

The Roots

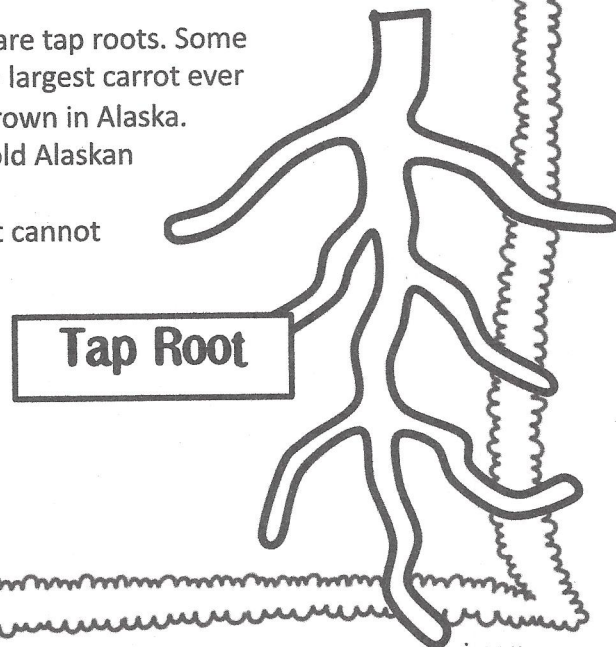
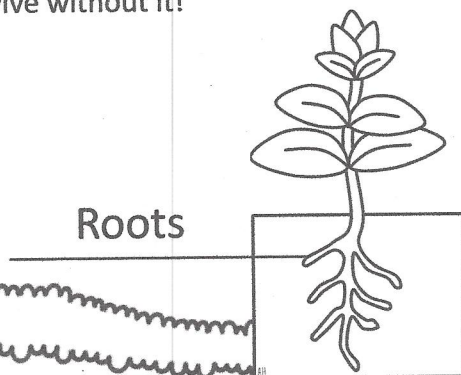
The roots are a very important part of the plant. They have three primary jobs. The first job of the roots is to support the plant. Roots are generally underground and help to anchor the plant to the ground. Without roots, the plant would easily fall over every time the wind blew or something touched it. The second important job of the roots is to absorb water and nutrients from the soil. Just like a sponge soaks up water from your kitchen table, the roots soak up water from the soil. The last job of the roots is to store the plant's food for those times that the plant is not able to produce more food. Since the roots store food, a plant can survive during times when it is not sunny or when it is very cold or dry.

There are two types of roots. The fibrous roots are the most common type of root. The fibrous roots grow very deep and extend widely. Since these roots are so large, they are able to find more sources of water and absorb more nutrients than other roots. These roots are great for anchoring a plant and for absorption, but they do not store many nutrients. Trees all have fibrous roots since they are large plants and need more nutrients. Grass also has fibrous roots. In fact, early settlers built houses using the fibrous grass roots since they were able to hold the dirt together so tightly that it formed a material similar to a brick. The second type of root is a tap root. These roots have one long, thick root. This one root extends deep into the soil while smaller roots grow off the larger root. The tap root is able to store more nutrients than the fibrous roots. However, they are unable to absorb as much water since they are much smaller. Most plants with tap roots are small. Plants with tap roots grow well in cold areas. If the plant dies due to frost, the root is able to store food underground and a new plant can sprout from that same root.

Not all roots grow underground. Some roots grow above ground, such as ivy. It is a vine. The roots attach themselves to other plants or objects above the ground to secure the ivy.

We eat roots! All of the roots that we eat are tap roots. Some examples include carrots, radish, and turnips. The largest carrot ever found weighed in at 19 pounds! The carrot was grown in Alaska. Plants with tap roots are perfect to grow in the cold Alaskan climate!

No matter what type of root it has, a plant cannot survive without it!



Name: _____

The Roots

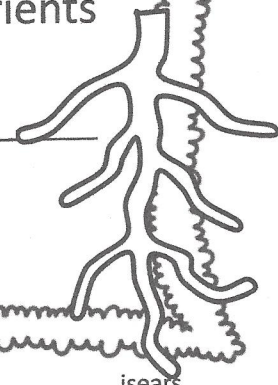
1. What are the three jobs of the roots?

2. What is the most common type of root?

3. Which of the two types of roots do we eat?

4. Give an example of a root that does not grow underground.

5. Where do the roots absorb the water and nutrients from?



jsears

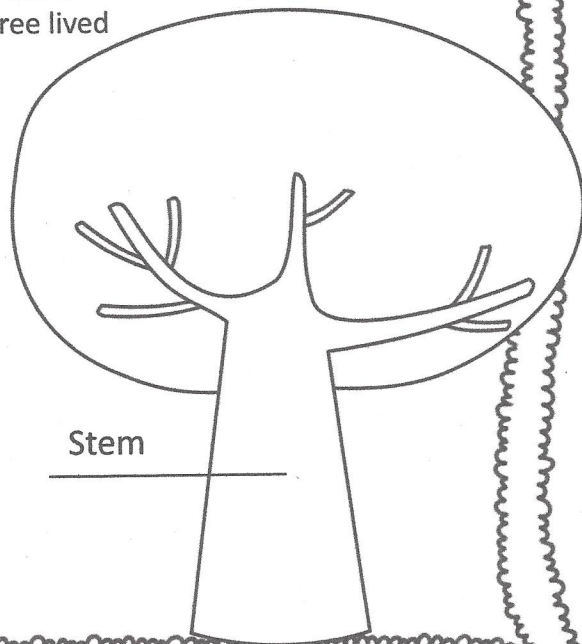
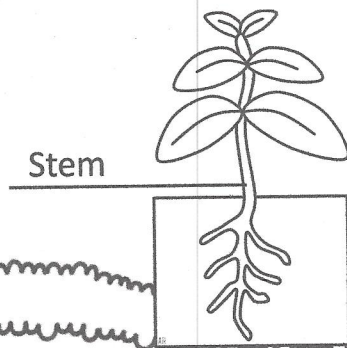
The Stem

