Blood Vessels Worksheet KEY

1. The *pulmonary* circuit circulates blood through the lungs. Blood from all regions of the body first collects in the *right atrium* . The pulmonary trunk divides into the right and left *pulmonary arteries*, which have blood that is *deoxygenated* . The largest artery in the systemic circuit is the *aorta* , and the largest veins are the superior and *inferior vena cava*.

2. Which blood vessels nourish the heart muscle? *coronary arteries*. They originate just above the *aortic semilunar valve* . A *portal* system begins and ends in capillaries. The hepatic portal vein begins in the capillaries found in the *villi* of the small intestine, and the second occurs in the *liver* . The *hepatic* vein leaves the liver.

3. List the three types of blood vessels in the circulatory system and give their functions.
Arteries – carry blood away from the heart
Capillaries – permit the exchange of material with the tissues
Veins – return blood to the heart

4. The middle layer of an artery has *elastic* tissue and smooth muscle, but the middle layer of small arteries, called arterioles, primarily has *smooth* muscle that regulates its diameter.

5. Capillaries are microscopic tubes with one-cell-thick walls composed of simple *squamous* endothelium. Capillaries exchange *nutrients* and waste molecules. Oxygen and nutrients *diffuse* out. Blood can go directly from the arteriole to the venule by means of the ateriovenus shunt when the *sphincter* muscles are closed around the entrance to the capillaries.

6. Small veins, called *venules*, drain blood from the capillaries and then join to form a vein. The walls of veins are *thin* and often have *valves* when compared to arteries. Veins act as a blood *reservoir* since more than half of the total blood volume is in veins.

7. Complete the following table to compare systemic arteries, capillaries, and veins.

Blood Vessel	Function	Number of Layers	Valves Present	Cause of Blood Flow	Blood Velocity (Fast/Slow)	Oxygenated/ Deoxygenated
Arteries	*Transport blood away from the heart*	*3*	*None*	*Blood pressure*	*Fast*	*Oxygenated*
Capillaries	*Exchange material with tissue fluid*	*1*	*None*	*Blood pressure*	*Slow*	*Both*
Veins	*Transport blood toward the heart*	*3*	*Yes*	*Muscular contractions – skeletal muscles*	*Fast*	*Deoxygenated*

8. Add the following terms to the diagram of a capillary shown below: arterial end, venous end, plasma proteins, oxygen, and nutrients, and carbon dioxide.
a. arterial end, b. venous end, c. oxygen and nutrients, d. carbon dioxide, e. plasma proteins
   a. At what position in the above diagram will blood pressure be most important? *C*
   b. At what position in the above diagram will osmotic pressure be most important? *D*