

All About Trees

Objectives

1. The students will learn that trees supply many of the things we use everyday.
2. The students will be able to relate the benefits of forests, both in useful products and environmentally.
3. The students will recognize the economic importance of forestry in Texas.

Grade Level

1-3

4-6

TEKS:

LA- 1.1; 1.3; 2.1; 2.14; 2.3; 3.1A;
3.3C; 3.14A

SS- 1.6B,C; 1.9B; 2.7B, 2.8D;
3.4A, M; 3.16A

LA- 4.1; 4.6; 4.15; 5.1; 5.6; 5.15;
6.1A; 6.6C; 6.10A; 6.15C

SS- 4.6C, 4.9C, 5.6B, 6.4D, 6.6B
M- 4.12; 4.14A,B,C,D 4.15B;
5.11A; 5.14 A,B,C,D; 5.15A
6.8A,B; 6.11A,B,C,D

TAKS:

GRADE

OBJECTIVES

Reading 3, 4, 5, 6

1, 3

Writing 4

1, 2, 3, 4, 5, 6

Science 5

1, 2, 3, 4

Math 3, 4, 5, 6

1, 4, 5, 6

Assessment Summary:

Materials and

Equipment: "Texas Timber" (table of production and value)

"Its More Than Just a Tree"

"Timber in Texas" Map of Texas Counties

"Forest Scene" writing prompt

"Tree Measurement" instructions

Assessment: Successful completion of grade appropriate activities

Written composition based on "Forest Scene" writing prompt

"Its More Than a Tree" multiple choice review

Teacher observation

Background

Information: "All About Trees", (included in lesson)

Texas Forestry Association, www.texasforestry.org

Texas Forest Service, <http://txforestservice.tamu.edu>

Technical Association for the Pulp and Paper Industry,
www.tappi.org

American Forestry and Paper Association, www.afandpa.org

Incense Cedar Institute, www.pencils.com

Project Learning Tree, www.plttexas.org

All About Trees

Procedure

1. Introduce new vocabulary:

Grades 1-3

forestry

harvest

seedling

timber

renewable resource

Grades 4-6

forestry

harvest

seedling

timber

renewable resource

2. Have students brainstorm a list of ways that trees benefit us. The list can include products we use that are made from trees, and environmental benefits of trees.

3. Individually or in cooperative groups have students research other timber products that were not mentioned in brainstorming list. Use Internet and/or other available resources. Have each group make a new list and compare with other groups. A list of products from the timber industry is included in this lesson for the teacher's reference.

4. Have students read "It's More Than Just a Tree" and complete the activity.

5. Have students complete "Texas Timber" using the chart of timber production and value.

6. Using the map of Texas counties have students locate where timber is grown in the state.

7. Divide students into groups of 3 or 4 and have them complete the activity "Tree Measurement".

8. Assessment: Students should successfully complete the activities, based on teacher observation and grading system.

Extension

My Little Corner of the World, by Beth Burch Smith.

Texas Forests Forever, CD-ROM

Contact Texas Forestry Association, 409 632-TREE to order

All About Trees

We depend on trees. Trees are great for the environment and provide us with many useful products. The average American uses **18 cubic feet** of wood and **740 pounds of paper**, equal to an **18-inch**-diameter **100-foot tree**, each year. People depend on forest products. We burn wood for heat and use it to make houses, **furniture**, and thousands of other things we use each day. Paper is used to make the books we read, the letters we write, the **boxes** we ship, the bags we bring home from the grocery store, and the **cartons** that hold our crackers and breakfast cereal.

Trees also help cool the earth. Trees give off moisture. More moisture in the air means more rain, and all living things need water. Trees cool air by shading and through water evaporation. They act like huge pumps to cycle water up from the soil back into the air. The 200,000 leaves on a healthy 100-foot tree can take 11,000 gallons of water from the soil and **breathe it into the air** in a single growing season.

