



ADVENTURE

GREEN MERIT

FIRE SAFETY

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Version 06/2010

Fire Safety



Merit Overview

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Merit Answer Guide

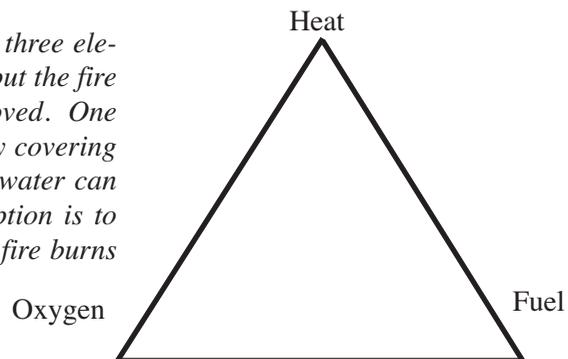
1. Answer the following questions in writing.

a. Explain the chemistry and physics of fire.

- *The process in which fires occur is called oxidation. Oxidation is the combination of a combustible material with oxygen. Chlorine may be the agent, instead of oxygen, in fires. Fires occur when the combustible agent is raised to a temperature high enough to cause combustion. The fire is sustained through the introduction and continual supply of oxygen. This state of oxidation is very rapid and results in heat and light. The heat is produced through the rapid oxidation of the combustible material. The light results from the gaseous materials that become luminous at a certain temperature. Thus, flames can be a variety of colors depending upon the agent used.*
- *Fires can be started by two means. The first is percussion. This is the use of a spark from two items being struck together, such as flint and steel. The second method is friction. When two items are rubbed together, it raises the temperature of the combustible material to its ignition temperature. For instance, in a bow and drill, the point of the drill causes the material it is spinning on to increase in temperature until it has the right amount of oxygen and heat to ignite.*

b. Draw a “fire triangle.” Point out each of the parts needed in order to have oxidation. Define oxidation and combustion.

- *In order to have combustion there must be three elements: Oxygen, fuel, and heat. In order to put the fire out, one of the elements must be removed. One method is to cut off the supply of oxygen by covering the fire with dirt or foam. To reduce heat, water can be placed on the fire to cool it. A third option is to remove additional sources of fuel until the fire burns itself out.*



- *Oxidation is the combination of oxygen with any material. Thus iron can oxidize and cause rust, although it does not occur rapidly enough to cause a fire, unless the temperature is raised high enough, as in a steel mill. Any material will oxidize in time. This is why silver tarnishes and needs to be cleaned occasionally.*
 - *Combustion is rapid oxidation so that a flame is created.*
- c. Define ignition point or kindling point.
Heat is required to start combustion. The temperature at which a substance will catch fire and continue to burn is called its ignition point or its kindling point.
- d. Define flash point.
This is the rapid consumption of vapor in the air. It ignites the vapor in combination with oxygen, but the heat created will not sustain combustion of the material. When a substance gives off a vapor that can ignite in the air, it is flammable, such as gasoline. A substance that is inflammable, such as wood, will not give off vapor that can ignite in the air.
- e. When either combustible liquids or materials are burning, what really is burning?
Vapors.
- f. What is spontaneous combustion?
Spontaneous combustion occurs when a material produces enough heat through such means,

such as pressure, to ignite without an ignition source. If the heat is sufficient to ignite and sustain the combustion of material, it is said to be spontaneous combustion. An example can be found on farms. Some forms of bacteria when found in moist hay will create enough heat to ignite the hay and start a fire. Ships that used coal to run their boilers would store vast quantities of coal in their holds. The heat generated by these large stores of coal could ignite and start fires within the ships.

2. Draw a floor plan of your home including all windows and doors. Locate two escape routes from each room. Also, mark a designated meeting area outside the home to gather after each person escapes from the home. Post this plan on a bulletin board or in your utility room. Practice a home fire drill using this plan.

Make sure the boy has a fire escape plan and has practiced using it with his family. The first way out would be the door, and the second way out could be a window. If the exit is blocked by smoke or fire, use the second exit to escape. Check to make sure the home fire drill is workable. Make sure the designated meeting area is marked.

3. Complete the Home Fire Safety Survey. Check your home for each of the conditions listed. State why these checks should be made twice a year.

