Grade 5

Forest Wildlife and Recreation

Objectives

Students will:

- describe at least three examples of the interdependence of forests and animal wildlife;
- identify at least 10 kinds of wildlife common in Minnesota forests;
- name and describe the general location of at least three Minnesota state forests;
- tell ways forests are used for recreation and well-being.

Vocabulary Words

predators	clear-cutting
prey	prescribed burning
vegetation	conifers
habitat	deciduous
cover	recreation
species	forest regions

Background Information

There is a close relationship among soil, water, plants, and animal wildlife. They all affect each other. Some animals, like fox and wolves, are **predators** that hunt and eat other animals (called **prey).** Deer, rabbits, and others eat plants. Birds, squirrels, chipmunks, and animals traveling through the forest help spread the seeds of plants so they can reproduce. Water gives life to all.

People can, and do, change or alter the environment. Through knowledge and care, humans can make things better. Through carelessness, not knowing the facts, or simply putting their own wants and desires before nature's needs, people disturb and destroy soil, water, and **vegetation.** This in turn destroys animal wildlife.

Wildlife Habitat

A wildlife **habitat** is a place or area where wildlife live, grow, and reproduce. Wildlife includes both plants and animals, but in this lesson we will focus on animal wildlife. Habitat includes both land and water areas.

Forests provide food, **cover** (protection from weather and enemies), and nesting places for wildlife. The number and the variety of wildlife **species** in an area depend on the amount and variety of plants (flowers, grasses, vines, shrubs, and trees) in the area. No two species of wild animals need exactly the same things.

Most animal species rely on a variety of plants. Pheasants and quail like to feed in the farmer's corn and grain fields and return to the forest borders near the farm crops to rest, nest, and hide. Fox venture out into these fields and meadows to catch the unwary quail, pheasant, rabbit, or field mouse and then return to their dens in the forest. Hawks soar over these same fields for the same food and return to their nests in the forest. The coyote might be seen ready to pounce on a rodent while its competitor, the badger, does the digging that chases the rodent out. The greater variety of vegetation and water areas, the greater the variety of wildlife species.

Swamp or marsh areas, often surrounded by forests, are necessary habitats for moose, muskrats, beavers, geese, ducks, and many birds. Many of these animals feed in or near the water, then return to their forest homes. The trees in forest land sur-

rounding marshes are helping soil and wildlife in another way. Their roots help hold soil in place, reducing erosion and keeping marsh waters clean for wildlife.

Animal Food

The greatest variety of animal wildlife is found along the shrubby edges of forest growth. Because there is more sunshine and moisture on edges, that's where the greatest variety of food plants grow. These edges are found along the outside forest borders, beside roads or logging roads, along stream banks, and in farm shelterbelts. Whether they're munching along the forest edges or moving further into the trees, everyone is looking for something different to eat.

Snowshoe and cottontail rabbits feed on bark and twigs of shrubs and small trees. Porcupine and beaver feed on bark as well as seeds and certain plants. Bears, raccoons, and many songbirds eat the berry-type fruits of wild plants such as strawberry, blueberry, highbush cranberry, raspberry, blackberry, cherry, and hawthorn. Ruffed grouse eat these berries as well as wild strawberry leaves, winter green, and rose hips. During winter, these grouse eat buds and catkins of birch, hazel, and aspen.

Deer prefer leaves and young twigs of northern white cedar, red-osier dogwood, white pine, and mountain maple. They also eat red maple, basswood, jack pine, willow, and aspen. When these plants are scarce, deer will feed on spruce, tamarack, and hazel. Deer need forest plants like these listed to digest their food properly; they can't exist on a diet that's entirely made up of grasses and forbs (broad-leaved plants).

Foresters can help deer and other plant eaters by creating small-scale forest openings by limited **clear-cutting** or by **prescribed burning.** Cutting or burning in a carefully planned way clears the area of old grass, bushes, trees, and tree litter, and makes room for new young plants. More sunlight reaches the forest floor when older trees are gone, and tender young shrubs and trees quickly spring up. This is like fresh "salad" to deer and other animals.

Foresters study each forest carefully before deciding to clear-cut or burn. They only do it when they know for sure these actions will create the best conditions for growing new tree species, make more forest edges for wildlife habitat, or create a healthier forest.

