



Looking at Leaves

This lesson plan was created by Judith Cullen as part of the Acadia Outdoor Classroom Collaborative) program. AOCCs created lesson plans are created by educators for educators. Any books or links suggested in this curriculum are not an endorsement by the National Park Service.

Grade Span	K-2
Time Span	3 Sessions (can be broken into more, shorter sessions as needed) Sessions can be repeated fall & spring
Standards	LS1.A: Structure and Function All organisms have external parts. Plants have different parts (roots, stems, leaves, flowers, fruits) that help them survive and grow. (1-LS1-1)
Focus Questions	<ul style="list-style-type: none"> → How is a leaf from one plant the <u>same</u> as the leaf from a different plant/bush/tree? → How are their leaves <u>different</u>? → How can leaves help us identify the different plants/bushes/trees in an area, such as our outdoor classroom?
Overview	In this first part of a study of leaves, students will learn to differentiate leaves from different plants, shrubs & trees by looking at attributes including leaf shape, edges and arrangement. Students will become familiar with these attributes as they first sort, then hunt for and draw a variety of leaves.
Objectives	<p>Students will identify the part of a plant that is a leaf.</p> <p>Students will identify basic parts of a leaf: edge, base, tip, midrib, petiole.</p> <p>Students will differentiate leaves from different plants, shrubs and trees by looking at specific attributes: shape, edge and arrangement.</p> <p>Students will use their growing knowledge of and familiarity with leaf shapes, edges and arrangements to make more detailed observations.</p>
Materials Needed	<p>Outdoor classroom space with plants, shrubs & trees.</p> <p>Sorting mats/circles if desired.</p> <p><i>Leaf Attribute Cards</i>: 1 complete set per pair/small group</p> <p>Hand lenses</p> <p><i>Leaf Hunt Worksheet</i>: 1 per student</p> <p>Clipboards</p> <p>Pencils/colored pencils</p>
Vocabulary	<p>Leaf</p> <p>plant</p> <p>bush</p> <p>shrub</p>



	<p>tree</p> <p>Parts of a leaf (<i>see leaf parts diagram</i>):</p> <p>edge margin petiole blade base tip</p>
<p>Teacher Prep</p>	<p>Choose a nearby, easily accessible area for viewing & collecting leaves.</p> <p>Include some stories featuring trees and other plants in class read alouds in the weeks before beginning these lessons; add nonfiction as students begin to learn & wonder.</p>
<p>Background</p>	<p>Students should have some practice with mindful seeing & observation drawing before beginning this unit.</p>
<p>Procedure:</p>	<p>Engage: <u>Leaf hunt & Sort:</u> Direct each student to find 3-5 different leaves in our outdoor classroom area. Once they have their leaves, work with a partner/small group to sort leaves (open sort.) Give time & encouragement for sorting in multiple ways, then let them know each pair/group should be ready to share one way they sorted.</p> <p>Wrap up with a brief whole group share- each pair/small group tell one way they sorted their leaves (can be done with each group showing their sort at their table or as a gallery walk if students can write & read labels for their sorts.)</p> <p>As students share, encourage questions/discussion about why different leaves might look the way they do. Record observations & questions on a class chart</p> <p>*If needed, this can be broken into 2 sessions: Hunt, then Sort. If so, students should have opportunity after the Hunt to briefly share their leaves with a partner or the group & tell one thing they noticed about the leaves they found (can be something same or something different.)</p> <p>Retain collected leaves for next lesson (you might also want to collect a few more to be sure every group has leaves that can be sorted by all attributes.)</p> <p>Explore 1: <u>Sorting leaves by attribute:</u> Students will work with a partner/small group to sort leaves in different ways.</p> <p>Remind students of the sorts they did in previous session. Name the ways they will be sorting today, showing <i>Leaf Attribute Cards</i> & examples of each as you name it. Introduce vocabulary for attributes & plant parts as you explain attributes (e.g. talk about the margin or edge of the leaf as you explain smooth, toothed & lobed; name & identify the petiole to help students determine simple vs compound leaf; etc.) * <i>You</i></p>