Trees are our breathing partners. You may not live in a forest, but you need trees in order to live. People and animals depend on trees and plants for oxygen. As you breathe in, your body uses oxygen. As you breathe out, it gives off carbon dioxide (CO₂). Trees do just the opposite. They take in CO₂, then release oxygen (which also helps clean the air).

Keeping our forests and wilderness areas healthy is important. Healthy forests will continue to provide the wood and paper products that are important to all of us and ensure that we have forests and wildlife for future generations of Americans. To make sure these areas are protected, the American Forest & Paper Association developed a plan called the Sustainable Forestry InitiativeSM, or SFISM, program, which guides them on how to successfully grow and harvest trees while also protecting wildlife, plants, soil, air, and water quality.

Unlike fossil fuels, metals and other resources, *trees are a renewable resource*. We can grow more trees. And we do. Since 1940, we have grown more wood each year in America than we have harvested.

In 1997, 1.6 billion seedlings were planted in the United States by the forestry community. That's an average of more than four million new trees planted every day—more than five new trees a year for every man, woman and child in America.

Working forests—where trees are planted, grown and harvested—can be located any place there are trees. The United States now has 737 million acres

of forests, more than half of which are working forests. Working forests help meet our nation's demand for wood and paper products. They also provide for wildlife habitat, cleaner water, good soil and a forest in which you can hike, camp, and explore. With proper stewardship and management, our forests will continue to provide the products, wildlife, recreation, water quality and other benefits we have come to enjoy for generations to come.

Texas' major forest lands are concentrated in 43 counties in East Texas, stretching from the Oklahoma/Arkansas boundary southward along the western edge of Louisiana, until it reaches the Gulf of Mexico. Of the 12 million acres of forest land in Texas, non-industrial private forest landowners own the greatest percentage.

Timber is the third most valuable agricultural commodity (only after cotton and nursery crops) in Texas. In East Texas, however, timber is the number one agricultural crop. The annual economic impact of Texas' forests is over \$22 billion.

The Texas forests provide more than 91,000 jobs with more than \$2.3 billion in wages and salaries. In comparison to the other 12 Southern States, Texas ranks second only to North Carolina in employment.

More than 5,000 things are made from trees.

Scientists and papermakers are learning new ways to use all parts of a tree so that nothing is wasted.

Paper Products

*computer paper
library books
grocery bags
newspapers
boxes
movie tickets
playing cards*

Hardwood Products

*lumber for building
new homes
furniture
baseball bats
rulers
crutches
fences*

Tree Extracts

*cologne
baby food
clothing
carpeting
football
helmets
luggage
hair spray
deodorant
toothpaste*

Tree Bark

*cork boards shoe
polish
garden mulch*

Forest Facts



In 1997, over 1.6 billion tree seedlings were planted in the United States—that's more than five new trees for each American.



There are 737 million acres of forest land in the United States.



Ginkgo trees provided food for dinosaurs, and yet they can still be found in backyards today.



The single oldest living thing on Earth is a tree, a 4,700 year-old bristlecone pine tree in California. It was growing when the Egyptians built the pyramids.



Most forest products (things made from trees) are recyclable.



Trees are a renewable resource. We can plant more trees, and we do!



Sawdust and wood shavings, saved from manufacturing wood products, are recycled to help make paper grocery bags, corrugated boxes, and other products. Thanks to today's new technologies, close to 100 percent of a tree can be used—with hardly any waste.



More trees are grown through replanting and natural regeneration than are harvested in the United States each year.



Forests are oxygen factories. To grow a pound of wood, a tree uses 1.47 pounds of carbon dioxide and gives off 1.07 pounds of oxygen.



About one-third of the United States is covered by forests.



More than 5,000 things are made from trees: houses, furniture, baseball bats, crutches, fences, garden mulch, books, newspapers, movie tickets—even clothing, carpeting, and toothpaste.

American Forestry and Paper Association

Texas Timber

Total Industrial Timber Harvest Volume and Value by County in Texas, 2004.