Animal Cover

Wild animals seek cover for many reasons including: a place to hide; shelter or protection from storms and wind; shade on hot, sunny days; a place to nest or rest; privacy during mating seasons; a place to build a nest or home; and a safe place to raise their young, where the youngsters can play, hunt for food, and learn to protect themselves.

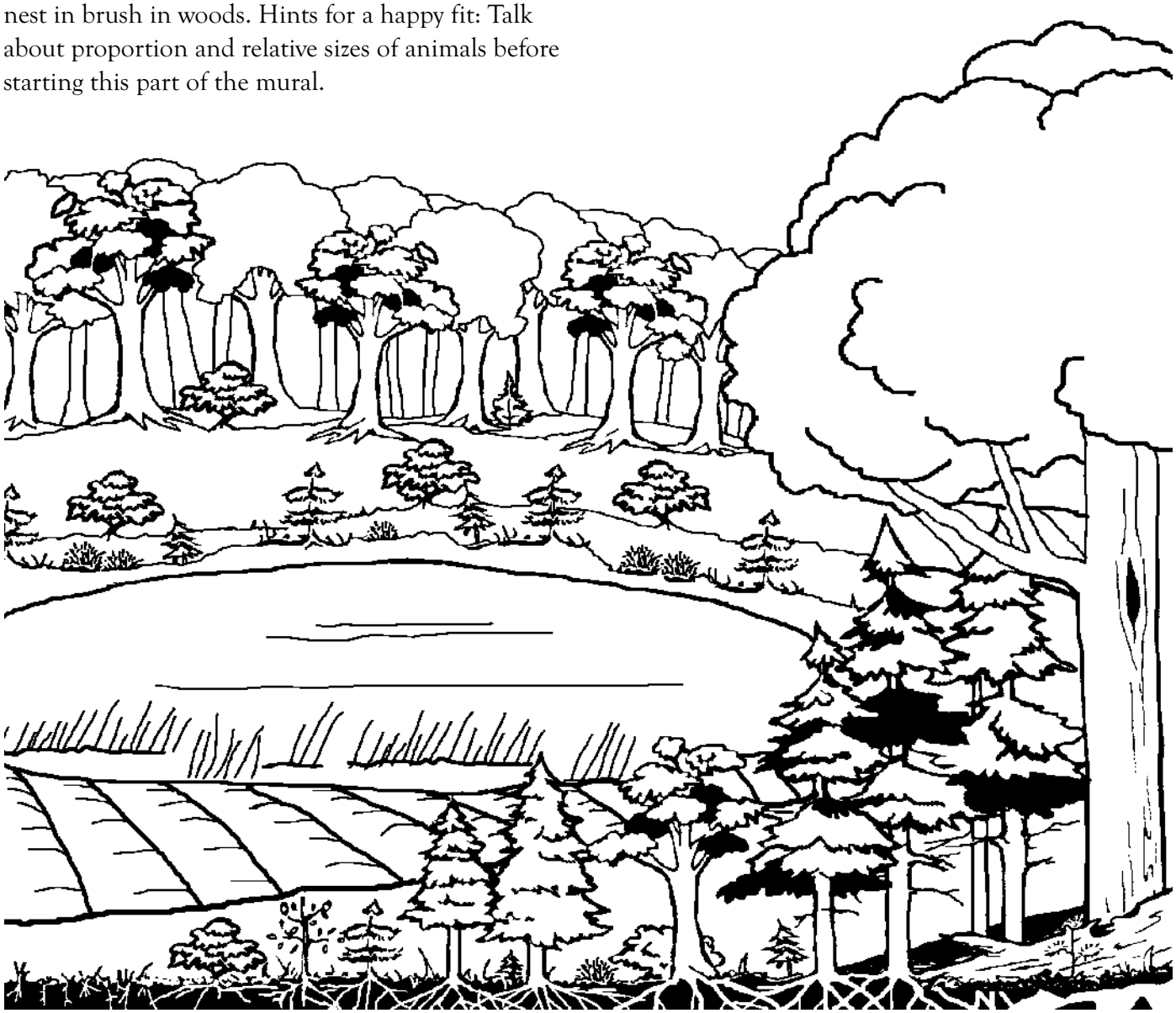
Hollow trees and logs, brush piles, and fallen branches offer wonderful cover for many animals. Raccoons, squirrels, and wood ducks are at home in hollow trees. Grouse, pheasants, quail, and rabbits use brush piles, downed tree branches, low shrubs, and tangled vines to hide and build their nests. Songbirds choose dense trees or shrubs as nesting sites. Trees and shrubs in a farm windbreak or shelterbelt are also excellent cover. They are animal roadways, too, making protected travel lanes for game birds, songbirds, fox, rabbit, deer, and skunks. Good cover is important to smaller animals because their enemies live in the same animal community. Hungry hawks, owls, wolves, and fox are waiting to nab animals that leave their cover.

