valeries photochannel

A picture is worth ten thousand words

DIGITAL PHOTOGRAPHY BASICS

ILLUSTRATED GUIDE

By Valerie Goettsch

INTRODUCTION

Welcome, and thanks for downloading this guide to Digital Photography. If you've been watching my Adobe Photoshop Lightroom tutorials on Youtube, you know Lightroom is terrific for taking rather ordinary-looking photos and making them look amazing.

But there's "ordinary" and there's poor quality. If you have a bad photo—if it's poorly exposed or blurry—well, even the best software won't be able to fix it.

So that's what this guide is about, how to get it right in the camera. I'm not talking about getting it perfect, but you need to start with good composition, proper lighting, and know what shutterspeed, aperture and ISO to use to create the best image for your shooting situation. And if you have no idea what those three words mean, trust me, if you read this guide you will know enough to go out and take some really good pictures.

If you start with good basic images, when you get to Lightroom you'll only need to make a few tweaks to the contrast or add some highlights or shadows and a touch of sharpening to make your photos pop.

It's much more enjoyable to take lots of photos and then have fun making creative enhancements, rather than wasting time trying to correct an image that's so poorly-exposed you'll never be able to bring out the detail.

So grab a cup of coffee and start reading...you're about to become a better photographer. Feel free to share this guide with your photo-loving friends and if you haven't yet, be sure to sign up for my newsletter for photo tips and tutorials.

Regards

Valerie Goettsch

Valerie Goettsch

P.S. Want to get awesome deals on printing and photo gifts? Get my weekly coupon code update to save at **Shutterfly, Mixbook** and other photo sites.

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Guide to Digital Photography Basics

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Digital Photography Basics

1. GUIDE TO GETTING GREAT DIGITAL PHOTOGRAPHS

How many times have you taken a photo and been excited to think that you've taken the most amazing shot in the world, only to discover that once you have seen the picture on your computer or in print, that everything is so dark that you can't tell who is who? Or you find that all you can make out is a line of rather fuzzy things that could be people, or trees, or a piece of abstract art?

So what went wrong?

Modern cameras are getting smarter and smarter. They are able to do fantastic things when in automatic mode to help you and I get better pictures.

But sometimes putting the camera on automatic isn't enough and we need to use and change some of the controls and settings in the camera's help menus to get a better picture.

How does that make you feel? Are you confident changing the settings on your camera, or does the thought of changing anything fill you with terror because you've never even looked in the manual, never mind taken the camera off automatic and looked inside a menu?

So what is holding you back? Is it simply a lack of knowledge? Are you completely in the dark when it comes to your digital compact camera, can't tell your ISO from your AF?

You're not alone. Many, many people struggle to make sense of the principles involved in photography and the common controls used by all cameras, whether you use a compact camera or digital SLR.

Does that sound like you? Have you ever caught yourself asking something like:

- How can I capture better vacation memories?
- Why can't I get a good picture of the kids?
- How can I start taking better pictures?
- How do I get a better understanding of the way my compact camera works when no-one seems to want to explain it in a simple, straight forward way?
- How do I get a solid foundation of photographic knowledge, one that is explained in simple layman's terms that can be understood by young and mature alike?
- How can I get more creative with the pictures I take?

Looking for a New Camera?

Check out my recommendations for every budget at the best price and value:

DSLR's

Point-and-Shoot

Basic principles aren't difficult to understand IF they are explained simply, using everyday language. But when you flick through many of the camera manuals, they can seem to be written in a foreign language.

Well now I have a solution for you. In this guide we'll take a look at some of the basic common controls found on most cameras, whether compact or DSLR. You'll start to get an understanding of what each of the controls does, how they work, any disadvantages or draw backs to them and how to start getting better results from each control.

Using this understanding, you will be able to use each control to improve the quality of the pictures you take, and get yourself ready to move on to more complex techniques and camera controls.

What's even more exciting is that everything will be explained in a straight forward, easy to understand way. If any photographic term or jargon is used, I'll be sure there is a clear, concise and understandable explanation of what it is.

Why don't we start to build the foundations of your knowledge by going back to basics?

PHOTOGRAPHY 101 – To Begin At The Beginning

You need 3 fundamental things to take any ordinary photograph:

- A subject
- Light
- A camera (recording device)

The subject – the subject of your picture - can be anything you choose; a landscape, a person, a building….. in fact anything that you see and want to capture an image of.

