

Looking at Leaves

BROWARD COUNTY ELEMENTARY SCIENCE BENCHMARK PLAN

Grade 1—Quarter 2

Activity 18

SC.A.1.1.1

The student knows that objects can be described, classified, and compared by their composition (e.g., wood or metal) and their physical properties (e.g., color, size, and shape).

SC.F.1.1.4

The student understands that structures of living things are adapted to their function in specific environments.

SC.F.1.1.5

The student compares and describes the structural characteristics of plants and animals.

SC.F.2.1.2

The student knows that there are many different kinds of living things that live in a variety of environments.

SC.H.1.1.1

The student knows that in order to learn, it is important to observe the same things often and compare them.

SC.H.1.1.3

The student knows that in doing science, it is often helpful to work with a team and to share findings with others.

SC.H.1.1.5

The student uses the senses, tools, and instruments to obtain information from his or her surroundings.

ACTIVITY ASSESSMENT OPPORTUNITIES

The following suggestions are intended to help you identify major concepts covered in the activity that may need extra reinforcement. The goal is to provide opportunities to assess student progress without creating the need for a separate, formal assessment session (or activity) for each of the 40 hands-on activities at this grade level.

1. Ask, *How are leaf veins and plants stem alike?* (They both carry things to the leaf that it needs to stay alive.) Display a collection of many different leaves. Reinforce that not all leaves look alike. As a class, create two or three groups of similar looking leaves. Help students notice that all leaves, however, do have veins, in some form.
2. Use the Activity Sheet(s) to assess student understanding of the major concepts in the activity.

In addition to the above assessment suggestions, the questions in bold and tasks that students perform throughout the activity provide opportunities to identify areas that may require additional review before proceeding further with the activity.

Looking at Leaves

OBJECTIVES

Students examine various kinds of leaves and learn about leaf structure and function.

The students

- ▶ play a game with a variety of leaves
- ▶ examine several leaves and draw pictures of them
- ▶ learn the functions of a leaf

SCHEDULE

About 30 minutes

VOCABULARY

veins

MATERIALS

For each student

- 1 Activity Sheet 18

For each team of four

- 2 magnifiers

For the class

- 1 chart, Plant Parts (from Activity 17)
- 32 leaves, assorted*
Delta Science Reader, *Properties*

*provided by the teacher

PREPARATION

- 1 A day or two before doing this activity, collect a variety of leaves, as described in Advance Preparation, Activity 18, pages 141–142. Each student will need one leaf.

Safety Note: Caution students never to put any leaves in their mouths, as some plants are extremely poisonous!

- 2 Jot down a list of descriptive terms for use in the “Leaf Game” that students play in this activity. (See some sample descriptions in Step 2 of Guiding the Activity.)
- 3 Make a copy of Activity Sheet 18 for each student.
- 4 Make sure the Plant Parts chart is still posted where all students can see it.
- 5 Each team will need two magnifiers.

Safety Note: Check for any student allergies to plants or pollen before having students handle plants or plant parts.

BACKGROUND INFORMATION

Leaves are the usually flat and broad parts of the plant that grow from the stem. Their function is primarily to produce food for the plant through photosynthesis.

Leaves are found in a wide variety of shapes—broad and narrow, large and small, pointed and rounded. These differences depend mostly upon genetics and the environments in which they grow. On the shady floor of a rain forest, a plant’s leaves must often be huge in order to be exposed to enough sunlight. On the top of a windswept

cliff, a plant's leaves get plenty of sunlight, so they are often small; but in order to resist being shredded or torn away by fierce winds, they must be tough and strongly attached to the plant.

Many leaves are covered with tiny hairs that help keep them from drying out when air moves over them. Some leaves have sharp spines (holly leaves) or stinging hairs (nettle leaves) that can keep them from being eaten by animals.

Veins in a leaf are thin tubes through which water and food move to and from the leaf. Their numbers and patterns vary from plant to plant. On grass plants and their relatives, such as corn, the veins run parallel to the long edge of the leaf. In the leaves of most flowering plants, the veins form a complex network.

▼ Activity Sheet 18

Looking at Leaves

a leaf

Drawings will vary.

a leaf from the game

Guiding the Activity

1 Ask, **What does a leaf look like? Where do you usually find leaves growing on a plant?**

Distribute a copy of **Activity Sheet 18** to each student and have each one draw a leaf from memory in the top box.