Scavengers such as vultures and crows also live in the forest. They have a special role. They help keep the forest clean by clearing away and feeding on dead forest animals.

Are all trees good for cover? Not really. Usually, **conifers** provide good shelter and some foods, while **deciduous** trees provide good food and some shelter. A forest with a mixture of conifers and deciduous trees is ideal for wildlife animals. Each forest has its own type of soil, topography, and plant and animal wildlife species.

Places in a Forest

Students participate by drawing and painting a forest including forest edges. As part of the background scenery, include a corn or soybean field and water. After the painting is finished, students draw and paint animals to fit in the scene in the appropriate places on the mural. Include at least 12 animals. Some animals may appear in more than one place. Example: Pheasants feed in meadows or fields and nest in brush in woods. Hints for a happy fit: Talk about proportion and relative sizes of animals before starting this part of the mural.



Forest Beauty and Recreation

Throughout the ages, poets, writers, and painters have praised the forest as a place of great beauty. Trees have given strength, inspiration, hope, healing, and a sense of peace to people in all walks of life. The beauty of a forest, with its wonderful plant and animal life, is enjoyed by youngsters and adults alike. Towering pines, reaching for the clouds, make us stop in wonder. Seeing a moose with its nose under water, grazing on the bottom of a stream flowing through the forest, is a thrill of a lifetime.

Since forests are places of beauty and peace, it is only natural that people are drawn to them for **recreation.** Fishing, hunting, camping, canoeing, birdwatching, hiking, horseback riding, skiing, snowshoeing, snowmobiling, and photography are all part of forest fun.

Much of the heavy traffic leaving a city on a Friday afternoon is due to city folks heading for **forest regions.** Minnesota has 58 state forests specifically set aside for the public to enjoy. Two national forests—the Chippewa and the Superior—are also in Minnesota.

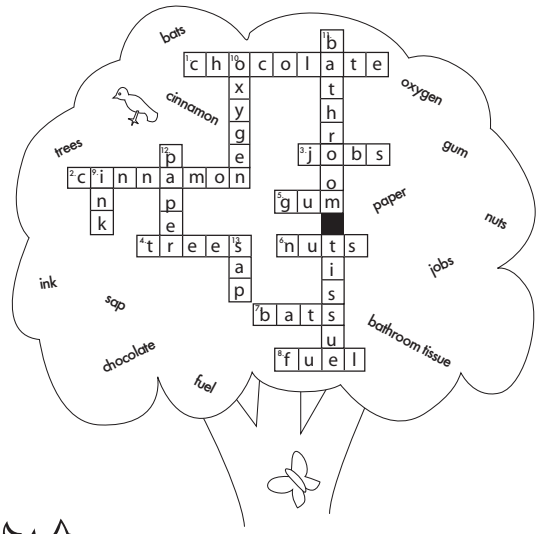
Language Arts

Tree-Mendous

You'll need: "Tree-Mendous" Activity Sheet, page 62.

Do the crossword puzzle on the activity sheet and learn more about what forests contribute to our lives.

Answers:



Forest Scramble

You'll need: "State Forest Scramble" Activity Sheet, page 63.

Do the game to learn more about our state forests.

Answers:

Minnesota has 58 state forests!

1. Northwest Angle
2. Sand Dunes
3. Richard J. Dorer Memorial Hardwood
4. Mississippi Headwaters
5. Paul Bunyan
6. Golden Anniversary
7. Emily
8. Land O' Lakes

What's Out There?

You'll need: Writing supplies and telephone or Internet access.

