

WOODINVILLE COMMUNITY DAY CAMP, OUTDOOR SKILLS PROGRESSION

Pixies	ENTERING K/1	ENTERING 2 ND	ENTERING 3 RD	ENTERING 4 TH	ENTERING 5 TH	ENTERING 6 TH
<p>Learn about personal safety around fire/open flame.</p> <p>How and when to use 911.</p> <p>Build a model A-frame fire with pool noodles.</p> <p>Learn concept of “safety circle”.</p> <p>Make Edible fires.</p>	<p>Learn about personal safety around fire/open flame.</p> <p>How and when to use 911.</p> <p>Learn 3 sizes of wood for fire, and be able to sort: tinder, kindling, fuel.</p> <p>Build a model A-frame fire. Learn concept of “safety circle”.</p>	<p>Review prior knowledge/skills plus:</p> <p>Learn to safely light a match.</p> <p>Learn about a fire circle.</p> <p>Help build, maintain, and put out a fire.</p>	<p>Review prior knowledge/skills plus:</p> <p>Learn three elements (essentials) of a fire.</p> <p>Continue working on match lighting skills.</p> <p>Learn to light tinder.</p> <p>Help build, light, tend, and safely put out an a-frame fire</p> <p>Conservation issues/LNT</p>	<p>Review prior knowledge/skills plus:</p> <p>Learn different types of fires, and know their purposes (best fires for various circumstances and purposes).</p> <p>Make and use firestarters as one type of tinder.</p> <p>Build, light, and tend an A-frame fire.</p> <p>Build, light, tend and safely put out tepee fire. Know its purpose.</p>	<p>Review prior knowledge/skills plus:</p> <p>Build, light, tend, put out, and know the purpose of a log cabin fire.</p> <p>Try to become a member of the Girl Scout “One Match Club”</p>	<p>Demonstrate understanding of personal safety precautions.</p> <p>Demonstrate understanding of fire safety precautions.</p> <p>Demonstrate awareness of conservation issues, and leave no trace principles.</p> <p>Be competent building, lighting, maintaining, and extinguishing a fire built for a specific purpose.</p>

Pixies/Daisies K/1st grade – 30 minutes.

New skills: Learn about personal safety around fire/open flame. How and when to use 911. Learn 3 sizes of wood for fire, and be able to sort: tinder, kindling, fuel. Build model fire. Learn concept of Safety Circle

Materials needed: examples of tinder, kindling, fuel. Additional wood for campers to make their own fires OR Food items for building edible fires (coconut, pretzels, carrots, etc.), hair ties.

WHERE/WHEN DO WE USE FIRE?

Ask: “Where might you see a fire/flame?”

Candles, fireplace, campfire, barbeque, etc.

BEGINNERS – SAFETY FIRST!

1. Never ever use matches or lighters, or play with lit candles/flame without an adult’s permission and supervision!

2. When using fire, always pull back hair that is long enough for a ponytail. **This includes any adults and PA/Ts at this station.** Keep loose clothing tucked in, jackets zipped, and do not wear long, floppy sleeves around a fire. “WHY?” (could catch fire).

3. What to do if your clothing or hair catches fire? **Stop, Drop, and Roll!**

How? Stop what you are doing. **Do not run!!!** (Why? A fire needs air to grow – running helps feed the fire, so **STOP** right away.) Then **DROP** down on the ground and cover your face with your hands to protect it from flames. Dropping on the ground helps smother the fire so it can’t get air. Next, **ROLL**. Roll back and forth until the fire is out.

4. If someone is badly burned, or a building catches fire, or a campfire gets out of control and can’t be put out, CALL 911!

Practice: STOP, DROP, AND ROLL.

Ask “**When is it okay to call 911?**”

“911 is only for emergencies!”

Don’t hang up! Stay on the line with the 911 operator until help arrives, or until you are told to hang up.

Learn your address so you can tell 911 where you are in an emergency.

SUMMARY:

1. When do we use or see fire?

2. Safety:

- Personal Safety

- 911

3. Sizes/types of wood & steps in fire building (ACTIVITY)

FIRE BUILDING STATION – GRADE LEVEL LESSON PLANS

THREE SIZES OF WOOD - When might we want a fire outdoors? Cooking, heating water, warmth...

