



# **Fire Safety for Texans**

Fire and Burn Prevention  
Curriculum Guide Developed by  
State Fire Marshal's Office  
Texas Department of Insurance

*Sixth Grade*

# **Fire Safety Power**

# **Fire Safety for Texans**

The complete series from the State Fire Marshal's Office

Kindergarten

**Fire Safe Together**

First Grade

**Fire Safety: Any Time, Any Place**

Second Grade

**Making Me Fire Safe**

Third Grade

**Positively Fire Safe**

Fourth Grade

**Fire Safety: Stop the Heat**

Fifth Grade

**Charged Up For Fire Safety**

Sixth Grade

**Fire Safety Power**

Seventh Grade

**Responsible For Fire Safety**

Eighth Grade

**Fire Safety's My Job**

Health (High School)

**A Lifetime For Fire Safety**

Economics (High School)

**Fire Safety For Consumers**

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# **Introduction**

# Introduction

## Why teach fire and burn prevention?

Each year during the past decade, about 300 Texans have died in fires. The State Fire Marshal's Office is committed to reducing this alarming statistic. Analysis of fire statistics shows that the vast majority of fires — and the resulting fire deaths — could have been prevented. Regretfully, most people do not know or practice even simple actions that can prevent fires and burns.

The State Fire Marshal's Office believes the key to reducing fires and fire deaths is education. Fire safety education has traditionally been concentrated in elementary school observances of Fire Prevention Week. While these observances can produce effective results, thoughtful analysis of the fire problem and fire safety educational programs shows that a more comprehensive, age-appropriate approach to fire safety education can multiply its benefits.

Recognizing the limits of classroom instruction time, the State Fire Marshal's Office has examined the Texas essential elements of instruction to determine the most appropriate topics with which to integrate fire prevention and fire safety. Teachers from across the state have provided feedback on topics appropriate for each grade level, kindergarten through high school.

The result of this extensive research is "Fire Safety for Texans," a series of curriculum guides teaching fire and burn prevention. Each grade-level program has been coordinated with essential elements in that grade and with the unique specific fire safety needs of that age group. The lesson plans have been field tested in classrooms across the state. On average, students who have been taught using these materials score 26 percent higher than students in control groups.

As you use this guide, you and teachers in other grade levels will be part of a continuum of fire safety education spanning all grades. The State Fire Marshal's Office believes this continuum will help create a generation of Texans who will be fire-safety aware. In turn, all Texans can benefit from a decrease in the number of needless fire deaths and an increase in safer homes and worksites — a benefit we all deserve.

## This Booklet

This booklet, "Fire Safety Power," is specifically designed for sixth-grade students. The following sections give specific information on the essential elements applicable to fire and burn prevention and on the age-specific needs of sixth-grade students related to fires

and burns. You will also find additional information on the format and materials found in this booklet.

This booklet has three sections:

- **Lesson Plans.** This section includes all steps in the lesson cycle.
- **Teacher Materials.** This section includes all teaching aids and tests.
- **Student Materials — Duplicating Masters.** This section includes master copies of materials to be used by students.



**General Objectives:** To develop a comprehensive understanding of fire physics

To evaluate electrical hazards and how to respond to those hazards

To continue study of first aid for burns

**Essential Elements:** The student will be provided opportunities to:

§75.25 (g) 2D. observe phenomena and apply knowledge of theories, facts, and concepts from the life, earth, and physical sciences.

§75.25 (g) 4B. name and describe objects, organisms, and events from the environment.

§75.25 (g) 4E. record data and interpret the arrangement of data on graphs, tables, and other visuals.

§75.25 (g) 6D. form and state generalizations about similarities and differences among observed objects, organisms, events, and phenomena.

§75.25 (g) 7B. relate classroom objects, science principles and activities to daily life.

§75.26 (g) 1F. identify factors, including peer pressure, that contribute to ... tobacco ... abuse and methods of prevention.

§75.26 (g) 1H. recognize hazards in the environment, and acquire knowledge and skills needed to avoid injury and to prevent accidents.

§75.26 (g) 2C. recognize the health of the family depends upon contributions of each of its members.

§75.26 (g) 2D. identify basic emergency treatment.

§75.26 (g) 3A. relate the system of health services provided by government to the health needs of people.

§75.29 (g) 7A. make and interpret time lines.

**\*\* Science Content:** Content from the sciences that shall be emphasized at the grade level shall include:

## Physical Science

3.1 energy ... kinds of energy ... sources of energy ... transformation of energy from one form to another.

3.4 electricity and magnetism: charges, circuits, properties, electromagnetism, etc.

### Background: Age Profile

Stage of industry vs. inferiority, which means the child needs to stay constructively busy. Because many differences in abilities are becoming more evident, comparisons among children should be avoided.

Areas of development include neuromuscular and social. The child is developing many new physical skills, both gross and fine motor skills. He is making a social move from the home into peer groups and school. He is developing his own self-attitudes and seeks significant human relationships.

Operating under the morality of cooperation, the child sees rules as mutual agreements made by those affected and involved in the situation. She tends to obey rules out of respect. The child can understand causes and consequences of actions.

The child is capable of concrete operations, which means he can solve a variety of problems using concrete objects, and may be capable of formal operations, in which concrete objects are no longer needed for problem solving. He must be active in the instructional process, and activities and materials must be relevant to the child's life or environment. Instruction will be more effective if it involves both the affective and cognitive domains.

The sixth-grader is interested in social, occupational and civic matters. She is becoming able to move from the simple to complex, concrete to abstract, undifferentiated to differentiated, discrete to organized.

### Fire And Burn Hazards

Curiosity about fires — playing with matches and lighters, candles, fireplace, heaters, other locations where the child can observe a flame; overconfidence in dealing with fires.

Scalds — cooking; tap water; hot foods, especially heated sweet foods.

Appliances — cooking at stoves or with microwave ovens, especially unsupervised; overconfidence in using appliances, such as irons, toasters, etc.

Clothing ignition — playing with matches; flammable clothing and costumes; walking or sleeping too close to heater or other open flame; knowing how to reduce injury.

Outdoor hazards — campfires and barbecues; mini-bikes and lawn mowers; fireworks; high-tension wires.

Other — flammable liquids; fires caused by parents' smoking; injury from smoke and fire gases; knowing how to escape from fire.

**Teacher's Note On Materials:** Illustrations and activity sheets in this booklet are intended to serve as masters. Photocopy, then use the photocopy as directed.

**Pre-Test and Post-Test:** Administer the pre-test prior to the first lesson and the post-test after the final lesson.

**Teacher's Note on Closure Activities:** Some activities included in the closure phase of the lesson cycle may be effectively used in the next lesson's focus activity.

**Key To Icons:** The following icons can be used to easily identify activities in the lesson plans:



Lesson objectives



Focus and closure



Creative group activity, including role playing



Lecture



Group problem-solving activity



Answering questions



Guest presenter



Investigation or research



Creative writing activity



Cut-and-paste activity



Group discussion



Drawing, artwork or illustration

# **Lesson Plans**

LESSON ONE:

# Physics Of Fire, Almost Like Magic

**Goal:** *To examine the complete fire tetrahedron and to apply knowledge of flammables and combustibles to product safety*



**Objectives:** The student will:

- describe fourth element of fire, uninhibited chemical reactions \*25(g)4B, \*\*3.1
- lists types of heat and fuel to define classes of fire \*25(g)2D, \*\*3.1
- describes three types of fire extinguishers \*26(g)1H

**Materials:** Pre-test (p. 13); fire tetrahedron, assembled as illustrated (p. 14); "The Basics Of Fire and Fire Safety," reproduced on overhead transparency or poster P. 15); "The ABCs of Fire Extinguishers" classification activity (p. 29) "Overpower The Fire" independent practice activity (p. 30); answer keys (pp. 25-27).



**Focus: Administer pre-test.**

Present tetrahedron. Have students describe how it is different from fire triangle usually presented (four faces, fourth element).

Introduce unit on fire safety by telling students that although fire sometimes seem magical, technical advances and greater knowledge of fire have given people greater power in controlling and putting out fires. Present general objectives:

To develop a comprehensive understanding of fire physics

To evaluate electrical hazards and how to respond to those hazards

To continue study of first aid for burns

Outline lesson objectives (paragraph above).



**Presentation Of Content:** Display "The Basics Of Fire and Fire Safety" on poster or overhead projector. Have students read the definition of fire and describe the differences between an object before it is burned and after it has been burned. Discuss the

four elements of fire and basic principles of preventing or putting out a fire.



Direct student attention to "Types of Fires." Have students read and discuss the three types of fuel, encouraging them to use Type A, B or C to identify the three fuel types. Have students add other items to each list.

Tell students that knowing the type of fuel is essential in knowing how to put out the fire. Have students discuss ways they would put out a Type A fire. (Spraying water on the fire, rolling to put out a clothing fire.) Ask how they would put out a Type B or C fire. (They will probably be able to name putting a lid on a pan to put out a cooking grease fire or turning off the electricity for an appliance fire, but will not be able to identify others except using fire extinguishers.) Tell students that fire extinguishers using chemicals have been developed to safely and effectively fight fires.



**Guided Practice:** Distribute "The ABCs of Fire Extinguishers" classification activity. Point out the fuel types chart at the top and the illustration of the fire extinguisher. Tell students that all fire extinguishers are labeled with one or more letters, A, B, C and/or D. Read note about Type D fires. Also note the shapes around each letter, which is another identifying aid. Examine any fire extinguishers in the room.



Point out that the most common types of extinguishers available for home use are Type A, Type BC (effective for both Types B and C) and Type ABC (effective for all three). Have students hypothesize on what each type might contain. (Type A only is usually water; Type BC, carbon dioxide or dry chemical to smother the fire; Type ABC, another dry chemical to smother and cool the fire.)



Have students read each item in the chart, then circle the type of extinguisher needed and write whether the fire was probably cooled or smothered. Reinforce awareness that two or more types of fuel are commonly involved in one fire.



**Independent Practice:** Distribute "Overpower The Fire" activity. Have students identify each item and answer the questions. Encourage them to recognize that an ABC extinguisher has a variety of applications.



**Reteaching:** Copy the pattern for the fire tetrahedron and have students construct their own. Have students make lists of sources of all elements and attach to the appropriate sides. Note that uninhibited chemical reactions will have no additional labels.



**Enrichment:** Have students research the fourth type of fuel — flammable metals. Have them prepare reports or illustrations that show how metal fires differ from other types of fires.



**Closure:** Review "Overpower The Fire" activity, if appropriate. Select objects in the classroom and have students tell the type of fire and type of extinguisher to use. Note any items with flammable liquid labels.

Introduce next lesson by telling students that their study of "Fire Safety Power" will focus on the power of electricity.

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**LESSON TWO:**

# Electricity

**Goal:** *To examine the relative risks of electrical appliances, including high-tension wires, and to relate the risks of electrical heating to other alternative heating methods*



**Objectives:** The student will:

- describe why electricity and electrical appliances are fire and burn hazards, relating amount of energy used by various appliances to their risk \*25(g)6D, \*\*3.4
- describe dangers of high tension wires \*26(g)1H, \*\*3.4

**Materials:** "Electrical Objects," transferred on poster or overhead transparency (p. 16); "Electricity Is ..." background information, transferred on poster or overhead transparency (p. 17); "Heat Equals Danger" analysis activity sheet (p. 31); "Higher Heat" analysis and classification activity sheet (p. 32); answer keys (p. 25-27). Option: electric light, electric heater and electric clock, other appliances if desired; display UNPLUGGED with cords securely tied.



