Make sure you use the [CEREQ RUBRIC](https://docs.google.com/document/d/1jfyvpHAVr61XKUO9AmXHz4hGN0YGWUu5sta17WoQY9g/edit?usp=sharing)  or the Physiology CER Guidelines to check your work!

Lab Question: What can you conclude about the relationship between light intensity and the distance from the light source?

Dessa Shapiro, period 3, 9/29/20

| **Description of each section** | **My work:** | **Examples** |
| --- | --- | --- |
| **Claim**  Statement about the results of an investigation.   * A one sentence answer to the question you investigated. * Asserts a fact * It should not start with yes or no. * It should show the relationship between dependent and independent variables. | The Light intensity(LUX) decreases as the distance increases in a nonlinear function. . | *Example:*  Air is matter |
| **Evidence**  Evidence must be:   * **Sufficient**- Use enough evidence to support the claim, this should include the range, max/min and any relevant statistics. * **Appropriate**- Use relevant data to support your claim * **Qualitative**- (uses the senses), or **Qualitative**- (numbers) | One piece of evidence that supports this claim is the data points from my own experiment using a flashlight. The greatest change happening from 5 to 10 centimeter, 5127- 3282 lux with a difference of 1,845 lux and a 64% decrease.The least amount of change being from 75-80 cm, 233-232 lux with a difference of 1 lux.    And the graph of points made    This graph shows a curved L-like shape or inverse square relation. Graph gives an average of 956.3 lux and a range of 5127-232 lux. The rate of change also decreases as the distance increases. | *Example:*  The mass of the balloon increased by 0.30 g when we filled it with air. |
| **Reasoning**   * Shows **how** or **why** the data count as evidence to support the claim. * Provides the justification for why this evidence is important to this * Includes a discussion of **relevant scientific principles** in the explanation. | The evidence shows that as the distance from the light decreases so does the light's intensity. Making the graphs of this data form a L shape  I know (relevant disciplinary ideas – i.e., scientific facts and concepts that help answer the question): that light travels in straight lines and these lines spread out with distance, so as the distance increases the light must spread out over a larger area causing the light to become less condensed and the lights intensity to decrease and making an inverse square relationship or “one over r squared” when plotted.    Therefore, we can conclude that: The Light intensity(LUX) decreases as the distance increases. | *Example:*  Air is made of atoms and molecules, and these atoms and molecules have mass and take up space. Therefore, my evidence suggests that air is made up of matter |
| **Error Analysis:**  What SPECIFIC sources of experimental error or design flaw did you have in your experiment, and how did it affect your results and their accuracy?  How could you fix this error to make your results more accurate? | Some possible errors I made would have been using very exact measurements because I had a small ruler and had to move it occasionally. It was also difficult to keep my camera (source reading lux) at the exact level of the light because it was about a inch off the ground.  To fix these errors I could put the light against a more steady surface like a wall or find a flatter light source without only one direct beam. I could also try to find a longer measuring device. | *Example:*  We only measured the balloon once. It may have been more accurate to weigh the balloon three times and average them to correct error in the balance. |
| **Further Questions:**  What testable questions could you ask in a future study to learn more about this issue? | How does the data react with different light sources?  How would the light react if there was little to no room to spread over distance?  Does the color of the light affect how it travels?  Why do our eyes preserve light as brighter the higher the itersity is?  How much of the sun's light are we receiving here on earth.? | *Example:*  Future studies could find out if different gases have different mass. What would be the difference between regular atmospheric air and helium? |
| **Grammar/Tone:**   * Double check your writing and remove any opinion words. * Make sentences short and direct * Be as specific as possible in all sentences * Do not use informal language (writing should not sound like how you talk) * Do not use wordy or flowery language | *Examples of formal words:*  *Examine*  *Increase*  *Decrease*  *300 grams of HCl*  *Examples of informal versions of those words:*  *Look into*  *Got bigger*  *Got smaller*  *A huge amount of acid* | |