# Take the Shot

notes

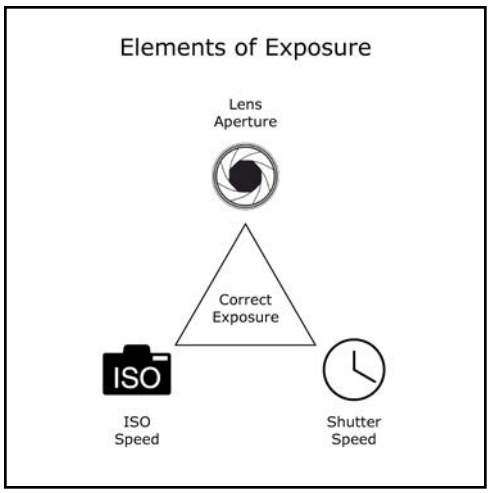
## More Exposure

Let's dig a little deeper to look at what's happening inside the camera—with more exposure.

### What Determines Exposure?

There are three settings the camera is using to determine the exposure.

The first is the lens aperture. This is the size of the opening in the lens that lets in light. A larger opening lets in more light; a smaller one, less light.



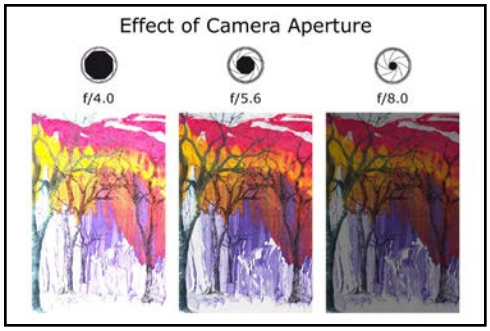

The second is the shutter speed. This is the length of time the camera shutter is open to let in light. A slower speed lets in more light; a faster one, less light.

The third is the ISO speed. This is the sensitivity of the camera's sensor to light. A higher ISO increases the sensitivity; a lower one decreases it.

Let's look at some examples to see how each setting affects the exposure.

### Aperture & Exposure

The size of the camera's lens opening or aperture is measured by something called an "f-stop". I won't go into any of the history, technical details, or why the numbers are what they are, other than to say they relate to the area of the lens opening. All you need to remember is that a smaller f-stop number is a larger opening and vice-versa.




In this example, an aperture of f/5.6 provides a correct exposure. When the lens is opened to f/4.0, too much light is let in and the image is overexposed. And when the aperture is closed to f/8.0, too little light is entering the camera and this results in an underexposed image.

### Shutter Speed & Exposure

The shutter speed is measured as the fraction of a second the shutter is open to admit light. A larger number in the denominator means a faster

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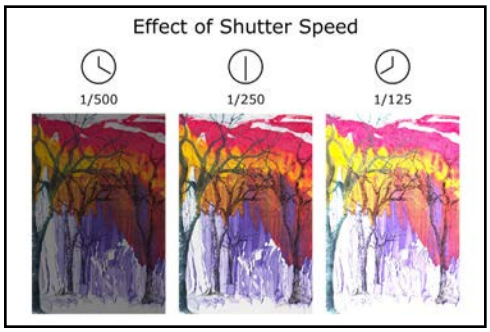
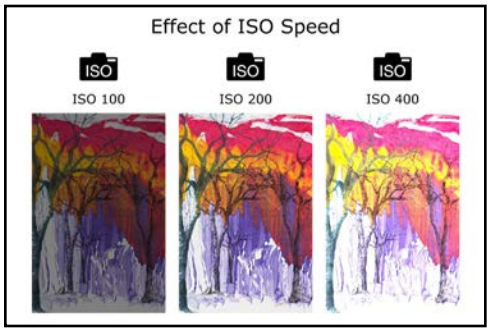
shutter speed. And because it's a fraction, doubling the denominator halves the amount of time the shutter is open—and the exposure.




Here, a shutter speed of 1/250 provides the correct exposure. When the speed is increased to 1/500, the shutter is open half as long and the image is underexposed. And when the speed is reduced to 1/125, the shutter is open twice as long and the result is overexposure.

**ISO Speed & Exposure**

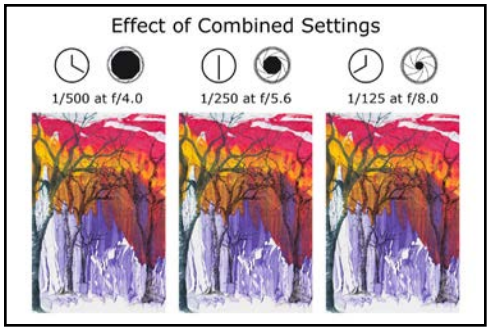
As with conventional film, the sensitivity of the sensor in the camera to light is called the "ISO speed". Larger numbers represent faster speeds and more sensitivity. The scale used is arithmetic, so doubling the ISO speed doubles the camera's sensitivity—and the exposure.




With an ISO speed of 200, for example, the exposure is correct. When the speed is reduced to 100, the sensitivity is halved and the image is underexposed. And at ISO 400, the sensitivity is doubled and the result is overexposure.

**Balancing Settings**

The correct exposure is a balancing act between the three settings—each either increasing or decreasing the amount of light entering the camera or the sensitivity of the camera to light.




Here, a shutter speed of 1/250 with an aperture of f/5.6 at ISO 200 results in a correct exposure. If the shutter speed is increased to 1/500 but the aperture is opened to f/4.0, the changes offset and the exposure is still correct. Similarly, at 1/125 and f/8.0 the exposure is correct.

In automatic exposure mode, the camera is selecting the settings to use to get the correct exposure. When photographing flat artwork, this doesn't affect the quality of the image—as long as the exposure is correct.