

4TH GRADE LESSON

The Peshtigo Theater Company Presents: The Life of Fire

NUTSHELL

In this lesson, students work together and act out scenes in a play about fire. Students collaborate in small groups to enhance the script by adding actor emotions, onstage activities, costumes, and scenery. Throughout the play, students learn about and discuss fire's relationship to people and the environment, the history of fire in Wisconsin, and issues related to development in fire prone areas.

BIG IDEAS

- In Wisconsin, there are two main types of wildland fire – wildfire and prescribed fire. Wildfires start without the intent of the landowner or land manager and are uncontrolled and unwanted. Prescribed fires are contained and are planned to meet the goals of a landowner or land manager. (Subconcept 1)
- The ignition of wildland fire can be caused by human activity (e.g., debris burning and other outdoor burning, machine sparks, children playing with matches, power lines, fireworks) or natural sources (e.g., lightning, spontaneous combustion). Human activity is responsible for most wildland fires in Wisconsin. (Subconcept 2)
- Fire requires oxygen, heat, and fuel to exist. Collectively these elements are known as the fire triangle. Under most conditions, the three elements can be manipulated to slow or stop the spread of fire. (Subconcept 3)
- Humans are a fundamental component of ecosystems. Earth's fire regimes have been shaped by human influences. (Subconcept 7)
- Throughout Wisconsin's history, fire has been understood and used in different ways. Human use of fire is influenced by the knowledge, needs, and goals of individuals and society. (Subconcept 14)
- Wildland fires have led to loss of human life, property, and natural resources throughout Wisconsin's history. Destructive fires can cause changes in land use practices, community development trends, and local, state, and federal governance. (Subconcept 15)

- Individuals have the responsibility to start and stop fires in safe and effective ways. Citizens who illegally start a fire or carelessly allow a fire to escape may be penalized with fines and even imprisonment. (Subconcept 26)

OBJECTIVES

Upon completion of this lesson, students will be able to:

- Draw the fire triangle and label the three elements fire needs to exist.
- Explain how human activities cause wildland fire.
- Identify a major fire event in Wisconsin's history and explain how the fire affected local communities.
- List the major causes of wildland fire in Wisconsin.
- Describe the different ways that people perceived and used fire at different periods in Wisconsin history.
- Identify ways that human fire practices have changed the Wisconsin landscape.

SUBJECT AREAS

English Language Arts, Science, Social Studies

LESSON/ACTIVITY TIME

- Total Lesson Time: 240 minutes
- Time Breakdown:
 - Introduction..... 15 minutes
 - Activity 160 minutes
 - Activity 275 minutes
 - Conclusion.....90 minutes

TEACHING SITE

Classroom

MATERIALS LIST

FOR EACH STUDENT (ACCORDING TO SCENE ASSIGNMENT)

- Copy of Student Pages  **2A-C**, Scene 2
- Copy of Student Pages  **3A-C**, Scene 3
- Copy of Student Pages  **4A-D**, Scene 4
- Copy of Student Pages  **5A-C**, Scene 5
- Copy of Student Pages  **6A-C**, Scene 6

FOR EVERY 2 STUDENTS

- Copy of Student Pages  **1A-D**, Scene 1

FOR THE TEACHER

- Copy of Student Pages  **1A-D**, Scene 1
- Copy of Teacher Pages  **1A-C**, *Discussion Questions Answer Key*
- Chalk/marker board

TEACHER PREPARATION

- Pick two students who read well to act out *Scene 1: The Laws of Fire*. Have them prepare to act out the scene by practicing the lines, locating costumes, and finding any props that they may need. Prometheus is a Greek god, so a toga, a crown of fire, and a scepter would be appropriate. You will also need to make a copy of Student Pages  **1A-D**, Scene 1 for each student pair.
- Read *Scenes 2-6*, make the necessary student copies, and make a note of props that might be useful for each. Some scenes are more difficult to prepare and act out than others. The easiest scenes are *Scene 2: Fire and the First People* and *Scene 5: No More Wildfires*. The most difficult scene is *Scene 3: The Cutover and Deadly Fires*.

BACKGROUND INFORMATION

Fire has always been a part of Wisconsin's history. Although fires of natural origin such as lightning were common, humans were and continue to be responsible for many of the wildland fires that occur. Early inhabitants learned to use fire to manage the land. They burned areas to increase habitat for wild game. Many of these fires escaped control and burned large areas.

The lumbering era that followed European settlement left the woods with large quantities of slash (tops of trees left in the woods after harvesting a tree). Dry slash acted as kindling that led to many large-scale fires. Some historians believe that as much of Wisconsin's forests burned during the late 1800s and early 1900s as were harvested for lumber.

For a fire to start and continue to burn, three elements must be present – heat, fuel, and oxygen. There must be heat to start and continue a fire, fuel to burn, and oxygen to facilitate combustion. These three elements are referred to as the fire triangle. The removal of any one of these three elements will extinguish the fire. Controlling a large wildland fire wasn't possible in the late 1800s and early 1900s. There were no firefighting personnel, nor methods to control large fires. As a result, a number of catastrophic wildfires occurred in Wisconsin during this period, destroying human life, property, and natural resources. Many farmers during this period lost crops, homes, and their lives to wildfire. At times, whole towns and businesses became engulfed in flames.

The Peshtigo Fire of 1871 was the deadliest fire in Wisconsin's history. As many as 1,500 human lives were lost. Many communities within the 1.5 million acres that burned in the fire were destroyed. Some communities, such as Peshtigo, rebuilt. Others, such as Peshtigo Harbor, never did. Ironically, the Chicago Fire burned the same day as the Peshtigo Fire and received far more media attention. Even Wisconsin's own governor responded by taking aid to Chicago. The telegraph lines had been destroyed in the Peshtigo region, and he was unaware of the situation in his own state. In 1887, Marshfield burnt to the ground. In 1894, the Phillips fire burned 400 homes and 100,000 acres. Catastrophic wildfires continued into the early 20th century. During the Dust Bowl era of the early 1930s, 336,000 acres burned annually in Wisconsin.

During the early 1900s, fire control efforts were started in Wisconsin. Manpower to fight these fires, however, was lacking until the Civilian Conservation Corps was started by President Roosevelt during the Depression. Since then, advances in suppression technology, detection, and response strategies have improved dramatically. Today, response time is within minutes of the detection of fires. Although this is comforting to know, the risk for catastrophic wildfires is still present.

Humans remain the number one cause of wildland fires in Wisconsin. In 2005, more than 1,500 human-caused wildland fires were reported and suppressed in Wisconsin. More than 1,000 of these fires were caused by humans burning trash or debris. As more people build houses and cabins in fire prone areas, the risk of wildland fire grows. As a result, humans need to understand the risks and how to properly control fire. In 2005, the largest wildland fire in Wisconsin in 25 years burned more than 3,400 acres and 100 structures in a mere four hours. This wildfire occurred because a small fire escaped human control.

VOCABULARY

Cutover: Land that has been logged. This term is often used as "the Cutover," which refers to northern Wisconsin after it was heavily logged during the period from the 1850s to the 1920s.

Informed Decision: Deciding how to act on something after learning more about it.

News Anchor: A person at a television station who reads the news and connects stories to reporters on the scene.

Prop: An object used by an actor or actress in a play.

Script: The words that actors read during a play.

Fire has always been a natural part of our environment. Our forests and prairies were burning long before cities and towns existed. The long-term suppression of fire has altered the extent and range of fire dependent ecosystems. Prairies and oak savannas were maintained by fire. Fire killed shrubs and young trees, keeping the forest out of the prairie. As settlers began to farm the prairies of southern Wisconsin, they eliminated fire. Brush grew on land that was too rough to farm and the prairies changed to forests. This nearly eliminated the prairie ecosystem that had historically covered the land. In the forested regions of the state, the elimination of fire has altered the composition of forest species. Sun-loving species that need a fire disturbance to open up areas for them to grow have decreased. So, fire's presence or absence plays a large role in changing the landscape of Wisconsin.

For more information on wildland fire, see the Wildland Fire Background starting on page 152.

PROCEDURE

INTRODUCTION – ENHANCING THE SCRIPT

1. Tell students that over the next few days they are going to put on a play. The play is about the history of fire in the place we now call Wisconsin.

Tell the class that you have the script for the play, but it is incomplete. All the words are there, but there is no information on how the actors should dress and act, or how the stage should be designed.

Explain to the class that the script was rescued from the Peshtigo Theater Company after a fire destroyed the building. The playwright finished the script, but never added the details to make the play come alive.

2. Tell students that it is their job to make the play come alive. To do this, they will need to add the following four things to the script – emotions, onstage activity, costumes, and setting. Write the terms on the board and ask the students to describe what is meant by each. Allow students to discuss the terms and write their ideas on the board. The final definitions should be similar to the following:

- **Emotions:** The feelings that the actors express during the play. Emotions are put in the script to indicate how the character is supposed to feel. Emotions can include sad, frustrated, happy, excited, angry, etc.
- **Onstage Activity:** The actions that are taking place onstage while the actors are talking. Actions can include things such as waving to someone, pretending to drive, walking around the room, etc.

- **Costumes:** The clothes and makeup that the actors wear.
- **Setting:** The setting and scenery in which the play takes place. The setting includes things such as seating arrangement, props (e.g., tools, musical instruments, books), and the backdrop (i.e., the area visible behind the actors).

