TWOPEASINABUCKET.COM PHOTOGRAPHY COURSE: 12 WEEKS TO BETTER PHOTOS

By Mark & Joanna Bolick

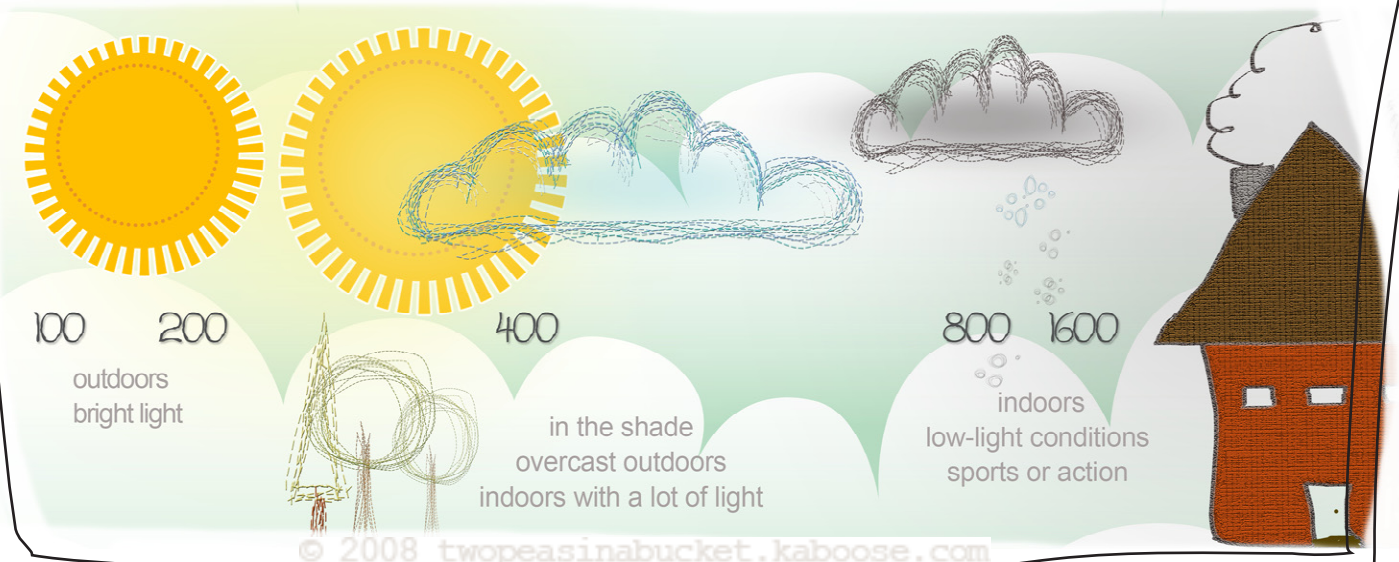
LESSON TWO, part 1: ISO & Shutter Speed

Last week we took a look at how aperture and f/stop settings work on your camera to restrict and control the elements in your photos that are in focus. The goal for our weekly challenge was to get you comfortable with adjusting the f/stop numbers for the amount of focus you desire in your photos. With a week's worth of practice, we hope that you are now more knowledgeable about how f/stops work and which f/stops produce certain kinds of looks.

Once you're comfortable with f/stops, then throwing in ISO and shutter speed is fairly simple.

ISO, or film speed, is really just a setting to determine how quickly an image will be captured by either the film or digital sensor. The higher the ISO, the quicker the image will be captured and the less light that is required. The lower the ISO, the longer it takes for the image to be captured and the more light you will need.

ISO depends on your surroundings and the amount of light available. Think back to when you used film -- do you remember consulting the back of the film box for the handy reference guide that suggested what film speed should be used when? It's still a good rule of thumb for digital cameras. In general, use:



"So why I can't I just shoot in 1600 ISO all the time so I capture images quickly and don't have to worry about how much light is available?"

Good question! The trade-off is that the higher you set the ISO, the more digital noise (or film grain) is created in the image. The faster the camera captures the image, the less time it has to be accurate, so the sharpness of the image will suffer. A good rule of thumb is that anything 800 or over will begin to give you digital noise in your image. The higher your ISO, the more digital noise.

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Shutter Speed

After you've considered your ISO it's time to think about shutter speed.

Your shutter speed is how quickly the shutter, or the little door that opens in front of your film or image sensor, operates. It can range from several seconds (or minutes on the Bulb setting) to 1/1600 of a second or faster. It might help to visualize your shutter literally as a door, with your shutter speed controlling how fast or how slow the door opens and closes.

