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ABSTRACT

This activity guide is designed to be used with the Growing Together program. Tree-related activities are correlated to the Benchmarks for Scientific Literacy, the recommended standards for mathematics, science, and technology suggested by the American Association for the Advancement of Science (AAAS). The Treature Educational Program is dedicated to teaching children about the important role tree planting and tree care plays in keeping the environment healthy. Treatures are a community of small, imaginary tree characters who help relay the scientific concepts behind the growth and function of a tree. Learning the names and jobs of the Treature characters helps reveal the functions of the tree and how each process is dependent on the other. The guide is divided into two sections. The first section is aimed primarily at students in pre-kindergarten through third grade. The second section is aimed at students in grades three through six. However, most of the activities are adaptable for children of all ages. (DDR)

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Growing Together with the Treetures®

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NATIONAL TREE TRUST

Activity Guide

Series 1

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Cover Photo: Jennifer Judd Hinrichs

This activity guide is the result of several years of collaborative effort by many individuals. The National Tree Trust would like to thank the following contributors for their perseverance, time and vision:

- Sharon Bailey
- Source 3, Inc.
- Judith H. Blau, Inc.
- All of the Growing Together participants who provided feedback and content suggestions throughout this process.

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Table of Contents

Welcome to the Growing Together Program

After many years of hard work and suggestions from past Growing Together (GT) program participants, the National Tree Trust presents this activity guide for your use with the GT program. Designed to improve the quality and content of the GT educational experience, these tree-related activities are carefully correlated to the Benchmarks for Scientific Literacy, the recommended standards for math, science, and technology suggested by the American Association for the Advancement of Science.

The National Tree Trust welcomes the **Treetures.**® The Treeture Educational Program is dedicated to teaching our children about the important role tree planting and tree care plays in keeping our environment healthy. The Treetures themselves are a community of small, imaginary tree characters who help relay the scientific concepts behind the growth and functions of a tree. Learning the names and jobs of the Treeture characters helps reveal the functions of the tree and how each process is dependent on the other. For example, Chlorophyll and Chlorophyllis recall photosynthesis, and Phloemina and her xylemphone remind us of capillary action. Treetures also use mnemonics and humor to entertain and impart scientific information, highlighting the message of working together to keep our planet healthy. Teachers and students are encouraged to use Treetures as a springboard to build upon their knowledge of trees.

The guide is divided into two sections: the first section is aimed primarily at students pre-kindergarten through third grade; and the second section is aimed at students grades three through six. However, most of the activities are suitable and adaptable for all age groups. Older students will certainly be engaged by Treetures while benefiting from the scientific content of the lessons. The second section also has many activities that are appropriate for all ages. Younger children will enjoy making tree pretzels, tree art activities, and creating a tree dance. Peruse both sections and choose activities from either or both. Expand upon or simplify the activities according to your needs.

Although there are literally hundreds of scientific, cultural, and aesthetic tree topics to cover, we chose to select only a few in order to address them as fully as possible with this introductory guide. Depending on the feedback the National Tree Trust receives from GT participants such as yourself, this pilot activity guide will become the first in a series of educational tools that complement the GT program.

Pre-kindergarten—Grade 3

Young children are true scientists. They use all their senses to explore the world around them. Invite your class to discover the magic of trees with Treetures® by guiding your students through the following fun and enriching activities.

While covering the scientific concepts of photosynthesis and tree parts, students are practicing basic skills, such as eye-hand coordination, sequencing, fine motor development, observing, and recording. Various learning styles are represented so you can choose what is appropriate for your class' needs. The PK–3 activities involve diverse learning concepts and studies designed to be integrated into your current curriculum or adapted for an older student audience.

Each activity in this PK–3 section includes a *Treeture Tale*. Treeture Tales are short stories that use the Treeture characters to introduce specific information about the many functions of the tree and the important role of trees in our environment. Using the Treetures as guides to tree education engages young children by stimulating their imagination. Treeture Tales open the door to the "real" magic of nature.

Third grade is a pivotal year; children are still interested in the whimsical nature of Treetures, yet they are ready for more technical information. Treetures impart solid information from which even older children benefit—and it's done in a fun, appealing way. Select appropriate portions from each lesson for use with the upper grades. Also look through the second section for hands-on activities for the younger crowd.

A final word of advice...have fun with these activities! We hope they open the wonderful world of trees to you and your students.

The Story of the Treetures®
The beginning. . .

Once, long ago, deep in a forest where a fierce fire had destroyed all the small and mighty trees, a little acorn was left hidden beneath the ashes.

On a magical day, after a dark storm, the sun began to shine and two rainbows graced the blue sky. They stretched from the clouds down toward the forest floor and came to rest just above the acorn.

The birds began to sing and the forest came alive. Homeless woodland animals gathered around the shafts of rainbow light. Suddenly, the acorn moved! The shell burst open and out stepped a fuzzy, little animal with a very big, soft and swishy tail. He held something tiny and sparkling between his paws. At that moment, the wind began to blow and the wind whispered, "Welcome, a Treeture has been born. He holds the seed to a magical, mighty oak tree. He will find just the right place to plant his seed. He will live next to the seedling and help it grow strong until it becomes a giant in the forest...a home for birds and animals. As the oak grows, so too will the forest grow again. This little Treeture will become wise and clever. He will grow to know and understand the many mysteries of the forest.

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Twenty years from this day, the magical oak will be blessed with many new acorns. Each will hold a baby Treeture and each Treeture will have its own precious seed...the beginning of many new magical trees. The first little Treeture will be called Twigs, and he will become a Teacher for all new Treetures born from his great oak."

...And the wind whistled and sang while shimmering lights danced around the silent forest animals. Once again, the wind whispered its final message, "The most wonderful magic of all will happen when the world's children learn to love and care for their home here on our planet earth."

The air grew still and the forest glowed with the spirit of the wind's message. The first little Treeture set out to plant his seed and to help make the dream of healthy trees in forests, towns and cities come true.

TREETURE CHARACTER GUIDE

PLACES:

Nutley Grove is the magical part of the Forest where the Treetures live.

Nutshelters are the nut shell homes of the Treetures.

The Twiggery is a busy nut factory where Treetures build their carts, furniture and all the things they need out of twigs, shells, and forest materials.

The Soup To Nuts Kitchen is the place where Treetures gather to cook and share a meal.

The Home Branch is a branch on the giant oak where important meetings are held.

The Root Cellars are located beneath the tree roots where Treetures store their food and information about their origins.

Treeture® Talk and Word Definitions

Note: The Treetures on pages 5 and 6 are used in this Series 1 Guide

Twigs

Treeture Teachers are young and elderly Treetures wise enough to instruct baby Treetures on how to care for the forest life.

Forests are filled with plants and animals. Learning about forest friends will help us appreciate their beauty and how important they are to life on earth.

Keepers Of The Crown watch over the newborn leaves that crown the trees and grow at the tips of the branches.

The leaves and branches of a tree are called the crown. The crown is the top of the tree.

Mama Greenleaf

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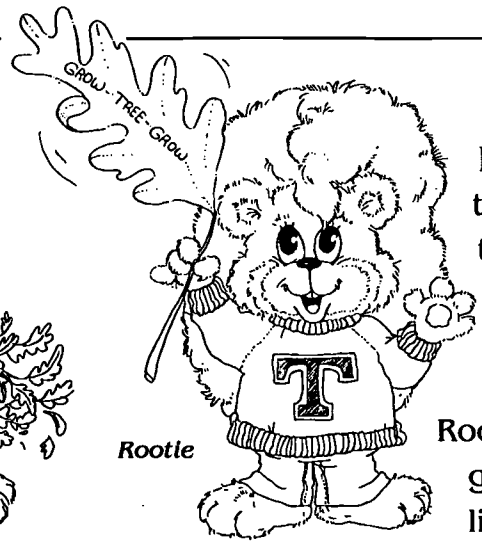
Roothie



Rootie

Rooters care for the tree roots and encourage them to grow (cheerleaders at splinter sprinting games).

Roots hold a tree in the ground. The roots have little hairs that help absorb water and nutrients so the tree can grow.

The Sunbeam Team helps direct sunlight to the leaves so the tree can make its food and can give us something invisible yet magical called "oxygen."

Chlorophyll is a pigment that gives leaves their green color. Using energy from the sun, water, and carbon dioxide, chlorophyll helps leaves make their own food. Oxygen is a by-product of this process called photosynthesis.

Chlorophyllis

Chlorophyll

Woody

Phloemina

Sap Tappers watch over the flow of sap in the trees' pipelines. The sap is food for the tree. They test the quality of the sap and get a bit "sap happy" now and then.

The newest layer of wood on a tree is called sapwood. It is new xylem—a pipeline that stores nutrients and carries water from the roots up to the leaves and the rest of the tree. Phloem is a layer on the inside of the tree. It is called the inner bark. Phloem carries sap from the top branches down to the roots.

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Protectors Of The Heartwood know the deep secrets of the inner parts of the trees and try to protect them from damage.

Sergeant Core

Smoke Detectors are trained to smell smoke from miles away. Their noses BEEP and signal the first sniff of smoke. They help protect the forest from unnatural fire.

Beeper

Blossom

Tree Twirlers help the wind spread tree pollen so baby trees can be born.

Ring Counters keep track of the age of trees and the Treetures' birthdays...they ring in each new year!

Ring-a-Ling

Doc Barkley

Tree Doctors help mend broken limbs, wounded bark and perform transplants.

Branch Brokers help forest birds and animals find just the right home in trees. They even settle squabbles between neighbors and help run the Bed and Branch Hotels in older trees that no longer make leaves.

Blanch

Bugsey

Blight Fighters fight off the Swarm Monster's army of Gypsy Moths and other insects that attack and try to destroy plant life. They also try to protect the forest from the diseases of Elvirus E. Ville.

Clipper

Little Shavers prune the trees and chop away dead and broken twigs from the branches. They use helichoppers to do their job.

Autumn

Leaf Turners help the leaves turn colors in the fall. They also help other Treetures when they are in trouble...to turn over new leaves.

Treedom Fighters work to keep our forests safe and healthy. They protect old forests and help to grow new ones.

Sprig

Weedetta

Weeder

The Weed Watchers warn us about the appearance of the Wheedlers who are noxious weeds. Noxious weeds are weeds that grow in the wrong places. They can threaten the growth of plant life as they wheedle their way into forests and over land.

Stomper

Compost Masters help collect and direct junk leaves and debris to trees and soil where "tree food" is needed. They also create and deliver "Treeture Leaflet" messages.

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Harve

Ester

Harvesters make products out of wood. They help plant new trees where grown trees have been cut down.

Professor Arbor E. Tum

Treesearch Scientists are dedicated to finding new ways to help trees grow and survive on Earth. They are tree-mendously excited about helping trees to grow and live happily in towns and cities.

THE FOREST FIENDS:

Spark

Spark, when under control, can help people and nature, but out of control is a great danger to all.

Elvirus E. Ville spreads disease to trees and plant life.

Elvirus E. Ville

The Swarm Monster

The Swarm Monster and his Army of Gypsy Moths destroy the trees' leaves and plant life.

THE MUDSTERS and THE DECOMPOSERS:

The Mud Meister

Soil Spoilers like polluted places, landslides and stagnant water. Treetures try to trick them into becoming Soil Toilers who strive to fight erosion and replenish the land with healthy soil.

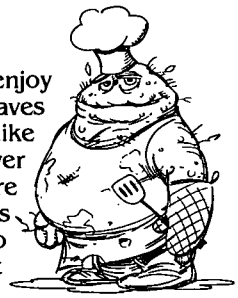
The Root Snoot

Root Rotters steal water from needy roots and sometimes direct too much water to tree roots causing havoc for the Treeture Rooters. All the Root Rotter's underground antics and burrowing can be useful when they help the worms aerate the soil.

Mushroominators can be killers when they "hang out" on healthy trees. The Treetures try to lure them to tree stumps and dead branches where they can help do the important job of decomposing. It's important to learn the difference between friendly mushrooms and Mushroominators.

Fun Gus

Dirt Dumpers enjoy eating tender roots, leaves and vegetation. Theylike to toss a trail of leftover garbage everywhere they go. The Treetures try to tease them into being in just the right places where the soil needs to be enriched.



Humus

Decayers pretend to be part of a healthy tree so they can attract tree destroying insects and disease to openings and wounds in the bark. Crud must be persuaded to spend his time around old dead wood so that his decomposing buddies will help him turn the dead wood into tree food.

Crud

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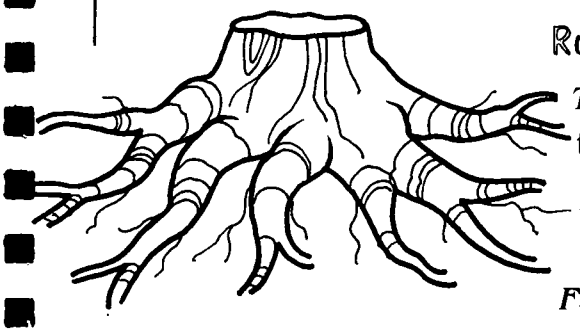
A Tree Has Many Parts

Think about this: Trees have many parts. Each part has an important job.

How it works: There are three main parts to a tree: the roots, trunk, and crown.



Roots: There are four types of roots.

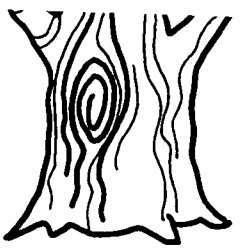
Tap roots anchor the tree firmly, albeit all trees do not have tap roots.

Lateral roots support and anchor the trunk. They extend far out, sometimes beyond the crown.

Fibrous roots are fine feeding roots. They are close to the ground's surface.

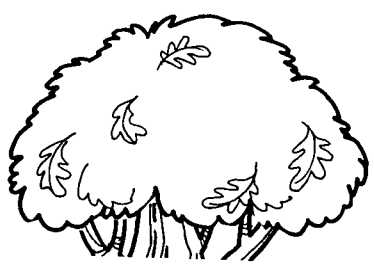
Sinkers are deeply descending roots. They grow downward from the lateral roots.

