WOOD MAGIC

EDUCATOR'S GUIDE

WOOD magic FOREST FAIR

LETTER FROM THE COORDINATOR

Dear Educator,

Thank you for attending this year's Wood Magic Forest Fair. The Fair is a cooperative effort between the Forestry Association of South Carolina, the USDA-Forest Service and the S.C. Forestry Commission, in partnership with many other state agencies and private industries. We hope your visit to our Fair was enjoyable, rewarding and educational to both yourself and your students.

The purpose of the Wood Magic Forest Fair is to provide information to students and their teachers about the sustainable management of forest resources in our state and the role of forests and forest products in their daily lives. Forestry is the largest manufacturing industry in South Carolina in terms of jobs and wages paid, and trees are the number one harvested crop in the state. We are committed to providing you with sound scientific-based information about this important natural resource and our dependence on it.

Enclosed in your educator's bag are many brochures and fact sheets about forestry and forest products. As a pre-visit activity you and your students watched "Forest Fast Breaks" along with instructional material for the video. We hope you found this useful in preparing your class for their visit. This Educational Guide (digital copy available at: https://www.scfc.gov/education/wood-magic/wood-magic-resources/) was prepared to help you with your post-visit follow-up. In it you will find several activities that you can do with your students, including the "Blowing Bubbles through Solid Wood," "Living with Fire," and "A Tree's Dream" lessons. These activities are related to ecology, sustainable forest management, stewardship, and green careers. We would also like to encourage you to invite foresters, industry representatives, and other professionals into your classrooms.

In order to assess how well the students retained their knowledge from their visit, please have your students complete the post-test. **Then please score it, summarize the results on the "Post-Visit Questions Summary" sheet, and scan/e-mail the results to me at mschnabel@scfc.gov.** As you well know, assessment is one of the most important parts of improving any educational program. These results also help us obtain grants that allow this program to be offered to the education community at no cost. We would also be interested in your professional opinion of how the program went and any improvements we could make. **Please complete the teacher "Post-Visit Survey" online or on paper and scan/e-mail the results to me.**

Again, thank you for taking the time and effort to attend the Wood Magic Forest Fair. We hope that you enjoyed and learned from your visit with us as much as we enjoyed providing this event for you.

Sincerely,

Matt Schnabel – SC Forestry Commission
Environmental Education Coordinator
SC Project Learning Tree Coordinator (www.plt.org)
PO Box 21707, Columbia, SC 29221 • (803) 896-8892 • e-mail: mschnabel@scfc.gov

Standards addressed in post-visit activities:
Math (NSBT.5, NSBT.6, NSF.4c, ATO.2, MDA.2), Science (ESS3-2), ELA (Inquiry 4.1, 4.2, 5.1)

TEST

HOW MUCH DO YOU KNOW ABOUT OUR FORESTS?

Post-visit questions

True or false

Answer the following questions as True (T) or False (F) by placing the letter in the blank.

_____ 1. There are more trees and forests in the U.S. today than there were 100 years ago.

_____ 2. Trees are a non-renewable natural resource.

_____ 3. Prescribed (controlled) fires are used to improve forests and wildlife habitat.

_____ 4. When trees are harvested and brought into a sawmill, every part of the log is used.

_____ 5. The main reason to recycle paper products is to save trees.

_____ 6. Using trees to make everyday products is harmful to the environment.

_____ 7. In South Carolina there are more trees planted and grown each year than are cut and used for wood products.

_____ 8. Forests pollute the air we breathe and the water we drink.

_____ 9. Natural resources such as oil and gas are renewable.

Vocabulary

Match the terms on the right with the statements on the left by placing the correct letter for each in the blanks provided.

_____ 10. Raw materials we use every day that come from the earth.	**A. Non-renewable resources**
_____ 11. Resources that can be planted, grown, used, and replanted again for future generations to use	**B. Natural Resources**
_____ 12. Resources that, once used, cannot be made again or be replaced by nature in our lifetime	**C. Renewable resources**
_____ 13. Materials that are able to be broken down by nature into simpler substances (decomposed)	**D. Recycle**
_____ 14. When a material is used, then collected, reprocessed and made into a new product	**E. Biodegradable**

15. On the back of this paper, make a list of as many things that you can think of that you use every day that come from trees. **Try and list at least ten (10)**.

TEST ANSWER KEY

Post-visit questions

True or false

Answer the following questions as True (T) or False (F) by placing the letter in the blank.

__T__ 1. There are more trees and forests in the U.S. today than there were 100 years ago.

__F__ 2. Trees are a non-renewable natural resource.

__T__ 3. Prescribed (controlled) fires are used to improve forests and wildlife habitat.

__T__ 4. When trees are harvested and brought into a sawmill, every part of the log is used.

__F__ 5. The main reason to recycle paper products is to save trees.

__F__ 6. Using trees to make everyday products is harmful to the environment.

__T__ 7. In South Carolina there are more trees planted and grown each year than are cut and used for wood products.

__F__ 8. Forests pollute the air we breathe and the water we drink.

__F__ 9. Natural resources such as oil and gas are renewable.

Vocabulary

Match the terms on the right with the statements on the left by placing the correct letter for each in the blanks provided.

