

Aperture and Depth of Field

In this lesson, we'll be taking a look at
Aperture and Depth of Field.



If you see a magnifying glass at the bottom right corner of a photo, click on that photo to make it full screen.

Aperture and Depth of Field

A few points before we start looking at **aperture**. In a moment, you'll see exactly what aperture is, and the sort of effects aperture is traditionally used to generate.

In order to take *great* photos, you don't *need* to understand, much less adjust, **aperture**. However, if you do get a basic understanding of aperture, you'll be able to take *even better* photos.

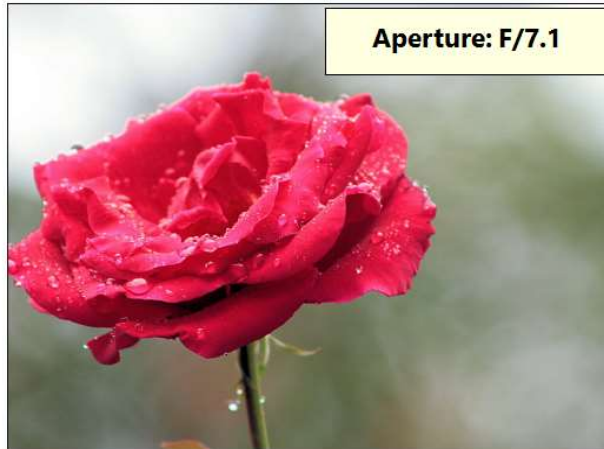


Different apertures can provide different results and effects.

Aperture and Depth of Field

Here's an example. A large aperture setting provides a small depth of field, it is a perfect setting to achieve the *blurry background* effect.

The **Depth of Field** refers to how much is in focus. The more that is in focus, the larger the depth of field. This feature of changing the aperture allows you to change the depth of field to create great effects.



With the larger aperture, as on the left, the rose stands out far more.

Aperture and Depth of Field

But what is **aperture**? Let's take a step back for a second. When you take a photo, the camera **shutter** opens to let in light, along with the image you are taking a photo of.

The shutter stays open for a certain period, then closes. The length of time it stays open is called the **shutter speed**.



Here we are looking down a camera lens - and the shutter is opening and closing, taking photos.

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The *wider* the shutter opens, the larger the **aperture** is, and the more light is let through the lens. And the more light a camera gets, the better the photo can be.



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A *large* aperture setting opens the shutter wide - letting in more light, while a small aperture setting only opens a small way - letting in less light.

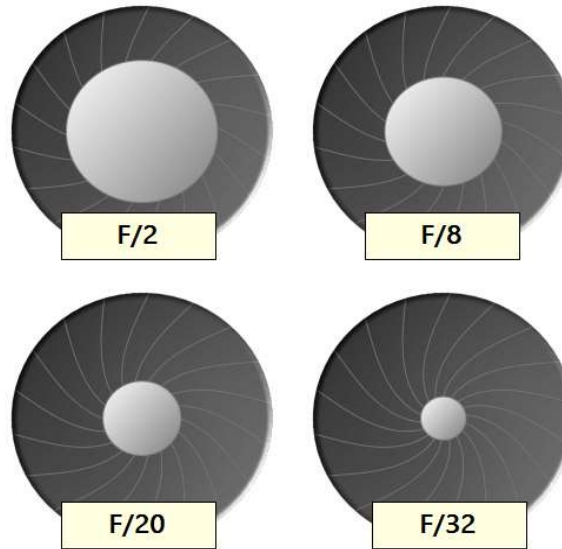
As you'll see shortly, this can dramatically affects how the photograph turns out.



When you take a shot, the shutter will open to a certain size. This is known as the aperture.

Aperture and Depth of Field

Aperture is measured in ***f-stops***, often just called ***stops***. Aperture settings can range from F/1, right through to F/40 or more. The **lower** the f-setting, the **wider** the shutter opens, and the more light passes through the lens.



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So, what difference does the aperture make? Quite a lot as it turns out. Compare the two images below.



Can you tell the difference between these two photos? Large aperture settings (lower F number) give a smaller depth of field - less is in focus. Small aperture settings (larger F number) allow much more to be in focus.

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The decreased depth of field provides a blurry background, and a wonderful effect on the leaf itself.



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The opposite is true when you want everything in focus - set the aperture as low as you can, and more of the subject will be in focus.



Landscapes should generally be taken with a fairly high aperture for better results.

Aperture and Depth of Field

Many traditional cameras or lenses offer a reduced aperture range - say F/3 through to around F/8 or so. The better the camera, or to be more precise, the better the lens, the wider the aperture range will be.

Often a measure of just how good a lens is, a lens that can achieve F/2 or even lower is regarded as a very high quality lens.

The iPhone 7 offers a lens that can achieve a **1.8** aperture, the Samsung S7 **1.7**, and the Google Pixel **2.0**.