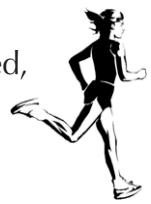
A faster shutter speed will freeze action whereas a slower shutter speed can create a blurred effect (or can just be downright blurry.) When you set your shutter speed on your camera, you'll see numbers like 60, 120, 250, 1000 and so on. These actually represent 1/60th of a second, 1/120th of a second and so on. So the higher the bottom number on the fraction, the faster the shutter speed. The smaller the number, the slower the shutter speed. You will also see shutter speeds for seconds, indicated by inch marks ("). For example, if the display says 1"5, that indicates a shutter speed of 1½ seconds. If the display says 30", the shutter will be open for 30 seconds.

As a general rule of thumb:

Use your tripod (or a flat, stable surface) for shutter speeds slower than 1/50th of a second -- so any shutter speed reading 50 or below, and anything with inch marks. Use a slow shutter speed to portray a blurred subject or surroundings.

If you are hand-holding your camera, set your shutter speed at a minimum of 1/60th of a second (indicated by the number 60) or faster. Hold your breath while taking the photo to help keep yourself steady. If you are wiggly or have wiggly subjects, increase your shutter speed.

Fast-moving objects will need a faster shutter speed, around 1/1000 of a second or higher, in order to freeze the subject(s) in action.



WEEKLY CHALLENGE: The Kitchen Sink test

So here's the question we want to focus on this week:
When should I use a fast shutter speed?

We call this one the kitchen sink test. If you don't have a window by your kitchen sink, try a bathroom sink. If you don't have enough light inside your house, a water hose, a babbling brook, or a rain puddle will do.

First of all, we want you to **operate your camera in Shutter Priority mode** (often indicated with an "S" or "Tv" on your camera dial. (Don't worry about aperture as the camera will take care of that for you.)

If you are inside go ahead and bump up your ISO between 1000 and 1600 unless you have an abundance of available light.

1. Find your kitchen sink (that shouldn't be too hard.)
2. Now locate an object that is going to obstruct the water flowing from the faucet. Basically, you want something that will interrupt the flow of water, causing the water to "splash" around it (similar to what a child's boots do when tromping through a rain puddle.)
3. Set your shutter speed to 1/80th of a second (indicated by the number 80.) Turn on the water and take the picture.
4. Now set your shutter really high (around 1/1000 of a second or higher) and take the photo again.

Don't worry so much if the composition of your two photos isn't exactly the same. What we're looking for here is a visual indication that you've "frozen" the action by using a high shutter speed.

***Bonus points: Grab your tripod and set up your shot again using a *really* slow shutter speed, such as half a second, indicated as 0"5, or 1 second, indicated as 1". What effect does that give you? In what situations can you use this effect?

[For those of you with point & shoot cameras set your camera on the action mode (usually indicated by a little running man) to obtain a high shutter speed. Take a photo in action mode, and then a second photo in a different mode, such as landscape.]

1. For our challenge photos we used a glass vase turned upside down in the sink. We placed the vase directly under the faucet and turned the water on "hot" to add a little steam (just for fun.)

The shutter speed here is 1/85 of a second. We focused on the spot where the water first touches the glass.

As you can tell, a slow shutter speed does not visually stop the flow of water coming from the faucet.

2. For our second photo we bumped up the shutter speed to 1/1300 of a second. As you can tell, we were able to stop (or freeze) the water in motion by using a higher (faster) shutter speed.

You may also notice that there is less in focus on this photo. Because we used a higher shutter speed, the camera automatically chose a lower f/stop to compensate.

This is how shutter speed works: the faster the shutter speed, the faster the camera takes the picture. The slower the shutter speed, the slower the camera takes the picture.

LESSON TWO, part 2: But Wait -- there's MORE!

Please note:
This part of the class is specifically written for those who are using SLR or dSLR cameras.

*****Also note: please don't read this part until AFTER you've completed the shutter speed challenge for this week*****

Now that we've talked about aperture, shutter speed, and ISO, it's time to think about achieving balance. The Tao of using our cameras, so to speak.

