PHOTOGRAPHY

Exercise: ISO, Resolution, and File Format

ISO number refers to the sensitivity of the film (or in the case of digital photography the sensitivity of the image sensor) to light.

ISO numbers are usually categorized as Low (e.g. 64, 100, 200) or High (800, 1600, 3200.) Each range has its advantages and disadvantages. The choice of ISO depends on the shooting conditions. Choosing the right ISO is the first step in getting the right exposure.

In general, choose **low ISO when there is lots of light or slow moving subjects** and choose **high ISO when there is low light or fast moving subjects.**

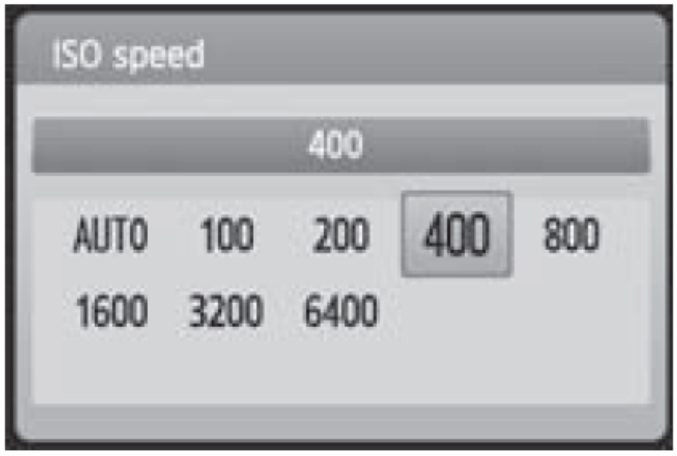
LOW ISO

- slow
- needs more light
- less noise more blur

HIGH ISO

- fast
- needs less light
- more noise less blur

Often mid range ISO numbers (like ISO 400) will produce the best results for a variety of shooting conditions.



Let's look at some examples. The photos below were taken in identical lighting conditions. When there is enough light, and the camera and subject are stationary – the low ISO produces the best results. There is less noise.

ISO 100

ISO 3200

In this example, there is very low light, and the subjects are moving. For these conditions the high ISO produces the best results despite the noise in the image.

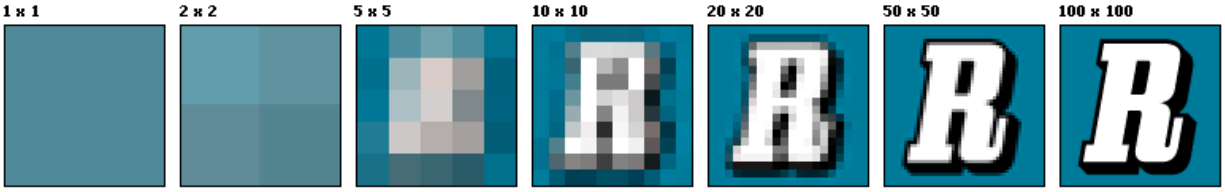
ISO 100

ISO 3200

The **resolution** of digital images is determined by the number of **pixels** that the image contains. The higher the resolution, the more pixels the image contains. Consequently high resolution images also have larger file sizes. Large resolution images can be downscaled to lower resolution with a loss of quality. Low resolution images **cannot** be upscaled to a higher quality image. Generally speaking, it is best to shoot in the highest resolution possible.

The resolution of a digital image is often stated as horizontal pixel count x vertical pixel count. The total number of pixels in the image is the product of these two numbers.

In the example below, the resolution of the first image is 1 pixel, the last image is 10 000 pixels. (Note: a megapixel is 1 million pixels.)

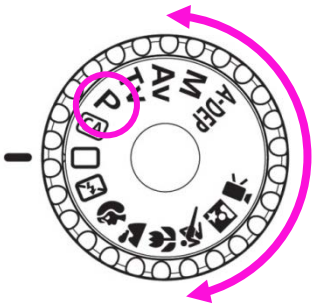


Use the words "pixel(s)", "resolution", and "image" to fill in the blanks."

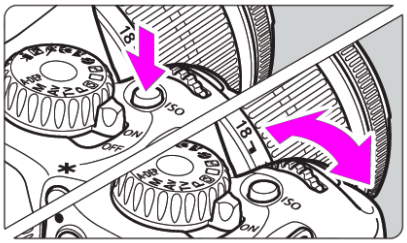
A digital _____ is made up of millions of tiny _____. The _____ of a digital _____ is determined by the number of _____ the _____ is made of. A high _____ image has more _____ than a low _____ image.

The **file format** you shoot in may also have an effect on image quality. DSLR cameras can be set to capture in **jpeg** or in **RAW** mode. Jpeg images are ready to be printed, viewed or edited using bitmap software (like Photoshop). RAW images on the other hand need to be processed (much like a negative in film photography.) RAW image files are not directly usable as images, but have all of the information needed to create an image. Like a photographic negative, a RAW digital image may have more information of the captured image than the final viewed or printed photograph. The purpose of RAW image formats is to save data obtained from the sensor, and the conditions surrounding the capturing of the image. RAW image files tend to take more memory to store than Jpeg files. We will **not** be shooting in RAW mode for this class as it requires specialized software to process.

Exercise



In this exercise, you will explore your camera's ISO settings. First, ensure that your camera is in **P mode** by turning the mode dial so that the hash mark lines up with the P. Then press the ISO button on the top of the camera body and turn the dial to adjust the ISO.



Experiment taking photographs with the following situations and record your observations below.