

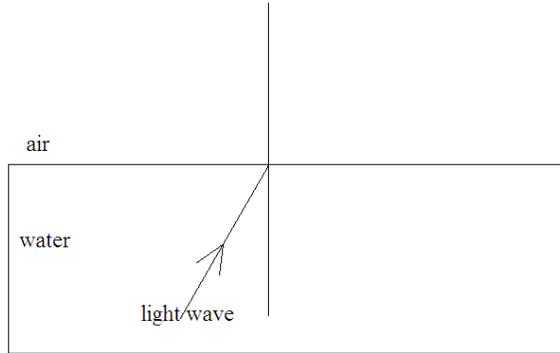
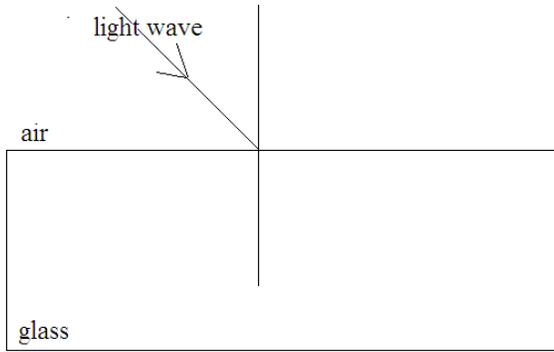
Matching

- | | |
|--|------------------------|
| _____1. Type of lens that is thicker in the middle and thinner on the edge | A. index of refraction |
| _____2. An image formed past the lens where refracted rays actually meet | B. virtual |
| _____3. A concave lens is this kind of lens | C. real |
| _____4. For a converging lens, the point where parallel rays meet | D. diverging |
| _____5. Type of lens that is thinner in the middle and thicker on the edge | E. concave |
| _____6. An image formed in front of a lens and right side up | F. convex |
| _____7. A convex lens is this kind of lens | G. converging |
| _____8. The amount that a substance slows down light compared to its speed in a vacuum | H. focal point |