Light is something we take for granted. It's all around us and is the reason we can see what is there. It lights up objects and can be produced by natural means – such as the sun or lightning, or by artificial mean - artificial lighting is something man made like street lights, fluorescent lights and light bulbs.

The camera is the tool you use to record your photograph with. While many people buy a new compact camera every couple of years, and technology becomes better, the basic principles of photography are constant. The functions and tasks the cameras can perform may change, but light is light, a subject is a subject and the ultimate end result hoped for is a reasonable photograph.

The first step on the road to taking something even resembling a good picture is to know the camera you're about to use – its strengths, its weaknesses and its limitations. How do you use any tool skillfully? First, by getting to know fully how it works, and second by use – that means practicing with it to develop your skill.

There is always the option of turning to the manual. But when reading through a camera manual, it only outlines how to turn each function on and off. It doesn't give you any understanding of the principle involved, or what is happening inside the camera. Because the terminology is unfamiliar to you, or because you don't understand the concepts involved, the only option is to give up in frustration.

By going through some of the controls common to most cameras, especially compact cameras, (or 'Point and Shoot' cameras as they are sometimes referred to as, because that is how you use it when on automatic settings), and by explaining, in layman's terms, their function and how and why they work, you will get a good, solid photographic knowledge of how to use them properly.

Armed with these fundamental principles, you will be able to not only understand why a picture may not turn out the way you had planned but also to begin to work around your camera's specifications to produce consistently better photos.

2. START TO TAKE THE PERFECT PHOTOGRAPH

Whether you're a professional or an amateur, when it comes to producing a good photograph there are three things that you must get right:

1) Getting your subject correctly framed.

Framing is how you line up the particular subject matter that you want to take a photograph of inside the camera's view screen. In a correctly framed image you can see everything you want in your picture, (no point of a family portrait if no one has a head!)

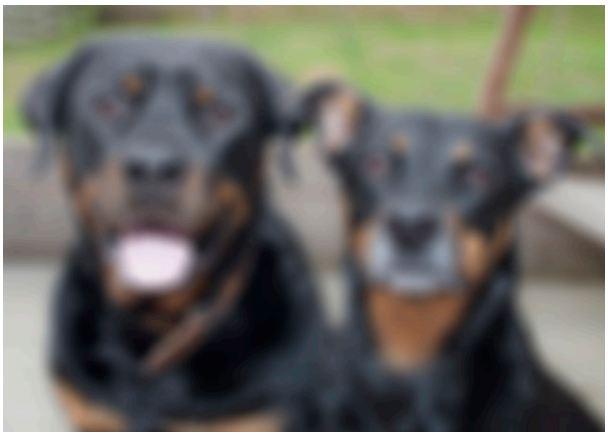
OOOPS

THAT'S BETTER

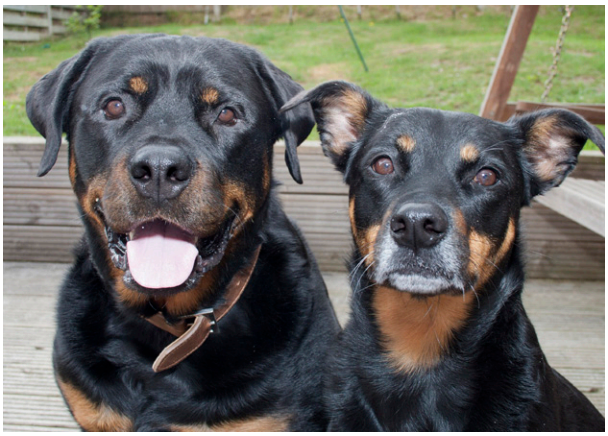
The view screen is normally on the back of a compact camera, where you look at the scene before you take the picture, but you can look through a small window called the view finder on some cameras.

Whichever one you use, make sure you can see EVERYTHING you want on your photograph and that it is inside the frame.

2) Getting everything you want in focus.



WHO IS THAT?