ACTIVITY 1 – SCENE 1: THE LAWS OF FIRE

1. Divide the class into pairs. Hand each student pair a copy of Student Pages **1A-D, Scene 1**. Explain to students that the play is entitled *The Life of Fire* and that it has six scenes. The first scene is entitled *The Laws of Fire*. It is the only scene that has the actor emotions and onstage activities included in the script.
2. Give students approximately 10 minutes to read the script and find and discuss the emotions and activities in parentheses. Have them read the discussion questions found at the end of the scene. Explain to students that each scene has discussion questions at the end and they need to pay close attention to what the actors in each scene say so they know the answers to the questions. As the teacher, you will serve as the Master of Ceremonies (MC) and will lead a class discussion using those questions after the scene has been acted out.

3. Discuss the script using the following questions:
- What is the scene about?
 - Is there anything that they don't understand?
 - Did they understand how the emotions and actions are used to help actors make the scene come alive?
 - Would they change anything about the script?
 - Do they think that they could act out the parts in the script?

4. Tell the students that several actors have already prepared to be the main actors! They have practiced the script, designed their costumes, but have not yet set up the stage. Have the class help you decide how the stage should be arranged.

Ask for two volunteers, one to escort Prometheus off the stage, and one to be the sponsor who ends the scene.

Use the script to decide how the actors should be seated, how the actors should enter, and how the audience should be seated. You should also discuss whether the actors need any props and be sure they are available.

5. Finally, tell students that you will play the role of the MC, whose job is to create the play program, introduce each scene, and guide the discussion at the end of each scene.
6. Tell the class that you are about to put on a full dress rehearsal of *Scene 1: The Laws of Fire*. Ask the students to pay attention to how closely the actors follow the script and to take notes about the information they are presenting about fire.

Be sure students understand that the scene and the play are about the relationship between people and fire. To be a good actor, they will need to understand this relationship and know all the information in the script.

When you are ready, prepare the stage and begin *Scene 1*.

7. After *Scene 1* is complete, use the discussion questions to lead a discussion about how the scene went and what the students learned about fire. See Teacher Pages 🍷🔪 **1A-C**, *Discussion Questions Answer Key* for the questions and answers. There is more information provided for each question than students can gather from the scripts. Use the information to enhance students' understanding of the questions.

ACTIVITY 2 – REHEARSAL

1. Divide the class into five groups (see Teacher Preparation for suggestion on group divisions). Each group will develop and act out a different scene. The number of speaking roles for each scene is listed below:
- *Scene 2: Fire and the First People*
2 speaking roles
 - *Scene 3: The Cutover and Deadly Fires*
2 speaking roles
 - *Scene 4: After the Cutover*
5 speaking roles
 - *Scene 5: No More Wildfires*
5 speaking roles
 - *Scene 6: A Changing Landscape*
5 speaking roles

NOTE: If you have a larger class, more students can be added to a scene as discussion leaders, in nonspeaking roles, or groups can add speaking characters. You may also add parts such as stagehands, play reviewers, and musicians. If you have a smaller class, students can play multiple roles (in different scenes).

2. Once the groups are formed, hand each student the student pages that correspond to their group's scene (Student Pages  **2A-C**,  **3A-C**,  **4A-D**,  **5A-C**, or  **6A-C**). The student pages consist of the playbill and the script.

Have students work together to decide the roles that they will play. Once the students have decided, they should fill out the playbill and give it to you, the MC.

3. Have students highlight the parts of the scene where their character speaks. They will then need to decide the emotions that the actors should express, the activities that should occur onstage, the costumes they should wear, and the arrangement of the stage. All of this should be done by achieving consensus within each group. Students should write all the activities and emotions directly on the script.
4. During the group discussions, move from group to group and collect the playbill for each scene. As MC, you will put all of the playbills in order and make a play program. The play program does not need to be more than the complete set of playbills, but can include original artwork, more background information, and recognition of guests or students who played nonacting roles.

Make six copies of the program, one for each group of students. As the MC, you will use the master copy to introduce each scene. The MC will read the title of the scene, the names of the students, their character, and the introduction.

5. As the groups finish their preparations, have them practice reading their parts of the script in order. Be sure to go over their plans for the stage and costumes and make sure that they are feasible. If possible, view parts of each group practicing their roles.
6. Once the groups are prepared, set a date for the performance. All the groups should present on the same day. Be sure to remind students to bring props and costumes.

CONCLUSION – THE FINAL PERFORMANCE

1. Explain to the class that, as the MC, you will direct the activity of the play. The play should last only one-and-one-half hours, so the transitions between scenes must be smooth.
2. Remind students that when they are not acting, they are members of the audience. Ask them to be quiet and respectful, as if they were at a real play. Just like a real audience, they should also applaud when the scenes are finished.
3. Begin the day with *Scene 2: Fire and the First People*. Help groups arrange the room before the scene. As MC, read the scene title, identify characters, and read the scene introduction.
4. Once the play is finished, discuss the questions that follow each scene. Use Teacher Pages  **1A-C**, *Discussion Questions Answer Key* to make sure the answers are accurate. There is more information provided for each question than students can gather from the scripts. Use the information to enhance students' understanding of the questions.

SUMMATIVE ASSESSMENT

Have students write a review of the play. Bring in some play and movie reviews from a newspaper and pass them out to students. Have students take a critical view of the play. They should include:

- A discussion on how the information in the play was presented
- Comments on how well the actors performed
- A brief summary of each scene of the play including the key information presented
- Their opinion of how people in Wisconsin have changed their views of wildland fire through history

EXTENSION

Treat the in-class play as a practice session and put the play on for the whole school. Create costumes, scenery, and music and make a show of it!

FORESTERS IN THE CLASSROOM

Wisconsin Department of Natural Resources fire personnel make classroom visits. To find a staff member in your county, go on-line to www.dnr.state.wi.us/staffdir/SearchCounty.asp, click on your county, and type "fire" into the subject box.

REFERENCES

Gough, R. (1997). Farming the Cutover: A Social History of Northern Wisconsin, 1900-1940. Lawrence, KS: University Press of Kansas.

Lessons From the Forest: Teaching About Fire. (2002). Clearing: Environmental Education Resources for Teachers. Issue No. 112, Fall 2002.

Pernin, P. (1999). The Great Peshtigo Fire: An Eyewitness Account. 2nd Edition. Madison, WI: State Historical Society of Wisconsin.

RECOMMENDED RESOURCES

BOOKS

Farming the Cutover: A Social History of Northern Wisconsin, 1900-1940 by Robert J. Gough. (Lawrence, KS: University Press of Kansas, 1997.) This book describes the visions and accomplishments of the Cutover settlers from their own perspective.

The Great Peshtigo Fire: An Eyewitness Account, 2nd Edition by Peter Pernin. (Madison, WI: Wisconsin Historical Society Press, 1999.) This book is an account from a survivor of the Peshtigo Fire of 1871. The revised edition includes photographs of Peshtigo before and after the fire.

Wisconsin Forest Tales by Julia Pferdehirt. (Black Earth, WI: Trails Custom Publishing, 2004.) Each chapter of this Wisconsin-based

fourth-grade reader takes place during a different era in Wisconsin's forest history. Students easily relate to the young characters and active writing style. Images and facts in each chapter help tie the information to forestry in Wisconsin today.

WEBSITE

Smokey Bear

www.smokeybear.com

The Smokey Kids section includes games, stories, and fun activities. Smokey's Vault contains Smokey's story and imagery from the past 60 years. The Only You section contains information about wildfires, the people who fight them, and how they can be prevented.

DISCUSSION QUESTIONS ANSWER KEY

SCENE 1 – THE LAWS OF FIRE

1. What is the “Law of Fire Behavior?”

It is the fire triangle. The fire triangle describes the three elements that fire needs to exist – fuel, oxygen, and heat.

2. Explain the fire triangle using the example of a campfire.

A campfire gets its oxygen from the air, its fuel from firewood, and its heat from the kindling and matches/lighter that are used to light it. If you want to put a campfire out, you just remove one of the elements. You can take away the fuel (stop adding and spread out the wood in the fire pit). You can pour water on the fire (remove the heat). You can smother a fire with dirt (removing the oxygen). To best put out a campfire, you should do all three!

3. What was Prometheus trying to say before he was escorted off the stage?

He was trying to say that fire can be both dangerous and useful.

4. What do you think the “Law of Responsible Use” is?

It is the law that states that all people must use fire responsibly – using it carefully and only for useful purposes – not destructive ones.

SCENE 2 – FIRE AND THE FIRST PEOPLE

1. Why could one of the aspen trees remember what happened so long in the past?

Most aspen trees grow from a very large root system. The root system produces many different trees and can survive for very long periods of time. In the story, one of the aspen trees can remember very far in the past because it is growing from a root system that has been alive for that long.

2. Who were the “First People?”

The First People were the Native American tribes who lived in Wisconsin before the European settlers arrived.

3. How did the “First People” use fire?

They used it to clear fields for farming. They used it to help the growth of plants and shrubs that were good wild food and good for wildlife. They used fire to move and corral wildlife for hunting.

4. How did their use of fire change the landscape?

The fires set by Native Americans killed trees and plants that didn't like fire (such as maple and basswood trees) and helped trees that survive or reproduce after fire (such as oak and aspen trees). Fires also kept many grasslands and prairies from growing into forests. Most fires were small and created a patchwork landscape with different trees growing where fires burned than where they didn't burn.