County	Volume Harvested			Value of Harvest	
	Pine	Hardwood	Total	Stumpage Value	Delivered Value
----- cubic feet -----				--- thousand dollars ---	
Anderson	9,648,827	3,291,375	12,940,202	8,072	15,070
Angelina	22,038,602	2,832,839	24,871,441	18,470	32,151
Bowie	7,131,722	5,437,225	12,568,947	7,106	12,791
Camp	2,288,931	1,103,569	3,392,500	2,401	4,042
Cass	31,490,322	11,992,969	43,482,291	31,137	52,334
Chambers	802,731	391,182	1,193,913	857	1,487
Cherokee	23,733,915	9,411,480	33,145,395	21,453	39,467
Franklin	448,981	952,841	1,401,822	665	1,263
Gregg	2,706,561	910,752	3,617,313	2,449	4,382
Grimes	2,457,290	151,424	2,608,714	2,456	3,872
Hardin	22,546,034	4,899,185	27,445,219	14,088	28,977
Harris	4,692,415	1,572,094	6,264,509	5,530	8,604
Harrison	16,357,395	5,185,455	21,542,850	14,465	25,406
Henderson	1,613,682	1,316,813	2,930,495	1,540	3,110
Houston	19,580,302	3,119,179	22,699,481	14,211	26,599
Jasper	44,071,691	4,268,477	48,340,168	22,939	50,541
Jefferson	627,591	199,350	826,941	626	1,061
Leon	1,781,317	1,232,430	3,013,747	2,159	3,558
Liberty	10,522,315	6,547,361	17,069,676	11,639	19,882
Madison	60,233	32,788	93,021	57	102
Marion	10,661,334	4,445,674	15,107,008	10,270	17,758
Montgomery	9,479,282	1,678,342	11,157,624	10,160	15,925
Morris	1,386,898	1,326,178	2,713,076	1,393	2,637
Nacogdoches	20,769,849	4,029,340	24,799,189	17,890	31,421
Newton	37,384,436	2,972,222	40,356,658	21,526	44,649
Orange	3,419,840	703,418	4,123,258	2,365	4,662
Panola	16,118,321	4,413,294	20,531,615	12,978	23,605
Polk	29,997,866	2,891,437	32,889,303	25,822	43,981
Red River	3,905,524	7,735,831	11,641,355	4,581	9,186
Rusk	11,727,604	5,006,401	16,734,005	12,318	21,216
Sabine	15,883,110	2,199,679	18,082,789	11,555	21,536

San Augustine	21,936,353	6,942,962	28,879,315	18,384	33,656
San Jacinto	19,256,723	1,308,566	20,565,289	13,202	24,759
Shelby	16,762,427	3,807,139	20,569,566	11,596	22,520
Smith	7,281,322	4,541,023	11,822,345	8,191	14,269
Titus	1,343,357	1,907,379	3,250,736	2,092	3,506
Trinity	15,251,394	1,751,779	17,003,173	13,377	22,647
Tyler	31,369,031	4,053,639	35,422,670	19,991	39,771
Upshur	5,699,694	2,946,203	8,645,897	6,152	10,485
Van Zandt	245,769	282,594	528,363	424	709
Walker	8,985,047	566,396	9,551,443	8,948	14,065
Waller	66,769	75,953	142,722	75	139
Wood	2,851,261	1,180,048	4,031,309	2,540	4,584
Other Counties	517,672,166	1,857,676	3,146,774	1,591	3,019
Total Production	517,672,166	133,471,961	651,144,127	419,743	765,401

For the latest harvest figures go to National Agricultural Statistics Service
www.nass.usda.gov/tx

1. Using the chart, list the ten Texas Counties, from highest to lowest, which had the highest *Total Harvested Volume of timber* in 2004.

