

Firem'n Chit Lesson Plan

(1) Introduction (Discuss with Scout): The ability to light a fire (and maintain it) is one skill that can truly make the difference between life and death. Humans do not perform very well when they are cold. *You can freeze to death in the outdoors!* A problem today is that few people have the opportunity to practice the skill of successfully building and maintaining a fire. The Firem'n Chit card is granted by Troop 413 to Scouts who have demonstrated the proper procedures for starting, maintaining, and extinguishing lighting devices, cooking fires, campfires, and lanterns. Scouts are not permitted to start, maintain, or extinguish troop lighting devices, cooking fires, campfires, or lanterns unless they are in possession of their Firem'n Chit card. The Firem'n Chit card will be issued by the Scoutmaster at the end of this training. Scouts will sign their card indicating agreement to abide by Boy Scouts rules with respect to fires. If the Scout feels that he cannot abide by the rules on the front and backside of the Firem'n Chit card, he will not be issued a card. **Administer Pre-test by have scouts right the answers to each of the questions found at the end of this document. Do not give out answers.**

(2) Objective (Discuss with Scouts) – The purpose of this session is to train Scouts on:

- a) The proper method for working with fire, campfires, cooking fires (wood and propane), and lanterns (propane).
- b) How to build campfires.
- c) How to build cooking fires.
- d) How to light lanterns and propane stoves.

(3) Materials – All materials needed for this class are in the Troop Equipment Storage Room. **Ensure that all materials are neatly returned after the class. Needed materials for class:**

- a) Firem'n Chit miscellaneous supplies box containing:
 - i) Matches
 - ii) Magnifying Glass
 - iii) Friction Fire Starter Kit – there are tender samples in a brown paper bag that you may use to light with the friction fire starter
 - iv) Tinder Samples (in plastic bags) – do not use the tender samples – get your own!
 - v) Kindling Samples (in plastic bags) – do not use the kindling samples – get your own!
 - vi) Sample Firem'n Chit Cards
 - vii) Fuzz Stick – do not burn the fuzz stick – make your own by using the pine stakes.
 - viii) Flint and Steel
 - ix) Pine Stakes
- b) Patrol Box
 - i) Lantern and propane tree
 - ii) Stove
 - iii) Propane Hose
 - iv) Butane Lighter
 - v) Adjustable Wrench
- c) Equipment Room
 - i) Shovel
 - ii) Water Bucket
 - iii) Propane Bottle in milk crate

(4) Firem'n Chit Card (Discuss the front and backside of the Firem'n Chit card. Have a few cards to pass around.)

- a) I have read and understand fire use and safety rules from the Boy Scout Handbook.
- b) I will secure necessary permits (regulations vary by locality).
- c) All flammable vegetation must be clear at least 5 feet radius in all directions from fire.

- d) Fire must be attended to at **ALL** times.
- e) Fire-fighting tools must be readily available (shovel and water/dirt/sand))
- f) Fire must cold to the touch before it is left.
- g) I subscribe to the Outdoor Code and Leave-No-Trace-Camping.

Firem'n Chit Privileges (Discuss with Scouts): Firem'n privileges can be taken away if a Scout fails in his responsibility. Typically, corners are cut from Firem'n Chit card for each infraction. If four corners are cut away or you conduct a serious infraction with fire – the card is taken away. You will have to re-earn your card by re-taking this class from a senior scout. You may not manage a Troop campfire, cooking fire, or light a lantern without being in possession of your Firem'n Chit card.

(5) General Information on Building Fires (Discuss with Scouts)

- a) It is better to use a propane cooking stove than building a cooking fire.
- b) Campfires should only be built in locations where previous campfires have been built.
- c) Fires leave scars with long lasting effects on the earth by destroying all of the minerals in the soil. Making a new fire pit should be the option of last choice – and only used for heat. Using previously established fire pits is OK – the damage has been done.
- d) Some localities or campgrounds require a permit to build an open fire. You need to know before you build the fire. Ignorance of the law is no excuse.