A campfire needs three types of wood (smallest to largest):

1. Tinder - smaller than finger; burns as soon as touched with a match
 2. Kindling - between finger and arm length, and smaller around than an adult thumb
 3. Fuel - size of arm or thicker; keeps the fire going
- Show examples of each, side by side.

STEPS IN BUILDING A FIRE: Demonstrate the steps for building a fire.

1. Choose a safe area to build your fire. Clear a SAFETY CIRCLE around the area where the fire will be built. “Hmmm... Where should I build my fire? Over here in the grass?” Lead girls to come up with good choices.
2. Do you have everything you need so you don’t leave your fire unattended?
3. Do you have everything you need to put the fire out?
4. Are YOU safe? Check for long hair and loose clothing.
5. Start with tinder.
6. Add kindling.
7. Then add larger fuel.
8. Fire needs a spark!

ACTIVITY OPTIONS: (Model fire with wood, OR edible fire)

Working in small groups, give each group an unsorted pile of various sizes of wood. Let them work in their group to sort them into three piles: tinder, kindling, fuel. If time, demonstrate and let them build a fire (minus flame) using their wood. Can also use pool noodles to build various types of fires: log cabin, teepee, A-Frame

-OR-

Build edible fires – demonstrate (using actual wood), and walk campers through the steps of building a campfire. Hand out one component of the fire at a time.

Small paper plate = safety circle.

Cup = water bucket.

Raisins are the rocks = fire ring. Make a circle of raisins on the plate.

Large pretzel stick = fuel. Break the stick in thirds, and create an “A” shape in the ring.

Shredded coconut, or a shredded wheat square = tinder. Place it in the pointed end of the “A”.

Red hots or craisins = spark (match). Add sparks to the tinder to start the fire.

Straight pretzels = kindling. Add kindling on top of the tinder.

Brownies – 2nd grade – 30 minutes.

Review/teach if necessary: Fire safety skills from K/1st progression. Especially touch on making sure hair is pulled back, loose clothing is tucked in, and no long, baggy sleeves. Watch out for other people around you.

New skills: Learn to safely light a match. Learn about a fire circle. Help build, maintain, and put out a fire.

Materials needed: Buckets with water, boxes of matches; three types of wood; hair ties.

LEARN TO SAFELY LIGHT A MATCH

Remind campers that they should never light matches, candles, or fires without adult permission and supervision.

“Why might we need a flame?” Light a candle, lantern, campfire, etc...

SUMMARY:

1. Review personal safety.
2. Learn to light a match.
3. Assist in building, maintaining, and putting out a fire.
 - Review types of wood
 - Teach fire circle

NOTE: some children at this age (and even older) may be very scared of lighting matches. They have been told repeatedly by adults that children should “never play with matches”. Strongly encourage, but don’t force campers to light matches – “**Challenge by choice**”. Remind them that we are taking precautions to keep everyone safe, and ask them to repeat back all the precautions we are taking (adult supervision, hair pulled back, water close by, etc.). A majority of campers will try to light a match before they leave the station.

With entire unit, demonstrate how to light a match:

1. We are going to practice lighting matches over a bucket of water. First, pull one match out of the box.
2. Close the box.
3. Hold the match in your dominant/writing hand, and the box in your other hand. The strike strip should be facing out.
4. Hold the end of the match stick between your thumb and pointer finger, with the match head near the strike strip.
5. Run the head of the match firmly along the strip. DO NOT throw the match!
6. When the match lights, you’ll notice it flare at first. Try to hold onto the match until after you see it flare.
7. Drop it in the water.

NEXT: *Split group in two – half will work on learning to light a match, while the other half helps to build and maintain a fire. Switch after approximately 10-12 minutes. Allow time for the fire building group to see a fire lit, and extinguished. If you have a PA who would like to instruct, and who you are comfortable having teach based on observation of their skills, have them lead one area while you lead the other.*

FIRE BUILDING STATION – GRADE LEVEL LESSON PLANS

For the match lighting group, split campers up into groups of 2-3 around each bucket of water, each supervised by an adult or PA, and walk them back through all the steps. Let them continue lighting matches until they are comfortable and ready to move on.