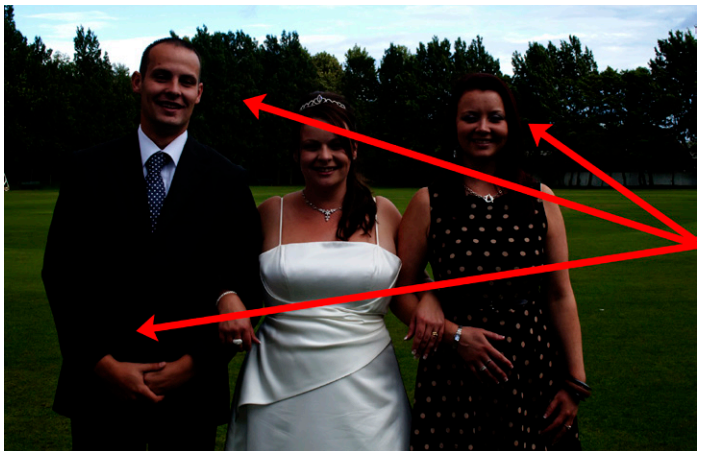


THAT'S MUCH CLEARER

3) Getting the picture correctly exposed.

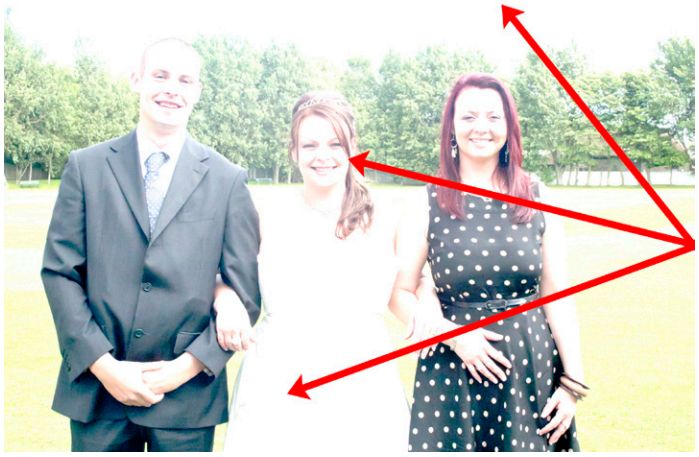
You will hear repeatedly about using the correct exposure. Here's why…….. Exposure will make or break a photograph. There's no point in having the greatest shot in the world if your picture is either too dark to make anything out or so light that all the detail's been bleached out to a white blob!

Here, the image is clearly too dark so it is **underexposed.**



There is no visible detail in the suit, the trees or in any hair. It may be possible to recover some details from the shadows with photo editing software but the final picture will look quite poor quality.

Here, the image has been given far too much light. It has been **overexposed.**



This has bleached out detail from the wedding dress, sky and much of the face detail.

The lightest tones, the highlights, have been destroyed, or 'blown', by letting too much light reach the sensor.

You cannot fix this. The detail from these areas has effectively been washed away by the excess light. There is no information left to retrieve.

Here is the correctly exposed image.

It's hard to believe it's the same picture when you compare it with the two above.

This comparison shows the importance of using the correct exposure for every photograph you take. It adds depth, detail and understanding to the stories you are telling.

Getting to understand what the basic tools of exposure are, and how they

work in relation to each other can be a little tricky to get your head around at first. It's not impossible to understand, but to begin with, it just might seem a little strange and upside down.

So what is EXPOSURE?

Simply put, the correct Exposure is how much light needs to reach the camera's sensor so that it can record a well-lit image, one that contains both a good record of the subject's details and has a full range of tones and contrast (blacks, whites and mid tones).

In other words, when you look at your picture, the picture looks bright and the subject is neither too dark nor too light.

There are no areas of deep shadow that should have detail in them (underexposed areas) and no areas so bright that all of the detail in them has been bleached out (overexposed areas – sometimes referred to as 'blowing the highlights).

When you press the shutter button using the automatic setting, the camera works out the best exposure based on how much light is falling on the sensor. It then decides what the best combination of aperture size and shutterspeed will allow the right amount of light in to create an acceptable exposure.

The camera then uncovers the sensor for whatever length shutterspeed and size of aperture it has calculated.