Write or call to get more information about Minnesota's forest recreation opportunities.

- State Forests: Contact the Minnesota Department of Natural Resources (DNR), Information Center, 500 Lafayette Road, St. Paul, MN 55155-4040; 651-296-6157 or toll free at 1-888-MINNDNR (646-6367). Check out the DNR's web site at http:/www.dnr.state.mn.us/forestry/state_forests/
- National Forests: Contact the Chippewa National Forest, 200 Ash Avenue Northwest, Cass Lake, MN 56633; 218-335-8600; http://www.fs.fed.us/r9/chippewa or the Superior National Forest, 8901 Grand Avenue Place, Duluth, MN 55808; 218-626-4300; http://www.fs.fed.us/r9/superior

People and Cultures

Trees and Celebrations

You'll need: Encyclopedias, access to library materials or optionally, the Internet, writing paper, and pencils.

Throughout history, trees and parts of trees have been at the center of celebrations and special occasions around the world. Have students research world celebrations and explore the significance of trees in them. Some idea starters: the Yule log, the Christmas tree, the maypole, ancient sacred trees, Northwest American Indian totem poles, the Buddhist Tree of Life.

The King's Forest

Versailles, France and Mexico were just two of many areas in past centuries that had royal forests. The king would enclose large areas of land with trees to save the acres for game and hunting. In some places, to trespass in the king's woods was punished with death. Paths cut through the forests to make it easier for the king's mounted hunting parties to pass through. These paths were so popular that they became a feature in designing the streets of Paris. Tree-lined streets crossed the city, often leading to a palace or an armory. Many places in Europe copied the idea, but the streets of Paris are the most dramatic because so many trees were carefully placed and planted.

Source: Porteous, Alexander. *Forest, Folklore, Mythology, and Romance,* 1928.

Think and discuss: How are trees used to mark special places in our communities today? (We still plant trees along our streets and boulevards. Trees are planted when babies are born and to honor people and events. Homeowners plant trees near their houses for shade and beauty, but also to make the houses look like they fit into the landscape. They make hedges for privacy and to mark their property lines. Trees, especially evergreens, grace our cemeteries and stand as tributes beside the graves of loved ones.)

Science and the Environment

Web of Life

You'll need: A ball of string and a card for each player with the name of a forest-related item. You may have some repeated cards; each of the items named on the cards is part of the web of life. For example, animals (deer, bear, fish, worm, wolf, rabbit); plants (grass, berries, tree buds, leaves); soil; sun.

Each student takes a card. Players sit in a circle with their cards on the floor in front of them. Starting with the *sun,* the first player holds onto the end of the string, then passes the ball to someone whose card names something that needs the sun in order to survive.

Have the student explain the connection. The next player does the same, moving the ball to something that needs his or her item to survive.

Continue to pass the string until all players are included and you can see a web. Discuss how all living things depend on each other. What happens in a forest when one part of the web is missing?

Option: If the group is large, you may want to break into smaller groups so players are closer together and cards are easier to see.

Forest Relationships

You'll need: The diagram on page 60 in a form students can see, acorns, and something to break open the acorns (optional).

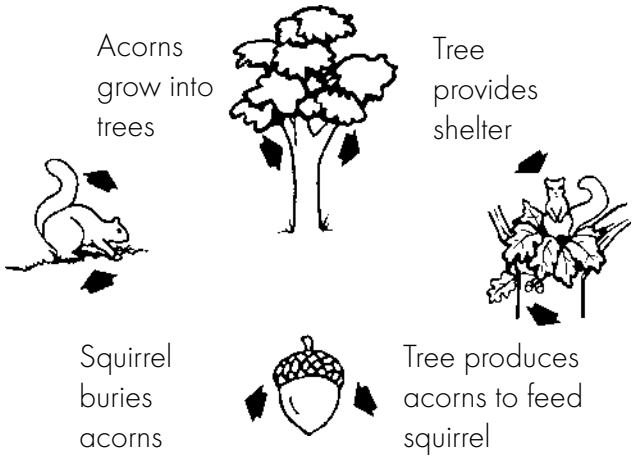
Draw the squirrel-nut-tree relationship cycle on the board or photocopy it for each student. Discuss what this diagram means. Ask the following questions; encourage students to ask questions, too!

a. How do most acorns get planted? Does every acorn grow into an oak tree? How do you know?
b. What happens to the acorns that do not grow into oak trees?
c. Does anything live in an acorn? How do you know?

