Comparative Circulatory Systems Name: _____

Biology Date: _____ Hour: _____

Lesson 1: Intro and Types of Circulatory Systems
Use the article inspired by Access Excellence (tinyurl.com/MHSCircSys) and the Introduction paragraph below to help you answer the questions:

Introduction *This excerpt is from page 992 in the textbook. Annotate the paragraph below using underlines, different colors, and highlights.*

Cells must have oxygen and nutrients and must also get rid of waste products. This exchange is accomplished by the circulatory system - the body's transport system. The circulatory system consists of blood, heart, blood vessels and the lymphatic system. Blood carries important substances to all parts of the body. The heart pumps blood through a vast network of tubes inside your body called blood vessels. The lymphatic system is considered part of the circulatory system and immune system. All of these components work together to maintain homeostasis in the body. The circulatory system transports many important substances such as oxygen *(taken in by the respiratory system) and nutrients *(broken down by the digestive system!!). The blood also carries disease fighting materials produced by the immune system. The blood contains cell fragments and proteins for blood clotting. Finally, the circulatory system distributes heat throughout the body to help regulate body temperature.

1. What are the three functions of a circulatory system?

2. Sponges, cnidarians (like Hydra), and flatworms (like Planarians) do not need a circulatory system. Think about their body plans and their digestive systems, and then explain why a circulatory system is not needed.

Organism Type	Digestive System Type	Reason for No Circulatory System
Sponge *(porifera)* & **Hydra** *(cnidarian)* & **Planaria** *(platyhelminthes)*		

3. Explain the difference between the two types of circulatory systems (open vs.closed).

OPEN CIRCULATORY SYSTEM **CLOSED CIRCULATORY SYSTEM**

4. Fill in the table below using provided resources (*Resource Sheet & textbook & previous notes*)?

Group of Animals	**Type of Circulatory System** *(open or closed)*	**Description** *(Key structures, # of heart Chambers…)*
Arthropods & Molluscs	*Open / Closed*	
Sharks and Fish	*Open / Closed*	
Vertebrates (except fish)	*Open / Closed*	

READ THIS!

Annotate the paragraph below using underlines, different colors, and highlights.

An open circulatory system is **less efficient** than a closed circulatory system because the "blood" is not sent through an orderly network of blood vessels to the tissues of the body; rather, it is just moved using the heart (with less direction). Therefore, organisms that have an open circulatory system are usually lower energy demanding organisms.

5. Insects are very active organisms; explain how their very efficient respiratory system helps to make up for their less efficient circulatory system.

Lesson 2: Types of Circulatory Systems
Use the article inspired by Access Excellence (tinyurl.com/MHSCircSys) to help you answer the questions:

6. Why does diffusion work as a mechanism of exchange in invertebrates like sponges, cnidaria, and flatworms, but not in others?

7. Explain the circulatory system of an earthworm. What structures are there and how do they ensure blood travels throughout the worm?

8. Explain the difference in circulatory pattern between a human and a fish.

9. Why don't frog organs ever receive blood that is saturated with oxygen?

Lesson 3: Human Circulatory System

Use the Blood flow through the heart and lungs simulation (tinyurl.com/MHScirc) to help you answer the questions below.

10. Click the "next" button in the bottom right corner. Then Click on "Return." We'll start the pathway of blood circulation with blood returning to the atria of the heart

    a. Where does blood entering the **left atrium** come from?

    b. Where does blood entering the **right atrium** come from?

11. Click the "atria" button. Blood leaving the left and right atria must pass through a valve to reach its destination

    a. Blood leaving the **left** atrium passes through which valve? Where does the blood go next?

    b. Blood leaving the **right** atrium passes through which valve? Where does the blood go next?

12. Click the "ventricles" button.

    a. Blood leaving the **left ventricle** travels where next?

    b. Blood leaving the **right ventricle** travels where next?

13. Click on "Oxygenation" and zoom in on the alveolar air sacs

    a. How does oxygen get into the bloodstream?

    b. How does carbon dioxide leave the bloodstream?