

Tips for Shooting with your Digital Camera-- Supplement

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Italics denote supplemental material

Before shooting:



1. Choose the Resolution and Image Quality Settings for your camera
 - a. Choose **JPG High** for most uses. *For the most part, only Digital SLRs can shoot RAW, & most point-&-shoot cameras shoot jpg. The advantage of JPGs is that any computer can read them, while RAW files must be processed with software such as Photoshop. RAW files, however, offer increased flexibility to change exposure, white balance, and other settings on the computer.*
 - b. Choose the highest resolution available for your camera. On our Olympus Cameras, this will either be 7MP (3072x2304) or 10M (3648x2736). *1 Megapixel means 1 million pixels. So a camera that has a resolution of 3072x2304 pixels will have a total of 7,077,888 pixels in that can be used to capture an image. When you round it off, its approximately 7 million pixels, or 7MP. This chart illustrates how large a clear print would be if you used those pixel dimensions at 240 dpi and 300 dpi.*

Megapixels	Pixel Dimensions	Size at 300dpi	Image Size at 240dpi
1	1216 x 912	3" x 4"	3.75" x 5"
3.1	2048 x 1563	5" x 6.5"	6.5" x 8.5"
4	2240 x 1680	5.5" x 7.5	7" x 9.25"
5	2560 x 1920	6.5" x 8.5"	8" x 10.5"
6	3032 x 2008	6.75" x 10"	8.25" x 12.5"
7	3072 x 2304	7.68" x 10.24"	9.6" x 12.8"
11.1	4064 x 2704	9" x 13.5"	11" x 17"
22	5440 x 4080	13.5" x 18"	17" x 22.5"

2. Choose the right Drive Setting
 - a. For **single** pictures, select the drive option. (Recommended for most situations). *Some cameras have a slight delay from the time the button is pressed until the picture is taken. Usually this is because the camera figures out the exposure and focus in that window, but if you hold the button half-way down before you shoot, you can "pre-focus" and prepare the camera for the exact moment you want to shoot the photo. With this drive setting, the camera shoots, and immediately passes the image to the memory card, taking only a couple of seconds before the camera is ready to shoot again.*
 - b. To shoot **multiple** rapid sequences of pictures, select the drive option and hold the "shoot" button down. *The "shoot" button must be held down, and a series of pictures will be shot continuously until the cameras internal memory buffer is filled. The camera will pass all of those*

pictures to the memory card after they've been shot, taking much longer to get the camera ready to shoot again.






3. Choose the Light Metering Mode

- a. Spot Metering  reads light hitting the center of the frame.
- b. Average Metering  reads light hitting all parts of the frame. (Recommended) *You can also use the “pre-focus” technique to register the exposure before you shoot. This will lock the exposure settings for whatever was in the LCD screen at the time. Most point-and-shoot cameras work this way.*

4. Set the method of Focus

- a. Choose Auto instead of Manual focus unless your camera is a D-SLR and has a focusing ring. *Most of the time, controls for manual focus measure a setting in feet or meters; you're allowed to select a distance. It is usually not a visual method and so unless you know the exact distance from the camera to your subject, its pretty useless to use manual focus on most point-and-shoot cameras.*
- b. Choose the method of Auto focus: **AVERAGE** focus averages all objects in the frame and chooses the focus for you. **SPOT** focus on the object in the center of the frame, allowing you more control. (Recommended on most cameras)
- c. Some cameras come with “**focus-points**” that can be used to sharpen parts of the frame, such as only the left or top (recommended if your camera has it).