Be sure the boy completes MWS 1 "Home Fire Safety Survey." He will need to put a check in the "Good Condition" box if the item is okay and a check in the "Needs Repair" box if the item needs attention. In the "Notes" section he needs to put down pertinent information, such as what type of repair, etc.

4. Describe in writing at least ten examples of fires occurring in your area started by the following causes. Give at least one example of each.

- a. Lightning strike: *Someone or an object is struck by lightning.*
- b. Arson: *Someone starting a fire at a home on purpose.*
- c. Lack of knowledge: *Kids playing with matches (eight- to eleven-year-olds have the highest percentage). Grease fires: Putting water on a grease fire (it should just be smothered). Barbecuing on a wooden deck: Grease spills or splatters on the deck and hot ashes land on the grease. It may not flare up until everyone is back in the house. A barbecue should always have a drip pan under it. Fires in ovens: Do not open the door. Simply turn off the heat and let the fire smother out. If the door is opened, oxygen rushes in, and the person opening the door can be badly burned as well as start a house fire.*
- d. Poor judgment: *Smokers: The ashtray is full then put into a garbage can; even a day or two later it may have burning embers. Candle: Letting it burn down and not having a large enough container for the wax. The excess wax melts then spills onto a dresser. A candle should never be in a child's room. Cleaning: Cleaning engine parts in gasoline.*
- e. Carelessness: *Throwing clothing or bedding near a heater (or even on a heater). Glass trinkets are left in windows, especially while the house is vacant since blinds or drapes are drawn, then the sun shines through them magnifying the heat of the sun and starting a fire. Even colored water in a bottle or glass container can start a fire. Some colors magnify the heat more than others. Using pure gasoline when lighting a fire to burn brush, etc. It is better to use solvent and diesel oil. The container must be well away from the brush when lighting the fire.*
- f. Mechanical or electrical failure: *Electrical: Frayed wires or too many appliances or electrical devices on one circuit. Electric blankets: Never place a cord between the mattress and box spring. Never fold up an electric blanket while it is on. (An electric blanket has a special folding pattern so that the cords are not pinched.)*

5. During the "Fire Season," there are fire ratings that the state and national forestry departments and local fire departments post daily. List, in writing, the five categories of fire conditions and what they mean.

Rating Number	Classification	Meaning
5	Extreme	No fires are allowed. The forest or park could be totally shut down.
4	Very High	Stoves are to be used in designated areas only.
3	High	Designated fires are to be made in pits only; no open fires.
2	Moderate	Fires are allowed, usually in fire rings. They will start shutting down open burning. A burning permit is required.
1	Low	Can burn in most conditions following the burn permit regulations.

6. Interview a fire captain or firefighter about the fire fighting profession. Ask about his or her most rewarding and most dangerous fire fighting experiences. Ask what education and specialized training are required for the profession. Write a 300-word report on your interview. Include your own reactions to the interview.

Verify the length, source, and personal reactions to the information.

7. Explain, in writing, the following:

a. How the “stop, drop, roll, and cool” procedure should be used to extinguish flames and lessen burn injuries if your clothing catches fire.

- *STOP immediately where you are; do not run.*
- *DROP to the ground.*
- *ROLL back and forth on the ground until the flames are extinguished. Cover your face with your hands to prevent flames from entering your lungs and burning your face. Roll one complete rotation in one direction and then reverse directions and make one complete rotation.*
- *Run COOL water over the burned area for ten to fifteen minutes and call an adult or 911.*

b. How to give first aid treatment for burns and what should not be done.

Cool a burn with water then call 911. Do not put butter or oil on the burn. Do not remove any melted clothing from the skin. Let the doctor take care of that.

8. Explain what action should be taken in each of the following situations:

a. You open the door of a home and smell gas (gasoline, diesel oil, kerosene, propane, or natural gas).

Leave the room or building, leaving the door open. Contact an adult or call 911 from a neighbor’s phone and report the smell of gas. Do not go into the room or call using the phone in the house. Do not light a match or operate any electrical device, such as the light switch. It might ignite the vapors that are present. (Odor is added to natural gas. It is like the smell of rotten eggs, so that you’ll quickly know if there’s a problem. The odor of propane is a strong-smelling substance called ethyl mercaptan, which is added to propane to warn consumers of a leak, but this odor can fade to where there is no smell.)

b. You smell smoke or the smoke detector goes off in the middle of the night.