__B__	10. Raw materials we use every day that come from the earth.	**A. Non-renewable resources**
__C__	11. Resources that can be planted, grown, used, and replanted again for future generations to use	**B. Natural Resources**
__A__	12. Resources that, once used, cannot be made again or be replaced by nature in our lifetime	**C. Renewable resources**
__E__	13. Materials that are able to be broken down by nature into simpler substances (decomposed)	**D. Recycle**
__D__	14. When a material is used, then collected, reprocessed and made into a new product	**E. Biodegradable**

15. On the back of this paper, make a list of as many things that you can think of that you use every day that come from trees. **Try and list at least ten (10)**.

TEST

POST-VISIT QUESTIONS SUMMARY

Please summarize the results of the post-visit questions and mail back to us in the pre-addressed stamped envelope. Record the number of **CORRECT** answers in the blank beside each question.

Teacher/school:_____

#Correct **Total number of students taking quiz= _____**

_____ 1. There are more trees and forests in the U.S. today than there were 100 years ago.

_____ 2. Trees are a non-renewable natural resource.

_____ 3. Prescribed (controlled) fires are used to improve forests and wildlife habitat.

_____ 4. When trees are harvested and brought into a sawmill, every part of the log is used.

_____ 5. The main reason to recycle paper products is to save trees.

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_____ 13. Materials that are able to be broken down by nature into simpler substances (decomposed)

_____ 14. When a material is used, then collected, reprocessed and made into a new product

_____ 15. Record the number of students that were able to list a minimum of 10 items.

POST-VISIT SURVEY

Dear Teacher,

Thank you for attending South Carolina's Wood Magic Forest Fair. We hope that this program provided a fun learning experience for you and your students. To help us provide an even higher quality program next year, please complete the teacher "Post-Visit Survey" online (https://tinyurl.com/2p93fzx9) or on paper and scan/e-mail the results to me. Thank you for your input!

Please circle one	**Poor**	**Fair**	**Good**	**Very good**	**Excellent**
Application process	1	2	3	4	5
Pre-visit information	1	2	3	4	5
Pre-visit activities	1	2	3	4	5
Introduction	1	2	3	4	5
Lunch	1	2	3	4	5
Board cuttin'/sawmill	1	2	3	4	5
Good fire, bad fire	1	2	3	4	5
Gifts of the forest	1	2	3	4	5
Makin' paper	1	2	3	4	5
Magic show	1	2	3	4	5
Student bag/packet	1	2	3	4	5
Teacher bag/packet	1	2	3	4	5
Blowin' bubbles lesson plan	1	2	3	4	5
Living with fire lesson plan	1	2	3	4	5
"When I grow up" activities	1	2	3	4	5
Post-visit questions	1	2	3	4	5

Please give us comments on above activities (please explain any low marks above).

What did you like most about the Wood Magic Forest Fair? Why?

What did you like least about the Wood Magic Forest Fair? Why?

How can we improve the Wood Magic Forest Fair Program?

_____ Name (read statement below)

Occasionally we like to use quotes from teachers in our advertising and report to our sponsors. By signing the above line you are giving us permission to do so. Thank you for your cooperation.

ACTIVITY

BLOWING BUBBLES THROUGH SOLID WOOD

Objective
To demonstrate the vascular structure of wood.

Science Skills
Making observations, predictions, and inferences

2021 SC Science Standard 4-LS1-1
Construct an argument that plants and animals have internal and external structures that function together in a system to support survival, growth, behavior, and reproduction.

Materials Needed
Individual pieces of red oak (supplied to each student in the goody bag)
Bubble mixture or dish detergent mixture
Magnifying glasses
Other pieces of wood such as the students' cedar block

Background Information
All living things are made of cells. Plants have cells that are surrounded by a thick cell wall made of cellulose. It is this cellulose that gives a plant its strength and is used for pulp to make paper. (A good example of cellulose is the thin, clear sheath that surrounds a kernel of corn.)

In trees, the cells of the sapwood are lined up and the contents of the cells die, forming hollow tubes or vessels that transport water from the roots of the tree. (This is called the xylem.) As a tree grows wider, these vessels become clogged with materials and fluids can no longer be transported through them. This forms the heartwood of trees.

In some trees, such as red oaks, these vessels remain open. If you observe a piece of red oak with a magnifying glass, you can see the openings of these tiny vessels. In other trees, such as white oaks, the vessels are closed.

There are several applications for this difference in wood's structure. If wood is to be used outside and it is not naturally resistant to decay it would need to be treated with some type of preservative. Wood that is porous can easily be treated with a liquid preservative or stain, with the liquid easily soaking deeply into the wood. However, wood that has vessels that are closed is difficult for preservatives to penetrate.

White oak is a common wood used to make barrels or the hulls of wooden boats. The vessels in white oak are closed, therefore liquids will not soak through them. A barrel or boat made of red oak would leak!