**Focus:** Review Lesson One concepts: the fourth element of fire; three classes of fire and fire extinguishers. Explain that this lesson will focus on the third class of fires — electrical fires.

Display illustrations of electrical objects on poster or overhead (or display light, heater and clock UNPLUGGED). Have students describe how they are similar. (All use electricity)

Tell students that this lesson will focus on electrical power and its relation to fire safety. Outline lesson objectives (paragraph above).

**Presentation Of Content:** Display "Electricity Is..." on poster or overhead projector. Read definition of electricity. Review basic electricity knowledge, including the fact that the flow of electrons creates power or energy that causes electrical and electronic appliances to operate. (NOTE: This information relates to science instruction on electricity.)



Discuss table titled "Electricity is used to:" Have students list additional examples of each use of electricity.

NOTE: This lesson does not address the issues of heat created by electronic "switching" devices such as computers and semiconductors. More traditional appliances, such as those listed, are much more common fire hazards.

Discuss table titled "How does this relate to fire safety?" If using sample appliances, read the wattages listed on the light bulb, heater and clock.



**Guided Practice:** Distribute "Heat Equals

Danger" analysis activity sheet, noting the background information. Divide class into groups of three or four students. Have groups read each item in the list and select the correct words. Encourage students to refer to the background information if necessary.



**Independent Practice:** Direct student attention to "Higher Heat" analysis and classification activity. Have students compare the two items and answer the questions. Point out the IMPORTANT note at the bottom of the page.



**Reteaching:** Have students research the wattages of home appliances. Have them prepare a list of the appliances and wattages and arrange from lowest to highest wattage. Relate the listing to relative fire risk.

NOTE: Tell students to conduct home research with help from parents or other adults.





**Enrichment:** Have students research the wattages of home appliances. Have them arrange the items in pairs and conduct an analysis similar to the "Higher Heat" activity.



**Closure:** Display the illustrations of electrical objects using in the Focus activity. Briefly review the purpose of high-tension wires. Have students tell which of the three remaining appliances uses the most and least amounts of electricity, then tell which one is most likely to start a fire. (Most electricity is used by heater, least by clock. Heater is most likely to start a fire.) Review "Higher Heat" activity, if appropriate.

Introduce the next lesson by telling students that their next lesson on "Fire Safety Power" will focus on one of the most powerful tools in being prepared for a fire.

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### LESSON THREE:

# Home Safety

**Goal:** *To apply knowledge by planning for safety at home*



**Objectives:** The student will:

- draw map of home to scale to show smoke detector placement and home exit plan \*25(g)7B, 26(g)1H,2C
- analyze prepared maps of other locations to show appropriate detector placement \*26(g)1H,2C
- develop holiday checklist that applies fire safety rules \*25(g)7B, 26(g)1H,2C

**Materials:** Student desks, tables and/or masking tape to make a floor plan outline; "Smoke Alarm" and "Smoke" role-playing labels (p. 18); "Are These Homes Prepared?" analysis activity sheets (p. 33); "A Powerful Plan For Home Safety" planning and research activity sheets (p. 34); answer keys (p. 26). Reteaching: "Are These Homes Prepared?" activity sheet (p. 34) with smoke alarm placements deleted.



**Focus:** Briefly review types of electrical hazards.

Emphasize that preventing a fire is the most desirable way to avoid fire damage; however, if a fire does

occur, every home should be prepared by having a smoke alarm and an emergency exit plan.

Ask for three ideas on the purpose of a smoke alarm and emergency exit plan. Record and retain for Closure activity. Outline lesson objectives (paragraph above).



**Presentation Of Content:** Have student desks and tables arranged in an outline of a home floor plan, or use masking tape to mark an outline of a home floor plan. SUGGESTION: Use the one-bedroom apartment floor plan from "Are These Homes Prepared?" sheet as a guide. Additional bedrooms might be added.

Have students sit on floor in groups in "rooms" of house. Give each group three minutes to make a hypothesis (based on prior knowledge and analysis of smoke movement and floor plan) on where a smoke alarm should be placed. If necessary, remind students that the largest number of fires that cause deaths occur at night when people are sleeping. They can be allowed to have more than one alarm.

When groups have their hypotheses, assign persons from each group as "Smoke Alarm(s)" and "Smoke" and distribute role-playing labels. Use one group to demonstrate a "test" of their hypothesis using the following steps.

1. Position "Smoke Alarm(s)" as the group suggested.
2. Have "Smoke" act out movement toward people sleeping in bedroom(s) from one or more of the following:
  - A fire that starts from a careless smoker sleeping on the sofa.
  - A fire that starts from a heater in a bedroom.
  - A fire that starts from unattended cooking in the kitchen.
3. Have "Smoke Alarm(s)" make warning sound when "Smoke" tries to pass.
4. Help students determine if their placement of smoke alarm(s) was the best possible.
5. Discuss what would happen if it were a two story building.
  - Using student suggestions, write a list of criteria for placing smoke alarms. Be sure the list includes:
    - At least one alarm outside each sleeping area.
    - At least one alarm on each level or story.

- Do not place in kitchen or high-humidity area (bath, sauna) to prevent nuisance alarms and damage to alarm..
- Optional: Place an additional alarm in each bedroom or any room in which someone might sleep.
- Optional: Interconnect all alarms so that if one goes off, all alarms sound. (Point out that these are usually part of a whole-house security system.)

Then have each group review their original hypotheses and test their theories using "Smoke Alarm(s)" and "Smoke" role playing.



**Guided Practice:** Distribute "Are These Homes

Prepared?" Have students examine each drawing and determine if the alarms are appropriately placed. Have them put an X on each misplaced alarm and draw in needed locations. Have them draw in two emergency exits from each room.



**Independent Practice:** Distribute "A Powerful

Plan For Home Safety." instruct students to draw maps of their homes to scale using the provided grid, marking locations of smoke alarms and two emergency routes from each room. NOTE: Distribute two pages to students who live in two-story homes.

Have them study the master holiday checklist and select five holiday safety rules that address hazards they feel they should address in their home.



**Reteaching:** Reproduce the prepared maps from

"Are These Homes Prepared?" without the smoke alarm locations. Have students mark where they think detectors should be placed for minimum and maximum coverage. Have them explain their choices.



**Enrichment:** Have students prepare letters to their parents and/or family members about the value of smoke alarms and planned emergency exit plans.



Have students share their checklists on holiday safety with family members by preparing illustrations or posters.



**Closure:** Display maps of home smoke alarm

locations and home exit plans. Have students share what they discovered and how their families responded to this activity. Compare their three ideas

from the Focus activity to what they learned about smoke alarms.

Introduce next lesson by telling students that they will look more closely at why learning about a fire as quickly as possible (which smoke alarms help do) is so important.

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## LESSON FOUR:

# Fire Response

**Goal:** *To examine various aspects of responding to fire and burns*



**Objectives:** The student will:

- prepares time line in response to fire sighting and reporting \*25(g)4E, 29(g)7A
- explains why to report smoke or suspected fire promptly \*25(g)6D, 26(g)1H
- describe professionals involved in emergency response and burn care \*26(g)3A

**Materials:** "Time Line Of Class" and "Time Line Overlay" illustrations (pp. 19-20), transferred to overhead transparency; "Seconds Count" overhead transparencies (pp. 21-22); "Seconds Count" activity sheets (pp. 35-36); "A Time Line For Safety" problem-solving activity (p. 37); answer keys (pp. 26-27).



**Focus:** Display "Time Line of Class" illustration. Ask students if a fire starts in a shorter or longer time. Add "Fire Time Line Overlay." Have students share their reaction to the differences.

Tell students that reacting quickly and appropriately saves lives in a fire. Emphasize that planning and practicing can make it easier to act quickly in an emergency. Add that fire departments and medical professionals have also planned for helping people in the community when fires or burns occur. Outline lesson objectives (paragraph above).



**Presentation Of Content:** Using "Fire Time

Line Overlay," discuss the kinds of actions that are required in responding to a fire. (Someone becomes aware of the fire, someone notifies the fire department, the fire department responds by coming to the fire, fire fighters put out the fire.) Discuss what would happen if any of the actions is not done or is done too slowly. (The home cannot be saved, anyone who might be hurt cannot be saved, the fire could

spread to other houses; accept other reasonable answers.)

Ask students if planning what to do in a fire emergency would make the reactions faster or slower. (Faster) Have students explain why. (In an emergency, people tend to think irrationally, not logically. Planning ahead helps you choose a correct action while you can think properly. Students may find it helpful to compare planning for a fire emergency to studying for a test or rehearsing for a play.)

Have students describe what might have been done to create a different outcome in the time line. (Not smoking, putting out the cigarette with water then putting it in a trash can; having a smoke alarm that might warn of the fire before it grows too large; checking ash trays before leaving house; using larger ash trays on table instead of couch arm.) Emphasize that most fires in the home can be prevented by "planning to be safe."



**Guided Practice:** Display "Seconds Count"

illustration and distribute "Seconds Count" problem-solving activity. Explain that the various time lines show several situations concerning fire. Review each time line and discuss the people involved and the actions that each person did.

Direct student attention to "Professionals At Work." Guide students in matching the fire service and hospital professionals to the job descriptions. Discuss how each person might be specially trained and prepared for their jobs.



**Independent Practice:** Distribute "A Time Line

For Safety" problem-solving activity sheet. Have students prepare the time line as directed, then list the professionals in their time lines.



**Reteaching:** Review Time Lines 1 and 2 from

"Second Count." Have students act out the scenarios in real time to develop a sense of the passage of time. Discuss how the time required to carry out an action is shortened by being prepared and practicing. Compare to knowing a friend's telephone to having to look up the telephone number in the directory.



**Enrichment:** Have students prepare time lines of

their own creation. Include other variables, such as a fire in a store, fire involving a senior citizen or handicapped person, fire in a school that has fire drills compared to a school that does not conduct fire

drills. Encourage them to explore variables in the way people might respond in each situation.



**Closure:** Ask students to stand, then sit down when they think that one minute has passed. Stop the demonstration a few seconds after the one-minute mark. Add that one minute is all it takes for a fire to consume a room. Ask students to share their opinions on why fast response for a fire is necessary.

Review the various jobs of the fire service and emergency medical personnel. Emphasize that the students' roles in having a safe home environment is as important as any of those jobs.

Introduce next lesson by telling students that the final lesson will focus on the various types of burns that might be seen by the medical professionals discussed in this lesson.

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## LESSON FIVE:

# Burn Response

**Goal:** *To examine various aspects of responding to fire and burns*



**Objectives:** The student will:

- classify six types of burns by causes (contact, UV, chemical, etc.) \*26(g)2D
- describe special first aid actions for burns other than contact burns \*26(g)2D

**Materials:** "Burns: Causes and Treatment" overhead transparency (p. 23); "A Guide To Burns" activity sheets (p. 38); "Warning: Burn Danger" activity sheets (p. 39); post-tests (p. 24); answer keys (pp. 25-27).



**Focus:** Review main ideas of the previous lesson, reinforcing the importance of responding quickly to fire and burn emergencies.

*Teacher:* "Fast responses to burn injuries are very important. Most of us know how to "cool a burn," which works well for most burns. But did you know that there are some types of burns that require other kinds of response? This lesson will give you information to help respond the major types of burns."

Outline lesson objectives (paragraph above).



**Presentation Of Content:** Display "Burns: Causes and Treatment" overhead transparency. Have students read and discuss the three major causes of burns — thermal, chemical and electrical.

Read and discuss the different types of burn treatment. Emphasize that different types of burn require different types of initial treatment.