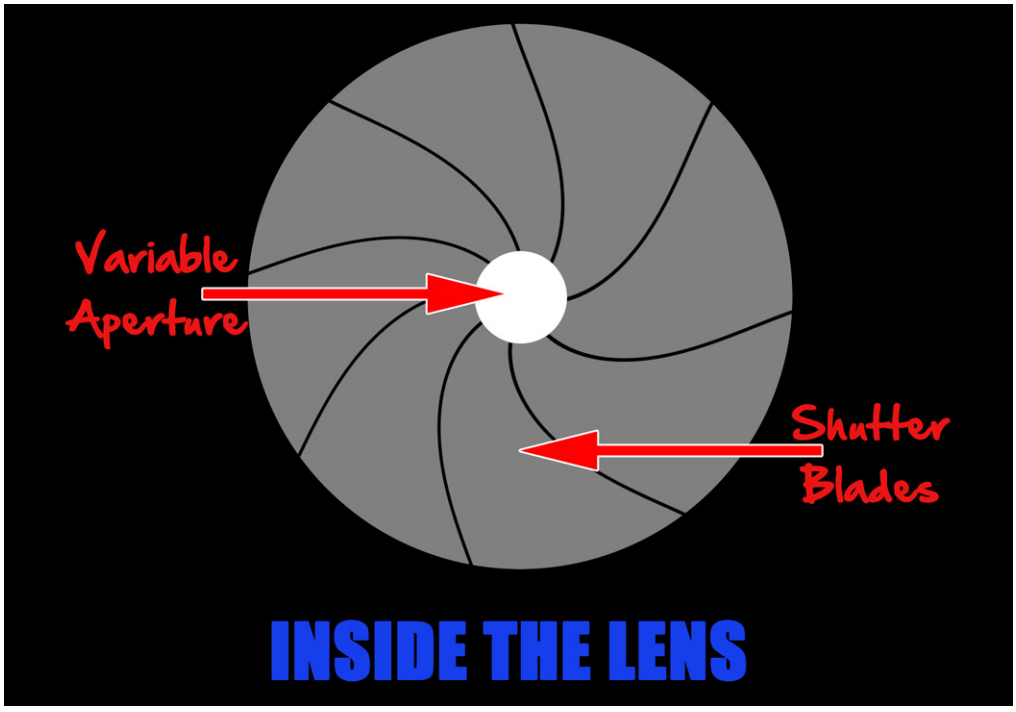
Once completed, the camera processes the information, and then records (writes) the final image onto the digital memory card in the camera. All in a fraction of a second!

3. UNDERSTANDING EXPOSURE
PART 1
APERTURE

The camera makes an exposure by using two separate elements, APERTURE AND SHUTTERSPEED. Let's take a closer look at each of those elements to see how they go to together to create a photograph.

APERTURE

The APERTURE is an opening (a hole or a gap) formed inside the lens by the blades of the shutter which allows light to enter the camera.



The Aperture can be adjusted in size to control the amount of light which is allowed to reach the film or digital sensor of the camera. It works like the iris in the eye – it can be larger when the light level is low to allow more

light in, or it can close up very small when it is very bright.

The apertures themselves have a size scale, called f-numbers, or f-stops. You may have seen something like f4.5 or f8 come up with the information on the screen of your camera when you're taking a photograph.

The f-stop scale looks like this….

f2.8	f4	f5.6	f8	f11	f16	f22	f32

There are other f-numbers at either end of the range, (some cameras have half or third stop settings in between these but we don't need to worry about those yet), but these are the most common f-numbers in use by cameras of all types. Your camera lens will have some or all of these f-numbers.