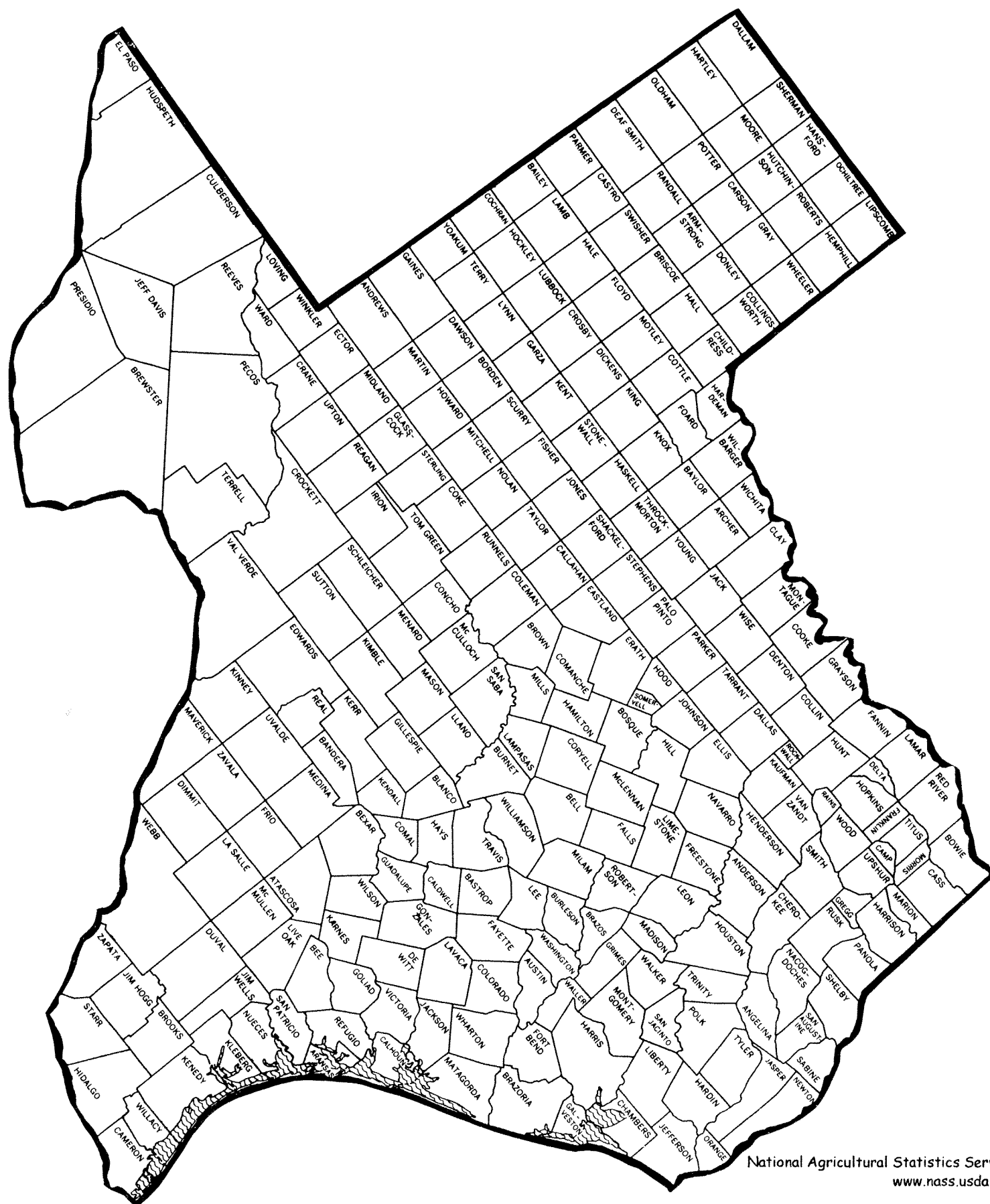
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

2. Use map colors to shade those ten counties on the Texas map.
 3. Use a different color to shade the rest of the counties that harvest timber.
 4. What is this area of Texas known as?
 5. According to the chart, list the ten counties which had the highest *Delivered Value* of timber, from highest to lowest.

