9C – ANSWER KEY: LIGHT ENERGY

Analysis

Table 1 – Observations in the dark

Trial #	LED color	LED time on glow in the dark object	Observations	Impact on the glow in the dark object.
1	Red			
2	Red			
3	Green			
4	Green			
5	Blue			
6	Blue			

Questions

1. Which color LED had the largest impact on the glow-in-the-dark object?

2. It can be said that red light wavelengths are longer and contain the least amount of energy, and blue light wavelengths are shorter and contain the most energy. How do your observations support this?

3. Ultraviolet (UV) waves are even shorter than blue waves, and infrared waves are longer than red waves. Based on your energy observations which of these light energy waves could cause sunburn? What do we do to protect ourselves from these rays?

4. Why didn't all the LED colors cause an equal amount of glowing in the object? Relate your answer to the ground state and excited state of the electrons within atoms that make up the glow-in-the-dark object.

5. Infrared waves are used for objects such as your TV's remote control. Why are remote controls safe to use in our homes while a source emitting UV waves is not safe?

6. What could stop the remote control infrared signal from getting to where you intend it?