**Guided Practice:** Distribute "A Guide To Burns."

Divide students into small groups. In groups, have students read each item and discuss the type and proper care of each.

Discuss when it would be appropriate to call for emergency medical service (9-1-1 in most Texas communities).



**Independent Practice:** Distribute "Warning:

Burn Danger" activity sheets. Point out that proper emergency treatment of burns depends on being prepared. Have students prepare warning labels or signs that could be placed on burn hazards. Instruct students to check the item or product, then prepare the label or sign.



**Reteaching:** Invite an emergency medical technician to present information on primary burn care.



**Enrichment:** Have students research the Shriners Burn Institute or the critical burn care hospital nearest to your community.

Invite a burn-care professional to visit the class. Encourage the guest to discuss burn prevention. (Note: Advise the guest on whether you wish to see photographs of severe burns. The students may be disturbed by some photographs.)



**Closure:** Have students present the labels and signs prepared in the Independent Practice activity. Share reactions to their work, and ask students to comment on those that might influence them to be more careful with burn hazards.

Ask students to tell what more impressed them during the study of "Fire Safety Power." Review major points on fire tetrahedron, electricity safety and types of fires.

**Administer post-test.**

# **Teacher Supplemental Materials**

Name \_\_\_\_\_

**SIXTH GRADE: Fire Safety Power**

**PRE-TEST**

Read each question, then write the best answer.

1. Fires are classified by letters, A, B and C. Tell the correct type of fire by writing the letter A, B or C in the blank.

- \_\_\_\_\_ electrical appliances or wiring
- \_\_\_\_\_ wood and paper
- \_\_\_\_\_ flammable liquids, such as gasoline or cooking oil

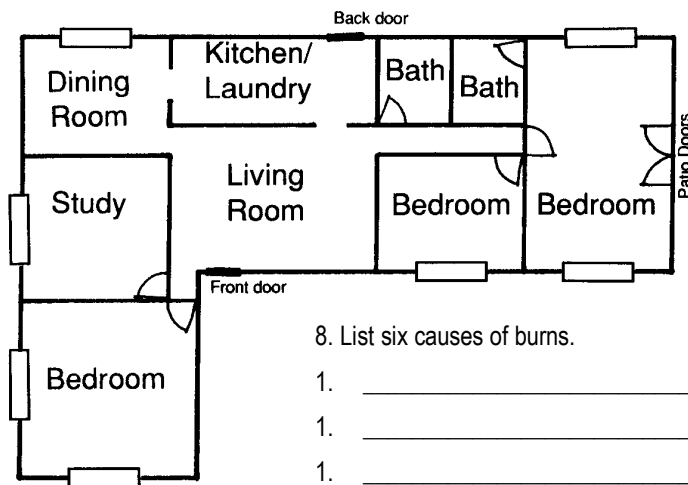
2. Why should you report a fire immediately?

\_\_\_\_\_

3. The three general types of fire extinguishers are:

\_\_\_\_\_, \_\_\_\_\_ and \_\_\_\_\_.

6. On the map, draw a circle in each place that a smoke alarm should be located. Then draw lines to show a fire exit plan.



4. You are not sure if a bottle of cleaner is a flammable liquid that might catch fire. How can you easily tell if the cleaner is a flammable liquid?

\_\_\_\_\_

5. Four elements are needed to create a fire and keep it burning. Three of these are heat, oxygen and fuel. The fourth is:

\_\_\_\_\_

6. List THREE professional jobs that are involved in responding to fire emergencies and providing care for burns:

- 1. \_\_\_\_\_
- 2. \_\_\_\_\_
- 3. \_\_\_\_\_

7. List two guidelines for placing smoke alarms.

- 1. \_\_\_\_\_
- \_\_\_\_\_
- 1. \_\_\_\_\_
- \_\_\_\_\_

8. List six causes of burns.

- 1. \_\_\_\_\_
- 1. \_\_\_\_\_
- 1. \_\_\_\_\_
- 4. \_\_\_\_\_
- 5. \_\_\_\_\_
- 6. \_\_\_\_\_

**Circle True or False.**

10. High-tension wires (outdoor power lines) are more dangerous than electric outlets in your home. **True False**

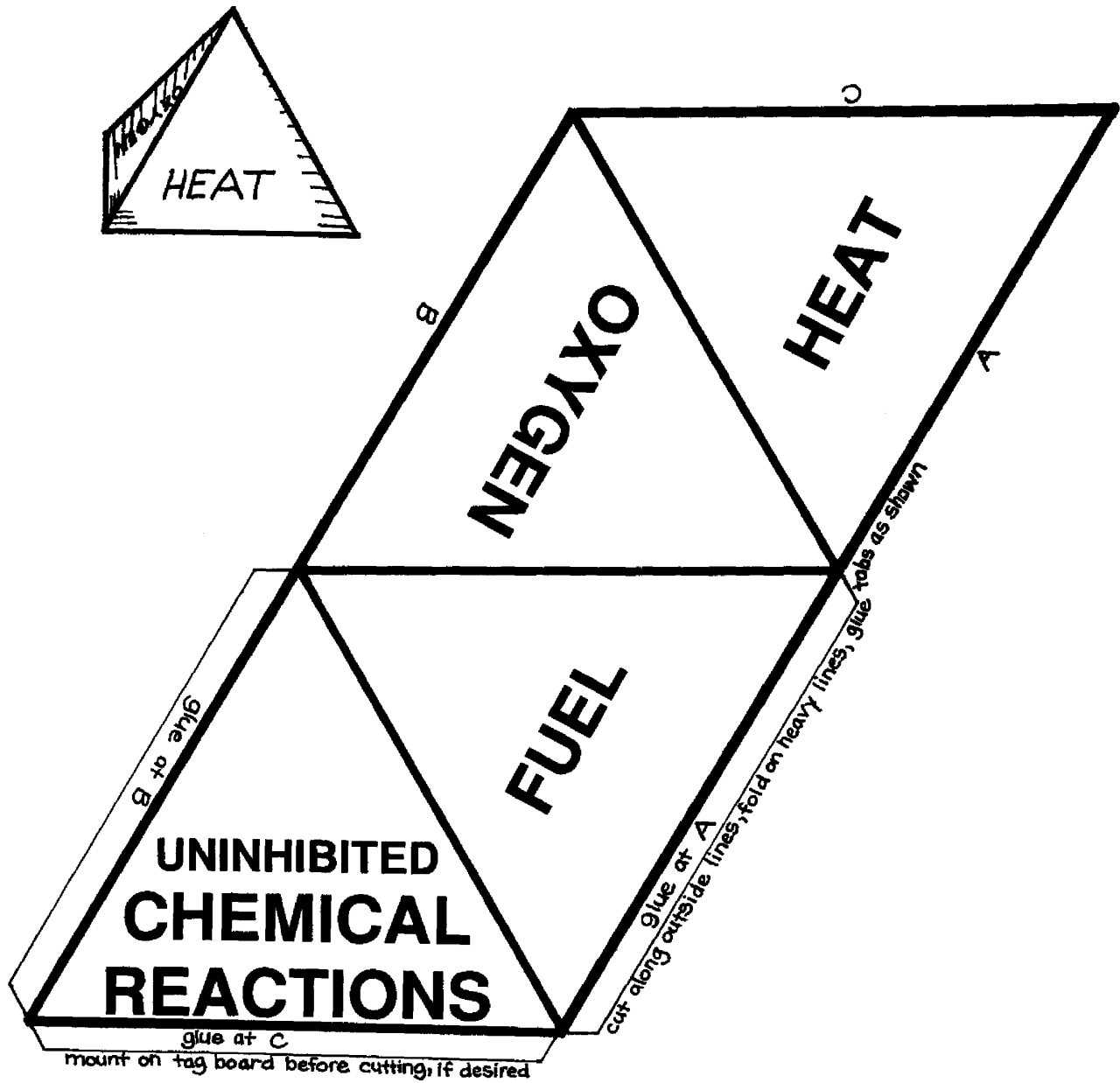
12. The chance of an electrical appliance catching fire is related to the amount of electricity that the appliance uses. **True False**

13. All burns are generally the same, so there is no difference in how you treat different burns. **True False**

Teacher: Use with Lesson One, Page 6. Duplicate for student use.

# Fire Tetrahedron

Model for illustration



Teacher: Use with Lesson One, Page 6. Copy and assemble as shown. Mount on tagboard and color before assembling, if desired.

## The Basics Of Fire and Fire Safety

Background Information

# Fire

A chemical process that converts one product (the fuel) to other products (including gases that contain carbon and hydrogen) in the presence of oxygen and heat.

*We usually say fire has three elements:*

*However, to start the process of combustion — and to keep the fire going — a fourth element is needed. Fire experts call this fourth element:*

**Fuel  
Heat  
Oxygen**

**Uninhibited  
Chemical  
Reactions**

*This means that nothing is being done to stop the interaction of the fuel, heat and oxygen that is producing the fire.*

Do something to **inhibit**, or stop, the interaction of fuel, heat and oxygen, and the fire is **stopped**.

