# **The Circulatory System Discussion Guide (for use during or after reading)**

1. According to the text, the circulatory system includes three components. What are they? (Introduction, p. 4-5)
   1. The circulatory system includes the heart, blood vessels, and blood. These three organs function together to carry blood through your entire body.
2. What is the main function of the circulatory system? (What Is Blood?, p. 6-7)
   1. The heart works to pump blood through your blood vessels in order to carry oxygen, nutrients, and other needed substances to all the other cells in your body. In addition, the circulatory system is responsible for using a similar process to transport waste from cells out of your body.
3. What four types of cells does blood contain? What are their main functions? (What Is Blood, Red Blood Cells, Platelets, White Blood Cells, p. 6-13)
   1. Blood contains plasma, red blood cells, platelets, and white blood cells.
   2. Plasma makes up a little more than 50% of blood. It is watery and pale-yellow in color. Its main job is to help carry the platelets, red blood cells, and white blood cells through the blood vessels and to the rest of the body.
   3. Red blood cells carry oxygen throughout your body. They are small and flexible so they can fit through the tiny blood vessels.
   4. Platelets are cells that help stop bleeding when skin is damaged. They link together keep blood from leaking out of the body and to help repair any damages.
   5. White blood cells work to defend the body against such invaders as bacteria and viruses. White blood cells work together to fight off illness in the body and can even grow in number when fighting infection.
4. Describe how blood flows through arteries, capillaries, and veins. (Blood Vessels, p. 14-15)
   1. Arteries are some of the largest blood vessels and carry oxygen-rich blood. The arteries narrow in size until they connect to the capillaries. Here, the blood transfers the oxygen, nutrients, and other helpful substances into cells. Next, the oxygen-poor blood travels from the capillaries and into the veins. The veins widen as they return blood to the heart so it can pick up new oxygen from the lungs and begin the process all over again.
5. What role does each pump in the heart play in the circulatory system? (Delivering Oxygen, p. 18-19)
   1. The right ventricle pumps oxygen-poor blood from the heart to the lungs so it can get rid of the waste product carbon dioxide it is carrying and pick up oxygen before returning to the heart.
   2. The left ventricle pumps oxygen-rich blood from the heart, through the aorta, and through arteries to the rest of the body.
6. Consider how blood moves through the circulatory system. After cells receive oxygen, they pass any carbon dioxide waste to the red blood cells so it can be removed. How does the carbon dioxide travel from the red blood cells out of the body? (Removing Wastes, p. 20-21)
   1. The now carbon-dioxide-rich red blood cells travel with the rest of the blood through the capillaries and into the veins. Next, the blood travels into increasingly larger veins until it reaches the right side of the heart. From there, the arteries carry this blood to the capillaries in the lungs. When you exhale, the carbon dioxide leaves your body! Breathing in again allows you to gather oxygen for your red blood cells to transport again.
7. What roles do the small intestine and the liver play in the circulatory system? (Delivering Nutrients, p. 22-23)
   1. The small intestine and the liver both play a major role in delivering and storing the nutrients your cells need to function and survive. Nutrients enter the blood through capillaries in the small intestine, an organ that breaks down and absorbs food. The liver stores nutrients for when the body needs them. In addition, the liver acts like a chemical factory by changing some nutrients into other substances needed throughout the body.
8. How does your circulatory system regulate your body temperature? (Body Temperature, p. 24-25).
   1. In addition to delivering nutrients, oxygen, and other needed substances to cells throughout your body, the circulatory system can regulate body temperature. This means it works to make sure your body temperature is steady and doesn’t get too hot or too cold. If your body is too hot, the circulatory system will send more blood to the vessels of the skin so the heat can escape. However, if your body is too cold, your circulatory system will restrict the flow of blood to the skin to try to retain as much heat as possible.
9. What is blood pressure? (Blood Pressure, p. 26-27)
   1. Blood pressure is the force of blood moving through the body. Doctors can use blood pressure as one of many ways to determine how healthy you are. Blood pressure helps pump blood through the body when it is needed. High blood pressure can be dangerous, so it is important to keep yourself healthy.
10. How can you take care of your circulatory system? Why is this important? (The Healthiest You, p. 28-29)
    1. We can take care of ourselves by eating a balanced diet of vegetables, whole grains, and lean sources of protein. In addition, we can exercise to keep our arteries stretchy and healthy. Exercise also helps develop our heart muscles! This helps our heart pump more efficiently.