

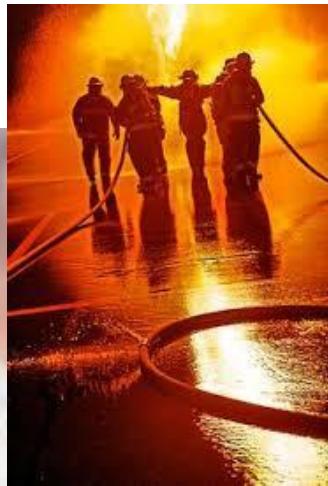


Science, Engineering,  
Technology & Math

*Fire Science!*



# FIRE SCIENCE



# Class Structure

## **Week #1:**

- What is Fire?
- What causes Fire?
- What to do in case of Fire?
- Types of Extinguishers

## **Week #2:**

- Candle pops air balloon but not water balloon.
- Hard boiled egg into bottle
- Set inside of water jug on fire

## **Week #3:**

- Colorful Fires & Chemical Fires

## **Week #4:**

- Make pictures with Tissue Paper

## **Week #5:**

- Fire Trucks & Ambulance Videos

## **Week #6: Finish-up all projects**

- 72 Hour Kits

# **Week #1:** *This week we will be learning about what fire and fire science is.*

## What is Fire?

Fire is the visible effect of the process of **combustion** – a special type of **chemical reaction**.

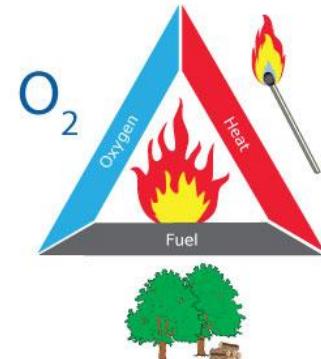
## What Causes Fire?

It occurs between **oxygen** in the air and some sort of **fuel**. The products from the chemical reaction are completely different from the starting material.

The fuel must be heated to its ignition **temperature** for combustion to occur. The reaction will keep going as long as there is enough **heat**, fuel and oxygen. This is known as the fire triangle

## What to do in case of Fire?

- *Have a predetermined plan of where to meet.*
- *Grab the 72 hour kit*
- *Call 911*
- *Warn neighbors*



# Fire Extinguishers!!

**Class A:** Solids- paper, wood, plastic, etc.

**Class B:** Flammable Liquids- paraffin, petrol, oil.

**Class C:** Flammable Gases- propane, butane, methane.

**Class D:** Metals- Aluminium, magnesium, titanium.

**Class E:** Electrical Apparatus.

## Propane Fire Training

<https://www.youtube.com/watch?v=gIDW-N6LqUE>

**How to put out a magnesium fire**

<https://www.youtube.com/watch?v=TOpsB5n9DZ8>

**Electrical Appratus Fire and Explosions**

<https://www.youtube.com/watch?v=UF5EDV6T7e>

What to do if car crash into power lines!!

<https://m.youtube.com/watch?v=fLVzvMTgGDY>

**Week #2:** *Experiments week!!!*

***Popping Balloons!!!!***

***Setting water jugs on Fire!!!***

***Bottling Eggs!!!!***



# **Week #3:** *This week we will be learning about Colorful Fires and Chemical Fires!*

*What makes fires colorful?*

*Red*- Strontium Chloride

*Orange*- Calcium Chloride

*Yellow*- Sodium Chloride

*Green*- Copper (II) Sulfate, Boric Acid

*Blue*- Copper (I) Chloride, Butane

*Purple*- Potassium Chloride

<https://www.youtube.com/watch?v=WDJ0MOGIN0o>



*(enter definitions here)*

# Week #4:

*Tissue paper Fire!!!!*



# Week #5:

*This week we will be learning about Fire Trucks and Ambulances!*

*How Fire trucks are made!*

<https://www.youtube.com/watch?v=d9xVCF5vCa0>

*How Ambulances are made!*

<https://www.youtube.com/watch?v=JUn3AjGX5Bo>





**Conventional Fire Appliance-**  
AKA Fire engine,  
used to pump  
water out onto fire.



**HAZMAT Truck-** Hazardous Materials Apparatus, Hazmat supplies.



**Tanker Truck-** Transports large amounts of water



**Heavy Rescue Vehicle-**  
used for vehicle extractions,  
rope rescues, and/or building collapse.



**Command Support Unit-**  
used to support other trucks and vehicles with supplies and tools.



**Turntable Ladder Truck**- used for tall buildings that normal ladders cannot reach.



**Tower Ladder**- Similar to the Turntable Ladder but with a bucket.



**Hydraulic Platform Truck**- Similar to the ladder truck but moveable arms.



www.alamy.com - CWX154

**Foam Tender**- Carries large amount of foam for fires that need to be smothered.



**Airport Crash Tender**- Fire truck for airports and aircrafts.

# **Week #6:** *This week we will be learning about 72 hour kits!*

*72 Hour kits should typically be packed with...*

- Food and Water
- Bedding and Clothing
- Fuel and Light
- Personal Supplies
- Medication
- Personal Documents
- Money
- MISC



**Make sure to store in an accessible, safe space!!**

**(enter definitions here)**

# Creative Challenge: Create our own fires using tissue paper and glue!





## Experiment Day!!

Today we sucked hard boiled eggs into glass bottles using a match: didn't quite work

We also popped balloons/ water balloons using a lighter. It worked!

Our final experiment was lighting the inside of a water jog! Didn't quite work.

# Materials & Supplies

- *Tissue Paper*
- *Empty Water Jug*
- *Balloons*
- *Matches*
- *7% Alcohol*
- *Hard Boiled Eggs*
- *Lighter*
- *Empty Bottle*

# Pro Tips by Tyree Snyder

Have a fire extinguisher handy at all times!  
Do not tell the kids how to make the experience  
at home!  
Have fire safe gloves!

# Resources:

- <https://www.youtube.com/watch?v=gIDW-N6LqUE>
- <https://www.youtube.com/watch?v=TOpsB5n9DZ8>
- <https://www.youtube.com/watch?v=UF5EDV6T7es>
- <https://www.youtube.com/watch?v=WDJ0MOGIN0o>
- <https://www.youtube.com/watch?v=d9xVCF5vCa0>
- <https://www.youtube.com/watch?v=JUn3AjGX5Bo>
- Shout out to Google Search Images!!!!