_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

Timber in Texas

Use the *Texas Timber Harvest Table* to determine the ten Texas Counties that harvested the most timber in 2004. With map colors shade those counties. Then, using a different color, shade all the counties from which timber was harvested.



Tree Measurement

Procedure

Materials Needed: string, ruler or tape measure, paper, pencil, tree

1. Trunk:
 - A. Measure from the ground to 4½ feet high on the trunk.
 - B. At that height, measure the trunk's circumference. Use a string around the trunk and measure the length of the string.
 - C. Round to the nearest inch. Record the number and label as circumference.

Extension: Determine diameter of the trunk by using the formula:

$$\text{diameter} = \frac{\text{circumference}}{3.14}$$

2. Crown:
 - A. Find the tree's five longest branches.
 - B. Put markers on the ground beneath the tip of the longest branch.
 - C. Find a branch that is opposite it and mark its tip on the ground.
 - D. Measure along the ground from first marker to the second marker.
 - E. Record the number and label as crown
3. Height:
 - A. Have your partner stand at the base of the tree.
 - B. Back away from the tree, holding your ruler in front of you in a vertical position. Keep your arm straight. Stop when the tree and the ruler appear to be the same size. (Close one eye to help you line it up.)
 - C. Turn your wrist so that the ruler looks level to the ground and is in a horizontal position. Keep your arm straight.
 - D. Have your partner walk to the spot that you see as the top of the ruler. Be sure the base of the ruler is kept at the base of the tree.
 - E. Measure how many feet he or she walked. That is the tree's height. Round to the nearest foot and record your answer as the height.

Assessment: Allow time for groups to compare answers and then remeasure the tree if needed. Usually it takes several measurements. Be sure and allow time for each person to take several measurements since they will be working with partners.

Classroom: Have students make bar graphs using information gathered outside. Have Students locate the biggest tree, smallest tree of the same species.

It's More Than Just a Tree

Find the 14 products made from trees in this story. Draw a circle around each one. On your own paper write the words you have circled.

Benjamin is visiting Aunt Sally and Uncle James. They raise trees for timber and have just harvested a large number of their trees. Benjamin likes to come here. It is fun because Aunt Sally and Uncle James live in a big house made of logs.

Today Uncle James has a special project planned for this morning. Benjamin will get to help plant new trees on the land where his uncle harvested the timber. For every tree his uncle cut down, he will plant seven new seedlings. Aunt Sally has something special planned for the afternoon. Benjamin will help make holly wreaths for the winter season. Aunt Sally has a secret ingredient for her wreaths; she puts just a few drops of fragrant perfume on the leaves so the wreaths smell good.

The first job this morning is for Benjamin to tackle the huge paper plate of blueberry pancakes with syrup. Aunt Sally and Uncle James read the morning newspaper while Benjamin enjoys his breakfast. After eating the pancakes, Benjamin uses a wet paper towel to wipe his sticky face. Later Aunt Sally will mop the messy floor with pine oil cleaner.