Trunk: A trunk is a stem—a very large one! It acts as the main support and as the tree's plumbing system. A trunk has several layers—*the outer bark, the inner bark, the cambium, the sapwood, and the heartwood*. The *outer bark* is like skin and it protects the inner parts. The *inner bark*, called *phloem (flō´em)*, is made of tubes that carry sap down from the leaves to the rest of the tree. Phloem is the food supplier for the tree.



Next is the *cambium*. This layer is a very thin one which is comprised of new cells that become part of the phloem, xylem, or cambium. It is the growing layer of the tree which makes the tree wider.

The next layer is called the sapwood, or xylem. This layer is made up of the newest layer which carries food upward from the roots to the other parts of the tree. The sapwood also stores and carries food across the tree. The heartwood is in the center of the tree and is the oldest part. It is old xylem that no longer acts as a transporter. This heartwood helps give the tree support and strength.



Crown: The branches and leaves of a tree are called the crown. The leaves are very important to the tree as they make energy for the tree. Using water and minerals from the soil, carbon dioxide from the air, and the sun, leaves produce their own food through the process of photosynthesis. This energy is carried to the parts of the tree where it is needed.

New words: trunk, roots, crown

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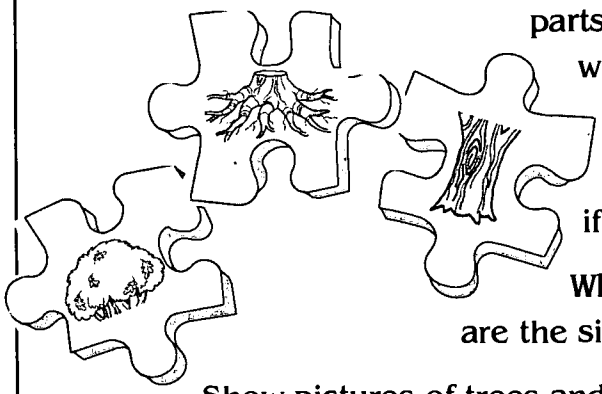
You'll need:

- ❑ tree pictures (use pictures from nature/outdoor magazines)
- ❑ tree parts activity sheet (one per child) p.14
- ❑ *Treeture Tales Tree Parts Mini Book* (one per child) p.15–16
- ❑ tree parts (p. 14)—cut multiple sets into parts and ready them for flannel board use by gluing a small piece of felt to the back of each cutout.
- ❑ treeture finger puppet pages (two sheets per child) p.17–18
- ❑ box pattern sheet (three per child, unless used as a center activity) p.19

Try it!

This activity is a wonderful outdoor experience where children can observe and feel real trees. However, many teachers do not have access to trees, so this lesson is also written for indoor use. If you are fortunate enough to have trees nearby, take the children for a tree walk and observe the trees. Follow the discussion suggestions listed below. Allow the children the opportunity to touch the various tree parts. (While feeling the bark on the trunk you might ask what the bark is for...feel the exposed roots...what do they do to help the tree...)



You may use the student pages indoors or outdoors if there is a suitable work space.

Who has seen a tree? What do they look like? What are the similarities? Differences?

Show pictures of trees and discuss their similarities and differences, leading into what they all have in common—roots, trunk, crown.

Using the flannel board tree parts, introduce them one at a time and have the children identify them as they are placed on a flannel board or stand. Mix the pieces and have the children take turns puzzling the tree together, while reinforcing the tree part name.

Tell the children that the pieces fit well together to form this tree—they all work cooperatively. They each have a special job. Begin with the roots and ask if anyone knows their job. Elicit the answer from the class and continue with the trunk and the crown.

At this point introduce your special friends, called Treetures®, who will help teach about trees. They will help remind us what each tree part is and how important their jobs are. Read the story on page 11 to your students.

The Story of the Crown, The Trunk and the Roots

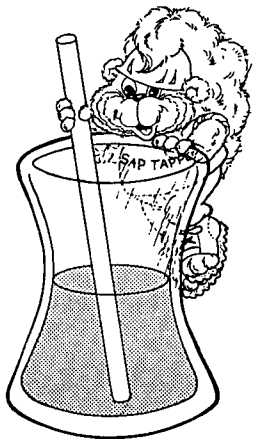
In the Magic Treeture Forest, in Nutley Grove, the great oak tree was enjoying the morning sunshine and the dew drops on its leaves. The oak and all the trees surrounding it in the forest seemed to be standing quietly together with only the sounds of birds chirping and soft breezes. But inside the trees there was a world of busy activity. If we look closely and listen very carefully to the magical oak tree, we might discover some of the secrets of the tree.

The tree has three main parts—the roots, the trunk and the crown. Let's look at the roots that are poking up from beneath the earth. The roots go into the earth where our Treeture friends, Rootie and Roothie, work with all the Rooters to hold the tree in place. The Rooters encourage the roots to grow. They sing, "Grow tree Grow, Grow tree Grow! Grow! Grow!," as they help send water and nutrients up to their friends, Woody and Phloemina, the Sap Tappers.

Woody and Phloemina take care of the tree's pipelines which are called vessels. Phloemina listens with her xylemphone to be sure that water is flowing from the roots to the crown. A strong trunk means the tree can support its beautiful crown of branches and leaves.

In the crown of the tree, Mama Greenleaf, Keeper of the Crown, watches over the young, green leaves that grow to cover the branches of the tree.

Twigs reminds us that each part of the tree is important. When all the Treetures do their jobs and work together, the tree grows strong and healthy.



After reading the story to your students, begin with the roots and introduce Rootie and Roothie using the finger puppets on p. 17-18. Our Treeture friends, Rootie and Roothie, want us to remember all about roots. Roots help a tree drink. The roots absorb water and nutrients from the soil, just like when you drink a glass of water! Where does the water go?

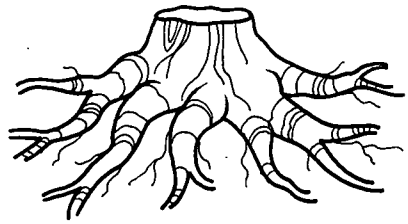
The Sap Tappers, Woody and Phloemina, take care of the tree trunk. They tell us how the water flows up the trunk—like a straw! The water comes through the roots and travels up the trunk through special tubes that are inside the trunk. Where does the water go when it gets to the top of the trunk?

This is Mama Greenleaf; she is the Keeper of the Crown. The crown is the whole top of the tree—the branches and the leaves. The crown of the tree is important because this is where the tree's food is made. The leaves make their own food with water, sun, and carbon dioxide. Mama Greenleaf takes care of the new leaves that grow on the crown of the tree. She reminds us that the crown is on top of the tree and has all the leaves.

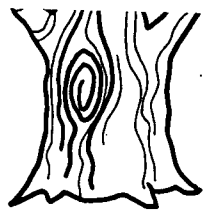
Try It Again!

In a bag, place several sets of tree parts—roots, trunk, crown. Each child gets to pick something from the bag and tell what part they have and its function. Have the children stand and hold their tree part for all to see and then let them mill around until they match themselves with the other tree parts. For example, if someone has the roots, she will walk around until she finds a trunk. Then the two of them will search for someone with a crown. They will group themselves in sets of three so each group will consist of a complete tree—roots, trunk, and crown. After all the children match themselves properly, have them look around at the forest of trees they created!

Have the children complete the cut-and-paste tree parts sheet.(p.14)



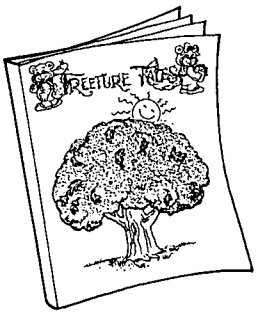
roots



trunk

crown

To reinforce this lesson, each child can make his/her own *Treeture Tales Tree Parts Mini Book*. (p.15-16)



- Each child gets one copy of the mini book pages (double sided)
- Cut along dotted lines—making sure not to cut through the middle
- Fold top half over so "Treeture Tales" heading is on bottom right
- Fold book in half to create mini book!

Next Time

Play "Who Am I?" with the Treeture finger puppets. Each child should color and cut out the finger puppets. To play the game, all finger puppets should be placed in front of the child. Read *"Who Am I?"* questions below to the students and have them find the correct Treeture puppet, put it on, and raise their fingers.

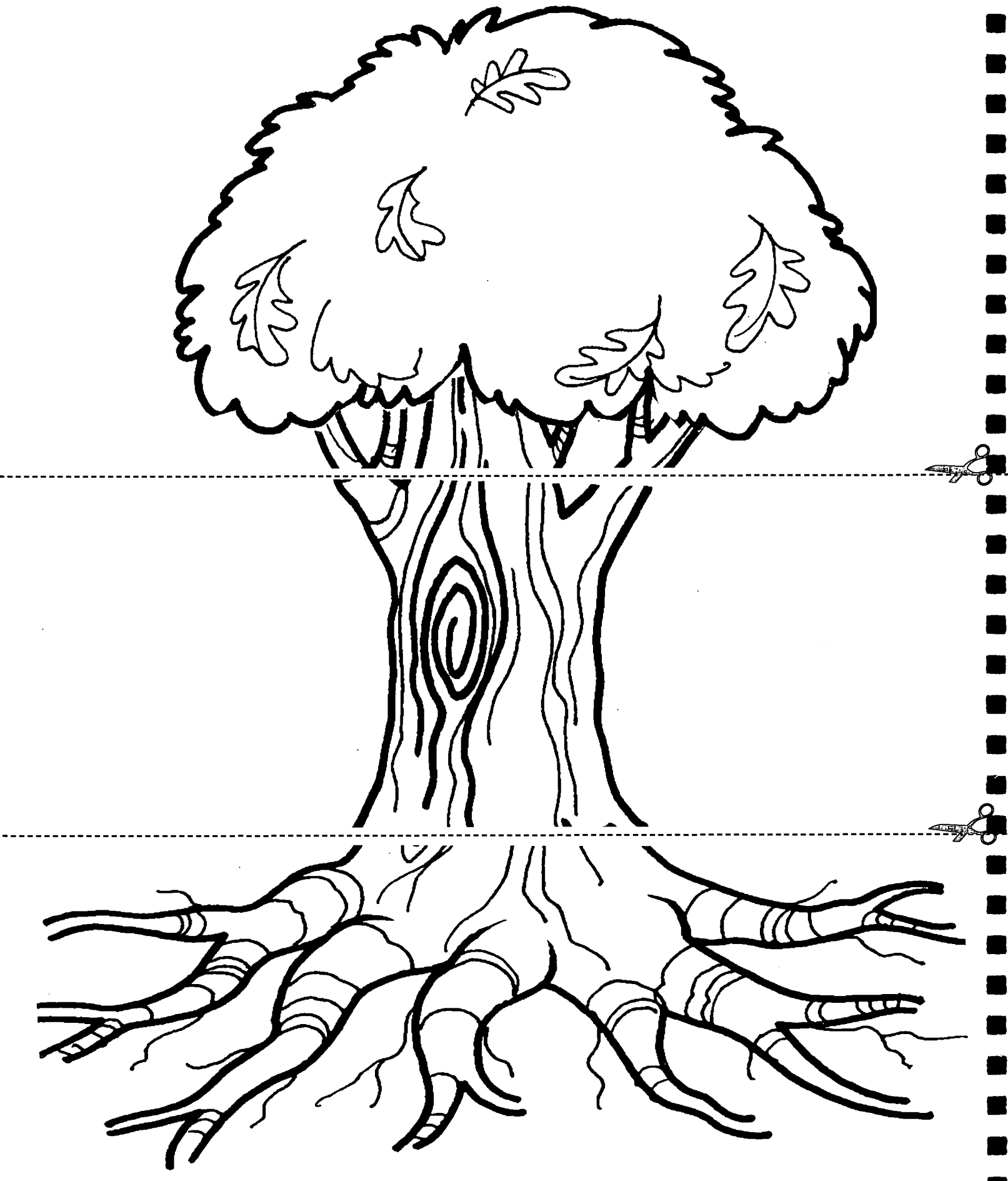
"I am the Treeture who reminds you of the crown of the tree. Who am I?"

"We are the Treetures who remind you of what a trunk does for a tree. Who are we?"

"We are the Treetures who help you remember what the roots of a tree do. Who are we?"

Build a tree with tree boxes. If this is an individual activity, pass out three boxes per child. Younger children might require help cutting around the edges. Fold on dotted lines. Color and construct the boxes. Tape the edges together. Let the children have fun building trees. Let them make silly trees by mixing the blocks. What would a tree look like if the roots were on top? Would that work in real life? Encourage their creativity. Roll them, like dice, and make a tree with whatever pictures land face up. A tree with two trunks?

Benchmarks Correlation: *Students should know that most things are made of parts. Something may not work if some of its parts are missing. When parts are put together they can do things they couldn't do by themselves.*



The Roots, The Trunk and The Crown

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Book 1

CUT

The Sap Tappers, Woody and Phloemina, work in the trunk of the tree along with Sergeant Core, Protector of the Heartwood.

Woody and Phloemina take care of the tree's pipelines which are called vessels. Phloemina listens with her xylemphone to be sure that water is flowing from the roots to the crown.

Sergeant Core guards the center of the tree which is the heartwood.

A strong trunk means the tree can support its beautiful crown of branches and leaves.

CUT

Twigs reminds us that each part of the tree is important.

When all the Treetures do their jobs and work together, the tree grows strong and healthy.

CUT

PASTE

FOLD

In The Magic Treeture Forest, in Nutley Grove, the great oak tree was enjoying the morning sunshine and the dew drops on its leaves.

But inside the tree, there was a world of busy activity taking place. If we look closely, we might discover some of the secrets of the tree.

The tree has three main parts...the roots, the trunk and the crown. The roots extend into the earth where our friends, Rootie and Roothie, work with the Rooters to hold the tree in place. The Rooters encourage the tree to grow. They sing. "Grow tree grow!" as they help send water and nutrients up to their friends the Sap Tappers.

