

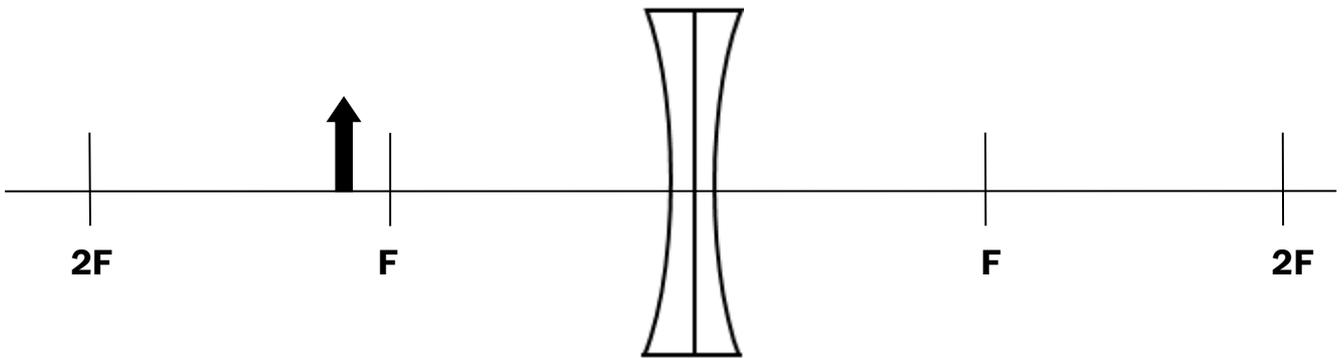
Name _____
Honors Physics
Period _____

Date _____
Reflection/Refraction WS#8
Mrs. Nadworny

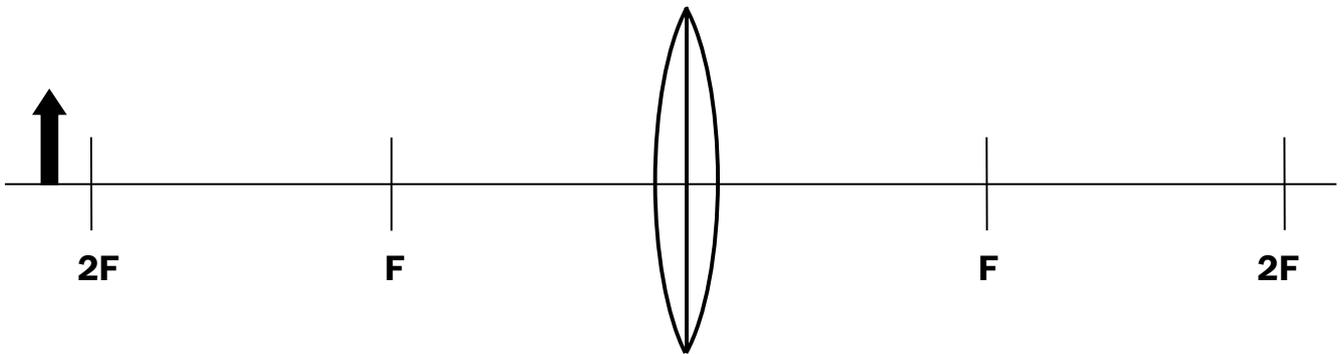
Review

Directions: Complete the ray diagrams using the method learned in class. Complete the calculation problems on a separate piece of paper. Where appropriate use the GUESS method and proper significant figures.

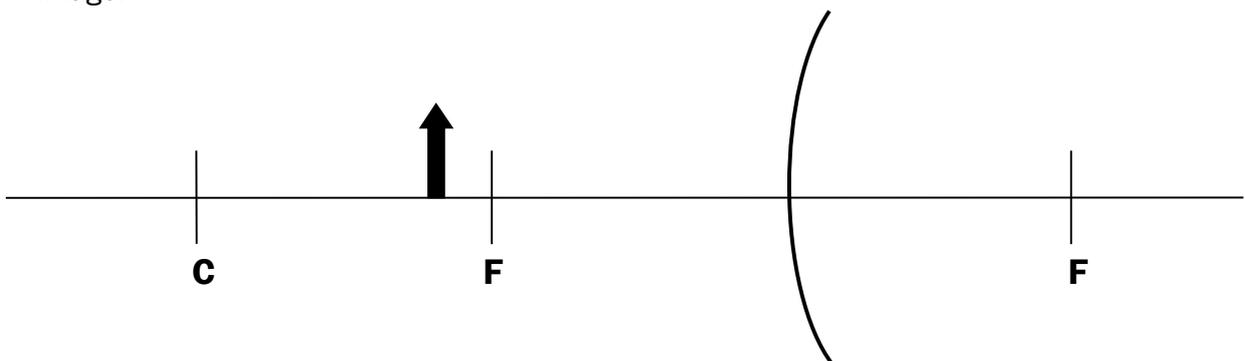
1. An arrow is placed in front of the **lens** as shown below. Locate the image of the arrow by means of a well-drawn ray diagram. Use a straightedge for all rays and clearly indicate the image.



