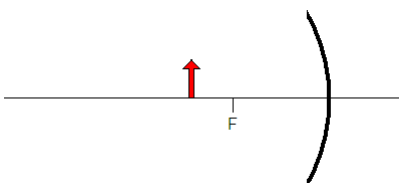


Physics II

Mirrors

Lens and mirror equations: $\frac{1}{f} = \frac{1}{d_o} + \frac{1}{d_i}$ $m = \frac{h_i}{h_o} = -\frac{d_i}{d_o}$

Problem 1.- In the following example of a concave mirror find the position of the image and describe it (virtual, real, upright, inverted, etc)



Problem 2.- You are standing 10.0 m from a convex security mirror in a store. Your image looks 0.25 times your actual size. What is the radius of curvature (R) of the mirror?

Problem 2a.- You are standing 4.0 m from a convex security mirror in a store. Your image looks 0.35 times your actual size. What is the focal length of the mirror?

Problem 3.- A mirror at an amusement park shows an upright image of a person who stands 2.0 meters in front of it. If the image is 2.5 times the person's height, what is the radius of curvature of the mirror?

Problem 4.- What would we see on the moon if it had a polished mirror-like surface? Describe the image.

Problem 5.- A solar cooker is made with a concave mirror. If the Sun's rays are focused 30cm in front of the mirror, what is the radius of the spherical surface from which the mirror was made?

Problem 6.- An object is placed 25 cm from a certain mirror and its image is half the size of the object, inverted and real. What is the focal length of the mirror and what kind of mirror is it?

Problem 7.- A shaving mirror is designed to magnify your face by a factor of 1.55 when your face is placed 25.0 cm in front of it.

- (a) What kind of mirror is it?
- (b) Describe the kind of image that it makes (virtual, real, upright, inverted, etc.) and
- (c) Calculate the radius of curvature of the mirror.

Problem 8.- A dentist wants a small mirror that, when 2.55 cm from a tooth, will produce an upright image 5 times larger. What kind of mirror must be used and what would be its focal length?

Problem 9.- What is the focal length of a plane mirror? What is its magnification "m"?

Problem 10.- What is the focal length of a shiny Christmas ball that has a diameter of 10cm?