

# KNOCK ON WOOD

*Students learn about coniferous and deciduous trees that grow throughout the Mississippi River valley. Students explore their own area and create a representative tree field guide.*

## TEACHER NOTES FOR DISCUSSION

Students can work individually or in groups to research and share information, and seek out trees. The actual field guide with introduction should be completed independently. Depending on the time of the year, students can use real tree specimens or can recreate the tree features for their field guides. If students make their own tree features, encourage them to recreate texture and size, as well as color and shape.

## RELATED STANDARDS AND BENCHMARKS

### Science

#### Standard 4. Knows about diversity and unity that characterize life

- knows ways in which living things can be classified
- knows that plants and animals have a great variety of body parts and internal structures that serve specific functions for survival

### Language Arts

#### Standard 1. Demonstrates competence in the general skills and strategies of the writing process

- uses style and structure appropriate for specific audiences

#### Standard 2. Demonstrates competence in the stylistic and rhetorical aspects of writing

- uses paragraph form in writing
- uses a variety of sentence structures to express expanded ideas

#### Standard 4. Gathers and uses information for research purposes

- writes research papers

## Objectives

By the end of this activity, students should be able to:

- use leaves, fruit, bark, flowers, and tree shape to identify trees found in their area.
- explain similarities and differences in forests found along the Mississippi River.

## Time Considerations

Instructor preparation:  
one hour

Student activity:  
five classes (less if homework is given)

# KNOCK ON WOOD

## UNDERSTAND YOUR MISSION

In this activity you will identify trees in your community and compare them to trees found in the Mississippi River valley, then you will create a field guide of trees where you live.

### LEARN THE LINGO

alternate (1)	a pattern of leaf arrangement on the stem where the leaves are staggered along the stem
broad	a tree shape that spreads out and is flat to rounded on the top (maple)
columnar	a tree shape that resembles a column (poplar)
conical	a tree shape that is rounded at the bottom and tapers up to a point (pine)
coniferous	having cones
clusters (2)	a pattern of leaf arrangement on the stem where the leaves grow in groups of two, three, or more
crown	the mass of branches, twigs, and leaves at the top of a tree
entire (adj.) (3)	having an outside edge free of indentations
deciduous	having a part that falls off itself seasonally; e.g., leaves
furrows	grooves or long, narrow trenches in the bark of a tree
leaflet (4)	one part of the leaf; like subdivisions of a compound leaf
lobed (5)	the edge of the leaf is deeply, but not completely, divided
palmate (6)	leaflets are attached directly to the end of the leafstalk, but not arranged in rows. the overall shape resembles the palm of a hand.
pinnate (7)	with leaflets arranged in two rows
pyramidal	a tree shape that is flat on the bottom and tapers up to a point (pine)

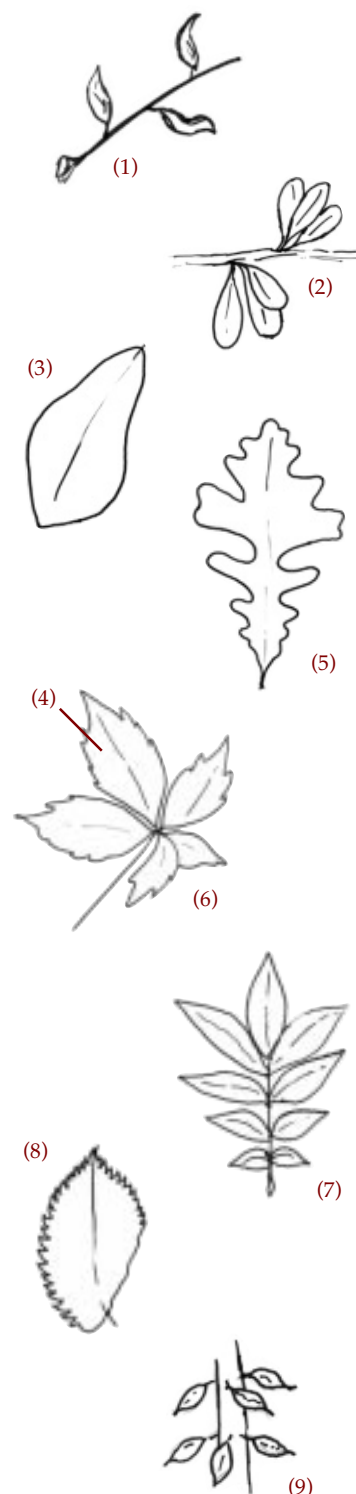
### Gather Your Supplies

- books about trees
- glue, stapler, tape, or brads (to put together the field guide)
- construction paper
- markers
- colored pencils
- tree field guides (such as the National Audubon Society or Peterson)
- crayons

# KNOCK ON WOOD

## LEARN THE LINGO (CONTINUED)

ridges	a long, narrow, or crested part of the leaf
rounded	a tree shape that is round at the bottom and curves up to the rounded top; a maple or an elm
serrate or toothed (8)	the outside edge of the leaf is divided into short tooth-like projections
spreading	a tree shape that spreads out and is pointed at the top
vase shaped	a tree shape that curves
whorl (9)	a pattern of leaf arrangement along the stem where the leaves grow around one spot on the stem in groups of three, five, seven, etc.



