

St Anthony's & St Aidan's

Sixth Form



PHOTOGRAPHY

Project one- Camera settings and techniques

Camera settings and techniques help guide for year 11 students in preparation for A Level studies

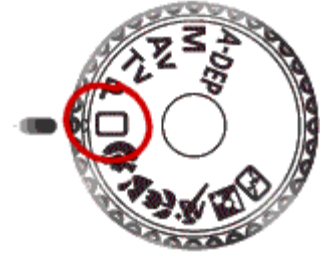
The following booklet has been compiled by Mr. Bransby from multiple sources to help give you an overview of what you will be learning during your first project. There are also many good videos on YouTube, explaining each of the settings and techniques mentioned in this booklet.

This is a good way for you to start to learn the independent research skills which will be one of the keys to your success in this subject.

Hope to see you soon

The first time you try your digital SLR camera, use fully automatic settings.

If you are a beginner to SLR photography, you should simply enjoy using it and get a good feel for how to handle it. The best way to do this is to set it on fully automatic. Look for a symbol on your camera's mode dial that looks like a rectangle. When your camera is on automatic, all important settings such as ISO, Aperture and exposure are made for you, taking out the guess work.









When your camera is set on automatic, it's also recommended that your lens is set on automatic focus. That is if it has that option. If your lens has an option for automatic focus you will notice on the side of it letters AF.

Beginner Tip for focusing: Always press your shutter button half way down, then once it focuses correctly press it the rest of the way down. ie focusing and taking the shot is always a two step process.

Six automatic settings you will find on your digital SLR camera:

The following DSLR settings are found on most camera models. However, depending on your camera brand, some may not be available.

-  Portrait - DSLR camera settings for portraits. Set your digital camera to portrait mode when your taking photographs of people. Portrait mode will set the image color for skin tone perfectly.
-  Landscape - Use this SLR camera setting when your taking photos of landscapes. For example if your photographing beach or mountain sceneries.
-  Close Up - Close up mode speaks for itself. For example, when you want to photograph small objects so they fill the whole frame as if to appear larger.
-  Sports - Sports mode should be used when you want to photograph a moving object such as a child or dog running.
-  Night Portrait - Choose night portrait automatic mode when you want to shoot a person in low light such as night time.
-  Flash Off - This mode is useful for times when you're not allowed to use a flash. For example, in an art gallery.

Manual DSLR Camera Settings Explained

Once you have a good feel for your digital SLR camera's automatic settings, you can start learning how to use manual settings like AV and TV mode. Manual settings give you full control over your photography and the style of images you take. The following links will explain in detail how to use all manual DSLR camera settings.

Go to this web site for the following information: <http://www.slrphotographyguide.com/>

1. [What is ISO](#) and how do you use it?
2. [What is AV mode](#), f numbers and aperture settings?
3. [Shutter speed priority](#) and the difference between fast and slow shutter speeds. Shutter speed priority may be represented as a TV setting on your camera.
4. [Full manual mode](#) - Includes examples and step by step lesson to help you fully understand using your SLR camera in manual mode.
5. Can you [turn off shutter noise](#)?
6. [What is mirror lockup](#) and when should you use it?
7. [RAW CR2 file format](#). What is it and what are the advantages and disadvantages?
8. [How to properly focus your SLR camera](#). DSLR focal points explained and how to use them.
9. [Exposure compensation tips](#). How to compensate for overexposed or underexposed photographs?
10. [How to reset your camera's factory default settings](#). Instructions for Nikon D40 and Canon 400D explained.
11. [What is the difference between A, AV, DEP and A-DEP modes](#).
12. [How to use white balance settings](#)
13. [What is a histogram and how do you read them](#)
14. [What is EXIF metadata](#) - why is it a useful learning tool and how do you read it.
15. [How to use metering modes](#) - When to use matrix, pattern, evaluative, center weighted metering, spot and partial metering.
16. [How to use depth of field preview button](#) (if your camera has this option) what it does and tips for using it.

1. What is ISO setting on your digital SLR (DSLR) camera and how do you use it?

The letters ISO on your digital SLR camera settings refer to the film speed. Even though your camera is most likely not film at all, but rather digital, the ISO camera setting still has the same function as older film cameras. Camera ISO determines how sensitive the image sensor is to light. If you're after a more technical explanation on 'What is ISO', Wikipedia has a good article called: [ISO speed](#).



The most common ISO camera speed settings are: 100, 200, 400 and 800. Depending on your digital camera model you may also have them in the range of 64, 100, 160, 200, 400, 640, 800, 1600.

On a Canon digital 400D (also known as Rebel XTi) you can see what the camera ISO setting is by looking at the rear LCD. This is similar to most SLR digital cameras. If you can't see this in your specific model, refer to your manual. As you can see by the example on the right, the ISO in this case is

set at 100.

The lower the ISO number, the slower the speed. The higher the ISO number, for example 1600 the faster the speed.

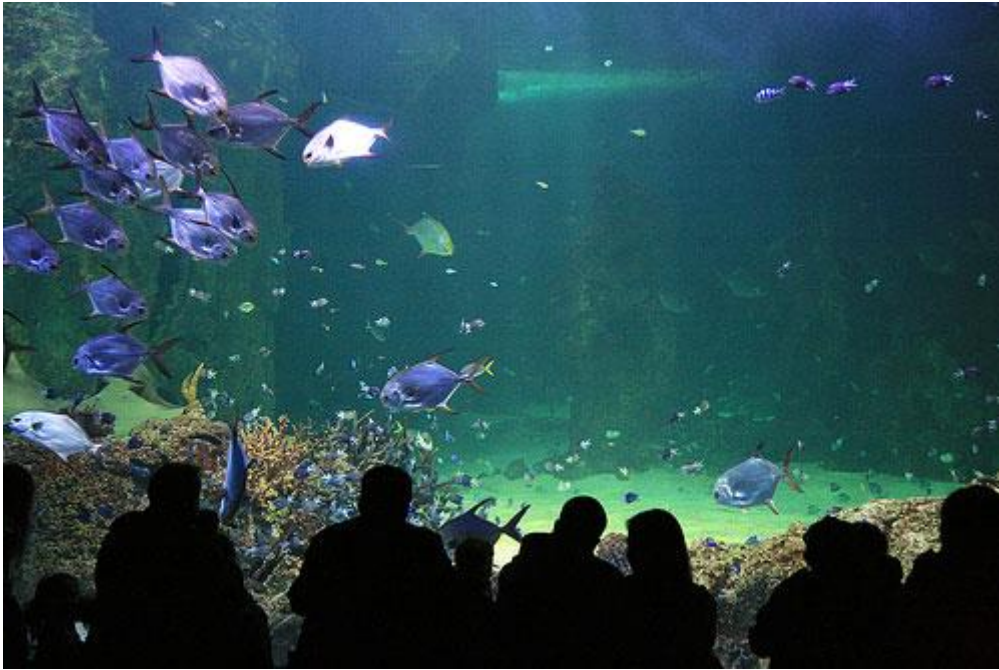
General Rules and tips for ISO Camera Settings:

- Use an ISO of 100 or 200 when taking photographs outside in sunny conditions.
- If the sky is overcast or it is evening time, then use an ISO within the range of 400 to 800.
- Night time or in cases of low light you might need to set your digital camera ISO to 1600. If you don't then your photo will appear too dark if at all.