Note

This activity can be messy and is best done outside or in a location where the soap bubbles can easily fall on newspapers or in a sink.

1. Ask students to examine their pieces of wood. Have them write what they observe. (Observations may include the color, it is solid, hard, its smell, etc.)
   Have students use their magnifying glasses to examine the wooden blocks closely, especially the ends.
   - If students observe tiny holes in the ends of their wooden blocks, ask them to guess (infer) what they think these holes are for.

2. Ask students if they think all wood is alike. What are some ways that wood is different?
   (You may want to have some other pieces of wood as an example to show them or use the pieces of cedar they were given at the Wood Magic Forest Fair.) Have students record their observations of the other pieces of wood.

3. Have students share the results of their observations with the other class members.

4. Explain to the students that what they have is a small piece of wood from the trunk of a red oak tree. Draw a picture of a tree and review with the students the major parts of the tree and their functions.
   - Roots – absorb water and nutrients from the soil and anchor the tree in the ground.
   - Trunk – transports water from the roots to the upper parts of the tree and sugars from the leaves to the lower parts of the tree.
   - Leaves – make food for the tree by combining water and carbon dioxide and using the energy from sunlight to make sugars in a process called photosynthesis.

5. Explain to the students that in order for water to move from the roots of a tree to the leaves there must be some type of vessels to transport the water (like soda straws). The tiny openings they observed with their magnifying glasses in the red oak were the ends of these vessels. In some wood these vessels become closed, but in red oak they remain open.

6. Explain to the students that now they are going to test to see if the vessels in their piece of wood are open or closed. Have the students predict if the vessels are open or closed. Have them write down their predictions.
   - Have students dip one end of their pieces of red oak in the bubble solution, then have them try to blow hard through the other end. (Caution: This could be messy)
   - Have the students repeat their experiment again or try it with the other pieces of wood.

7. Ask the students if the vessels were open or closed in their piece of wood. How did they know? Were their predictions right or wrong?

8. Explain to the students that the uses of wood often depend on the properties of the wood, such as the vessels being opened or closed. (See background information for applications of this.)

Assessment

1. Why do trees have vessels in the wood of their trunks? (The vessels act like tiny straws to carry water and nutrients up the tree from the roots.)

2. Do you think you could blow bubbles through any piece of wood ? (No, only certain species of wood have vessels that remain open.)

3. What are the three major parts of a tree and their functions? (Roots, trunk, leaves – see description listed in lesson)

4. If you were building a boat, which wood would you use – red oak or white oak? Why? (White oak. Red oak has vessels that are open and water would leak into the boat.)

5. If you were building a fine piece of outdoor sculpture, which wood would you use – red oak or white oak ? (Red oak. Red oak would soak up the stain and preservative needed to keep it from decaying in the out doors.)

Extension

1. Use a tree cookie (cut cross section of a tree trunk or limb) or a digital image to explain the parts of a tree. You may also rewatch the "Tree Biology" Forest Fast Break at https://www.scfc.gov/education/other-programs/. Discuss the following parts:
   - Heartwood – the dark center of the tree, often filled with resins
   - Sapwood – the lighter parts of the tree closer to the bark. The sapwood contains the vessels that conduct water from the roots to the leaves. (Xylem)
   - Xylem – the vessels that conduct water and nutrients from the roots to the leaves
   - Cambium – then only living part of the trunk. The tiny layer of green-living cells between the sapwood and bark that divide to produce new sapwood (xylem) and phloem.
   - Phloem – the vessels on the outside of the cambium below the bark. Phloem carries food from the leaves down the trunk to the roots.
   - Bark – layer of dead cells on the outside of the trunk. Bark protects the tree.
   - Annual growth rings – bands of light and dark colored growth within the trunk. The lighter colored rings are called "spring wood" and grow rapidly from spring to mid-summer. The darker colored rings are called "summer wood" and occur from mid-summer to fall as growth of the tree slows. By counting the annual rings one can infer the age of a tree.

2. Examine a tree stump or the cross section of a tree. Have the students identify the parts and count the rings to determine its age at harvest. The associated Project Learning Tree activity, "Tree Cookies," can be downloaded for free at: https://www.plt.org/learn-forests/tree-cookies/

3. Have your students write a narrative answering these questions: "What is something new or surprising you learned at Wood Magic Forest Fair? Why is it interesting and how may it affect your life or choices you make?"

4. Do the Project Learning Tree activity, "Living with Fire," to dive deeper into concepts and lessons learned at the Good Fire/Bad Fire station. This activity can also be found on the Project Learning Tree website at: https://www.plt.org/activities-for-families/learn-about-forests/. (Science Standard ESS3-2)

LEARN ABOUT FORESTS

We all depend on trees and forests! Use this fun, hands-on activity to engage youth in learning about sustainable forest management. It's perfect for educational events, career days, or field visits.

LIVING WITH FIRE

PLAN

KEY CONCEPT: Fire is a disturbance that can be either natural or human-caused, including some fires that are introduced by humans as a management tool. [PLT Forest Literacy Framework, Concept 1.C.6]

OBJECTIVES: Provide opportunities and materials for learners to

- Explain how different fuels affect the potential for wildfire within a particular forest.
- Describe ways to reduce the fire risk to homes in the wildland–urban interface.