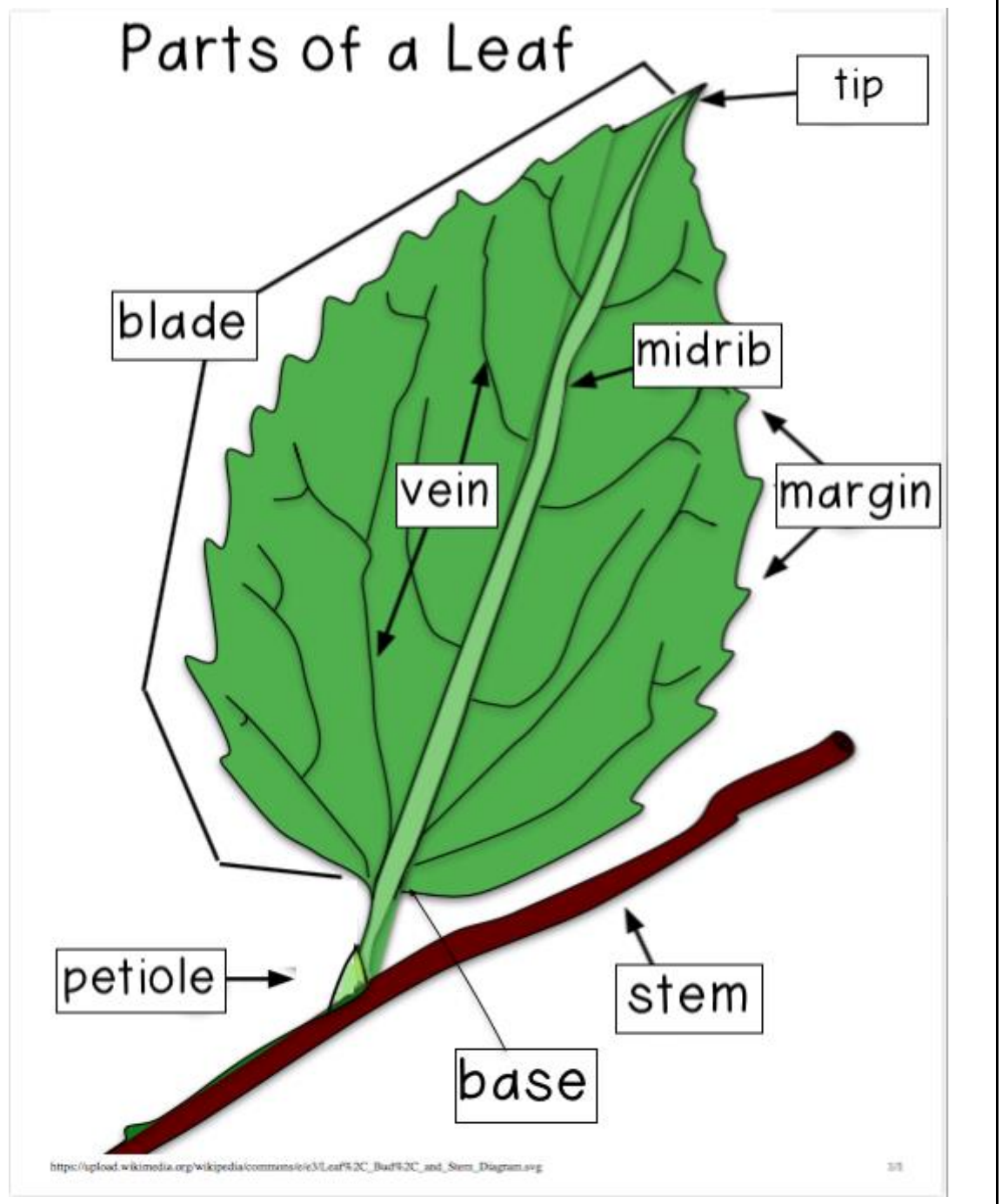
	<p>can do the Art extension activity below to reinforce leaf parts, as a way to look more closely at & compare individual leaves, or as the start of learning more about the function of leaves in the What is a Leaf lessons.</p> <p>Provide <i>Leaf Attribute Cards</i> to help students focus on sorting by one attribute at a time: <u>Leaf Shapes</u>: Palmate (hand shaped)/Pinnate (not) <u>Arrangement</u>: Simple/Compound <u>Edges</u>: Smooth/Toothed/Lobed</p> <p>Explore 2: <u>Hunting leaves by attribute</u>: Students will work with a partner/small group to find leaves. Provide <i>Leaf Hunt worksheet</i> to help students focus on finding one leaf for each attribute: <u>Leaf Shapes</u>: 1 each Palmate (hand shaped) and Pinnate (not) <u>Arrangement</u>: 1 each simple & compound <u>Edges</u>: 1 each smooth, toothed & lobed Each student will have their own clipboard, pencil & <i>Leaf Hunt worksheet</i>, when someone finds a leaf that has a certain attribute, partners/group members should help confirm, then each student will draw it on their own sheet. If students need support with their first drawings, they can start by tracing leaves (you can provide a worksheet with more space for each leaf) then add in details. Encourage students to use their new knowledge of leaf attributes to include as much detail as possible as they draw. What else do they notice?</p> <p>Explanation: Read some nonfiction about leaves (a few pages/section per session to allow for thinking & discussion about content) & consider: what is the same about leaves as well as what is different? Do all plants have leaves? How do a plant's leaves help it survive? As students learn that leaves make food for the plant, encourage them to wonder about why leaves of various plants all look so different if they do the same job. (You can also watch this fun photosynthesis song video: https://www.youtube.com/watch?v=dt178kJR1u0 -very basic info.)</p>
<p>Extensions</p>	<p>Extension: <u>Plant ID with leaves:</u> Identify different plants, bushes & trees in the local habitat by their leaves. Use data to create a field guide to plants (including bushes & trees) in the local habitat. (See <i>What Is That Plant</i> lessons.)</p> <p><u>Phenology:</u> Choose 1 each: plant bush and tree* somewhere the class can visit weekly throughout the year (such as somewhere on school grounds- <i>avoid the playground or other free play spaces, to help students focus on observation work.</i>) Provide observation sheet with space for drawing & writing (all on one page & in the same order, to allow for week-to-week comparison.) Demonstrate drawing/writing observations on first outing (students will also benefit from mindfulness activities practicing mindful seeing, etc.) Visit plant, bush & tree weekly- bring observation sheet on clipboard, pencils, & colored pencils for adding detail. Teacher can also photograph the plants each week for students who are absent or need more time for their observation. Students will date their observation sheet each week and add it to their own folder (with prongs to keep sheets in order.) Ideally, observations should be weekly in fall & spring, but can be reduced to every other week or even monthly through winter (from when plant/bush/tree have dropped all leaves in fall until buds appear in spring.)</p>



