

Experimental Write-up

Focal Length:

Use a far away light or the sun to measure the focal length of your lens:

$$f' = \underline{\hspace{2cm}} \text{ cm}$$

Phone screen to lens:

What's the best distance between your phone and the lens?

$$d = \underline{\hspace{2cm}} \text{ cm}$$

How does this compare to your lens' focal length?

Lens to projected image:

What's the best distance between your lens and your image projected on the paper?

$$d = \underline{\hspace{2cm}} \text{ cm}$$

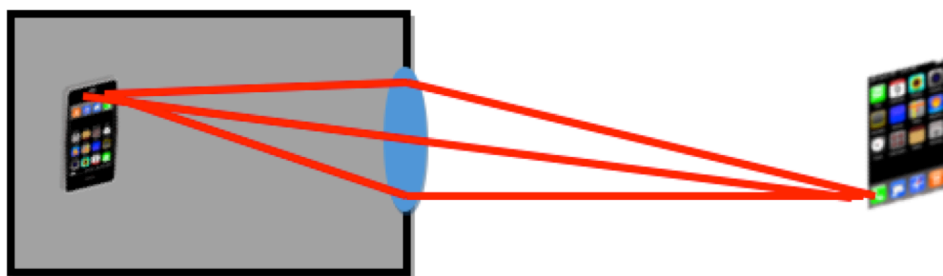
How does this compare to your lens' focal length?

Sketch:

Make a sketch of your final setup, including all measurements:

Ray Diagrams:

A Ray Diagram is drawn below. It shows how light given off from one side of the screen goes through the lens and ends up forming that part of the image on the paper. In the same way, draw a ray diagram for light coming from the **other side** of the phone. Do this in pencil first, then check with another group to compare what you drew.



**Inverted
Image:**

To get an **UPRIGHT** image you probably needed to turn your phone upside down. Using the Ray Diagram, explain why this might be. Feel free to use words and/or pictures.

**Experimental
Errors &
Tech Issues:**

Fill in the blanks below and answer the question:
Your image on the paper isn't nearly as sharp and bright as the image from a _____ projector or a _____ projector.

List *at least 3* reasons (your own errors or issues with materials and technology) that prevented your image from being more perfect:

- 1.
- 2.
- 3.
- 4.
- 5.