5. How is the use of fire different now?

Fire is not used across the landscape because many different people own land. Mostly, fires are prevented and suppressed to protect property and human life.

DISCUSSION QUESTIONS ANSWER KEY

SCENE 3 – THE CUTOVER AND DEADLY FIRES

1. What happened in the city of Peshtigo in 1871?

A wildfire passed through the town. It destroyed buildings, forests, and farms. The fire killed nearly 1,500 people.

2. How did the destructive Peshtigo fire start?

It is unknown exactly how the fire started. Under such dry conditions, cooking fires, disposed ashes, and even machine sparks could have started the fire.

3. What human and natural events caused the fire to be so destructive?

Logging and construction activities around Peshtigo left piles of branches and leaves on the forest floor. In addition, a very dry year set the stage for the deadly fire. The forests and fields were so dry that wetlands dried up and were very flammable. Very dry leaves, needles, and branches covered the forest floor.

4. Was Peshtigo the only place where a big, destructive fire happened?

Fires similar to Peshtigo occurred in countries around the globe where settlements and logging were expanding into new areas. Fires occurred in Minnesota, Michigan, northern Europe, Russia, and southeast Asia.

SCENE 4 – AFTER THE CUTOVER

1. What happened to many trees in northern Wisconsin during the 1800s?

They were cut down. The wood was used to build many Midwestern cities.

2. What happened to the lumber mills in northern Wisconsin after all the trees were cut down?

The lumber mills closed. The towns that supported the mill workers also failed.

3. What happened to the landscape after all the trees were cut down?

Many of the lands were covered with stumps, tree limbs, and rocks. Some lands were farmed, some were left untouched, and some were burned by wildfires.

4. Why did people want to farm the land after the trees were gone?

After the lumber mills closed there were no jobs. Trees would take too long to grow back. Many immigrants who came to work in the lumber mills were farmers, and the land was already cleared of trees.

5. What do you think happened to many farms in northern Wisconsin?

The climate and soils of northern Wisconsin were more suited to trees than to crops. Much of the soil was full of boulders and tree stumps. Because of the hardships, many farms did not survive. Only one-quarter of the farms started after the Cutover still remain. The majority of the area that was once farmed is now forested.

DISCUSSION QUESTIONS ANSWER KEY

SCENE 5 – NO MORE WILDFIRES

1. What is Smokey Bear’s message?

“Only you can prevent wildfires.” His message is designed to make people aware that their actions can cause deadly fires.

2. Why did Smokey Bear want to tell people about this message?

Smokey’s story is that he was saved by forest rangers in a deadly wildfire that killed his parents. The character of Smokey was created by the U.S Forest Service to protect forests and property from accidental fires.

3. How do you think people reacted to this message? Do you think that the number of forest fires increased or decreased?

People took Smokey’s message to heart. Nearly everyone has heard of Smokey Bear. His message, as well as a nationwide policy to stop all wildfires, greatly decreased the area burned by wildfires in the U.S.

4. How do you think this affected the environment?

The environment changed because there were fewer and fewer fires. Trees and plants that could not survive fire or did not grow well after fire began to dominate the landscape. The plants and trees that took advantage of fire and depended on fire to survive began to diminish. The forests grew very thick because fire was not there to thin the stands of trees. The suppression of fires also allowed individuals and businesses to build in areas that were prone to fire.

SCENE 6 – A CHANGING LANDSCAPE

1. What is the issue that the news report is dealing with?

The issue is wildfire – more specifically wildfires that occur in the wildland/urban interface. The wildland/urban interface is any area where homes and/or businesses are being built in areas that are prone to wildfires. The areas are found in landscapes that have had wildfires throughout history. In many cases, fire suppression has just postponed the fires. The fires, when they come, will be more intense because there is much more to burn.

2. How do the different people in the program feel about fire?

The realtor is excited about how many houses are selling. The fire warden is very concerned and states that it is only a matter of time before a fire burns the area. The homeowners know about the risk, but are willing to take their chances.

3. What can people do to protect themselves from wildfires?

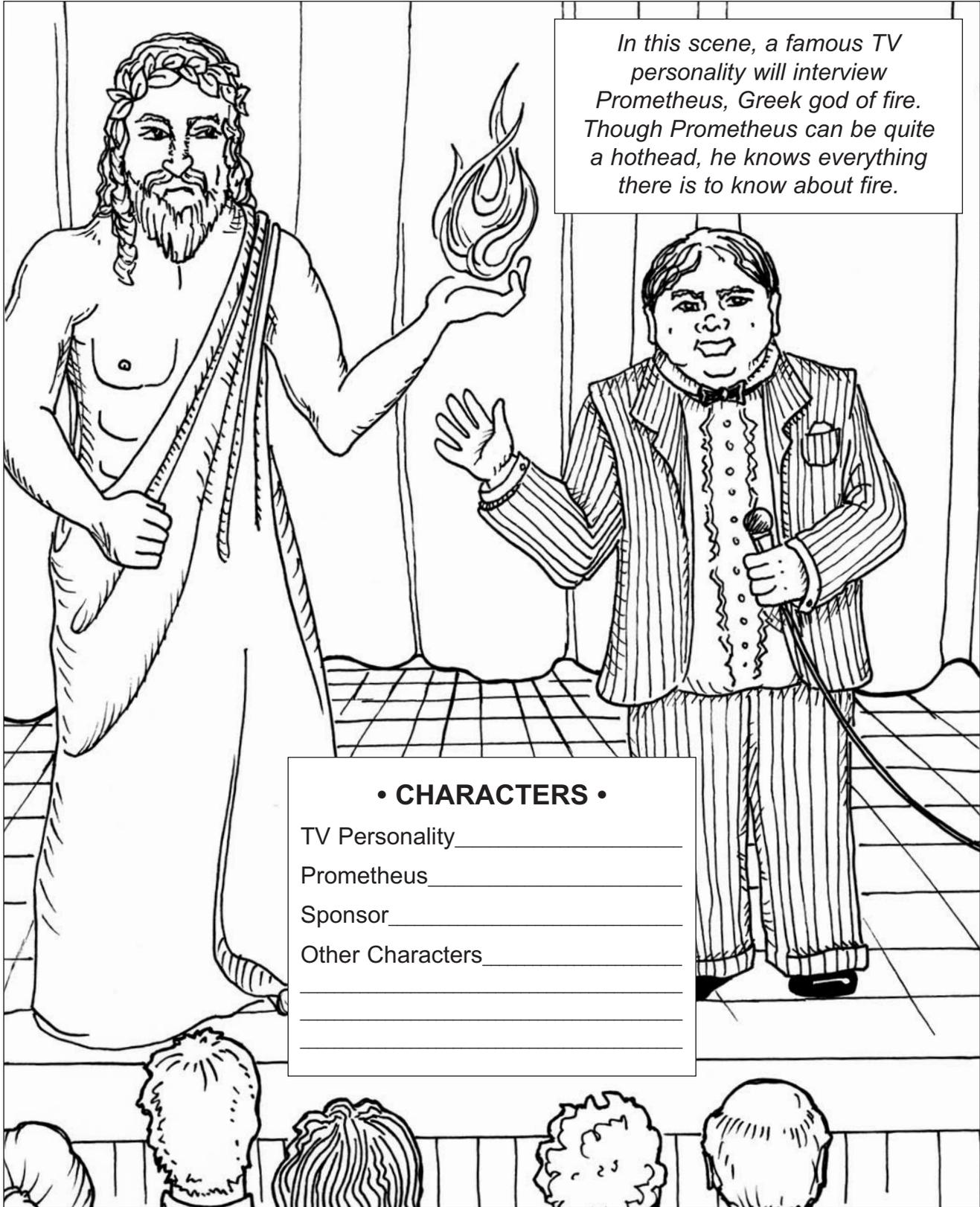
They can make the choice to not build a home in a fire prone area. If they do build, they can construct their house of fire resistant materials and be sure that flammable materials are away from the building at all times. They can follow the restriction on the use of fire and always be careful with potential sources of ignition.

4. Do you think the threat that wildfire poses to people and their homes is increasing or decreasing? Why?

Increasing. Many people are building new homes in rural areas. Cities and towns are growing and expanding into undeveloped areas. Nationally, wildfires that destroy homes are now commonplace in many areas and are often featured on news programs.

SCENE 1 PLAYBILL

THE LAWS OF FIRE *(Interview with Prometheus, Greek god of fire)*



In this scene, a famous TV personality will interview Prometheus, Greek god of fire. Though Prometheus can be quite a hothead, he knows everything there is to know about fire.

