# Using your knowledge from the diagrams, Produce Images!

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| **Problem:** When using lenses, how does the location of the object affect the image produced? | | | | |
| **Materials:** | Optic bench  Sheet of paper  Converging lens  Diverging lens  Masking tape  Candle | | |  |
| **Procedure:**  **\*BE Careful with the candle!**  **Make sure all long hair is tied back.**  **Watch out for hot wax it can burn.** | | 1. Set the meter stick onto the legs of the optics bench. 2. Set the lens holder on the meter stick with a converging lens in the holder at 50 cm mark. 3. Place a lit candle (with a paper under to catch wax) close to the end of the meter stick. 4. Hold up a piece of blank paper on the opposite side of the lens. 5. Slide the paper along the side of the meter stick, until a tiny dot of light is formed. 6. Place a piece of tape on the meter stick at this location and record this distance (in cm) from the lens. This is the distance from the lens to the principle focus (F). 7. Label the point F’ on the other side, the same distance from the lens 8. Measure out twice the distance from the lens to F and place a second mark on a piece of tape labelled 2F and 2F’ respectively on both sides of the lens. 9. Place a lit candle at a point beyond the 2F’ mark. 10. Move the paper screen along the other side of the lens until a clear focussed image is formed. 11. Record the description of the image using S.A.L.T. 12. Move the lit candle four times to attempt to produce images.   **Observation for Converging Lens**  **Distance from lens to Principle Focus: \_\_\_\_\_\_\_\_\_\_, thus 2F distance is \_\_\_\_\_\_\_\_\_\_\_\_\_**   |  |  |  |  |  | | --- | --- | --- | --- | --- | | Object location from lens (cm) | Size of Image | Attitude of Image | Location of Image | Type of Image | |  |  |  |  |  | |  |  |  |  |  | |  |  |  |  |  | |  |  |  |  |  | |  | | | | | | | |
| **Discussion Questions:** | | | In a paragraph format, answer the following questions as if for a formal lab   1. Define the conditions that produce a real image. 2. Define the conditions that produce a virtual image. 3. Compare and contract SALT for a real vs a virtual image.   What happened to the size of the image as the object moved closer to the concave lens? Convex lens?   1. Can you always find an image no matter what lens you use? 2. If a converging lens had a focal length of 15 cm, what would the image characteristics be for an object placed 5cm , 20 cm, 30 cm and 40 cm be? | |