

JUNIOR FARMER PROGRAM

Advanced Series



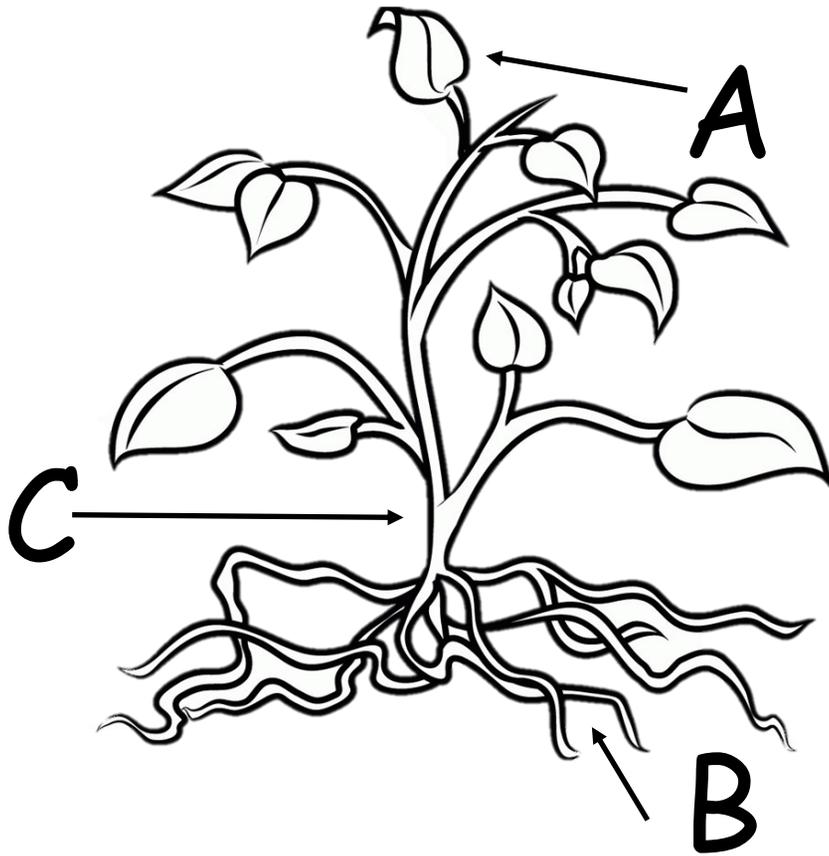
ALLEN COUNTY
soil and water conservation
DISTRICT

Please return this to the Allen County Soil and Water Conservation District to receive a Junior Farmer patch and certificate.

Indiana State Science Standards covered: Plant and Soil Science: Core Standard #5
PSS-5.1, PSS-5.2, PSS-5.3, PSS-5.4, PSS-5.5



ADVANCED SERIES: 1



Plant Parts:

In the image above, three parts of a plant are labelled. Name these parts:

A

B

C

What do you think each of the parts do to help the plant?

A

B

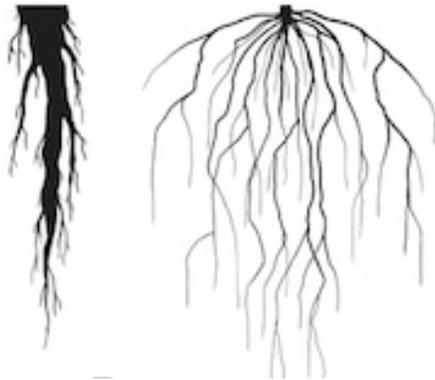
C

Are there parts of a plant that are missing from this picture? If so, what are they?

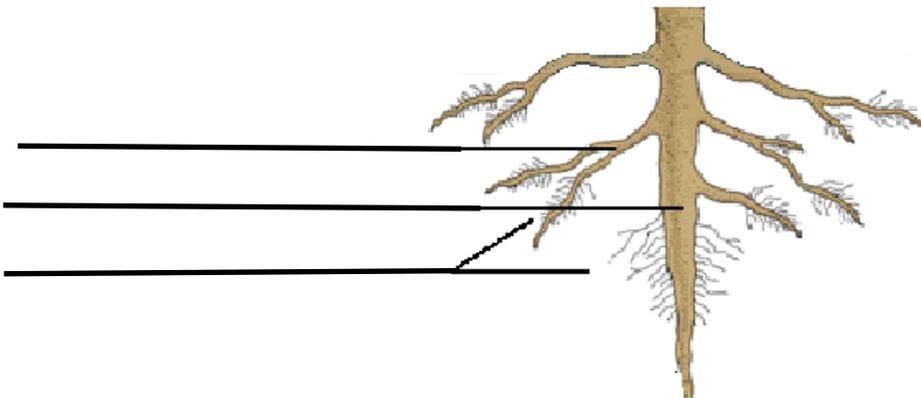
What do you think the missing parts do?

