

ROOTS, STEMS, AND LEAVES

Plants have structures that serve different purposes for keeping the plant alive and healthy.

Let's start from the bottom up, with the ROOTS:

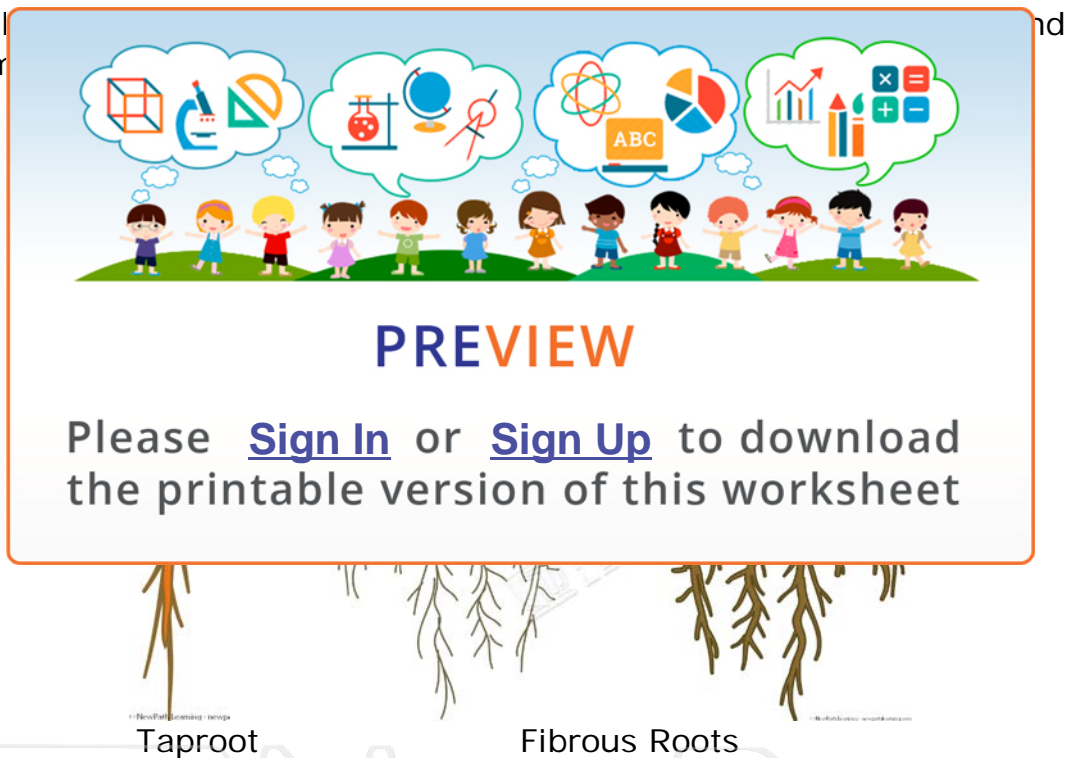
The roots of a plant have three jobs to do:

- to anchor the plant firmly into the soil,
- to store food, and most importantly,
- to absorb water and nutrients from soil.

Plants have two different root systems.

A **taproot** system consists of one main large root that grows directly down into the soil.

A **fibrous** root system consists of many roots of similar size that grow out from the base of the stem.



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Taproot Fibrous Roots

Next, the STEM:

The stem also has several jobs. It helps the plant reach up tall which enable the plant to take in more sunlight. The stem also carries food, water, and nutrients all throughout the plant. All parts of a plant need food, water, and nutrients. These essential necessities get to all parts of the plant through the tissues in the plant, called the xylem and phloem.

Vascular plants have special tubes that carry food, water, and nutrients throughout a plant. The **xylem** is the tube that carries water and nutrients from the roots to leaves. The **phloem** carries sugar away from leaves to the rest of the plant.

Now to the **LEAVES**:

Most of a plant's food is made in its leaves.

Leaves of a plant are made of plant organs and tissues. The top layer of leaf, which protects the leaf, is called its epidermis. Leaves have tiny openings underneath them called the stomata which let air and water in and out of the leaf.

Lesson Checkpoint: *What three jobs do roots do for the plant?*

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Flowers pass along their hereditary information in seeds. The seeds thus contain all the information for reproducing the flower, stem, leaves, and roots of a plant

A seed is made up of three parts: a seed coat, embryo (which is a new plant ready to grow), and endosperm.

Spores, asexual reproduction (reproduction involving only one parent), budding, and runners are all ways some plants reproduce without seeds.

Lesson Checkpoint: **What is pollination?**

Plants make their food through the process of photosynthesis



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Plants use photosynthesis to make their food. All of the photosynthesis sugar gets sent to all the cells in the plant. Sugar is used for energy and for forming **cellulose** – a chemical that makes up plant cell walls. The more sunlight the plant absorbs, the more sugar the plants make.

Photosynthesis occurs in the **chloroplast** of a plant cell, where the plant absorbs sunlight. Plants use carbon dioxide they take in from the air around them, water they get from the soil through their roots, and energy from the sun to produce sugar and oxygen. Plants release the oxygen, which they don't need, into the air for us aerobic organisms, who need oxygen to survive.

Lesson Checkpoint: **What absorbs sunlight in a plant cell?**