Name: _____

Most plants are vascular plants, having organized systems for transporting materials around to the various parts of the plant. We all know that the human body has organs in it, like the heart, lungs, kidneys and so on. But vascular plants have organs, too. The organs in a vascular plant include leaves, roots and stems. Leaves help the plant produce food by gathering sunlight and using it in the process of photosynthesis. The roots help the plant stay in one place. They burrow down into the ground and hold on. The roots also absorb nutrients and water out of the ground that the plant can use. Stems hold water, and help support the plant. They also act as a highway system to help plants get what they need.

There are two kinds of vascular tissue inside the plant's organs: **xylem** and **phloem**. Xylem carries water and nutrients through the plant from the roots to the stem and leaves. Xylem always flows up, not down. After sugar is made in the leaves during the process of photosynthesis, phloem picks up the sugar and carries it throughout the plant. The natural direction of phloem is downward, but it can flow upward when it has sugar to deliver. Sometimes the plant needs to use the sugar right away. At other times, the sugar is stored to be used later.

Vascular tissue is found in clusters in most plants, with xylem and phloem "packaged" together. It takes a certain amount of "pull" to make water flow up a plant. Root pressure gets the process started. Roots tend to be salty, which draws water in. The special tissue of the roots prevents the water from going back out. Water drops cling to each other, and to some other molecules. This property of water is called cohesion. But even root pressure and cohesion are not enough. **Transpiration** is the final piece that keeps things moving. As water evaporates off of the plant's leaves, it "pulls" more water up through the plant to take its place. In fact, almost all of the water that flows through a plant moves up through the plant fairly quickly and is transpired.

Answer the following questions based on the reading passage. Don't forget to go back to the passage whenever necessary to find or confirm your answers.

1) What is a vascular system?

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_____

2) What is the main difference between xylem and phloem? _____

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3) What are the three primary organs in a vascular plant? _____

_____

4) Why is it important to the plant that phloem moves both up and down?

_____

5) How does water flow up a plant?

_____

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_____

Name: Key

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Answer the following questions based on the reading passage. Don't forget to go back to the passage whenever necessary to find or confirm your answers.

Actual wording of answers may vary.

1) What is a vascular system?

A system for transporting materials in a plant or animal.

2) What is the main difference between xylem and phloem? Xylem moves water and nutrients up the plant from the roots to the leaves. Phloem moves sugar both up and down to deliver sugar to the plant.

3) What are the three primary organs in a vascular plant? roots, leaves and stems

4) Why is it important to the plant that phloem moves both up and down?

It can move sugar wherever the plant needs it.

5) How does water flow up a plant?

The roots draw in water and don't let it escape. The water droplets stick together. Water on the leaves pull the water up from the roots through transpiration.