Roots

There are two types of roots. Tap roots are big, singular roots that grow straight down and some lateral roots may branch off from them. Fibrous roots are roots smaller roots that do not have a central root, they look like the branches of a tree. Label which you think is a tap root and which you think are fibrous roots.



Roots also have their own anatomy. There is the primary root, lateral roots, and root hairs. Use your best judgment to label them below.



Roots

What do you think is the job of roots? What do they do for plants? Brainstorm ideas below:

True or False:

T F Roots absorb water.

T F Roots do not absorb minerals.

T F Roots serve as structural support for plants.

T F Roots do not store food for the plant.

Roots can be good to eat. What roots can humans eat?

How important do you think roots are to a plant? Why?

Stems

The stems are the transportation system for a plant. They transport food, water, and minerals. There are four kinds of stems: **shoot**, **twig**, **branch**, and **trunk**.

Use your best judgment to determine which type of stem goes in each blank in the following paragraph:

A _____ is less than one year old and has leaves; a _____ is less than one year old but is in the dormant winter stage. A _____ is older than one year and typically has many stems growing off of it. Last is the _____, which is a woody plant's main stem.

Are stems important to the following plants?

Tomato Plant

Moss

Tree

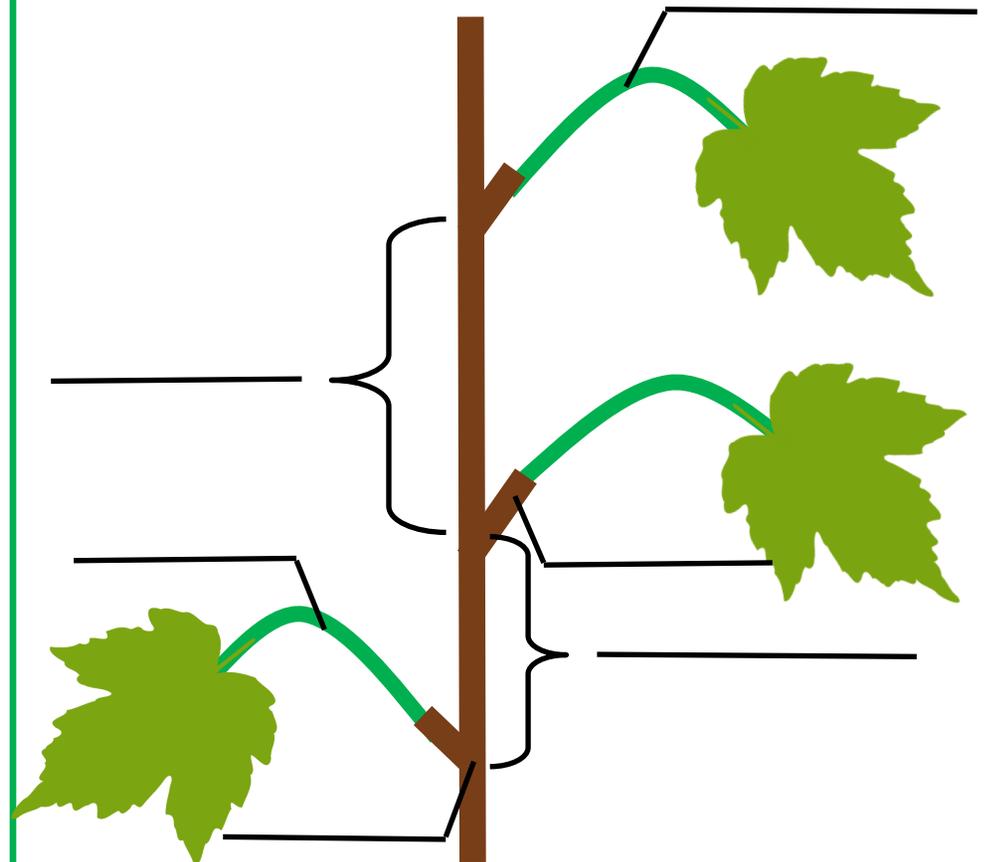
Sunflowers

Name two ways that stems are important to plants.