• CHARACTERS •
 TV Personality _____
 Prometheus _____
 Sponsor _____
 Other Characters _____

SCENE 1

SCRIPT

- TV Personality**.....Good morning to all of you. I'm sure that you will be excited to know that, because I am so famous, I have been promised a rare interview with a real Greek god. Yep, you heard me, straight from the days of Zeus and the first Olympic games...
- It is my pleasure to introduce my guest, Prometheus, God of Fire.
- Prometheus**(*Stands silently.*)
- TV Personality**.....The strong silent type I see.
- Prometheus**(*Stands silently.*)
- TV Personality**.....Okay. Well maybe you could tell us a little bit about how you invented fire.
- Prometheus**(*Irritated.*) Let's get this straight. As far as I know, fire just is. No one "invented" it. What I did was give it to humans without Zeus' permission.
- TV Personality**.....(*Turning to audience.*) Sounds like a bit of a hothead (*laughter*). Well, you probably didn't make friends with Zeus that way.
- Prometheus**(*Irritated.*) Do you know anything about me? Hundreds of years chained to a rock by Zeus himself? I mean really. Don't you prepare for your interviews?
- TV Personality**.....(*Looking down at notecards.*) Well, I do have something written down about you giving people the alphabet. I was wondering, did you write the song, too? You know, "ABCDEFG..." (*in singing voice*).
- Prometheus**(*Frustrated.*) No I didn't write the song, but I did give people other things, like numbers and art. And I taught them how to farm and tell the seasons by the stars.
- TV Personality**.....Wow! You must be pretty smart. I bet you have some good stories.
- Prometheus**(*In a serious tone.*) I could tell you plenty of stories about hope and suffering and heroes and villains, but I really came to talk about fire.
- TV Personality**.....The heroes and villains stuff sounds more interesting.
- Prometheus**Listen. I gave people fire, but I never really told them much about it. It's been bothering me and I want to explain the laws of fire.
- TV Personality**.....What do you mean when you say "The Laws of Fire?"
- Prometheus**Just like parents have rules that determine the way children behave, nature has laws that determine the way fires behave. Unlike a parent's rules, though, nature's laws can't be broken. The laws are very important to understand if you want to use fire safely.
- TV Personality**.....Well, then, you better get on with it.

SCENE 1

SCRIPT

- Prometheus**First, fire is a natural process. It was part of nature well before humans began to use it. It is also a very powerful force. It is powerful because it can very quickly change materials. It takes the chemical energy in a material and changes it into heat, making fire very hot.
- TV Personality**.....Hold on Mr. God of Fire. You're using some big words. I mean, I know what heat is, but what is chemical energy?
- Prometheus**An easy way to think of chemical energy is to think of it as the energy that holds things together. Food, for example a carrot, has a lot of chemical energy. When you eat a carrot, your body gets energy by breaking down the bonds that hold the carrot together. Fire gets energy by breaking down the bonds that hold materials, like wood, together.
- TV Personality**.....Does that explain why there are only ashes left after you have a campfire? I mean, I always wonder, "Where did all of the wood go?"
- Prometheus**.....Exactly. Most of the wood is changed into heat energy. The ashes are the part of the wood that didn't change into heat. It is a really simple way to think about how fire can change materials.
- TV Personality**.....The idea that fire makes heat from the energy that holds materials together makes sense, but I guess I'm still confused about the laws you talked about. You know, like what laws determine how a fire starts and stops.
- Prometheus**.....The law of fire behavior is called "The Fire Triangle." (*Prometheus moves from where he is standing and draws a triangle on the board.*) It is a triangle because fire needs three things to exist – heat, oxygen, and fuel. Each of these things is a side of the triangle (*labels each side*). If you take any side away, fire cannot exist.
- TV Personality**.....Well, that is interesting, but I'm a bit confused. What do you mean when you say, "take them away?"
- Prometheus**Picture a campfire (*draws a campfire in the middle of the triangle*). To have a campfire, you need wood and matches. Wood is the fuel (*pointing to the fuel side of the triangle*) and the match is the heat (*pointing to the heat side of the triangle*).
- TV Personality**.....But what about the third side of the triangle, oxygen?
- Prometheus**Oxygen is in the air all around us. It is what we breathe. The fire takes the oxygen from the air.
- TV Personality**.....Okay. So you get the fire started, then how do you put it out?

SCENE 1

SCRIPT

- Prometheus** Good question. You can take away any of the three sides of the triangle – oxygen, heat, or fuel. The easiest way to put out a campfire is to take away the fuel and the heat. You can take away the heat by dumping water on the fire – water absorbs a lot of heat. And you can take away the fuel by making sure that there is nothing near the fire that can burn.
- TV Personality** Well, that is great information Prometheus, but we are running out of time here...
- Prometheus** *(Interrupting.)* But I have more to tell you.
- TV Personality** Sorry, but it's time to break for a commercial...
- Prometheus** *(Rushed.)* But I need to tell you about the “Law of Responsible Use!” Fire can be dangerous. It can destroy homes. And it can also be helpful. It is part of nature.
- TV Personality** Thanks Prometheus. Great having you on the show! And now a word from our sponsors.
- Prometheus** *(In desperation while MC escorts him off of the stage.)* But I'm a god. I suffered for hundreds of years at the hands of Zeus for helping you. You can't just cut me off like...
- Sponsor** Do you ever notice in the summer that some people's feet are much whiter than the rest of their legs? Let the days of embarrassing white feet be over, with TanToes – an all new revolutionary...
- END SCENE 1.**

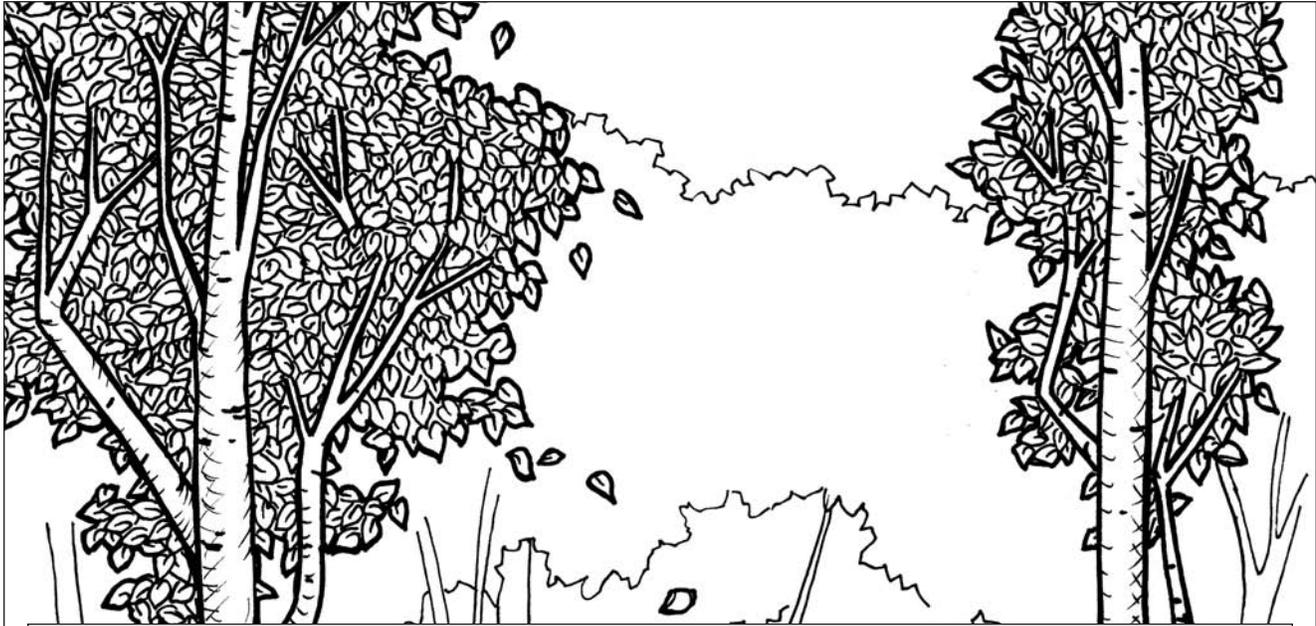
DISCUSSION QUESTIONS

1. What is the “Law of Fire Behavior?”
2. Explain the fire triangle using the example of a campfire.
3. What was Prometheus trying to say before he was escorted off the stage?
4. What do you think the “Law of Responsible Use” is?

