# Lenses

Directions: Read textbook pages 568 – 579. Complete the following problems.

Questions 1 through 3 refer to the following:

The diagram below represents an object 0.030 m high placed at point X, 0.60 m from the center of a lens. An image is formed at point Y, 0.30 m from the center of the lens.
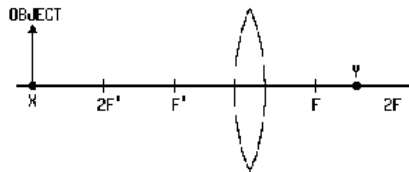
1. The image formed is

     (A) real and inverted   (B) real and erect   (C) virtual and inverted   (D) virtual and erect

2. As the object is moved closer to the focal point from position X, the image will

     (A) decrease is size and move farther from the lens
     (B) decrease is size and move closer to the lens
     (C) increase in size and move closer to the lens
     (D) increase in size and move further from the lens

3. The formation of the image is best explained in terms of

     (A) diffraction   (B) refraction   (C) reflection   (D) polarization

4. The same frequency of monochromatic light is incident from air upon four lenses having the same curvature, but made of different materials. Which lens has the shortest focal length?
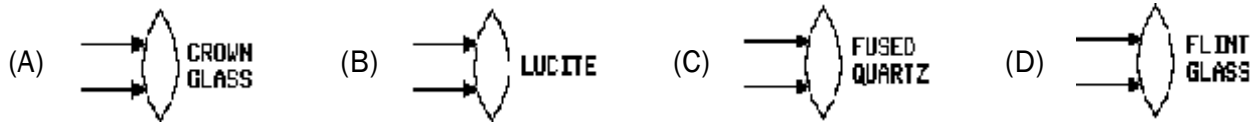
    (A) CROWN GLASS   (B) LUCITE   (C) FUSED QUARTZ   (D) FLINT GLASS

5. 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.
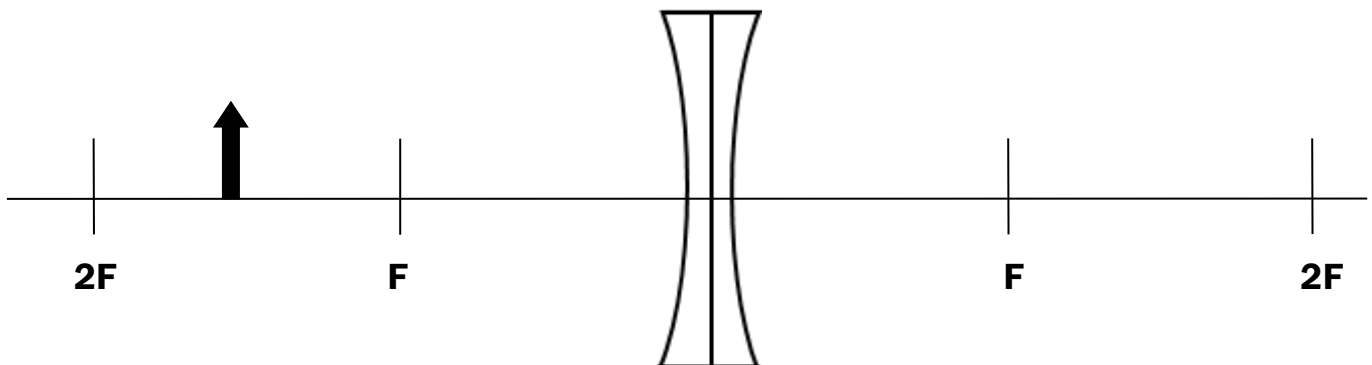
6. A 14 cm high object is placed 46 cm in front of a **diverging** lens whose focal length is 35 cm. Determine the location, height and orientation of the image.

7. 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.

2F **F** **F** **2F**
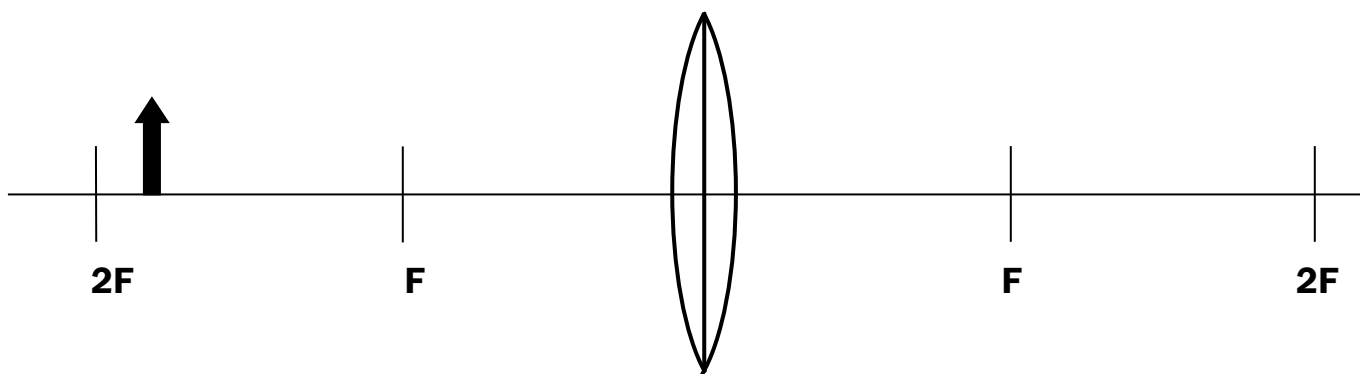
8. A 14 cm high object is placed 46 cm in front of a **converging** lens whose focal length is 35 cm. Determine the location, height and orientation of the image.

Answers in size order: 6.1, 20., 46, 150