

Nova's Night Sky: The Science of Bonfire Night

Learning objective: To understand the historical context and safety considerations of Bonfire Night while exploring chemical reactions and light.

Nova the owl is fascinated by the bright colours and chemistry of fireworks. Read the statements below about the history and science of the 5th of November. Decide whether each statement is 'True' or 'False'. If it is false, you must justify your answer by correcting the statement using your knowledge of history and firework safety.

Word bank: Guy Fawkes · Parliament · Gunpowder · Chemical reaction · Safety · Sparkler · Temperature · Light energy

1. True or False: The Gunpowder Plot of 1605 was an attempt to protect the Houses of Parliament. Explain your reasoning. (2 marks)

2. True or False: Fireworks create light and sound due to a simple physical change that does not involve chemicals. Justify your answer. (2 marks)

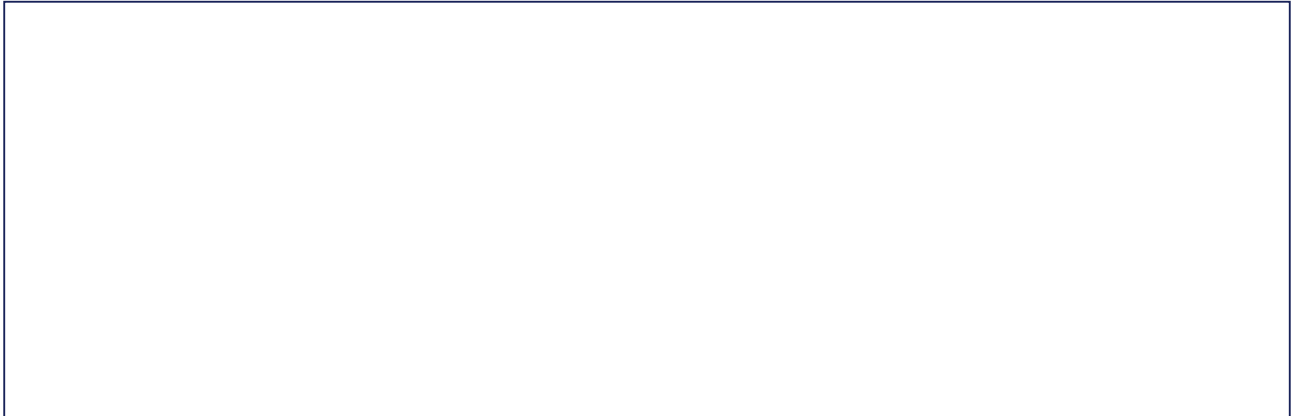
3. True or False: It is safe to handle a lit sparkler without gloves because the metal stays cool. Explain why this is dangerous. (2 marks)

4. Compare and contrast: How does the behaviour of a firework in the sky differ from the light produced by a candle? Use scientific vocabulary. (2 marks)

5. What might happen if the safety codes for fireworks were ignored at a large public display? Explain the potential consequences. (2 marks)

6. Justify why we celebrate Bonfire Night today rather than simply remembering the failed plot. How has the focus of the event shifted? (2 marks)

Draw: Draw a scientific diagram of a firework exploding in the night sky. Label the parts showing where 'light energy' and 'sound energy' are released, and draw a 'Safety Zone' circle around the spectators.



Extension challenge: Imagine you are a scientist invited to design a new, eco-friendly firework. Write a short paragraph explaining what materials you would use to ensure the display is bright but less harmful to the environment. If one firework costs £4.50, calculate the total cost for a display of 12 fireworks.