts- 5 pts for each category) 	Finish Disease Infographics if not finished
Review	11	Review prefix/suffix flashcards	<ul style="list-style-type: none"> Collect Disease Infographics Task Card Review 	<ul style="list-style-type: none"> Observe student progress during task cards Informal questioning, if necessary 	Study for test
	12	Review prefix/suffix flashcards	<ul style="list-style-type: none"> Go over Task Card Review making sure students have correct answers to study for test External Heart Anatomy Diagram Interior Heart Anatomy Diagram Intrinsic Cardiac Conduction Diagram 	<ul style="list-style-type: none"> Assess student understanding based on task card answers Information questioning Informal check of diagram accuracy 	Study for test
Assessment	13	Review notes for test	Cardiovascular System Test	<ul style="list-style-type: none"> Formal assessment 	



4.1, 4.9

4-13-23

Cardiopulmonary circulation-carries blood from the heart to the lungs and back.

Apex-lies on the diaphragm and points to the left of the body.

Stethoscope-instrument used for detection and study of sounds arising within body

Cardiac arrest-System ceasing from failure of heart as a pump

Cardiopulmonary resuscitation (CPR)-Prevention of asphyxial death by artificial respiration

Pericardium-Closed membranous sac surrounding heart

Myocardium-makes up the major portion of the heart

Endocardium-membrane lining interior of heart

Septum-Partition; dividing wall between two spaces or cavities, such as the septum between left and right side of heart or one

Vena cava-large blood vessel that returns blood to the right atrium;

Coronary sinus-From the heart muscle to the right atrium

Pulmonary artery-takes away blood from the right ventricle to the lungs for oxygen

Pulmonary veins-bring oxygenated blood from the lungs to the left atrium

Aorta-takes blood away from the left ventricle to the rest of the body

Atrium-upper chamber of heart

Right ventricle-one of the lower chambers of the heart

Left ventricle-one of the lower chambers of the heart

Tricuspid valve-Positioned between the right atrium and the right ventricle.

Chordae tendinae-small fibrous strands connecting the edges of the cuspid valve to the papillary muscle that are projections of the myocardium.

Mitral (bicuspid) valve-located between the left atrium and the left ventricle.

4.2, 4.4

Blood Pressure Worksheet

Answer the following questions.

1. Define blood pressure.

The measurement of pressure of blood that is exerted on the wall of arteries during various stage of heart activity

2. Identify what unit of measurement is used to measure blood pressure.
milligrams of mercury

3. What are the names of the instruments used to measure blood pressure?
Sphygmomanometer & Stethoscope

4. The greatest force of the blood against the walls of the arteries during ventricular contraction is called Systolic

5. The constant pressure in the walls of the arteries is called Diastolic

6. Describe the normal ranges for each type of blood pressure measurement.

a. Systolic - 100 - 140 mm Hg

b. Diastolic - 60 - 90 mm Hg

7. What are the four main factors that influence blood pressure?

a. Force of the heart

b. Resistance of the arterial system

c. Elastic of the arteries

d. Volume of the blood in the arteries

8. Describe the three factors that may increase blood pressure.

a. excitement

b. Exercise

c. Smoking

a. Rest / sleep

b. Shock

c. Fasting

10. What other factors may cause miscellaneous readings of blood pressure?

a. incorrect cuff size

b.