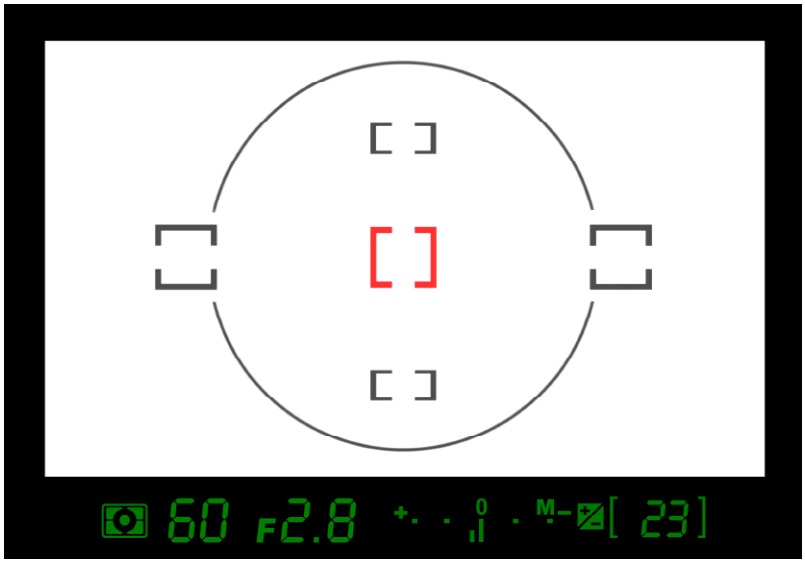
--During the aperture challenge in week one we learned that we need to have a LOT of light in order to use a high f/stop like f/22. (If you took your photos indoors you may have noticed that your photos at the high f/stops tended to come out blurry.)

-- During the shutter speed challenge this week we learned that we need to have a LOT of light indoors to use a very high shutter speed. To compensate for high shutter speeds indoors, the camera chose a low f/stop, resulting in a shallow depth of field.

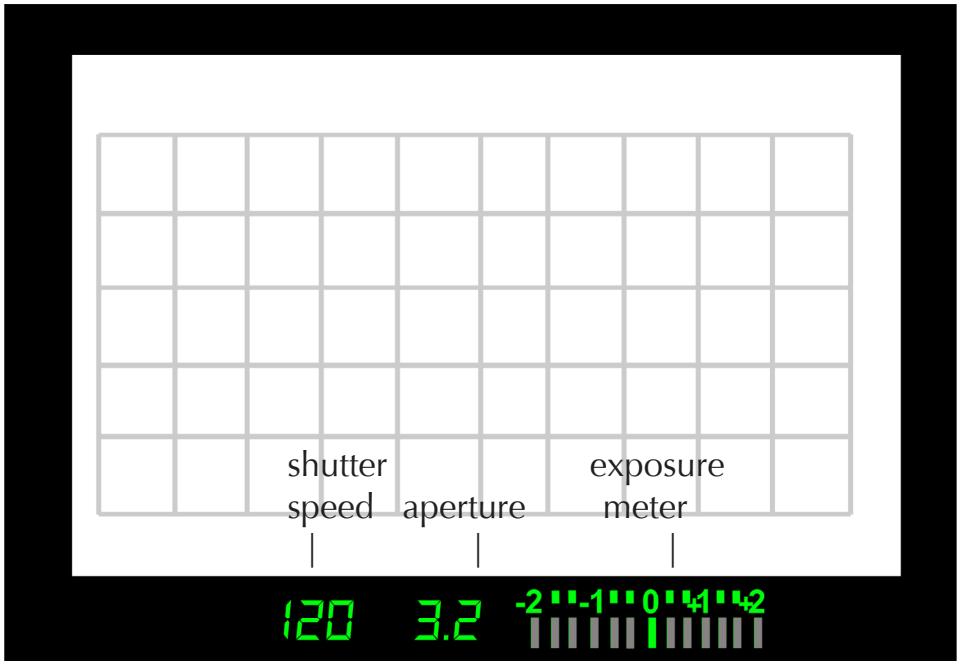
To achieve what your camera considers to be correct exposure your aperture and shutter speed need to *balance* to let in enough light to expose your image. (The *exposure* is the image created by the light entering the camera and being recorded onto the film or digital sensor.)

Thankfully for us, most SLR cameras come with a built-in meter that tells you when you are correctly exposing your images.

Look through the viewfinder of your camera. Do you see all those little numbers at the bottom of the screen? --> Do you know what they stand for?



(photo courtesy istockphoto.com)



When you are looking through your camera the exposure meter is located on the bottom of your viewfinder. It looks sort of like a scale, and will generally have a zero or image indicating the middle of the scale, and plus and minus numbers to the right and left of center.
Quick - focus on something with your camera and press your shutter button half-way down (the button you use to take the photo.) Do you see a blinking line on your exposure meter?

When you are focusing on an image, a small indicator light will show up on the scale, indicating your current exposure. If the line is on the minus section, your image is underexposed. If the line that lights up is on the plus section, your image is overexposed. If the line is centered, you have achieved what the camera considers to be the correct exposure.