ERIC

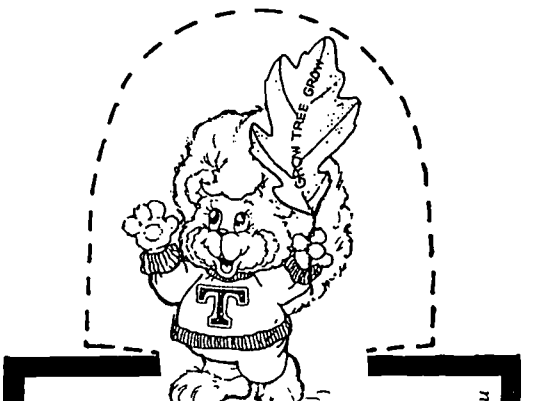
CUT

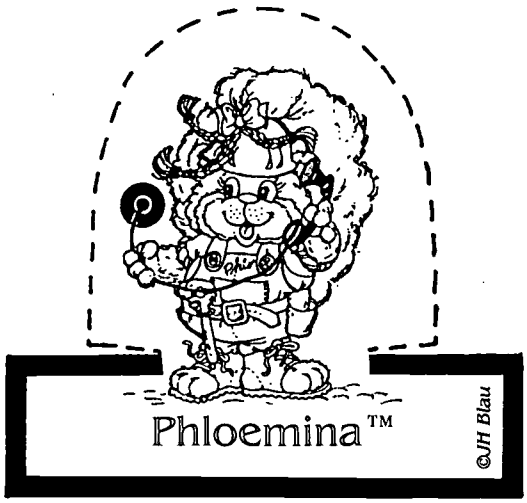
PASTE

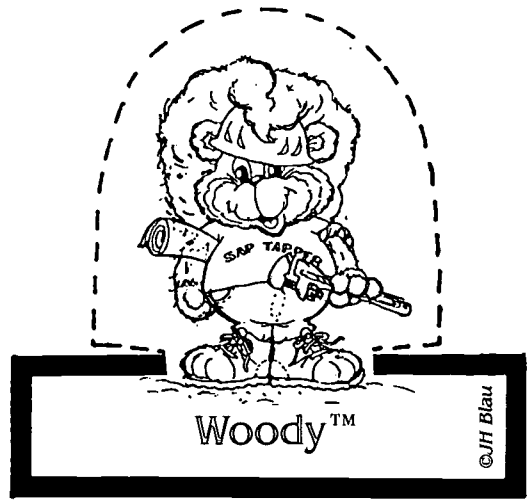
FOLD

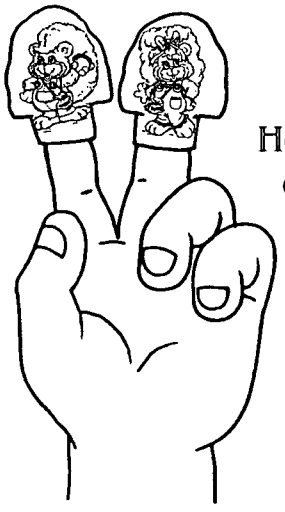
In the crown of the tree, Mama Greenleaf, Keeper of the Crown, watches over the young green leaves that grow to cover the branches of the tree. She works with Chlorophyll and Chlorophyllis, the Sunbeam Team. They help the tree make its food.

Treeture Finger Puppets
Series I

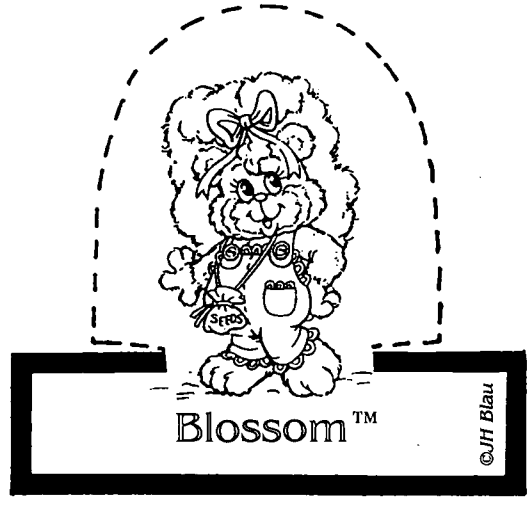


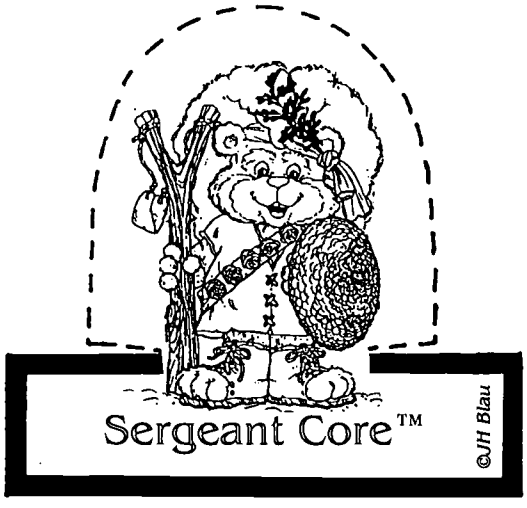


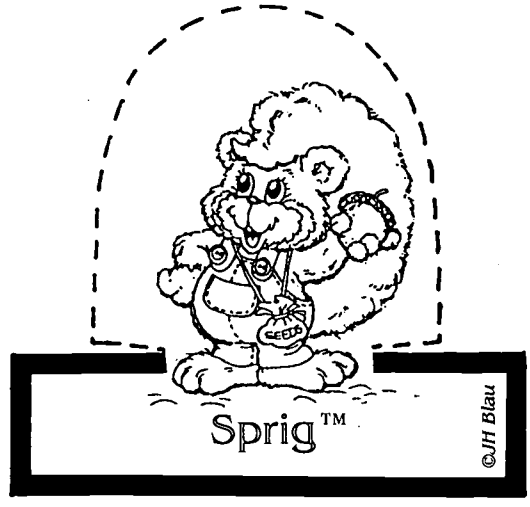




Here are three more characters for your students to create new stories.







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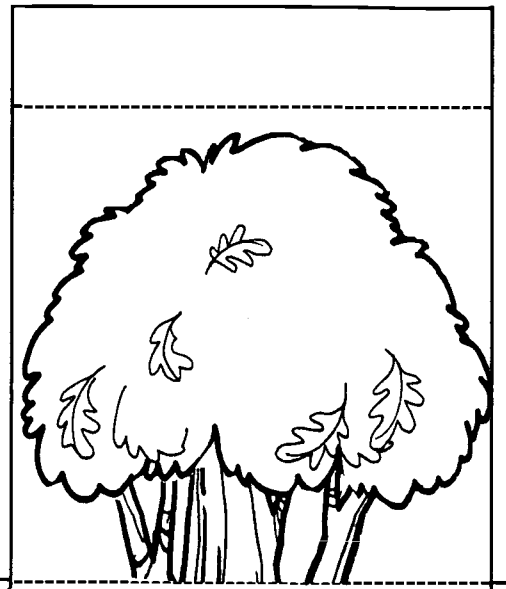
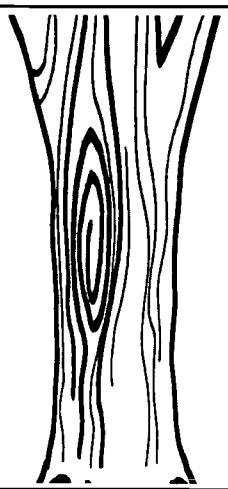
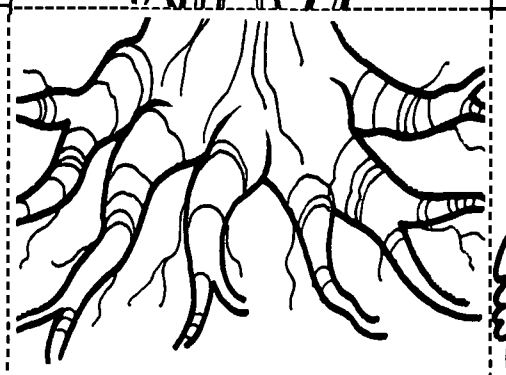
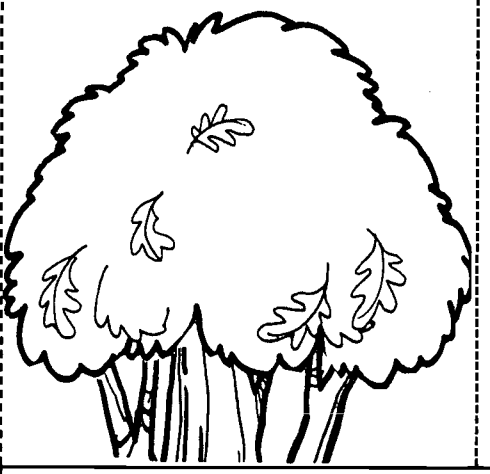
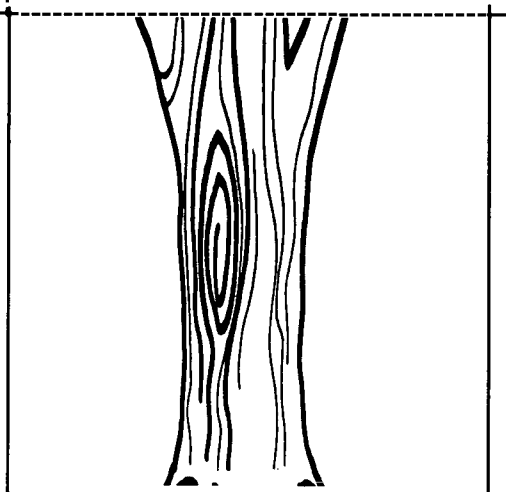
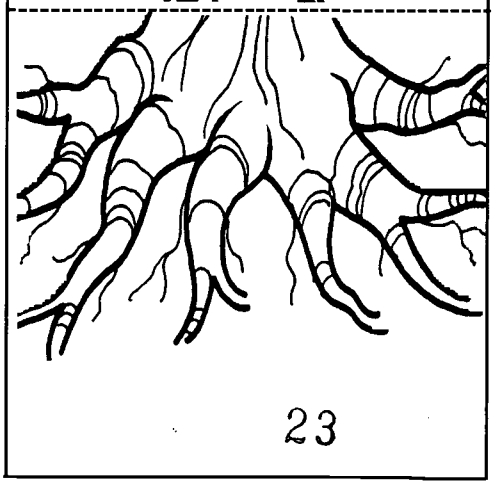












23

Note:

Build a tree with tree boxes. If this is an individual activity, pass out three boxes per child. Younger children might require help cutting around the edges. Fold on dotted line. Color and construct the boxes. Tape the edges together. Let the children have fun building trees. Let them make silly trees by mixing the blocks. What would a tree look like if the roots were on top? Would that work in real life? Encourage their creativity. Roll them, like dice, and make a tree with whatever pictures land face up. A tree with two trunks?

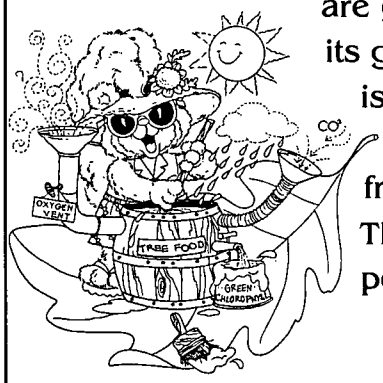
Recommendation:

Use heavy stock paper for tree box.

Photosynthesis

Think about this: Leaves can make their own food.

How it works: A leaf's primary function is to produce food for the plant. Green leaves are green because of a pigment called *chlorophyll*, which gives the leaf its green color and enables it to make food. This food-making process is called *photosynthesis*. Food is made with water, carbon dioxide, and energy from the sun. The tree absorbs water and minerals from the soil with its roots. Carbon dioxide comes from the air. This gas, carbon dioxide, enters the leaf through the stomata—tiny pores in the leaf. The sun provides the energy needed for the chlorophyll to help the carbon dioxide and water create glucose (sugar). Glucose is turned into starch and protein (tree food).

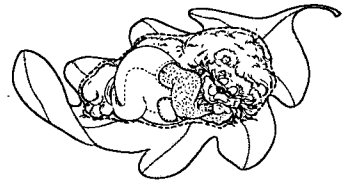


This food is carried to the roots and trunk to be used or stored. A waste product of this process is oxygen. The oxygen comes from the water splitting into hydrogen and oxygen. The hydrogen combines with the carbon dioxide and some of the oxygen to make the sugar. The remaining oxygen is released into the air through the leaf's stomata.

New words: chlorophyll (klor´e fil´), photosynthesis

You'll need:

- ❑ *Treeture Tales Tree Food Mini Book* (p.27-28)
- ❑ plants
- ❑ paper clips
- ❑ copies of Twigs cut-out so each child has one for tracing, or enough to share (p.25)
- ❑ dark construction paper
- ❑ photosynthesis game cards (p.26)



Try it!

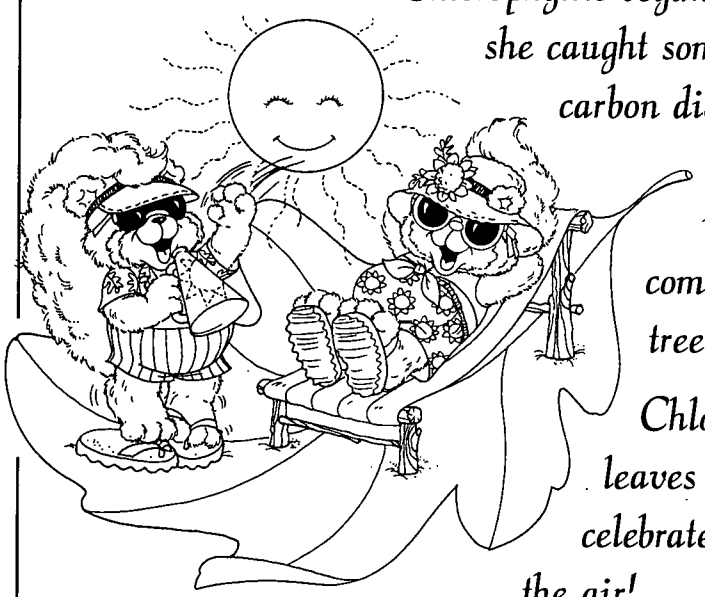
Elicit a discussion on food—what it is, why we need it. Food is energy. What about other living things, like trees—where do they get their food? Accept answers such as rain and fertilizer or compost, if given. Lead them towards the discovery that leaves make food for trees. What happens in autumn? (leaves turn colors and fall) Why? (they die) What is the difference between summer and fall? (the leaves are green in the summer)

Introduce Treeture friends, Chlorophyll and Chlorophyllis. These are very important Treeture friends because they help a tree make food. Read the story on page 21 to your students.