How does the ISO speed affect the photographs end result?

If you set your digital camera to a low ISO, for example 100, the resulting photograph will be better quality than one set at 1600. The higher the ISO the grainier the photo will look. Therefore go for a low ISO number whenever possible.

However there are circumstances where a lower quality photograph is better than none at all. For example taking photographs of fish in a dark aquarium would normally be out of range for most point and shoot cameras. As you can see by the image below, setting my DSLR camera to a high 1600 ISO made this task possible. Otherwise there would not have been enough light let in to the sensor and the image would have turned out totally black.



Of course I could have chosen a lower ISO camera setting and used the inbuilt flash. However this would have resulted in unwanted flash glare bouncing off the glass. With this in mind a higher ISO (say 800) is also recommended if you want to take photographs of people inside in the evening without using a flash.

How to change your digital SLR camera ISO setting?

To change the ISO setting on your digital SLR camera, press the ISO button then use the 'up down left and right buttons' to change the speed. Again, if you don't have this option refer to your cameras manual as it may be slightly different between brands.



Note: When your digital SLR camera is in automatic mode, the ISO speed is chosen for you to suit the level of light available at that particular time.



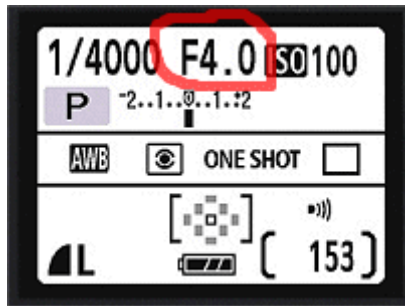
A manual mode I photograph in quite often is called Program AE. With Program AE you can choose the ISO you wish to photograph in and the digital camera then sets the **shutter speed** and **aperture** (exposure) automatically to suit. I like to think of it as

being similar to an ISO priority option. To use Program AE change your mode dial to P, like the example image on the right.

If you're a beginner in using a DSLR camera, you'll find it takes some time to get used to setting your ISO correctly. I can't count how many times I've kept my ISO at 100 and tried taking a fast night shot to find the photo turning out completely black. However after six months or so taking photographs in all different situations, you'll soon find it becomes second nature. Like anything new, it just takes practise.

2 How to use aperture priority, AV (for Canon) or A (for Nikon) mode on your digital SLR camera

For photographers who use SLR cameras, **AV** or **A** mode determines whether all the photograph is in focus or part of. For example photographers can choose to have a sharp foreground and background, or they can blur the background. If you're after more technical details, Wikipedia already has a great article on [how aperture works in photography](#).



On digital SLR cameras, aperture is indicated by a **f**-number value.

The higher the **F** number, the more of the photo that will be in focus. For instance if you're taking a photograph of a landscape, chances are you will want all of the foreground and background to be sharp and in focus. For this to happen you will need to set your digital camera **f** value or aperture as its known, to a large number, for example **F/11**.

On the other hand if you're taking a photograph of a bird and you want the animal in focus but not the background, then you would choose a small **F** number like **F/4**.

You can see what aperture your digital SLR camera is set at by looking at the back LCD screen for a F number. As you can see by the image above right, the aperture in that example is set at F4.0. The display shown on your LCD may look different to this example, depending on the make and model of your camera.

How to set your camera to aperture priority?



The letters AV (for Canon camera's) or A (for Nikon camera's) on your mode dial sets your digital SLR camera to aperture priority. Your camera then changes all other settings such as

[shutter speed](#) automatically to suit.

Once you have **AV** mode turned on, you can change the f-number by rotating the main dial above the shutter button. **Note:** this is for Canon digital cameras. You may need to refer to your manual to find out how to change the **F** stop for your specific brand of camera.

When the **f** number is small, the lens diaphragm is actually wide open. So if someone says to you that you need to open your lens more, they mean to lower the aperture or **F** number. Alternatively, if the aperture is a large number, say F22 then the lens diaphragm is smaller or more closed. This often causes much confusion with beginners.

- Opening your lens more refers to lowering the **f** number.
- Closing your lens more refers to a higher **f** number.

The best way to understand how aperture works is to take numerous photographs with different f-number values and see what the difference is.

Take images at both ends of the scale. One with as low a F number as possible and one with as high a F number as possible. More importantly, when you view them on your computer take notice of how much of the photo is in focus.

Shown below is a couple of examples to help explain aperture.

In the first photograph shown below, the aperture (f number) was set at f/11 so all the image is in focus.



Now for the second photo, the aperture was set at a smaller number f/5.6 so only the rocks and sand at the foreground are in sharp focus while the background elements are blurred.



And here is an example of a close object photographed with an aperture value of f/5.6. As you can see the foreground object is in sharp focus and the background is blurry.



It's also important to note that results from aperture settings can change from one lens to another. For example just because an aperture value of f/5.6 for your macro lens results in a blurred background, it doesn't mean you should also set your telephoto or wide angle lens to the same f stop. Therefore, it's important to experiment with all your camera lenses so you know your equipment better.

All photographs shown on this page are taken with a Canon 400D (Rebel XTi) Digital SLR Camera.

Photography Assignment - Grab your DSLR camera and give this a try

Understanding how each mode works separately, is vitally important before trying **M** (manual mode). Learn how to use aperture priority and how different **F** numbers effect the overall image. Then and only then, will you fully understand how to use it when shooting in manual (**M**) mode.

Assignment: Lesson in aperture priority mode

1. Set your digital SLR camera to aperture priority mode. For Canon users, this means turning your mode dial to **AV**. Nikon users need to change the dial to the letter **A**. If you don't see the letters **AV** or **A**, then refer to your camera manual.
2. Change your camera's aperture **F** stop to the lowest number possible for your lens. It's important to note that each lens will be able to shoot at different apertures. Expensive lenses can go as low as **F1**, where most on average will be able to shoot at around **F4**.
3. Go outside and photograph a close object where the background elements are far away in distance. This is extreme to ensure you easily see the visual differences as you change the **F** number. On a low **F** number, you should notice the background is very blurred, when compared to the main object that is in focus.
4. Now change the aperture number to around **F7.1** and take the shot again.
5. Take two more photographs, firstly with an aperture of **F11**, and then **F22**.
6. Download and open all 4 photographs on your computer and see the difference that can be seen in the background. Notice the lower the **F** number, the more blurred the

background. The higher the **F** number, the more of the background that is seen in focus.

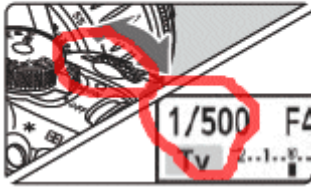
3 Shutter speed and the difference between fast and slow shutter speeds

Wikipedia describes [shutter speed](#) as being the amount of time a digital cameras shutter is held open for when taking a photograph. Shutter speed allows light to reach the cameras image sensor.