	<p><i>*For youngest learners, you might decide to choose just one or two rather than all 3-plant bush & tree. For looking specifically at leaves, trees are most difficult for primary students since leaves are often far above student eye level. If choosing a plant, you will want to be sure it is not something that will be mowed or removed. You also want to consider accessibility through the seasons- you don't want to be wading through waist-high snow to do your observations in January!</i></p> <p>Math: After sorting leaves by size, students can work together to arrange leaves from shortest to longest. Then introduce the idea of measurement by asking “How many cubes long do you think this leaf is?” or “Do you think this leaf is more than 5 cubes or less than 5 cubes long?” Do a few together as a group; jot different estimates for a leaf on the whiteboard, then demonstrate measuring a leaf down the middle from base to apex with unifix cubes. Repeat with a second leaf, this time measuring wrong (not starting at base/not measuring straight from base to apex, etc) & encouraging students to tell you what is wrong & how to improve your measurement technique. Still as a group, measure one more leaf, but with a student doing the measurement (provide guidance as needed.)</p> <p>Send students to measure their set of leaves with a partner. Partners can trace each leaf and jot down their estimates (or just share them verbally) before measuring, then write the measurement in or next to the traced leaf.</p> <p>For a follow up activity, challenge students to “find a leaf that measures less than 3 cubes”, “Find a leaf that is longer than 6 cubes”, etc (you can create some challenge cards or a worksheet for this, or have students challenge each other.)</p>
<p>Extensions</p>	<p>Art: Leaf Rubbings. Provide or gather large leaves with the class. Direct students to place the leaf on a clipboard, then cover with the type of paper you will be using. You can use plain copy paper, tracing paper, wax paper, parchment paper, or foil. Then use crayon, colored pencil or oil pastel to make the rubbing by rubbing the side (or side of the tip) over the paper over the leaf, making sure to rub over the entire leaf. When the rubbing is completed, guide students to label leaf parts: <i>edge, veins, blade, petiole, etc.</i></p> <p>Encourage students to compare. <i>You might want to try one type of paper & drawing material one day, then try a different paper and/or drawing material another day.</i></p>
<p>Wrap-Up</p>	<p>Evaluate:</p> <p>Formative Assessment: Observe students during sort and hunt activities. How do they sort leaves for the open sort? When sorting with attribute cards, are they able to differentiate leaves by difference in shape, difference in edge, arrangement? Do students use vocabulary introduced in the lessons to talk about their leaves?</p> <p>Summative Assessment: Students will show attention to a leaf's shape, edges and/or arrangement in their observation drawings. They may use some of the vocabulary from the lessons to label or describe their observations. Students will be able to use what they learned about leaf shape, edges & arrangement to identify trees and shrubs in a local area, such as outdoor classroom or school grounds in the next activities of this leaf unit.</p>