SESSION TIME: 50 minutes

SETTING: Outdoors

BACKGROUND

From an ecological standpoint, fire is neither "good" nor "bad." Fire is a natural event in many forest ecosystems and can help to recycle nutrients back into the soil or help some plants regenerate. It is also important in the life cycle of several tree species that need intense heat to open their cones.

Fires must have heat, fuel, and oxygen to burn; these three elements are known as the "fire triangle." Initially, the heat is provided by an ignition source such as lightning, matches, or sparks. Fuels include dry trees, dead trees and limbs, leaf litter, and dry grass. Oxygen is available in the air. Without enough of one or more elements of the fire triangle, fire will not burn.

As more homes and other buildings are constructed near forests and wildland areas, people and property are increasingly threatened by wildfire. Preventing, controlling, and suppressing fires in this wildland–urban interface is a challenge. A prescribed burn (one that is lighted and managed by trained fire personnel) can reduce burnable fuels and reduce future fire hazard, while also enhancing natural habitats. By promoting healthy forests, forest managers help to reduce the risk of wildland fire and prevent the unwanted effects of fire.

BENEFITS OF FORESTS

did you know

For millennia, Indigenous peoples in fire-prone ecosystems used small intentional fires to renew food and resources, create animal habitat, and reduce the risk of larger, more dangerous, wildfires. Foresters are building on that knowledge to employ prescribed burns in a variety of forests where fire is a natural element.

PREPARE

MATERIALS: Five metal containers or pans, different-sized fuels, fire extinguisher, buckets or other containers filled with water, safety goggles, paper, and drawing materials.

GET READY: Set up five metal containers and fill each one halfway with the following fuels:

1. Different-sized live branches, leaves, and needles (all green).
2. Different-sized dead and dry branches, leaves, and needles.
3. Different-sized dead and damp branches, leaves, and needles (or a dry assortment that has been sprayed lightly with water).
4. Large-diameter fuels, such as branches or whole pieces of wood (not kindling).
5. Partially burned pieces of wood, such as from a fireplace or campfire (used but not completely consumed).

Identify a site for learners to assess using the Worksheet.

LEAD

INTRODUCE:

Point out that as city populations expand, the urban boundary expands into wildland areas. This means that more and more people are building homes in woodland and grassland areas. Ask:

- What might be the risks in living next to or within wildland areas?
- How might people reduce the risk of fire in these wildland–urban interfaces?
- How might the type of fuel around the homes affect the fire risk?

EXPERIENCE:

1. Show students the five different containers you have prepared, describing the contents of each. Tell them that you will try to start a fire in each container. Have students predict which fire will be easiest to start, and which will be most difficult.
2. Use matches to try to light a fire in each container, one at a time. Safety Check! Place metal containers outside on a fire-resistant surface (concrete, asphalt, or bare earth) away from cars, buildings, and dry vegetation. Be sure to have water and a fire extinguisher readily available. Ask another adult to assist with the demonstration, and wear safety goggles.
3. Lead a discussion about the results and the implication for wildland fires:
   - Which fuel burned the most readily? Which was most difficult to burn?
   - What types of plant materials would be best to have around residences in wildland–urban interfaces?
   - How do prescribed burns help to reduce the risk of wildfires?
4. Provide students with copies of the Wildfire Safety Checklist Worksheet and have them use it to assess the site.

CONNECT:

Introduce the concept of wildfire behavior, discussing how an area's slope, fuel density, and weather can affect fire conditions. Take students on a walk through your site or nearby area to identify elements of the fire triangle that could affect wildfire behavior or intensity.

CLOSE

How do healthy forests depend on wildland fires? How do they help to prevent high-intensity wildland fires that are particularly damaging in wildland–urban interfaces?

TAKE ACTION

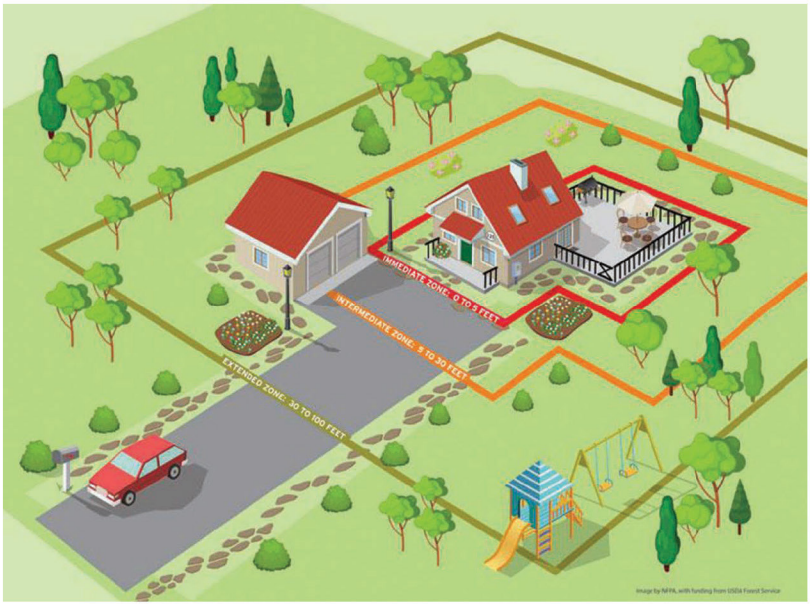
Invite students to design a home that is safer from wildfire, using art materials to draw a picture or make a model. Remind them to include conditions around the home that could affect wildfire safety. Encourage them to share their designs at a later time, pointing out the safety features.