Shutter priority allows the photographer to choose a shutter speed, then the digital SLR camera automatically sets the aperture to suit.



To set your digital SLR camera on shutter priority, turn your mode dial to TV like the image on the left. In case your wondering, TV stands for time value. Now rotate the main dial until you have the shutter speed your after.



Shutter speed is measured in seconds and looks like 1/500, 1/250, 1/2 or 1 as in one second etc. It can range anywhere from 1/8000 to B for bulb. Bulb keeps the shutter open for as long as the

shutter button is pressed down.

How do you know what shutter speed to use?

The shutter speed you will need to use depends on the type of photograph you want to take. For example, if you want to take a photograph of water frozen in action with every little bead in focus, then you would choose a fast shutter speed like 1/500 of a second. If you want to blur running water like the example below, then you would need to use a slower shutter speed like 1/4 of a second. Often when you use a slow shutter speed, you will also need a tripod to help avoid camera shake.



The photograph of blurred water shown above was taken with a shutter speed of 0.25 sec (1/4). At this speed I was lucky enough to hand hold the digital camera steady to avoid having to use a tripod.

Now in contrast, here is a photograph of water taken with a faster shutter speed of 1/60 sec so every bead of water can be seen.



As seen in a recent lesson on [light trails](#), night photography also requires a slow shutter speed. Once again, this allows enough time for light to reach the cameras image sensor. Otherwise your image might turn out nothing other than a black rectangle or a series of colorful circles.

Short tips for using shutter speed in digital SLR photography

- Slow shutter speed, slows motion.
- Fast shutter speed, takes the image almost instantly as in frozen in time.
- Use slow shutter speeds of at least 10 seconds or more for night shots of cities, buildings and streets etc.
- When using a slow shutter speed it's also a good idea to use a tripod and remote shutter release to avoid camera shake.
- If for any reason you don't want to use a tripod, then a general rule to avoid camera shake is to never set your shutter speed slower than the reciprocal of the focal length value. For example, if your lens focal length is set at 50mm then don't use a shutter speed any slower than 1/60th of a second and so forth.

- To photograph a running child or animal while blurring the background, set the shutter speed to between 1/40 sec and 1/125 sec. Then follow the running child or moving animal as you press the shutter button. This is often referred to as panning.

Similar to [aperture AV priority](#), shutter speed also requires you to experiment so you can fully understand this mode of photography. Find some running water and try both fast and slow shutter speeds so you can see the results for yourself. Over time, setting the correct speed for any specific circumstance will become second nature.

4 Tips for manual mode camera settings

Using your DSLR camera in fully manual mode (M on the top dial), isn't as hard as it first seems. Whether you own a Canon, Nikon, or any other SLR camera brand, using manual mode works basically the same.

Advantages of fully manual

- Manual mode allows you to set both your **aperture** and **shutter speed** separately, without the camera automatically changing the other to suit. With this in mind, you can be more creative with your shots. For example, you can photograph a beach landscape keeping the aperture high (for example f/22) so everything is in focus, yet at the same time set a slow shutter speed to create dreamy, slow motion waves.



Example of photograph taken in fully manual settings

Digital SLR Camera: Canon EOS 400D / Rebel XTi

DSLR Lens: Canon EF-S17-85mm f/4-5.6 IS USM

Exposure: 0.2 sec (1/5)

Aperture: f/22

Focal Length: 85 mm

ISO Speed: 100

Exposure Program: Manual

Flash: Flash did not fire

Why this shot worked

For this beach landscape, I wanted the whole scene from the sand in the foreground, to the island and boat in the background to be fully in focus. I also intended for the ocean waves to have a slow motion dreamy look and feel to them. For this to be achieved, the camera needed to be set on a high aperture f/22, and a relatively slow

shutter speed of 1/5th of a second. If I had set the camera to aperture priority, then the shutter speed would have been automatically created for me, or conversely if I'd set shutter priority, the camera would have automatically set the aperture to suit. Therefore, setting the camera on manual mode, allowed me to fully choose both the aperture and the shutter speed.

- Manual mode gives you full control over your exposure. If you are finding a lot of your photographs are either underexposed (too dark) or overexposed (too light) then working in fully manual mode will help you to better understand and correct these exposure problems. Personally, I've found tweaking exposure results in photographs that are much more colourful than those taken in other modes.

How to use manual mode on a digital SLR camera?

- Firstly set your camera's top dial to the M mode and turn it on.

Example of manual mode:



- To set the **shutter speed**, turn the rotating dial that looks like this:



- To set the **aperture** (f/number), press and hold down the exposure compensation button while turning the rotating dial.

The exposure compensation button on your digital SLR camera looks like this:




- To set the exposure, look through your viewfinder and press the shutter button half way down to focus on an object or scenery. You will then notice at the bottom of the screen what is referred to as a light meter, that looks similar to this:



For this example, turn the rotating dial again until this exposure line shows 0 exposure. That is, it is neither on the right or left side, but rather set in the middle. If you don't like looking through the viewfinder, you should also be able to see this

exposure line on the back LCD display. Take the shot and you'll find a well balanced exposure.

Other tips and hints for using your digital SLR camera in manual mode



- You will notice when you change the exposure level as demonstrated in the last tip, the shutter speed also changed to suit that particular exposure. You can however set the camera so it's the aperture that changes to suit the required exposure instead. To do this, press the exposure compensation button  down while turning the rotator to the correct exposure. This way it will be the aperture that is changed and not the shutter speed.

Therefore, before setting the correct exposure, it's important that you ask yourself which setting is more important to keep for your specific shot. Is the aperture more important or the shutter speed? If you're shooting a landscape, then I recommend keeping the aperture (f/number) as you had originally set it to. If you are photographing a moving object like a bird for example, then I recommend keeping the shutter speed setting.

Photography Assignment - Grab your DSLR camera and give this a try


One of the most important steps for taking photographs in manual (**M** mode), is understanding how to achieve a good exposure.

Assignment: Step by step lesson to help you fully understand manual mode exposure

- Change your camera setting to manual (**M**) mode and turn it on.
- Press and hold down the exposure compensation button  while turning the rotating  dial until the aperture is the lowest f number it can go. You will be able to see this on the back LCD display. For example:



Note: The only reason I've instructed you to change to a low **F** number is to ensure the image is taken quickly, even if shot inside.

- Look through your viewfinder and point your camera at a nearby object or person. Press the shutter button half way down to focus, then lift up again. Don't yet take the shot.
- Still looking through your viewfinder, look for the exposure line along the bottom. Turn the rotating dial  until that exposure line is set directly in the middle (on 0).



- Now take the photograph. This should result in an image that is not too underexposed and not too overexposed. If you find the camera took too long to shoot the photograph, increase your ISO to 400 or 800 and try again.

- Repeat the lesson again, this time going outside and taking an image of your street. However, for this example, firstly set the aperture to f/11. This will ensure everything is in focus.
- While your taking photographs of your street, try setting the exposure off centre. You'll notice a few notches to the right and left of middle, will result in over and under exposure (too light or too dark).