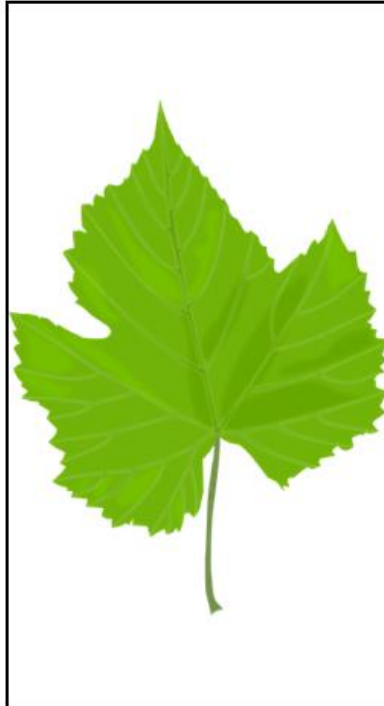
**Parts of a Leaf
diagram:**





Leaf Attribute cards:

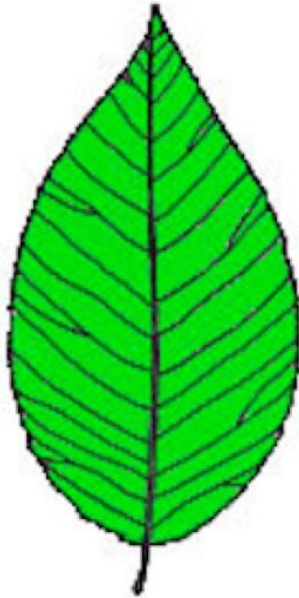
(1 complete set of cards for each pair/small group)