(6) Fire Safety Rules (Discuss with Scouts)

- a) Do not build a fire when conditions are too dry. Check with Ranger and/or look for a “No Fire” sign.
- b) Build a fire ring or dig a pit. Use existing fire rings or pits. Fire rings should be surrounded by dry rocks.
- c) If you are removing sod to make a fire, take the sod out in squares. The squares should be dug out at 6” in depth. Save the sod to re-install later. No more than four square feet of sod should be removed. Place sod in a shady location with the grassy side up.
- d) Always ensure 3 fire buckets filled with water and a shovel are available by the fire.
- e) Clear a 5' radius area encircling the fire. This includes removing any items that may be tripped over. Check above the fire ring to make sure there's no flammable vegetation.
- f) Ensure that fires are a safe distance from tents, tarps, ropes, propane tanks, overhead tree limbs, and any other flammable material.
- g) **NEVER** have a flame in a tent, including lit matches.
- h) Do not play with matches.
- i) Do not wave or throw burning sticks. Once a stick is lit, it must stay in the fire. **This is a good way to lose a corner.**
- j) Do not put rocks from streams, lakes or ponds - these may explode and cause injuries.
- k) Do not put sealed cans in the fire - these may explode and cause injuries.
- l) Do not put plastic in a fire - it releases dangerous fumes.
- m) Do not jump over the fire, or wrestle around and/or run near fires (within the 5' radius).

(7) General Information on Fires (Discuss with Scouts)

- a) The three things needed for a fire (called the "Fire Triangle") are:
 - i) Oxygen,
 - ii) Fuel
 - iii) Heat
- b) The three types of firewood are:
 - i) Tinder (dryer lint, wood shavings, birch bark, tinder fungus, pine resin, dry grass, dry pine needles, wood shavings). You should always keep a supply of tinder in a dry plastic bag in your camping gear or backpack. **Be Prepared! (Show examples of tinder.)**
 - ii) Kindling (fuzz sticks, small pieces of wood, up to the diameter of one finger) **(Show examples of kindling. Have Scouts try to build a fuzz stick.)**

iii) Fuel - Various sizes of wood, larger than kindling either green or wet wood that is dry enough for the surface to catch fire.

(8) Starting the Fire with Matches (Have Scouts practice lighting a match by cupping hands.)

- a) NEVER use flammable liquids (e.g. gasoline) to start a fire
- b) It's OK to use fire starter sticks
- c) It's OK to use a butane lighter, but store the lighter out of the sun
- d) Start with small, easily burnable material (tinder), move up to larger sticks (kindling), then to larger pieces of wood (fuel)
- e) Use of matches
 - i) Crouch down as close to the fire as possible. Shield the flame from the wind with your body.
 - ii) Strike the match and keep it lit in cupped hands. Most matches go out because people try to light something with a match before the match is properly lit.
 - iii) Put the match into your tender in the same direction as the wind

(9) Maintaining the Fire (Discuss with Scouts)

- a) Only **ONE** scout in charge of the fire at a time (designated on duty roster)
- b) Fire must be attended at **ALL** times. If the fire is not going to be attended, it **MUST** be put out.
- c) No playing with the fire – do not poke at the fire; stay out of the fire ring

(10) Types of Heating or Campfire Fire Lays (Have each Scout in your group build at least one of the fire lays. If you have fewer than three Scouts, the instructor and/or the Scout(s) will have to build all three lays. Ensure that the Scout views all three fire lays. Start at least one of the lays so you can practice extinguishing procedures.)

a) Lean-To

- i) Start by placing a green "lean-to" stick in the ground at a slant. *Question – Why use a green stick?*
Answer: It will burn slower and maintain the Lean-To.
- ii) Point its tip into the wind. This stick should hold the tinder upright while the tender is burned out

b) Tepee

- i) Start by placing a large handful of tinder in the middle.
- ii) Lean a circle of kindling around the tender. The tips should come together like the poles in a Indian teepee.
- iii) Feed fire from down wind side.

c) Log Cabin - Ideal council fire for a whole camp of scouts. It consists of crisscross made from logs at the bottom. The smaller crisscross fire lay is made from branches on top. Start the fire at the top with the smaller pieces of wood. As the campfire progresses, it will ignite the lower wood.

(11) Types of Cooking Lays (Have each Scout in your group build at least one of the cooking fireplaces. If you have fewer than three Scouts, the instructor and/or the Scout(s) will have to build all three lays. Ensure that the Scout views all three fire lays.)

a) Criss-Cross – Used when you need a bed of coals in a hurry for boiling or baking.