11. How is the blood pressure recorded?

in fractions. Systolic on top ; Diastolic on bottom

12. Identify two types of blood pressure cuffs.

a. mercury

b. Electronic

13. Describe the exact location you should place the blood pressure cuff.

Center of the upper arm and 1/2 space above the antecubital area of the arm

14. In what direction should the earpieces of the stethoscope be pointed?

forward

—towards the face

15. Identify three positions of the patient to obtain a BP.

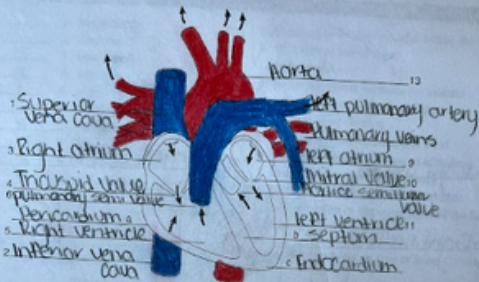
a. lying

b. standing

c. sitting

4.1, 4.2,
4.3, 4.4,
4.7

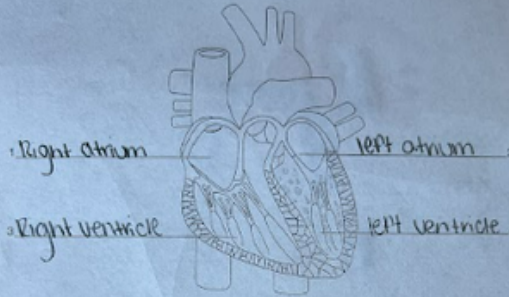
11. Label the entire heart. Color the structures blue or red according to the type of blood they carry or hold.



E. Use the words in the following list to complete the story on circulation.

- | | |
|--------------------|---------------------------|
| aorta | lung |
| aortic semilunar | mitre |
| bicuspid valve | oxygen |
| carbon dioxide | pulmonary artery |
| descending aorta | pulmonary semilunar valve |
| inferior vena cava | pulmonary veins |
| left atrium | right atrium |
| left ventricle | right ventricle |
| liver | tricuspid valve |

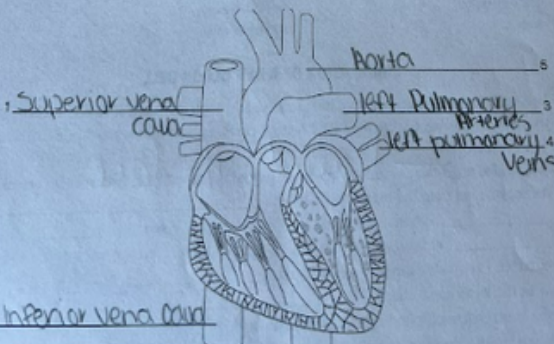
3. Label the chambers of the heart. Color the right heart blue (which indicates deoxygenated blood) and the left heart red (denoting oxygenated blood).



4. Why is the heart colored in this fashion?

To show the flow of the deoxygenated + oxygenated blood

5. Label the structures leading to and away from the heart. Color correctly those that should be blue and those that should be red.



4.1, 4.5, 4.6, 4.7

Cardiovascular System Test

Multiple Choice
Select the best answer for each question below.

88

- Which of the following is the function of the cardiovascular system?
 - a. regulating body temperature and fluid volume
 - b. preventing infection
 - c. transporting hormones and wastes
 - d. all of these are functions of the cardiovascular system
- All of the following are formed elements of the blood except
 - a. plasma
 - b. erythrocytes
 - c. leukocytes & thrombocytes
 - d. thrombocytes
 - e. leukocytes
- Which of the following components of blood makes up the smallest percentage by volume?
 - a. plasma
 - b. erythrocytes
 - c. leukocytes & thrombocytes
 - d. thrombocytes
 - e. leukocytes
- An erythrocyte is more commonly known as
 - a. a white blood cell
 - b. a platelet
 - c. a red blood cell
 - d. hemoglobin
 - e. a protein
- Blood plasma is mostly made of
 - a. water
 - b. granules
 - c. oxygen
 - d. hemoglobin
- The cell above is responsible for releasing histamines, which dilate blood vessels during an allergic attack. It is categorized as an
 - a. granulocyte, lymphocyte
 - b. granulocyte, basophil
 - c. granulocyte, monocyte
 - d. agranulocyte, eosinophil
- A single hemoglobin molecule can carry _____ oxygen molecules and each red blood cell can carry _____ hemoglobin proteins.
 - a. millions of
 - b. millions of 4
 - c. millions of 4
 - d. millions of 100
- Because oxygen is nonpolar
 - a. it must be absorbed by the lymphocytes.
 - b. it must diffuse directly into the blood.
 - c. it must be eliminated quickly.
 - d. it must be carried by hemoglobin.

