

Aperture, Focus and Depth-of-Field

An *aperture* is a hole in the lens. It's as simple as that. The smaller the hole, the less light gets in. If you make the hole bigger, more light hits the sensor.

The smaller the aperture hole, the larger the f-number used to designate that hole.

An f-stop is one over the f-number. So $f/22$ refers to a very small opening in a lens, whereas $f/2.8$ is a much larger hole. If, in fact, the lens can't be opened any wider than $f/2.8$, then $f/2.8$ is called the *maximum aperture* of the lens.



The diagram above shows some apertures and the comparative size holes they make.

Depth-of-Field

Depth-of-field is the distance behind and in front of a subject that is apparently in focus. Depth-of-field is a key compositional element in many, if not most, photographs. It is one of the most important tools a photographer can use to create striking images.

The biggest compositional impact of the aperture setting is that it controls the extent of the depth-of-field. Of course, it depends upon the lens you are using and where it is focused, but given a particular lens and a focus setting, your control of depth-of-field is based solely on how you set the aperture.

The smaller the lens aperture, the more depth-of-field there is. At its maximum aperture, say $f/2$, a lens has almost no depth-of-field. At intermediate apertures, such as $f/11$ and $f/16$, there is some, and



◀ This photo of a Dahlia was taken with the lens almost all the way open for minimal depth of field at $f/4$. The photo shows the Dahlia in focus and the background elegantly blurred, isolating the flower from the background.

105mm $f/2.8$ macro lens, $1/1250$ of a second at $f/4$ and ISO 100, tripod mounted

▶ I wanted as much of this flower as possible to be in focus, so I stopped the lens down all the way for maximum depth-of-field.

200mm macro lens, $1/30$ of a second at $f/36$ and ISO 200, tripod mounted