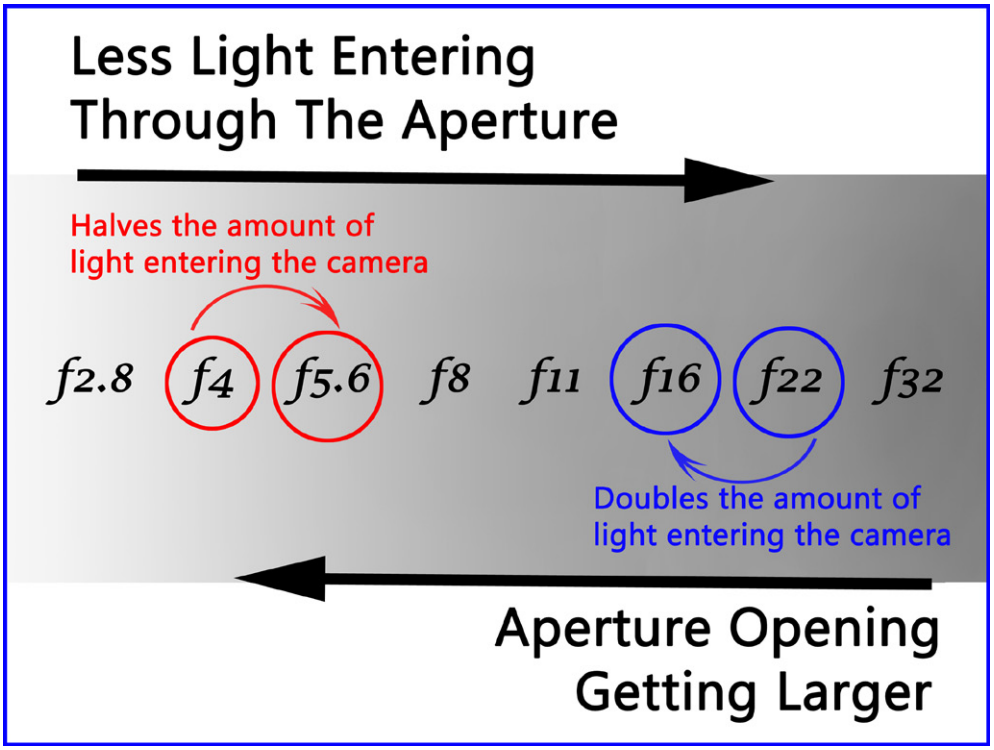
The next bit is often made more complicated than it needs to be. The fact is, the principle is very VERY simple!

Everytime you move from one f-number up or down to the next, all you are doing is either doubling or halving the amount of light going through the aperture.

That's it! It really is a simple a rule to understand.

You are either opening the aperture up one stop and letting twice as much

light through, which makes the picture brighter, or you are closing the aperture down one f-stop, cutting in half the amount of light going through, which makes the picture darker.



There is a little twist though – ***and it's this twist that can confuse people***.

The f-stop scale has fooled many into thinking that the bigger the f-stop number gets, the more light that is going through and so the bigger the aperture is. It actually is the other way around.

Because of the way the aperture size is calculated (much too complicated to explain here), as the f-number gets larger, it actually means that LESS light is going through the aperture and that the aperture is getting SMALLER.

So the **f-number f4 is a larger aperture (hole) than f22.** If you get mixed up, just remember to look at the chart above to help you out. You can even print it out and carry it around with you for a while until you get used to this idea.

Part 2 of Understanding Exposure will look at the role of SHUTTERSPEED in taking a photograph. This brief video may help you understand the components of exposure.

Understanding DSLR Camera Lenses

Your choice of lens has a big impact on your photos. A **wide-angle** (around 18mm-40mm) lens captures a wider angle of view, so more of your subject's surroundings will be in the shot. This is good for landscapes. A **telephoto** (over 70mm) lens captures a narrower angle of view, and less of your subject's surroundings will appear in frame.

Focal length also affects depth of field (DoF). A wide-angle lens will capture more DoF vs. a telephoto lens. This is why telephoto lenses are preferred to wide-angle lenses for portraits, as they further knock backgrounds out of focus to make people more prominent in the scene.

Prime Lens vs Zoom: A **prime lens** has one focal length, there is no zoom. They come in all focal lengths ranging from wide angle lenses to longer telephoto ones. If you're on a budget they're a great value for the money in terms of image quality.They're often smaller and lighter. **Zoom lenses** have a range of focal lengths in one lens. While more convenient because you only need to carry one lense, they are usually bigger and heavier.

Portraits Lenses

Nikon 50mm 1.8G

Canon 50mm 1.4

Nikon 85mm f/1.4

Wide Angle Lenses

Nikon 28mm f/1.8G AF-S50

Canon EF 17-40mm Wide Angle

Zoom Lenses

Nikon 70-300mm f/4.5-5.6G

Canon EF85mm Telephoto

4. UNDERSTANDING EXPOSURE
Part 2
SHUTTERSPEED

In this second part of understanding exposure, we're going to see how the SHUTTERSPEED works hand in hand with the Aperture to create the exposure for your photograph.