WORKSHEET
WILDFIRE SAFETY CHECKLIST

NAME _____ DATE_____

Wildland fire is an element of nature, just like weather, soils, minerals, plants, animals, and water. In fact, some landscapes depend on periodic fire to maintain a healthy ecosystem. As with other natural elements, fire is unpredictable and cannot always be controlled. Community members in fire-prone areas must make their homes, schools, and workplaces "defensible" against wildfire.

Use this checklist to assess wildfire safety around the visiting site, school, or home. (Note: Check with your local fire safety agency for requirements in your area, which may be different from the ones described here.)



Very Near a Building (within 5 feet)

- ❑ Nothing flammable within 5 feet of any structure
- ❑ No plants, mulch, woodpiles, furniture, or stored or decorative items within 5 feet of structure

Zone 1 (5–30 feet from home)

- ❑ Area is "lean, clean, and green"
- ❑ All dead plants, grass, and weeds are removed
- ❑ Tree branches are trimmed so that they are a minimum of 10 feet from other trees
- ❑ Plants are watered regularly
- ❑ No woodpiles (move them to Zone 2)
- ❑ Trees and shrubs are separated from items that could catch fire, such as patio furniture or swing sets

Zone 2 (31–100 feet from structure)

- ❑ Annual grass is cut or mowed to a maximum height of 4 inches
- ❑ Trees branches are removed if less than 6 feet from the ground
- ❑ Shrubs and trees are planted in "islands" with space around them
- ❑ Shrubs and trees are pruned to eliminate fire ladders (places where fire could climb from the ground to the plant's crown)
- ❑ Fallen leaves, needles, twigs, bark, cones, and small branches are removed (but may be permitted to accumulate on the ground to a depth of 3 inches)

WHEN I GROW UP, I WANT TO BE A LOGGER!

A logger is someone who harvests trees and transports them to the mill to be turned into products we use. Loggers have to know how to cut trees safely and how to operate large machines like bulldozers and trucks.

How tall is this tree? Use the height of the logger to estimate how tall the tree is.

_____ ☐

The logger needs to cut this tree and divide it into smaller pieces so it can fit on the logging truck. If each log needs to be 8 feet long, how many pieces can the logger cut from this tree?