LEARN ABOUT A FIRE CIRCLE - HOW TO BUILD AND MAINTAIN A FIRE – HOW TO PUT OUT A FIRE

1. Start by creating a SAFETY CIRCLE – all flammable debris should be cleared from within a 5ft radius of the fire circle. This will keep a small fire from spreading. Look above for overhead trees and branches.
2. Use an already established FIRE CIRCLE, ring, pit, etc. whenever possible. This reduces our impact on the environment. A fire ring/circle helps contain a fire, and also serves to hold in heat.
3. Have water and a shovel nearby in case the fire starts to spread, and to put the fire out.
4. Have everything you need close by – you should never leave a fire unattended! If you need something, ask someone else to get it for you, or put someone else in charge of the fire.
5. To build a fire, start with small wood and work up in size. Tinder – Kindling – Fuel (Review “Three Types of Wood”, found in resource section.)
6. At this point you are going to demonstrate building a fire. Walk the girls through the steps of making an “A” frame fire. Let them build their own “fires” as you go through the steps. Only the station leader’s fire will actually get started with a match. Be sure to point out that you can hold the match for quite a while and not get burned. From there, have the girls tell you what type of wood should come next, and let them hand it to you.
7. Time to put the fire out. We teach to sprinkle the fire with water and stir with a shovel (or large stick). This takes longer than dumping a bucket of water on the fire, but is less messy and allows the fire ring to be used again sooner. Add water, stir. Add water, stir. Repeat as necessary. When it’s cool to the touch, it’s safe to leave, however, that should be confirmed by an adult (ie. I would not encourage the girls to be touching the just-burned wood) . A few ways to know that the fire is cooling down is that the water will no longer “hiss” or steam when you sprinkle it on the coals, and you will no longer feel heat coming from the coals.

Brownies – 3rd grade – 30 minutes.

Review/Teach if necessary: Fire safety; three types of wood for fire; how to light a match.

The purpose of the third grade fire rotation is to build confidence and skill with fire building. This will be done through continued practice in match lighting, with the addition of putting a match to tinder to start a small fire.

New skills: three elements of a fire (fire triangle); fire ecology/conservation.

Materials needed: matches, babyfood jars, birthday candles, modeling clay; tinder, kindling, fuel, buckets with water, aluminum pans to build fires in, hair ties. Be sure to cover the review materials in the process of demonstrating, particularly proper personal safety and supervision around fires, where to safely light a fire, and how to light a match.

SUMMARY:

1. REVIEW: Personal safety
2. Three elements of a fire (ACTIVITY)
3. Fire ecology/conservation
4. Review lighting a match, and practice lighting tinder.

THREE ELEMENTS OF A FIRE (10 minutes) Campers will work in groups of three, each group with one jar, lid, large candle, small candle, ball of clay.

Teach: “A fire requires three elements in order to burn: oxygen, heat, fuel. If any one of these is taken away, a fire cannot burn.”

Through experimentation and observations, campers will learn how the elements of a fire work together.

(Activity with candle, adapted from http://tat.orwit.org/assets/documents/6th-8th_Activity_3.pdf).

Using a candle, demonstrate the three elements that are needed to keep a fire burning.

1. Stick a birthday candle to a baby jar lid using modeling clay. Light the candle. Have a student place the jar over the lid. This will cut off the oxygen supply and the fire will go out. One way of suppressing a fire is to remove the **oxygen**.
2. (Use short candle) Take the lid off the jar and let the candle burn until the fuel (the candle) is consumed. When the fuel is gone, the fire will go out. Have students predict how long it will take for the candle to **use all its fuel**. (The most common way to manage a forest fire is to remove the fuel. This would include setting a backfire or creating a fire line by clearing all the potential fuel.) *Great illustration of why we want to clear a safety circle outside of our fire ring – removing fuel.*
3. Light a second candle in the jar. Have a student extinguish the fire by adding water (can get their fingers wet in one of the water buckets and flick water on the flame), thus **removing the heat**. Water is still the primary means for extinguishing forest fires.

BRIEF REVIEW:

A campfire needs three types of wood (smallest to largest):

1. Tinder - smaller than finger; burns as soon as touched with a match
 2. Kindling - between finger and arm length, and smaller around than an adult thumb
 3. Fuel - size of arm or thicker; keeps the fire going
- Show examples of each, side by side.

FIRE ECOLOGY/CONSERVATION ISSUES

“When might we want a fire outdoors?” Cooking, heating water, warmth...

“Where *could* we get wood for our fire?”

Is the wood laying in the forest just like litter we find thrown on the ground? No, the layer of dead branches, logs, twigs, leaves, etc. are all habitat for animals in the forest. When we take wood from the forest for our fires, we are removing animal homes and taking away a step in the cycle of the forest. Girl Scouts work to **leave no trace** when they go places, especially when we are outdoors.