SHUTTERSPEED

Shutterspeed is a lot less complicated to explain and understand than Aperture, you'll be please to know.

Shutterspeed is the length of time that the shutter stays open to let light come through the aperture and fall onto the sensor that records your picture. It's like opening and closing a pair of curtains to let light in.

That's not as crazy as it sounds. When you take a photograph, the camera does 2 things:

- It opens up the Aperture to the right size for that exposure

- It removes a cover from in front of the sensor to allow the light to reach it. (This cover is sometimes referred to as the curtain)

Once the exposure time has been completed, the camera will then move the shutter back in front of the sensor, blocking any more light from reaching it.

Like Aperture, Shutterspeed has a set range of time intervals common to all cameras. Shutterspeeds are much easier to work out as they are simply fractions of seconds.

The range looks like this on your camera:

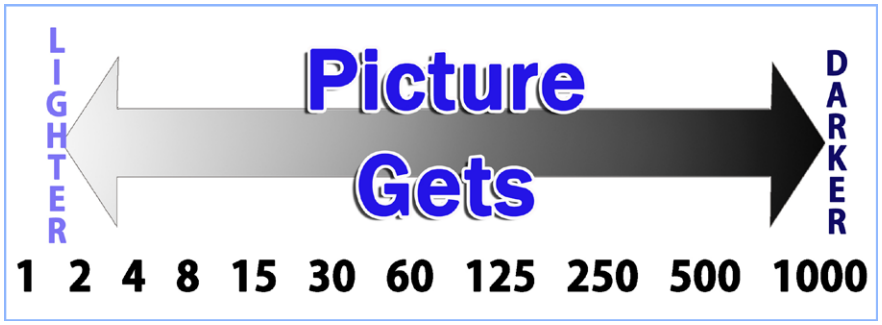
1	2	4	8	15	30	60	125	250	500	1000

But because Shutterspeed is fractions of seconds, it is sometimes shown like this:

1/1	1/2	1/4	1/8	1/15	1/30	1/60	1/125	1/250	1/500	1/1000

Like Aperture, there are speeds both faster and slower at each end of the range, and many cameras do have half or third intervals in between these full stops, but we'll just deal with the main shutterspeeds here.

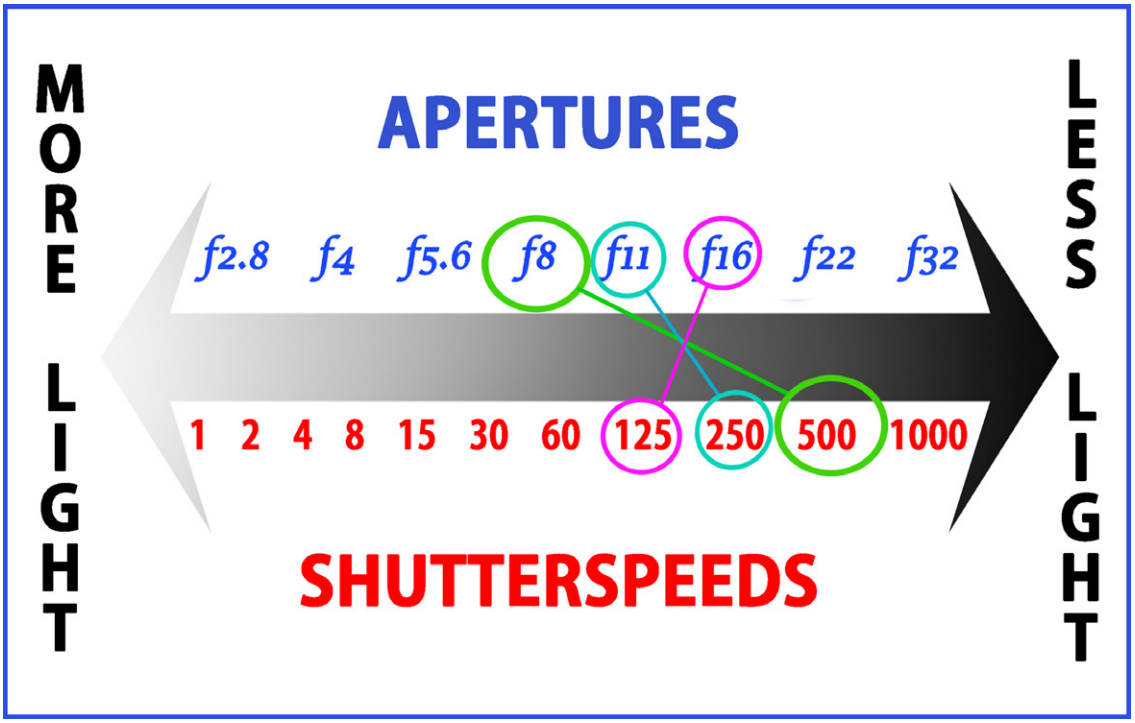
The scale works on exactly the same principle as the scale used for aperture. Every time you move from one Shutterspeed to the next, you are either doubling or halving how much light is being allowed in to the camera.