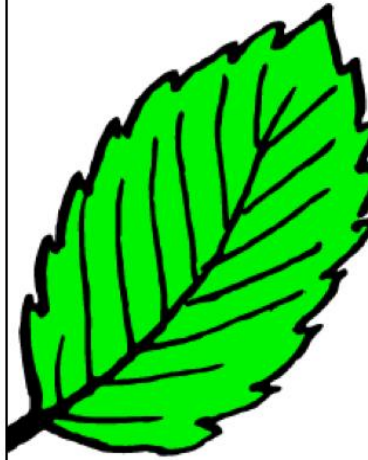
palmate
hand shaped



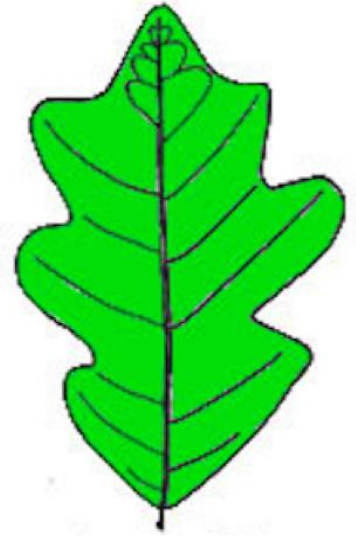
pinnate
not hand shaped



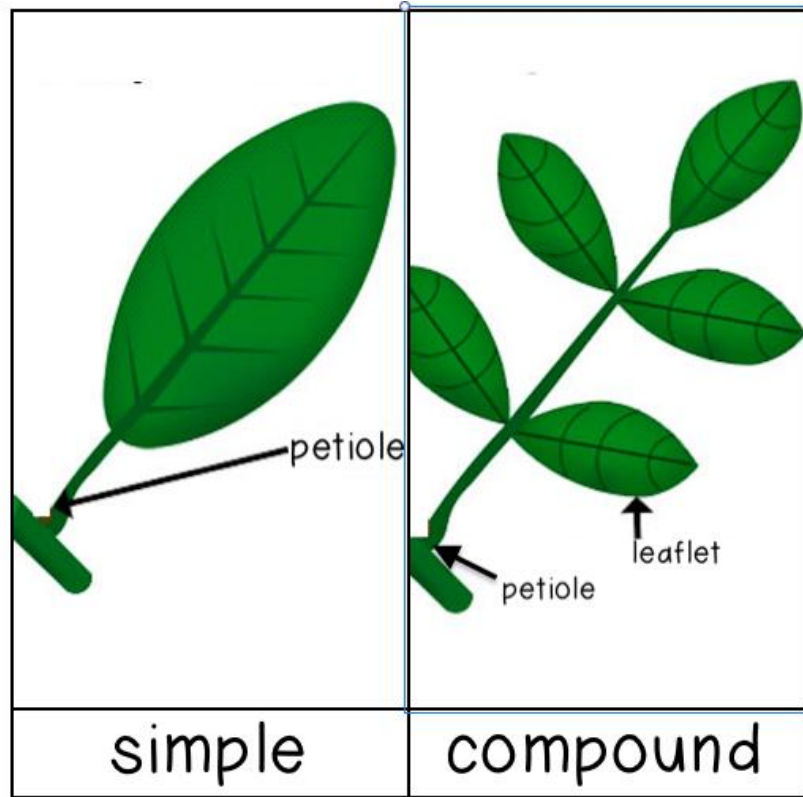
smooth



toothed



lobed





Book

Suggestions:

Read some fiction books about plants/leaves/trees in the weeks before launching the leaf study activities.

As students start to learn & wonder about leaves in their explorations, you can begin to read some of the nonfiction books (usually good to do in parts vs whole book.)

Fiction

The Little Yellow Leaf by Carin Berger
Leaves by David Ezra Stein
Kate Who Tamed the Wind by Liz Garton Scanlon
Wangari's Trees of Peace by Jeanette Winter
Poetrees by Douglas Florian (Poetry)

Nonfiction

Tell Me, Tree by Gail Gibbons
A Leaf Can Be... by Laura Purdie Salas
Exploring Leaves by Kristin Sterling
Plants by Kathryn Williams
Trees, Leaves, and Bark by Diane Burns
A Tree is a Plant by Clyde Robert Bulla
Living Sunlight by Molly Bang and Penny Chisholm



Leaf Hunt Worksheet:

(Worksheet could be expanded to provide more room for observations of each type of leaf. For more challenge for older students, picture support can be removed.)

