In this unit you will learn to:

- describe the needs of plants and the function of roots, stems and leaves.
- describe how flowering plants change throughout their life cycles.
- describe how plants are important to living things and the environment, and propose protection measures.
- identify different types of plants.
- make inferences and predictions about plants.
- value the importance of taking care of forests.
What Do You Know?

1. Mark the plant characteristics with a ✓.
   - [ ] They grow.  [ ] They move.  [ ] They react.

2. Classify the plants in the picture using the words below.
   - [ ] tree  [ ] bush  [ ] grass

3. What do plants need to live?

Scientific Skill: Infer and predict

4. Look at and describe the following pictures.

   a. How is plant 2 different from plant 1?

   b. What would happen to plant 1 if you cut its roots?
Plants and Their Structures

Plant Structures and Needs

Let’s Connect

1. Look at the picture and mark your answers with a ✓. Infer

When Mariana moved to a new house, she forgot to take out a plant her mother had put in a box. A few days later, she found it as shown in the picture.

a. What parts of the plant withered?

- roots
- leaves
- stem
- flowers

b. What was this plant missing in order to be healthy?

- air
- water
- light
- shelter

c. What does a plant need to live?

Plants have three main structures or parts: the roots, the stem and the leaves. Through their parts, plants receive the water, light and air that they need to grow. Some plants also have flowers, fruits and seeds.

Did You Know...?

Cacti are able to accumulate water because they have adapted to live in dry places. Ferns, on the other hand, need to live in humid environments.
Let’s Practice

2. Write the names of the main parts of the plant. **Identify**

![Plant diagram]

3. Match the parts of the plant with the labels that represent their needs. **Relate**

<table>
<thead>
<tr>
<th>Water</th>
<th>Light</th>
</tr>
</thead>
<tbody>
<tr>
<td>Air</td>
<td>Wood</td>
</tr>
<tr>
<td>Ice</td>
<td>Soil</td>
</tr>
</tbody>
</table>

**Word Focus**

**Light**

1. Not heavy.
2. The **brightness** produced by the sun, a lamp, a fire, etc.

How is it used in the text?

**Let’s Summarize**

Plants have three main structures or parts: the roots, the stem and the leaves. Through these, they get the water, light and air that they need to live.
The Function of the Roots

Let’s Connect

1. Look at the pictures and answer.

   a. What structures do you see in both plants? Identify

   b. What differences do you see between the two sets of roots? Compare

   c. Which plant’s roots give it more support? Infer

The roots are the part of the plant that allow it to hold firmly to the ground and to absorb water and minerals that are essential for its development and growth. In this case, water and minerals go from the soil to the root.

Did You Know...?

Some plants, like carrots, have a very thick main root with other thinner roots coming from the thick one.
Let’s Practice

2. Which of these roots will be able to absorb more water? Mark with a ✔. Predict

Let’s Summarize

3. Explain what will happen in each situation. Predict

Situation 1
If you plant a carrot in a flowerpot with soil, will it grow?

Situation 2
If you plant a carrot in a flowerpot with stones, will it grow?

Let’s Summarize

The function of a plant’s roots is to absorb water and minerals and to stabilize the plant.

Staying Healthy

There are many roots that we eat on a daily basis, such as carrots and beets. These roots give us nutrients, such as vitamins and minerals, which help us grow and stay healthy. Do you know of any other edible roots? Research and find out!
The Function of the Stem

Let’s Connect

1. Watch the two stages of an experiment carefully and answer. Infer

   ![Situation 1 and Situation 2](image)

   a. What differences can you find between situation 1 and situation 2?

   ____________________________________________________________
   ____________________________________________________________

   b. Why did the water level not decrease in situation 2?

   ____________________________________________________________
   ____________________________________________________________

   c. What is the stem for? Mark with a ✔.

   □ To absorb water and minerals.
   □ To transport substances to all the parts of the plant.

   d. Which plant should have more water and minerals in its leaves at the end of the experiment?

   ____________________________________________________________

The stem’s function is to transport water and minerals absorbed by the roots to all the parts of the plant. It also connects the roots with the leaves, flowers and fruit.
Let’s Practice

2. Karen wanted to prepare an experiment to show the function of a stem to her classmates. She found the following pictures.

