

## PhET Online Lab, Geometric Optics, Part 1

### I. Introduction

In this guided inquiry activity, you will investigate how an image is formed by four different optical instruments: a convex lens, a concave lens, a convex mirror, and a concave mirror. By the end of this lab, you should be able to (1) explain how the characteristics of the image change as the object is brought closer to each of the lenses and mirrors, (2) explain the similarities and differences between the image formation for each of the lenses and mirrors, and (3) explain the meaning of the points  $F$  and  $2F$  for the convex lens and concave mirrors.

You will use one of the simulations from PhET Interactive Simulations. The simulation is called Geometric Optics (GEOML). The link for the simulation is: <https://phet.colorado.edu/en/simulation/geometric-optics>.

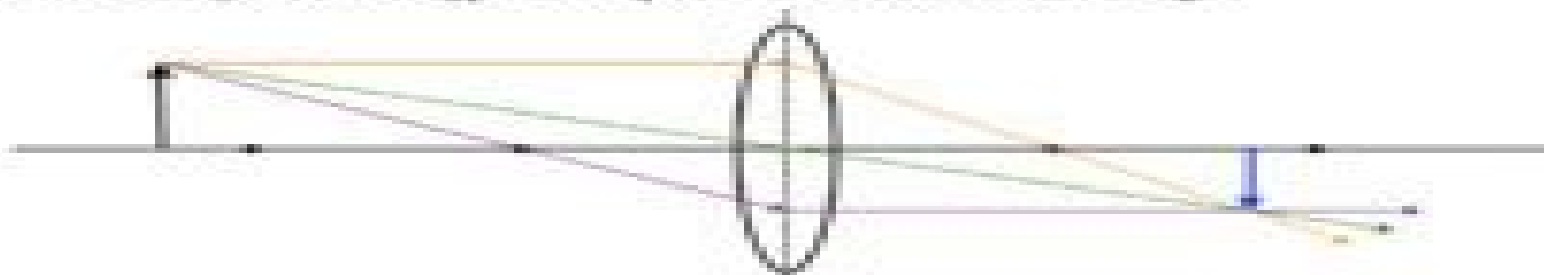
### II. Convex Lens and Concave Mirror

To begin, click on the Lens window. Next click on the PhET logo in the bottom right hand corner of the simulation and then click Options. When the Options window opens, check the red "off points" box and change the focal length control from infinity to 40 cm. Close the Options window.



Next, on the simulation window (1) change Rays from Marginal to Principal, (2) make the lens diameter 200 cm and (3) check the off Points and Labels boxes. Leave the focal length at 40 cm and the Second Point box unchecked.

Choose an object from the upper left drop down menu. Do not choose the light.



(1) On the diagram above label the following:

- |                     |   |
|---------------------|---|
| a) the optical axis | e) the focal length   |
| b) the object       | f) the points that are two focal lengths away from the lens |
| c) the image        | g) the object distance                                      |
| d) the focal points | h) the image distance                                       |

(2) Move the object back and forth on the optical axis. Where does the convex lens form an image?

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# Lenses Virtual Lab Using Phet Geometric Optics Answers

**Lei Shi**



## **Lenses Virtual Lab Using Phet Geometric Optics Answers:**

## **Lenses Virtual Lab Using Phet Geometric Optics Answers** Book Review: Unveiling the Magic of Language

In an electronic digital era where connections and knowledge reign supreme, the enchanting power of language has become more apparent than ever. Its capability to stir emotions, provoke thought, and instigate transformation is truly remarkable. This extraordinary book, aptly titled "**Lenses Virtual Lab Using Phet Geometric Optics Answers**," compiled by a very acclaimed author, immerses readers in a captivating exploration of the significance of language and its profound impact on our existence. Throughout this critique, we shall delve into the book's central themes, evaluate its unique writing style, and assess its overall influence on its readership.

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