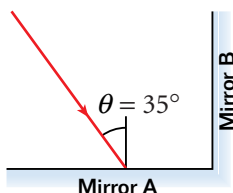


15. If you are stranded on an island, where would you align a mirror to use sunlight to signal a searching aircraft?
16. If you are standing 2 m in front of a flat mirror, how far behind the mirror is your image? What is the magnification of the image?
24. If an object is placed outside the focal length of a concave mirror, which type of image will be formed? Will it appear in front of or behind the mirror?
25. Can you use a convex mirror to burn a hole in paper by focusing light rays from the sun at the mirror's focal point?

Conceptual Questions

17. When you shine a flashlight across a room, you see the beam of light on the wall. Why do you not see the light in the air?
18. How can an object be a specular reflector for some electromagnetic waves yet be diffuse for others?
19. A flat mirror that is 0.85 m tall is attached to a wall so that its upper edge is 1.7 m above the floor. Use the law of reflection and a ray diagram to determine if this mirror will show a person who is 1.7 m tall his or her complete reflection.

20. Two flat mirrors make an angle of 90.0° with each other, as diagrammed at right. An incoming ray makes an angle of 35° with the normal of mirror A. Use the law of reflection to determine the angle of reflection from mirror B. What is unusual about the incoming and reflected rays of light for this arrangement of mirrors?
21. If you walk 1.2 m/s toward a flat mirror, how fast does your image move with respect to the mirror? In what direction does your image move with respect to you?
22. Why do the images produced by two opposing flat mirrors appear to be progressively smaller?



Conceptual Questions

26. A convex mirror forms an image from a real object. Can the image ever be larger than the object?
27. Why are parabolic mirrors preferred over spherical concave mirrors for use in reflecting telescopes?
28. Where does a ray of light that is parallel to the principal axis of a concave mirror go after it is reflected at the mirror's surface?
29. What happens to the real image produced by a concave mirror if you move the original object to the location of the image?
30. Consider a concave spherical mirror and a real object. Is the image always inverted? Is the image always real? Give conditions for your answers.
31. Explain why enlarged images seem dimmer than the original objects.
32. What test could you perform to determine if an image is real or virtual?
33. You've been given a concave mirror that may or may not be parabolic. What test could you perform to determine whether it is parabolic?

Practice Problems

For problems 34–35, see Sample Problem B.

34. A concave shaving mirror has a radius of curvature of 25.0 cm. For each of the following cases, find the magnification, and determine whether the image formed is real or virtual and upright or inverted.
 - a. an upright pencil placed 45.0 cm from the mirror
 - b. an upright pencil placed 25.0 cm from the mirror
 - c. an upright pencil placed 5.00 cm from the mirror

CURVED MIRRORS

Review Questions

23. Which type of mirror should be used to project movie images on a large screen?