### What will inhibit the interaction of fuel, heat and oxygen?

☒ Taking away the heat

*Example:* cooling with water 💧

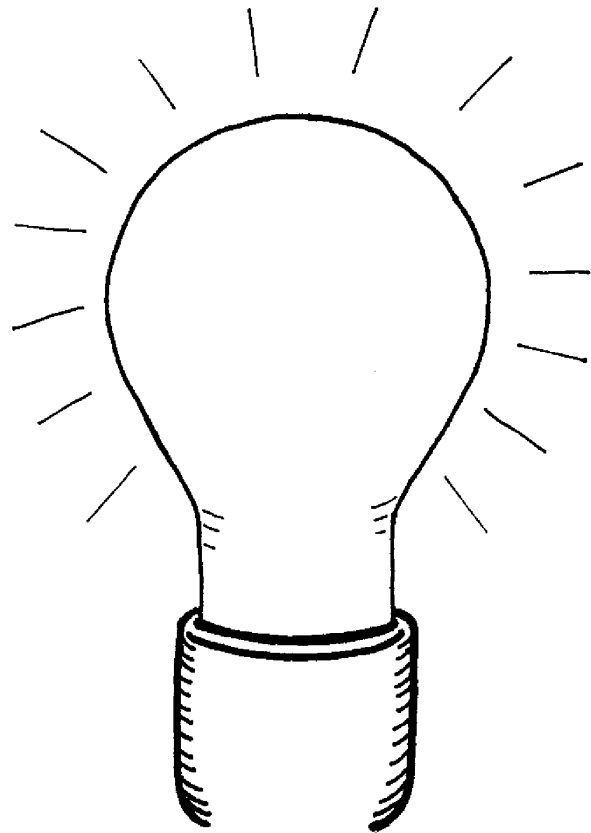
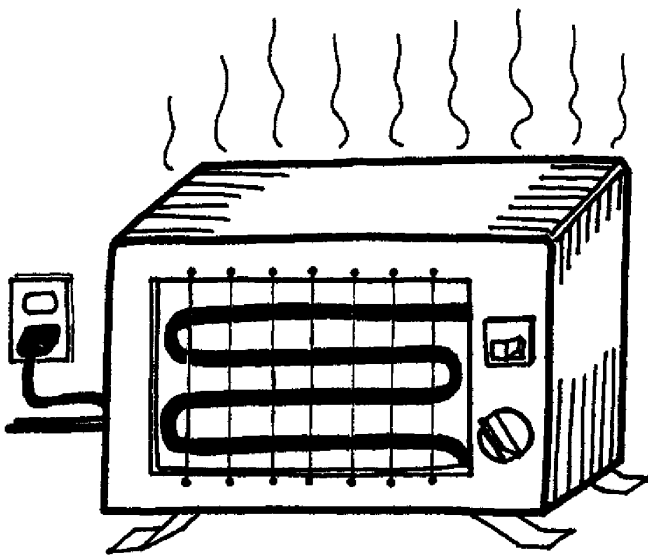
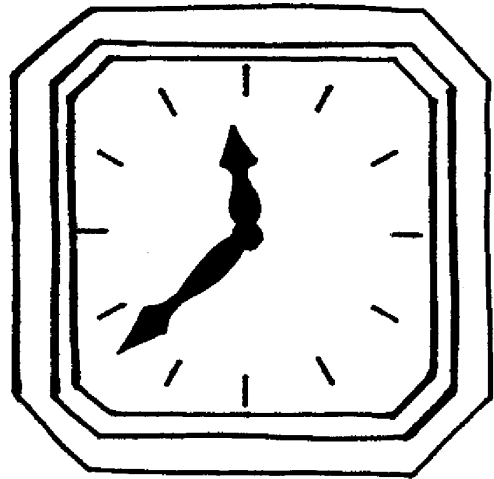
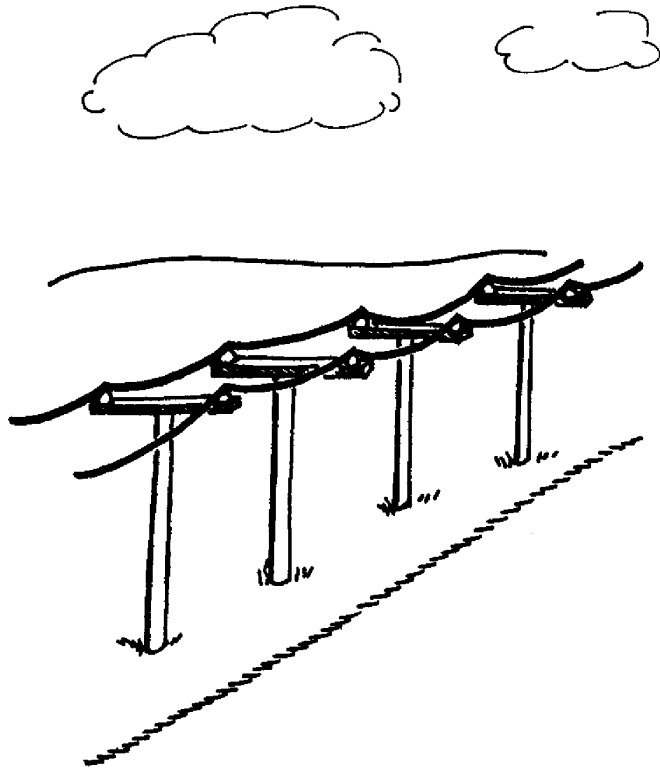
☒ Taking away the oxygen

*Example:* smothering the grease fire in a cooking pan by covering with a lid.

Teacher: Use with Lesson One, Page 6. Copy on poster or overhead transparency.



# Electrical Objects



Teacher: Use with Lesson Two, Page 7. Transfer to poster or overhead transparency.

**Electricity Is ...**  
Background Information

# Electricity

is the flow of electrons through simple materials and devices.



The flow of electrons creates **power** or **energy** that causes electric appliances to operate.



The flow of electrons also creates **heat**.

**Electricity** is used to:

**Produce heat**

toaster, heater, stove, dryer

**Produce light**

light bulb, television, video display terminal (VDT)

**Turn motors**

clock, fan, timer, washing machine

**Turn switches on and off**

computers, calculators

If an electrical appliance

produces more **heat** OR

produces more **light** OR

turns a motor *faster*,

the appliance uses **more electricity** and is **more likely to cause a fire**.

**HINT:** The wattage of an appliance is one indicator of how much electricity the appliance uses. The higher the number, the more electricity it uses.

Teacher: Use with Lesson Two, Page 7. Transfer to poster or overhead transparency.

**Role-Playing Labels**

**Smoke Alarm**

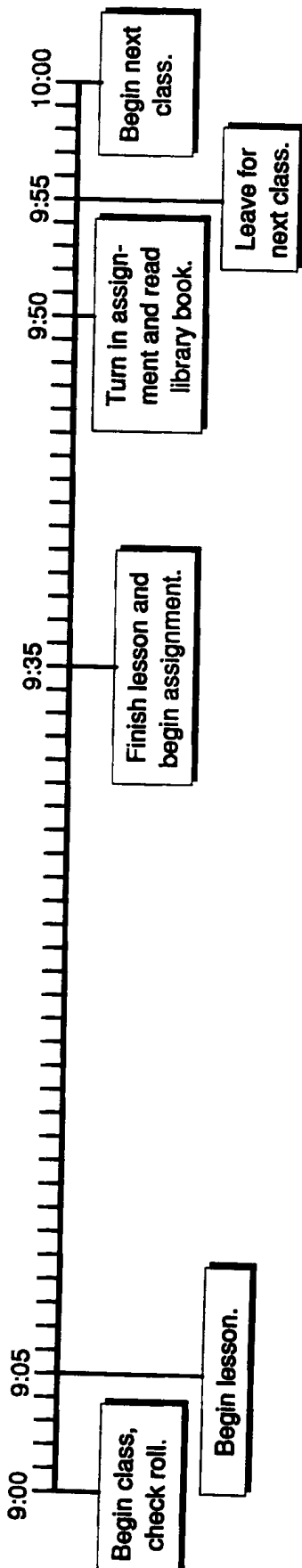
**Smoke Alarm**

**Smoke Alarm**

**Smoke**

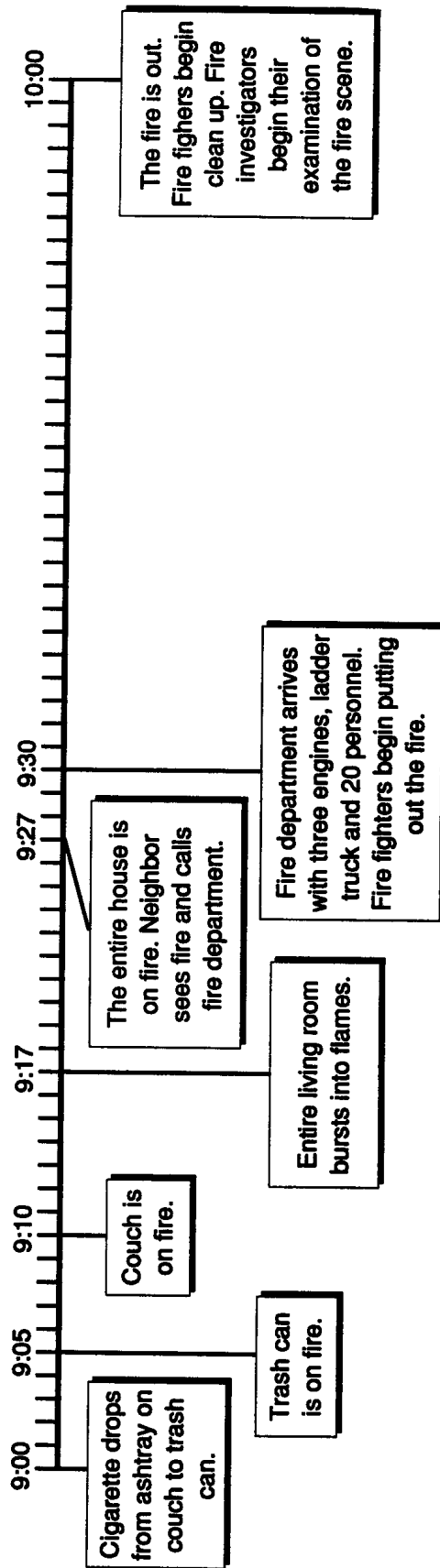
Teacher: Use with Lesson Three, Page 8. Make copies for each group, and cut apart.

# Time Line Of Class



Teacher: Use with Lesson Four, Page 9. Transfer to overhead transparency.

# Fire Time Line Overlay

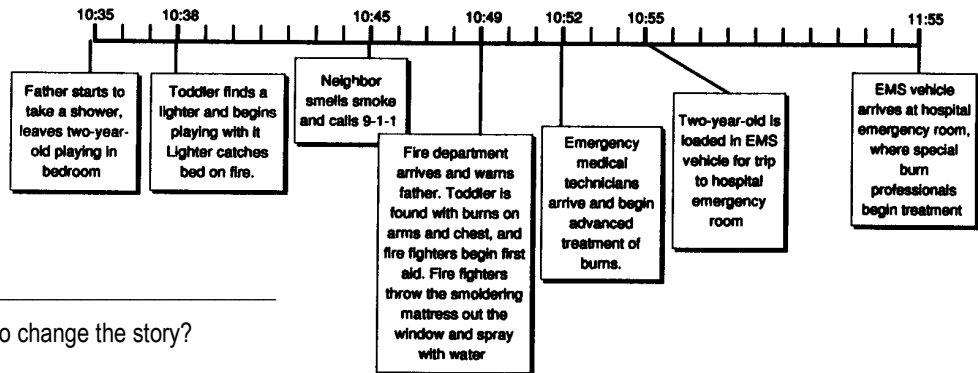


Teacher: Use with Lesson Four, Page 9. Transfer to overhead transparency.

# Seconds Count

Problem-Solving Activity

## Time Line 1



Briefly tell what happened

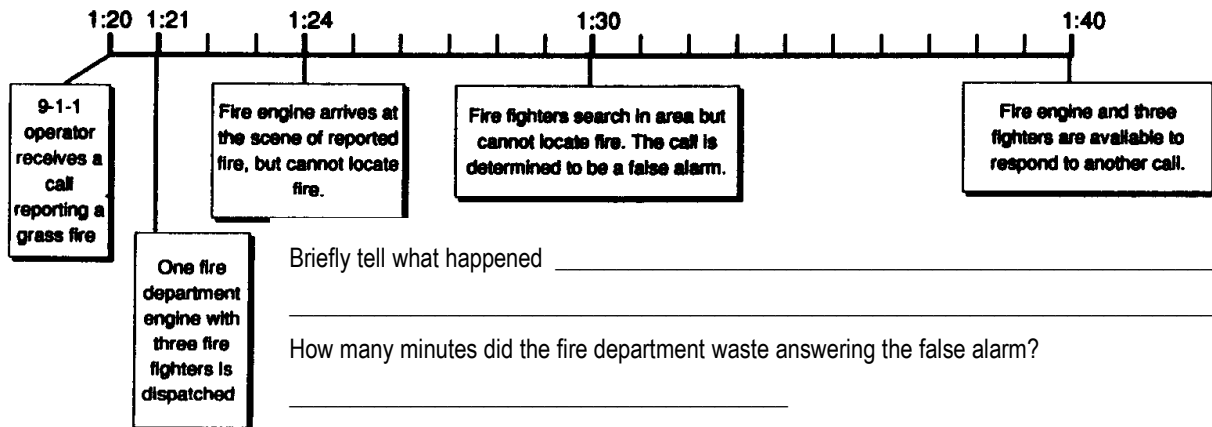
\_\_\_\_\_

What could one person do to change the story?