List all the facts students know about acorns. Carefully cut several open and observe their insides.

What portion of the acorn will grow into the new tree? Which part is eaten by squirrels and other animals for food? Why don't humans eat acorns? (They are bitter.)

The Squirrel-Nut-Tree Relationship



—U.S. Department of Agriculture Forest Service

Places in the Forest

You'll need: Magazines to cut up, scissors, and materials for making a mural background.

If you didn't do this as a bulletin board activity, create a "Places in the Forest" mural now or talk through the various places of the forest with students.

Discuss: Which animals live in each part of the forest? Ask students to bring "wildlife" magazines to school that can be cut apart. Some titles to suggest are *Field and Stream, Outdoor Life, National Wildlife, Ranger Rick.* Attach wildlife where it would belong in the mural.

Enhancements

Math

Pine Tree Math

You'll need: "Pine Tree Math" Activity Sheet, page 64.

Have students do the activity sheet.

Answers:

1. 600' x 12" = 7,200"
   7,200" ÷ 2" = 3,600 seeds per row
2. 3,600 seeds/row x 8 rows = 28,800 seeds in all
3. 600' x 12" = 7,200"
   7,200" ÷ 4" = 1,800 seedlings per row
4. 1,800 seedlings/row x 5 rows = 9,000 seedlings

The Arts

The Living Forest

You'll need: Paper and pencils.

Write a short musical based on the life that goes on in a forest. Students take turns reading sections of the story and performing original songs or appropriate songs from other sources.

Recreational Fun

You'll need: Magazine clippings or photos of outdoor recreation and display space.

Have students find as many outdoor recreation pictures as possible in magazines or from family vacation snapshots. Each picture must include at least one tree. Make a recreational collage on a large bulletin board or length of butcher paper to display the pictures. How many of the students have done each of the recreational activities? Which are group favorites? Share tales of adventures in the forest.

Natural Works of Art

You'll need: Art materials and debris from the natural world.

Create forest landscapes using "natural treasures" collected on a hike. Students combine illustration, design, and bits of nature to create scenes. Consider dioramas or three-sided scenes constructed in boxes, too. Natural elements to choose from are nonliving specimens whose removal will not harm the environment in which they were found. Examples are stones and pebbles, twigs, bark debris, leaves, catkins, pine cones, and nuts.

Games and Physical Activities

Forest Call Ball

You'll need: Playground balls for each group of eight to 10 students.

Form circles of eight to 10 students. One player in each circle holds the ball to start. This first player tosses the ball to another player, calling out the name of a tree as he or she does so. The receiving player catches the ball, names another tree, and tosses it to someone else. The game continues until all players have had several chances to toss and receive the ball. Change the call category and continue on. Other call categories might be: animals that live in a forest, things people do for fun in a forest, and things made from wood.

Performance Assessment

Task Statement

Students replicate, on their own, a forest relationship cycle similar to the squirrel-nut-tree relationship cycle on page 60. They may choose another animal for a different plant-animal-soil, etc., example, but must show at least three steps of interrelationship between forest elements.

Grade 5 Standards

Identify the interdependence of forests and animal wildlife.

Evaluate the recreational contributions forests make to Minnesota.

Rubric—Quality of Performance

4 Exceeds performance standard
3 Meets performance standard
2 Developing toward performance standard
1 Attempts made but many serious errors

FUN FACT

Minnesota's state tree is the Norway pine, but we in the Lake States (Minnesota, Wisconsin, and Michigan) are the only ones who call it that. To most others, it is the red pine. The name "Norway" could have come from English settlers who thought it resembled the Norwegian scotch pine. Others speculate that it took its name from the town of Norway, Maine, another locale where red pine was observed by early settlers.