Chlorophyll and Chlorophyllis Make Tree Food

One sunny afternoon, the Sunbeamers were busy doing their job of directing sunlight to the leaves. Chlorophyll was shouting, "Over here! Over here!" to the sun. Chlorophyllis was relaxing and enjoying the warm rays of the sun's shine.

"Time for work," Chlorophyll said. "It's time for ***PHOTOSYNTHESIS!****"*



Chlorophyllis began her favorite job—making tree food. First she caught some sun rays. Then she mixed them with carbon dioxide which she captured from the air all around her. Rootie and Roothie sent water and nutrients up from the roots to help complete the mixture. Soon the lovely green tree food was done.

Chlorophyll helped Chlorophyllis cover the tree leaves in the wonderful green. The leaves celebrated by sending a special gift of oxygen into the air!

Twigs, the Treeture Teacher, waved hello to Chlorophyll and Chlorophyllis. He was out checking the three main parts of the tree... the roots, the trunk and the crown. He was so tired by the time he reached the crown that he decided to take a nap.

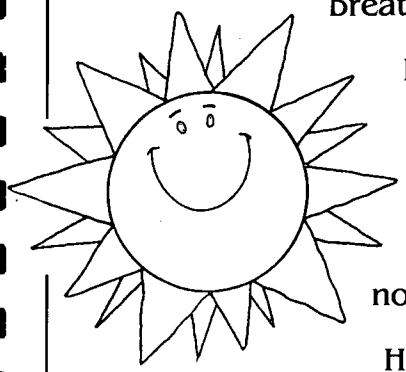
Twigs called to Chlorophyllis, "Don't worry, I'll watch this leaf for you!" But Twigs fell asleep. He slept and slept and slept. He slept all day, all night and several more days too! When he finally awoke, he stood up and cried, "Oh no!"

What do you think he saw when he looked at where he had been sleeping on the leaf?

The leaf was no longer green. When Chlorophyll and Chlorophyllis left, the leaf lost its green color.

Twigs called all the Treetures together to remind them how important sunlight is to letting the tree make green leaves and its own food. Green leaves mean tree food is being made, the air is being cleaned and the tree is giving us its special gift, oxygen, so that we can breathe.

Discuss the story. Chlorophyll keeps leaves green. Without chlorophyll the leaves turn different colors and die. The sun helps the leaves make their own food. The leaves use the sun's energy; water from the soil; and an invisible gas called carbon dioxide from the air. Then they can make their own food. And guess what? After a leaf makes food, there are leftovers—it is called oxygen. The oxygen goes back into the air for us to breathe. So we need trees and trees need us.

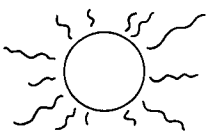


Have the children repeat the necessary ingredients for photosynthesis to occur. What would happen if we didn't have sunlight? What would happen if a tree or plant did not get sunlight? Record the question and their answers. Twigs, a special Treeture, will help us discover what will happen if a leaf does not get sunlight.

Have children cut out Twigs and glue onto dark paper. If you have a tree near your classroom, and the season is right, (make sure the leaves are low enough to reach) you can do this activity outdoors. You can also do the exercise with a couple of plants in the classroom and/or the children can do it at home. If it is done in the classroom, use one plant for the cut-out and another plant as a control. Use paper clips to attach the silhouette cut-out to the leaf. Leave the second plant without a cut-out so the children can compare the two. The cut-outs should stay on for at least a few days, possibly longer. After one day, check to see if the leaves have lost any color. Keep a chart of the amount of color lost and how many days it has been. After several days, remove the covers for observation.

Were their predictions correct? What do we now know from this experiment? Play one of the photosynthesis games to reinforce the concept.

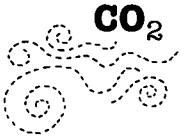
leaf



sun

Photosynthesis Games

Game 1: Split children into four groups: sun, carbon dioxide, water, and leaves. Each child gets a card depicting his/her role. Children have to team up to create a complete set that contains one of each of the four components.



CO_2

carbon dioxide

H_2O

water

Game 2: Using the same groups as described above, the children will listen for their role. Children who are leaves will scatter themselves around the room. Teacher calls "suns." All sun children find a leaf to touch. Teacher calls "carbon dioxide" and those children find a leaf. (At this time there will be two children touching each leaf child.) Continue with "water." Soon all children are attached to a leaf, forming the perfect combination for photosynthesis.

Make a Treeture Tales Tree Food Mini Book

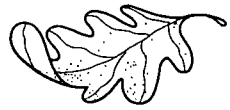
- Each child gets one copy of the mini book (double sided)
- Cut along dotted lines—making sure not to cut through the middle
- Fold top half over so "Treeture Tales" heading is on bottom right
- Fold book in half to create mini book!

We've covered: photosynthesis, recording, observing, predicting

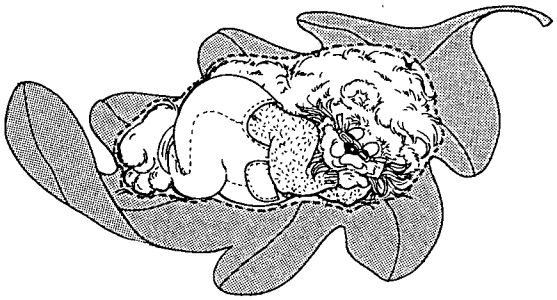
Next time:

- Demonstrate other tree processes, such as water absorption, capillary action, phototropism, hydrotropism.
- What foods do we get from trees?
- We need trees and trees need us—the oxygen-carbon dioxide dependency.
- Leaf rubbings, leaf prints, leaf sorting

Benchmarks Correlation: *Students should know that: plants and animals both need to take in water, and animals need to take in food. In addition, plants need light. A lot can be learned about plants and animals by observing them closely. Raise questions about the world around them and be willing to seek answers to some of them by making careful observations and trying things out.*



Twigs will show you how leaves need sunlight to stay green.

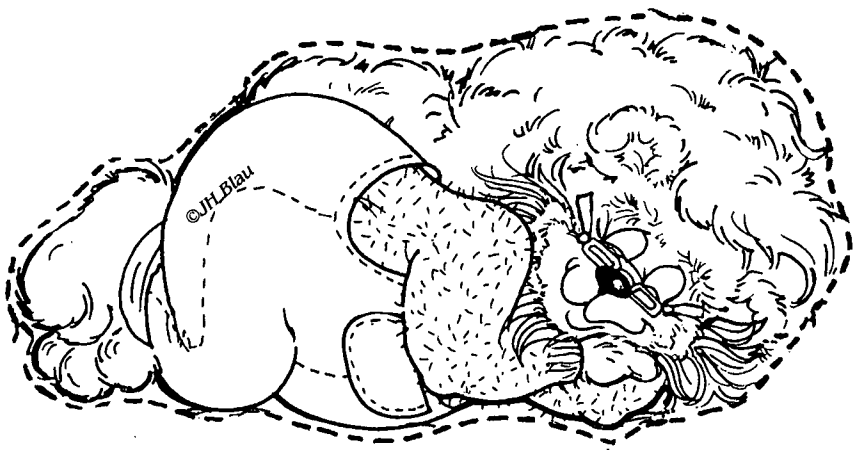


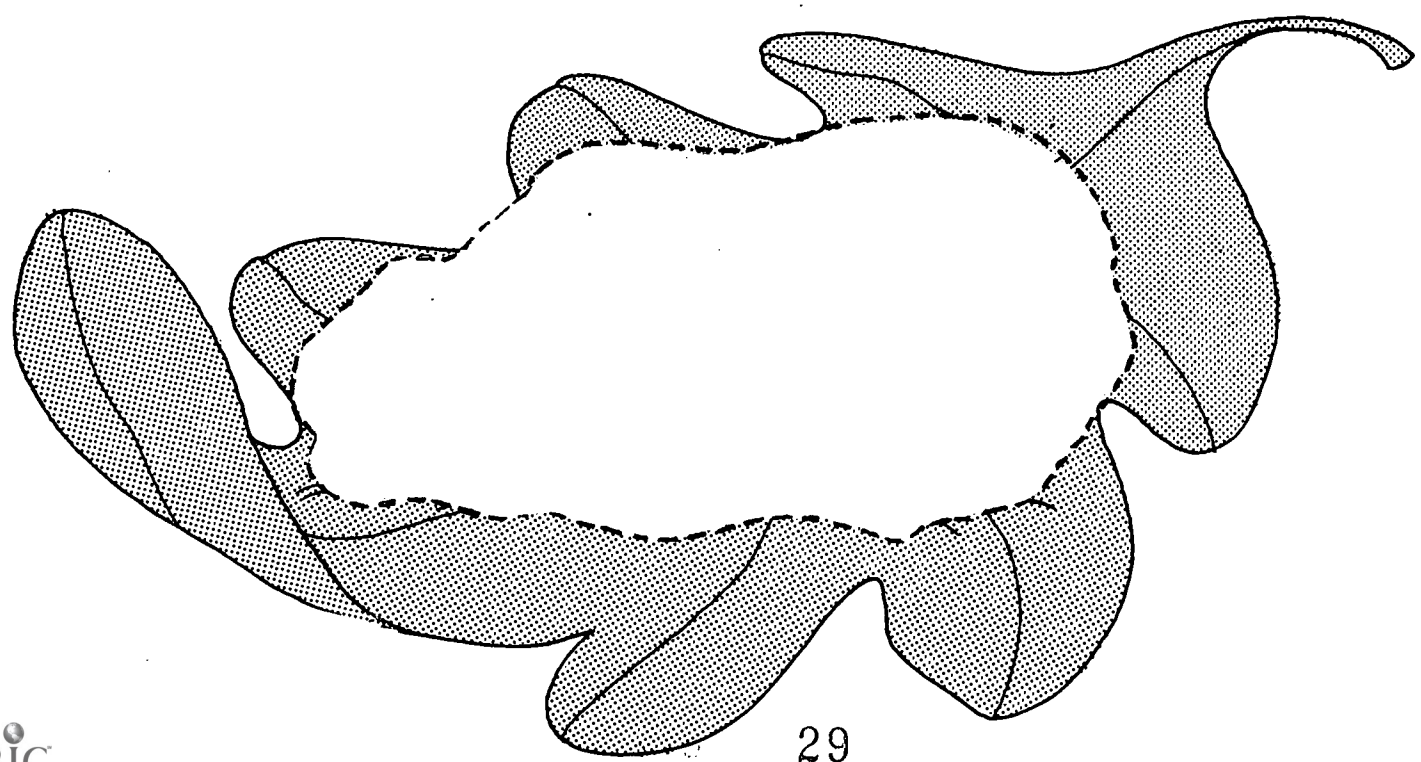
Reduce or enlarge Twigs depending on the size of your leaves.

Cut out Twigs.

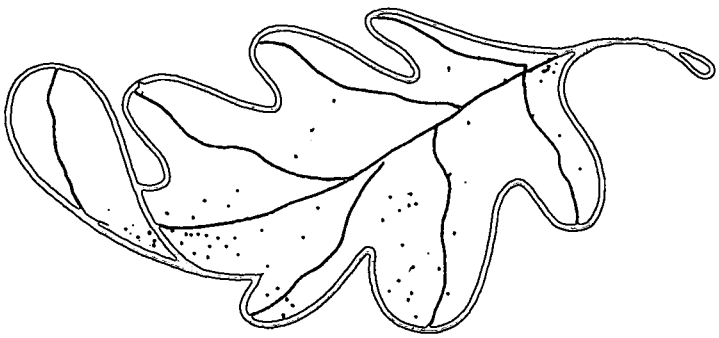
Glue him onto dark paper.

Attach Twigs to a leaf with paper clips. Leave him on for a few days or a week. Lift him up to see what happened to the leaf.

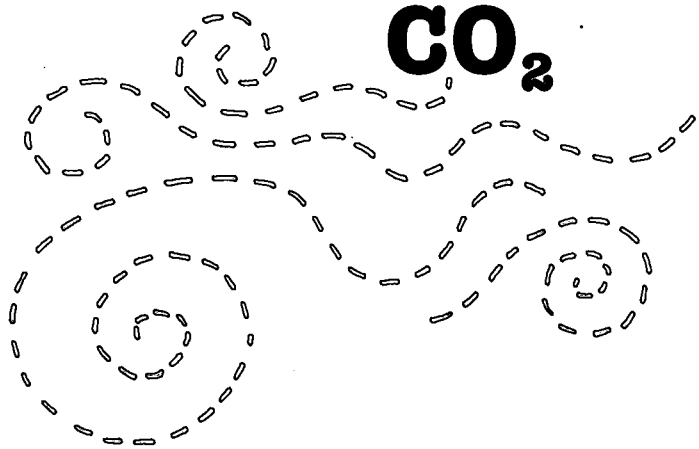




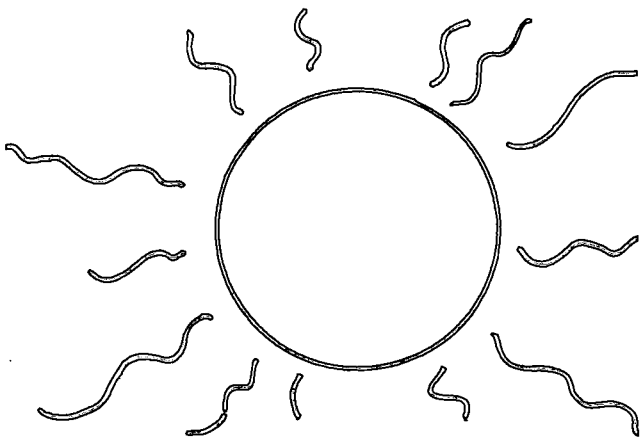
Photosynthesis Game Cards



leaf



carbon dioxide



sun

water

Make enough copies of this page so each child will get one card. Laminate for durability.

Game 1: Split children into four groups: sun, carbon dioxide, water and leaves. Each child gets a card depicting his/her role. Children have to team up to create a complete set that contains one of each of the four components.

