

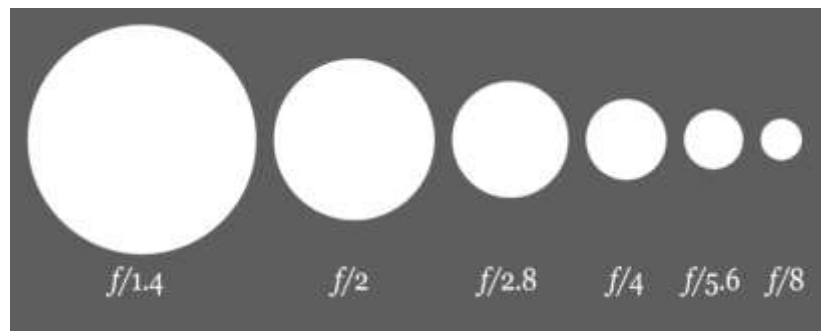
APERTURE

“Aperture is the size of the opening in the lens when a picture is taken”

Aperture either adds a dimension to a photograph by blurring the background, or magically brings everything in focus.

Aperture is a hole within a lens, through which light travels into the camera body. It is easier to understand the concept if you just think about our eyes. Every camera that we know of today is designed like human eyes. The cornea in our eyes is like the front element of a lens – it gathers all external light, then bends it and passes it to the iris. Depending on the amount of light, the iris can either expand or shrink, controlling the size of the pupil, which is a hole that lets the light pass further into the eye. The pupil is essentially what we refer to as **aperture** in photography. The amount of light that enters the retina (which works just like the camera sensor), is limited to the size of the pupil – the larger the pupil, the more light enters the retina. Aperture is ‘the opening in the lens.’ When you hit the shutter release button of your camera a hole opens up that allows your camera's image sensor to catch a glimpse of the scene you're wanting to capture. The aperture that you set impacts the size of that hole. The larger the hole the more light that gets in – the smaller the hole the less light.

Aperture is measured in ‘f-stops’.



for example f/2.8, f/4, f/5.6, f/8, f/22 etc. Moving from one f-stop to the next doubles or halves the size of the amount of opening in your lens (and the amount of light getting through). Keep in mind that a change in shutter speed from one stop to the next doubles or halves the amount of light that gets in also – this means if you increase one and decrease the other you let the same amount of light in – very handy to keep in mind).

One thing that causes a lot of new photographers confusion is that large apertures (where lots of light gets through) are given f/stop smaller numbers and smaller apertures (where less light gets through) have larger f-stop numbers. So f/2.8 is in fact a much larger aperture than f/22. It seems the wrong way around when you first hear it but you'll get the hang of it.

Lens Apertures: Maximum and Minimum

Every lens has a limit on how large or how small the aperture can get. If you take a look at the specifications of your lens, it should say what the maximum (lowest f-number) and minimum apertures (highest f-number) of your lens are. The maximum aperture of the lens is much more important than the minimum, because it shows the speed of the lens. A lens that has an aperture of f/1.2 or f/1.4 as the maximum aperture is considered to be a fast lens, because it can pass through more light than, for example, a lens with a maximum aperture of f/4.0. That's why lenses with large apertures are better suited for low light photography.

The minimum aperture is not that important, because almost all modern lenses can provide at least f/16 as the minimum aperture, which is typically more than enough for everyday photography needs.



This 50mm lens has a max. aperture of f/1.4

There are two types of lenses: “fixed” (also known as “prime”) and “zoom”. While zoom lenses give you the flexibility to zoom in and out (most point and shoot cameras have zoom lenses) without having to move closer or away from the subject, fixed or prime lenses only have one focal length. Due to the complexity of optical design for zoom lenses, many of the consumer lenses have variable apertures. What it means, is that when you are fully zoomed out, the aperture is one number, while zooming in will increase the f-number to a higher number. For example, the Nikon 18-200mm lens has a variable maximum aperture of f/3.5-f/5.6. When zoomed fully out at 18mm, the lens has an aperture of f/3.5, while when fully zoomed in at 200mm, the lens has an aperture of f/5.6. The heavy, professional zoom lenses, on the other hand, typically have fixed apertures. For example, the Nikon 70-200mm f/2.8 lens has the same maximum aperture of f/2.8 at all focal lengths between 70mm and 200mm.

Why is this important? Because larger maximum aperture means that the lens can pass through more light, and hence, your camera can capture images faster in low-light situations. Having a larger maximum aperture also means better ability to isolate subjects from the background.