\_\_\_\_\_

How many minutes did it take the fire department to arrive after the neighbor called? \_\_\_\_\_

## Time Line 2



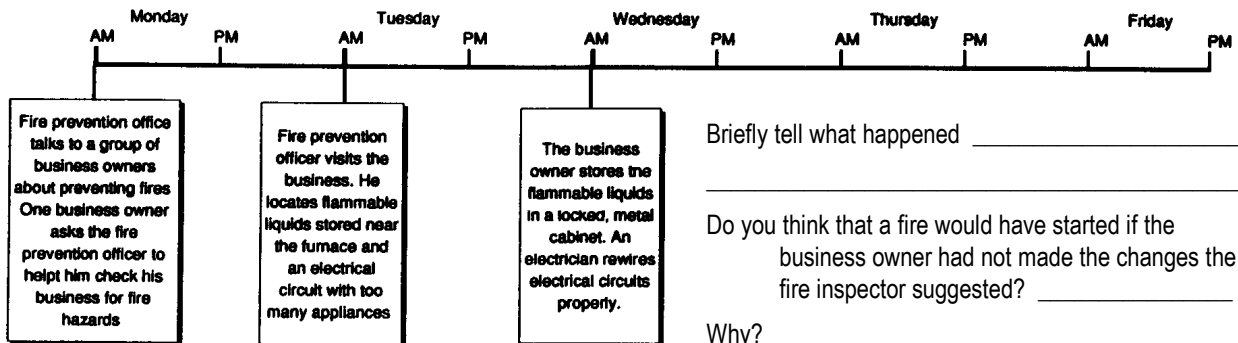
Briefly tell what happened \_\_\_\_\_

\_\_\_\_\_

How many minutes did the fire department waste answering the false alarm?

\_\_\_\_\_

## Time Line 3



Briefly tell what happened \_\_\_\_\_

\_\_\_\_\_

Do you think that a fire would have started if the business owner had not made the changes the fire inspector suggested? \_\_\_\_\_

Why? \_\_\_\_\_

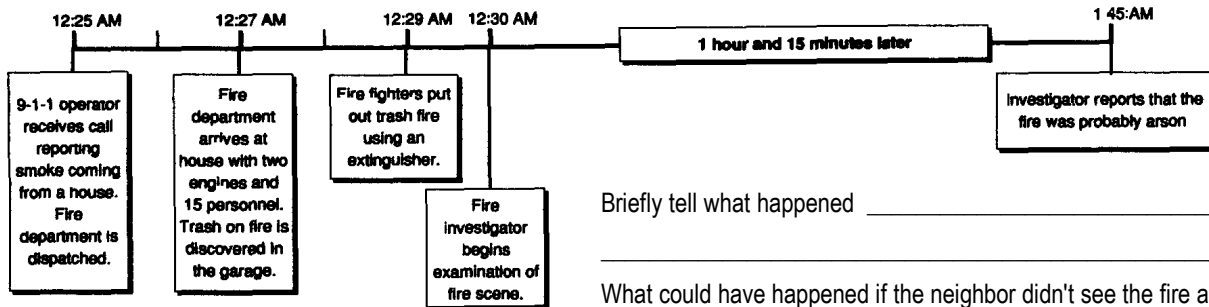
\_\_\_\_\_

Teacher: Use with Lesson Four, Page 9. Transfer to overhead transparency or poster.

# Seconds Count (continued)

Problem-Solving Activity

## Time Line 4



Briefly tell what happened \_\_\_\_\_

What could have happened if the neighbor didn't see the fire and report it quickly? \_\_\_\_\_

How many minutes did the fire department spend at this fire? \_\_\_\_\_

## Professionals At Work

Read the following descriptions of fire service and medical professionals, then match with the titles below and complete the sentences.

- |                                   |  |
|-----------------------------------|--|
| <b>A. fire inspector</b>          | <b>B. emergency medical technician</b> |
| <b>C. fire prevention officer</b> | <b>D. burn care specialists</b>        |
| <b>E. fire fighter</b>            | <b>F. fire investigator</b>            |

- \_\_\_ 1. This professional's primary job is to put out fires. He or she might also \_\_\_\_\_
- \_\_\_ 2. This professional's primary job is to help people prevent fires. He or she might teach fire safety at schools or help inspect buildings for fire hazards.
- \_\_\_ 3. This professional treats medical emergencies where the accident occurs. At a fire, he or she might treat a person for burns or for breathing in dangerous smoke and gases. He or she might also treat \_\_\_
- \_\_\_ 4. This professional's primary job is to carefully look at buildings for things that might cause fires. He or she tells how to correct problems so that a fire may be prevented. Some buildings that this person might inspect are \_\_\_\_\_
- \_\_\_ 5. This professional looks closely at the scene of the fire to determine how the fire was started and how it developed and spread. He or she is frequently involved in identifying fires that have been started on purpose.
- \_\_\_ 6. These professionals provide advanced types of medical care for people who have been burned. Their jobs include safely cleaning and treating large burns to prevent infections; replacing badly burned skin with skin grafts; and using physical therapy to exercise muscles that have been damaged. We usually call these professionals by these titles: \_\_\_\_\_

Teacher: Use with Lesson Four, Page 9. Transfer to overhead transparency or poster.

## Burns: Causes and Treatment

Burns from fires are only one type of burns. Medical experts group burns in three general categories, with six specific causes.

The first four are generally classified *thermal burns*. Thermal burns are caused by high heat.

*Flame* caused by fire, most frequently clothing on fire.

*Contact* caused by contacting, or touching, a hot object.

*Scald* caused by hot liquids.

**U-V Rays** (Ultra-violet rays) caused by the sun or sunlamps.

The other two types of burns are:

**Chemical** caused when the skin contacts a hazardous material, such as battery acid, drain cleaners, and some flammable liquids.

**Electrical** caused when the body directly contacts electrical energy (electrical current).

### Emergency treatment for each begins differently:

For thermal burns: Remove from the source of heat and cool with cool water. ♠  
(This helps even with sunburn.)

For chemical burns: Usually flush with water ♠ for 20 minutes or more. ⌚  
Remove contaminated clothing.  
(Some dry or powdered chemicals must be brushed off. Read the product label.)

For electrical burns: Turn off the electricity before touching the patient. Pull the plug or turn off the electrical power at the source.

### The next steps apply to all kind of burns.

- ε Check breathing.
- ε Stop bleeding.
- ε Cover the burn with clean bandage or cloth.
- ε For major burns, ☎ call 9-1-1 or local emergency medical services or get the patient to a doctor's office or emergency room.

Teacher: Use with Lesson Five, Page 10. Transfer to overhead transparency.



Name \_\_\_\_\_

**SIXTH GRADE: Fire Safety Power**

**POST-TEST**

Read each question, then write the best answer.

1. Fires are classified by letters, A, B and C. Tell the correct type of fire by writing the letter A, B or C in the blank.

- \_\_\_\_\_ electrical appliances or wiring
- \_\_\_\_\_ wood and paper
- \_\_\_\_\_ flammable liquids, such as gasoline or cooking oil

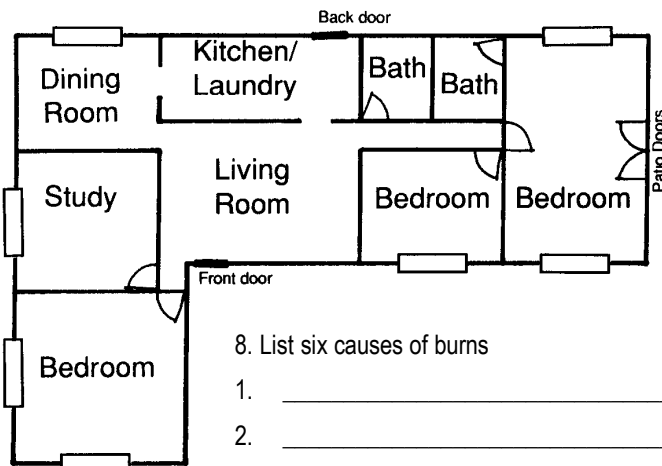
2. Why should you report a fire immediately?

\_\_\_\_\_

3. The three general types of fire extinguishers are:

\_\_\_\_\_, \_\_\_\_\_ and \_\_\_\_\_.

6. On the map, draw a circle in each place that a smoke alarm should be located. Then draw lines to show a fire exit plan.



8. List six causes of burns

- 1. \_\_\_\_\_
- 2. \_\_\_\_\_
- 3. \_\_\_\_\_
- 4. \_\_\_\_\_
- 5. \_\_\_\_\_
- 6. \_\_\_\_\_

7. List two guidelines for placing smoke alarms.

- 1. \_\_\_\_\_
- 2. \_\_\_\_\_

**Circle True or False.**

10. High-tension wires (outdoor power lines) are more dangerous than electric outlets in your home. **True False**

12. The chance of an electrical appliance catching fire is related to the amount of electricity that the appliance uses. **True False**

13. All burns are generally the same, so there is no difference in how you treat different burns. **True False**

Teacher: Use with Lesson Five, Page 10. Duplicate for student use.

# ANSWER KEY-1

Name \_\_\_\_\_

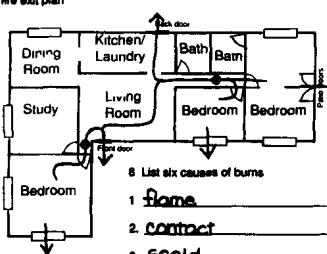
## SIXTH GRADE Fire Safety Power

PRE-TEST POST-TEST

Read each question, then write the best answer.

- Fires are classified by letters A, B and C. Tell the correct type of fire by writing the letter A, B or C in the blank.
  - C electrical appliances or wiring
  - A wood and paper
  - B flammable liquids, such as gasoline or cooking oil
- Why should you report a fire immediately?
 

fire spreads/grows very quickly
- The three general types of fire extinguishers are A, B and C.
- On the map, draw a circle in each place that a smoke alarm should be located. Then draw lines to show a fire exit plan.
 



7 List two guidelines for placing smoke alarms

  - outside each sleeping area
  - on each level or story
- List six causes of burns.
  - flame
  - contact
  - scald
  - U-V rays
  - chemical
  - electrical
- List THREE professional jobs that are involved in responding to fire emergencies and providing care for burns.
  - fire fighter
  - fire investigator
  - burn care specialist or doctor, etc.
- The chance of an electrical appliance catching fire is related to the amount of electricity that the appliance uses. (True/False)
 

True False
- All burns are generally the same, so there is no difference in how you treat different burns. (True/False)
 

True False

Circle True or False

10 High-tension wires (outdoor power lines) are more dangerous than electric outlets in your home. (True/False)
 

True False

Teacher: Use with Lesson One, Page 7. Duplicate for student use.

Name \_\_\_\_\_

## The ABCs of Fire Extinguishers

Background Information / Classification Activity

Solid Fuel A	Flammable Liquid B	Electrical Appliances and Equipment - C
Examples • wood • paper • rubber • most plastics • most clothes, upholstery, wall and window coverings • most furniture • most trash	Examples • gasoline • kerosene • oil, including cooking oil • grease, including cooking grease (animal fat) • paint thinner • solvents • some cleaners NOTE: Most flammable liquids are labeled with a warning message	Examples • house wiring • television • video cassette recorder • computer • CD or record player, stereo • electric fan • other electric appliances NOTE: When an electrical fire starts in most of these, surrounding materials can be ignited, creating another type of fire

Types of Fire Extinguishers

Fire extinguishers are grouped the same as fires A, B and C.

Some fire extinguishers are made to put out more than one type of fire. These are examples of fire extinguishers sold for use at home or work.

Type A: Water to cool  
 Type BC: Carbon dioxide or chemical to smother  
 Type ABC: Another type of chemical to smother and cool

Circle the type of extinguisher needed to put out a fire involving the object. Write whether the fire was probably cooled or smothered.