- i) Place two sticks (1"-2" diameter) on the ground parallel to each other about 1 foot apart.
- ii) Place two sticks (1"-2" diameter) perpendicular to the original stocks. Place on end to form a "stick box".
- iii) Put kindling inside the "stick box".
- iv) Place kindling sticks crosswise over the two supports. Ensure that the sticks are a "little finger width" apart.
- v) Continue with more crisscross layers. Increase the thickness from layer to layer.

b) Three Point – For a single pot or pan, stick three metal tent stakes into the fire lay before you start the fire. The metal tent stakes will hold a frying pan.

c) Hunters – Place two logs on the ground. Separate the logs according to the width of your pot. Put a handful of tender and kindling against the logs. Build up the fire lay with thicker and thicker fuel then ignite the tender. Since the fire eats the logs from the inside they will have to be replaced from time to time.

(12) Putting out the fire. Do in order:

- a) Spread the coals with a shovel or stick.
- b) Sprinkle water on the fire to begin to cool it. A big steam of water could cause burns through steam or splattering water.
- c) Continue to put out the fire with water or dirt. Stir the ashes and coals to ensure that they are completely out. The fire is out when the ashes and remains may be touched with the bare hand. This is called a Cold Out Test.
- d) If water is scarce, use sand or dirt to put out the fire

(13) After you are done (Reconstruct the area when the fire was lit.)

- a) If an area was cleared for the fire, the ashes should be scattered and the area returned to its original state - i.e. cover the area with leaves, sticks, or whatever was there before.
- b) Rocks that were used to form a fire circle should be turned over and put back.
- c) Replace any sod if it was removed.

(14) Other ways to start a fire (Have the Scouts try each)

- a) Flint and Steel – Flint is a hard gray rock with smooth faces and sharp edges. Use a piece of steel such as a small file. Make a spark catcher. How? *A bit of lint from the screen of a clothes dryer makes a good spark catcher.* After you have laid a fire, gather a handful of very fine, dry tender. Lay it on the ground and nest a bit of spark catcher in the center. Hold the flint over the tender. With the steel, strike a glancing blow against the flint, knocking sparks into the spark catcher. Gently blow on the tender until it catches fire.
- b) Fire by Friction – Use the device in the kit. Put some very fine tender under the fireboard notch, then kneel with one foot on the board. Twist the bowstring around the spindle and hold the spindle upright with the hand piece. Press down on the spindle to keep it in the fireboard hollow. Turn the spindle with long, steady strokes of the bow. Keep going until heavy smoke pours from the notch. Lift the fireboard and tender together and blow on the ember in the notch until it ignites the tender. Slide the flaming tender under your fire lay.
- c) Fire by Glass – On a very bright day, you can start a fire with a magnifying glass or a lens of a pair of thick eyeglasses. Move the glass until it focuses the sun's rays into a small, brilliant point of light on your tender. In a few minutes, the fuel should begin to smolder. Blow on the smoldering tender to start a fire.

(15) Using a camping stove (Have Scout demonstrate lighting a stove and lantern.)

- a) There are two types of common fuel for camping stoves
 - i) White gas (Coleman fuel)
 - ii) Propane
- b) All lanterns and standalone burners in this troop are propane and cooking is done on propane stoves – the only exception are backpacking stoves. Some backpacking stoves use white gas or a butane/propane mix. Check with an adult prior to lighting a backpacking stove.
- c) Setting up Propane Equipment
 - i) Make sure that the propane bottle is on level ground and inside a milk crate to stabilize it on the ground.
 - ii) Connect the green stem to the propane bottle. Use the adjustable wrench from the patrol box if applicable. **Make sure that all gas connections are tight!**
 - iii) Ensure the stem anti-rotation jig is properly installed to securely hold the lantern upright.
 - iv) Connect one end of the propane hose to the stem and the other to the stove. **Make sure that all gas connections are tight!**

v) Put the lantern on top of the stem. Be careful not to cross thread the lantern on the end of the manifold stem. **Make sure that all gas connections are tight!**

vii) Test gas connections by smell and listening for a hissing sound once tree is installed. Do this by turning off all control valves and slowly turn the bottle valve on.

d) Lighting Equipment

i) Light the match or butane lighter, hold close to the burner or lighting hole on the lantern, then turn the propane on.

ii) If the stove or lantern does not light immediately, turn off the fuel and call your Patrol Leader/SPL or an adult.

iii) Always attend a lighted stove or lantern

iv) Use pots that are appropriate in size for your stove

v) Let a stove/lantern cool completely before touching or attempting to put it away.

