1. A converging lens with a focal length of 3.1 cm is used to image an object which is 3.4 cm away from the lens. How far from the lens is the image?
2. A light beam (initially in air) strikes a substance with an index of refraction of 1.4 at an incident angle of 18.0 degrees. What is the refracted angle in this substance?
3. A planetoid is 3.7 times farther from the Sun than Earth. How many times more intense is the light striking the atmosphere of earth compared to the intensity of light striking the planetoid?
4. An object has a height of 2.4 cm and a width of 14.9 cm. A 33.80 cm height of the shadow is cast by a point source onto a nearby wall 694.78 cm from the object. How far away from the object is the point source of light casting the shadow?
5. Light travels at 3 X 108 m/s in a vacuum. How fast does light travel in a piece of glass that has an index of refraction n = 1.1595 ?
6. Light from a tiny light bulb shining through a mask illuminates 40.7 cm2 of a screen placed 10.6 cm from the bulb. Predict the screen area that would be illuminated at a distance of 155.4 cm from the bulb.
7. An object with a height of 3.5 cm is 21.7 cm from a pinhole. On the other side of the pinhole at a distance of 306.0 cm is the reproduction cast on a screen. What is the height of this reproduction?
8. A 1.48 kg brick has 890.1 J of kinetic energy. What is the velocity of this brick?
9. A rock is thrown from just above the ground vertically into the air and reaches a height of 26.6 m. What is its speed just before it returns to the ground?
10. A boy throws a steel ball straight up. Consider the motion of the ball only after it has left the boy's hand but before it touches the ground, and assume that the forces exerted by the air are negligible. For these conditions, the force(s) acting on the ball is (are):
    1. a downward force of gravity along with a steadily decreasing upward force.
    2. an almost constant downward force of gravity only.
    3. a steadily decreasing upward force from the moment it leaves the boy's hand until it reaches its highest point; on the way down there is a steadily increasing downward force of gravity as the object gets closer to the earth.
    4. none of the above. The ball falls back to the ground because of its natural tendency to rest on the surface of the earth.
    5. an almost constant downward force of gravity along with an upward force that steadily decreases until the ball reaches its highest point; on the way down there is only a constant downward force of gravity.