## BACKGROUND

Cherished since the beginning of time, trees are an important part of our habitat. They provide oxygen, prevent soil erosion, and serve as a source of food, shelter, and raw materials for people and animals. There are over six hundred species of trees native to North America and seven different types of forests. Along the Mississippi River, only three different kinds of forests exist. The Upper Mississippi valley is actually a mixed forest where the eastern deciduous forests meet the northern coniferous forests. South of the confluence of the Ohio River, the southern coastal plain forests begin.

# KNOCK ON WOOD

What types of trees are in your community? How can you distinguish one tree from another?

## Seven Basic Tree Shapes

pyramidal, conical, columnar, spreading, vase-shaped, broad, and rounded



## Bark: Furrowed or Ridged

The furrows may run lengthwise on the tree, creating an irregular pattern, or even be checkerboard in pattern, like most pine trees. The ridges may be smooth, flattened, pointed, rounded, or scaly.

## Leaf Characteristics

Simple leaves have only one leaf blade. Compound leaves have two or more separate leaflets. The edges, or margins, of the leaf can be finely toothed, toothed, double toothed, wavy, entire, or deeply lobed. The end of the leaf can be notched, pointed, tapered, or rounded. The part of the leaf that connects to the stalk can be rounded, narrow, squared, symmetrical, asymmetrical, or heart-shaped. The texture ranges from smooth to rough. Leaves are partially to completely covered with hairs that people do not usually notice. These hairs can be fine to coarse.

## Varied Flowers and Fruits

All trees have flowers, but some are small and inconspicuous. Trees must flower in order to produce seeds. Usually fruits encase the seeds. Fruits are either fleshy or dry. The fleshy fruits are usually edible. Animals often times eat the fruit and deposit the seeds in their scat (animal fecal droppings). Dry fruits can be cones, pods, and nuts. The seeds vary in size from microscopic to huge like a peach pit.

## Go Beyond

### Dendrochronology

Dendrochronology is the study of the age of trees. You can tell the age of a tree by counting the rings. Each year two rings are formed to mark the growth of the tree. When counting rings to determine the tree's age, the light and dark rings are counted together. Together they show changes in moisture availability during the seasons. Because there is less moisture in the summer, the tree grows more slowly and the wood cells are denser. In the spring, there is more moisture and the cells grow faster and larger resulting in lighter and wider cells. The width of the rings also provides evidence to significant events in the life of the tree, such as years of flooding, drought, insect damage, or fire.

# KNOCK ON WOOD

## CHART A COURSE FOR EXPLORATION

### Part A

Working in small groups, research trees found along the Mississippi River. Field guides will be a big help because they will provide habitat maps. Note the characteristics of these trees. How tall do they grow? Do they grow on dry land or wet? List twelve trees that live in the Mississippi River valley. Use the chart provided on the next page or create your own chart to identify each tree by location, leaf type, leaf description, seed description, tree shape, bark description and whether it is deciduous or coniferous.

Explain how a forest of the upper Mississippi differs from a lower Mississippi forest.

### Part B

- Walk around your school or neighborhood and identify the trees in your area. If you can, get samples of some of leaves, bark or flowers to use in your field guide. Press the leaves and flowers between heavy books to flatten them while they dry.
- List these trees in Part B of your chart.
- Write an introduction to your field guide. Which trees are most prevalent in your area. Traditionally, what kind(s) of forest were in your area.
- Using the data collected about the trees in your area, create your own field guide. An eye for detail will make all the difference. For each species:
  - Pay attention to size, color, texture, and shape.
  - Include a map of where in the U.S. the tree commonly grows.
  - Include clear and descriptive information.

### Go Beyond (cont.)

Find a tree stump. Put a tack in the center of the stump. It takes approximately five years for a tree to be large enough to form a ring, so count the middle as five years. Count of the remainder of the rings by light and dark pairs to determine its total age. Be a tree detective and see if you can guess significant events in the life of the tree.

Identify the bark, phloem, cambium, xylem, and heartwood. Label these parts.

# KNOCK ON WOOD

## Part A

TREE NAME	
LOCALE	
DECIDUOUS OR CONIFEROUS	
TREE SHAPE	
BARK DESCRIPTION	
LEAF TYPE	
LEAF DESCRIPTION	
SEED DESCRIPTION	
FLOWER DESCRIPTION	
ENVIRONMENT DESCRIPTION	
TREE NAME	
LOCALE	
DECIDUOUS OR CONIFEROUS	
TREE SHAPE	
BARK DESCRIPTION	
LEAF TYPE	
LEAF DESCRIPTION	
SEED DESCRIPTION	
FLOWER DESCRIPTION	
ENVIRONMENT DESCRIPTION	

# KNOCK ON WOOD

## PART B

TREE NAME	
LOCALE	
DECIDUOUS OR CONIFEROUS	
TREE SHAPE	
BARK DESCRIPTION	
LEAF TYPE	
LEAF DESCRIPTION	
SEED DESCRIPTION	
FLOWER DESCRIPTION	
ENVIRONMENT DESCRIPTION	