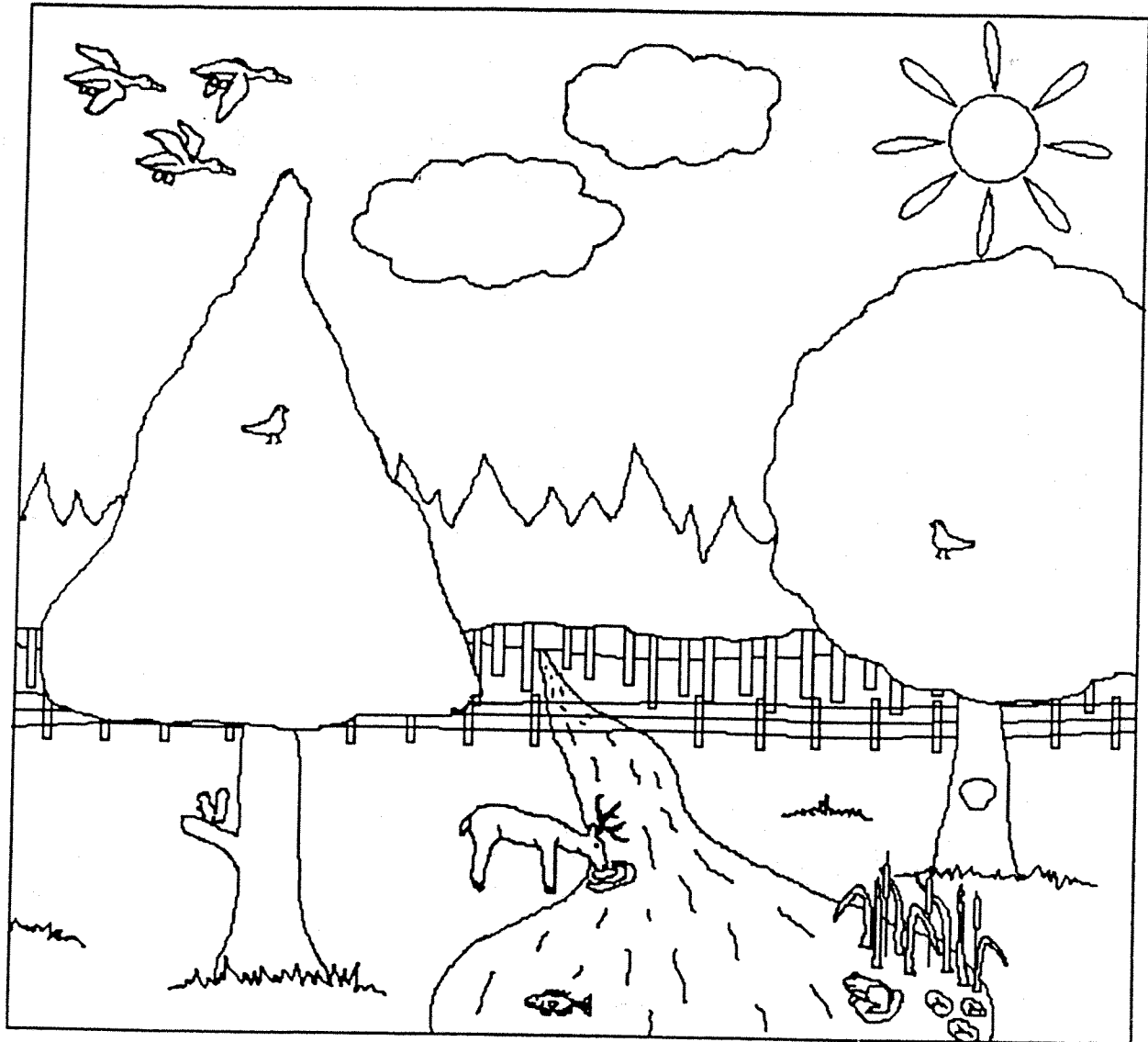
As Benjamin and Uncle James go to the truck to begin their day, Benjamin walks past the airplane Uncle James uses to inspect his large tree farm. He would like to be a timber producer, too. Benjamin hopes someday he can own an airplane and a boat, like Uncle James. But for now, Benjamin will enjoy reading books, swinging his baseball bat, knocking down the bowling pins at the bowling alley and playing a musical instrument in the school band.

Benjamin loves to visit Uncle James and Aunt Sally. It is fun and interesting to learn about growing the trees which provide so many products for people.

After reading the story "It's More Than Just a Tree", circle the letter next to the most correct answer.