Multiple Choice

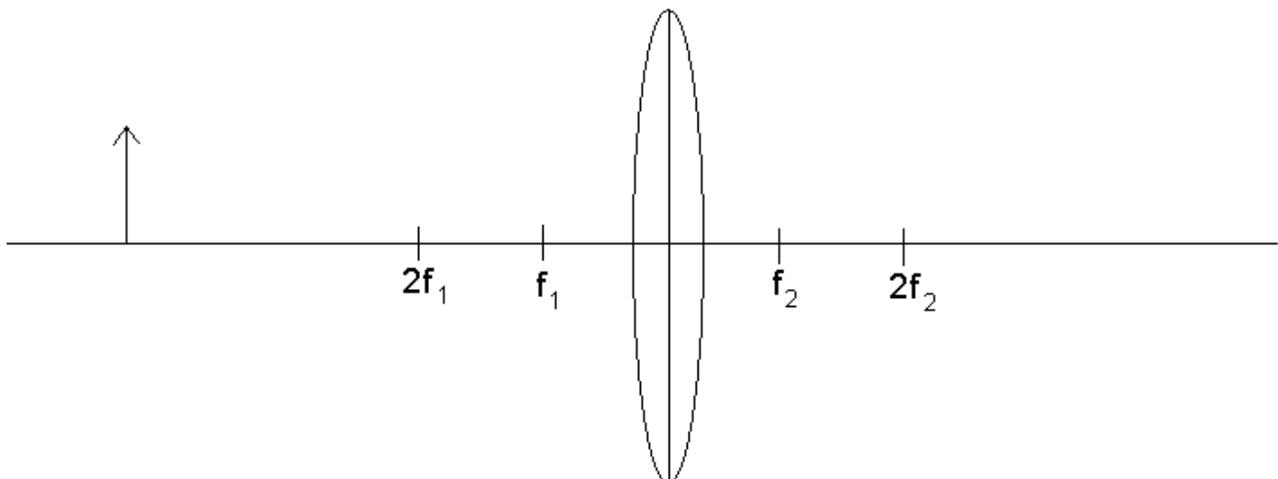
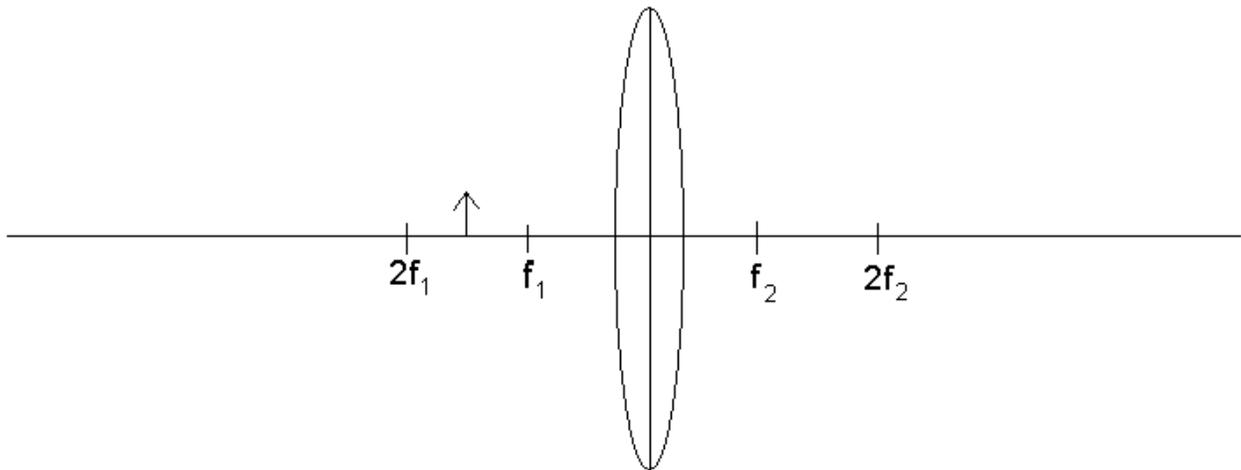
- _____9. The location of the focal point of a lens depends on the _____ of the lens.
 A. thickness B. curvature C. material D. all of these
- _____10. A concave lens can produce _____ images.
 A. virtual B. real C. larger D. A, B, and C are all correct
- _____11. A real image formed by a lens is always
 A. smaller than the object
 B. in front of the lens
 C. upside down
 D. A, B, and C are all correct
- _____12. Which of the following is an example of a convex lens?
 A. the lens in your eye
 B. the lenses in a simple telescope
 C. a magnifying lens
 D. A, B, and C are all convex lenses
- _____13. A virtual image formed by a lens
 A. is always smaller than the object
 B. can only be formed by a concave lens
 C. is formed in front of the lens
 D. is upside down