This lesson helps demonstrate the importance of the exposure line when photographing in manual mode.

6 What is mirror lockup and when do you need to use it?

When you press the shutter button on your digital SLR camera to take a photograph, the first thing that happens is the mirror flips up and out of the way to expose the digital image sensor. Sometimes if you have a long telephoto lens connected to your cameras body, this mirror flip can cause a slight vibration. This vibration can result in a blurred photograph similar to the effects of camera shake. Many photographers choose to use a manual setting called mirror lockup to help avoid this problem.

How to know when you need to use mirror lockup?

When you use a long telephoto lens and notice photo blur (or loss of image sharpness) even after trying a sturdy tripod and remote release.

Is there any disadvantages to mirror lockup?

The main disadvantage to using mirror lockup is that you cannot look through the viewfinder when the mirror is locked. For this reason, mirror lockup is implemented most often with [long shutter speeds](#). For example, when taking a photograph of a landscape at dawn.

How to set your DSLR camera to mirror lockup?

With Canon digital SLR cameras the mirror lockup is hidden in the Custom Function (C.Fn) setting. Once in custom function choose Mirror Lockup / Enable.

Note: These articles often refer to Canon or Nikon SLR cameras because those are the models I am personally familiar with. If you own a different model simply check your [camera manual](#) on how to set specific settings. For the most part, the basic workings are very similar if not the same, from one SLR model to another.

Does it really matter if your digital SLR camera doesn't have this option?

No, it doesn't matter as it's not a function that is implemented often. Photo blur due to mirror vibration is usually so minute that it isn't easily noticeable. To most photographers, their photographs simply may not look as sharp as normal and need to be sharpened in an editing program like Photoshop

What is RAW setting on your Digital SLR Camera?



Digital SLR cameras usually save images in either jpg or raw format (or both), depending on the camera model and settings. The downside to jpg is that they start to deteriorate or loose quality from the first time you edit the photos. Furthermore, even before the editing stage, your digital camera compacts the image into a smaller file when it saves JPG format. Therefore, losing all the raw information that

was originally gathered by the camera.

However, if you set your camera to save in RAW CR2 then all the data is kept in tact.

Take this image below for example. It is a desktop picture taken from a raw editing program showing both the JPG and raw CR2 file side by side. It's clear to see how much data is lost in the JPG on the right. If your image is destined to be printed. Then it's recommended to open the RAW CR2 file and save it as a TIFF file before printing. TIFF files also keep a high percentage of the data's quality when compared to JPG. JPG is really only recommended for website viewing due to its fast loading, small file size.



Another way to think of RAW format is to being similar to negatives back in the eighties. It didn't matter if you damaged the photograph back then because you knew you could pull out the old negative and have it printed again. The same goes with RAW format.

Whenever possible use RAW format or if you own a Canon digital SLR camera change the settings to JPG + RAW. What this does is it saves each image in two different file formats, one jpg and one raw. Then you can digitally edit the jpg as many times as you want, knowing that you can resave an original copy from the raw file if needed in future.

How to convert and edit RAW files?

If you need to convert a raw file into a jpg so you can use it on a website or have it printed, then you need a conversion software package that can read this format. Chances are, if your DSLR camera has a raw file option, then your purchase should also have included a raw software package on a CD. For example Canon offers with each SLR camera a copy of [Digital Photo Professional](#). If you purchased your camera second hand, then you can download 3rd party conversions like [Photoshop Camera Raw plug-in](#).

8 Other advantages to setting your digital SLR camera to RAW

Another advantage to using RAW is that you don't need to have your camera's white balance or picture style etc set perfectly when you take the actual photograph. Instead you can change this later on using a RAW editor. This is particularly useful for beginners who may forget to change their picture style from portrait to landscape when going from one particular subject to another.

When I took the first photograph shown below, I'd forgotten to change my white balance from the day before. As you can see the 'shade' white balance setting wasn't suitable for this particular day which resulted in the tree having an off orange tinge to it. Had I taken the photograph in JPG format, I would have been stuck with this image as it is.



Photographed in RAW format so the file could be opened in my editor and change the colour balance to 'daylight'. This resulted in a much better colour tone in the tree.



Disadvantages to shooting in RAW

Like most things, there are also some disadvantages that must be taken into account when setting your digital SLR camera to photograph in RAW format. RAW CR2 files are very large and take a lot of space on your cameras memory card and on storage disks. If you plan on shooting in this mode then I recommend having at least two 4gig memory cards for your camera. Backing photo's up on DVD disks instead of CD will also let you save more images per disk. Having a fast computer on which to edit the RAW files is also a necessity. If you own a 5 year old computer you might find it takes an hour just to open your folder of RAW files. Other than that, shooting RAW is the only way to go.

9 Focusing tips for Nikon and Canon digital SLR cameras

One of the most important skills for a beginner to learn from the start, is how to focus properly. Using a digital SLR camera will become very frustrating if you don't understand how to set the focus on the exact object you're trying to photograph. Take the two images below for example.

1. For the first photograph, the camera focused on the leaves in the front right, while the waterfall at the back was blurred and out of focus. In this case, the photographer was intending to take a photograph of the waterfall.



2. With the second image shown below, the photographer was taking an image of the sheep. However, as you can see, the camera focused on the tree to the right. You can tell this due to the tree being sharper than the sheep. If this was the initial intention, then it's a good photo. However, if it was not, then it is a badly focused photograph.



How to focus on what you want? Or spot focus on single area.

So how do you ensure you're focusing correctly on what you want to photograph and not the object on the front or to the side of it? In short, the answer is to set your AF-Area Mode (autofocus) to one of the main focal points on your camera. However first you need to understand what I mean by focal point.

For instance, follow this exercise below:

- Set your digital SLR camera on the P dial and turn it on.
- Look through the viewfinder as though your going to take a photograph.
- Press your shutter button half way down and look for a red blinking focal point. The object in your scene that the focal point is positioned over when it blinks red, is what your camera is focusing on. For the two examples shown above, the red focal blink would have occurred over the leaves in the front and on the tree to the right.

It's also important to note that different camera models will have a different number of focal points. For example, Canon 400D has 9 focal points. Whereas Nikon D40 has 3 focal points.

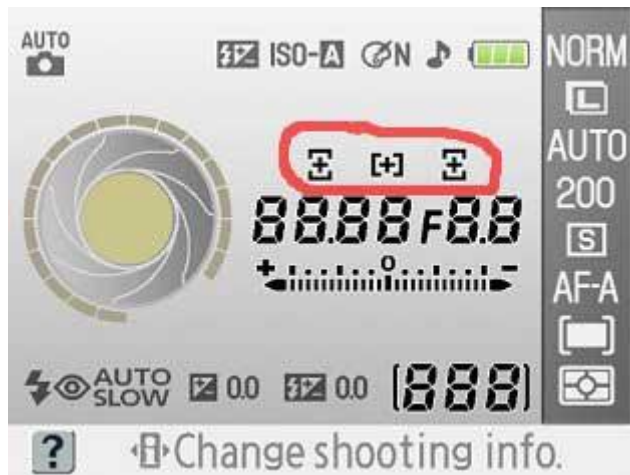
Depending on your current camera setup, it might be possible to keep pressing the shutter half way down and back up again, then half way down etc and it will focus differently each time. As you can imagine this could become tedious. Furthermore, a moving object isn't going to stick around until your camera automatically focuses on the correct object. Therefore, you also need to learn how to set one particular focal point as the default main focus. Examples below are shown for a Nikon D40 and a Canon 400D SLR camera. However, most digital camera's work in similar ways.