SCENE 2

PLAYBILL

FIRE AND THE FIRST PEOPLE *(As told by an aspen stand)*



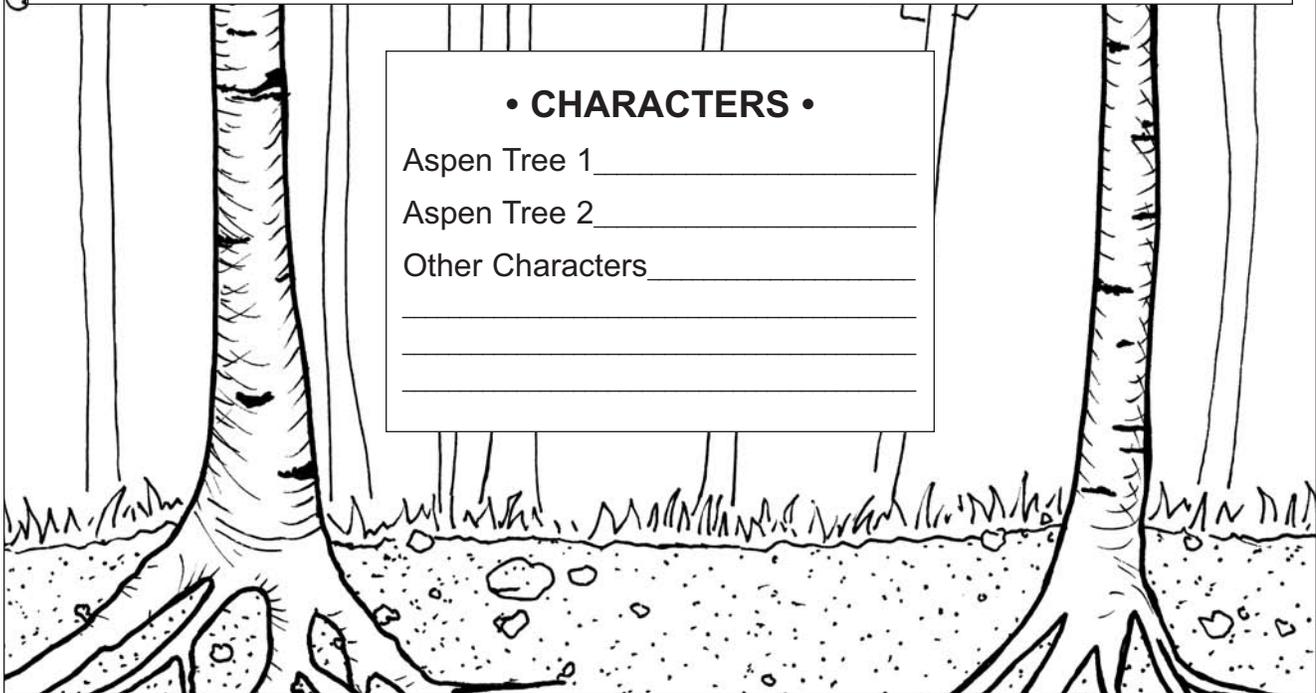
An individual aspen tree can live to be 100 years old, but many aspen trees grow from root systems that have been alive in the ground for thousands of years. In many aspen forests, the trees are all connected to the same root system. Thus, it can be said that aspen forests live for thousands of years. In the following story, it seems that some of the individual aspen trees can remember things that happened thousands of years ago – a time when the First People lived on the land we now call Wisconsin.

• CHARACTERS •

Aspen Tree 1 _____

Aspen Tree 2 _____

Other Characters _____



SCENE 2

SCRIPT

Aspen Tree 1Nice day, wouldn't you say?

Aspen Tree 2Yep.

Aspen Tree 1A one-in-a-million day I think.

Aspen Tree 2Yep.

Aspen Tree 1Do you remember what the weather was like a million days ago?

Aspen Tree 2Yep.

Aspen Tree 1I don't believe you.

Aspen Tree 2*(Stands silently.)*

Aspen Tree 1Okay smarty. How many years ago was that?

Aspen Tree 22,739 years.

Aspen Tree 1Good memory.

Aspen Tree 2Yep.

Aspen Tree 1So, what was it like then?

Aspen Tree 2About the same as today.

Aspen Tree 1Okay. Okay. The weather was the same, but what about other things like animals and plants and stuff?

Aspen Tree 2That was different.

Aspen Tree 1Different how?

Aspen Tree 2You are not going to stop asking questions, are you?

Aspen Tree 1Nope.

Aspen Tree 2Fine. The plants and small animals were about the same back then, but there were a lot more fires – all the time, as I recall. There were also a lot of big animals like wolves, elk, cougar, and even bison. We don't sense many of those animals or many fires any more.

Aspen Tree 1Why?

Aspen Tree 2I don't know.

Aspen Tree 1Hah! Something you don't know!

Aspen Tree 2Well, I do know what the little bird told me.

Aspen Tree 1And...

SCENE 2

SCRIPT

Aspen Tree 2It's complicated, but it goes something like this. The people of that time, who the little bird called the "First People," used fire to manage the land for the big animals that they liked to hunt.

Aspen Tree 1I like fire.

Aspen Tree 2I know. So do many animals. Many animals, like deer, eat the green, sun-loving plants and shrubs that grow in the clearings after fire. The First People used fire to round up animals for hunting, to provide habitat for animals that they hunted, and to clear land for agriculture.

Aspen Tree 1And the big animals?

Aspen Tree 2I'm getting there. So, what I am trying to say is that the First People started changing the landscape with fire. They did this to provide themselves with food and clothing. They did it so well that their numbers grew and they started forming settlements and planting food crops. They began to hunt more and...

Aspen Tree 1And they killed off all of the big animals!

Aspen Tree 2No. I don't think so.

Aspen Tree 1You don't know, or you don't think so?

Aspen Tree 2Well, it is not very clear because a second group of people moved onto the land. And they completely changed the course of history.

Aspen Tree 1So you don't know.

Aspen Tree 2Well, I only know what I can sense from right here.

Aspen Tree 1Obviously.

Aspen Tree 2So, what I am saying is that the little bird hasn't told me what happened since then.

Aspen Tree 1Well, when is the bird coming?

Aspen Tree 2Any year now, I think.

END SCENE 2.

DISCUSSION QUESTIONS

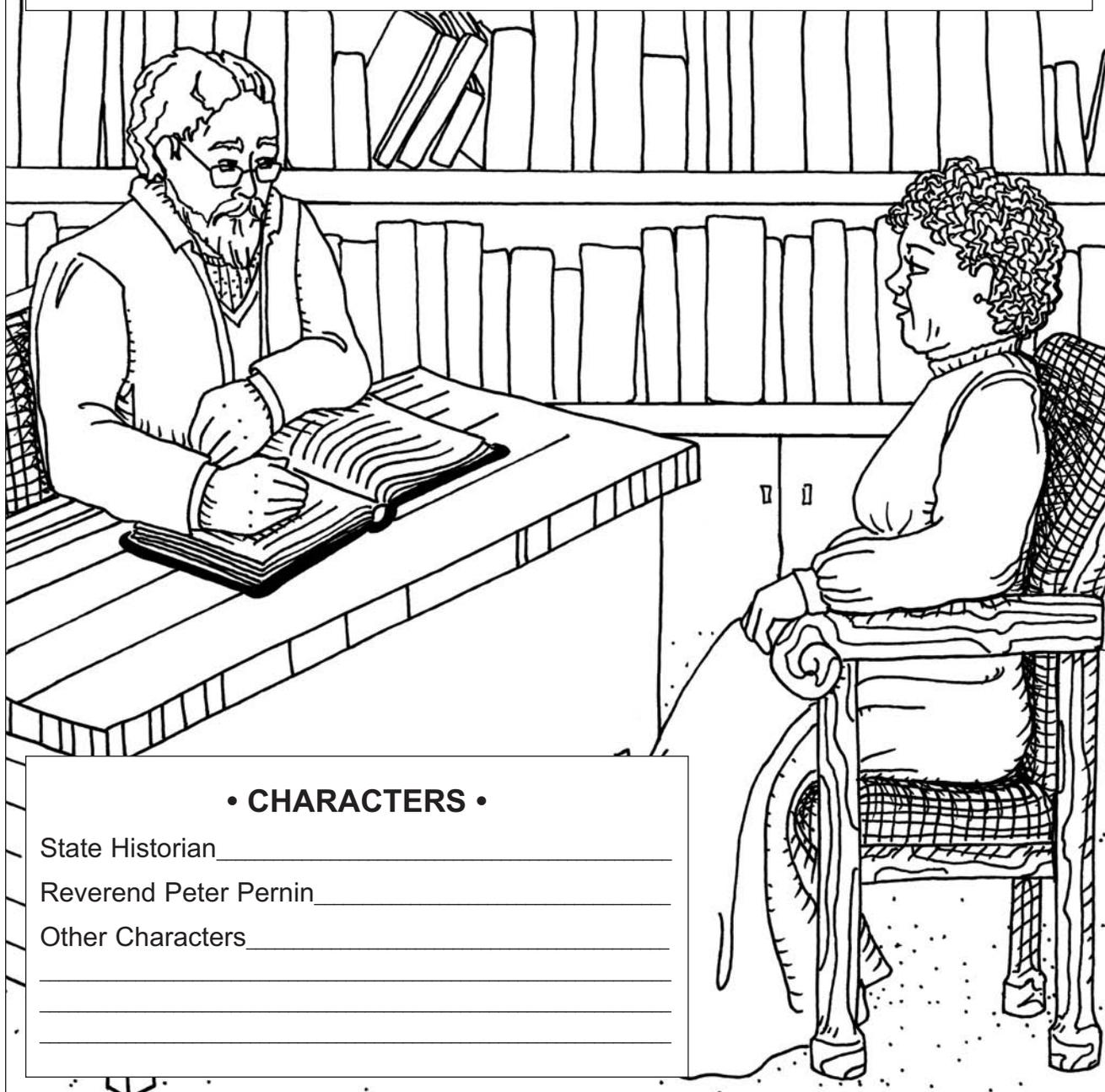
1. Why could one of the aspen trees remember what happened so long in the past?
2. Who were the "First People?"
3. How did the First People use fire?
4. How did their use of fire change the landscape?
5. How is the use of fire different now?

SCENE 3

PLAYBILL

THE CUTOVER AND DEADLY FIRES *(A survivor's account)*

It is the late 1800s, and the arrival and spread of European immigrants has changed the Wisconsin landscape. They brought with them a vision of conquering, using, and controlling the landscape. The forests of northern Wisconsin were logged to build many of the cities and towns that we know today. The nearly complete removal of forest is known as "the Cutover." It changed the landscape and people of Wisconsin. In this scene, the state historian interviews a survivor of a deadly wildfire that burned very hot in the limbs and dead trees that were left behind after logging.



