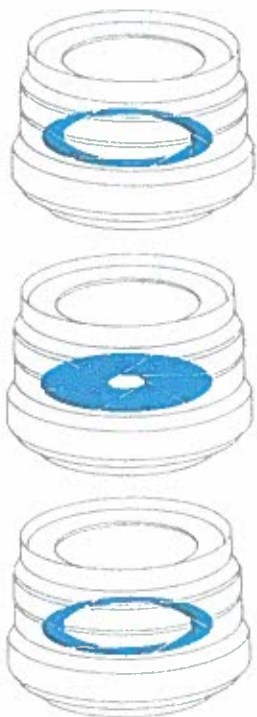


## THE APERTURE CONTROLS LIGHT AND DEPTH OF FIELD

### Animation

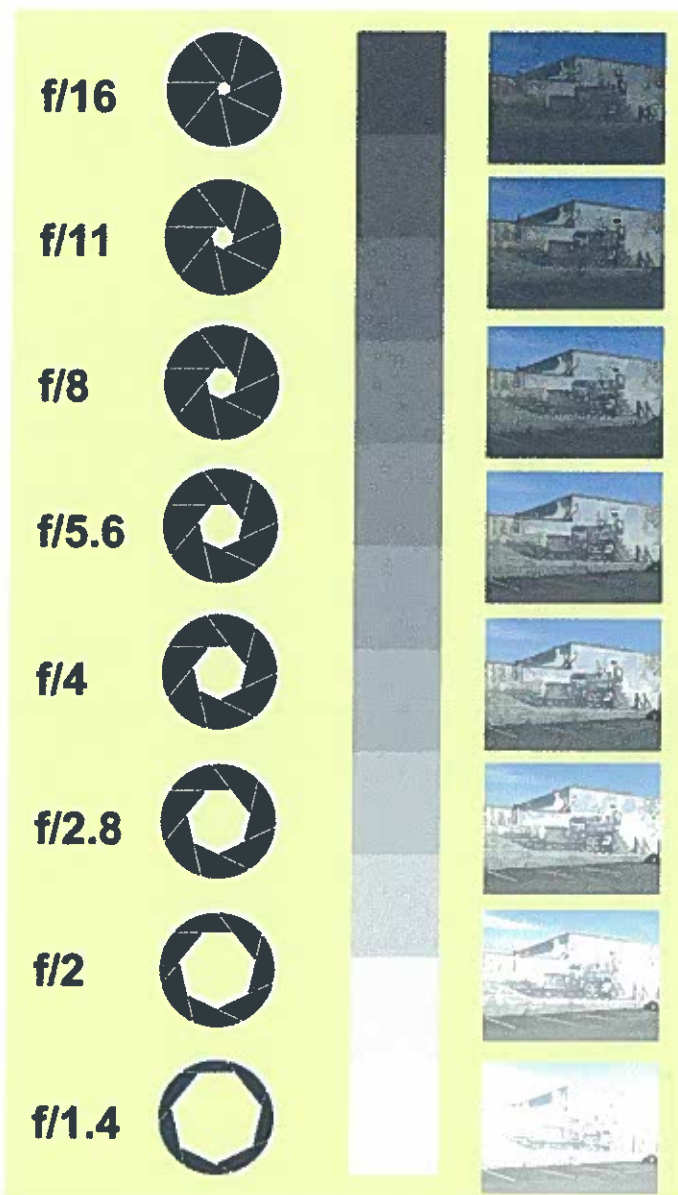
Click here to explore the standard series of apertures and the aperture's effects on exposure.

As the aperture number gets smaller (for example, from  $f/8$  to  $f/5.6$ ) the aperture opening gets larger and the image gets lighter. The reason you don't usually see this effect in your images is because when you or the camera change the aperture, the camera changes the shutter speed to keep the exposure constant.



In better cameras, the aperture is a series of overlapping leaves located between the glass elements in the lens.

The aperture adjusts the size of the opening through which light passes to the image sensor. The aperture can be opened up to let in more light or closed (stopped down) to let in less. In respect to just exposure, smaller apertures let less light strike the image sensor so the image is darker. Larger apertures let in more so it's lighter.