“Where *should* we get wood for a campfire?” Ask at the camp where you are staying; buy bundles of firewood at the store and bring them along.

Instead of taking green (ie. Living) branches from living trees for stick cooking (hot dogs, marshmallows, etc.), bring long roasting forks or skewers. They can be reused, and you won't be harming trees.

Whenever possible, build campfires in already established fire rings, or use a bbq. A fire ring helps to contain a fire, and the area around it should be clear of burnable materials. Using an already existing fire ring helps reduce impact on an area.

LIGHTING MATCHES AND STARTING TINDER

Groups of 2-3 campers, with a water-filled bucket, will practice lighting a match, holding that match to the count of 3, and then dropping (not throwing) the match into the water.

As they grow comfortable, move campers over to aluminum pans with tinder. Remind them about making tinder with their knives at the TOOLS station (if their unit has been there already). They should now practice lighting their match and holding it to the tinder until it ignites. Match should be laid on tinder once tinder is lit.

Juniors – 4th grade – 60 minutes.

Review/Teach if necessary: Fire safety; three types of wood for fire; how to light a match, three elements of a fire, .

New skills: Build, light and tend an A-frame fire. Build, light, tend and safely put out a teepee fire. Make and use firestarters as one type of tinder. ALSO – 4th graders and up will be bringing tinder they have already made in tools (though you should have additional tinder available, if needed).

Materials needed: matches, wax paper, birthday candles, dryer lint, modeling clay, tinder, kindling, fuel, buckets with water, aluminum pans to build fires in, hair ties.

Preparation: Pre-build models of three different fire types.

Be sure to cover the review materials in the process of demonstrating, particularly proper personal safety and supervision around fires, where to safely light a fire, and how to light a match.

As a group, review personal and campfire safety, as well as what a fire needs (3 elements).

Using fire starters as a form of tinder

When outdoors and needing to build a fire, dry tinder can be hard to come by. Fires can be tricky to start even with dry tinder! One way to make things easier is by using your own fire starter. You will place it with your tinder when building your fire. We’re going to make fire starters using wax paper, a birthday candle, and dryer lint.

Show them your example, then walk them through the steps...

1. Place a pinky-size bit of lint on a piece of wax paper.
2. Lay a candle on top.
3. Roll it up like burrito, then twist the ends like a piece of saltwater taffy.

Most often observed stumbling blocks with fire building:

- Not using enough tinder.
- Leaving too much space between kindling and fuel wood.
- Moving to larger diameter wood too soon.

ALL TOGETHER – THREE TYPES OF FIRES AND THEIR PURPOSE

Have models of each type of fire already made (*see resources for pictures and instructions for each type of fire*). Demonstrate the process of building a teepee over an a-frame.

“There are three basic types of campfires, and they each have their own purpose. The A-frame is a good, all-purpose fire. It can be used as a start for other kinds of fire, or on its own as a cooking fire. A-frame is also good in the wind because you turn the tip of the “A” towards the wind and it helps to shelter the tinder. The teepee fire is good for getting a small fire going quickly. It’s often used as a base for a larger fire, but fuel-sized pieces of wood can be added to produce a big fire with a larger, taller flame. The teepee produces fewer coals than the log cabin. This style of fire directs heat upward, so it’s a good choice for a pot hung on a tripod for quick heating, and can also be used as a signal fire. The log cabin is a great fire for making lots of coals, such as for stick cooking. Today we’re going to focus on building an A-frame, and teepee fires.”

Before starting to demonstrate building, cover basic safety: personal safety (hair and clothing), safety circle (including looking above), fire ring, equipment nearby to extinguish fire.

Next, get ready to split unit into two groups. Assess who is comfortable lighting matches, and who needs more practice. You can do this by asking, but should have those who are comfortable with this skill first demonstrate for you that they are competent (meet you around a water bucket and light a match for you). Split into two groups – those who need time lighting matches, and those who are ready to move straight into fire building.

GROUP ONE – START WITH MATCH LIGHTING AND PROGRESS TO FIRE BUILDING

See 2nd grade section on Learning to Safely Light a Match.

Move on to building fires as outlined below...

GROUP TWO – BUILD, LIGHT, MAINTAIN A-FRAME AND TEEPEE, AND SAFELY PUT OUT FIRE

Before starting to demonstrate building, cover basic safety: personal safety (hair and clothing), safety circle (including looking above), fire ring, equipment nearby to extinguish fire.