• CHARACTERS •

State Historian _____

Reverend Peter Pernin _____

Other Characters _____

SCENE 3

SCRIPT

State Historian Reverend Peter Pernin, it is good to be here with you.

Reverend Peter Pernin Thank you. It is my pleasure.

State Historian Let me first explain to you why I am so interested in a wildfire that occurred nearly 20 years ago. The wildfire was in and around Peshtigo in the fall of 1871. It was very large and very destructive. It burned nearly 2,500 square miles of land and killed nearly 1,500 people. It also occurred on the same night as the Great Chicago Fire that destroyed about 200 million dollars worth of property.

Both of these fires were a result of human actions. Because of this, I have been doing research to find out if the Peshtigo Fire has changed the way that people in Wisconsin think about forests. Your story, as a first person account to the fire, is very important to this research.

Reverend Peter Pernin Well, I hope I can help.

State Historian First, let me ask you to describe Peshtigo before the fire.

Reverend Peter Pernin Peshtigo was located in a rolling landscape of dense forests. The forested landscape was covered with newly open roads, cleared areas, and farms. The climate of the region was predictable and the rains generally fell at a good time for growing crops.

Peshtigo was a farming community surrounded by forest. Many families farmed small plots, and the town had the nation's largest woodenware factory. The factory converted logs into pails, tubs, broom handles, and clothespins. Hundreds of people worked at the factory. The logs for the factory were cut from neighboring forests and forests to the north. Many of the logs came to the factory on the Peshtigo River.

State Historian Before I ask you some specific questions about the fire, will you please describe, in a few words, your general impression of its size and strength?

Reverend Peter Pernin It is hard to describe the size of the fire. It burned an area nearly twice the size of the state of Rhode Island.

When the fire was upon the town of Peshtigo, many of us were taking cover in the river. From the river, I saw nothing but flames. Houses, trees, and the air itself were on fire. Above my head, as far as the eye could see, I saw nothing but flames covering the sky. Flames rolled like clouds over one another in a fierce storm.

State Historian For me, your description is only words. I do not have a way to understand a fire of that size.

SCENE 3

SCRIPT

Reverend Peter PerninI will just say that, even in the middle of the Peshtigo River, the air was on fire. We needed to cover ourselves with wet quilts and blankets and continually splash water in the air. The blankets would dry in a matter of seconds and begin to burn and we would need to go below the water again. On land, the fire was so hot that many of the rich, black soils around Peshtigo were burned to sand.

State HistorianAn amazing story. How did a fire of this size start?

Reverend Peter PerninI am not sure exactly where it started, but I'm sure it started like many other fires of that time – as a very small human-made fire.

State HistorianCould you please explain more about how people were using the land and using fire?

Reverend Peter PerninIt may be best to tell you about the specific activities that I witnessed during the year of 1871. It was a very dry year. Farmers took advantage of the dry conditions to clear areas for planting by cutting the trees and burning the brush and stumps that stood in their way. A railroad was being built, and hundreds of workers were clearing land in the same way.

Hunters and Indians also spread throughout the woods, fishing for trout and hunting deer. They built fires at night to cook and keep warm. I saw many of these fires still burning the next morning. Conditions in the forest were dangerous. Many branches were left in the forest after loggers cut trees. The branches and leaves were very dry and would ignite very easily.

State HistorianWhat you describe is similar to the conditions that existed before major fires in Wisconsin, Michigan, Minnesota, and in other parts of the world. Large, destructive fires have been occurring throughout the late 1800s around the globe where settlement is expanding. They have destroyed frontier communities in northern Sweden, Russia, New Zealand, Australia, and British Columbia. All these areas had similar conditions to Peshtigo.

Reverend Peter PerninIt makes sense that when these actions occur and the climate conditions are just right, destructive fires happen. In Peshtigo, two fires threatened the town in the months prior to the fire that destroyed us. I realized then that it was only a matter of time.

END SCENE 3.

DISCUSSION QUESTIONS

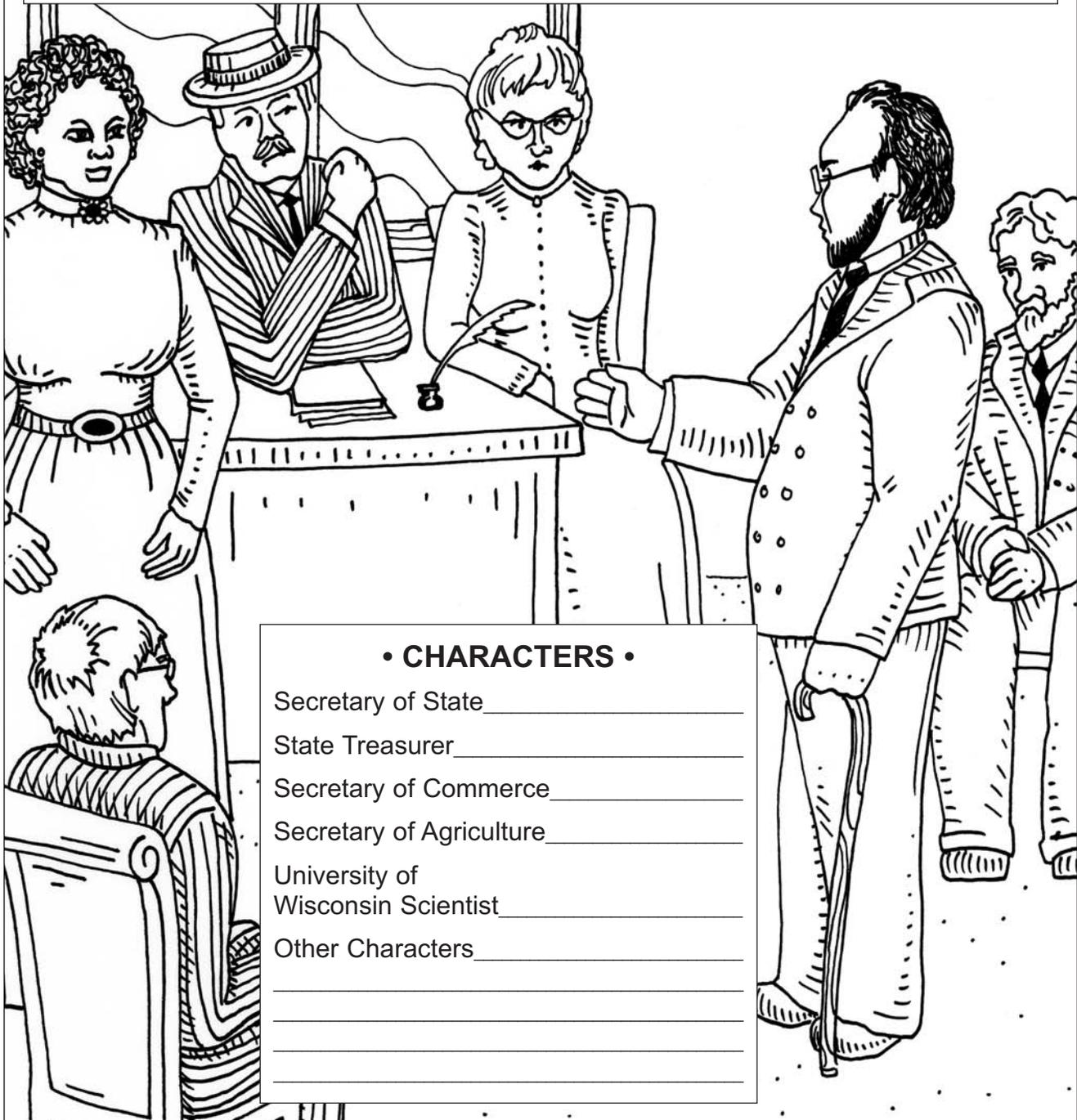
1. What happened in the city of Peshtigo in 1871?
2. How did the destructive Peshtigo fire start?
3. What human and natural events caused the fire to be so destructive?
4. Was Peshtigo the only place where a big, destructive fire happened?

SCENE 4

PLAYBILL

AFTER THE CUTOVER *(Debating the future of the northwoods)*

It is 1900 and a very important meeting is taking place at the State Capitol Building in Madison, Wisconsin. The State's government leaders have been brought together to debate the future of northern Wisconsin. Pay close attention to the solutions proposed to help Wisconsin recover after the logging and wildfires that took place during the 1800s.



• CHARACTERS •

Secretary of State _____

State Treasurer _____

Secretary of Commerce _____

Secretary of Agriculture _____

University of
Wisconsin Scientist _____

Other Characters _____

SCENE 4

SCRIPT

Secretary of State Good evening to all of you. As you already know, I have brought us together today to discuss the future of northern Wisconsin.

The 18 northernmost counties of Wisconsin make up one-third of the state's land cover. Over the last century, loggers have been removing trees and selling the lumber to the major cities of the Midwest. The removal of trees has happened very fast, with very few large trees left behind. Within the next 10 years, 90 percent of this area will have been cleared of trees. We will soon refer to this area as "the Cutover."

As lumber mills close and the cleared lands are left behind, the lands can be abandoned or settled. What have you to say on this matter?

State Treasurer First I would like to say thanks to our Secretary of State for bringing us all together. I would like to add that the money that the State of Wisconsin gets from the taxes we collect on lumber mills has already started to decrease. Once the remaining forests are cleared, the money will completely disappear.

Secretary of Commerce... Oh how the State Treasurer counts his nickels! Always worried about how much money you have tucked away.

