Lens Practice

Read from **Lesson 5** of the **Refraction and Lenses chapter** at **The Physics Classroom:**

http://www.physicsclassroom.com/Class/refrn/u14l5f.html

Use the lens equation and magnification equation to solve the following problems.

1. A converging lens has a focal length of 18.0 cm. A 4.0-cm tall object is placed in front of it. Determine the image distance and the image height when the object is placed …
   a. … 54.0 cm from the lens. **PSYW**

   b. … 36.0 cm from the lens. **PSYW**

   c. … 18.0 cm from the lens. **PSYW**

   d. … 12.0 cm from the lens. **PSYW**

2. A magnified, inverted image is located a distance of 32.0 cm from a converging lens with a focal length of 12.0 cm. Is the image real or virtual? _____ Determine the object distance. **PSYW**

3. An inverted image is magnified by 2 when the object is placed 22 cm in front of a converging lens. Determine the image distance and the focal length of the lens. **PSYW**

4. An upright image is magnified by 2 when the object is placed 22 cm in front of a converging lens. Determine the image distance and the focal length of the lens. **PSYW**

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5. A diverging lens has a focal length of -12.8 cm. A 4.5-cm tall object is placed 34.5 cm from the lens's surface. Determine the image distance and image height. **PSYW**

6. Determine the focal length of a diverging lens that produces an image that is 12.9 cm from the lens (and on the object's side) when the object is 32.4 cm from the lens. **PSYW**

7. A lens forms a virtual image that is $1/4^{th}$ the height of the object when the object is 28.4 cm from its surface. Determine the focal length of the lens. **PSYW**

8. The focal point is located 20.0 cm from a diverging lens. An object is placed 12.0 cm from the lens. Determine the image distance. **PSYW**

9. When an object is placed 36.8 cm from a lens, an upright image is formed that is 2.50 times larger than the object. Is the lens converging or diverging? _____. Determine the focal length of the lens. **PSYW**

10. When an object is placed 36.8 cm from a lens, an inverted image is formed that is 2.50 times larger than the object. Is the lens converging or diverging? _____. Determine the focal length of the lens. **PSYW**