How to focus using a specific focal point on a Nikon D40

1. Press MENU, go to the left side (if not already highlighted) and select the up and down (next to OK button) to navigate to the pencil icon. Then highlight the CUSTOM SETTING MENU on the top of the color LCD and press OK.
2. Scroll to number 3 in that menu 'AF-Area Mode', and choose '[o] Single Area'. Press OK to set it.
3. Then set your camera on P for this example, and look in the view finder. At the bottom you will see something similar to the image below. The part I've circled in red is what I will be referring to in the rest of this tutorial. You'll notice it resembles the focus points in the centre of the screen (left, middle, right).



If you don't want to look at it though the viewfinder then you can also see it on the back LCD screen, like the image below:



4. When the middle is highlighted (part in the red circle above), any object the center focal point is positioned over when looking in your view finder, will be the main focus when the photo is taken. You are able to change this to either right, center or left by pressing the left and right buttons near your OK button.

How to focus using a specific focal point on a Canon 400D

1. Put your camera setting on something other than automatic, for example the P setting on your top dial.
2. Look through your viewfinder and hold down the button circled below in red.



While holding that button down, use the rotating dial shown below to move between the numerous focal points.



3. Note: If you find this does not work, it may be due to you having the shutter speed or aperture screens displayed in your LCD. You might have to hop out of that particular screen first, then set your focal point before going back into the shutter speed and aperture if need be.

10 Quick tips for turning a Nikon and Canon digital SLR camera back to original settings

Digital SLR cameras offer so many different settings, it's often hard to keep track of what one's you have changed. Any photographer who has given his digital SLR camera to another person for a day or two, will understand how hard it is to try and guess what settings were changed so it can be put back to the original state.

How to change a Nikon D40 back to default factory settings?

- Press the 'menu' button on the back near your LCD display.
- Press the left button near the 'OK' button to make sure you have the left side of the menu highlighted on the LCD display.
- Use the up and down buttons near the 'OK' to scroll to the 'pencil' icon.
- When the 'pencil' icon is highlighted, press the right button near the 'OK' to highlight the right side.
- Scroll up and down until you have 'Reset' highlighted, then press 'OK'.
- Scroll down one to 'yes', and press 'OK'.

Your default factory settings are now back to when you originally purchased your Nikon D40 camera.

How to change a Canon 400D back to default factory settings?

- Firstly press the 'menu' button, then the up button above the 'OK' as many times as needed, until you see the top folders are highlighted.
- Press the right button near the 'OK' until you see the last folder highlighted. You will know this is highlighted when you see the first menu option that says 'Language'. The 3rd one down from that says 'Clear Settings'.
- Press the down button under the 'OK' until 'Clear Settings' is highlighted, then press the 'OK' button.
- Scroll up to your choice and press 'OK' to reset your Canon 400D back to default factory settings.

11 Difference between DEP (AV, A on some camera's) and A-DEP modes

Depending on the brand of your digital SLR camera, you may have noticed 2 similar yet different modes on the dial, called **DEP** and **A-DEP**. DEP may also be symbolised by the letters **AV** (*Canon*) or **A** (*Nikon*).

DEP (AV, A) and **A-DEP** modes, basically do the same thing, in that they allow you to set an aperture so you can control the depth of field seen within a photograph. Or in other words, it allows you to set how much of the scenery you want in focus and how much you want blurred. The difference between the two camera modes, is how they achieve this.

What do the letters DEP, AV and A stand for or mean on a digital SLR camera?

The letters **DEP** stands for 'depth of field automatic exposure'. Sometimes **DEP** is replaced with the letters **AV** or **A**, meaning 'aperture priority'. When you set your camera to these modes, you also need to set an aperture F number. I won't go into detail here, as we already have a good tutorial for this setting at: [What is AV mode](#).

What do the letters A-DEP, stand for or mean?

A-DEP stands for 'automatic depth of field', or 'auto depth of field'. Meaning, the camera sets the depth of field automatically. When the camera is set on **A-DEP**, the photographer doesn't need to set an aperture F number as the camera does this for them.



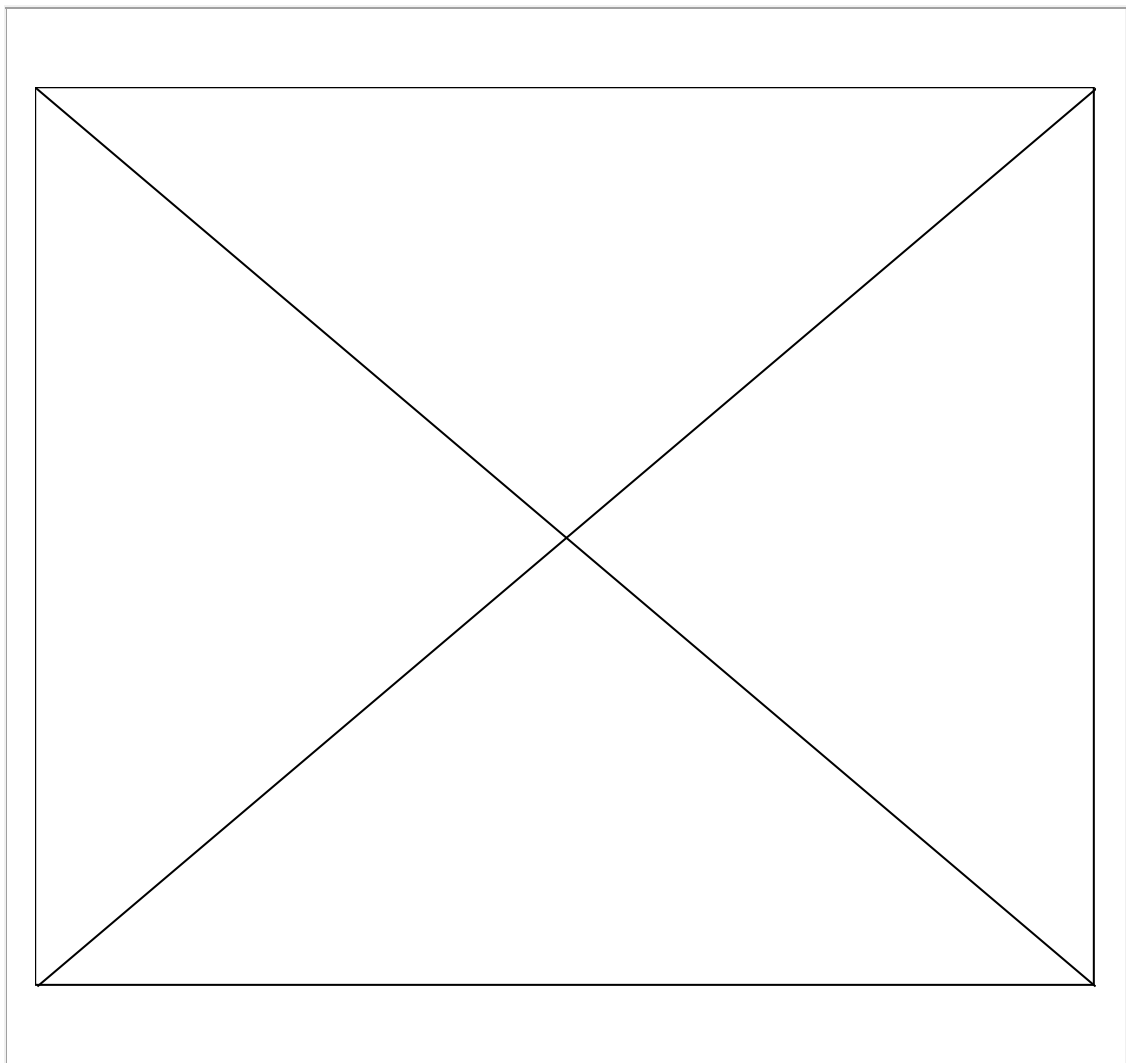
How to use A-DEP mode on a digital SLR camera?