Object	A	B	C	Cool or smother?
Grease fire	A	<u>B</u>	C	<u>smother</u>
Gasoline fire in car	A	<u>B</u>	C	<u>smother</u>
Beating on fire	<u>A</u>	B	C	<u>cool</u>
Television	A	B	<u>C</u>	<u>smother</u>
Electrical circuit box	A	B	<u>C</u>	<u>smother</u>
Trash can with paper and cooking grease on fire	<u>A</u>	<u>B</u>	C	<u>cool and smother</u>

BONUS: An extinguisher labeled ABC would be correct for which fires on this page? All of them









Teacher: Use with Lesson One, Page 7. Duplicate for student use.

Name \_\_\_\_\_

## Overpower The Fire

Analysis Activity

Look at each object and answer the questions in the boxes.

Fire or fire hazard	What type of fire (solid fuel, flammable liquid, or electrical)?	What type of extinguisher should be used?
	<u>electrical (may also cause solid-fuel fire in cover)</u>	<u>C (A)</u>
	<u>solid fuel</u>	<u>A</u>
	<u>flammable liquid</u>	<u>B</u>
	<u>solid fuel</u>	<u>A</u>
	<u>solid fuel with possible flammable liquid or electrical</u>	<u>ABC</u>
	<u>flammable liquid</u>	<u>B</u>
	<u>electrical (may also cause solid-fuel fire in cover)</u>	<u>C (A)</u>
	<u>flammable liquid</u>	<u>B</u>

Teacher: Use with Lesson One, Page 7. Duplicate for student use.

Name \_\_\_\_\_

## Heat Equals Danger

Analysis Activity

**Electricity** is the flow of electrons through simple materials and devices.

- The flow of electrons creates power or energy that causes electric appliances to operate.
- The flow of electrons also creates heat.

Electricity is used to

- Produce heat
- Turn motors
- Produce light
- Turn switches on and off

If an electrical appliance produces more heat OR produces more light OR turns a motor faster the appliance uses more electricity and is more likely to cause a fire.

HINT: The wattage of an appliance is one indicator of how much electricity the appliance uses. The higher the number, the more electricity it uses.

Read each sentence. Decide which bold word fits best, and circle it.

HOUSE APPLIANCES	
1 A clock uses less electricity BECAUSE it turns a motor. <u>SLOWLY/ QUICKLY</u>	SO it is <u>MORE/ LESS</u> likely to start a fire.
2 A fan uses more electricity BECAUSE it turns a motor. <u>SLOWLY/ QUICKLY</u>	SO ... it is <u>MORE/ LESS</u> likely to start a fire.
3 A flashlight uses less electricity (compared to a reading light) BECAUSE it produces <u>MORE/ LESS</u> light.	SO it is <u>MORE/ LESS</u> likely to start a fire.
4 A cooking stove uses more electricity BECAUSE it produces <u>MORE/ LESS</u> heat.	SO it is <u>MORE/ LESS</u> likely to start a fire.
SPECIAL PROBLEMS	
5 High-tension wires — the wires on tall poles that bring electricity to our homes and other buildings — carry very large amounts of electricity. BECAUSE a high-tension wire has a large amount of electricity, it can produce <u>MORE/ LESS</u> heat and is <u>MORE/ LESS</u> likely to start a fire.	
6 A hair dryer uses more electricity BECAUSE it produces <u>MORE/ LESS</u> heat AND it turns a motor (the fan). <u>SLOWLY/ QUICKLY</u>	SO ... it is <u>MORE/ LESS</u> likely to start a fire.

Teacher: Use with Lesson Two, Page 8. Duplicate for student use.

ANSWER KEY-2

Name \_\_\_\_\_

### Higher Heat

Analysis and Classification Activity

Look at each pair of objects. Decide which one is more likely to cause a fire, then write the reason

It produces more heat  
It produces more light  
It turns a motor faster  
A combination (name which ones)

Circle the object that is more likely to cause a fire	Why is it more likely to cause a fire?
● small light (large light)	It produces more light.
● clock (fan)	It turns a motor more quickly.
● flash light (high-power reading light)	It produces more light.
● (high-tension wires) household extension cord	It produces more heat because it carries more electricity.
● MAKE UP YOUR OWN!	Accept reasonable answers.

**BONUS:** With an adult's help, look for the wattage labels on appliances at home. Make a list of the appliances you investigated and their wattages. Which ones use the most electricity? Do you think this means they are more likely to cause fires? Why?

Accept reasonable answers.

Teacher Use with Lesson Two, Page 8. Duplicate for student use.

36 Sixth Grade Fire Safety Power

Name \_\_\_\_\_

### Are These Homes Prepared?

Analysis Activity

Look at these homes. Are smoke alarms located where they should be?

Draw in smoke alarms that should be added. Use solid circles ● to show smoke alarms that are needed for minimum coverage. Use open circles ○ to show other smoke alarms that would give extra coverage.

✗ Put an X on a smoke alarm if it is not located in an appropriate location.

Then, draw in two fire emergency exit routes from each room.

**One-bedroom apartment**

**Home for a large family**

**Two-story home**

Discuss need for fire ladder for upstairs bedrooms.

Write two general rules for locating smoke alarms.

1. outside sleeping areas
2. on every floor or level

Teacher Use with Lesson Three, Page 9. Duplicate for student use.

37 Sixth Grade Fire Safety Power

Name \_\_\_\_\_

### A Powerful Plan For Home Safety

Planning Activity

Draw a map of your home to scale. Mark the location of each smoke alarm with a solid circle ●. Draw in other locations where smoke alarms would be helpful with open circles ○. Then draw two fire emergency exit ways from each room.

Scale 1 square = \_\_\_\_\_ foot/feet

Accept reasonable answers.

**Plan For Fire**

Help keep your family safe during the holidays. Hundreds of people die and are injured in fires during holiday celebrations each year. Read the following guidelines for holiday safety. Pick five rules for holiday fire safety that you feel could affect your family, and write your list on the back of a separate page.

- Never leave cooking unattended, such as putting a turkey in the oven to roast all night or while shopping.
- Don't overload extension cords with Christmas lights. Follow directions on the package.
- Never leave menorah candles or other holiday candles unattended. Use glass covers around candles.
- Celebrate New Year's Eve with games instead of fireworks.
- Turn off and unplug Christmas lights while sleeping or away from home.
- Celebrate Independence Day with a neighborhood parade instead of fireworks.
- On camping vacations or holidays, never leave campfires or cooking fires unattended. Always cover with water and dirt to put the fire out completely before sleeping or leaving the campsite.
- Use flashlights instead of candles in Halloween jack-o-lanterns.
- Think safety first whenever you're celebrating. Some of the most tragic fires occur during holiday seasons.

Accept reasonable answers.

Teacher Use with Lesson Three, Page 9. Duplicate for student use.

Name \_\_\_\_\_

### Seconds Count

Problem-Solving Activity

**Time Line 1**

Briefly tell what happened that caused burns.

Accept reasonable answers: father watch baby; neighbor not call, etc.

How many minutes did it take the fire department to arrive after the neighbor called? four

**Time Line 2**

Briefly tell what happened false alarm for a grass fire.

How many minutes did the fire department waste answering the false alarm? 20 minutes

**Time Line 3**

Briefly tell what happened Business owner tries to prevent fire.

Do you think that a fire would have started if the business owner had not make the changes the fire inspector suggested? YES

Why? two dangerous conditions existed.

Teacher Use with Lesson Four, Page 10. Duplicate for student use.

# ANSWER KEY-3

Name \_\_\_\_\_

## Seconds Count (continued)

Problem-Solving Activity

Time Line 4

Briefly tell what happened. Fire department put out and investigated an arson fire.  
 What could have happened if the neighbor didn't see the fire and report it quickly? House completely burned.  
 How many minutes did the fire department spend at this fire? 80 minutes

### Professionals At Work

Read the following descriptions of fire service and medical professionals, then match with the titles below and complete the sentences.

A. fire inspector  
 B. emergency medical technician  
 C. fire prevention officer  
 D. burn care specialists  
 E. fire fighter  
 F. fire investigator

1. This professional's primary job is to put out fires. He or she might also rescue people and clean up after fires.

2. This professional's primary job is to help people prevent fires. He or she might teach fire safety at schools or help inspect buildings for fire hazards.

3. This professional treats medical emergencies where the accident occurs. At a fire, he or she might treat a person for burns or for breathing in dangerous smoke and gases. He or she might also treat cuts, broken arms or legs, and injuries from auto accidents.

4. This professional's primary job is to carefully look at buildings for things that might cause fires. He or she tells how to correct problems so that a fire may be prevented. Some buildings that this person might inspect are homes, stores, offices, shops and factories.

5. This professional looks closely at the scene of the fire to determine how the fire was started and how it developed and spread. He or she is frequently involved in identifying fires that have been started on purpose.

6. These professionals provide advanced types of medical care for people who have been burned. Their jobs include safety cleaning and treating large burns to prevent infections, replacing badly burned skin with skin grafts, and using physical therapy to exercise muscles that have been damaged. We usually call these professionals by these titles: nurses, doctors, therapists.

Teacher: Use with Lesson Four, Page 10. Duplicate for student use.

40 Sixth Grade: Fire Safety Power

Name \_\_\_\_\_

## A Guide To Burns

Group Classification Activity

Read each example, then check the type of burn. Discuss special first aid actions for each.

What type of burn?	Flame	Contact	Scald	U-V Rays	Chemical	Electrical	What first aid or other actions should be done?
A boy stays outside for several hours while playing baseball. His face and arms are sunburned.				X			cool water (sunscreen on next outing)
Some battery acid splashes on a mechanic while he is working on a car. His leg is burned by the acid.					X		wash thoroughly
A pot of hot coffee spills when a child puts up on the table. The child's shoulder is burned.			X				cool with cool water; see doctor for large area
While she is ironing clothes a young woman accidentally touches her hand with the iron. Her hand is burned.		X					cool with cool water
While using an electric grass cutter, a man accidentally steps in water. He is shocked and falls down, still holding the cutter.						X	turn off power; call 9-1-1 or get medical assistance
A woman's blouse sleeve catches fire while she is cooking. Her arm and hand are burned.	X						cool with cool water; see doctor for large or deep burn

The four elements of fire are  
 1 Heat 2 Fuel 3 Oxygen  
 4 Uninhibited chemical reactions

Two guidelines for locating smoke alarms  
 1 outside or near sleeping areas (bedrooms)  
 2 on every floor or level

Teacher: Use with Lesson Five, Page 11. Duplicate for student use.

42 Sixth Grade: Fire Safety Power

Name \_\_\_\_\_

## A Time Line For Safety

Problem-Solving Activity

A time line is another way to tell a story. Write your own time line about the story below and describe why reporting a fire promptly is important. Then make a list of all the fire department and medical professionals who were involved.

**Story** At 10:00 p.m., the smoke alarm went off in the Martin's house. Because the family had practiced their fire emergency exit plan, everyone was outside in their meeting place in two minutes. Tom went to the neighbor's house and called 9-1-1.

The 9-1-1 operator received Tom's call at 10:05 p.m. One fire department engine arrived at the Martin's house in three minutes and began searching for the fire. The fire fighters immediately found an electrical fire in the garage. The fire was completely out in six minutes. However, one fire fighter burned his arm and was treated by an emergency medical technician.

The fire fighters set up a large fan to blow smoke out of the house. When the smoke was cleared an hour later, a fire investigator carefully checked the garage and house. His investigation took about 45 minutes.

The fire investigator said the fire was the result of damaged electrical wiring. He suggested that the Martins have a fire inspector or an electrician thoroughly check the house. Mr. Martin agreed to call the fire inspector the next morning.