Remember the first priority is to escape, not to call 911. Stay low, below eighteen inches, and crawl under the smoke to safety. Attempt to escape out the primary escape, the door, first. If the door is warm then retreat through the secondary escape, typically a window. Go to the designated gathering area.

d. Define *flash point*.

e. When either combustible liquids or materials are burning, what really is burning?

f. What is spontaneous combustion?

Leader's
Initials

Date _____

Leader's
Initials

Date _____

Leader's
Initials

Date _____

2. Draw a floor plan of your home including all windows and doors. Locate two escape routes from each room. Also, mark a designated meeting area outside the home to gather after each person escapes from the home. Post this plan on a bulletin board or in your utility room. Practice a home fire drill using this plan.

Draw the floor plan of your house on a separate sheet of paper then insert it into your workbook.

3. Complete the Home Fire Safety Survey. Check your home for each of the conditions listed. State why these checks should be made twice a year.

Complete MWS 1 "Home Fire Safety Survey."

4. Describe in writing at least ten examples of fires occurring in your area started by the following causes. Give at least one example of each.

Obtain the information from newspaper stories or fire department data.

- a. Lightning strike
- b. Arson
- c. Lack of knowledge
- d. Poor judgment
- e. Carelessness
- f. Mechanical or electrical failure

5. During the "Fire Season," there are fire ratings that the state and national forestry departments and local fire departments post daily. List, in writing, the five categories of fire conditions and what they mean.

Write your descriptions on a separate piece of paper and insert it in your workbook.

Leader's
Initials

Date _____



Rating #	Classification	Meaning

Leader's Initials
Date _____

6. Interview a fire captain or firefighter about the fire fighting profession. Ask about his or her most rewarding and most dangerous fire fighting experiences. Ask what education and specialized training are required for the profession. Write a 300-word report on your interview. Include your own reactions to the interview.

Write your report on separate paper and insert it in your workbook.

7. Explain, in writing, the following:

a. How the “stop, drop, roll, and cool” procedure should be used to extinguish flames and lessen burn injuries if your clothing catches fire.

Stop: _____

Drop: _____

Roll: _____

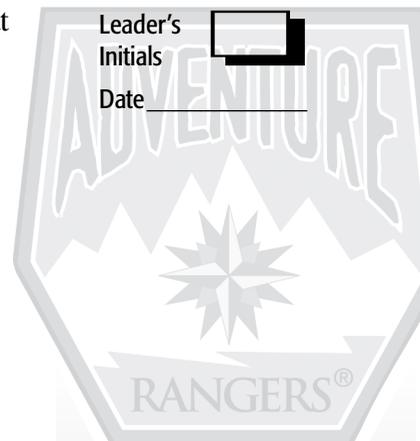
Cool: _____

b. How to give first aid treatment for burns and what should not be done.

8. Explain what action should be taken in each of the following situations:

a. You open the door of a home and smell gas (gasoline, diesel oil, kerosene, propane, or natural gas).

b. You smell smoke or the smoke detector goes off in the middle of the night.



Leader's Initials
Date _____

Leader's Initials
Date _____

Leader's Initials
Date _____

Fire Safety MWS 1: Home Fire Safety Survey

Home Fire Safety Survey

Take pictures of every room and valuables.

Winter = (W) Summer = (S)		W = Checked in the beginning of winter season S = Checked in the beginning of summer season W/S = Checked in both seasons		
Season	Activity	Good Condition	Needs Repair	Notes
Outside of Home				
W/S	Is the address on the house visible day and night?			
S	Are grass, vegetation, and overhanging trees cleared around the house?			
W/S	Is there any combustible debris on the roof?			
S	If a wood roof, is a sprinkler system installed?			
W/S	Are the gutters clean?			
W	Are there any branches overhanging the chimney? Does the chimney have a half-inch mesh screen over it?			
W/S	Are windows kept clear of outside combustible plants? (A local nursery can give advice.)			
W/S	Have bars from windows or obstructions been removed from windows to be able to exit in an emergency?			
S	Does the garden hose reach to all sides of the home?			
W/S	Barbecue area: Is the area clear of all burning material at least ten feet in all directions (including above the barbecue)? Does the barbecue have a drip pan under the barbecue?			
W/S	Are guns and ammunition stored in a locked metal cabinet?			
W/S	Are storage areas free of flammable rags and newspapers?			