As with the shutter speed, the aperture also affects the sharpness of your picture, but in a different way. Changing the aperture changes the *depth of field*, the depth in a scene from foreground to background that will be sharp in a photograph. Smaller apertures increase depth of field while larger ones decrease it. For some pictures—for example, a landscape—you may want a smaller aperture for maximum depth of field so that everything from near foreground to distant background is sharp. But perhaps in a portrait you will want a larger aperture to decrease the depth of field so that your subject is sharp but the background is soft and out of focus.

## THE SHUTTER CONTROLS LIGHT AND MOTION

The shutter keeps light out of the camera except during an exposure, when it opens to let light strike the image sensor. In respect to just exposure, faster shutter speeds let less light strike the image sensor so the image is darker. Slower speeds let in more so it's lighter.

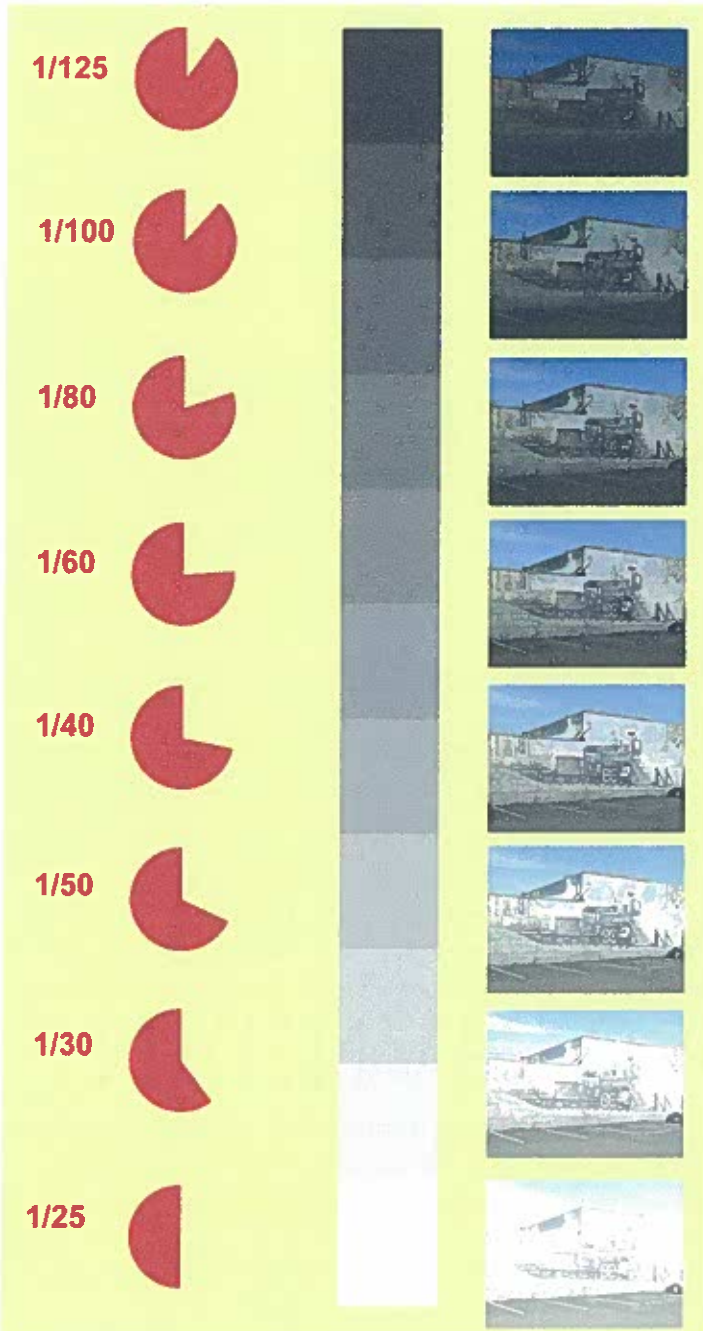
*As the shutter speed gets slower, the image gets lighter. The reason you don't usually see this effect in your images is because when you or the camera change the shutter speed, the camera changes the aperture to keep the exposure constant.*

### Animation

*Click to explore the various types of shutters used in digital cameras.*

### Animation

*Click to explore the effect of shutter speed on exposure.*



*Katie turned a little just as the shutter opened causing unwanted blur in the image.*

In addition to controlling exposure, the shutter speed is the most important control you have over how motion is captured in a photograph. The longer the shutter is open, the more a moving subject will be blurred in the picture. Also, the longer it's open the more likely you are to cause blur by moving the camera slightly. Although you normally want to avoid blur in your images there are times when you may want to use it creatively.