Day 3: Perfect Exposure with Proper Metering

- Your camera measures light for you. The meter will appear in one of two ways:
    - As a number, with 0 being correctly exposed, negative numbers as underexposed, and positive numbers as overexposed.
    - As a scale, with the center point as a correct exposure, the left side as underexposure, and the right side as overexposure.
- All your exposure changes are going to be based on this meter reading.

Exposure Simulation

- Exposure simulation is where the camera shows the exposure level of the picture before you take the picture (sometimes you have to enable this in your camera's menu).
    - You can use this to set exposure, and this will get you a correct exposure but not necessarily an appropriate exposure.
    - For example, it will not help you achieve any effects with the exposure process.

How metering works

- The camera doesn't really know the right exposure.
- Rather, camera manufacturers base all exposure off of "middle grey" also known as "18% grey."
- All scenes that the camera meters are then averaged out and compared to middle grey.
    - If the scene is brighter than middle grey, it appears as overexposed.
    - If the scene is darker than middle grey, it appears as underexposed.
- Your camera knows the effect of changes in your exposure settings, so as you change the dials it shows the effect on exposure.

What About When Your Scene Isn't Average?

- If you have a very bright scene (such as a beach or snow scene), you need to set the camera to overexpose in order to get an accurate exposure.
- If you have a very dark scene (such as a night or dark scene), you need to set the camera to underexpose to get an accurate exposure.

Measuring After the Fact

- You can measure the exposure after you take the shot by using the camera's histogram.
- You can often measure the exposure before you take the shot using the histogram as well.
- The histogram is the most accurate way of measuring exposure.

Additional Commentary

Before we talk about adjusting the exposure controls, which we will do in upcoming lessons, we need to talk about how the camera knows how much light to let in to the camera in the first place. In other words, what sorcery does the camera use to determine what the exposure level of your pictures should be?

How Do Cameras Know the Proper Exposure Level?

Camera manufacturers claim it isn't sorcery at all, but rather than they simply set the brightness value at a "middle grey" tone. You will also see this referred to as 18% grey. The exact value of grey isn't important, and all you need to know is that it is a middle shade of grey. The point is that the camera manufacturers just assume that the scene in front of you averages out to a middle grey tone.

Middle Grey

Why do they do that? Because the camera engineers have determined that the average light value of most scenes in the world is this middle grey. In other words, if you take the brightness levels of any scene you face, and you were somehow able to average out all the pixels in that scene, then the value you would end up with would usually be this middle grey tone. The camera engineers use that tone as the proper exposure level. Every time.

Middle grey.
Just remember this for now, as we'll come back to it for comparison purposes later.

So that's how it works. And you know what? It works pretty well most of the time. You'll probably be very surprised at the percentage of the time in which this little conversion to middle grey results in proper readings of your scene.

Changes from Middle Grey

Moving on, here is how it works when the scene in front of you does not average out to a middle grey tone. Let's say that your meter averages out all the pixels in the scene in front of you and the result is something like this:

Compare that to the original middle grey tone and you will see that this is much darker. Because it is darker, the meter will tell the camera that the scene is underexposed. The meter assumes you need more light. If the scene truly should average out to a middle grey tone, then the meter will be right. You need more light and you'll have to use one of the exposure controls to make that happen. It is getting slightly ahead of things, but as a preview to upcoming lessons, you can lengthen the shutter speed, increase the size of the aperture, or increase the ISO level of the camera. You just pick which one(s) of those controls suits your purposes and make that change. The camera will register than and change the meter accordingly.

Now here comes the problem. Let's say that this is the scene you have aimed your camera at:

That's dark. But, importantly, it is *supposed* to be dark. But your camera's meter doesn't know that. It thinks everything should be middle grey. You meter is going to be telling you that this scene is woefully underexposed and you need to increase the exposure. But that's not right.

Before talking about the solution, let's look at this issue from the other direction. Now let's say that your meter averages out all the pixels in the scene in front of you and the result is something like this:

Compare that to our original grey tone and you will see that this is much lighter. Because it is lighter, the meter will tell the camera that the scene is overexposed. The meter assumes you are allowing too much light into the camera to achieve a correct exposure. As with our prior example, if the scene truly should average out to a middle grey tone, then the meter will be right. You need to reduce the exposure. You should shorten the shutter speed, reduce the size of the aperture, or reduce the ISO level of the camera, depending on which of these suits your purposes. The camera will register than and change the meter accordingly.

But now let's assume that this is the scene you have aimed your camera at:

That is very bright, particularly if you are aimed at the sky. Importantly, it is supposed to be bright. But the camera's meter doesn't know that. Again, it thinks everything should be middle grey. The meter will be telling you to reduce your exposure. But if you do so, the scene just won't look right. What is supposed to be white will likely be a dull grey.

Using Your Meter as a Guide

Now we have shown how the meter works and showed you when it works well and when it doesn't work so well. But we haven't talked about what to do when the meter is not correct. How will you know? And what should you do about it?

The answer is that you should use your meter as a guide, but not follow it slavishly. As mentioned earlier, the meter is quite often right. It is really surprising how much of the time the meter is correct. But sometimes it is not. You'll just need to pay attention to the scene in front of you and make your own determination as to whether it should be a little brighter or darker than what the meter is telling you. And that's what today's lesson will help you start doing.

Day 3 Assignment

Capture Sunset

Description:

Head out to your favorite nearby spot and capture tonight's sunset. Take shots that - per the camera's meter - are properly exposed, overexposed, and underexposed. Note the results, and then get the best shot you can.

Keys to Success:

- Start by creating a proper exposure per the camera's meter, but then move away from center to see what looks best to you.
- In particular, check out what happens when you *underexpose* the image per the camera's meter:
    - Are the colors more or less saturated?
    - What happens to the items in the foreground?
- Don't worry about particular shutter speed, aperture, or ISO settings yet.

Upon Completion of this Assignment:

You are now taking photographs using your camera's meter as a useful tool or helpful guide - not as something that must be followed in all instances.