Help Karen finish her assignment.

a. What materials does Karen need to do this experiment? Identify

b. Which steps should she follow in this experiment? Go to Cutout 1 on page 159 and glue the steps in the right order. Put in order

Let’s Summarize

The main functions of the stem are to transport water and minerals and connect the parts of the plant.
The Function of the Leaves

Let’s Connect

1. Look at the pictures and answer. Predict

   a. What will happen to plant A after a week?

   ___________________________________________________________

   ___________________________________________________________

   b. Why are leaves important to a plant?

   ___________________________________________________________

   ___________________________________________________________

Plants produce their own nutrients. This important process happens in the leaves. It is called photosynthesis.

In order to make photosynthesis possible, a plant needs water, carbon dioxide and light energy. Water is absorbed by the roots and distributed by the stem. Carbon dioxide is a gas in the air that is absorbed by a plant’s leaves. Light energy is energy the plant absorbs from the sun or other light sources. The photosynthesis process makes nutrients for the plant and releases oxygen, which is essential for all living things.
Let’s Practice

2. Look at the picture and answer.
   a. In which part of the plant does photosynthesis occur? Circle. Identify
   b. What do plants need for photosynthesis? Explain

3. Talk with a partner about the importance of photosynthesis for all living things. Apply

Let’s Summarize

Leaves are one of a plant’s parts or structures. Their function is to produce nutrients through photosynthesis.

Quiz Yourself

1. Draw a plant and include its main parts. Color the route that water and minerals take through the plant in red, and explain the function of each structure.

Leaves:

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

Stem:

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

Roots:

________________________________________________________________________

________________________________________________________________________
What is a Root’s Function?

Basic Framework
The main structures of the plant are the roots, the stem and the leaves. Each one allows the plant to grow and develop.

Observation
Look and answer.

Why do you think the carrot grew?
_____________________
_____________________
_____________________

Research Question
What would happen if we put a radish in a glass of water?

Hypothesis
The radish will absorb the water, allowing the root and the stem to develop.

Prediction
1. Mark with a ✓ what you think will happen if you put a radish in water.
   - Roots will grow out of the radish. Therefore, the plant will grow.
   - Nothing will happen to the radish. Therefore, the plant will not grow.

When you infer, you are giving a possible answer based on an observation.

If you want to better understand what predict means, look at the example in the Scientific Research Skills foldout.

When you predict, you are giving an answer based on your knowledge about what you think is going to happen in a particular phenomenon or process.
Experimental Procedure

Supplies
– water
– a radish
– a ruler
– a marker
– aluminum foil
– 2 skewers
– a clear plastic cup
– a long piece of wood or metal

Steps
1. With the help of an adult, cut the ends of the radish.
2. Push a skewer through each side of the radish. This will create a way to support the radish over the cup (see photograph 1). **Warning:** be careful when using the skewers.
3. Pour water into the cup until it covers the bottom of the radish. Mark the water level on the cup with the marker.
4. Cut a piece of foil and cover the top of the cup (see photograph 2).
5. After seven days, observe the water level and the bottom of the radish.
6. Write your observations in your notebook.

Results
1. Did the root grow? ☐ yes ☐ no
2. What happened to the water level?
   - ☐ It increased.
   - ☐ It decreased.

Conclusion
1. Was your prediction correct? ☐ yes ☐ no
2. According to your results, what is the main function of the root?

In this experiment, you inferred based on observation. The prediction allowed you to give an anticipated answer about what was going to happen to the radish if it was left in a cup of water.
What Did You Learn?

1. Match each structure with its function.

- **Roots**
  - Protects the seeds.

- **Leaves**
  - Transports water to all the parts of the plant.

- **Flowers**
  - Capture gases and sunlight and carry out photosynthesis.

- **Stem**
  - Have the feminine and masculine reproductive organs.

- **Fruit**
  - Absorb water and minerals.

2. Draw the life cycle of a flowering plant. Then explain the process.

3. Why are plants important to all living things? Explain.
4. Name five plants native to your country and propose ways of protecting them.

________________________________________________________________________
________________________________________________________________________
________________________________________________________________________

5. Maggie bought a white carnation and put it in a clear vase of water. After a week, she noticed that there was less water in the vase than before.
   a. Why does Maggie’s vase have less water now?

________________________________________________________________________
________________________________________________________________________
________________________________________________________________________

   b. If you put blue ink in the vase with the white carnation, what do you think would happen?

________________________________________________________________________
________________________________________________________________________
________________________________________________________________________

Collect a white carnation, a vase of water and some blue ink, and test your prediction.