5. Observe the lighting conditions

- a. Set the White Balance according to the “color” of your light. *White Balance is a setting that compensates for the “color-temperature” of light. This is measured in degrees Kelvin. Lower temperatures such as 2000°K are usually warmish red while cooler temperatures such as 9000°K are very blue. The presets for White Balance internally set the color temperature of the camera to known standard Kelvin measurements for that particular light source as indicated below.*
 - i. For rapidly changing lighting conditions, use the Automatic WB feature. **AUTO-** the easiest option, but can sometimes produce unpredictable colors.
 - ii. When shooting in one kind of light, use a WB preset. (Recommended for most situations and/or for shooting in one specific kind of light, but be sure to change the setting as the light changes)
 -  **Sunny-** For direct sunlight hitting your subject. 5500°K
 -  **Cloudy-** Overcast light outdoors or indirect sunlight coming through windows indoors. 6000°K
 -  **Tungsten-** Light from standard light-bulbs indoor at night. Used for warm street-lamps. 3200°K
 -  **Fluorescent-** Light from fluorescent tubes, or compact fluorescent bulbs. 4000°K
 - iii. For mixed lighting conditions or to get really clean colors, use the Custom WB option. (Camera manufacturers vary the procedure for measuring a custom white-balance. See the manual for your make/model of camera for the correct procedure.)
 -  **Custom-** To measure, fill the frame with a white object reflecting light into the camera. *A clean sheet of white paper usually works great for this, just be sure you are filling the entire view of the camera with reflected light and not blocking the light with the sheet of paper.*

Intentionally blurring the focus view while doing this is not a bad idea either.









- b. Set the ISO to adjust the sensitivity of your cameras sensor to incoming light. A typical range of ISOs: **50, 100, 200, 400, 800, 1600**, etc. *ISO settings are the same as those used to rate the light sensitivity of photographic film. Instead of having to change rolls of film to change ISO speeds, digital cameras can change the ISO on the fly from picture to picture as needed. The typical range of ISOs listed above corresponds with 1 f-stop increments.*
 - i. Using **AUTO** ISO is not recommended for most situations since the camera will choose the ISO, sometimes producing noisy images.
 - ii. In low light, or for fast-moving subjects, use high sensitivity ISOs such as **400**, and above. (This may produce images with noise as a trade-off for speed)
 - iii. In strong light, or for slow-moving subjects, use low sensitivity ISOs such as **50, 100, & 200**. (Recommended since they produces smoother images. If available light is not strong you might try using flash or a tripod)

While shooting:

- 1. Set the Macro option for shooting very small or close-up subjects.
 - a.  your camera will adjust itself for close-up focusing
 - b. Be sure to turn the Macro option off if you don't need it.

- 2. The **main dial** on your camera will allow you to make choices that affect the exposure of your shots.

These settings can greatly affect the aesthetic quality of your image. *For the most part, what is being adjusted to find a proper exposure is the Aperture and the Shutter speed. Both settings must work in combination since they both determine just how much light is allowed to hit the image sensor. The aperture is an adjustable opening in the lens that can vary the amount of incoming light hitting the sensor. The aperture is an adjustable opening in the lens that can vary the amount of incoming light hitting the sensor. A typical range of F-stop numbers are listed below. As you open by one f-stop, twice as much light is being let in as the previous f-stop. As you close by one f-stop, half as much light is being let in as the previous f-stop. This is important since shutter speeds also work this way. Apertures also control depth-of-field, which is the distance in front of and beyond the subject that appears to be in focus. Smaller openings yield more depth of field and the opposite is true of large openings.*








f/#	2.8	4	5.6	8	11	16	22	32
								
Smaller # equals larger opening & less depth of field				Larger # equals smaller opening & more depth of field				

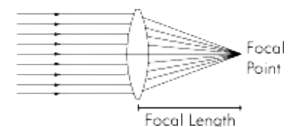
Shutter Speeds are usually measured in fractions of a second. Since most point-and-shoot cameras don't have a physical shutter, its the amount of time that the sensor is allowed to record light hitting it. As with f-stops, each stop on the shutter speed scale will either halve or double the amount of light hitting the

seconds	1	½	¼	1/8	1/15	1/30	1/60	1/125	1/250	1/500
	Slow shutter speeds, use with a tripod						Fast shutter speeds, can be hand-held			



sensor when the picture is taken. The term "long-exposure" typically means exposures of 1 second or longer. Digital cameras usually help you find the correct combination of f-stop/shutter speed with a needle-graphic or a numerical readout of how many stops you are off by. (i.e. -1 means that you are under-exposing by one stop.)