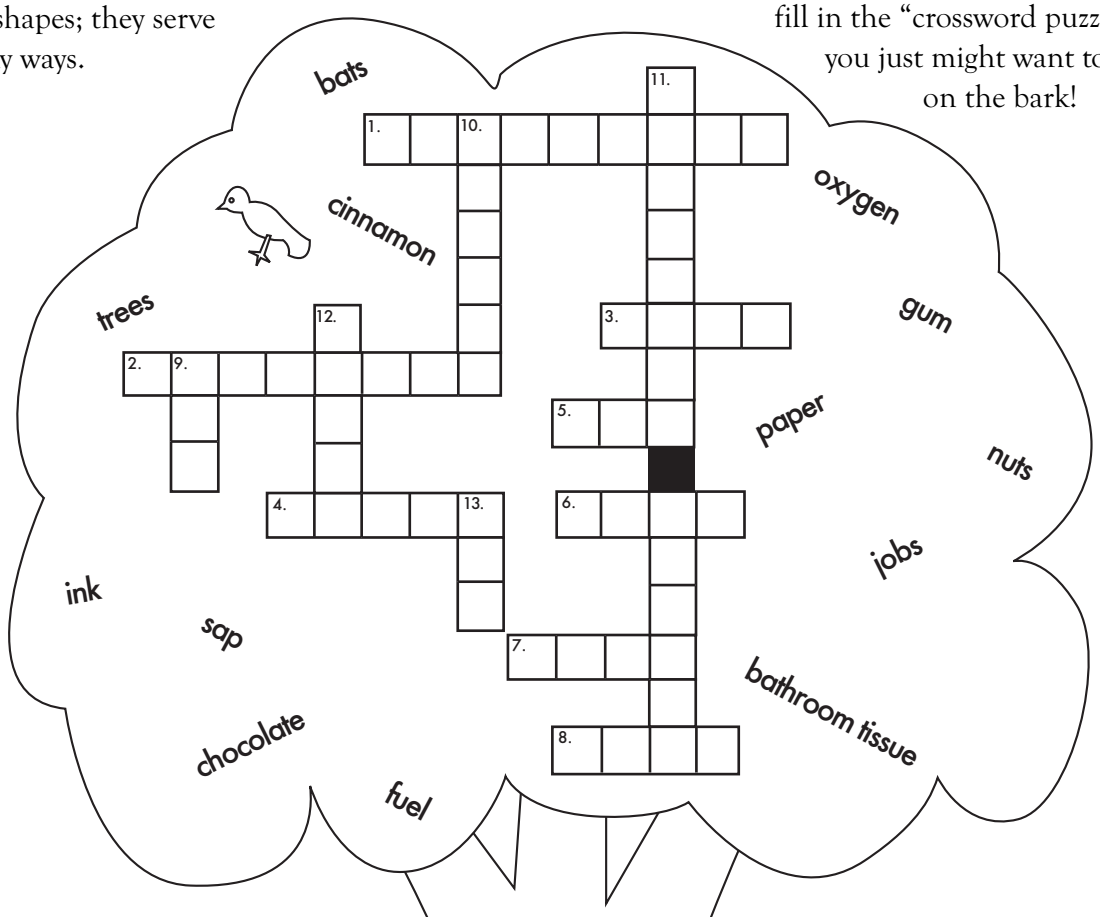
Tree-Mendous

KID'S COPY

Tree (tre)n. A woody plant that is at least 15 feet tall when fully grown; trees grow taller, live longer, and become more massive than nearly any other living thing; trees grow in many sizes and shapes; they serve us in many ways.

NAME: _____

You'll think trees are tree-mendous when you see some of the things they give us! Use these words to fill in the "crossword puzzle" ... then you just might want to pat a tree on the bark!



Across

1. Ground, roasted beans from the cocoa tree make _____.
2. _____ is a spice made from the bark of certain trees.
3. Trees give _____ to thousands of Minnesota workers who make these tree products for us!
4. Arbor Day is a special day when people learn about, plant, and care for _____.
5. Thank a tree for your chewing _____.
6. _____ are a type of food from trees.
7. The wood of ash trees makes great baseball _____.
8. Enough wood is burned for _____ each year in the U.S. to build a 100-foot-tall wall of wood that could stretch from New York to San Francisco.