There are also parts to a stem which include: nodes, internode, and a petiole.

A **node** is where leaves are attached to the stem. An **internode** is the stem region between two nodes. And the **petiole** is the stalk connecting the leaf to the stem.

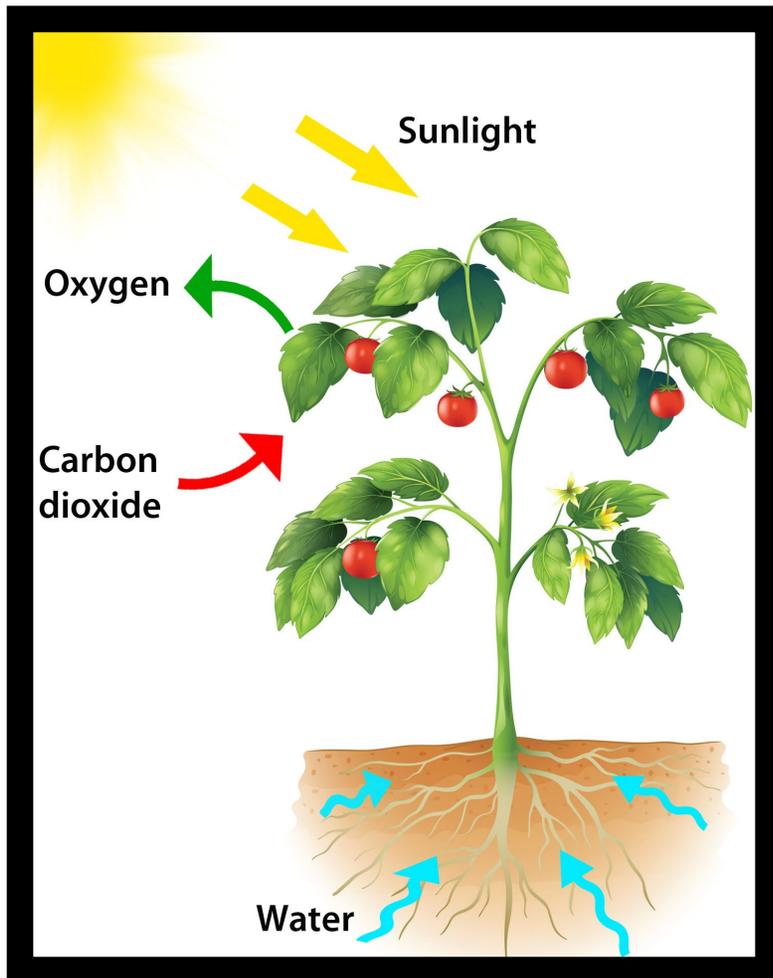
Using this information, label the diagram below. Words will be used more than once.



Leaves

What do you know about leaves?

What do you think the job of leaves is for a plant?



The principal function of leaves is to collect sunlight and, through the process of **photosynthesis**, create food for the plant. Using the image, describe the process of photosynthesis. There should be at least three sentences about the picture.

The roots, stem, and leaves all use a process of translocation. This means "stuff" like water, nutrients, and food are transported from one location in the plant to another. How is this similar or different than our own bodies?

Can you think of other things that use the process of translocation?

Photosynthesis

Photosynthesis is like you eating a snack. What is your favorite snack?

Describe how you eat a snack:

A plant takes in carbon dioxide, much like we take in a snack. Then, it sucks up water to the leaves, much like we take in a drink. Everything goes to the leaves, like everything you eat goes to your stomach. Your stomach uses energy to break down the food. Some nutrients our bodies keep and others it expels. Plants do the same thing; solar energy breaks things down and some nutrients stay with the plant and others are released, like oxygen.

This process is very important for us and for the world.

Photosynthesis

What types of food should we eat to stay healthy?

Plants also need certain nutrients to be healthy: Nitrogen, Phosphorus, and Potassium. These are known as the big three. There needs to be a balance of these three nutrients for successful plant growth.

Below is what each nutrient provides for a plant. Using the information, answer the questions.

Nitrogen: helps produce green leaves

Phosphorus: stimulates root development

Potassium: guards plants against diseases

Which nutrient does the plant need?

1. The plant has been overrun with a leaf blight which is making it very sick.
2. The plant blew over in a wind storm; I noticed there weren't many roots to keep it in the ground.
3. The plant doesn't seem to be intaking enough water, despite that I'm watering it often.
4. The plant is not producing many leaves.