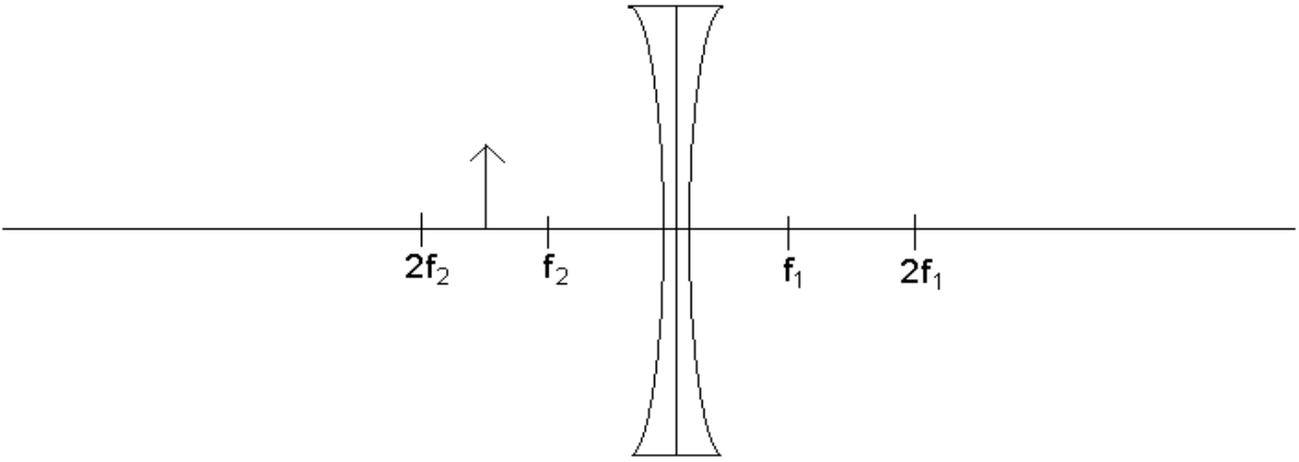
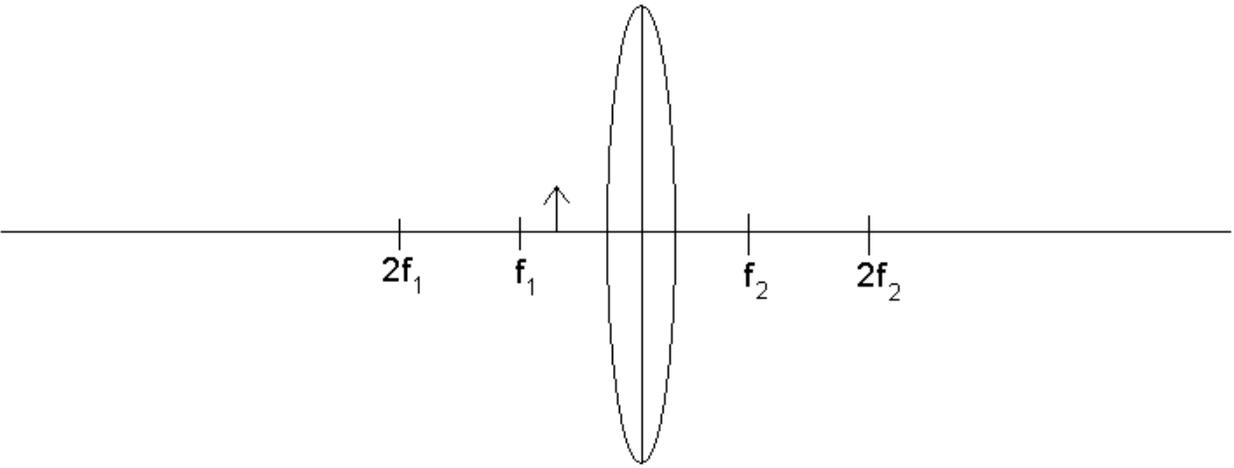
14. Complete the diagrams below to show how the light is refracted as it moves to a new medium.



15. Give the name of the line that is perpendicular to the border between the first medium and the second medium. _____

Diagram: Use a ruler to draw the 3 rays necessary to locate the image formed by each of the lenses. Draw the image in the proper location and tell whether it is a real or virtual image.





Know the following for the 19.2 Quiz

Be able to determine how light refracts when it moves from one medium into another

Know the difference between concave and convex lenses

Know the differences between real and virtual images formed by lenses

Know what kind of images are formed by concave and convex lenses

Be able to complete a ray diagram for concave and convex lenses

- draw the 3 rays necessary to locate the image
- extend reflected rays behind the lens if necessary
- draw image in the proper location (where 3 rays meet)
- determine whether the image formed is real or virtual

Know the definition of the following terms

- refraction
- index of refraction
- lens
- image
- ray diagram
- real image
- virtual image
- concave lens
- convex lens
- normal
- converging lens
- diverging lens
- focal point

Be able to predict whether an image will be real or virtual based the location of the object and type of lens (without drawing the rays in first)

Know the similarities and differences between how lenses make images and how mirrors make images