# KNOCK ON WOOD

	EXPERT	PROFICIENT	NOVICE
CONTENT/IDEAS	<ul style="list-style-type: none"> <li><input type="checkbox"/> descriptions use precise words that provide visual images</li> <li><input type="checkbox"/> quality details provide important information that goes beyond the obvious</li> </ul>	<ul style="list-style-type: none"> <li><input type="checkbox"/> topic is defined with information drawn from both prior knowledge and facts, but has difficulty connecting them</li> </ul>	<ul style="list-style-type: none"> <li><input type="checkbox"/> information is limited or unclear</li> <li><input type="checkbox"/> lacks critical information and includes too much unimportant information</li> </ul>
ORGANIZATION	<ul style="list-style-type: none"> <li><input type="checkbox"/> enhances and highlights the central idea</li> <li><input type="checkbox"/> details fit</li> <li><input type="checkbox"/> sequencing is logical and effective</li> <li><input type="checkbox"/> good transitions connect ideas</li> <li><input type="checkbox"/> good introduction, body, conclusion format</li> </ul>	<ul style="list-style-type: none"> <li><input type="checkbox"/> moves the reader through the text without undue confusion</li> <li><input type="checkbox"/> good introduction and conclusion</li> <li><input type="checkbox"/> sequencing is logical</li> <li><input type="checkbox"/> transitions usually work well</li> </ul>	<ul style="list-style-type: none"> <li><input type="checkbox"/> lacks a clear sense of direction</li> <li><input type="checkbox"/> sequencing needs work</li> <li><input type="checkbox"/> no real introduction or conclusion</li> <li><input type="checkbox"/> lack of organization make it difficult to understand the main points</li> </ul>
GRAMMAR, USAGE, MECHANICS (G.U.M.)	<ul style="list-style-type: none"> <li><input type="checkbox"/> no G.U.M. errors</li> </ul>	<ul style="list-style-type: none"> <li><input type="checkbox"/> any grammatical or usage problems do not interfere with meaning</li> <li><input type="checkbox"/> most words are spelled correctly</li> <li><input type="checkbox"/> correct paragraph form is used</li> <li><input type="checkbox"/> only moderate editing needed</li> </ul>	<ul style="list-style-type: none"> <li><input type="checkbox"/> multiple G.U.M. mistakes</li> <li><input type="checkbox"/> extensive editing is required</li> </ul>
FIELD GUIDE ENVIRONMENT	<ul style="list-style-type: none"> <li><input type="checkbox"/> description of the tree environment is given</li> </ul>	<ul style="list-style-type: none"> <li><input type="checkbox"/> a map is included that identifies the environment of the tree</li> </ul>	<ul style="list-style-type: none"> <li><input type="checkbox"/> description and maps are not included</li> </ul>
F.G. VISUALS & GRAPHICS	<ul style="list-style-type: none"> <li><input type="checkbox"/> detailed representations of the leaves, bark, flower, and seed are provided</li> </ul>	<ul style="list-style-type: none"> <li><input type="checkbox"/> detailed representations of the tree shape and color included</li> </ul>	<ul style="list-style-type: none"> <li><input type="checkbox"/> lacks correct detail of shape and color</li> </ul>
F.G. LEAVES, FLOWERS, FRUITS, & BARK	<ul style="list-style-type: none"> <li><input type="checkbox"/> the shape is correctly described</li> <li><input type="checkbox"/> the color and size is correctly identified</li> </ul>	<ul style="list-style-type: none"> <li><input type="checkbox"/> adequate description of its size, shape, and color</li> </ul>	<ul style="list-style-type: none"> <li><input type="checkbox"/> the shape, color, and size are not described</li> </ul>

# KNOCK ON WOOD

## REFERENCES

- . *Project Learning Tree: Environmental Education Activity Guide, Third Edition*. Washington, D.C., American Forest Foundation, 1995.
- Baughner, Barbara. *American Bottom*. East St. Louis Action Research Project. <<http://imlab9.landarch.uiuc.edu/~eslarp/la/LA437-F95/final/barb/background.html>>, March 15, 2000.
- Elias, Thomas. *The Complete Trees of North America Field Guide and Natural History*. New York, Gramercy Publishing Company, 1987.
- Howarth, William, Jane R. McCauley, H. Robert Morrison, Jennifer C. Urquhart, and Merrill Windsor. *America's Wild Woodlands*. Washington, D.C. National Geographic Society, 1985.
- Kendall, John S. and Robert J. Marzano. *Content Knowledge: The McREL Standards Database*. <<http://www.mcrel.org/standards-benchmarks/>>, March 16, 2000.
- Little, Elbert L. *The Audubon Society Field Guide to North American Trees*. New York: Alfred A. Knopf, 1980.
- Niering, William A. *Wetlands*. New York: Alfred A. Knopf, 1997.
- Peterson, Roger Tory. *Peterson First Guides: Wildflowers*. Boston, Houghton Mifflin Company, 1986.