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Firework Show

Kaitlin A. Ordiway

The College at Brockport, kordi1@u.brockport.edu

Miranda Wharram

The College at Brockport, mwhar1@u.brockport.edu

Steven Lauffer

The College at Brockport, slauf1@u.brockport.edu

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CONCEPT MAP OF UNIT

To understand how different metals give off different colors of light as well as amounts of energy when photons are emitted.

TOPIC

Photon Emission

TEACHER

Miranda, Steve, and Kaitlin

GRADE

High School

LEARNING STANDARDS

CHEMISTRY

Key Idea 3- Matter is made up of particles whose properties determine the observable characteristics of matter and its reactivity.

3.1k- When an electron returns from a higher energy state to a lower energy state, a specific amount of energy is emitted. This emitted energy can be used to identify an element.

PHYSICS

5.3d the energy of a photon is proportional to its frequency.

MATH

Make sense of problems and persevere in solving them.

Solve equations and inequalities in one variable.

LEARNING TARGETS

Students will be able to:

- Manipulate the given model
- Describe the relationship between metals, light emission and energy
- Figure out how to distract the zombie for the longest amount of time possible given the provided budget
- Determine the energy of a photon of a specific color

OPTIONAL INSTRUCTIONAL TOOLS

Netlogo Model

CONCEPT

Chemistry

CONCEPT

Physics

CONCEPT

Mathematics

CONCEPT

Cross-Cutting

LESSON ESSENTIAL QUESTIONS

Which color is the most effective at distracting the zombie? Least effective? Using the provided budget how can you most effectively distract the zombie for the longest period of time?

LESSON ESSENTIAL QUESTIONS

How can the amount of energy within each firework be determined?

LESSON ESSENTIAL QUESTIONS

Given the color of light, what is the associated energy?

LESSON ESSENTIAL QUESTIONS

What firework show do you need to create to distract the zombies for a sufficient amount of time?

VOCABULARY

Light emission, energy level, electron

VOCABULARY

Photon, light emission, energy, Planck's Constant

VOCABULARY

Frequency, Planck's constant, photons

VOCABULARY

Cause, effect, time, cost