Season	Activity	Good Condition	Needs Repair	Notes
Bedrooms				
W/S	Are rooms clean to help reduce fire hazards and accidents?			
W/S	Are lightbulbs in closets of proper wattage? (Do not put a 500-watt bulb in place of a 150-watt bulb.)			
W/S	Are electrical circuits overused?			
W/S	Are glass trinkets placed in windows? They may reflect and magnify the sun's rays, causing a fire.			
W	Are portable heaters shut off or too close to combustible material?			
W/S	Are there candles in a young person's room?			
W/S	Are there retractable fire ladders outside the window of each upstairs bedroom?			
W/S	Are you using flame-resistant materials for clothing and curtains, particularly for children's sleepwear, clothing, cloth dolls, and toys?			
W/S	Do residents smoke in bed or when sleepy, such as when watching TV and sitting on a couch or upholstered chair?			
W/S	Have you installed window guards to prevent falling from upstairs windows? Are these guards easily removable for exit during a fire?			
W/S	Do you have a fire escape plan? Do you practice fire drills?			
W	Electric blanket and heating pads: Are cords going under the bed, not between the mattress and box?			
W	Electric blanket: Are they always spread out, not rolled up or folded?			
W/S	Are appliances left on during absences?			



Season	Activity	Good Condition	Needs Repair	Notes
Living Room				
W	Does the fireplace have a chimney, and is it cleaned and inspected for cracks, leaks, and buildup of carbon by a professional?			
W	Fireplace: Is there any material within eighteen inches? Is there a screen covering the opening?			
W/S	Electrical: Are extension cords of proper size and not overused with too many devices? Are cords running under the carpet? Are the "Christmas tree plug-ins" (several electrical devices plugged into the same socket) attached to a fuse block? Are there bare wires?			
Kitchen				
W/S	Are appliances overloading electrical outlets?			
W/S	Are coffee makers left on?			
W/S	Are stoves/ovens kept on? Is there any grease buildup? Is the hood system dirty or loaded with grease?			
W/S	Is the fire extinguisher rated 10# ABC?			
W/S	Are cabinets locked to keep out small children?			
W	Are ashes put in a metal container, not a plastic garbage can? Is there adequate clearance between curtains and the stove or other potential sources of fire? Is anyone wearing a scarf, tie, or loose-flowing sleeves when cooking?			
Bathrooms				
W/S	Are hair driers, etc., overloading the circuits? Is the ground-fault system working?			
W/S	Are chemicals properly stored?			
W	Are portable heaters placed near flammable material?			



Season	Activity	Good Condition	Needs Repair	Notes
Utility Rooms				
W/S	Electrical: Are cords on the washer and drier frayed or kinked?			
W/S	Are all electrical appliances grounded with adequate wiring?			
W/S	Is there any lint buildup behind the dryer?			
W/S	If you use part of the basement as a laundry room or recreation area, have you installed a fire-resistant ceiling?			
W/S	Are storage areas kept free of flammable rags and newspapers?			
House Safety				
W/S	Is the smoke detector working and have the batteries been replaced?			
W/S	Is the carbon monoxide detector working and have the batteries been replaced?			
W	Has the heater been checked, filters replaced, and the pilot and venting checked? Heaters can be checked for free by your utility provider.			
S	Has the air conditioner been checked, coils and evaporator fins cleaned, and the filters replaced?			
W/S	Has the water heater been checked? Does the gas pilot burn properly? Are there spider webs, etc., in the vent tubes? Have wires been frayed or chewed? Has the venting been cleared and water flushed through the system? Water heaters can be checked for free by your utility provider.			
W/S	Are fire extinguishers kept in crucial areas—the kitchen, workroom, and near stairways? Are they checked periodically and has each family member been taught how to use them?			