To use automatic depth of field, turn your digital SLR camera mode dial to A-DEP. Look through your viewfinder and point at the object you want to photograph, then press the shutter button half way down to focus. All the area you see covered by the focal points that flash or light up, will be in focus. Or in otherwords, will be within the automatic depth of field. The camera will choose the best aperture for that specific circumstance when you take the shot.

12 What is white balance?

Setting the correct white balance in your digital SLR camera is important to ensure the objects that are white, are actually displayed white within the photograph. As you can see by the interactive example below, white balance also effects other colors as well. If your camera's automatic white balance setting doesn't get the color 'white' correct, it won't render the other colors correctly either.

Click within the square below to start the demonstration. Then click each of the four white balance settings to see how color is effected by this setting.



How to know if the wrong white balance has been set?

Just about every photographer at one stage or another, has taken a photograph that contained a blueish tinge. The blueish tinge is normally a result of using an incorrect white balance. For example, the first image below has a blueish tinge, where as the second shot displays a more natural coloring.



Setting an incorrect white balance, can also result in unsightly reds, yellow or green tinges as well, depending on the situation.

Doesn't auto white balance fix this problem?

Not always. While it's true many improvements have been made in today's digital camera's, they still often get white balance settings wrong in certain lighting conditions. If you take your images in [RAW format](#) (highly recommended) then sure, go ahead and use auto white balance. If the camera gets it wrong, you can always change this setting later on in your RAW editor.

Where to find your digital SLR camera's white balance settings?

For Canon users, the camera's white balance setting can be found on the back panel next to the LCD screen (on Canon 400D). It can be recognised by the letters WB, as demonstrated in the image below. There can be slight differences between models, so if you can't see the letters WB, then check with your camera's manual. Press the WB button and you'll be given a list of the following options: auto, daylight, shade, cloudy, tungsten light, white fluorescent light, flash and custom.



For Nikon users, press the menu button on the back near the LCD screen, and navigate your way to the 'Shooting Menu'. From there, you'll be able to choose 'White Balance'. Once you're in the white balance screen you'll have several options including: auto, incandescent, tungsten, fluorescent, direct sunlight, flash, cloudy, shade and preset.



Note: If you have the camera set on fully automatic, you won't be able to choose a white balance setting.

Quick explanation of each white balance setting found on digital SLR cameras

Note once again, settings differ between brands and models. Therefore don't worry if you have a few of them missing from your menu bar.

When to use Auto white balance: In auto, the camera guesses what white balance to use depending on the available light. In 95% of the time, the guess results in a nicely colored photograph. This is a perfect setting for times when you're unsure what white balance to choose. It's also a good idea to keep the camera on Auto white balance if you shoot in [RAW format](#) (recommended).

Daylight (Canon) and Direct Sunlight (Nikon): This is a good setting for direct sunlight. For example, a beach landscape mid morning where you're not shooting into shade.

When to use Shade white balance: Use shade white balance in shady area's or sunset shots. It will help give a warmer color to your shots.

When to use Cloudy: This is a good setting for cloudy days. It's also quite effective for shady area's as well. I've found there is a fine line between shade and cloudy white balance settings.

When to use Tungsten white balance: This is one of the most extreme balance settings of them all and should only be used with tungsten light bulbs. Or at times where you purposefully want a blue tinge to your images.

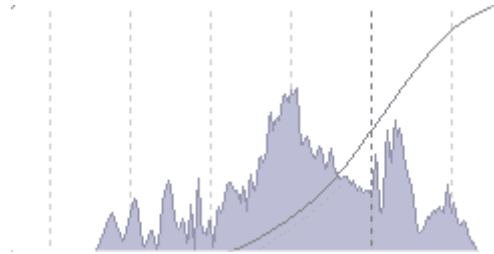
When to use fluorescent: This setting will help make inside fluorescent house lighting, look a bit better than the yellowy orange color you usually see.

Flash white balance: Flash white balance is used mostly for studio work.

Custom (Canon) and Preset (Nikon) white balance settings: Use these ones with a white or grey card that you can pick up cheaply from any camera store, for perfect white balance.

13 What is a histogram

A histogram is a bar chart that shows you whether a photograph's exposure is good or bad. You can view the histogram on your camera's LCD screen after you have taken the shot. A histogram looks similar to the image shown below.



If you see high peaks on the right side of the histogram, this indicates the photograph may be too bright or overexposed. On the other hand, if there are high peaks on the left side of the histogram, the image is most likely too dark and underexposed. If the peaks are centered like in the example above, the photo is said to be well balanced and exposed. That is, not too dark or too light.

Reasons why photographers should view the photo's histogram

- While it's true that some photographs are obviously too light or too dark when viewing them back on your camera's LCD screen, other images may not be so clear. I can't count the times I've viewed the perfect image on my small LCD screen, to find they are badly exposed when seeing them on my 19 inch computer monitor.
- It is especially important to check the histogram if the photograph is taken from a once in a lifetime moment. Photograph taken down at our local harbour side marina. The morning was perfect, there wasn't a ripple in the water and the reflections were crystal clear. It was one of those moments we may not see again for a long time. Therefore it was important to ensure the exposures were correct in the histogram before packing up and heading home. If the histogram showed any under or over exposure, I would have taken the shot again while I had the chance.

Where to find the histogram graph on your digital SLR camera?

- If you are using a Canon 400D SLR camera, view a photograph in your LCD screen, then press the DISP button twice, on the top left near the LCD screen. You should then see the histogram. Once you're done, press the DISP button again to get back to the previous screen.



