



## Fire Making

Fire is a powerful force, but if used in a safe way, it's an incredibly valuable tool! Learning how to make a fire opens up a whole new survival skill set: if you can make fire, you can warm yourself, light the dark, cook food, dry wet clothes, purify water, and keep biting insects away.

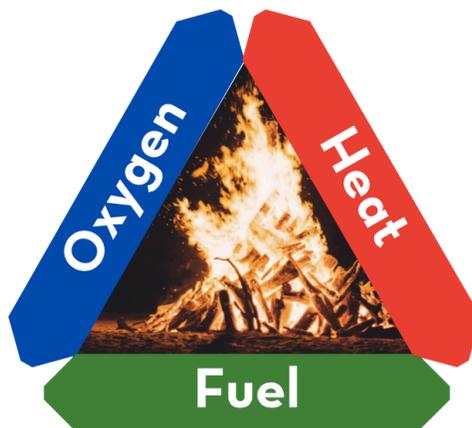
Imagine that you were in a survival situation and needed to be able to build a fire. Could you do it? What if you only had 3 matches? 1 match? No matches!?

Before we start placing ourselves in these scenarios, we need to learn the science behind starting a fire:

### The Fire Triangle

Fire needs 3 things in order to thrive:

- Fuel: This is what is going to burn, usually wood
- Heat: A fire needs a heat source to get going, like a light from a match, a lighter, a coal from a bow drill, or a spark from flint and steel
- Oxygen: In order for the combustion reaction to take place, oxygen (which makes up about 20% of air at sea level) needs to be present





### The Fire Ingredients

It's time to go a bit more in-depth with the 3 different types of fuel that you'll need to build a fire:

- **Tinder**
  - This is the very fine fuel that you will light first because it lights very easily. You may have used newspaper before as tinder. Creating a good tinder bundle may be the most important ingredient in fire making, as it's where the fire starts and builds from. Some natural materials that make great tinder include:
    - birch bark (oil in it makes it burn even when it's wet)
    - dead hemlock twigs (also will burn when wet)
    - cattail fluff
    - dead, dried grasses and fern fronds
    - the scraped off inner bark of cedar trees
- **Kindling**
  - These are the pencil-thin twigs that will catch first after the tinder has started to burn. It's important that they be dry! (If you're unsure if a stick is dry, try snapping it. If it breaks cleanly without bending, it's dry. If it bends before breaking or won't break at all, it's not dry).
- **Fuel wood**
  - These include the large logs that you place on your fire once it really gets going, but it also includes anything larger than your pencil-sized kindling. This is the fuel that will sustain the fire's blaze. It's easier to keep the fire going if the fuel wood is dry, but you can always dry out some damp fuel wood by placing it near the fire to dry it out so you can throw it on later.

### Fire Structures

There are two main ways that people build their fires: tee-pee style and log cabin. Both take advantage of the fact that fire burns up – meaning that the flames of whatever is burning are above the burning item. To use this to our advantage when building a fire, the tinder should be placed at the



bottom, then the kindling, then the fuel wood at the very top. Then you can light the tinder and the flames from the burning tinder will light the kindling, etc. The tee-pee and log cabin structures follow this advice, plus they allow for enough airflow, which is essential for oxygen to reach the fire and allow it to continue to burn.

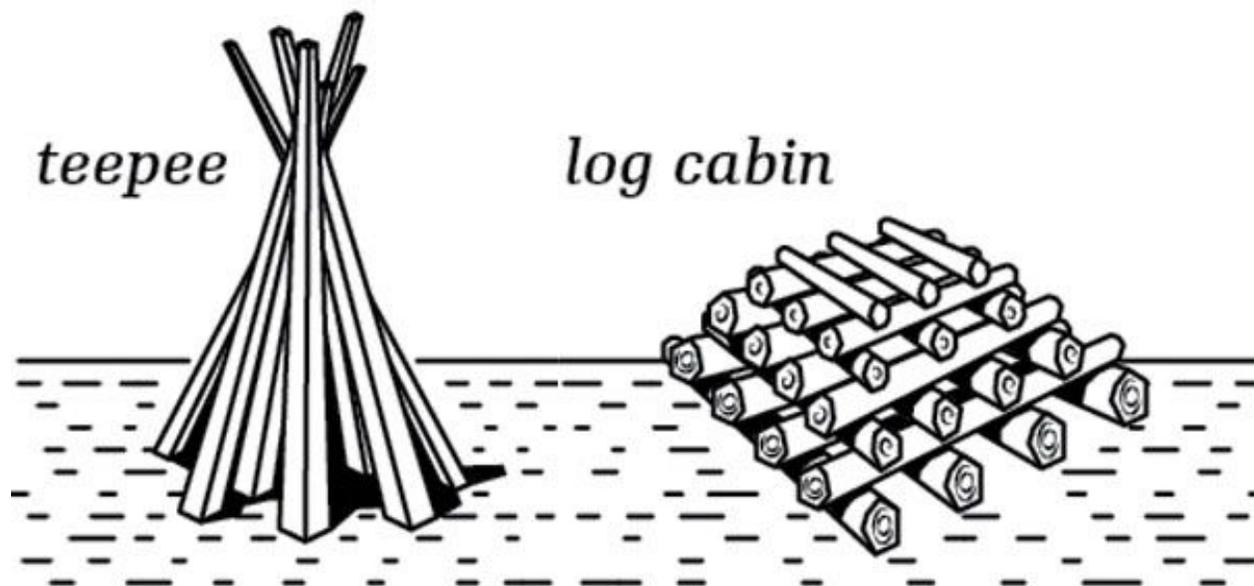


Image from [www.popularmechanics.com](http://www.popularmechanics.com)

### **Your Challenge**

Whew! Now that we know the science behind building fires, it's time for your challenge: First, make sure you have a full bucket of water or a working hose within reach and that the area is clear of any flammable debris! Then, with your parents'/guardians' permission and supervision in a safe spot in your yard like a sand pit or gravel path (or ideally, a fire ring), see if you can build a fire from all-natural materials, light it with matches or a lighter, and keep it burning for 5 minutes without touching it. Too easy? Try only using 1 match and keeping it lit for 10 minutes! Good luck, and let us know how you did!