Objective

By the end of this lesson, you will understand the basic principles of chemistry related to fireworks and be able to explain how different chemicals contribute to the colors and effects seen in fireworks.

Materials and Prep

- Pen and paper for note-taking
- Access to internet or library resources for research

Activities

- 1. Research the chemistry of fireworks. Use the provided materials to find information on how different chemicals are used to create specific colors and effects in fireworks. Take notes on the key concepts you find.
- 2. Create a visual representation of the chemical reactions that occur in fireworks. Use your notes to draw diagrams or create a poster showing the different chemicals involved and the reactions that produce the desired colors and effects.
- 3. Design your own virtual fireworks display. Use an online simulation or a computer program to experiment with different combinations of chemicals and see how they affect the colors and patterns of the fireworks. Take screenshots or record your findings.
- 4. Present your research and findings to your teacher or parent. Explain the chemistry behind fireworks, including the role of different chemicals and the reactions that take place. Use your visual representation and virtual fireworks display to support your explanations.

Fifth Grade Talking Points

- "Fireworks are not just beautiful, but they are also a result of fascinating chemistry!"
- "Different chemicals are used in fireworks to create different colors. For example, copper compounds produce blue colors, while strontium compounds create red colors."
- "The colors we see in fireworks are produced by the excitation and emission of electrons in the atoms of the chemicals used. When the electrons absorb energy, they move to higher energy levels. When they return to their original energy levels, they release the excess energy as light."
- "Fireworks also involve combustion reactions, where the chemicals react with oxygen to produce heat, light, and sound."
- "To create specific patterns and effects in fireworks, different chemicals are mixed together and timed to ignite at different moments. This allows for a synchronized display of colors and shapes."