- a. **AUTO** - Full Auto, point-and-shoot mode. Image quality may suffer.
 - b. **P** – Program will auto expose, but allow for manual control of WB, ISO, Focusing, etc. (Recommended for most situations)
 - c. **A** – Aperture priority will allow you to select the Aperture. The camera will choose the correct shutter speed to compensate. Use this option if you want to control how much or how little depth of field your picture will yield.
 - d. **S** – Shutter priority will allow you to select the Shutter-Speed. The camera will choose the correct aperture to compensate. Use this option if you want to control how long the shutter will be open on the camera.
 - e. **M** – This option allows you to control the Aperture and Shutter-Speed independently of one another. You can intentionally under-expose or over-expose if you are in a tough lighting condition and are not getting good results from any of the auto settings.
 - f. **Scene Modes** – Basically the same as “Program” mode, except that the camera will have a bias toward an auto-exposure based on the chosen scene. These are not recommended since they offer no specific control over the Aperture or Shutter-Speed.
 -  Landscape – Biased toward more depth of field – *Higher f-stop numbers*
 -  Portrait – Biased toward center weighted exposures and less depth of field – *Lower f-stop numbers*
 -  Night – Biased toward using flash and longer shutter speeds – *Slower shutters, Longer exposures*
 -  Sports – Biased toward more stopping power – *Faster Shutter speeds*
3. When there's not enough available light to make a good exposure, try using flash or a tripod.
- a. Press the **flash button**  to enable the onboard flash on your camera. You should also see the same icon somewhere on your digital readout. (On some of our Olympus cameras you must also manually flip- up the flash on the camera body) *Using the flash is not only good in night conditions. If your subject has a lighter background and is silhouetted, using the flash will even the exposure so they don't appear too dark. Until students get the hang of it, its often good to try taking a picture both ways to see what works.*
 - b. To **disable the flash**, press the flash button until your digital readout shows a  icon
 - c. If you are not using the flash, and your shutter speed is slower than 1/60th of a second, you should use a tripod or prop the camera on something still. When shooting, use the **self-timer** function  so that you don't move the camera as the exposure is being made.
4. Frame your subject by moving the camera closer/further away, or change the focal length (zoom in/out) *While zooming in or out, the focal length on the lens mechanism is being manipulated. When parallel rays of light strike a lens focused at infinity, they converge to a point called the focal point. The focal length of the lens is then defined as the distance from the middle of the lens to its focal point. Most times its preferable to move the camera closer-to/ further-from the subject than just zooming. This will often lead to experimenting with shifting the camera up, down, or to the sides until the composition shows the subject in the best way. Suggest to your students that they take the time to try walk closer to subjects instead of zooming. Have them try various angles and carefully watch all parts of the frame rather than just centering the subject and snapping away.*

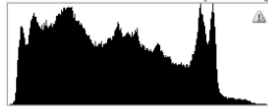


After shooting:

1. After shooting a few pictures, its a good idea to review them to check the exposure, sharpness, etc.
 - a. Put your camera into Playback mode  then choose an image to review. *The camera can't shoot any pictures while in playback mode.*
 - b. While in playback, press the **DISP** button (a.k.a.  or **INFO**) until you see the histogram for that image. *The display button can also be used while shooting on most cameras. On a decent camera, the histogram will become visible while you are framing your shot. This is useful because it can help you see if your picture is going to be over or under exposed before you shoot.*
 - c. If the **histogram** doesn't look right, then adjust your exposure and shoot again. *The histogram is a graphical representation of all the pixels in the image. The left side represents the dark areas of an image, and the right side represents the highlights. If the histogram shows the information "falling-off" the right or left side, then your exposure may be off. A good histogram like the center one below shows the information tapering in from the left side and tapering out on the right.*



Too Dark:
Under-exposed –
Open the aperture
or longer shutter
speed to let in
more light.



Just Right:
When a full range
of tones is
captured, you'll
see the "start" and
"end" of the info.



Too Light:
Over-exposed –
Close the aperture
or faster shutter
speed to reduce
incoming light.