Thins Lens Equation Worksheet

Keep in mind the following points when working with the thin lens equation
- A concave lens has a negative focal length and a negative distance to the image.
- A convex lens has a positive focal length and either a positive or negative distance to the image, depending where the object is placed.
- The image distance di is positive if the image is real and negative if the image is virtual.

1. A powerful magnifying glass produces a real image 4 mm from the convex lens. If the object was placed 28 mm away, what is the focal length of the lens?

2. Determine the focal length of a convex lens that produces a virtual image at a distance of 30 mm when the object is placed 15 mm away.

3. The objective lens of a microscope is convex. The light from a specimen 4.0 mm from the lens forms a real image 10.0 mm from the lens. What is the focal length of this lens?

4. A concave lens has a focal length of 15 cm. An object is placed 20 cm from the lens. What type of image is formed? How far from the lens is the image?

5. A convex lens focuses the light from the image of a bacterium that is 0.02 cm from the lens. If the focal length of the lens is 0.03 cm, how far from the lens is the image?

6. A concave lens has a focal length of 5.0 cm. If a penny is placed at the focal point, where is the image of the penny formed?

7. A concave lens with a focal length of 18 mm produces an image 2.5 mm from the lens. How far from the lens is the object?

8. What is the distance of the object if a concave lens with a focal length of 70.00 cm produces a virtual image 33.00 cm from the lens?

9. An virtual image of a candle is produced by a convex lens 14 cm away. If the focal length of the lens is 7.0 cm, how far from the lens is the candle placed?