Do you see those other two numbers to the left of the exposure meter in the illustration above? They might look familiar by now, as they indicate your current shutter speed and aperture.

When in manual mode, you use the exposure meter to balance your f/stop with the shutter speed to equal a correct exposure. Really, if you have already set your ISO for the amount of light you have or the situation you're in, then operating in manual mode means you're just making 2 choices -- your shutter speed and your aperture.

Here's the best part: If you already know the range where you want one of those two numbers to be, then the camera is ready to help you find the other number that correctly balances your exposure.

You Can Do It!

You know what that means, don't you? Yes, it means that you can operate in *manual* mode. Yes, you, I promise! Let's take it slow.

Turn your camera dial to Manual mode (usually indicated by an "M.")

Choose a non-moving object either indoors or outdoors.

Step 1: Consider your surroundings.

Refer back to the ISO chart on page 1 and set your ISO.

Step 2: Consider your priority.

Aperture controls the amount of the photo in focus -- *do you want to limit your depth of field?*
Shutter speed controls the pace of the photo - *do you want to freeze or blur the action?*

Step 3: Select the number on the camera.

If you've chosen aperture as your priority, set your f/stop. If you've chosen shutter speed, set it.

Step 4: Focus on your subject and press the shutter button half-way down.

Find the blinking line on your exposure meter -- is the image underexposed (-) or overexposed (+)?

Step 5: To balance your exposure, you will need to change the OTHER number (the one that's not the priority.)

If you selected your aperture, change the shutter speed until your line is centered on the exposure meter. If you selected your shutter speed, change the f/stop until your line is centered. As you're turning the dial for either setting, keep an eye on the exposure meter. If the line is going in the wrong direction (not toward center) reverse the dial.

....and, relax! Whew!

Disclaimer: Okay, so we're not really finished yet. Look at the numbers through the viewfinder again. Is your shutter speed 60 or above? If not, you may have to decrease your f/stop. If your original priority was shutter speed, check your f/stop number. Will that f/stop work with the amount of your subject you want in focus? Take the photo and find out! Are you not getting anywhere at all? Increase your ISO if your meter indicates that the image is severely underexposed. Decrease your ISO if your meter indicates that the image is severely overexposed. OR just come yell at Joanna on this week's photography message board thread and we'll work on it together.

I know that probably just seemed like a LOT of work to set up 1 photo! But you can do it! Remember, too, that you don't have to use manual mode all the time. But we do want you to try. It's perfectly okay to rely on the Aperture Priority & Shutter Priority modes if you don't want to make all the decisions or you need to take a photo quickly without thinking. But if you want to help your camera make the decisions, than manual mode gives you this ability.

Q & A: ISO, Shutterspeed, and Aperture

Did you really make it through all 8 pages? Whew! We know that we covered a lot this week, but that doesn't mean that you have to know it all at once. (Also, don't worry -- we're not going to make you operate in manual mode for the rest of the course. We just want you to be informed.)

Q: When is a good time to use a very slow shutterspeed?

A: A slow shutter speed can be used to depict the motion of an object (such as a ferris wheel) against the stillness of its surroundings. Another example would be showing the blur of busy traffic going by on the street. This photo by Mark was taken using a shutter speed of one second, with the camera on a tripod. The f/stop is f/20 so that the majority of his photo in focus.

Q: Chris in Ontario asked: Are manual photos if done the correct way better than a photo that is taken on automatic?
A: The question of if one is "better" than the other really depends on you and the composition you desire for your photo. You can absolutely take a fantastic photo on auto. If you want to control the set-up of the photo, or have to take a photo in poor light conditions, it is often helpful to know how to use manual mode to do so to achieve the results you desire.

Q: Allison_Hiller said : I bought the Understanding Exposure book and quickly realized that I can't learn by just reading...definitely need photos and specific how-to's. The more illustrations, the better. Hope that helps!
A: Allison, it is definitely our goal to give you this information in bite-size chunks. Also, we love visuals, which is why we try to include as many photos and illustrations as we can. Thanks for your suggestions!

Also, a note about exposure. This week we talked about what the camera considers to be "correct" exposure. Exposure, however, is a tricky thing and whole books have been written on getting it correct and then intentionally messing it up for artistic purposes. Keep in mind that there can be a difference between what the camera thinks is the correct exposure and what YOU think is the "correct" exposure. A creative exposure (where you control the settings to get the look you want) does not always equal a "correct" exposure setting on the camera. The book mentioned above, "Understanding Exposure," does a great job explaining this more in depth.