State Treasurer Well, I might also be worried about how we will pay the salary of the Secretary of Commerce next year.

Secretary of Commerce... Well said.

Secretary of Agriculture... Gentlemen. Without a vision, neither of you will have a nickel to fight over. As Secretary of Agriculture, I have come today with just such a vision – northern Wisconsin is going to be a great agricultural country!

Secretary of State That sounds like a very commonsense idea. The area is mostly cleared of trees. Most of the people moving to Wisconsin have experience farming. Farming has been very successful in the southern half of the state.

University of Wisconsin Scientist..... An appealing idea, but there are a few environmental problems.

Secretary of Commerce... Leave it to a university scientist to give us a speech on the environment.

University of Wisconsin Scientist..... My dear Secretary of Commerce, you deal in the affairs of people and see only that. I only suggest that you cannot separate the actions of people from the laws of nature.

SCENE 4

SCRIPT

Secretary of StateGentlemen. If you would like to talk philosophy, you can come by my house for dinner later. For now, let us stick to the matter at hand.

University of

Wisconsin Scientist.....As I was saying, it is my understanding that the soils of northern Wisconsin are forest soils of a cool climate. They are more similar to the soils of Canada than they are to the soils of southern Wisconsin. To me, this means that farmers will not only have to deal with shorter growing seasons, but also with different soil conditions.

Secretary of Agriculture...With all due respect, I have information that suggests otherwise. A scientific study from your very own university concluded that, and I quote, “The greater part of the land is fair to excellent in quality and suited for the highest agricultural development.”

University of

Wisconsin Scientist.....I am familiar with the study, but it is incomplete. We estimate that 45 percent of the soils in the Cutover are good for farming. This can be compared to southern Wisconsin, in which 90 percent of the soils are good. This is not to mention the large number of tree stumps and rocks that would need to be removed to create fields.

Secretary of Commerce...Now I’ve already had conversations with people on the ground up north, and they are a lot more optimistic than our fellow scientist here. I talked to a land dealer in Lincoln County. He stated, and I quote, “Any man who buys a farm...stands absolutely no chance of losing.”

I also talked to lumberman John G. Owen about the rocks and stumps. He said, “There will be a lot of hard work before a man gets the land cleared up, but it pays him a big profit in the end.”

University of

Wisconsin Scientist.....It seems that I am outnumbered. I will just add that some of my colleagues are warning that the Cutover is on its way to becoming an environmental disaster. Piles of limbs and dead trees have been left on the landscape. We are already seeing terrible fires. I do not need to remind you of the disaster at
.....Peshtigo. There is evidence that the fire burned so hot that it
.....destroyed the very soils that you wish to grow crops on.

Secretary of Agriculture...I say we take our chances. Those fires cleared land for farms.

SCENE 4

SCRIPT

Secretary of StateWith respect to the opinion of our fellow scientist, we all understand that your concerns are real, but I must agree with the Secretary of Agriculture. It seems that farming is our best option. The trees will take too much time to grow back. We need an industry that can provide money and jobs now, not in 100 years.

State TreasurerI would have to agree with the Secretary of State on this matter. We need a new industry to put people to work and provide for our growing state. This needs to happen now before we hear that the last tree has been cut down.

University of Wisconsin Scientist.....I see that we have made our decision. I would just like to be on record as saying that I believe that northern Wisconsin is best for trees, not corn and beans.

Secretary of StateYour opinion is noted.

Secretary of Commerce...We will have to get people moving up there as soon as possible. We'll need to make a brochure that shows how much opportunity exists for farming in the north.

Secretary of Agriculture...We can use the newspapers to get the word out now. I can see it already. The headline will read "The agricultural resources of northern Wisconsin will equal any part of the state." Or even better, "Northern Wisconsin is bound to be the richest part of the state."

END SCENE 4.

DISCUSSION QUESTIONS

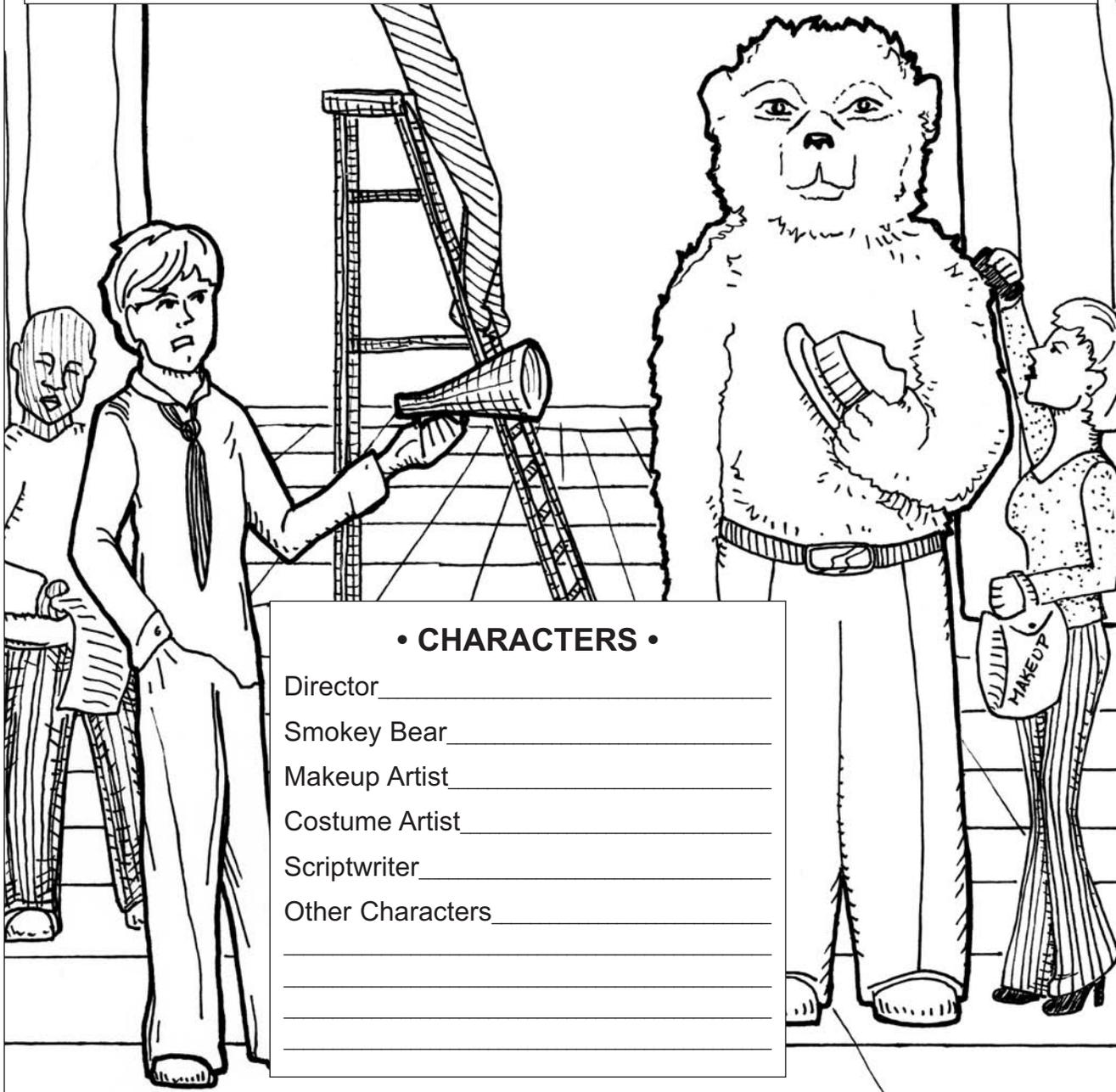
1. What happened to many trees in northern Wisconsin during the 1800s?
2. What happened to the lumber mills in northern Wisconsin after all the trees were cut down?
3. What happened to the land after all the trees were cut down?
4. Why did people want to farm the land after the trees were gone?
5. What do you think happened to many farms in northern Wisconsin?

SCENE 5

PLAYBILL

NO MORE WILDFIRES (*Smokey Bear outtakes*)

By 1950, three-quarters of the farms in northern Wisconsin had failed due to poor soil conditions, difficulty with stumps and rocks, and short growing seasons with harsh winters. The idea of a great, forested north returned to the minds of the people of Wisconsin. County, state, and national forests were created, and the government encouraged the planting of trees. The danger of fire still existed, though. One character helped to change the way that people think about and use fire. Let's take a look backstage as Hollywood filmmakers try to give Smokey Bear an image.



