

## Science of fireworks

Class: Middle school/high school

Level: Upper-intermediate.

Time : 45 minutes

Aims:

- To learn about 4<sup>th</sup> of July and Bonfire Night history and celebrations
- To learn about fireworks and explosives
- To learn about chemical reactions
- To look for specific information on the internet
- To read for specific information
- To transfer the information.
- To use web pages

CLIL: Physics, Chemistry

Materials : included photocopies, access to the internet and personal computer, speakers.

STAGE	AIMS	PROCEDURE	CLASSROOM LANGUAGE	TIME	MATERIALS
Introduction	To start the lesson	Check the register /check homework		1 min/ 6 min	
Warm – up activity	To provide students with introduction to the topic	Brainstorming as a class	Do you like fireworks? When was the last time you saw the fireworks display? When do people set off fireworks in your country?	5 min	
The main part of the lesson	Group work – to learn about Independence Day and Bonfire Night	Divide the class into two groups. Ask the students to read and prepare a short presentation about American and British celebrations.	Divide into two groups and prepare a short presentation about : ❖ 4 <sup>th</sup> of July celebrations in the USA ❖ 5 <sup>th</sup> of November celebrations in the UK	10 min	Worksheet 1 Internet
	To learn basic facts about fireworks	Ask the students to go online, watch a video and make notes on fireworks facts. Quickly recap the information as a class.	Watch a National Geographic film about fireworks: <a href="http://video.nationalgeographic.com/video/i-didnt-know-that/idkt-fireworks?source=relatedvideo">http://video.nationalgeographic.com/video/i-didnt-know-that/idkt-fireworks?source=relatedvideo</a> Did you learn anything you didn't know?	10 min	
	To learn how	Ask the students to work in pairs	Let's learn some more, find the answers to these questions:	10 min	

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	fireworks are produced, chemical reactions producing colours and aerial shells	and go through exercises 4 and 5 at their own pace.  Monitor the progress and check the answers with the pairs.	<ul style="list-style-type: none"> <li>❖ What are the fireworks made of ?</li> <li>❖ How do they explode?</li> <li>❖ How are the colours created?</li> </ul> Look at the aerial shell diagram and watch a film about fireworks : <a href="http://www.youtube.com/watch?v=nPHegSulI_M">http://www.youtube.com/watch?v=nPHegSulI_M</a>		
Wrap- up	To listen to a song, listen for general information	Students work in pairs, listen to the song and underline all expressions connected with today's lesson.	Listen to Katy Perry's song "Firework" , look at the lyrics and underline all the words and expressions connected with today's lesson <a href="http://www.youtube.com/watch?v=QGJuMBdaqIw">http://www.youtube.com/watch?v=QGJuMBdaqIw</a>	10 min	

Sources:

<http://video.nationalgeographic.com/video/i-didnt-know-that/idkt-fireworks?source=relatedvideo>

[http://www.youtube.com/watch?v=nPHegSulI\\_M](http://www.youtube.com/watch?v=nPHegSulI_M)

<http://www.instructables.com/id/How-to-Make-Fireworks/>

[http://news.bbc.co.uk/cbbcnews/hi/newsid\\_4360000/newsid\\_4361500/4361562.stm](http://news.bbc.co.uk/cbbcnews/hi/newsid_4360000/newsid_4361500/4361562.stm)

<http://science.howstuffworks.com/innovation/everyday-innovations/fireworks1.htm>

<http://scifun.chem.wisc.edu/chemweek/fireworks/fireworks.htm>

<http://chemistry.about.com/od/fireworkspyrotechnics/a/fireworkcolors.htm>

<http://www.youtube.com/watch?v=QGJuMBdaqIw>