Game 2: Using the same groups as described above, the children will listen for their role. Children who are leaves will scatter themselves around the room. Teacher calls "suns." All sun children find a leaf to touch. Teacher calls "carbon dioxide" and those children find a leaf. (At this time there will be two children touching each leaf child.) Continue with "water." Soon all children are attached to a leaf, forming the perfect combination for photosynthesis.

making tree food!

Chlorophyllis began her favorite job...

- - - - - - - - - - - - CUT- - - - - - - - - - - -

Chlorophyll and Chlorophyllis Make Tree Food

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The Treeture characters are Trademarks of Judith H. Blau.

TREE FOOD RECIPE

1. Lots of Sunshine
2. Just enough Carbon Dioxide from the air
3. Water and nutrients from the roots
4. Blend together and Chlorophyll will generously Spread Wonderful Green over all the Leaves

- - - - - - - - - - - - CUT- - - - - - - - - - - -

Twigs called all the Treetures together to remind them how important sunlight is to giving the tree the energy to make the leaves green. Green leaves mean tree food is being made, the air is

being cleaned and that the tree is giving us its special gift, oxygen, so that we can breathe.

"It's time for Photosynthesis!"

"Time for Work," Chlorophyll said.

- - - - - - - - - - - - CUT- - - - - - - - - - - -

One sunny afternoon, the Sunbeamers were busy doing their job of directing sunlight to the leaves.

Chlorophyllis was relaxing and enjoying the warm rays of the sun's shine.

Chlorophyll was shouting, "Over here!" to the sun.

PASTE

FOLD

PASTE

FOLD

But Twigs fell asleep.

He slept all day, all night and several more days and nights too!

Twigs called to Chlorophyllis,

"Don't worry, I'll watch this leaf for you!"

- - - - - - - - - - - - CUT- - - - - - - - - - - -

When he finally awoke, he stood up and cried,

"Oh, no!!"

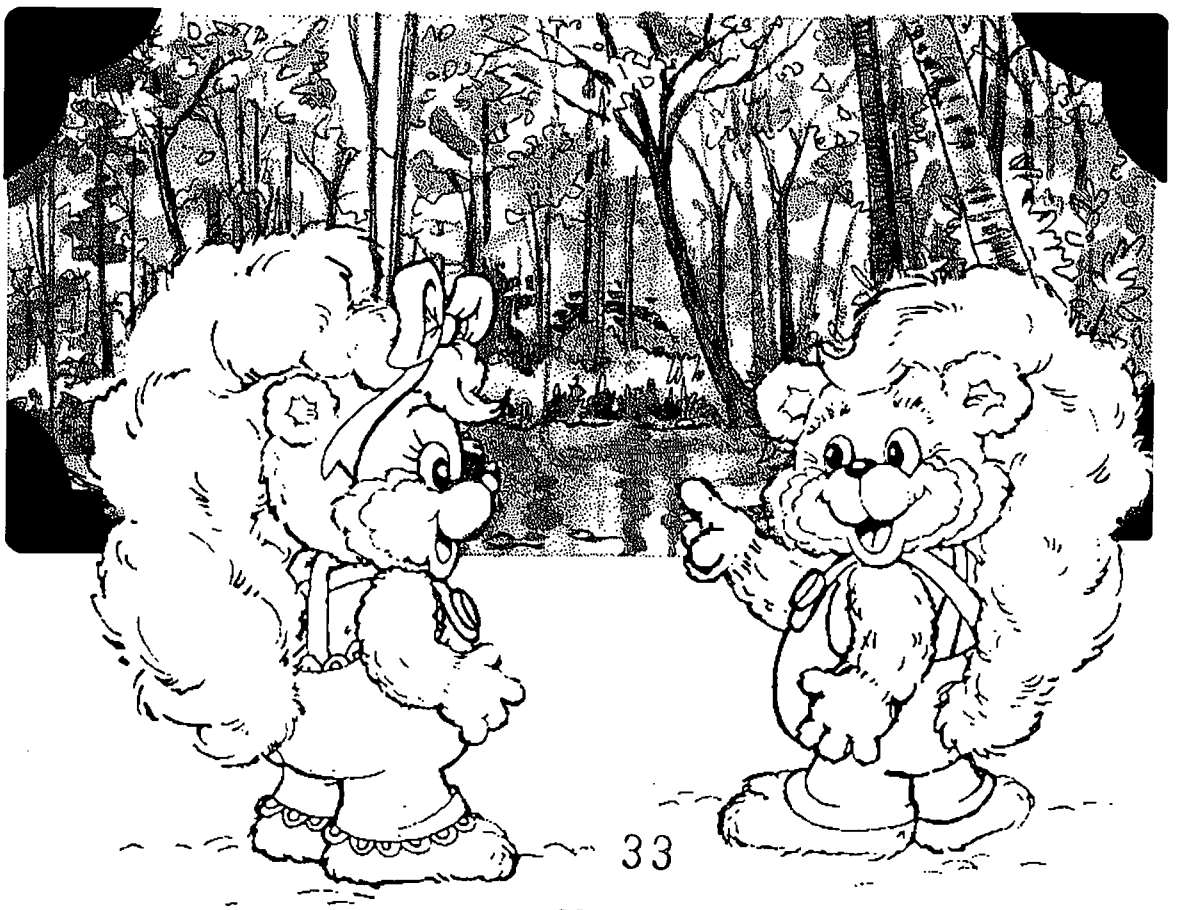
The part of the leaf where he had been sleeping was no longer green.

When Chlorophyll left, the leaf lost its green color.

Third—Sixth Grades

Trees are the central theme for the activities presented in this section. From problem solving to appreciation of the natural world—the importance of trees in our environment is emphasized. Exposing youth to these types of activities will help strengthen their awareness and foster a positive environmental ethic. We want to teach our children *how* to think—not what to think.

The Treetures are used in this section to suggest additional enrichment activities. Again, third grade is viewed as a pivotal year where the Treeture characters still hold an appeal for students, but students are also prepared for more solid scientific concepts. At the end of this section is a *Treeture Talk Newsletter* filled with jokes, games, and review material. Introduce the Treetures and their roles to your students. They will benefit from their mnemonic qualities and have great fun with them. Can they create their own Treeture Newsletter? Can they create their own Treeture character—with a job description and name? Use activities from the first section to teach/reinforce photosynthesis and as part of your larger curriculum.



Transpiration

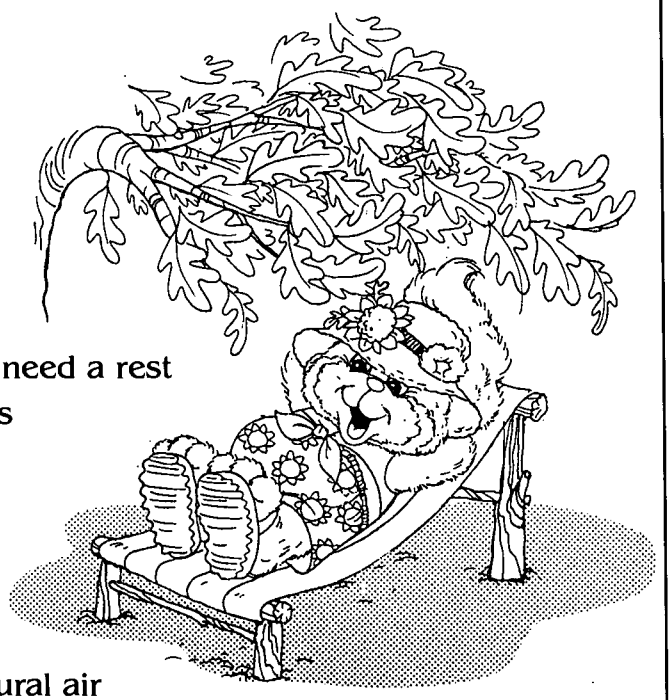
Think about this: How do we get water from trees?

How it works: Did you know trees can make water? It is called *transpiration.* Transpiration takes place primarily in the leaves. Trees take in water. The excess water is released (as water vapor) through tiny holes in the leaves called *stomata.* This is transpiration. Leaves release a lot of water through transpiration. A tree of average size can give off fifty quarts of water in one summer day. To control the amount of water given off, the stomata has guard cells. The guard cells usually allow the stomata to remain wide open; but when the plant does not have enough water and the leaves are wilting, the guard cells close the stomata, slowing down the amount of water evaporation.

New words: transpiration, stomata

You'll need:

- ❑ two plants or leaves with long stems
- ❑ four clear plastic cups
- ❑ cardboard
- ❑ masking tape
- ❑ scissors



Try it!

Do a visualization exercise. Have the students close their eyes and imagine a very hot summer day. They are outdoors. They are hot, tired, and need a rest from the hot sun. Give them a moment, with eyes closed, to think about this. What would they do? Someone will probably say they would look for a tree. Why? Trees provide shade. Why else do you think it feels cooler under a tree on a very warm day? Trees release water through their leaves and that water cools the air. Trees are natural air conditioners! It is called transpiration. How can we prove that water is released through leaves? Allow time for the students to tell how they think this can be proved. Demonstrate the following, or provide enough materials for the children to work in cooperative groups.

- Cut a piece of cardboard to fit over the top of the cup. In the middle of the cardboard, cut a tiny hole just big enough for the plant stalk to fit through.
- Take a plant and put the stem through the hole in the cardboard.
- Put the stem into a cup of water.
- Place the other clear cup over the plant so that it is sitting on the cup with water.
- Tape the cups together.
- Place the cups in the sun.
- Prepare a control by placing cardboard with a tiny hole over an empty cup. Invert another cup over it and tape them together just as you did with the first cup. There will be no plant in this one.

Ask if anyone knows why you are preparing a set of cups without a plant. Explain the reason for using a control. What do they think might happen?

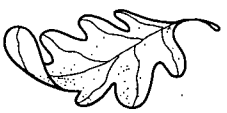
The inverted cup from the leaf cups should have water droplets on the inside of the top cup. The cups with no plant should not have water in it.

Have the students complete the Transpiration Data Sheet. (p.32)

We've covered: data recording, hypothesizing, observing

Next time: Observe stomata. Using a soft-leafed plant, take a leaf and roll it in your hands. This will loosen the bottom skin on the leaf. Carefully scrape a small piece from the underside of the leaf. Put this on a microscope slide. Add a drop of water to it. Cover with a slide cover. Observe it under a microscope to see stomata and the guard cells.

Benchmarks Correlation: *Students should be able to...keep records of their investigations and observations and not change the records later...Raise questions about the world around them and be willing to seek answers to some of them by making careful observations and trying things out...Know that in something that consists of parts, the parts usually influence one another.*



Transpiration Data Sheet

Professor Arbor E. Tum

This is how we prepared a plant for this experiment:

This is what I think will happen to the plant that is covered with a cup:

I think this will happen because:

What will happen to the cup without a plant? Why?

How do people and animals benefit from transpiration?

My observations:

36

Tree Products

Harve

Think about this: Without trees we couldn't chew gum.

How it works: Tree products are all around us. Trees provide us with so many things...gum, maple syrup, fruit, nuts, cork, paper, dyes, lumber...to name a few! Trees act as physical barriers, wind breaks, and erosion stoppers. They provide us with great beauty and artistic inspiration. Most importantly, trees provide us with the invaluable carbon dioxide—oxygen exchange. Responsible logging and forestry help maintain our precious resource.

You'll need:

- ❑ A paper bag filled with assorted tree and non-tree products, such as pen, pencil, plastic toy, piece of wood, paper, chewing gum, cork, straw, etc. If this will be a cooperative group activity, prepare one bag per group (each bag does not need the same items). If this will be a group activity, one bag is enough.

Try it!

If the students are working in groups, have them form teams and give each group one bag. Instruct them to look at the items and to brainstorm on ways to categorize them. If the whole class is working from one bag, have them gather in a circle on the floor. Take out one item at a time and place it in the middle of the circle for observation. After all the items are out, allow time for the children to brainstorm and come up with various ways of sorting them. After a sufficient amount of time, if the category "tree/non-tree products" hasn't been suggested—elicit that response from them by pointing out some of the more obvious tree products—Hmmm....a pencil...a piece of paper...wood... Hmm...Stop as soon as someone says "tree/non-tree products." Let them complete the categorization process. Wow! Trees give us so many things. Have them create a list of tree products in their notebooks. Ask them thought-provoking questions and discuss their responses.

Ester

- What are some of the more valuable tree products?
- What does renewable resource mean?
- Do you think trees are renewable? Why or why not?
- Do you think there is a danger in considering trees a renewable resource?
- What if they were not renewable?
- What can you do to help educate other people about the many products trees provide?
- Can we survive without trees?
- Is there anything you can do to promote tree planting and proper tree care?

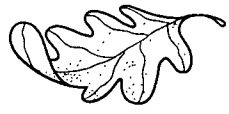
Lead them into brainstorming what they can do to educate others about the value of trees and how people directly influence how trees are used. What kind of action activity can they get involved with? What do they feel strongly about (rain forest destruction, recycling, tree planting, education, local issues)? What can they do about it? Perhaps some students will mention: poster campaign, writing letters to the editor of a local and/or national paper or magazine, visiting other classes and performing a play, attending local council meetings to bring up local tree-related issue, community tree planting, or letters/calls to a major company suggesting the benefits of recycling.

Keep a list of their suggestions. Before they do any kind of action they need to be informed. Review the ways in which they can get more information. They could use the library, get information from local and national organizations, interviews, documentaries, visits to an arboretum. Have the students break into groups and brainstorm, or do it as a class. You may want individual students to carry out one of the suggestions or you may want the students to work in groups. Either way, the next step would be recording ideas. You might want to use the attached Action Activity Form.(p.35) Give them a time-frame for research, action, and reporting to the class.

Hand out the Tree Product Survey for the students to complete at home.(p.36)

We've covered: classifying, making decisions, formulating hypothesis, recording data

Benchmarks Correlation: *Students should know that technology extends the ability of people to change the world...The changes may be for survival needs such as food, shelter,...Students should be able to buttress their statements with facts found in books, articles, and databases, and identify the sources used and expect others to do the same.*



Action Activity

What tree-related issue interests you most?

How will you find more information?

What do you want to do about this issue?