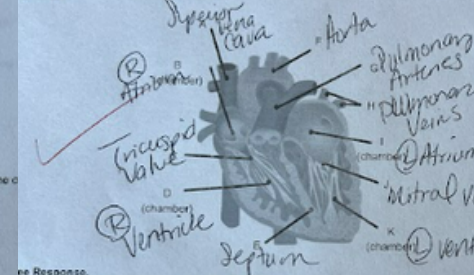
Cardiovascular Test- 4.1, 4.2, 4.3, 4.4, 4.5, 4.6, 4.7, 4.8, 4.9

- The process of hemostasis is completed by which type of cells?
 - a. white blood cells
 - b. bacteria
 - c. red blood cells
 - d. plasma
- Which of the following is NOT true of hemostasis?
 - a. It occurs in the red bone marrow of adults.
 - b. It begins with a monocyte.
 - c. It is stimulated by epinephrine.
 - d. It causes the differentiation of all types of blood cell.
- The hormone that stimulates platelet formation is
 - a. erythropoietin
 - b. thrombopoietin
 - c. thrombopoiesin
 - d. thrombopoiesin
- Which of the following is the first step of hemostasis?
 - a. A fibrin mesh is formed.
 - b. The blood vessel contracts.
 - c. Platelets are activated.
 - d. The blood vessel contracts.
- An individual with B+ blood would have what on their erythrocytes?
 - a. B antigens & no Rh antigens
 - b. B antibodies & no Rh antigens
 - c. B antigens & Rh antigens
 - d. B antibodies & Rh antigens
- A person with Type A blood needs a blood transfusion. Which blood type is compatible?
 - a. A and O blood
 - b. B and O blood
 - c. O blood only
 - d. A and B blood
- Which is a possible genotype for an individual with B blood?
 - a. I^AI^B
 - b. I^AI^A
 - c. I^Ai
 - d. I^AI^A
- The pericardium around the heart is responsible for
 - a. covering and closing the heart valves
 - b. creating the heart beat
 - c. creating the heart beat
 - d. covering and closing the heart valves
- The real work of the heart contractions is done by which layer?
 - a. epicardium
 - b. pericardium
 - c. myocardium
 - d. endocardium
- The human cardiovascular system has two loops. Which loop carries blood to the head and back?
 - a. pulmonary loop
 - b. coronary loop
 - c. systemic loop
 - d. systemic loop
- Which type of blood vessel contains blood at the highest pressure?
 - a. vein
 - b. artery
 - c. capillary
 - d. capillary

Matchings

- Match the following terms to the correct description.
- 1) Negative feedback
 - 2) Atrial node
 - 3) Diastole
 - 4) Valves
 - 5) Septum
 - 6) Atrium
 - 7) Ventricle
- Also called the cardiac pacemaker
Externally covers an atrium
Caused by dropping blood oxygen levels
The contraction portion of the cardiac cycle
The relaxation portion of the cardiac cycle
Divides the deoxygenated and oxygenated blood
Prevents the backflow of blood

Stop backside growth deficiency of red blood cells



- Short Answer.
Answer 5 of the questions below. Use full sentences.
- 1) Name 2 ways in which the structure of an erythrocyte complements its function.
 - 2) Describe the structure of a hemoglobin protein.
 - 3) Name 3 differences between red blood cells and white blood cells.
 - 4) List the layers of the pericardium from outermost to innermost.
 - 5) List the layers of the heart wall from outermost to innermost.
 - 6) Name one event that can alter stroke volume and one event that can alter heart rate. Make sure to designate which is which.
 - 7) What are the drawbacks to artificial blood substitutes that are currently available?
 - 8) If two parents (Type AB blood and Type O blood) have children, what are the possible genotypes for their offspring? Show a Punnett Square.

Round to travel better. Don't have for large surface area. epicardium, myocardium, endocardium. -3 missing