The stem makes up the majority of a plant. The stem has three very important jobs to help the plant grow and survive. First, the stem provides support for the rest of plant. Without the stem, the leaves and the flower of the plant would just lay on the ground! Since the leaves and flower are supported by the stem, they are facing the sun and able to get the energy they require. The second job of the stem is to transport water and nutrients within the plant. The stem brings water from the roots up to the leaves and flower. It also brings energy from the leaves down to the roots. It acts like a straw for the plant. The third job of the stem is to store nutrients that the plant has made until they are needed. Did you know that a potato is a stem and the portion that we eat is actually sugar, or food that was being stored by the stem?

The stem has three different parts that help it to do his jobs. First, the stem has an outside covering called the cortex. The cortex helps protect the stem. An example of the cortex is the bark on a tree. Inside the stem, you will find the phloem. The phloem is the part of the plant that carries the food made in the leaves to the rest of the plant. The sap from a tree would be found in the phloem. In order to make maple syrup, the trunk of a tree is cut into to get the sap. The final part of the stem is the xylem. This part of the plant transports water and nutrients from the roots to the rest of the plant.

The stems of a plant can be used to determine the age of a plant. Every year, the plant produces a new ring of xylem. Therefore, we can count these rings to get a good idea of how old the plant is. This practice is often used with trees. Tree ring dating has helped scientists discover trees that were over 2,000 years old! Scientists have also discovered that using tree rings can help them to identify the weather conditions that the tree has lived through. When the tree has had a year with more rain, the xylem ring is thicker. In years when the tree lived through dryer conditions, it formed a thinner ring.

Plant stems come in many sizes. The longest stem is a tree trunk that was 379 feet tall! This is a huge difference from the smallest tree stem which was only 6 centimeters long when the tree was full grown! Regardless of the size, a plant needs its stem to grow and survive.



Name: _____

The Stem

1. What are the three jobs of the stem?

2. What is the outside covering of the stem called?

3. What does the xylem do?

4. How long does it take for a stem to get a ring of xylem?

5. What are the two things a tree ring can tell scientists?



The Leaf

One of the most interesting things about a plant is that they are able to make their own food! Since they make their own food, they are called producers. The leaf has just one important job- to produce all of the plant's food and energy. They do this through a process called photosynthesis. The leaf needs certain ingredients to perform photosynthesis, or the making of the plant food. These ingredients include sunlight, water and carbon dioxide. The leaf of a plant faces up so that it can easily absorb the sunlight needed. The water is sent to the leaves from the roots through the stem. The carbon dioxide comes from the air. Air contains carbon dioxide and oxygen. The leaf separates the oxygen and the carbon dioxide. Then it will keep the carbon and release the oxygen back into the air. Humans and animals can then use that oxygen! With all of the necessary ingredients, the leaf is able to make a sugar that will be the food for the plant. A leaf can be thought of as a food making factory.

The leaf consists of two primary parts. The first part of a leaf is the leaf surface. This is the area where most of the photosynthesis occurs. The leaf also has a transport system called the veins. After the leaf produces food, it uses the veins to carry the food to the parts of the plant that need it or to the stem and roots to be stored.

Have you ever wondered why leaves change colors in the fall? As summer ends and the fall season begins, there is less daylight. The sun sets earlier during the fall. The leaves require sunlight in order to perform photosynthesis. Since the fall months have less sunlight, the plants stop performing photosynthesis. The chlorophyll disappears. The chlorophyll is green and that is why a leaf looks green during the summer. When the chlorophyll goes away, we can see the leaf's true color underneath. That is why in the fall you can find yellow, red and orange leaves!

There are a few very special leaves that can actually catch their own food instead of making it! For example, the leaves of a Venus flytrap can catch flies. Since they live deep in the rain forest, the plant receives very little sunlight. It is not able to perform photosynthesis like most leaves.

Do you like to eat leaves? You might, and just not know you were eating a leaf! If you enjoy eating lettuce, cabbage or spinach- then you like to eat leaves!

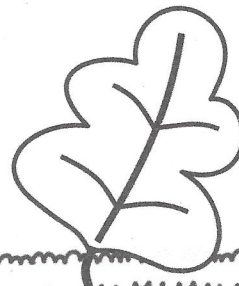
Maple Leaf



Bean Leaf



Oak Leaf



Name: _____

The Leaf

1. What is the job of the leaf?

2. What does it mean to be a producer?

3. What do the veins do?

4. What color is chlorophyll?

5. Why does photosynthesis stop during the fall?