How do you think you can do that?

What is your action plan?

Tree Product Survey

1. Walk through your house and list as many tree products as you see.

_____	_____
_____	_____
_____	_____
_____	_____

2. Interview someone at home. Ask them how many tree products they could name. Walk through the house with them and point out things they missed. Maybe they will be surprised!

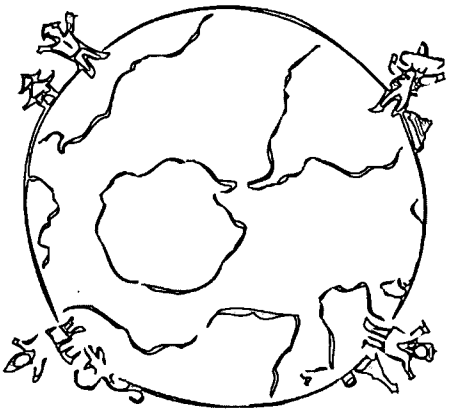
3. Make a poster or something to show which products come from trees.

4. What do you think is the most important tree product? Why? What would happen if we weren't able to get this from trees?

5. What if trees were not a renewable resource?

Trees around the World

Think about this: In many cultures, people plant a tree when a child is born.



How it works: Trees. They grow here and they grow there. They grow in dry lands. They grow in wet lands. Trees come in different sizes and shapes... just like people of the world. Trees have been important to people of different cultures for a very long time. Trees have special meanings and are part of folk tales and myths. They are part of religious and cultural celebrations. People have enjoyed trees for what they provide, their beauty, and the stories that have come from them.

You'll need: Copies of Tree Stories—enough for each child or group. (p.39-41)

Try it!

Ask if anyone knows what a myth is. A myth is a story that is created about natural things or old times. It is not based on fact. Remind them of Rudyard Kipling's Just-So Stories, like *How the Elephant Got its Trunk*. Myths are filled with fantasy. There are myths about plants and trees.

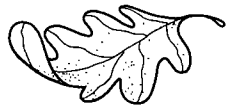
Read one of the myths and talk about it. Discuss how such stories can be based on a certain belief (from ancient cultures) but they are not factual. Hand out copies and allow children time to silently reread them. You may want to divide the class into three groups and have each group read/review one of the three myths. Ask them why myths are so popular—after all, they have been around for so long! Ask them to think of this question as if it were a myth—"Why do leaves change color in autumn?" Allow time for students to share myth ideas. Put some pictures of trees on the board for inspiration, or allow the children to look through tree books. Have the children create their own tree myths. Some suggestions: *Why the Weeping Willow Weeps; How the Crab Apple Tree Became So Crabby; Why the Sassafras Has Three Different Leaves.*

Give them plenty of time for thinking, writing, and illustrating. Some children might want to work in groups and produce a play, video, or an audio tape. Have a day for presentations. Present them to another class or a local senior home.

Next time: Make a tree quilt
Read Rudyard Kipling's Just-So Stories

We've covered: reading, creative writing, mythology, art, speaking, geography

Benchmarks Correlation: *Students should know: stories sometimes give plants and animals attributes they really do not have. Plants and animals have features that help them live in different environments.*



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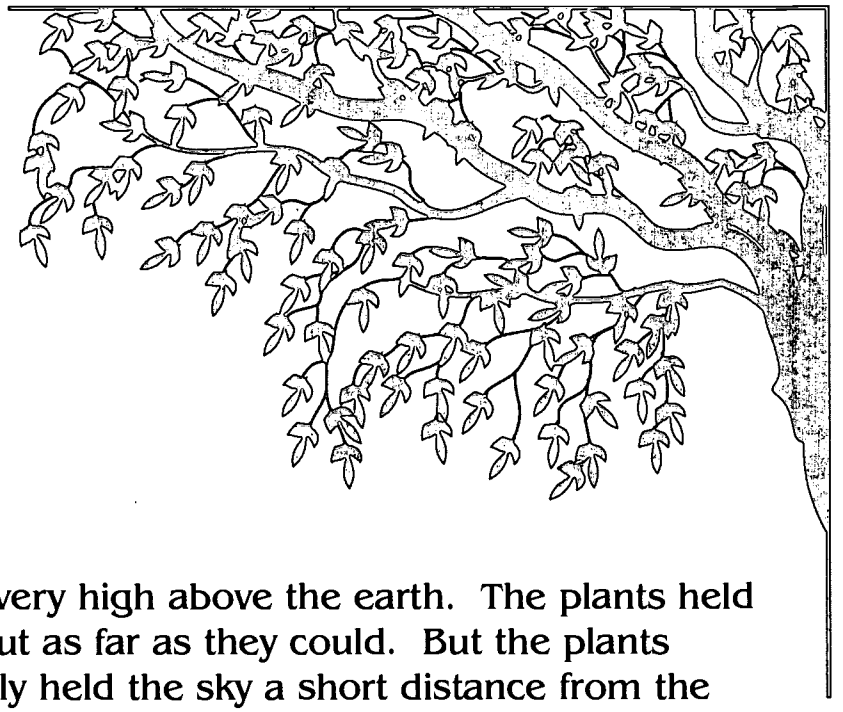


Why Most Trees and Plants Have Flat Leaves

Polynesian Tale

Long ago the sky was not very high above the earth. The plants held up the sky by pressing it out as far as they could. But the plants weren't very tall so they only held the sky a short distance from the ground, not even as high as the treetops.

Because the sky was very heavy, the weight of it caused the leaves of the plants to flatten out more and more. Some, like the leaves of the banana plant, spread into long thick blades as they pressed against the sky. Others, like the taro plants, became as round and broad as elephants ears as they stretched out to hold the ever-expanding sky. "We cannot hold out much longer," said the plants. "Soon the sky will fall and crush the earth."

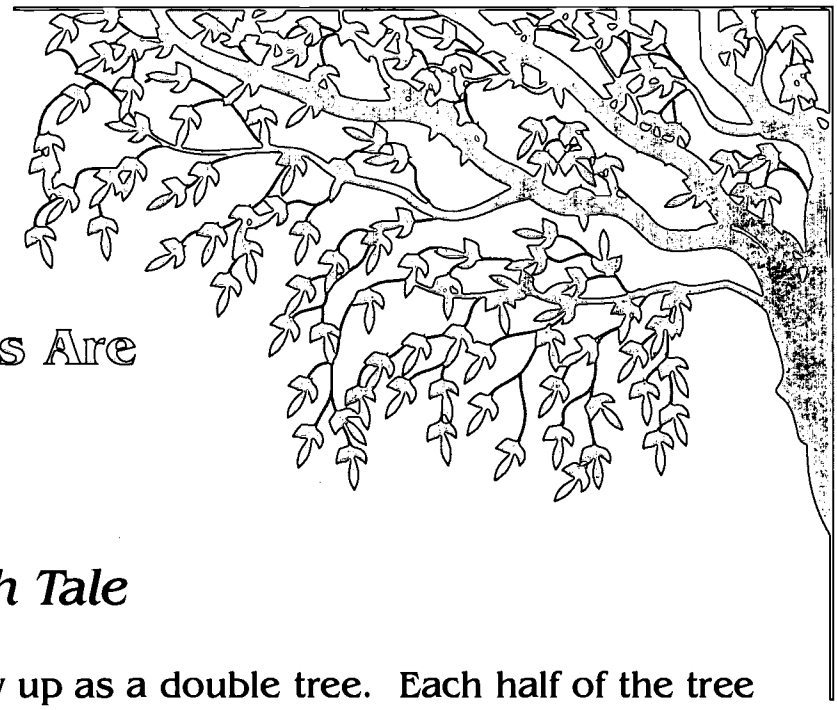
"We must call for help," said the people.

One woman said, "I will go to Maui. Maui is a trickster, but he is also wise and knows how to do many things."

"Yes, I can raise the sky for you," said Maui. "But first, you must give me a drink of water from your gourd."

The woman gave him a drink of water from her gourd and Maui held up his arms. With his large hands he lifted the sky until it came to the treetops. He let it rest for a time, and the sky flattened the leaves of the trees. Maui heaved his shoulders, raised his arms, and pushed again. Soon the sky was resting on the mountain tops.

After he had rested enough, Maui made a mighty effort and hoisted the sky so it reached the heavens, where it has remained ever since. But the leaves have remained flat, to show that they once held up the sky.

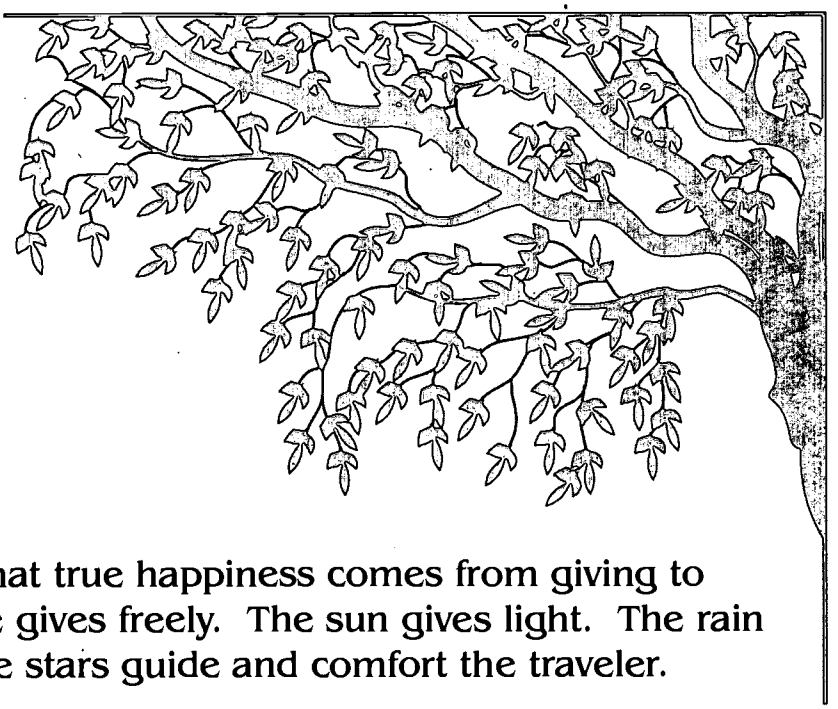


Why Some Leaves Are Shaped Like the Human Hand

Persian and Flemish Tale

The first two humans grew up as a double tree. Each half of the tree had branches that spread over the places where the ears and eyes eventually developed. When the double tree reached maturity, it was separated into two by the spirits. Each half was given a separate life and a human soul.

At last, the crown was transformed into two human heads with the gift of knowledge. The branches became arms and legs. Some other trees wished to be transformed also and they managed to change part of their shape. But in the end, they remained trees. However, their leaves have stayed in the shape of the human hand, as a sign that humans are descended from trees.



The Gifts of the Trees

Iroquois Legend

The First Peoples believe that true happiness comes from giving to others. They say all nature gives freely. The sun gives light. The rain feeds the thirsty earth. The stars guide and comfort the traveler.

Many, many moons ago the people were frightened. "Where shall we find food and shelter?" they asked.

The trees heard this question and laughed softly. "We are your friends and we will help you." The maple said, "I will give sweet water for you to drink and to make into sugar." Hickory, beech, walnut and chestnut said, "We will fill your baskets with sweet nuts." The great pine softly whispered, "When you get tired, I will make you a bed." There was happiness in the hearts of the people as they set out to explore the world.

"How will we ever get across the river?" they asked.

The trees laughed again. The birch tree said, "Use my skin. Sew it together with the muscles of the elm tree, to make a boat that will carry you across the widest river."

When the sun crossed the sky to its lodge in the west, the people felt cold. The balsam fir whispered to them, "My little friends, there is much sun-fire in my heart. If you rub my branches together you will make fire."

The people wanted to know how they could repay their friends. The wise ones among them said, "They do not ask for anything in return. But you can give them care and attention. You can give love and care to every plant and flower."

Tree Story Quilt

Making a quilt is a fun, cooperative group activity. It is a good follow-up to tree folk tales.

You'll need:

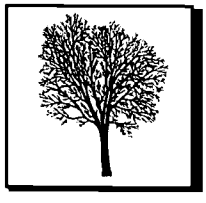
- ❑ material—cut into squares or other shapes
- ❑ fabric paints and/or fabric crayons
- ❑ needle and thread
- ❑ fabric glue
- ❑ scissors

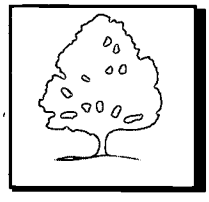
Try It!

The quilt can be a quilt of special trees or homemade folk tales. Review some of the tree myths and the stories they wrote. Use the stories the children wrote as the foundation for the squares. If you want the quilt to be a special tree quilt—ask the children if they have any special memories involving a tree such as a tree house, a favorite fruit tree, the tree they see out of a window or a tree from a story.

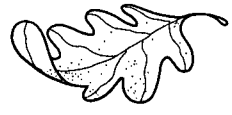
First, have them sketch their design on a piece of paper. Then they can decorate their square with fabric paint, crayons, or cut out pieces of cloth. Sew the quilt pieces together. Next to the quilt, display written stories on each square. Display for the school, district, or community to see.

Next time:





Make tree tiles using ceramic tiles and enamel paint.



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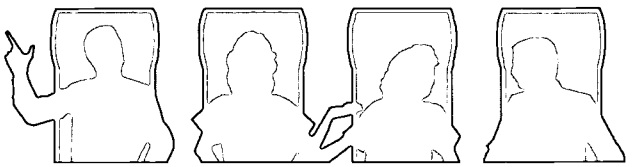
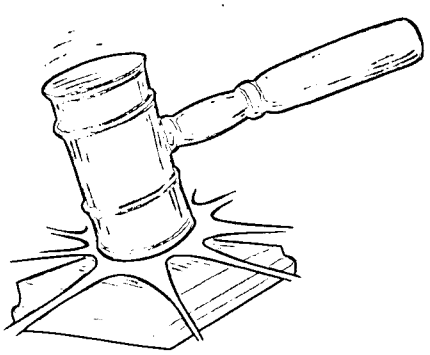
Dilemma Analysis: A Community Debate

Role playing is the perfect activity for children to develop their decision-making skills. They learn how to listen to the facts and make the best decision based on their knowledge. Some dilemma analysis activities can take weeks, with research and in-depth study prior to the actual role playing activity. This particular activity was created for a one or two period use. It is a good introductory lesson. Perhaps the children will become motivated and create their own simulation.

