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| CW #3 - Electrons and Light  Directions: Answer each question fully.   1. Determine if the statement is true or false: All electromagnetic radiation travels at the same speed. 2. What is wavelength? 3. Draw 2 waves: one with a large wavelength and one with a small wavelength. 4. What is frequency for a wave of electromagnetic radiation? 5. Draw 2 waves: one with a high frequency and one with a low frequency. 6. How are the wavelength of light and the frequency of light related to each other? 7. Which color of light has the highest frequency? Lowest frequency? 8. Which color of light has the largest wavelength? Smallest wavelength? 9. Describe how light can act as a particle. 10. What is a photon? 11. What happens to the electrons in an atom when energy is added to an element? 12. Why and how do elements emit colored light? 13. How can the color of light produced by an element identify that element? 14. Describe, according to the Modern Atomic Theory, what we believe an atom looks like. 15. FM radio waves have a wavelength of 2.3 × 10-2m. What is the frequency? 16. Copper emits a green light when heated. Green light has a frequency of 5.45 × 1014Hz (1/s), what is the wavelength of the green light? How much energy is in a photon of green light given off by copper? 17. The element, lithium emits a strong red color when heated. Red light has a wavelength of 7.8 × 10-7m. What is the frequency of the red light emitted by lithium? How much energy is in a photon of red light? 18. Extra Credit   If one photon from copper gives off the amount of energy in your answer to #16, how much energy would 63.55 grams of copper release (that would be 6.02 × 1023 photons)? |
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