

Name: _____

Date: _____

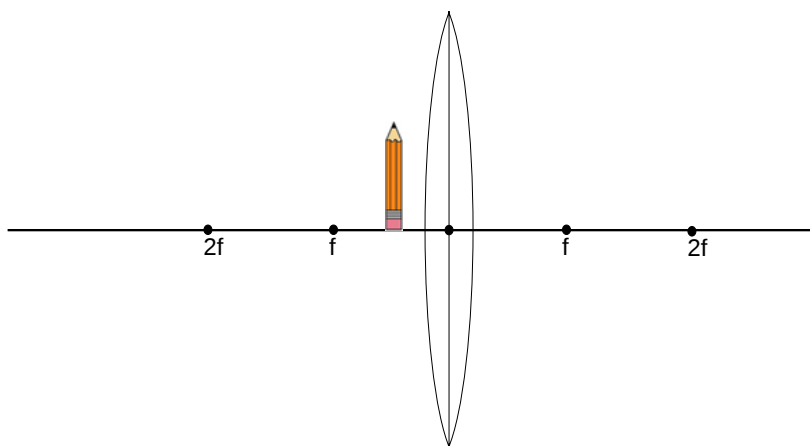
Section C D F

Refraction III: Ray Diagrams

Virtual and 2D Images

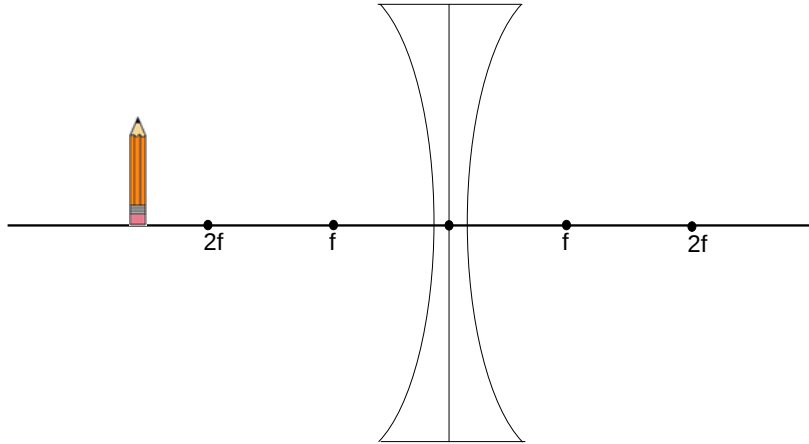
1. **For the following images, please draw the ray diagrams.**
2. The following slides illustrate an image/object being refracted by a lens. The only element that changes is the object distance, and from that the image distance changes, as well as the image height and magnification. Certain elements are the same, such as focal length and height of the object.
3. Remember the 3 rules of lenses:
 - i. Any ray that travels parallel to the principal axis refracts through the focal point.
 - ii. Any ray that travels through the focal point refracts parallel to the principal axis.
 - iii. Any ray that travels through the center continues straight.
4. Rays must converge to create an image point.
5. Please consult the textbook pages 568-577 to ensure that your diagrams are correct.
6. Please use the "Links" page on [*The Vault*](#) for supplemental applets, diagrams, and explanations.

Object Distance less than f



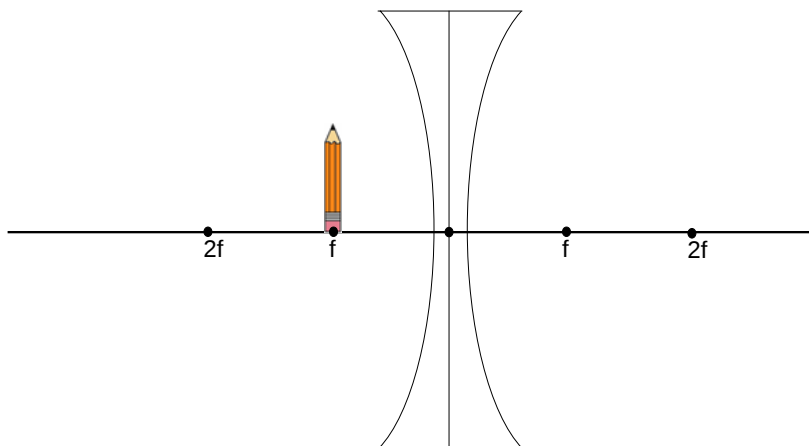
Converging Lenses

Object Distance greater than $2f$



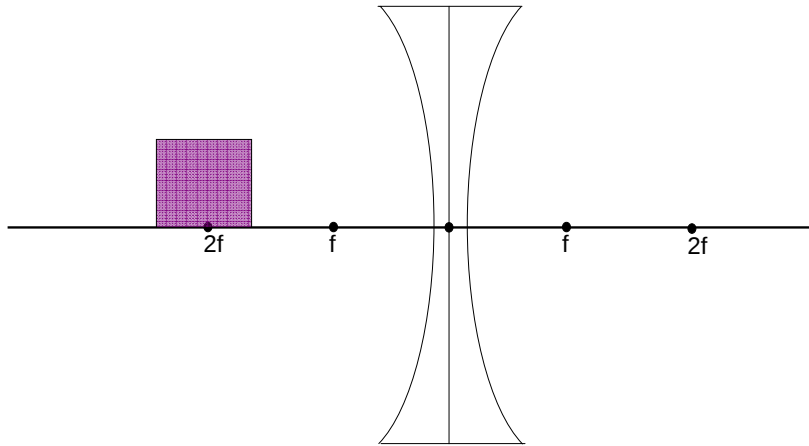
Diverging Lenses

Object Distance at f



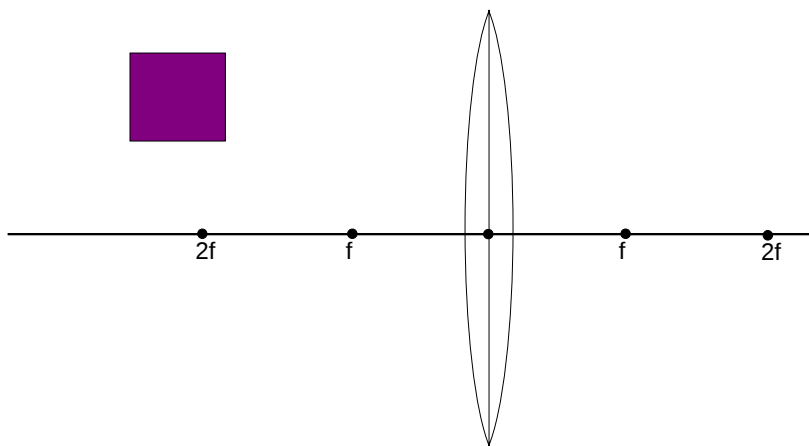
Diverging Lenses

2D Object on Principal Axis



Diverging Lenses

2D Object off Principal Axis



Converging Lenses