- Read the scenario to the class. (p.44)
- Discuss the dilemma and allow children the opportunity to ask questions and discuss their opinions.
- Tell them you are going to act out a real situation and make a decision—just as a town board or city council would.
- Hand out the scenario and allow time for them to reread it.



- Introduce the roles. Read each role aloud.
- Divide the class into even groups. Hand out one role to each group, although each child can have his/her own role card.
- Explain that even if their personal feelings are different than their assigned role, for this activity they will be actors.
- Allow time for each group to discuss their role and to write down reasons why the town board should go along with their point of view. They should record their ideas.
- After ten minutes or so, walk around to each group and quietly choose one child from each group to go with you.



- Once away from the rest of the class, explain that they are the town board. Even though they have aligned themselves with a particular interest group, as members of the town board, they have to be able to listen to all citizens and seriously consider their comments.
- This new group of children can sit behind a town board table in front of the class.

At this time, the other children should stop what they are doing. Explain to them that this new group is the town board. Just like real town boards or councils, these people were part of larger groups, but now they are representing the whole town. They have to listen carefully and be as fair as possible.

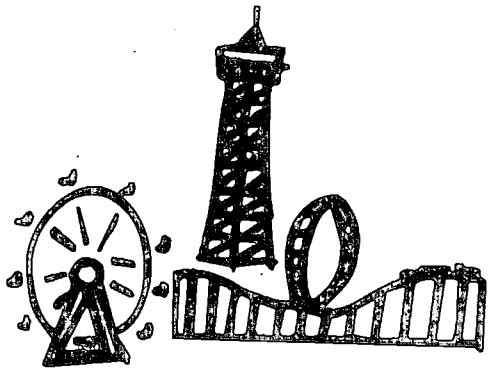
Each group takes turns having one representative present their argument to the town board. Encourage the children to be as creative and animated as possible. It makes it great fun! Impose a time limit, if needed. Perhaps give the town board a gavel to make them official.

As each group presents their argument, the town board can ask them questions.

After all groups have presented, the floor can be opened for individual comments from the audience—with the students still portraying their roles.

The town board then leaves the room and comes back with a decision based on the facts heard. The decision might be in favor of one group or it might be a compromise. After the decision, the class can discuss how that decision will effect the town.

Scenario: There is a town called Middletown. At one time it was very rural, but recently, there has been a lot of development. Housing developments are popping up here and there. Shopping centers are being built to keep up with the demands of a growing population. *Build 'Em Up Development Company* has presented the town board with a plan to build an amusement park. It would have water activities, like water slides and rides. There would be food concessions, a petting zoo, swimming pool, skating rink, ski slopes, rides, and ball fields. This amusement park would be built on the existing town park. Now this park is quite large, with only one small part of it cleared for a playground. The larger part is a forest which has some naturally made paths for hiking. Other than the trails, the forest is untouched. There is some wildlife there including deer, raccoon, and many birds.



Some people in town think it is a wonderful plan. It will bring a lot of business to the area. More people would move to the community. It would help the town develop. Some people of Middletown are against the amusement park plan. They feel the increased traffic would cause problems. They don't want more business or people in the town. They want the forest to remain as it is. They don't want the town to grow any more.

Roles:

Against theme park citizens: We don't want a theme park here! There are already too many people and too much development. This used to be a quiet, country town. An amusement park will bring people from all over. The traffic will be terrible! We like our town just the way it is. They say it will bring so much money into the town, but who do you think will get most of it? This amusement park is not for an area like Middletown.

Ecologist: Theme park developers want to build a park in a forest that has some very unique features to it. We want an ecological survey of the area. This land cannot support the demands of an amusement park and all the people it will bring. What about sewage and traffic? What about the animals and trees that live there now? The ecological and environmental impact on the area will be too great.

Business people: This theme park will provide so many jobs. With the farming industry dying, this is the perfect opportunity for the unemployed people in our town. It will bring more money into the community and upgrade the scale of living for everybody. We want this theme park. It will benefit everyone!

Citizens—Pro-Amusement Park: We want a place for the kids to go. There are kids hanging around, not knowing what to do. A park like this would be great—right in our own town. Teenagers can get summer jobs without having to leave the community. Times are difficult for everyone. A lot of us can work there. We have to keep up with the rest of the world.

Build 'Em Up Developers: This is an opportunity of a lifetime. Just imagine how much it will bring to your community. You will have visitors from all over the state coming to Middletown. Money will pour into the area!

Middletown Historical Society: At one time this area thrived. But not with an amusement park. We have beautiful country here that is in danger from over development. The amusement park will add to this problem. We don't need big crowds of visitors. We already have people coming here to visit our beautiful, simple town and historic homes and farms. Property values will decrease (the value of our homes and land will go down).

Next time:

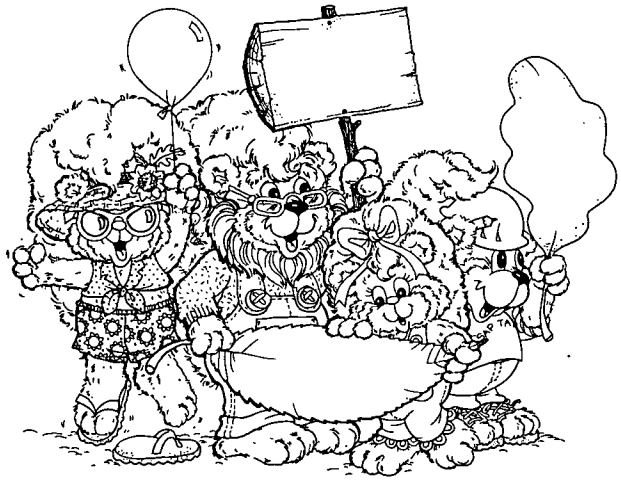
Have the children write their own dilemma analysis on current problems—locally or nationally. Write one yourself and include topics for research so the presentations are very thorough and fact-filled. Suggestions: rain forest, wetlands, local watershed.

Read the Treetures origination story and the Treeture job descriptions. Let the children use their imaginations to create a problem-to-be-solved using the Treetures in Nutley Grove. They might want to write about a camp-ground being built in Nutley Grove. How do they think the Treetures would react? Would all the characters agree? How would they solve their problem? Let them create a skit using the Treetures in this story, or whatever one they create. They also can perform the play for younger classes.

The following Treeture® team artwork can be used to enhance this activity. The Treetures depict two sides of the debate. Have students fill in the signs expressing their view.

We've covered: decision making, questioning, reasoning

Benchmarks Correlation: *Students should know that: Rules and laws can sometimes be changed by getting most of the people they affect to agree to change them,...change in social arrangements happen because some rules do not work or new people are involved or outside circumstances change. Communicating the different points of view in a dispute can often help people to find a satisfactory compromise. Reasoning can be distorted by strong feelings.*



Team A

Team B

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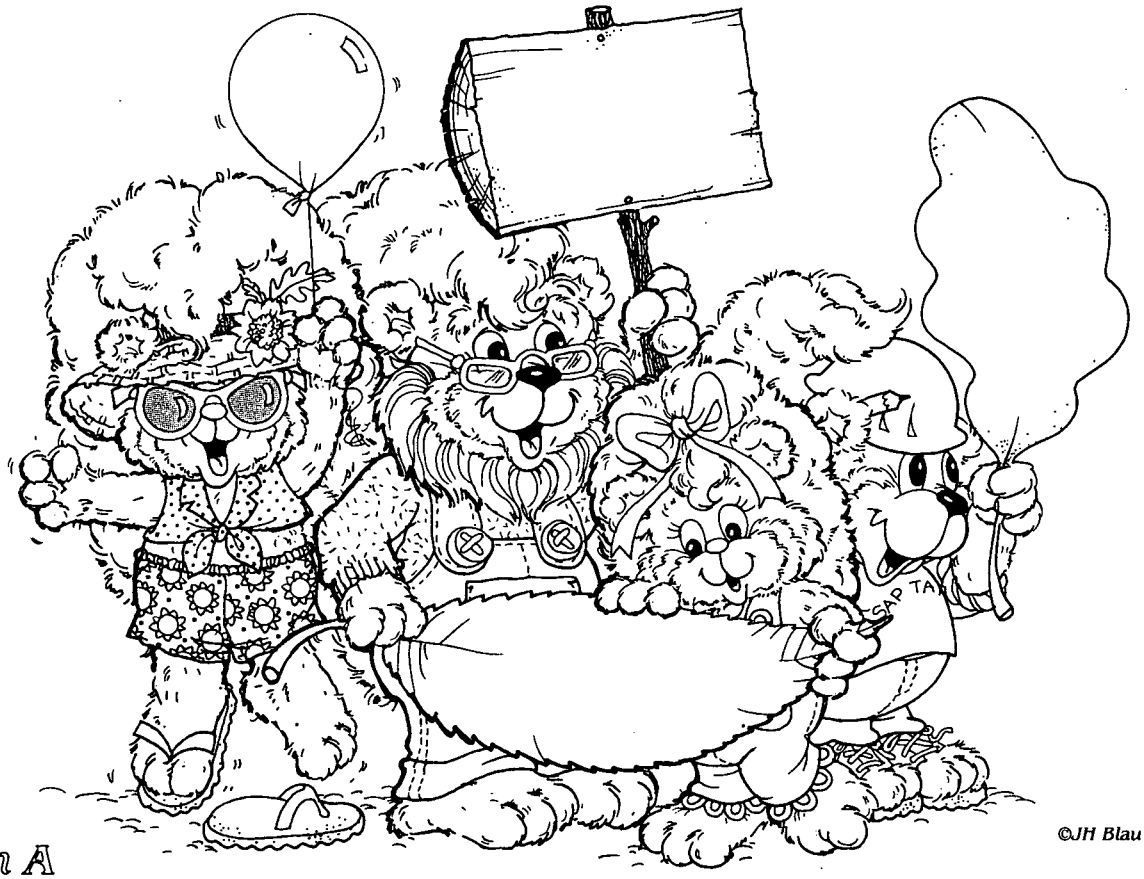

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Team A

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Team B

Language Arts

Speaking, listening, writing, and reading. What wonderful things! Children can be terrific writers and storytellers—when given the opportunity and the inspiration. They can become enmeshed in listening to a good tale; they can travel anywhere in a book. The following activities are for you to integrate with your current language curriculum. They will hopefully elicit a basic appreciation for trees and be the springboard for future language experiences.

Make writing fun!

Have the children decorate a notebook cover. Use scraps of material, wrapping paper, colored cellophane, ribbon...anything! The children will create a personalized book that will become their journal. Personalizing it in this way makes it special and the children who would normally be a little hesitant to write, look forward to using their home-made book.

Use stamps to make borders. Decorate some of the inside pages with stamps and colored ink pads. Creating borders with these, as well as with other designs, also helps make a personalized journal that is fun to use.

Tree History

Each child or group gets a tree cookie. (Tree cookies are a slice or cross section of a tree trunk which can be ordered from science supply catalogs. Or you may want to check with your local tree trimming service provider.) Examining the rings, they should decipher the tree's age and whether or not there were any significant events—fire, drought, etc. They should draw the tree's life in a time-line fashion. Entitle the story appropriately and make up stories for different years in the tree's life from the perspective of a child or another animal that depends on the tree.

Branching Out

Invite the children to do some brainstorming. Ask the students what they think of when you say "tree." Write their answers on the board. Keep going until there are a lot of words on the board. Using these words, each child should write a story or a poem. Or have them work in cooperative groups and write one poem or story as a team.

Poetree

Use the words on p. 49 for creative writing. Enlarge, cut, and glue them to felt for use on a flannel board or laminate them to use as a center activity. Give groups or individuals their own set(s). Write sentences or poems. Rewrite their creations in a journal or in a class tree book.

conifer	yellow	in	the
grows	squirrel	on	the
he	upon	fall	the
she	grows	nest	where
will	dies	down	are
when	sapling	fresh	is
go	brown	new	can
goes	carry	bloom	not
deciduous	baby	blossom	lean
seed	bird	across	grows
to	feed	flower	tiny
the	mother	sprout	falls
top	father	hidden	flower
bottom	beautiful	beneath	bluebird
water	woodpecker	wind	birdhouse
evergreen	beauty	blows	nest
tree	color	climb	build
lives	sway	there	perch
green	earth	are	look
house	forest	a	feed
above	wood	a	watch
red	cut	a	dream
orange	light	a	I
chipmunk	birth	s	we
shines	of	s	are
down	off	the	going

Tree Sleuth

Be a tree detective!

Look around until you have found a tree for your detective work.

Observe closely. Describe in detail what your tree looks like.

What kind of leaves does it have?

If a tree guide is available, what type of tree have you chosen?

Look at the base of the tree, as well as the bark. What signs of animal life are there?

If your tree had a name, what would it be? Why?

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Talking Tree

Find a tree to observe. Using all your senses think of words to describe your tree. Think of a word for each letter.

A _____

B _____

C _____

D _____

E _____

F _____

G _____

H _____

I _____

J _____

K _____

L _____

M _____

N _____

O _____

P _____

Q _____

R _____

S _____

T _____

U _____

V _____

W _____

X _____

Y _____

Z _____

Tree Word Search

Can you find the words listed below?