Down

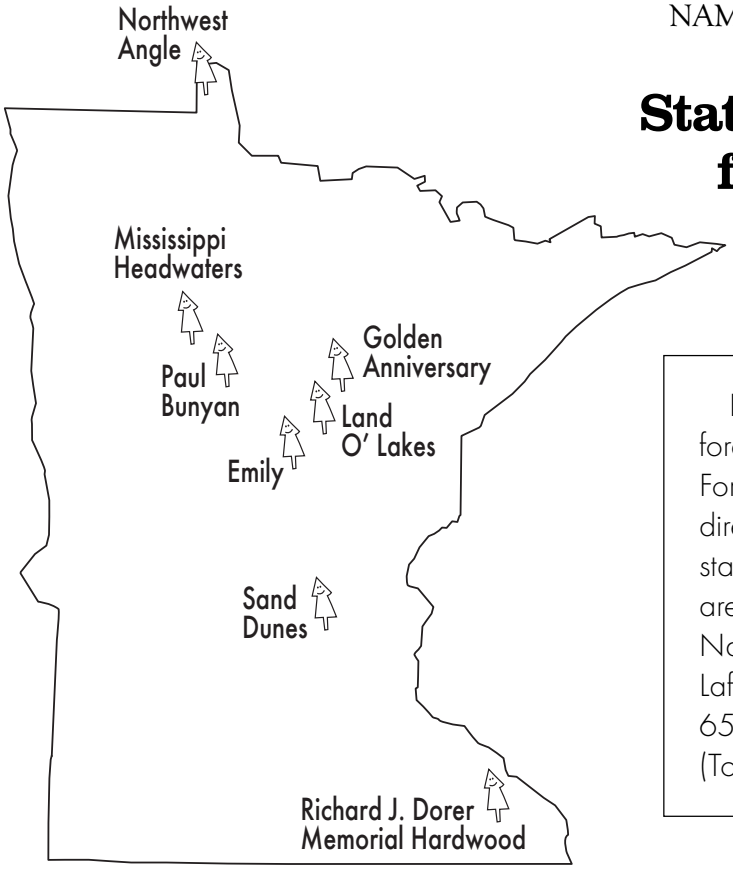
9. The _____ that is printed on this page starts with trees.
10. Trees supply _____ for the air we breathe.
11. Machines spin out 6,000 feet of this paper product every minute!
12. Each of us uses 600 lbs. of this tree product every year.
13. 30 to 40 gallons of _____ from a sugar maple tree boil down to one gallon of maple syrup.

Answers on page 58.

State Forest Scramble

KID'S COPY

NAME: _____



State forests are for everyone!

For more information on Minnesota's state forests, check out the brochure, "Minnesota State Forests—Outdoor Recreation Guide." It includes directions to state forest recreation areas and lists state forest trails, campgrounds, and day-use areas. Available through the Department of Natural Resources' Information Center, 500 Lafayette Road, St. Paul, MN 55155-4040; 651-296-6157 (Metro Area); 1-888-646-6367 (Toll Free).

How many state forests do you think Minnesota has? _____

In what ways can urban dwellers enjoy state forests? _____

_____

Eight of Minnesota's state forests are shown on this map.
Unscramble the names and tell which state forest is:

1. The farthest north? tsewthorN glenA _____
2. Named after landforms? nadS nDeus _____
3. East of Rochester? odroawdH mroiaelM orerD J chardiR _____
4. Where the Mississippi River begins? issiMppiiss sdwaHeater _____
5. Named after a logging legend? aulP yanBun _____
6. Named after 50 years of marriage? oldenG vnniAerarsy _____
7. A woman's name? miEly _____
8. Has the same name as a Minnesota foods company? naLd O keLas _____

Answers on page 58.