• CHARACTERS •

Director _____

Smokey Bear _____

Makeup Artist _____

Costume Artist _____

Scriptwriter _____

Other Characters _____

SCENE 5

SCRIPT

- Director** Listen. I don't know if this is going to work. I mean, look at how big and hairy this guy is. I hate to say it, but big and hairy is just not hip right now.
- Smokey Bear** Excuse me sir, but I am a bear. Bears are big and hairy. And I don't know what "hip" means, but I have a story to tell, and it is your job to help people hear it.
- Director** Okay big guy. You don't need to say that twice. Let's just get makeup over here for a second...makeup!
- Makeup Artist** Yes sir.
- Director** We need to make this guy, I mean bear, look a little less hairy, I mean scary. Any suggestions?
- Smokey Bear** Please call me Smokey, Smokey Bear.
- Makeup Artist** Smokey. I like it! Very manly! You know, I'm envisioning something very rough and outdoorsy.
- Smokey Bear** That shouldn't be too difficult.
- Makeup Artist** Oh, and he's funny too! I think this is going to work just fine. I have an idea! You need a hat – a ranger hat! It will make you look cute AND like a person of authority.
- Smokey Bear** A bear of authority.
- Director** Costume! Find a ranger hat!
- Costume Artist** Yes sir, ranger hat. I'll see if we have one in back.
- Smokey Bear** Wait a minute. I already have a ranger hat. I just take it off when I come inside – good manners you know.
- Director** You have a ranger hat? How did you get a ranger hat?
- Smokey Bear** I took it from a forest ranger I ate.
- Director** That you ate?!?
- Smokey Bear** Relax. I'm just joking. When I was a bear cub I was saved from a forest fire by forest rangers. They have taken care of me since then. How do you think I learned to talk?
- Director** Wow! You do have quite a story. What is it you are trying to tell people?

SCENE 5

SCRIPT

- Smokey Bear**I survived the fire, but it killed my parents. It was started by human carelessness. I want to tell people to be careful with fire. I want to help protect forests and all of the plants, animals, and people that live in them.
- Director**That is a great message, but you only have 20 seconds. Time is money and you aren't offering much. Maybe you should have been rescued by millionaires.
- Smokey Bear**I see I have a lot to learn about the way things work with you people. Well, let's do it in 20 seconds then.
- Director**Script!
- Scriptwriter**Yes sir, at your service.
- Director**Have you heard Smokey's story?
- Scriptwriter**Yes sir, I have.
- Director**Give it to me in 20 seconds.
- Scriptwriter**Well, I was thinking that the message has to be powerful so that people understand that it is important. And that it has to make them want to do something about it.
- Director**Like I said, give it to me in 20 seconds.
- Scriptwriter**Okay. Here goes. We start with some footage of a forest fire. A deer is running for its life. A rabbit is stranded all alone. The scene switches to after the fire – burned stumps as far as you can see. Smokey walks on screen and says, "Only you can prevent wildfires."
- Director**Only you can prevent wildfires. It's marvelous!
- Smokey Bear**I already say that all the time.

END SCENE 5.

DISCUSSION QUESTIONS

1. What is Smokey Bear's message?
2. Why did Smokey Bear want to tell people about this message?
3. How do you think people reacted to this message? Do you think that the number of forest fires increased or decreased?
4. How do you think this affected the environment?

SCENE 6

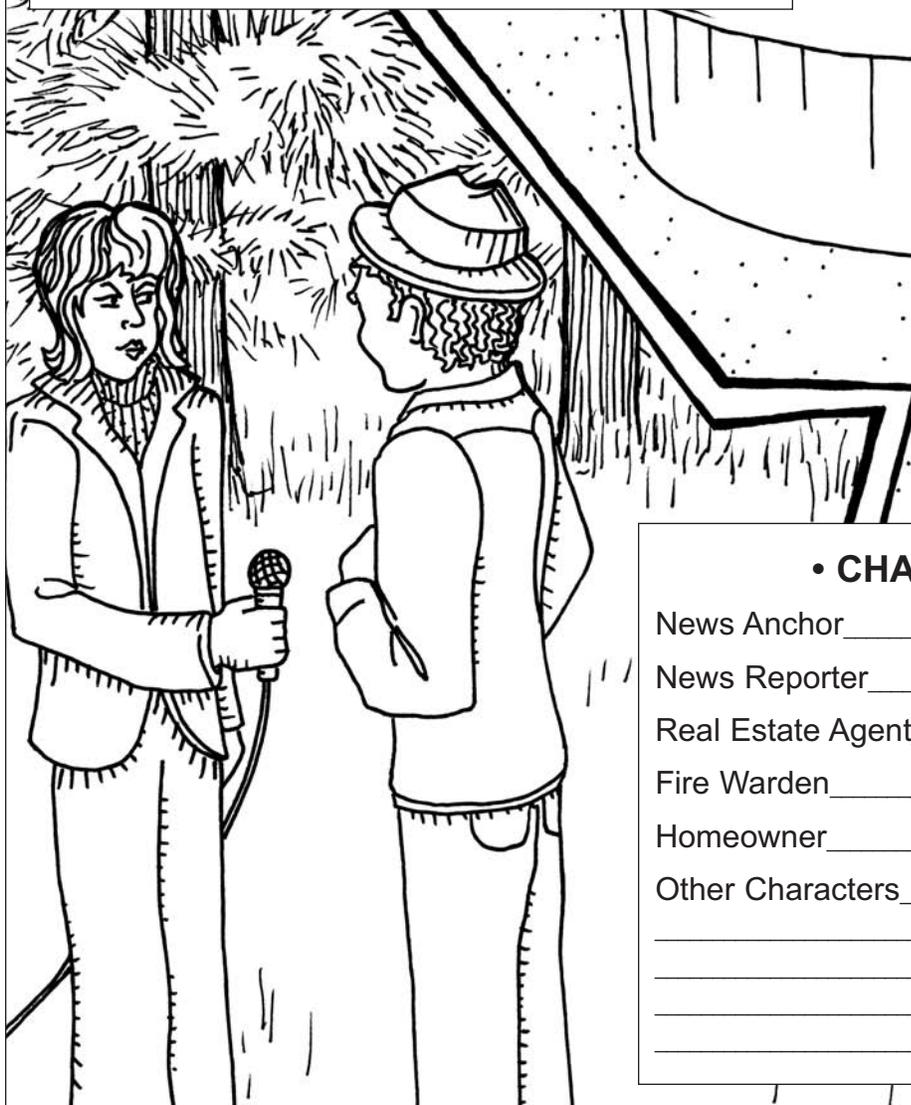
PLAYBILL

A CHANGING LANDSCAPE (A live at 5 news report)

Smokey Bear's message has been very effective.

Forest fires have been stopped all across the U.S. Many houses were saved, and a lot of the wood that would have burned has been harvested and used. But many forests have become very, very thick with trees.

We now understand that fire is a natural part of many forested areas. By preventing and suppressing fires, humans stopped fires that have occurred over and over again for thousands of years. As you will see, this has had some unintended consequences.



• CHARACTERS •

News Anchor _____

News Reporter _____

Real Estate Agent _____

Fire Warden _____

Homeowner _____

Other Characters _____

SCENE 6

SCRIPT

- News Anchor** Good evening. Tonight we bring you a special report on wildfires and the threat that they pose to life, property, and natural resources.
- To begin, let's turn to our reporter on the ground in Adams County, Wisconsin.
- News Reporter** I'm standing here in the Tri-Lakes area of northern Adams County. This is a rapidly growing area, where forests are filling with expensive vacation homes and businesses.
- I'm here with a real estate agent from a local realty company. Can you describe the changes that you've seen in the real estate market over the last 10 years?
- Real Estate Agent** In one word – “boom.” The current price of land is evidence of that. People from other parts of the state and country have been buying land and putting up vacation homes. And I'm not talking about cabins. I'm talking about \$300,000 homes. With these homes come the businesses and jobs for local people that support them.
- News Reporter** And that is only part of the story. Let's talk to the local fire warden about where those homes are being built.
- Thanks for being here with us. What does the development in the Tri-Lakes area have to do with forest fires?
- Fire Warden** The forest in the Tri-Lakes area is a very fire prone forest. This means that the trees here, jack pine and red pine, burn very easily and very hot when conditions are dry. Historically, fire has occurred in jack pine forests every 125 to 180 years. The forests surrounding this area are due for a fire.
- The people building homes in this area may be putting themselves right in the middle of a disaster waiting to happen.
- News Reporter** What can homeowners do about the danger of fire?
- Fire Warden** I would say the first thing that they can do is make an informed decision about where they build houses. As a fire warden, I see all of the houses in danger and think that communities and individuals need to make better choices about where they build.
- Second, if people do build houses in areas that are prone to fire, they need to protect their houses. They can do this by keeping flammable materials away from their houses, using fire resistant materials during construction, and being careful when using fire.
- If anyone in the audience wants to know how to protect their home, they can look on the World Wide Web at www.firewise.org.

SCENE 6

SCRIPT

News ReporterLet's turn to a local homeowner and landowner to see how he or she feels about the possibility of fire.

Have you ever thought about the possibility of a large wildfire in the area?

HomeownerWildfires, earthquakes, and tornadoes are all possible, but I try not to think about it too much. You can't control things like that.

News ReporterHave you done anything to prepare?

HomeownerMy house is insured and I don't burn anything outdoors when it is dry, but besides that, not really. I have 40 acres of trees and I can't get insurance on them. If a fire came through the forest, I would lose all my trees.

News ReporterWhat would you say to a person who said that fires have occurred in these forests throughout history and the forests need fire to remain healthy?

HomeownerI would say that what might be good for the trees is not good for us folks who live here.

News ReporterA very hot issue. Back to you.

News AnchorWe'll be sure to keep watch on this burning issue. That does it for our program tonight. Have a great evening!

END SCENE 6.

DISCUSSION QUESTIONS

1. What is the issue that the news report is dealing with?
2. How do the different people in the program feel about fire?
3. What can people do to protect themselves from wildfires?
4. Do you think the threat that wildfire poses to people and their homes is increasing or decreasing? Why?