

Physics  
Worksheet: Lens Problems

1. If the focal length of a convex lens is located 60 cm from the lens, what is the radius of curvature?
2. If an object is placed 50 cm in front of a convex lens of 60 cm radius, where does the image form?
3. Give a lens whose radius of curvature is +20 cm. What is the focal length of this lens? Does it form a real or virtual image?
4. A convex lens of radius 60 cm is placed so that a luminous object is 20 cm in front of the lens. Where does the image form?
5. A 2.2m tall object is placed 10 m in front of a concave lens which has a radius of curvature of 5 m. How tall is the image?
6. What is the radius of curvature of a concave lens which forms an image one fourth of the size of an object when the object is placed 6 m in front of the lens?
7. Where must an object be placed in front of a convex lens of radius R in order to form the image at the same location as the object? Is this a real or virtual image?
8. A concave lens with a radius of curvature located 3 cm from the lens forms an image of an object which is 2 m in front of the lens. Locate the image.
9. A 2.2 m tall object is standing in front of a piece of clear glass. Locate the image.
10. An object is placed 10 cm in front of a concave lens of radius 30 cm. Where is the image located? What is the magnification?
11. The radius of curvature of a concave lens is 30 cm, what is its focal length?
12. A 3 cm object is placed in front of a convex lens and the upright image formed is 9 cm in height. What is the magnification of this object? In general terms where was the object placed (beyond C, at C, between C and F, or between F and the lens)?
13. A concave lens has a radius of curvature of 60 cm. If a 2.2 m tall object is placed 4 m in front of the lens, where is the image located and how tall is it?
14. An image is formed 10 cm from a concave lens of radius 30 cm. Where is the object placed?
15. An object 0.1 m tall is placed 0.4 m from a concave lens. An image is formed 0.2 m from the lens. What is the focal length of the lens?
16. An object 0.5 m tall is placed 0.9 m from a concave lens. An image is formed 0.7 m from the lens. What is the focal length of the lens?
17. An object is placed 37.5 cm in front of a convex lens with a radius of curvature of 75 cm, where is the image formed?

18. An object is located 45 cm in front of a concave lens which has a radius of curvature of 20 cm. What is the magnification?
19. An object is located 30 cm in front of a convex lens which has a focal length of 40 cm. What is the magnification?
20. An object is placed 1.2 m from a convex lens with a radius of curvature of 60 cm. What is the image distance?
21. A convex lens is designed to have a magnification of 4 when an object is placed 60 cm in front of it. What is the radius of curvature?
22. A woman looks through a magnifying converging lens whose focal length is 20 cm. If the object is 10 cm from the lens, where is the image located and what is the magnification?
23. A child looks through a concave lens with a diameter of 8 cm, and sees an image that is reduced by one half. How far is the object from the lens?
24. A converging lens has a focal length of 15 cm. Where would you need to place an object in order to produce an upright, virtual image twice as tall as the object?
25. A 2 cm high candle is placed 15 cm in front of a converging lens with a focal length of 30 cm. How far "in front of" the lens does the candle appear, and how large is it?

Answers to Odd:

1. 1.2 m
3. 10 cm, either
5. 0.44 m
7. R, real
9. none is formed by refraction
11. -15 cm
13. -0.279 m, 0.152 m
15. -0.4 m
17. infinity, no image is formed
19. 4
21. 160 cm
23. 2 cm
25. -30 cm, 4 cm