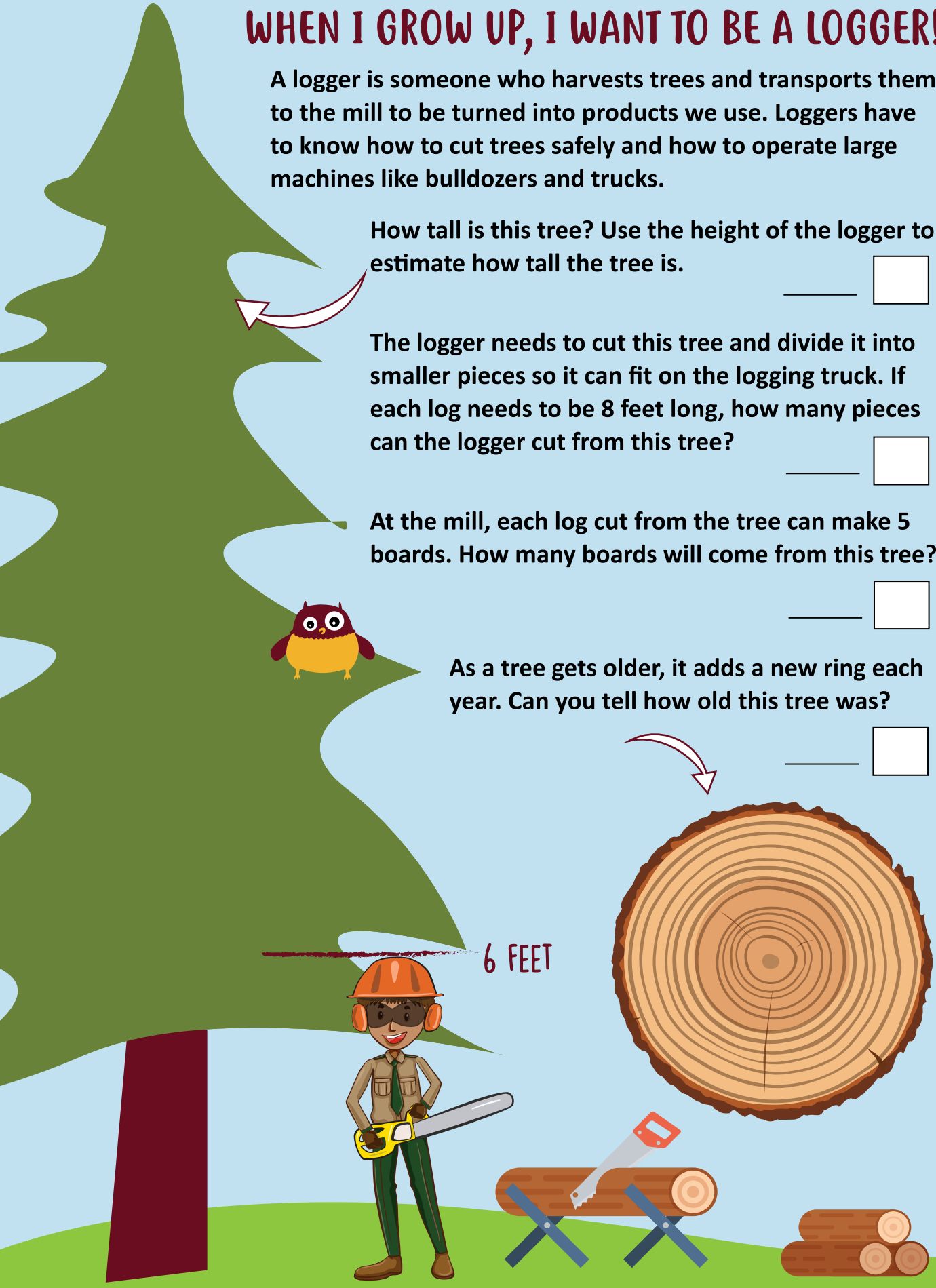
_____ ☐

At the mill, each log cut from the tree can make 5 boards. How many boards will come from this tree?

_____ ☐

As a tree gets older, it adds a new ring each year. Can you tell how old this tree was?

_____ ☐



A farmer hired a logging company to harvest a pine plantation. To conserve the forest, the farmer will plant new trees. If the farmer plants 12 rows with 9 trees in each row, how many total trees will they plant?

_____ ☐

When those new trees grow big enough for their first harvest, the logger only needs to cut down 1/3 of the trees. How many trees will be harvested?

_____ ☐

CRYPTOGRAM

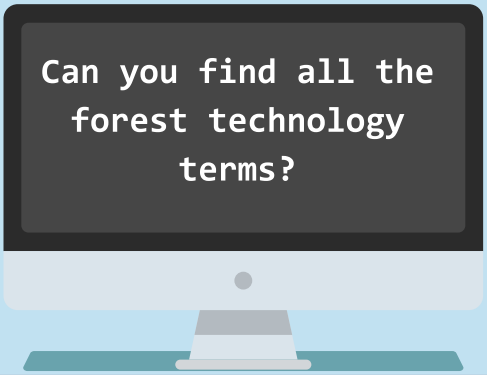
For example, if an answer is 8 then a letter in the riddle answer is K.

Trees that are grown and harvested for their wood are called

☐ ☐ ☐ ☐ ☐ ☐

WHEN I GROW UP, I WANT TO WORK WITH TECHNOLOGY!

Did you know there are ways you can help manage the forest without ever going outside? Using technology like drones, satellites, and computers, you can track the growth and health of the forest. As a technician, you can also plot the location of wildfires on a map and help firefighters protect lives, land, cities, and towns.



WORD BANK:

