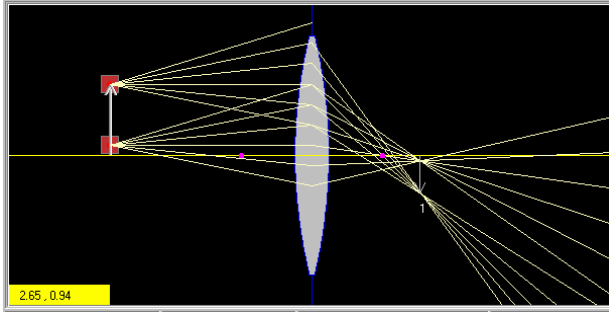


## Worksheet for Exploration 35.2: Ray Diagrams



You will often use ray diagrams in order to determine where an image of an object will be, whether it will be real or virtual, and whether it will be inverted or upright (**position is given in meters**). The animation shows an object arrow, a lens, and pink dots to show the focal point of the lens. [Restart](#).

- Two point sources are attached to the object in the animation. Move the object and notice where the rays from the point sources converge. In order to sketch a diagram of the object, the lens and the approximate position of the image, you need to know where the light from these sources (from the object) converges. As you move the object around, what do you notice about the rays that are parallel to the principal axis (either before entering the lens or after leaving the lens)?

Why do they always cross the axis at the same place?

- Instead of trying to draw a large number of the rays from many points on the object, we generally use three rays from the tip of the object (sometimes called principal rays) to sketch a ray diagram. Change to the "ray diagram" view. Describe the three rays (compare them to the list in your textbook, if needed).

Which one goes from the object through the lens and then through the focal point?

Which one seems to be undeflected as it goes through the lens?

Which one goes through the focal point (on the object side) and then through the lens?

- c. Look at a diverging lens with a point source. Try sketching a ray diagram for a diverging lens. Check it by looking at the ray diagram.