Campers will work in groups of two, with a nearby supply of wood, water, and one aluminum pan. Each will have the opportunity to build an a-frame as a base fire, and then build a teepee over the top.

Partner “A” can be building the fire in the pan, while partner “B” practices by building their own model on the ground.

1. Take two large pieces of kindling and put them together to make an upside-down “V”.
2. Place tinder in the corner of the “V” so that it overlaps the kindling on one end, but touches the ground/pan on the other end.
3. Place a smaller piece of kindling across the two larger pieces, creating the crossbar of the “A” (A-frame). The crossbar should rest against the tinder.
4. Light the tinder under the crossbar, adding more tinder as necessary to get the fire going. **Talk about what they learn from mistakes:** What happens if you throw a big pile of tinder onto your small flame? Why? How can they do it differently next time?

Partner “B” should work with Partner “A”, bringing any needed supplies, helping keep the area safe, and brainstorming to help solve any problems that come up.

There is not a lot of time for this activity, but the concern is more with having them learn that **a fire is more than a bunch of wood thrown into a pile.**

Once the A-frame fire is established, move on to teepee building.

Teepee instructions (if starting from Teepee, without A-Frame):

Walk through building a Teepee fire. This time Person B will build in the pan (using their own tinder and fire starter), while Person A builds a model outside the pan.

1. Start with a fist-sized bundle/pile of tinder.
2. Place small kindling around so their tips are leaning up against each other in the middle, leaving an opening to reach the tinder with a match.
3. Add additional kindling as the fire starts to grow, gradually working up to fuel-sized pieces.

This type of fire can be especially challenging to build in the aluminum pans. Bracing the edges of the wood against the sides and corners of the pan is helpful. Experiment with various lengths of kindling to see what works best.

Putting out the fire:

Use a large stick to spread out the coals, then sprinkle with water and stir. Repeat until cool.

Switch partners. *Each camper should have to opportunity to build, light, maintain, and extinguish at least an a-frame fire.*

Juniors – 5th grade – 60 minutes.

Review/Teach if necessary: Fire safety; three types of wood for fire; how to light a match, three elements of a fire, name three types of fires and their purpose; know how to build, light and tend A-frame and tepee fires; make and use a fire starter.

New skills: Build, light, tend and safely put out a log cabin fire. ALSO – 4th graders and up will be bringing tinder they have already made in tools (though you should have additional tinder available, if needed).

Materials: matches, wax paper, birthday candles, dryer lint, modeling clay, tinder, kindling, fuel, buckets with water, aluminum pans to build fires in, hair ties. Pre-build models of three different fire types.

Be sure to cover the review materials in the process of demonstrating, particularly proper personal safety and supervision around fires, where to safely light a fire, and how to light a match.

As a group, review personal and campfire safety, as well as what a fire needs (3 elements).

Using fire starters as a form of tinder

When outdoors and needing to build a fire, dry tinder can be hard to come by. Fires can be tricky to start even with dry tinder! One way to make things easier is by using your own fire starter. You will place it with your tinder when building your fire. We're going to make fire starters using wax paper, a birthday candle, and dryer lint.

Show them your example, then walk them through the steps...

1. Place a pinky-size bit of lint on a piece of wax paper.
2. Lay a candle on top.
3. Roll it up like burrito, then twist the ends like a piece of saltwater taffy.

Next, get ready to split unit into two groups. Assess who is comfortable lighting matches, and who needs more practice. You can do this by asking, but should have those who are comfortable with this skill first demonstrate for you that they are competent (meet you around a water bucket and light a match for you). Split into two groups – those who need time lighting matches, and those who are ready to move straight into fire building.

GROUP ONE – START WITH MATCH LIGHTING AND PROGRESS TO FIRE BUILDING

See 2nd grade section on Learning to Safely Light a Match.

Move on to building fires as outlined below...

GROUP TWO – BUILD MODELS OF A-FRAME AND TEEPEE FIRES; BUILD, LIGHT, TEND A LOG CABIN FIRE; KNOW THE PURPOSE OF EACH

Before starting to demonstrate building, cover basic safety: personal safety (hair and clothing), safety circle (including looking above), fire ring, equipment nearby to extinguish fire.

Review three types of fires and their purpose (see 4th grade section: All Together – Three Types of Fire and Their Purpose).