They may be diagonal, forward, or backward.

p	t	r	a	n	s	p	i	r	a	t	i	o	n
l	r	n	i	a	r	u	x	y	l	e	m	b	s
g	e	a	e	u	i	b	n	z	g	t	u	f	w
m	e	m	n	a	x	e	r	l	s	q	s	o	i
e	c	e	k	r	l	j	l	e	i	h	r	v	p
n	o	x	y	g	e	n	r	x	c	g	y	c	s
t	p	a	s	s	a	o	e	s	h	n	h	g	g
a	h	a	w	g	f	t	t	p	l	a	n	t	p
t	l	h	p	v	b	o	a	n	o	i	z	c	e
i	o	i	d	e	m	a	w	u	r	o	o	t	s
o	e	b	n	a	r	o	r	x	o	w	d	p	k
n	m	y	t	t	r	u	n	k	p	p	u	d	b
p	f	a	o	c	h	i	v	n	h	r	d	j	h
a	q	i	z	c	a	n	o	p	y	o	t	r	u
n	u	t	r	i	e	n	t	s	l	t	q	w	b
o	g	l	y	b	m	j	k	f	l	e	a	c	l
m	c	a	r	b	o	n	d	i	o	x	i	d	e
s	i	s	e	h	t	n	y	s	o	t	o	h	p

stomata
photosynthesis
nutrients
rings
rain
forest
paper
syrup
sap
transpiration
tree
sunlight
plant
roots
crown
prune
chlorophyll
canopy
trunk
water
oxygen
carbon dioxide
phloem
xylem
leaf
bark
grow
pigmentation

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Tree Dance

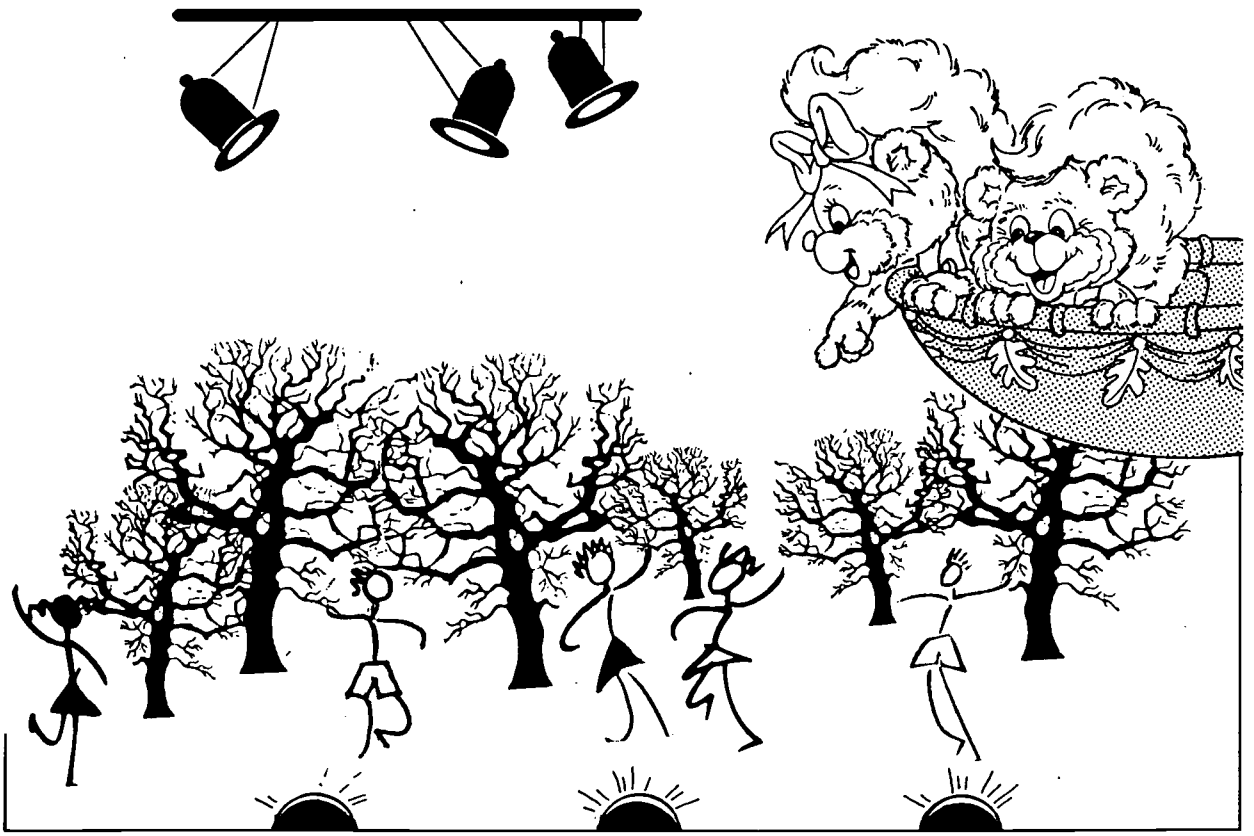
Trees can look graceful when swaying in a gentle breeze.
They can look strong and scary when seen as silhouettes at dusk.
A weeping willow can look sad.
A fruit-filled orange tree can look cheery.

Dramatize different trees and feelings:

Grow from a tree seed to a small tree seedling.
Develop branches and leaves.
Sway to a gentle breeze.

Move wildly like a tree in a hurricane.
How does a tree feel when it rains?
What about a tree reaching up to the bright sunlight?

Have the children be seeds, under the soil. They can grow and grow to become big beautiful dancing trees. Add music! Choreograph dances to homemade tree songs and/or poems.



Tree Art

Trees provide us with many useful resources as well as aesthetic pleasure. They have been the inspiration for writers, dancers, and artists of all kinds. Here are some art activities that will hopefully inspire your students. Integrate them into your other curriculum areas.

Tree Rubbings

Hold a piece of paper against a tree, and using crayons that have had the paper removed, rub the broad side of the crayon over the paper. Compare rubbings from different types of trees. See if the students can match a rubbing to the tree from which it came. Make a collage of rubbings, cutting or tearing them into various shapes.

Leaf Rubbings

Using flat leaves, make rubbings, similar to the activity described above. Allow artistic license and encourage the students to use different colors. Create a mural of colorful rubbings. Do they notice any patterns?

Tree Silhouettes

Draw tree silhouettes on black paper. Cut them out and use them to mount tree poems or for a dramatic looking bulletin board display. Try writing stories and poems in a tree shape.

Paper Making

After making this recycled paper, write poems on them or use several sheets to make a real hand-made book.

You'll need:

- ❑ shredded newspaper or other paper that has been used
- ❑ embroidery hoop
- ❑ fine screen (to fit in hoop)
- ❑ blender
- ❑ basin
- ❑ newspaper

- Use an embroidery hoop for your paper making frame. Cut screening larger than the hoop. Place screening over bottom hoop and snap outer hoop on.
- Tear newspaper into small pieces.
- Put in blender. For a special effect, add grasses and flowers.
- Fill blender about half way with water. Blend until you have slurry—a mush about the consistency of loose oatmeal.
- Fill a basin or large container halfway with water. Add the slurry.

- Place the screen under the water and allow the slurry to float above the screen.
- Raise the screen, and while doing so, slowly shake it so the slurry forms an even layer across the screen.
- Let it drain for a minute.
- Place newspaper over screen and quickly turn over.
- Using paper towels, blot the back of the screen, absorbing excess water from the slurry.
- Very slowly and gently remove the screen, leaving the newly made paper on the newspaper.
- Place wet paper in the sun to dry.
- When dry, carefully peel newly made paper from newspaper.

Family Tree

Using a tree silhouette, with the appropriate number of branches and limbs, have the children make a family tree, writing names and pasting pictures on the branches.

Me-Tree

Trace a life-size picture of each child on butcher block paper. Have the children position themselves in tree-like positions with arms up, out, and fingers opened. Have them color and cut them out to create a forest of me-trees.

Leaf Impressions

Use a rolling pin to flatten a ball of air-drying clay. Place a leaf on the clay and using the roller, roll over the leaf. Remove the leaf. Make a hole in the top with a nail. Allow the clay to dry. It can then be painted or glazed.

Tree Pretzels

Use this easy pretzel recipe to make tree and/or leaf shaped pretzels. Fun to make and fun to eat!

- one package yeast
- 4 cups flour
- 1 1/2 cups warm water
- 1 egg
- 1 tablespoon sugar
- 1 tablespoon salt

Mix yeast, water, sugar, and salt. Stir in flour. Knead until smooth. Shape dough into small tree shapes. Brush with beaten egg. Sprinkle with salt. Bake on greased cookie sheet at 425 degrees for 15 minutes or until browned.

Benchmarks Correlation: *Students should know: ...language...and the arts...are intrinsic parts of human culture, and they both shape society and society is shaped by them.*

CLASSIFIEDS

Attention Tree Dwellers

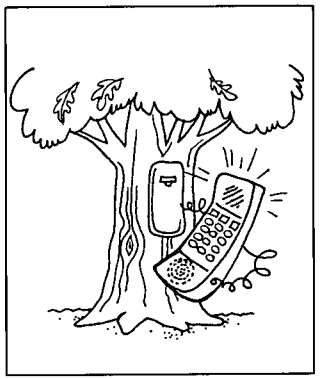
- **Are you stumped?** Blanch the Branch broker will help you find the stump of your dreams.
- **Just flying by?** Call Blanch for the best nest to take a rest at the Bed and Branch Hotel.
- **Looking for a new home?** Log in with Blanch.

Dry, Limp Leaves with a fall? Doc Barkley will make tree house calls.

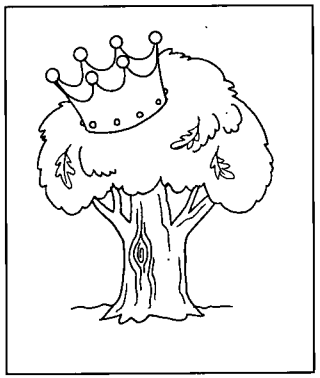
Need Advice? Call Autumn. She'll help you turn over a new leaf.

Just a trim, please! Call Clipper and his Helichopper Service.

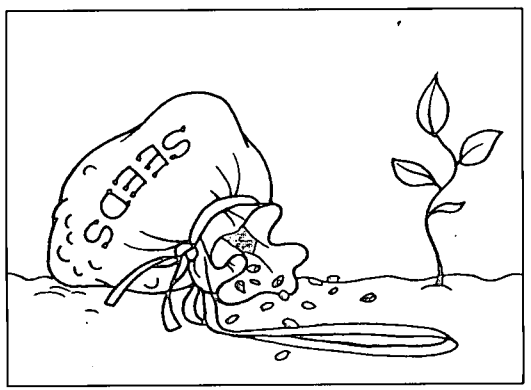
Under Attack from the Swarm Monster and his army of Gypsy Moths? Call Bugsey, the Blight Fighter, to the rescue.



What becomes a year older every time it rings?



What wears the biggest crown in the world?



What can be sown without using needle and thread?

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Fold

NEWSLETTER

Volume 1, No. 1

News from Nutley Grove

Half Past Fall: Nutley Grove, the Magic Treeture Forest

Chlorophyll and Chlorophyllis packed their bags and left the Grove with the rest of the Sunbeam Team for their winter vacation.

Autumn and the Leaf Turners went to work overseeing the changing of the leaves. They did an exceptionally colorful job. The yearly dispute did take place once again when the Sunbeamers took credit for the colorful fall. They claimed that their excellent direction of the sun toward the leaves helped create a spectacular season. The Leaf Turners, of course, did not beleaf this and said, "We'll never fall for that!"

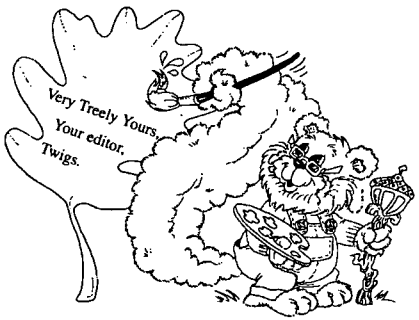
Thanks to the Little Shavers, under the leadership of Clipper, all trees have been carefully pruned to avoid winter storm damage.

Meetings will be held on the Home Branch to plan for a treemendously exciting spring.

Ring-a-Ling will be arranging for all the spring birthday parties after he's done his winter ring counting.

Blanch, our Branch Broker, has been busy getting all winter birds and tree animals settled in their winter lodgings in her Bed and Branch Homes and Hotels.

Hope to see you all during the holidays at our Tree-La-La caroling festivities.



Be a Treeture Reporter

Try writing your own Nutley Grove News or School News. Include jokes, riddles, ads, interviews, or games.

Tree Jobs

Trees are a very important part of our lives in so many ways. In fact, some people make their living working with trees. Guess which jobs below have something to do with trees.

Circle your answers.

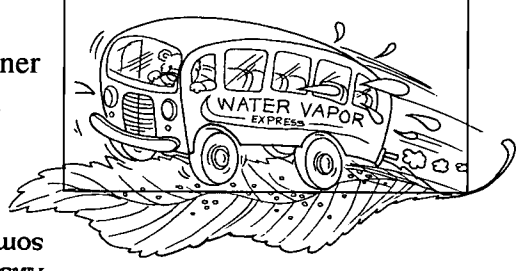
1. Nurseryman/woman
2. Urban Forester
3. Landscaping Professional
4. National Park Forest Ranger
5. Conservationist
6. Tree Research Scientist
7. Lumberjack
8. Tree Farmer
9. Apple Orchard Owner
10. Paper Plant Worker

Tree Riddle

What did the air say to the water vapor as it arrived from the leaf?

Air:
What Transpiration brought you here?

Water Vapor:
Well, First I took a bus, then a subway, then...



Answers: All of these jobs have something to do with trees!

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STOMATA ARE TINY HOLES IN THE LEAVES THAT RELEASE WATER INTO THE AIR. THIS PROCESS IS CALLED TRANSPIRATION

BELEAF IT!

Draw a line to the right answer.

1) How many trees does it take to make a ton of paper?	❑ Air conditioner
2) Transpiration of trees is like a natural _____.	❑ Pine trees
3) An average size tree can give off _____quarts of water a day.	❑ Trees
4) What kind of trees do not loose all their leaves in winter?	❑ 50
5) What are the oldest living things in the world?	❑ 17
6) What is the pipeline that carries water & nutrients from the crown down to the roots?	❑ Phloem

Answers: 1. 17 2. Air conditioner 3. 50 4. Pine trees 5. Trees 6. Phloem

Activity Guide Evaluation

Please take a few minutes to fill out this evaluation. We would greatly appreciate your feedback.

1. Do you think the activities were age/developmentally appropriate?

2. Were the activities user-friendly?

4. Did the activities meet their respective learning standard?

5. Why would or wouldn't you recommend this to a colleague?

6. What tree related topic(s) would you like to see in future publications?

7. Overall opinion:

Please return this evaluation to:

National Tree Trust
1120 G Street, N.W., Suite 770
Washington, DC 20005
Fax: 202-628-8735

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