Name _____

Date _____

Leaf Hunt

Find at least one leaf of each type.
Draw the leaf you find- show important details.



simple



compound



smooth edge



toothed edge



lobed edge

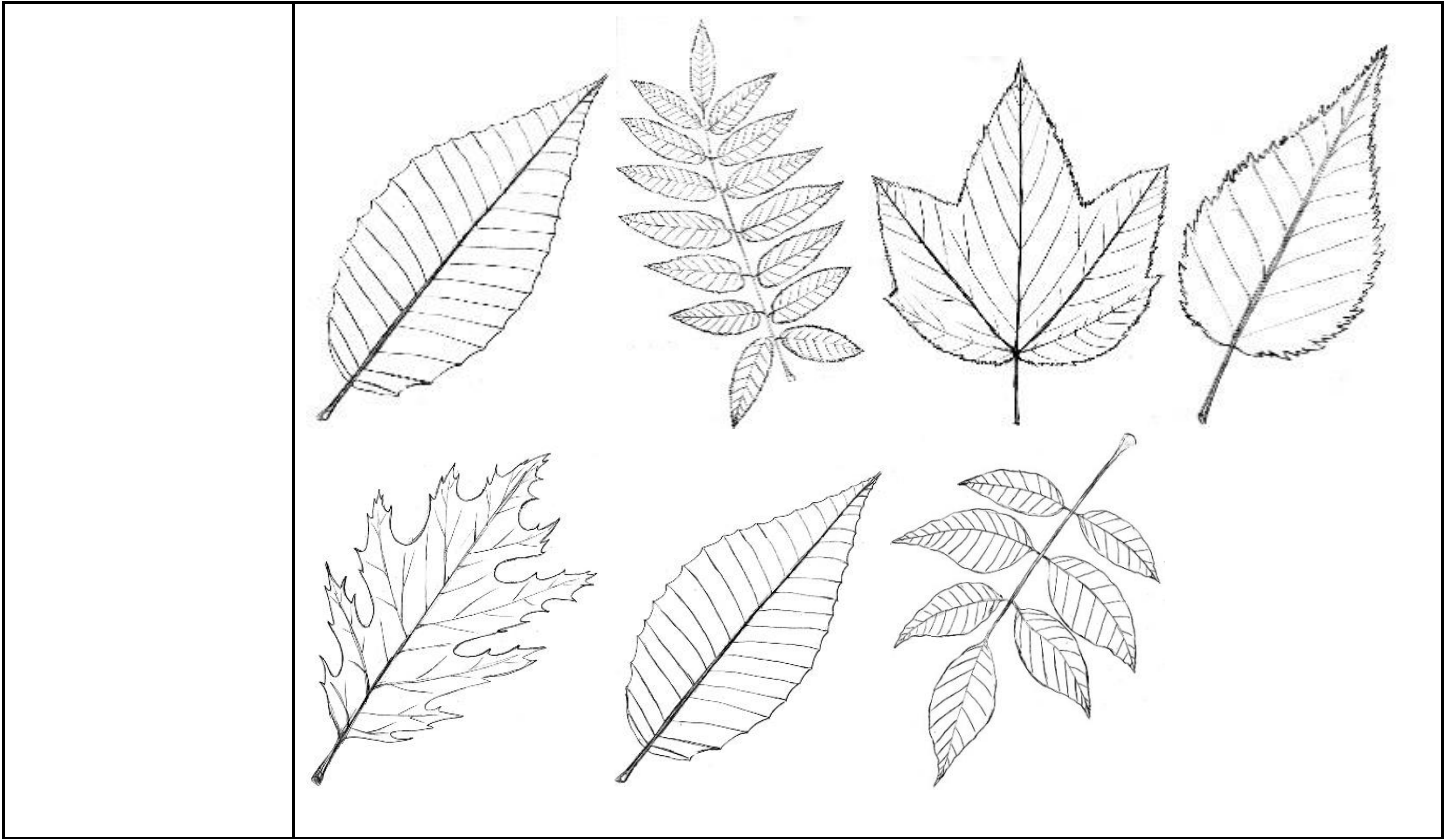


pinnate



palmate

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Observation Sheet:
plant/bush/tree

To be used weekly in fall/spring, monthly thru winter. Modify as needed (change plant names, reduce to 2 plants observed- see example)

Name _____

Date _____

Today I observed:

Milkweed (plant)

Rosa Rugosa (bush)

young Apple Tree (tree)



Name _____ Date _____

Today I observed:

Strawberry (plant)

A large empty rectangular box for drawing or writing observations of a strawberry plant.

Forsythia (bush)

A large empty rectangular box for drawing or writing observations of a Forsythia bush.
