DEPTH OF FIELD

A camera is capable of focusing the light rays from only one particular plane in front of it. (Call this the “plane of sharp focus.”) These light rays reconverge at the “focal” plane; that is, the plane where the film is located, and produce a sharp image there. Non-convergent light rays that originate from points outside the plane of sharp focus produce a fuzzy image at the focal plane.

This effect is shown clearly in the photo below. There is only one plane which is in sharp focus. Everything before and beyond this plane is blurred.

Notice, however, that the sharp part of the photo is not really a mathematical plane. It is a slice of space with a considerable thickness. We refer to this thickness as the “depth of field.” It would be more descriptive to call it the “zone of acceptably sharp focus.”

There are three ways to change the depth of field:

1. It increases as the lens aperture is made smaller.
2. It increases when the “plane of sharp focus” is located progressively farther away from the camera.
3. It increases when the focal length of the lens is made shorter.

The sample photographs were all taken from a fixed camera position and they clearly show the effects of changing the lens aperture and the position of the plane of sharp focus.

An example of very shallow depth of field.
Choose or create a scene in which something is 2 feet in front of the camera and something is 10 feet in front of the camera. Do not move the camera or the items for the 4 photos. Change only the focus, f-stop and shutter speed. Do not change the focal length of the lens. If you don’t have an f/2 aperture, use the widest aperture available to you. If you have an f/22 or f/32 you may use it.

Figure 2A. Lens focused at 10 feet; aperture at f/16.
Figure 2C. Lens focused at 2 feet; aperture at f/16.

Figure 2B. Lens focused at 10 feet; aperture at f/2.
Figure 2D. Lens focused at 2 feet; aperture at f/2.

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