2 Distribute one leaf to each student. Tell the class they are going to play a leaf game and that they will have to study their leaves closely to play the game (see Figure 18-1). Explain the rules of the game.

Additional Information

Students are likely to remember that a leaf is a flat and usually wide part of the plant that grows off the stem.

Students will stand up, each one holding a leaf. (You may have them either stand up at their desks or form a circle.) You will call out a description of a leaf. If a student's leaf matches that description, the student will remain standing; if the leaf does not match that description, the student will sit down.

Guiding the Activity

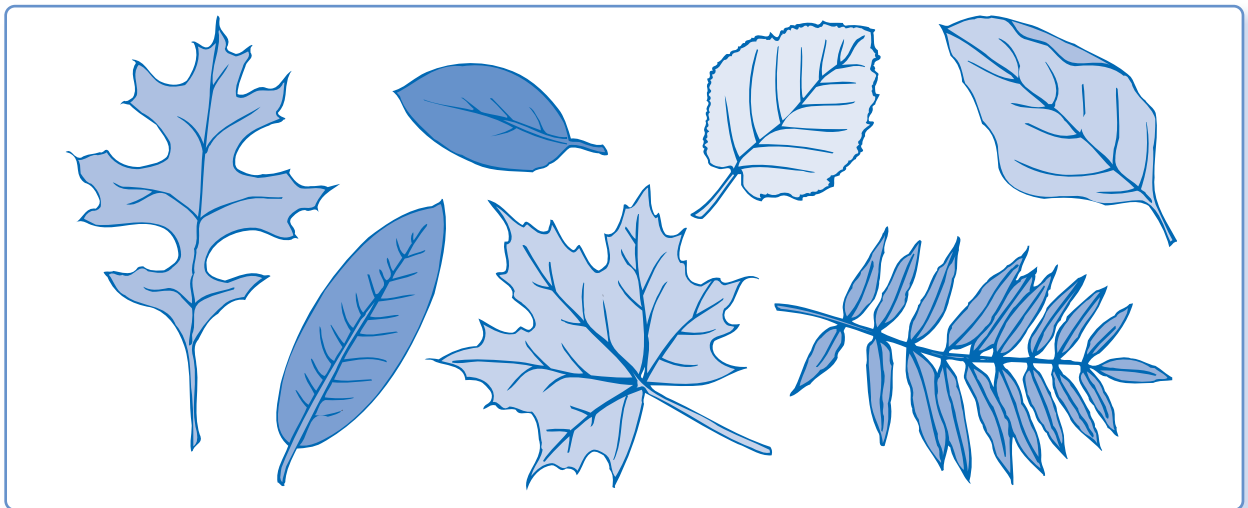
Name characteristics such as these:

- 1) has a smooth edge
- 2) has teeth on its edge
- 3) has big “ins and outs” (lobes) to its shape
- 4) is fuzzy
- 5) has a different color on top than on the bottom
- 6) lies flat on a table
- 7) has holes chewed in it

Have students keep the same leaf for several rounds of the game to help them refine their observation skills; then have students exchange leaves and play more rounds.

Additional Information

Adapt your descriptions to the leaves you have distributed, and help students look for these characteristics as you go along.



▲ *Figure 18-1. A leaf collection.*

- 3** Point out the leaves on the Plant Parts chart and ask, **What do you think the job of the leaves might be?**

Tell students that leaves are the parts of the plant that use sunlight to make food for the plant.

- 4** Tell students to draw a picture in the bottom box on their activity sheets to show the leaf they had in the last round of the game.

Answers may vary.

In order to do this, a plant usually has many broad flat leaves and holds them spread out in the sunlight.

Guiding the Activity

When students have completed their drawings, ask, **Are all leaves alike?**

Ask, **How are your leaves alike? How are they different from one another?**

Write *veins* on the board. Tell students that the thin lines in the leaves on the Plant Parts chart are the veins of the leaves. Ask, **What do you think the veins in a leaf do for the leaf?**

Explain that the **veins** help to carry food and water in and out of the leaf. Veins are also found in the roots and stem, and they form a continuous tube from the roots to the leaves. Tell students that a plant's veins carry food and water to help the plant live, just as a person's veins carry blood to help the person live (see Figure 18-2).