Campers will work in groups of two, with a nearby supply of wood and one aluminum pan to be shared. DURING MODEL BUILDING, DO NOT USE PANS.

A-Frame instructions:

See if they remember how to build an A-frame.

1. Take two large pieces of kindling and put them together to make an upside-down “V”.
2. Place tinder in the corner of the “V” so that it overlaps the kindling on one end, but touches the ground/pan on the other end.
3. Place a smaller piece of kindling across the two larger pieces, creating the crossbar of the “A” (A-frame). The crossbar should rest against the tinder.
4. Fire would be lit under the crossbar.

Teepee instructions:

Walk through building a Teepee.

1. Start with a fist-sized bundle/pile of tinder.
2. Place small kindling around so their tips are leaning up against each other in the middle, leaving an opening to reach the tinder with a match.
3. Add additional kindling as the fire starts to grow, gradually working up to fuel-sized pieces.

This type of fire can be especially challenging to build in the aluminum pans. Bracing the edges of the wood against the sides and corners of the pan is helpful. Experiment with various lengths of kindling to see what works best.

Log cabin instructions:

From the teepee, we’re going to build a log cabin around it...



1. Start with your larger pieces of wood, placing two logs parallel to each other.
2. The next level up will be slightly smaller pieces, placed parallel to each other, but perpendicular to the first two.
3. Continue in this manor, building around the teepee, decreasing the size of the wood, and bringing it closer in at each level so that a pyramid shape forms.
4. You should be able to reach in through the bottom layer to light the tinder under the teepee.

Now build, light, and maintain a log cabin, with a teepee to start.

Partners will need to take turns (unless there are enough pans for each to have one of their own). They may need to build their log cabin first, and then build the teepee inside. Camper should use their own tinder and fire starter to start their fire. Reinforce that as the fire grows, the size of the wood added to the fire also grows. Have them safely put out their fire, leaving enough time for their partner to have a turn. (approximately 20 minutes each, with time for clean-up and safety review).

Cadettes – 6th grade – 20 minute rotations as part of Survivor Challenge.

Materials needed: 3 sizes of wood, matches, buckets, water, roasting pans, knives, hatchet

In the 20 minute morning rotation of the Survivor Challenge, the 6th grade unit will split into three groups to rotate between fire building, knots, and tools. At fire building, they should receive a quick review on basic fire safety (with attention to personal safety), fire types and their purpose (with particular emphasis on teepee fires), and should have the chance to start, build, and maintain a small fire. The purpose of this rotation is to make sure all girls can safely start and build a fire on their own so they can be successful in the afternoon session. Encourage and assist, but let girls make their own fires.

Girls will review knife and hatchet safety and use and learn to use a hatchet to make kindling and a knife to make tinder.

In the afternoon session, the girls will be supported as they use these skills, together with knots and tools, to create their own fire that is able to pop a suspended balloon (or glove) full of water.

TIPS FOR STATION LEADERS...

1. Make sure Leaders are modeling good safety. Being consistent with safety rules creates a comfortable, safe environment for the campers.
2. Make additional kindling and tinder as needed (or delegate someone else to).
3. Allow adequate time for clean-up. Have a bucket with water for burned wood, and spent matches.
4. Let the program director know if supplies are running low (matches, aluminum tins, supplies for fire starters, wood).
5. Things to keep in mind: Fire skills build incrementally, particularly in the first few years. Always try to gauge the skill and comfort level of your group of campers, and teach accordingly. If that means you have a unit of 3rd graders who spend their entire time reviewing 2nd grade skills, that's fine. Girls who aren't comfortable lighting matches should be encouraged to spend time getting comfortable with that skill. Utilize girls who are comfortable with fire to start teaching and encouraging their peers. Remember that the process is ultimately more important than outcome – allowing a 5th grader to sit over a bucket and spend extra time lighting matches is okay if that's the skill she needs to work on and it's empowering for her. A 4th grader who is already comfortable and confident at building and maintaining a fire stands to learn a lot from encouraging and teaching her peers.
6. Utilize all leaders, especially when you split units into groups to work on different skills. Look over the schedule at the beginning of the day, then go over the lesson plans for those grade levels. How do you want to split up the tasks? There may be a fair amount of prep work – making tinder, cutting wax paper, having model fires made, etc. – share the work.



Three Elements of Fire

Three elements must be present for a fire: fuel, heat and oxygen. Removing any element of the fire triangle prevents or extinguishes fires.