**Time Line** Answers may vary. Accept reasonable answers. Possible answers could include all actions, to calling the inspector. One suggested answer:

Reporting a fire immediately is important because fire spreads very quickly.  
Accept other reasonable answers.

List of people in the story  
 the Martin family  
 neighbor  
 fire fighters  
 emergency medical technician  
 fire investigator  
 fire inspector  
 electrician

Teacher: Use with Lesson Four, Page 10. Duplicate for student use.

Name \_\_\_\_\_

## Warning: Burn Danger

Problem Analysis and Creative-Writing Activity

From the list below, select three items to complete the activity. Write the name of the item in the first blank in each section. Answer the questions, then create a burn warning label for the item.

Electric toaster	Chemical cleaner	Coffee pot	Sunlamp
Heater	Extension cord	Gas cooking grill	Battery
Bleach	Electric frying pan	Electric grass edger	Hair dryer

1. Name of item: Selection from list above. Write your own warning label:  
 How can it cause burns? Note relationship to six burn causes.  
 Answers should reflect awareness of the burn hazards of the item, plus additional awareness of general fire prevention.

If a burn occurs, what should be done first?  
Must be appropriate for type of burn.

2. Name of item: \_\_\_\_\_ Write your own warning label:  
 How can it cause burns? \_\_\_\_\_  
 If a burn occurs, what should be done first? \_\_\_\_\_

3. Name of item: \_\_\_\_\_ Write your own warning label:  
 How can it cause burns? \_\_\_\_\_  
 If a burn occurs, what should be done first? \_\_\_\_\_

Teacher: Use with Lesson Five, Page 11. Duplicate for student use.

**Student Materials —  
Duplicating Masters**

Name \_\_\_\_\_

## The ABCs of Fire Extinguishers

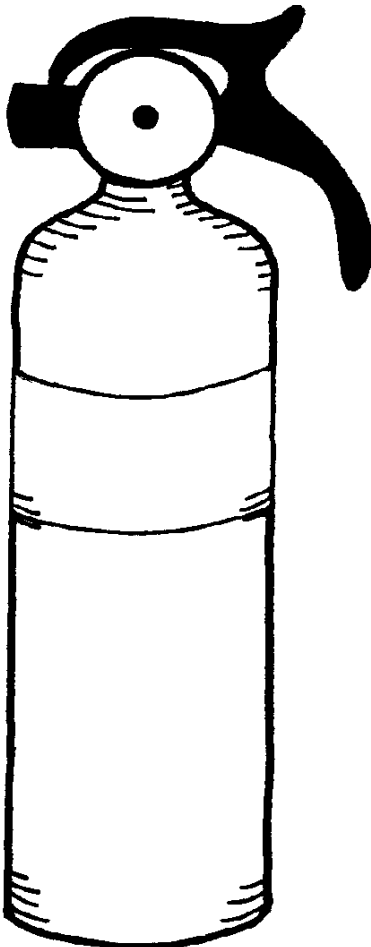
Background Information / Classification Activity

### Types of Fires

Solid Fuel A	Flammable Liquid B	Electrical Appliances and Equipment — C
<p><i>Examples:</i></p> <ul style="list-style-type: none"> <li>• wood</li> <li>• paper</li> <li>• rubber</li> <li>• most plastics</li> <li>• most clothes, upholstery, wall and window coverings</li> <li>• most furniture</li> <li>• most trash</li> </ul>	<p><i>Examples:</i></p> <ul style="list-style-type: none"> <li>• gasoline</li> <li>• kerosene</li> <li>• oil, including cooking oil</li> <li>• grease, including cooking grease (animal fat)</li> <li>• paint thinner</li> <li>• solvents</li> <li>• some cleaners</li> </ul> <p>NOTE: Most flammable liquids are labeled with a warning message.</p>	<p><i>Examples:</i></p> <ul style="list-style-type: none"> <li>• house wiring</li> <li>• television</li> <li>• video cassette recorder</li> <li>• computer</li> <li>• CD or record player, stereo</li> <li>• electric fan</li> <li>• other electric appliances</li> </ul> <p>NOTE: When an electrical fire starts in most of these, surrounding materials can be ignited, creating another type of fire.</p>

### Types of Fire Extinguishers

Fire extinguishers are grouped the same as fires: A, B and C.



Some fire extinguishers are made to put out more than one type of fire. These are examples of fire extinguishers sold for use at home or work:

**Type A:** Water to cool

**Type BC:** Carbon dioxide or chemical to smother

**Type ABC:** Another type of chemical to smother and cool

#### Classification Activity

Circle the type of extinguisher needed to put out a fire involving the object. Write whether the fire was probably cooled or smothered.

Object	A	B	C	Cool or smother?
Grease fire	A	B	C	
Gasoline fire in car	A	B	C	
Bedding on fire	A	B	C	
Television	A	B	C	
Electrical circuit box	A	B	C	
Trash can with paper and cooking grease on fire	A	B	C	

**BONUS:** An extinguisher labeled ABC would be correct for which fires on this page?









Teacher: Use with Lesson One, Page 6. Duplicate for student use.

Name \_\_\_\_\_

## Overpower The Fire

### Analysis Activity

Look at each object and answer the questions in the boxes.

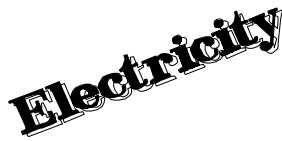
Fire or fire hazard	What type of fire (solid fuel, flammable liquid, or electrical)?	What type of extinguisher should be used?
1. 		
2. 		
3. 		
4. 		
5. 		
6. 		
7. 		
8. 		

Teacher: Use with Lesson One, Page 6. Duplicate for student use.

Name \_\_\_\_\_

## Heat Equals Danger

Analysis Activity



is the flow of electrons through simple materials and devices.

- The flow of electrons creates **power** or **energy** that causes electric appliances to operate.
- The flow of electrons also creates **heat**.

**Electricity** is used to:

- Produce heat
- Produce light
- Turn motors
- Turn switches on and off

If an electrical appliance

**produces more heat OR produces more light OR turns a motor faster**

the appliance uses more electricity and is more likely to cause a fire

**HINT:** The wattage of an appliance is one indicator of how much electricity the appliance uses. The higher the number, the more electricity it uses.

### Heat Equals Danger

Read each sentence. Decide which bold word fits best, and circle it

HOUSE APPLIANCES			
1. A clock uses less electricity <b>BECAUSE</b> it turns a motor <b>SLOWLY / QUICKLY</b> .	SO ... it is <b>MORE / LESS</b> likely to start a fire.	2. A fan uses more electricity <b>BECAUSE</b> it turns a motor <b>SLOWLY / QUICKLY</b> .	SO ... it is <b>MORE / LESS</b> likely to start a fire
3. A flashlight uses less electricity (compared to a reading light) <b>BECAUSE</b> it produces <b>MORE / LESS</b> light.	SO ... it is <b>MORE / LESS</b> likely to start a fire	4. A cooking stove uses more electricity <b>BECAUSE</b> it produces <b>MORE / LESS</b> heat.	SO ... it is <b>MORE / LESS</b> likely to start a fire.
SPECIAL PROBLEMS			
5. High-tension wires — the wires on tall poles that bring electricity to our homes and other buildings — carry very large amounts of electricity.	<b>BECAUSE</b> a high-tension wire has a large amount of electricity, it can produce <b>MORE / LESS</b> heat and is <b>MORE / LESS</b> likely to start a fire.	6. A hair dryer uses more electricity <b>BECAUSE</b> it produces <b>MORE / LESS</b> heat <b>AND</b> it turns a motor (the fan) <b>SLOWLY / QUICKLY</b> .	SO ... it is <b>MORE / LESS</b> likely to start a fire.

Teacher: Use with Lesson Two, Page 7. Duplicate for student use.



Name \_\_\_\_\_

## Higher Heat

Analysis and Classification Activity

Look at each pair of objects. Decide which one is more likely to cause a fire, then write the reason:

It produces more heat

It produces more light

It turns a motor faster

A combination (name which ones)

Circle the object that is more likely to cause a fire?	Why is it more likely to cause a fire?
① small light    large light	
② clock    fan	
③ flash light    high-power reading light	
④ high-tension wires household extension cord	
⑤ <i>MAKE UP YOUR OWN!</i> _____ _____	

**BONUS :** With an adult's help, look for the wattage labels on appliances at home. Make a list of the appliances you investigated and their wattages. Which ones use the most electricity? Do you think this means they are more likely to cause fires? Why?

**IMPORTANT NOTE:**  
Any object that uses electricity can cause a fire. Use any electrical appliance carefully with adult supervision!

Teacher: Use with Lesson Two, Page 7. Duplicate for student use.

Name \_\_\_\_\_

## Are These Homes Prepared?

Analysis Activity

**Look at these homes.  
Are smoke alarms located  
where they should be?**

✘ Put an X on a smoke alarm if it is not located in an appropriate location.

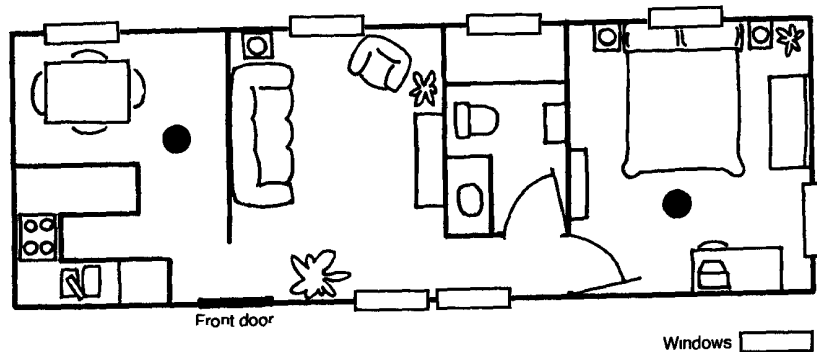
Draw in smoke alarms that should be added:

Use solid circles ● to show smoke alarms that are needed for minimum coverage.

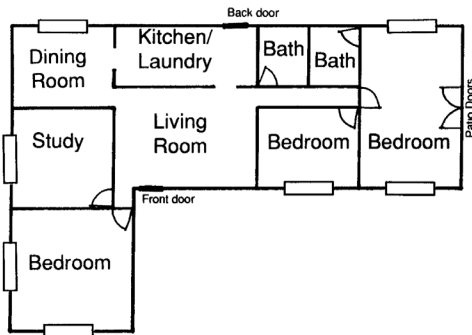
Use open circles ○ to show other smoke alarms that would give extra coverage.

Then, draw in two fire emergency exit routes from each room.

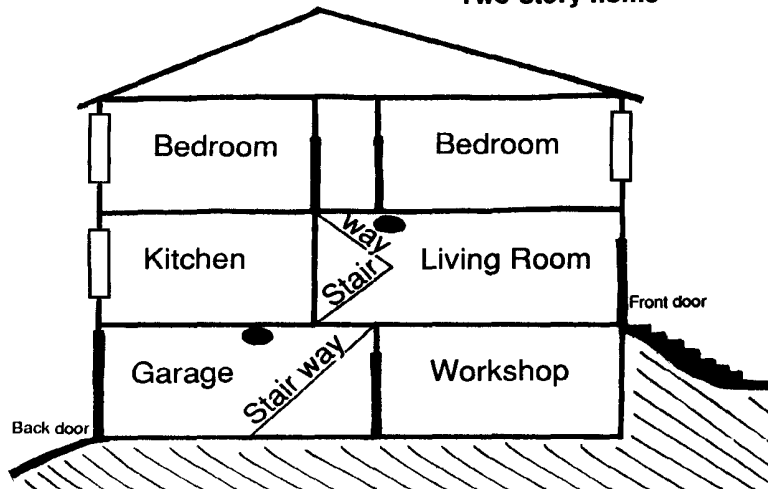
### One-bedroom apartment



### Home for a large family



### Two-story home



Write two general rules for locating smoke alarms.