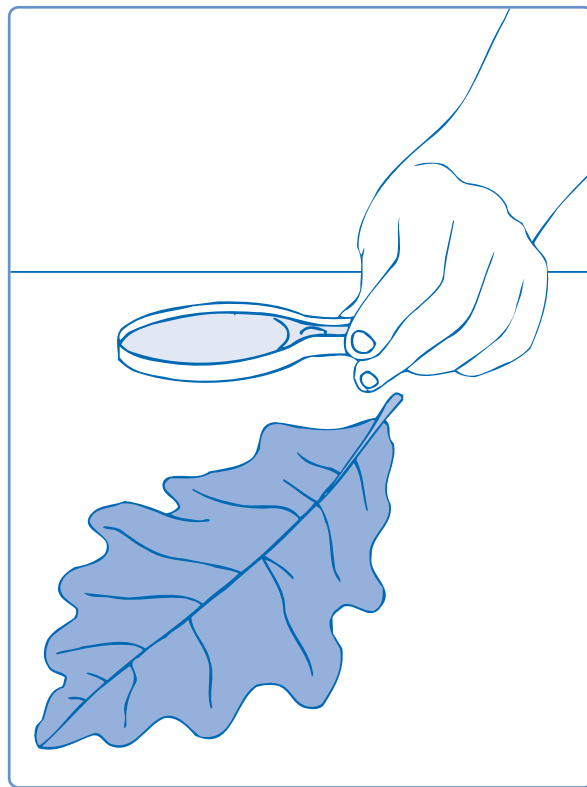
Ask, **Who can find the veins on their leaves?**

Additional Information

No, they differ from one another.

All the leaves probably have at least some green color, and most are broad and flat. They differ in size, shape, texture, and shades of coloring.

Answers will vary. Some students may know the term vein and associate it with blood flow.



▲ *Figure 18-2. Examining the veins in a leaf.*

Students should be able to locate them. To demonstrate, you may want to draw a picture of a leaf with veins on the board.

Guiding the Activity

Distribute two magnifiers to each team. Have students reexamine their leaves and add veins to the leaf drawings they made on their activity sheets.

- 5 As appropriate, read or review pages 2–13 of the Delta Science Reader *Properties*.

Additional Information

Suggest they take turns using their magnifiers to find the smallest veins. It may be helpful for them to hold the leaves up to the light to see the veins more clearly.

REINFORCEMENT

Have students help you create a chart that categorizes leaves according to their characteristics. Have students help you decide on headings, such as *Smooth*, *Fuzzy*, *Big*, *Pointed*, and so forth. Tape or pin leaves under the appropriate headings.

SCIENCE JOURNALS

Have students place their completed activity sheets in their science journals.

CLEANUP

Collect the magnifiers and return them to the kit.

SCIENCE AT HOME

Ask students to look for a variety of leaves and bring some in to add to the leaf chart.

Connections

Science Challenge

Tell students that when leaves make food, they take in and give off air. (More accurately, they absorb carbon dioxide and release oxygen.) Students can observe the release process by doing the following activity. Have each team remove one leaf from a plant that has been in sunlight for several hours and put it into a small clear-plastic cup. Tell students to add enough water to the cup to completely cover the leaf, then watch carefully. Students will see bubbles rising from the leaf as it gives off “air.”

Science Extension

Obtain a mimosa plant, and show students that when the plant’s leaves are lightly touched, they fold up. Keep the mimosa in the classroom for a time so students can touch its leaves themselves and watch the reaction. Tell them not to keep touching the plant for long periods; the plant is a living thing and should be left alone most of the time. If students become too enthusiastic about touching the plant, you may want to assign a different “touching” day and time to each student.

Science and the Arts

- ▶ Have students make rubbings of leaves of different sizes and shapes and with different vein patterns. Demonstrate the technique: Put a leaf, underside up, between two sheets of thin white paper, and rub a crayon over the top sheet. If students have difficulty keeping the paper in place, staple the sheets together at the corners.
- ▶ Make some simple oaktag tracing templates of different leaf shapes, and let students use them to create leaves to decorate the windows or bulletin board. In the spring, students could make leaves from construction paper in various shades of green. In the fall, they could use red, orange, yellow, and brown paper. Encourage students to draw veins on the leaves, using real leaves as models for the vein patterns.