1. An object is 5.0 cm from a convex lens with a focal length of 6.00 cm. Locate and describe the image. [-30 cm; virtual, erect, larger]

2. What focal length concave lens is needed to form a virtual image 10 cm from the lens when the object is 35 cm from the lens? [-14 cm]

3. An object 4 cm high is placed 20 cm in front of a convex lens of focal length 12 cm. What is the position and height of the image? [30 cm; -6 cm]

4. An object is 5 cm in front of a convex lens of focal length 7.5 cm. What is the position and magnification of the image? [-15 cm; 3]

5. An object is 9 cm high and is placed 27 cm in front of a concave lens of focal length 18 cm. What is the position and height of the image? [-10.8 cm; 3.6 cm]

6. A 20 cm tall object is placed 40 cm in front of a diverging lens with a focal length of 65 cm. (a) What is the resulting image distance? (b) Find the image size. (c) What is the magnification? [-24.8 cm; 12.4 cm; 0.62]

7. An 8 cm high object is placed 6 cm to the left of a concave lens of focal length 8 cm. (a) Where is the image? (b) Is it real or virtual? (c) Erect or inverted? (d) How large is it? [-3.4 cm; virtual, erect, 4.57 cm]

8. An object is placed 45 cm from a converging lens with a focal length of 25 cm. (a) What is the resulting image distance? (b) What is the resulting magnification? [56.25 cm; -1.25]

9. A diverging lens with a focal length of 30 cm forms an image 10 cm from the lens. (a) How far from the lens was the object placed? (b) What was the magnification? [15 cm; 0.67]

10. A converging lens has a focal length of 20 cm. An object is placed 50 cm from the lens and a 3 cm tall image is formed. (a) At what distance from the lens is the image formed? (b) What is the height of the object? [33.3 cm; 4.50 cm]

11. An object placed 6 cm from a lens produces a virtual image 5 cm from the lens. (a) What is the focal length of the lens? (b) Is the lens convex or concave? (c) What is the magnification? [-30 cm; concave; -0.83]

12. The convex lens of a copy machine has a focal length of 19.5 cm. A picture to be copied is 37.3 cm from the lens. Will the copy be an enlargement or a reduction? [enlargement]

13. In order to clearly read a book 22 cm away, a farsighted person needs an image distance of –74 cm. What focal length lens is needed? [31.3 cm]

14. When an object is placed 8 cm in front of a convex lens, an erect image is formed 12 cm from the lens. Find the focal length. [24 cm]

15. Compute the position and focal length of the converging lens which will project the image of a lamp, magnified 4 times and inverted, upon a screen located 10 meters from the lamp. [2.5 cm; 2 cm] *

16. A convex lens has a focal length of 10 cm. An object 2 cm tall is placed in front of the lens. (a) At what object distance will the image appear inverted and 2 cm tall? (b) At what object distance will the image appear erect and have a magnification of 3? [20 cm; 6.7 cm]**

17. An object is placed 80 cm from a screen. A converging lens with a 20 cm focal length is then placed between the object and the screen to form a focused image on the screen. Find (a) the distance from the object for the placement of the lens. (b) the magnification. [40 cm; -1] ***