1. \_\_\_\_\_
- \_\_\_\_\_
2. \_\_\_\_\_
- \_\_\_\_\_

Teacher: Use with Lesson Three, Page 8. Duplicate for student use.

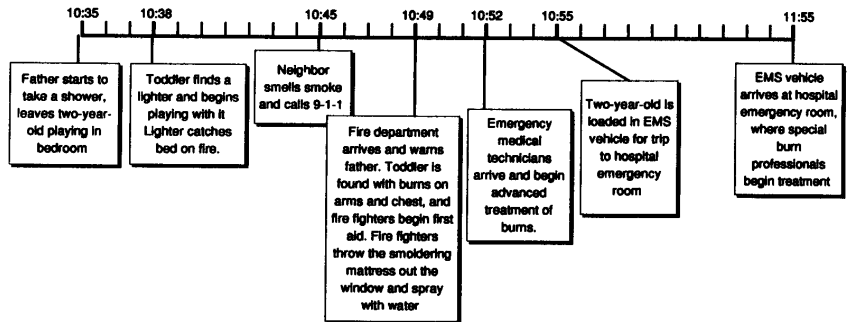


Name \_\_\_\_\_

## Seconds Count

Problem-Solving Activity

### Time Line 1



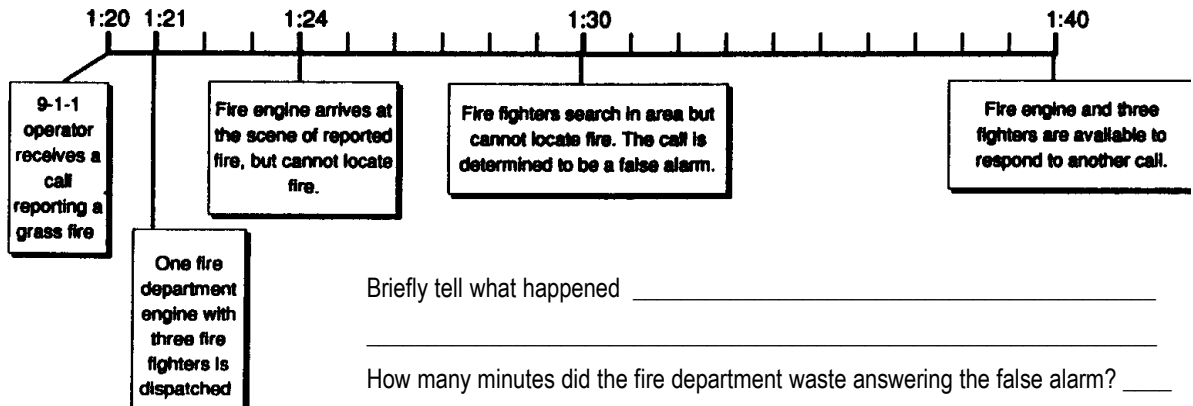
Briefly tell what happened

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

What could one person do to change the story?

How many minutes did it take the fire department to arrive after the neighbor called? \_\_\_\_\_

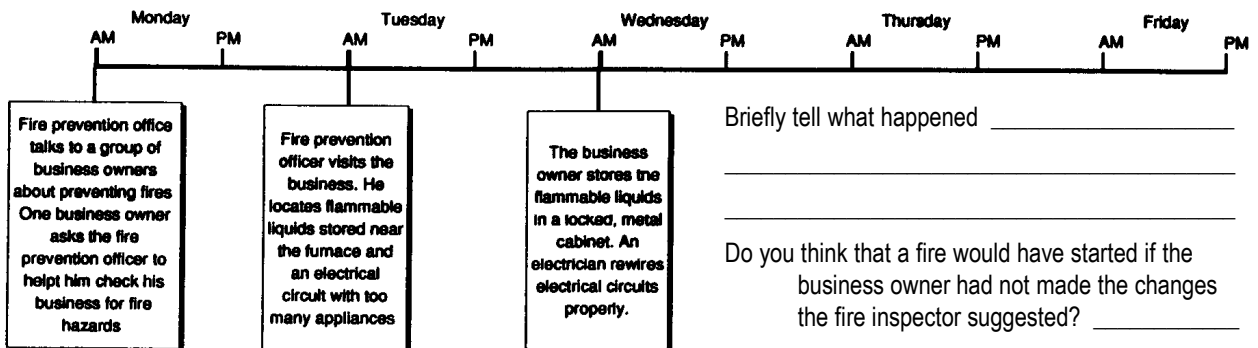
### Time Line 2



Briefly tell what happened \_\_\_\_\_

How many minutes did the fire department waste answering the false alarm? \_\_\_\_\_

### Time Line 3



Briefly tell what happened \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_

Do you think that a fire would have started if the business owner had not made the changes the fire inspector suggested? \_\_\_\_\_

Why? \_\_\_\_\_

\_\_\_\_\_

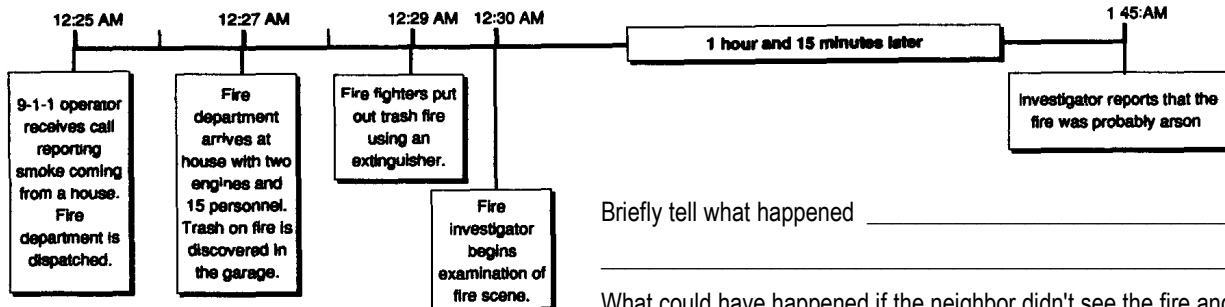
Teacher: Use with Lesson Four, Page 9. Duplicate for student use.

Name \_\_\_\_\_

## Seconds Count (continued)

Problem-Solving Activity

### Time Line 4



Briefly tell what happened \_\_\_\_\_

What could have happened if the neighbor didn't see the fire and report it quickly? \_\_\_\_\_

How many minutes did the fire department spend at this fire? \_\_\_\_\_

### Professionals At Work

Read the following descriptions of fire service and medical professionals, then match with the titles below and complete the sentences.

A. fire inspector

B. emergency medical technician

C. fire prevention officer

D. burn care specialists

E. fire fighter

F. fire investigator

\_\_\_ 1. This professional's primary job is to put out fires. He or she might also \_\_\_\_\_

\_\_\_ 2. This professional's primary job is to help people prevent fires. He or she might teach fire safety at schools or help inspect buildings for fire hazards.

\_\_\_ 3. This professional treats medical emergencies where the accident occurs. At a fire, he or she might treat a person for burns or for breathing in dangerous smoke and gases. He or she might also treat \_\_\_\_\_

\_\_\_ 4. This professional's primary job is to carefully look at buildings for things that might cause fires. He or she tells how to correct problems so that a fire may be prevented. Some buildings that this person might inspect are \_\_\_\_\_

\_\_\_ 5. This professional looks closely at the scene of the fire to determine how the fire was started and how it developed and spread. He or she is frequently involved in identifying fires that have been started on purpose.

\_\_\_ 6. These professionals provide advanced types of medical care for people who have been burned. Their jobs include safely cleaning and treating large burns to prevent infections; replacing badly burned skin with skin grafts; and using physical therapy to exercise muscles that have been damaged. We usually call these professionals by these titles: \_\_\_\_\_

Teacher: Use with Lesson Four, Page 9. Duplicate for student use.

Name \_\_\_\_\_

## A Time Line For Safety

Problem-Solving Activity

A time line is another way to tell a story. Write your own time line about the story below and describe why reporting a fire promptly is important. Then make a list of all the fire department and medical professionals who were involved.

### THE STORY

At 10:00 p.m., the smoke alarm went off in the Martin's house. Because the family had practiced their fire emergency exit plan, everyone was outside in their meeting place in two minutes. Tom went to the neighbor's house and called 9-1-1.

The 9-1-1 operator received Tom's call at 10:05 p.m. One fire department engine arrived at the Martin's house in three minutes and began searching for the fire. The fire fighters immediately found an electrical fire in the garage. The fire was completely out in six minutes. However, one fire fighter burned his arm and was treated by an emergency medical technician.

The fire fighters set up a large fan to blow smoke out of the house. When the smoke was cleared an hour later, a fire investigator carefully checked the garage and house. His investigation took about 45 minutes.

The fire investigator said the fire was the result of damaged electrical wiring. He suggested that the Martins have a fire inspector or an electrician thoroughly check the house. Mr. Martin agreed to call the fire inspector the next morning.

## Time Line

Reporting a fire immediately is important because \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_

### List of people in the story

Teacher: Use with Lesson Four, Page 9. Duplicate for student use.

Name \_\_\_\_\_

## A Guide To Burns

### Group Classification Activity

Read each example, then check the type of burn. Discuss special first aid actions for each.

What type of burn?	Flame	Contact	Scald	U-V Rays	Chemical	Electrical	What first aid or other actions should be done?
A boy stays outside for several hours while playing baseball. His face and arms are burned.							
Some battery acid splashes on a mechanic while he is working on a car. His leg is burned by the acid.							
A pot of hot coffee spills when a child pulls up on the table. The child's shoulder is burned.							
While she is ironing clothes, a young woman accidentally touches her hand with the iron. Her hand is burned.							
While using an electric grass cutter, a man accidentally steps in water. He is shocked and falls down, still holding the cutter.							
A woman's blouse sleeve catches fire while she is cooking. Her arm and hand are burned.							

### Looking Back

The four elements of fire are:

1. H \_\_\_\_\_ 2. F \_\_\_\_\_ 3. O \_\_\_\_\_  
 4. U \_\_\_\_\_ C \_\_\_\_\_ R \_\_\_\_\_

Two guidelines for locating smoke alarms

1. \_\_\_\_\_  
 2. \_\_\_\_\_

Teacher: Use with Lesson Five, Page 10. Duplicate for student use.

Name \_\_\_\_\_

## Warning: Burn Danger

Problem Analysis and Creative-Writing Activity

From the list below, select three items to complete the activity. Write the name of the item in the first blank in each section. Answer the questions, then create a burn warning label for the item.

Electric toaster  
Heater  
Bleach

Chemical cleaner  
Extension cord  
Electric frying pan

Coffee pot  
Gas cooking grill  
Electric grass edger

Sunlamp  
Battery  
Hair dryer

<p><b>1</b> Name of item:</p> <p>How can it cause burns?</p> <p>If a burn occurs, what should be done first?</p>	<p>Write your own warning label:</p>
<p><b>2</b> Name of item:</p> <p>How can it cause burns?</p> <p>If a burn occurs, what should be done first?</p>	<p>Write your own warning label:</p>
<p><b>3</b> Name of item:</p> <p>How can it cause burns?</p> <p>If a burn occurs, what should be done first?</p>	<p>Write your own warning label:</p>

Teacher: Use with Lesson Five, Page 10. Duplicate for student use.