COMPASS
CODING
LONGITUDE
LATITUDE
SATELLITE
COMPUTER
DATA
DRONE
TABLET
APPS
NAVIGATE
MAP

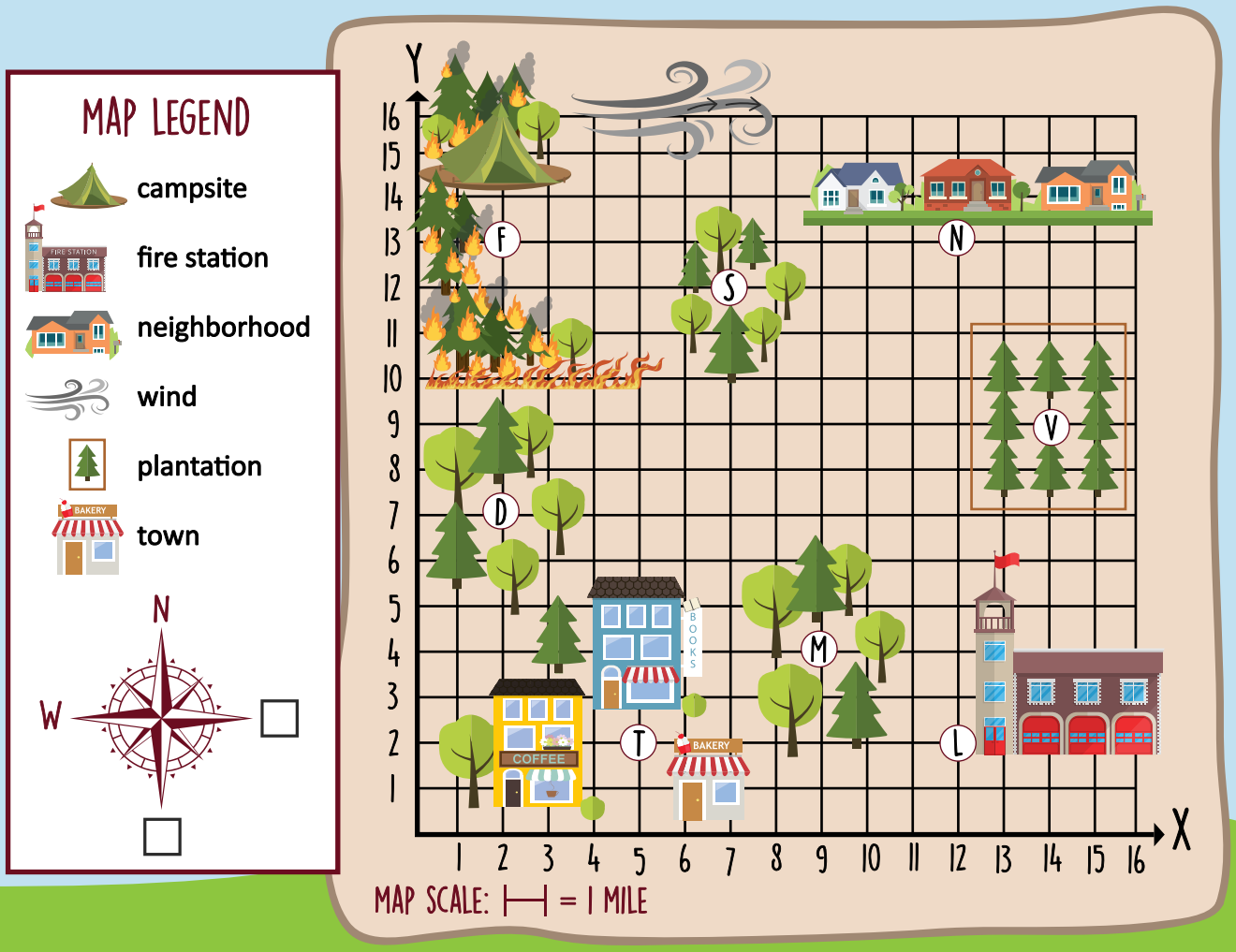
Q	I	L	X	V	E	P	T	R	W	C	Z	N	K	U
E	D	U	T	I	G	N	O	L	V	T	Y	H	Y	J
I	P	O	Q	W	L	A	T	I	T	U	D	E	U	S
S	O	S	F	S	C	H	T	E	L	B	A	T	R	J
O	P	S	S	Z	A	K	Q	W	F	A	V	D	E	M
G	G	P	Z	A	E	T	H	W	M	G	N	R	T	C
H	N	W	A	M	P	V	E	R	K	X	E	O	U	J
V	I	A	S	B	E	M	J	L	K	P	D	N	P	F
K	D	N	U	D	X	M	O	F	L	B	A	E	M	V
R	O	H	K	H	X	A	D	C	W	I	E	E	O	N
Z	C	S	V	T	K	P	U	O	R	D	T	R	C	Z
Z	F	U	N	I	J	J	J	R	A	X	X	E	O	E
Q	T	S	S	W	B	L	E	T	X	T	T	W	X	U
J	R	Y	X	P	L	B	A	M	J	W	W	U	L	T
W	T	Z	S	N	A	V	I	G	A	T	E	R	A	H

A wildfire has broken out at the local campground. Use the map to help the town locate the fire, protect their property, and predict where the fire will spread next. Answer the questions below, then write the letter in the space provided.

1. **At which point is the fire station located? Coordinate (___,___)**
   Letter ☐
2. **Firefighters need to be prepared in case the fire spreads. Using the map scale, find the distance between the fire station and neighborhood. _____**
3. **Fill in the missing directions on the compass rose. Which direction is the wind blowing? _____**
4. **Wind can cause a fire to spread in the direction it blows. Which group of trees might catch fire next? Coordinate (___,___) Letter** ☐

BRAIN TEASER

5. **The firefighters will call for more help when a wildfire is larger than 30 square miles. Is this fire large enough to call for assistance?**
   (Hint: Draw a rectangle around the fire and find the area.) _____



ANSWERS

Answers for "WHEN I GROW UP, I WANT TO BE A LOGGER."
Page 16
24 feet tall
3 pieces
15 boards
Approximately 13 years old

Page 17
108 trees will be planted
36 trees will be harvested

Answers for "WHEN I GROW UP, I WANT TO WORK WITH TECHNOLOGY."
Page 19
Coordinate (2,13)
11 miles
EAST
Coordinate (7,12) Letter (S)
To find the area of the fire, draw a rectangle with a length of 5 miles and a width of 6 miles. 5 miles X 6 miles = 30 square miles. The firefighters do NOT need to call for help yet.