- For Nikon D40 users, view an image in your LCD screen, then press the up and down buttons near the 'Ok' to scroll to the histogram.



- All other users, check your camera manual.

Histogram examples

1. **As you can see by the image below, it was underexposed (too dark).** There is very little detail seen in the tree's, footpath and two people on the left.



Shown below, is the histogram for the underexposed image. As you can see by this example, the high peaks are on the left hand side of the graph.



2. **In contrast, the photograph below is overexposed (too light).**



Shown below, is the histogram for the overexposed image. Notice this time, the high peaks are on the right hand side of the graph.



3. What you should be aiming for, is a histogram that displays the majority of peaks within the centre of the graph.

Exceptions to the rule

There are times when it's perfectly acceptable for the graph to display high peaks at either end of the histogram.

- For instance, if there is naturally a lot of white within the scenery (snow shots), then you would see high peaks on the right side of the histogram, even when the photo is perfectly exposed.
- On the other hand, if there is a lot of black within the scenery or object you are photographing, then the high peaks would naturally occur on the left hand side of the graph.
- Furthermore, if there is a good mixture of black and white within the scenery, you may find high peaks at both ends of the histogram.

Photography Assignment - Grab your DSLR camera and give this a try

It's important to understand histograms and how different sceneries can effect how the graph looks. Once you understand this information, you'll instantly be able to recognize if a photograph is under or over exposed when viewing it in your tiny LCD screen.

To follow this assignment, you need to know how to display a photograph's histogram within your camera's LCD screen. I've listed instructions for Canon 400D and Nikon D40 users in the article shown above, under the heading '[Where to find the histogram graph on your camera](#)'. For all other models and brands, check your camera's manual.

Assignment: A lesson in reading histograms.

1. Take a photograph of an object or person against a dark background. For this example, it's important to make sure a dark colour dominates much of the composition. View the photo's histogram and you should notice high peaks towards the left side of the graph. It's important to understand that in this case, the peaks on the left hand side are due to there being a lot of black within the photograph. Not necessarily because it is underexposed.
2. Alternatively, take a photograph of an object where there is a dominance of white colouring within the composition. When viewing the image's histogram, you should notice the high peaks positioned on the right side of the graph.
3. For a third example, photograph a black object on a white background. This time when you view the histogram you'll notice there are peaks at both ends of the graph.

This exercise was important to help demonstrate other reasons why you could see high peaks on either end of your histogram graph. They may not always mean your image was exposed incorrectly. Therefore, when you view your histogram, it's also vital that you analyze any other reasons why you may see uneven peaks. After all, you don't want to delete a perfectly good photo!

14 What is EXIF metadata?

EXIF (exchangeable image file) data is a record, showing what digital SLR camera settings were used to take a photograph. This data is recorded into the actual image file. Therefore each photograph has its own unique data. EXIF data stores information like camera model, exposure, aperture, ISO, what camera mode was used and whether or not a flash fired.

The image below is an example of what EXIF data looks like. This information differs depending on what EXIF reader is used to see the metadata.

Camera:	<u>Canon EOS 400D Digital</u>
Exposure:	0.005 sec (1/200)
Aperture:	f/11
Focal Length:	100 mm
ISO Speed:	100
Exposure Bias:	0/3 EV
Flash:	Flash fired
Orientation:	Horizontal (normal)
X-Resolution:	72 dpi
Y-Resolution:	72 dpi
Software:	Adobe Photoshop CS2 Windows
Date and Time:	2008:01:06 20:59:54
YCbCr Positioning:	Co-Sited
Exposure Program:	Manual
Date and Time (Original):	2008:01:06 14:47:06
Date and Time (Digitized):	2008:01:06 14:47:06
Shutter Speed:	500948/65536
Metering Mode:	Pattern
Color Space:	sRGB
Focal Plane X-Resolution:	4433.295 dpi
Focal Plane Y-Resolution:	4453.608 dpi
Exposure Mode:	Manual
Compression:	JPEG

How is EXIF metadata useful?

For beginners, reading an images EXIF data can be a very useful learning tool. When I first started using a digital SLR camera, I got into a habit of taking a notepad with me so I could write down the settings used for each shot. That way if I liked the results, I could replicate the shot at another time. Later on I learned about EXIF metadata and realized I didn't need to write down the settings after all. Instead, it was all recorded for me when I took the photograph. All I needed was a way to read the data.

EXIF metadata readers

Metadata readers allow you to view the image, then read the EXIF information so you can recall the camera settings. When you first start out in digital SLR photography, all the camera settings can seem overwhelming. There are so many different settings, that it can be hard to remember what one's were used for each shot. Over time, studying each photo's EXIF metadata, will help you understand what settings are needed for specific shots.

Listed below are some of the most popular ways of reading a photographs metadata:

- When you preview a photograph in windows picture viewer, you can right click on the image and choose properties. Click the summary tab along the top, then if you don't see the EXIF data instantly, click the advanced button. You should then see all the information that was recorded when the photo was taken.
- There are many free EXIF readers available. One of the most popular freeware programs is called [EXIF Reader - image data file analysis](#). EXIF Reader can obtain metadata from photographs taken with the following camera models: Canon, Nikon, Olympus, Epson, Sanyo, Ricoh, Casio, Toshiba, Fujifilm, Kodak, Konica, Sony, Minolta, Pentax, Kyocera and Panasonic.
- If you already own a graphics editor like Photoshop CS2 and above, you can read the EXIF data with the programs File Browser feature (File / File Info, along the top toolbar).

Reasons why you may not be able to read a photographs EXIF metadata

Some graphic editors tend to strip out EXIF metadata from an image when it's edited. For example, earlier versions of Jasc Paint Shop Pro or Photo matrix, are well known culprits. Usually upgrading to the latest version of the program will solve this problem.

Photography Assignment - Grab your DSLR camera and give this a try

Reading a photographs EXIF metadata will allow you to recall what camera settings were used when you took the shot.

Assignment: EXIF metadata lesson

1. Download and install a free EXIF reader called [EXIF Reader - image data file analysis](#). Even for those who own a copy of Photoshop CS2 with its inbuilt reader, will appreciate the extra details EXIF reader displays.
2. Open up a few different photographs within EXIF Reader and read through the numerous metadata columns. Look specifically for metering mode, aperture, exposure (shutter speed), focal length and ISO. These are the camera settings most beginners want to replicate for specific types of shots.

If for some reason, you can't view the images EXIF data, it may be because you have edited the original photograph with a graphics program that has striped this information out.

15 Digital SLR camera metering modes

Metering modes can be one of the most frustrating settings for beginners to SLR photography. If you have ever taken an under or over exposed photograph using program mode (P), aperture priority (A Nikon, AV Canon) or shutter priority (S Nikon, TV Canon), chances are you've set the metering mode incorrectly.

Metering systems work by measuring the amount of brightness within a scenery or object, then sets the exposure accordingly. However, the camera can often get the exposure wrong if the onboard metering mode has been set incorrectly.

What metering modes are available on digital SLR cameras

The majority of digital SLR cameras will give you a choice of at least three different metering systems. The names of the modes will differ depending on your camera model.