1. The main idea of the passage is:
 - A. Benjamin likes pancakes
 - B. Benjamin plays baseball
 - C. Many useful products come from trees
 - D. Pancakes are messy
2. What does Uncle James do for a living?
 - A. He works on cars and trucks
 - B. He raises trees for timber
 - C. He is a fisherman
 - D. He works for the railroad
3. Three things named in the story that are made from trees are:
 - A. Shoes, socks and bubble gum
 - B. Forks, knives and spoons
 - C. Baseball bats, paper towels and books
 - D. Gloves, potato salad and hamburgers
4. According to the story what does Uncle James do after he has harvested trees?
 - A. He takes a short nap.
 - B. He goes fishing with friends.
 - C. He Takes Aunt Sally out to eat to celebrate.
 - D. He plants seven new seedlings for every tree he cut down.
5. According to the story Benjamin helped his Aunt Sally
 - A. Make wreaths
 - B. Make pancakes
 - C. Mow the yard
 - D. Sew a dress
6. In the story the word *harvest* means
 - A. To cut down trees
 - B. To eat a meal
 - C. To build a house
 - D. To plant trees
7. In the story the word *seedling* means
 - A. A large, old tree
 - B. A small, very young tree
 - C. A machine used for cutting down trees
 - D. A musical instrument

This is a picture of a forest scene. Look at the picture and write a composition in which you describe what you see.



TREE PRODUCTS

Look at just a few of the products that come from trees. If trees could not be used, ask your students to think of what material could be a replacement. Is it more environmentally friendly and/or economically feasible than trees? In your discussions, remember that trees are a renewable resource and that tree products are recyclable and biodegradable.

acetate	Christmas trees	gift boxes	paint	rubber ties
adhesives	clocks	golf club heads	pallets	rulers
alcohol	computer paper	golf tees	panelboard	sailboats
artificial vanilla	confetti	guitars	paper cups	sandboxes
flavoring	corks	gum	paper plates	school desks
artificial snow	cosmetics	handrails	paper towels	skis
asphalt	creosote	houses	park benches	sleighs
atlases and maps	cribs	hurdles	particleboard	space craft reentry
axe handles	crutches	javelins	pencils	shields
barrels	diapers	kitchen cabinets	pews	stationary
baseball bats	diving boards	kites	photo albums	swings
billboard signs	dollhouses	knife handles	photographic film	T. V. trays
birdhouses	doors	leather tanning	pianos	tax forms
boats and canoes	drums	liquid soap	ping pong balls	telephone books
book paper	fence posts	lumber	plaques	telephone poles
bowling alley lanes	fertilizer	magazines	playing cards	tennis rackets
bowling pins	fire ladders	maple syrup	plywood	tickets
broom handles	fishing floats/tackle	masking tape	polo mallets	toilet seats
calendars	flagpoles	matches	popsicle sticks	toilet paper
camera cases	flooring	medicine	posters	toys
can labels	foam rubber	metronomes	poultry feed	trailers
candy wrappers	football helmets	mulch	price tags	turpentine
cartons	frames	napkins	puzzles	varnish
CD covers	frozen food packages	newspapers	railroad ties	vinegar
cellophane	fruits and nuts	oil well drilling	rakes	violins
cereal boxes	fuel	compounds	rayon	window frames
chairs	furniture	organs	rolling pins	wrapping paper
charcoal		paddles	roofs	yardsticks

ANSWER KEY

Timber Harvest

1. Polk, Angelina, Nacogdoches, Tyler, Shelby, Jasper, Newton, Montgomery, Cass, Cherokee
2. Teacher observation
3. Teacher observation
4. East Texas
5. Polk, Angelina, Montgomery, Jasper, Nacogdoches, Shelby, Tyler, Newton, San Augustine, Sabine

It's More Than Just a Tree

Products Made from Trees

house
wreaths
perfume
paper plate
syrup
newspaper
paper towel
pine oil cleaner
airplane
boat
books
baseball bat
bowling pins
musical instrument

It's More Than Just a Tree

1. C
2. B
3. C
4. D
5. A
6. A
7. B