Parts That Make A Fire

Lesson 1 of 2

Grade Level: K-4
Subject: Physical Science
Prep Time: 10-30 minutes
Activity Duration: One class period
Materials Category: Special Requirements

National Education Standards				
Science	Mathematics	Technology		Geography
		ISTE	ITEA	
3a, 3c, 5a, 7a				

Objective: To understand the three components that cause a fire to burn, and to make a model to illustrate how taking one component away causes the fire to stop burning.

Materials:

- Gumdrops (three per student)
- Toothpicks (three per student)
- Student Sheet

Related Links:

United States Fire Administration (USFA) Kids Page
http://www.usfa.fema.gov/kids/index.htm

Parts That Make A Fire

Teacher Sheets

Background

Scientists use the idea of a triangle to describe fires because a fire needs three things to be stable, that is, to keep it burning. Fuel is one source, which includes such things as wood in a fireplace, food on a stove, trees in the woods. Oxygen is a second source, which is the air we breathe. Heat is a third source, which is something hot such as the heat used to cook on a stove, or a discarded match. These are the things needed to start a fire and to keep it burning. Removing fuel, or oxygen, or reducing the heat can extinguish a fire. When you throw water on a fire, you cut off oxygen and remove the heat. You also cut off oxygen when throw dirt on a fire. "Stop, drop, and roll" reduces the supply of oxygen to a fire. Running away would add oxygen, allowing the fire to burn more. Fire extinguishers remove heat and take away oxygen.

Guidelines

1. Read the NASAexplores article, "Fire Prevention In Space," and discuss how dangerous a fire on the International Space Station would be.
2. Discuss how fuel, oxygen, and heat are the three components a fire needs to burn. When one of these is taken out of a fire, it cannot burn. Tell students they are going to build a triangle using toothpicks and gumdrops to model the three things needed to start a fire.
3. Pass out the gumdrops and toothpicks to each student to build their triangle. The toothpicks are the sides, and the gumdrops are the corners. Tell students that the triangle is used to describe the three things a fire needs to keep it burning. Each side represents heat, fuel, and oxygen, making up the three sides of a triangle.
4. Ask the students what happens when one leg of the triangle is removed. It collapses, and, therefore, the fire quits burning.
5. Have the students answer questions on the Student Sheet.
6. An example of the Fire Triangle is included on the last page of the Teacher Sheets.

Discussion / Wrap-up

- Ask the students: *What are the three things needed for a fire to occur?* Fuel, heat, and oxygen.
  What happens when one of these three things is removed from a fire? The fire will stop burning.
  Explain that burnable things surround us every day. *Why aren't they on fire?* An external source of heat is usually needed to start a fire. Once a fire has started, it produces the heat needed to continue burning. A fire can be put out if fuel, oxygen, or heat is removed.
- Explain how "stop, drop, and roll" removes something from the fire triangle and puts out the fire.

- Let the students collapse the triangles completely by eating the gumdrops and throwing the toothpicks away.

Extension(s)

- Have students draw their own fire triangles on paper and decorate them. Make sure they label each side of the triangle with heat, fuel, and oxygen.
- Take a field trip to a fire station.

Fire Triangle

Parts Of A Fire

Student Sheet(s)

Answer the questions below.

1. Name the three things needed for a fire to occur.

2. Burnable things surround us everyday. Why aren't they on fire?

3. What are some fuels used in fires?

4. Where does oxygen for fire come from?

5. What heat sources do we use to start fires?

6. Use the fire triangle to describe some ways to put out a fire.