## Question 1

An object is placed to the left of a convex lens with focal point as illustrated. Two rays are traced from the tip of the object through the lens and indicate the location of the image.



As the object is shifted closer toward the left focal point, which of the following is true?

- 1. The location and height of the image remain fixed.
- 2. The image gets closer to the lens and its height decreases.
- 3. The image gets closer to the lens and its height stays constant.
- 4. The image gets further from the lens and its height increases.
- 5. The image gets further from the lens and its height decreases.

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## Question 2

An object is placed to the left of a concave lens with focal point as illustrated.



As the object is shifted closer toward the lens, which of the following is true?

- 1. The location and height of the image remain fixed.
- 2. The image is produced at the focal point and its height increases.
- 3. The image gets closer to the lens and its height decreases.
- 4. The image gets closer to the lens and its height increases.
- 5. The image gets further from the lens and its height increases.

## Question 3

A plano-concave lens is as illustrated. Let  $R_1$  be the radius of curvature of the left side and  $R_2$  that of the right side.

Which of the following is true for an object to the left of the lens?

- 1.  $R_1 = 0$  and  $R_2 < 0$ .
- 2.  $R_1 = 0$  and  $R_2 > 0$ .
- 3.  $R_1 = \infty$  and  $R_2 < 0$ .
- 4.  $R_1 = \infty$  and  $R_2 > 0$ .