(17) Mantle Replacement in Lanterns (Discuss with Scouts) – Mantles are very delicate and are important for proper lantern operation. See you Scoutmaster before replacing a mantle.

(18) Common problems & misconceptions (Discuss with Scouts)

a) **Misconception:** If a fire “looks” like it’s out (no smoke), it’s really out

b) **Problem:** Leaving the fire unattended for “just a few minutes” is OK.

c) **Problem:** Playing around the fire

d) **Problem:** More than one person attending the fire

(19) Final comments (Discuss with Scouts)

a) Always use common sense – these rules can’t possibly cover all situations.

b) These privileges can be taken away if you fail to act responsibly.

c) You can waterproof a match by dipping the head of the match in melted wax.

d) You can make a fire starter with lint and wax or clothes dryer lint.

e) Never take tinder or fuel from a live tree.

f) Be 100% ready *before* lighting the match.

g) Pass out final exam.

The Outdoor Code

As an American, I will do my best to

Be Clean in my outdoor manners.

Be Careful with fire.

Be Considerate in the outdoors.

And

Be Conservation-Minded.

Firem'n Chit

Quiz

While a quiz is usually not the best means to test what a scout knows it is the fastest way to test his knowledge. The following quiz can be used to make sure a scout has learned everything he needs to know to earn the Firem'n Chit.

True/False(Please write out word)

- _____1. All flammable vegetation should be at least 3 feet in all directions from a fire.
- _____2. A can of water and/or a shovel should be near a fire at all times.
- _____3. There can still be a fire if no flame or smoke can be seen.
- _____4. Using gasoline or other flammable liquid to help start a fire is alright as long as you don't add more after you have lit a match.
- _____5. It is okay to play with burning sticks as long as they are in the fire circle.
- _____6. Evidence of fires disappear in only a few days.
7. In many public parks & camp grounds you may need a _____ to build a fire.
8. Sometimes it is better to use a _____ than a fire.
9. If there is not already a fire circle at a campsite then you can use a _____ or you can remove _____ when needing to build a fire.
10. Never leave a burning fire or stove _____.
11. Rocks used for a fire circle should be _____ _____ after you are done using a fire.
12. When putting out a fire first _____ the embers then sprinkle _____ on the embers until the fire is out.
13. Always keep a campfire under _____ _____.
14. How is it possible to tell if a fire is totally out?
15. If water is not available or is scarce what can be put on a fire to put it out?

Fire Quiz

True/False(Please write out word)

False 1. All flammable vegetation should be at least 3 feet in all direction from a fire.

True 2. A jug of water and/or a shovel should be near a fire at all times.

True 3. There can still be a fire if no flame or smoke can be seen.

False 4. Using gasoline or other flammable liquid to help start a fire is alright to use as long as you don't add more after you have lit a match.

False 5. It is okay to play with burning sticks as long as they are in the fire circle.

False 6. Evidence of fires disappear in only a few days.

Fill-in(Put the correct word on the blanks)

7. In many public parks & camp grounds you may need a **permit** to build a fire.

8. Sometimes it is better to use a **stove** than a fire.

9. If there is not already a fire circle at a campsite then you can use a **ground cover, stove** or you can **remove sod** when needing to build a fire.

10. Never leave a burning fire or stove **unattended, burning**.

11. Rocks used for a fire circle should be **turned over**, put back after you are done using a fire.

12. When putting out a fire first **spread out, disperse** the embers then sprinkle **water** on the embers until the fire is out.

13. Always keep a campfire under **complete control**.

Short Answer(Answer the following questions by using one or two complete sentences)

14. You can put you **hand just above the ashes and there is not heat** coming from them.

15. You can **use sand or dirt** to put out the fire.