Worksheet for Exploration 33.4: Focal Point and Image Point



In the animation, you have the option of adding both a parallel beam source and a point source of light, as well as mirrors (**position is given in meters**). Whenever you add a mirror, all the light sources will be cleared off the screen. <u>Restart</u>.

a. First, add a concave mirror and then add a parallel beam source. Where do the light rays converge? This is the focal point of the mirror.

b. Now, add a point source of light (move the parallel beam source to the right of the mirror). Where do the rays converge? Is it at the focal point? Hint: The focal point is determined by the shape of the mirror. Should it always be in one place or should it move as the light source is moved?

c. Move the point source around. What happens to the point where the rays converge?

d. Now add an object. Put the object and point source at the same place. Where is the image in relation to the point where the rays converge? What is the difference between the focal point and an image point?

e. What happens when you move the object to the focal point of the mirror? Why?

f. What happens when the object is between the focal point of the mirror and the mirror itself?

g. What is the difference between images when the object is inside the focal point or outside the focal point? (If you find that the screen is too cluttered to see what is happening, you can clear the screen and add only a concave mirror and an object.)

h. Which images are real images and which ones are virtual? How can you tell?

i. Clear the screen and add a convex mirror and an object. Describe (and explain) the image formed.