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But here is the rub. The main difference between camera phones, and traditional DSLR cameras is that on (almost all) phone cameras, the aperture is fixed. **It cannot be changed.**

So the iPhone 7 always uses a **1.8** aperture, the Samsung S7 **1.7**, and the Google Pixel always uses an aperture setting of **2.0**.



Aperture and Depth of Field

Adjusting aperture is one way traditional cameras can be used to create a small **depth of field** - a photo with an out of focus background, or foreground.

Because phone cameras do not allow you to adjust aperture, we have to use other methods to get this same sort of effect.



Aperture and Depth of Field

As mentioned, most phones (not all) use a set aperture, and it may be hard or impossible to change. Even in Pro mode on your camera, you can change almost everything but the aperture - this is fixed.

To compensate for this, most camera phones / software have alternative ways to get the same sort of effect as a change of aperture will give you.

Also, we'll look at some techniques you can use to achieve a low depth of field effect.



Aperture and Depth of Field

If your camera software does not have manual aperture control, or even if it does - it may have some various modes available that will adjust other settings to try and achieve the same effect.

For example, if you select a mode called **Portrait**, or perhaps **Selfie**, or **Beauty**, you may find the software automatically adjusts settings to give that blurry foreground/background look - based on whether this is possible in the circumstances.



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Selective focus mode. For example, Samsung photo software has a mode called **selective focus**. It allows you to frame a photo, and the phone takes a series of shots with a slightly different focal length. In general, this works only when at least part of the subject, or one of the subjects is close to the camera.

After you take the photo, you can then select which photo you prefer.

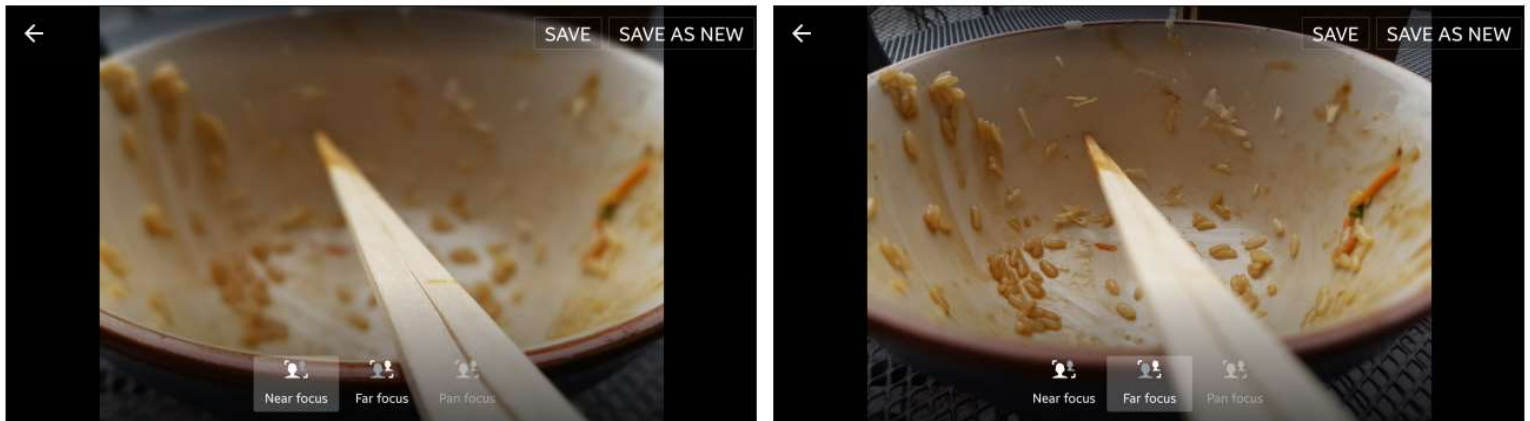


Samsung Selective Focus mode.

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*Selecting **Near Focus**, on the left, and **Far Focus**, on the right, gives two interesting and contrasting results.*

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Getting in Close. Take a look at the examples below.

The closer the subject is to your camera, the easier it is to get the soft, out of focus background effect. Not only does this look good, but it also draws the attention to the subject in the photo.



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Below, this technique is illustrated with a closeup of a spider web.



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Most cameras have a close-up (macro) capability, and with this you can achieve a very narrow depth of field that can yield an interesting effect - but again, you have to be careful to get the focus correct.



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One issue with the shallow depth of field is how much of the subject is in focus. In the example below, not even the whole flower is in focus.



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The Samsung S7 also has a camera mode called **Food**. Using this mode, you highlight the main area of interest, and the camera slightly blurs the rest, creating depth of field.



Aperture and Depth of Field

Well done. You've now completed this lesson.

In this lesson, we took a look at **Aperture and Depth of Field**.