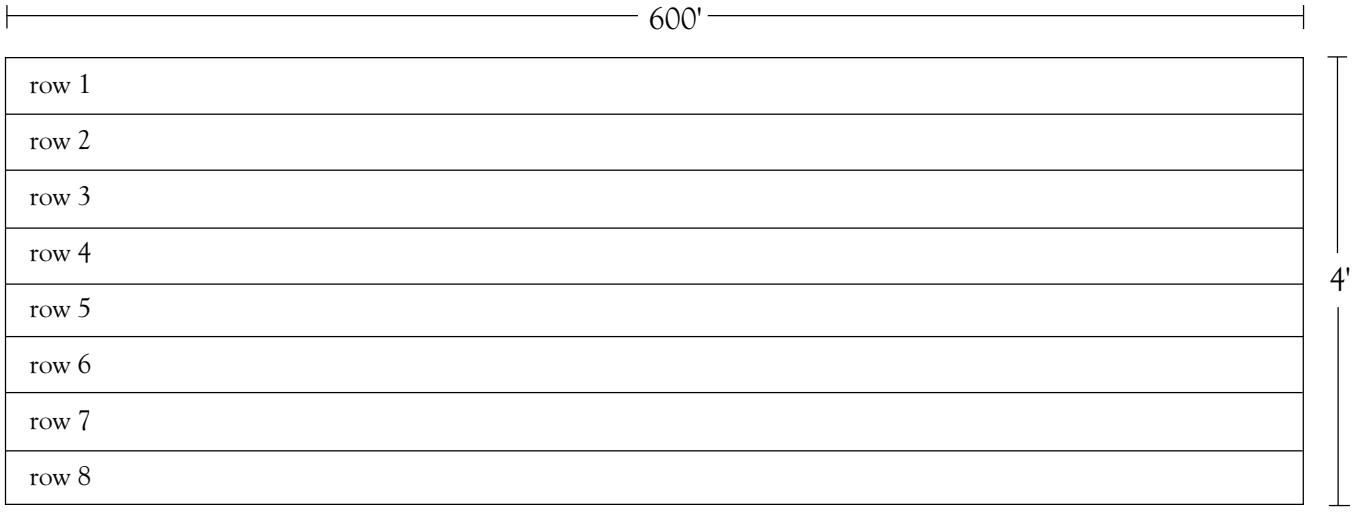
Pine Tree Math

NAME: _____

The red pine is an important tree to both wildlife and humans. It's an excellent cover, timber, windbreak, and Christmas tree. Long-lived, it can grow to a height of 60 to 80 feet. Although found on a wide variety of sites, the red pine grows best in areas with full sunlight and moist, well-drained soil. It grows quickly, has few major pests, and is Minnesota's state tree.

Shown below is the way a tree nursery plants seeds and seedlings in a planting bed beginning the life of red pine trees.

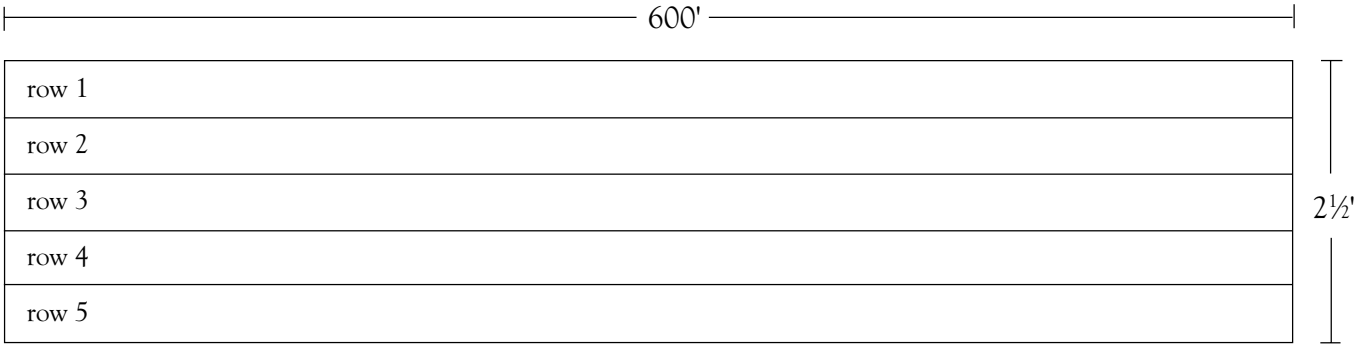
The planting bed is 600 feet long and 4 feet wide. It has 8 rows. Seeds are planted 2 inches apart in each row.



1. How many seeds are planted in each row? _____

2. How many seeds are planted in a planting bed? _____

After two years of growth, the seedlings are transplanted to another planting bed. This planting bed has 5 rows. Seedlings are planted 4 inches apart in each row.



3. How many seedlings are planted in each row? _____

4. How many seedlings are planted in a 2-year-old seedling planting bed? _____

Answers on page 60.