A Tree's Dream

Forestry and education partners from across the Southeast collaborated to create the new environmental education program, "A Tree's Dream." These free materials teach youth about ways we are conserving Earth's natural resources and protecting the environment through the "A Tree's Dream" video and accompanying lessons. Lessons are correlated to the Next Generation Science Standards for grades 3-5 and 6-8. Follow the dream of Tim the tree as he fulfills his dream of becoming part of a family's home at: http://www.langdale-company.com/a-trees-dream

GRADES 3-5 LESSON PLANS

Engineering Design Using Wood Products
Environmental Services
Tree Growth and Products
Stewardship and Sustainability

GRADE 6-8 LESSON PLANS

Engineering Design Using Wood Products
Environmental Services
Tree Growth and Products
Stewardship and Sustainability

PROJECT LEARNING TREE

Project Learning Tree (PLT) is an award-winning environmental education program designed for teachers and other educators, parents, and community leaders working with youth from preschool through grade 12. The South Carolina PLT program provides educational resources for youth and professional development opportunities for educators (SCDE renewal credits & free of charge for school districts and schools). More information can be found at: https://www.scfc.gov/education/project-learning-tree/.

PLT has 12 free activities that are each 50-minutes and offer simple suggestions for leading learners ages 10–16 in themes related to sustainable forest management, stewardship, and green careers. These activities can be found at: https://www.plt.org/activities-for-families/learn-about-forests/

TEACHING STUDENTS

HOW TO THINK

NOT

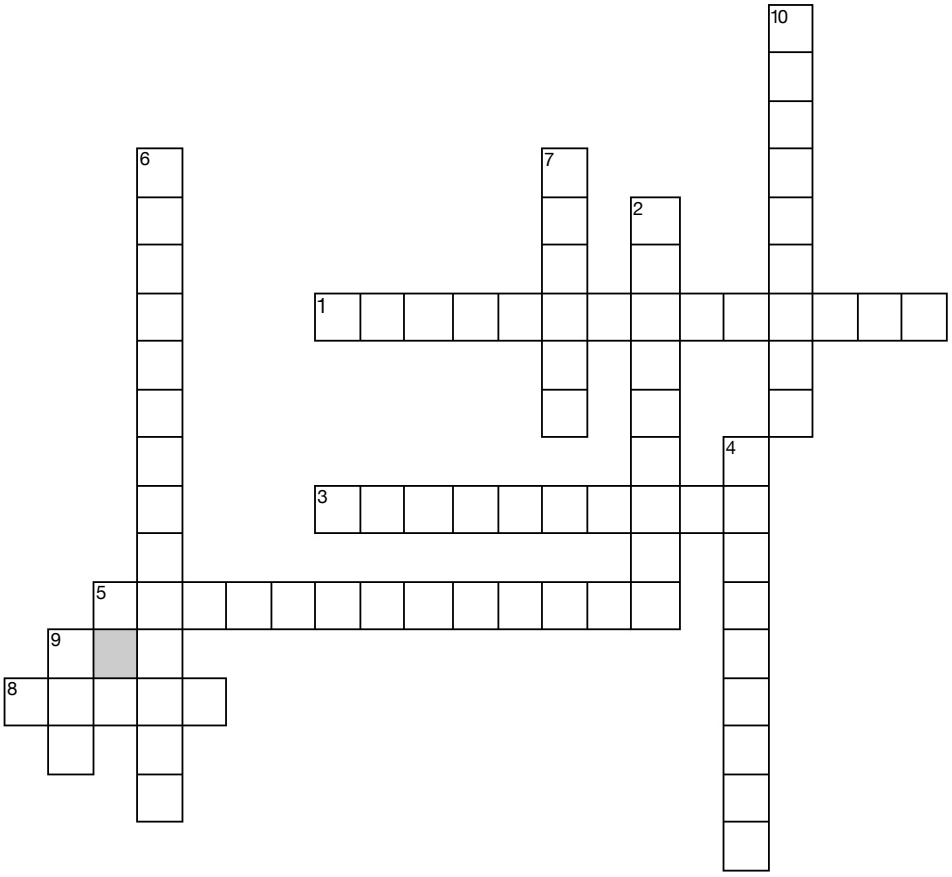
WHAT TO THINK

ABOUT ENVIRONMENTAL ISSUES

PLT is an initiative of SFI Inc.

WOOD IS MAGIC!

Name:_____



Sustainability
Non
Biodegradable
Toxic
Efficient

Fossil
Photosynthesis
Recyclable
Renewable
Resources

Across

1. The process by which trees make food from sunlight.

3. A ____ product can be reprocessed and turned into a new product.

5. If something is ____, it can be broken down by microorganisms.

8. Non-_____ means not poisonous or dangerous to the environment or humans

Down

2. A _____resource is a natural resource that can be grown again and again.

4. Raw materials from earth that we use are called natural _____.

6. _____is the wise use of a resource in a manner that insures a continuing supply.

7. _____ fuels are non-renewable fuels made from the remains of plants.

9. A resource that once used can not be replaced is called ____ -renewable resources.

10. If something does not waste energy, then it is energy _____.