

**STRUGGLE
FOR SURVIVAL**

TIME

Fire



Christine Dugan

Table of Contents

For teachers' inspection ONLY

In a Cold, Dark World	4
The Importance of Fire for Survival . . .	6
Starting a Fire.	14
The Lights Are Out in the City	22
In the Woods	30
Deserted in the Desert	36
Survival of the Fittest	42
Glossary	44
Index	45
Check It Out!	46
Try It!	47
About the Author	48



In a Cold, Dark World

What do you think it would be like to suddenly have the world go dark? All the modern inventions you expect to easily use—lights, cell phones, computers—suddenly stop working. It is hard to imagine such an extreme situation as being somewhere with no phone, no electricity, and no Internet.

Consider what you might need to survive such a scenario. It is always good to be prepared for anything that could happen. If the world suddenly goes dark for a long period of time, you may start looking for the basic necessities to survive. Heat and light are important for survival, but where would you find heat and light in an emergency?



For teachers' inspection ONLY

The skills needed to survive a serious emergency do not require heroic acts or great physical strength. The skills you need to stay alive will work if you keep calm and make good choices. You need to know about the environment you are in when disaster strikes. How can that environment help you? What challenges do you need to overcome? Facing a tough situation with determination will help you stay alive!

Trying It Out

You can take a survival class and practice different ways to stay alive. The Boulder Outdoor Survival School claims to be the oldest survival school in the world. You can learn how to make rope, start a fire, build a shelter, and identify **edible** plants.

Practice Carefully!

To be prepared for a disaster, you may want to practice some of the fire-starting suggestions in this book. Always make sure an adult is present to help, and only practice under safe conditions! Fire is not a toy and must be respected.



The Importance of Fire for Survival

For teachers' inspection ONLY

Imagine the planet in total darkness. It might feel like being transported back in time. What was it like when people had to survive off the land with only the most primitive resources? What did people use as sources of heat and light?

Fire, one of the most important forces of nature, is a truly valued resource. But be careful—it can have both positive and negative impacts since fire can both help and harm you. Fire provides heat and light, which is necessary to **sustain** and regenerate life. But it can also be very destructive and can damage anything in its path in the blink of an eye.

Fire has been a key part of survival for millions of years. If you are building a fire to survive, you probably want the fire to provide many different things. You'll need fire to stay warm and dry, especially in cold areas, which is essential for survival. Fire can also **illuminate** the darkness, and having fire means you can cook food or melt snow or ice into drinking water. Smoke from a fire could also help others locate you.

A lit candle is shown in the foreground, with its flame reaching upwards. To the right of the flame, a vertical temperature scale is marked with four points: 800°C, 1000°C, 1200°C, and 1400°C. Lines connect these labels to the corresponding heights on the flame. The candle is yellow and has a dark wick.

1400°C
1200°C
1000°C
800°C





THINK LINK

- © Describe what fire provides for you in a survival situation.
- © Why are heat and light so important when fighting to survive?
- © Which do you think is more important: heat or light?

How Hot Is That Flame?

You know fire is hot, but how hot is it? That depends on the type of fire and the environment in which it is burning. Even a candle has different temperatures within it. Look at the diagram and determine the difference between the hottest and coldest part of the candle flame.





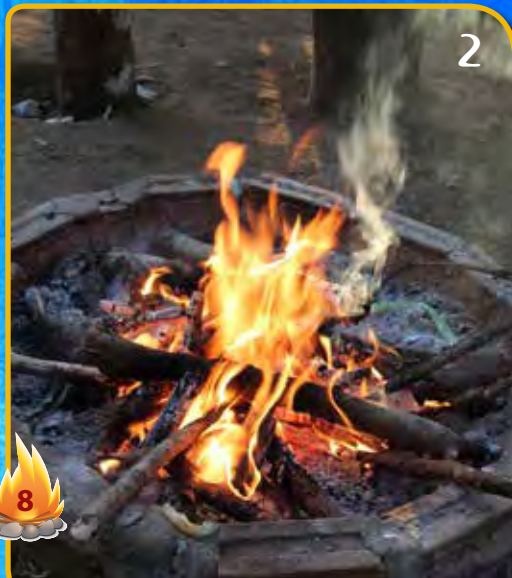
For teachers' inspection ONLY

What Is Fire?

Fire is a chemical reaction between oxygen and some type of fuel, such as wood. This is also called **combustion**. Here is what happens when wood is heated and catches fire.

Watch It Ignite!

Something has to ignite the wood, which means something heats the wood to a temperature at which a fire begins. The heat can come from a source such as a match, lightning, friction, or focused light.



Up in Smoke

The wood reaches about 302 degrees Fahrenheit (°F), which is the same as 150 degrees Celsius (°C). The wood starts breaking down because of the heat, so part of the wood is changing from a solid into a gas. The gas is in the smoke that starts to rise.





3

Flaming Fire

The wood continues to burn and turns into *char*, which is made up of **carbon** and ash. This creates the flames that rise from the fire. These flames can be different colors depending on the fuel that is burning and how hot the fire is.

Putting It Out

When it's time to put out the fire, the fuel (wood), the heat, or the oxygen must be removed. Taking wood out of a fire can be very tricky when the wood is hot. The most common (and safest) methods are to remove the heat from fire by **dousing** it with water or to remove the oxygen by **smothering** the fire with dirt or sand.



4

Reader's Guide

For teachers'
inspection ONLY

1. What key information about survival should be taught in a two-hour survival skills class?
2. Look at the list of items for a bug-out pack on page 25. Which one item could be left off this list, and why?
3. Conduct a survey about what people think is most important in a survival situation: heat, light, shelter, clothing, food, or water. Compile your data in a chart. How does your data compare to what you learned about surviving dangerous situations in this book?
4. In what ways, other than heat, can a fire be useful in a survival situation?