Major Principles:

1. Fuel, heat and oxygen are essential for combustion (burning).
2. Fuel must be ignited before it will burn.
3. Without a reaction, fire will not burn materials such as wood, cloth and paper. Chain reactions are crucial to fires. If the reaction is interrupted, the fire will be altered or extinguished.
4. Burning will continue until:
 - fuel is cooled below ignition temperature
 - fuel is removed or completely burned
 - oxygen is removed or lowered


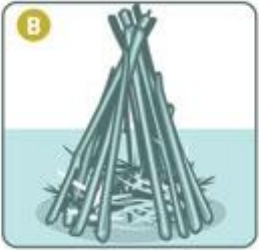

Elements of Fire:

Fuel: This is anything that will burn. Fuel must be available for ignition. It may be in the form of a solid, a flammable liquid or gaseous state. Solids may be wood, cloth or paper. Examples of flammable liquids are kerosene, oil and gasoline. Vapors from paint, gasoline and other flammable materials are considered gaseous. Understanding that there are invisible, potentially dangerous vapors surrounding flammable chemicals is very important. Natural gas and propane are other examples of flammable materials in a gaseous state.

Oxygen: This is needed for combustion. Twenty-one percent of the air we breathe is oxygen. Fires use and absorb this same oxygen to maintain a state of combustion (burning). Fires also produce smoke and poisonous gases. When people breathe the harmful smoke and gases, they can suffer injury. The smoke and poisonous gases deaden the senses and inhibit a sleeping person's ability to awaken.

Heat: Combustible materials may catch fire at ignition temperatures. Heat is needed to start a fire. For many items found in the home, the combustion temperature is 400 - 600 degrees Fahrenheit. Some items may ignite more easily than others. From a chemical reaction standpoint, putting water on a campfire removes heat from the fire as it uses the heat to change into steam, thereby cooling the fire itself.

THREE TYPES OF CAMPFIRES

			<p>A-FRAME... Start by making an “A” shape, using two small pieces of fuel, and a piece of large kindling. The fuel will make the sides of the “A”, and the kindling will be the crossbar of the “A”. Place tinder in the point of the “A” so that the ends prop up in the corner, and their other end touches the ground. Make sure the crossbar piece is touching the kindling. Light tinder under crossbar. The A-frame is another good cooking fire, and can be made in whatever size is necessary by increasing or decreasing size of the wood being used, and by how high it is built. An A-frame is a good choice in windy conditions – the point of the “A” can be pointed towards the wind to shelter tinder when starting the fire.</p>
<p>TEEPEE... Starting with a pile of tinder, build a teepee-shape around it with kindling. As the fire grows, gradually add larger pieces of wood, continuing the teepee arrangement. As the inner wood burns, the outer wood should fall in to feed the fire. Creates a vertical flame – used for signal fires. Good for directing heat upward. As the fire grows, wet wood can be added to the outer teepee, which will dry out and burn.</p>			<p>LOG CABIN... A log cabin fire starts with larger fuel at the bottom with gradually decreasing sized fuel towards the top, and spacing moving closer together, criss-crossing at right angles. The sides will angle into sort of a pyramid shape. The fire is started from the bottom. Makes a lot of coals – good for cooking. An alternative form of the log cabin fire is the “platform” or “pyramid” fire, which uses multiple logs laying side by side on each level, with the fire being started from the top, with the ashes eventually burning down into the lower levels.</p>
<p>For all fires... add additional kindling/fuel at the pace that the fire is growing. You want to feed the fire, but not cut off its oxygen supply. As the fire grows larger, the size of the fuel added can grow larger.</p>			

STEPS IN BUILDING A FIRE...

1. Start by creating a SAFETY CIRCLE – all flammable debris should be cleared from within a 5ft radius of the fire circle. This will keep a small fire from spreading. Look above for overhead trees and branches.
2. Use an already established FIRE CIRCLE, ring, pit, etc. whenever possible. This reduces our impact on the environment. A fire ring/circle helps contain a fire, and also serves to hold in heat.
3. Have water and a shovel nearby in case the fire starts to spread, and to put the fire out.
4. Have everything you need close by – you should never leave a fire unattended! If you need something, ask someone else to get it for you, or put someone else in charge of the fire.
5. To build a fire, start with small wood and work up in size. Tinder – Kindling – Fuel