- **Matrix metering** on Nikon camera's is called either **Pattern** or **Evaluative** on other models.
- Most brands all name the second mode, **Centre-weighted metering** or very close to it.
- Whereas **Spot metering** found on Nikon SLR's, basically work similar to **Partial metering** on Canon digital camera's.

When to use Matrix (Pattern, Evaluative) metering modes

Matrix, Pattern and Evaluative are considered good all-round metering modes. The camera sets the exposure automatically to suit the scene, taking into consideration both dark and light area's. It's considered good for evenly backlit subjects like portraiture and landscapes. It's also the way to go when you're not sure which metering mode to use. This is the reason why it's the default setting for fully automatic camera settings.

As you can see by the image below, matrix metering works by dividing the frame into zones, taking separate readings from each one. The camera then takes a guess at what parts of the scene are important and exposes accordingly. For the most part, it does a pretty good job at picking the correct exposure.



When to use Centre-weighted metering

Centre-weighted metering assigns the greatest weight for exposure from the middle area of the frame. Therefore, it's good for times when your main subject is in the middle of the frame and you want to take a quick exposure.

Centre weighted metering would be effective when you have a bright background or backlit subject. For example, if you were taking a photograph of a person's face on a sunny day at the beach. You wouldn't want the strong background light, or the white sand, to effect the exposure on their face. As long as the person's face was correctly exposed, that's all that matters. It's times like this, you would choose centre weighted metering.

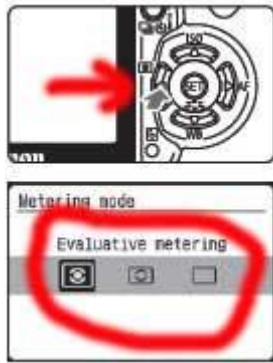
When to use Spot or Partial metering

Spot (Nikon) or Partial (Canon) metering should be used when you want to take an exposure reading on a specific area. It takes the reading from a very small area in the middle of your composition.

You would use spot or partial metering for example, if you had a slightly shaded white bird, against a darker background. You would then take the exposure from the bird's feathers and the darker background wouldn't affect the colouring.

How to change your digital camera's metering mode?

- To select a metering mode on a Canon 400D, turn the top dial to any setting other than automatic and turn on your camera. Now press the < button to bring up the metering menu. Then press the left and right buttons to navigate through the 3 metering modes. When you have the correct setting, press the **OK** button to select it.



If your Canon model doesn't display a menu like the example image shown above, refer to your camera's manual.

- For Nikon D40 users, choose the pencil icon in the Setup menu and select number **5 Metering**. Then choose between Matrix, Centre-weighted and Spot. Once you have the mode that you need highlighted, press the **OK** button to select it. Instructions for this are listed on page 74 of your camera's manual.

If your particular Nikon model isn't a D40, refer to your camera's manual for information on how to change the metering.

Photography Assignment - Grab your DSLR camera and give this a try

Understanding how each metering mode works, is best learned through a method that I like to call 'try and see'.

Assignment: Lesson in understanding metering modes

1. Set your digital SLR camera on program mode for this assignment by turning your dial to the letter **P**. Just for this example, also change your ISO to 400. This will ensure you are able to take a fast photograph in many different situations.
2. Go outside and take a landscape photograph in your street, firstly using the Matrix (Pattern or Evaluative on some camera's) metering system. Then change your metering to Centre-weighted and take another shot of the same landscape. Finally take a third photograph of the same scenery with Spot (partial) metering.

Load all 3 images onto your computer and see what the difference is. Try this a few more times with different landscapes and sceneries.

What you should find, is that the Matrix metering system works best in the majority of cases.

3. Now find a friend who will let you photograph them against a bright background. For example, with the sun shining directly behind them, or against a white sandy beach or freezing snow.

Compose your shot so their shoulders and head takes up 2/3's of the frame. Once again, take three photographs, one with each of the different metering settings. Load them onto your computer and see what the difference is between each one.

In this case, you should find that Centre-weighted metering works best to expose the facial area correctly.

4. For the next part of this assignment, place a lightly coloured object against a darker background (black if possible). When you compose your shot, place the object directly in the middle of the frame. Once again, take 3 photographs, one for each metering mode. Load them onto your computer and see what the difference is.

This time you should find Spot metering works best for this particular situation.

16 Depth of field preview button of a digital SLR camera

Your digital SLR camera's depth of field preview button is much more useful than photographers first think. I know this from personal experience. Like many new DSLR photographers, I pressed the depth of field preview button on my Canon 400D and saw everything got darker when looking through my viewfinder. Not understanding what I was looking at exactly, I didn't use it again for over 6 months. Now I never take a shot without it.

What does depth of field preview button do?

The depth of field preview button, gives you a preview of the overall [depth of field](#) you can expect to see in the final photograph before you've taken the actual shot. In other words, it will show you how much of your photograph will be in sharp focus and how much will be blurred.



Why is this useful? Like many beginners, I too wasted a lot of time taking numerous images while changing the aperture settings between shots, until I found the setting that blurred my background exactly as I intended. Now I preview the background blur (or sharpness depending on what you require) and correct the depth of field before taking the photograph.

Where to find the depth of field preview button on a digital SLR camera?

Unfortunately not all digital SLR cameras have a depth field preview button. For example, the Nikon D40 doesn't have this option. On many other models, for example a Canon 400D, it can usually be found on the front of the camera body, on the left side, under the flash button. It's a very handy place for it, as it's positioned exactly where your left hand rests when holding your camera. If you don't see it there, check with your camera manual.



How to use the depth of field preview button?

When using the preview button, it's important to take more notice of the out of focus areas of the composition. It's these out of focus area's, that you'll see change as you set different [aperture F numbers](#). To do this, you have to practise looking past the change in darkness that occurs when you press the button. The higher you set the aperture F number, the more that will seem in focus. Follow the step by step assignment posted below to truly understand how it works.

Photography Assignment - Grab your DSLR camera and give this a try

Assignment: A lesson in using your camera's depth of field preview button.

For this example, set your digital SLR camera to aperture priority AV (for Canon) or A (for Nikon), choosing the lowest aperture **F** number possible. Set the lens focal length to around 70mm. Now look through your viewfinder and focus on a nearby object. When you press the preview button, you'll most likely notice nothing much happens. This is normal for low aperture **F** numbers, because basically what you see when you first look through your viewfinder, is the main object in focus.

Now change the aperture **F** number to **F/11** and try again. This time you will notice two things when you press the DOF (depth of field) preview button.

1. The first noticeable difference is that the screen got darker when looking through your viewfinder. This is normal, it happens because the lens stopped down to the aperture you selected. However, don't worry about this, your photograph won't be that dark when you take the shot.
2. Now it's important to take notice of the changes that happened in the out of focus background, when looking through the viewfinder. Looking past the darkness, you should see that at **F/11** the background elements got sharper (more focused). Now try a higher **F** number, for example **F22**. You'll notice the higher the F number, the more that looks focused when pressing the depth of field preview button.