2. An arrow is placed in front of the **lens** as shown below. Locate the image of the arrow by means of a well-drawn ray diagram. Use a straightedge for all rays and clearly indicate the image.

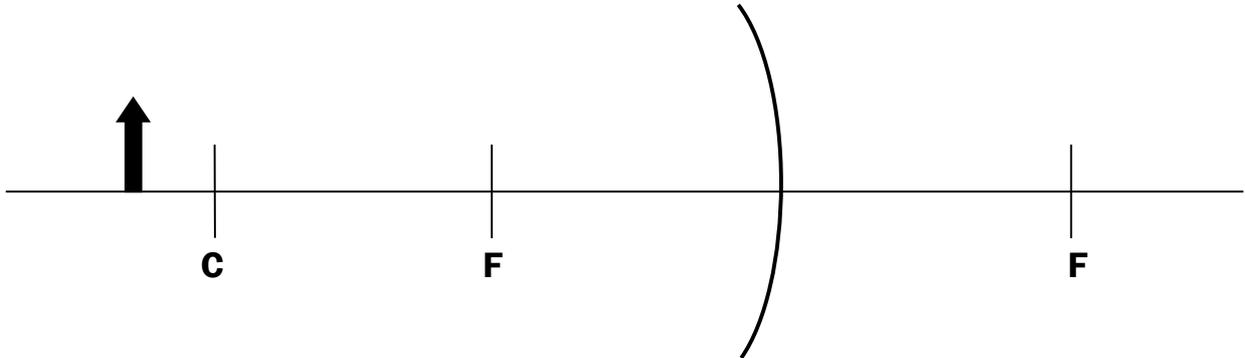


3. An arrow is placed in front of the convex **mirror** as shown below. Locate the image of the arrow by means of a well-drawn ray diagram. Use a straight edge for all rays and clearly indicate the image.



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4. An arrow is placed in front of the concave **mirror** as shown below. Locate the image of the arrow by means of a well- drawn ray diagram. Use a straight edge for all rays and clearly indicate the image.



5. A convex security mirror in a warehouse has a radius of curvature of 1.45 meters. A 2.81 meters high pile of boxes is located 9.37 meters from the mirror. Calculate the location and size of the image. Describe the properties of the image.
6. A 1.37 meters tall student at a museum stands 2.65 meters in front of a large concave mirror, whose focal length is 1.20 meters. Calculate the location and size of the image. Describe the properties of the image.
7. A 12.7 centimeter high object is placed 71.5 centimeters in front of a concave lens whose focal length is 52.0 centimeters. Calculate the location and size of the image. Describe the properties of the image.
8. A 12.7 centimeter high object is placed 71.5 centimeters in front of a convex lens whose focal length is 52.0 centimeters. Calculate the location and size of the image. Describe the properties of the image.
9. Light travels at a speed of 1.95×10^8 m/s in an unknown medium. What is this material?
10. An x-ray traveling through a vacuum has a wavelength of 6.1×10^{-9} m. As the x-ray passes into a denser medium, the wavelength of the x-ray will decrease to 3.8×10^{-10} m. Calculate the speed of the x-ray in the denser medium.
11. During an experiment a beam of red laser light ($f = 4.15 \times 10^{14}$ Hz) travels from Lucite into water at an angle of 27.5° .
- Calculate the angle of refraction upon entering the water.
 - Calculate the critical angle of Lucite.
 - Calculate the speed of light in the water.
 - Calculate the wavelength of light in the water.

Answers in size order: 5.45×10^{-7} , 0.202, 0.673, 1.13, 1.54, 2.19, 5.35, 30.1, 31.4, 33.9, 41.8, 191, 1.9×10^7 , 2.26×10^8