

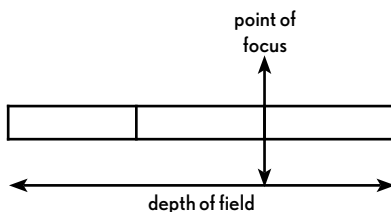
aperture: depth of field



THERE ARE THREE FACTORS THAT AFFECT DEPTH OF FIELD:

- focal length of the lens
- distance between the camera and the subject
- aperture or f-stop used

If a lens is focused at a particular distance, all points at that distance will be in focus. There is a zone in front of this specific distance and a zone behind that will also be in acceptable focus. This zone or distance in front of and behind the focus point is called the *depth of field*. The distance that is in focus behind is approximately twice as large as the distance that is in focus in front of the point of focus.



The smaller the focal length of a lens, the larger the depth of field is. Thus a wide-angle lens has a wider depth of field than a normal lens, which in turn has a wider depth of field than a telephoto lens. The longer the telephoto lens is, the shorter the depth of field is. In using a telephoto lens for portraiture you may get an image where the eyes are in focus but the tip of the nose and the ears are outside the narrow depth of field, and thus out of focus or blurry.

As the camera is moved closer to the subject, the depth of field gets smaller; thus, closer objects require more precise focusing. To ensure that you are at the closest focusing distance for the camera, set the focus to the minimum distance and without changing the focus, move the camera towards the object until it is in focus.

A wide aperture (small f-stop, say $f/2$) will have a narrow depth of field. As the aperture is made smaller (larger f-stop) the depth of field increases. Faced with the choices of the exposures $f/5.6$ at $1/30$, $f/4$ at $1/60$, $f/2.8$ at $1/125$, and $f/2$ at $1/250$, the one with the smallest depth of field is $f/2$ at $1/250$.

Greater effect is achieved by using the controls in combination. To get the narrowest depth of field use a telephoto lens, move in as close as possible, and use the largest aperture of the camera. To get the largest depth of field use a wide angle lens, move far away from the subject, and use the smallest aperture.



$f/1.4$ – narrow depth of field



$f/5.6$ – moderate depth of field



$f/16$ – large depth of field