





Xplorlabs: The Science of Fire Forensics & Fire Safety

Students will become fire investigators, using science, technology, engineering, and math to study a kitchen fire scene. They will search for clues in the debris, ask questions, and use fire science knowledge to figure out how and where the fire started. Students will also learn about fire safety and why understanding it is important—not only to prevent fires, but also to interpret evidence and understand how safety measures play a role in fire forensics.

	Engage	Explore	Explain	Elaborate or Extend
Part of the Pathway				
NGSS	MS-PS1-1 Matter and its Interactions and MS-PS3 Energy			
Time	Days 1 - 2	Days 3 - 5	Day 6	Days 7 - 10
Overview	<p>Goal: Spark interest and curiosity.</p> <p>Activity: Students will watch the Side by Side Burn video. The class will have an open discussion about what we noticed. Students will complete the Fire Sprinklers Interactive Experience. Students will then complete the How Do Fire Sprinklers Keep Us Safe Student Guide.</p> <p>Why: Builds curiosity, connects to real-life situations, and introduces the concept of fire forensics and fire safety.</p>	<p>Goal: Hands-on investigation of evidence.</p> <p>Activity: Students click through the Solve the Case interactive of a burned kitchen. Ask: "What happened here?" and "What clues could tell us where the fire started?" Students share quick observations and predictions. They record observations, identify possible fuel sources, and note burn patterns. Students will be introduced to the Science of Fire Forensics pathway through the How does fire develop? interactive.</p> <p>Why: Encourages discovery learning and gives students a chance to collect real "evidence" before learning the scientific explanation.</p>	<p>Goal: Connect observations to scientific concepts.</p> <p>Activity: Teach the fire triangle (heat, fuel, oxygen), combustion, and chemical vs. physical changes. Students revisit their evidence and match it with science concepts to build a cause theory.</p> <p>Why: Links student observations to physical science principles and vocabulary while reinforcing fire safety measures.</p>	<p>Goal: Apply learning in a new way and assess understanding.</p> <p>Activity: Students create a fire investigation report or model explaining the origin and cause of the fire, including fire safety recommendations. Class discussion on how safety knowledge helps in fire forensics. Students will create fire escape routes for their own homes.</p> <p>Why: Gives students a chance to apply skills, deepen understanding, and demonstrate mastery through a real-world-style task.</p>
Supporting Resources	<p>Side by Side Burn video</p> <p>How Do Fire Sprinklers Keep Us Safe Student Guide</p> <p>Interactives: How does fire behave? and Make a Claim</p>	<p>Fire Forensics: Student Guide</p> <p>Introduce the Mystery video</p> <p>Interactive: How does fire develop?</p>	<p>Fire Forensics: Student Guide</p> <p>The Fire Triangle video</p> <p>The Fire Triangle student guide</p> <p>What are the components of fire?</p>	<p>Fire Forensics: Student Guide</p> <p>Fire Development: Four Stages video</p> <p>Guided Investigation video</p> <p>Unlock the answer: The origin of the fire</p>
Fire Sprinklers Interactive Experience / The Science of Fire Sprinklers				