The scale works on exactly the same principle as the scale used for aperture. Every time you move from one Shutterspeed to the next, you are either doubling or halving how much light is being allowed in to the camera.

So rather than Aperture and Shutterspeed being random, independent functions of your camera, they both work on the same principle: When you move up or down either scale, you are doubling or halving the amount of light let into the camera.

Because Shutterspeed and Aperture are linked this way, you can easily work out new exposure settings which may suit your purpose better than the one the camera has chosen.



In the chart below all three linked sets of exposure will allow exactly the same amount of light into the camera. By halving one setting and doubling the other, the overall exposure will stay the same.

It's all about keeping the same amount of light entering the camera.

Consider this:
The number 20 can be made up by adding two numbers together.

You can add 7 and 13. Or 1 and 19. You could even add together something like 4.5 and 15.5.

As long as the pair of numbers make up the same amount, (a total of 20), then the result will always be the same.

The principle is exactly the same with exposure.

Whatever you do to the Aperture setting of the exposure has to be balanced out by doing the opposite to the Shutterspeed setting to keep the same amount of light present as the original exposure setting.

For example, you start with an exposure of 1/250th at f-8 but want to use a faster (shorter) shutterspeed of 1/500th.

Because you have decreased the light by 1 stop with the shutterspeed, you have to balance out that change by increasing the aperture size by the 1 stop to let more light in.

So changing the Shutterspeed from 1/250th to 1/500th means the Aperture's f8 would become f5.6 to balance out the change.

So your new exposure would be 1/500th at f5.6, but the photograph would

look exactly the same as if you had taken it at 1/250th at f8.

Using this principle, you can change the exposure combination by more than 1 stop, as long as you remember to change both the aperture and shutterspeed by the same amount in opposite directions.

So from a starting exposure of 1/250th at f8, all these exposure combinations would give the same amount of light exposure to a photograph:

1/1000th	at f4
1/500th	at f5.6
1/125th	at f8
1/60th	at f11
1/30th	at f16
115th	at f22
1/8th	at f32

Using this knowledge, together with other factors, you could:

- Create a greater depth of field using a smaller aperture
- Freeze action by using a fast shutter speed
- Create movement using a slower shutter speed.

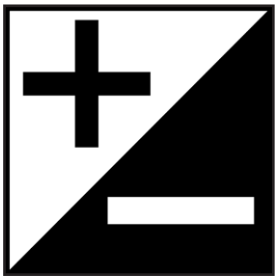
This video explains more about using shutterspeed for certain effects.

So now, when you look at your photos, you'll be able to spot if anything goes wrong with your exposure. But how do you correct it? Next I'll show you a really valuable setting on your camera – EXPOSURE COMPENSATION.

5. TAKE BETTER PHOTOGRAPHS BY UNDERSTANDING EXPOSURE COMPENSATION

An essential feature that has been added to virtually all compact cameras is something that their big brother, the Digital SLR, has taken for granted over the years – the ability to make an adjustment to the exposure within seconds.

This quick function is known as EXPOSURE COMPENSATION, and is often identified by a small icon, something similar to this :



Over the next two sections, we are going to take a look at just how useful this little control can be!

Exposure Compensation allows you to slightly adjust the camera's choice for the exposure, quickly telling the camera to allow more or less light in. But if you have your camera on automatic, why would it be necessary to do anything else yourself?

It is all to do with the way your camera works out the exposure. The camera makes its choice of exposure based on the amount of light coming through the lens. Under normal circumstances, this light is spread pretty evenly over the whole frame of the picture so the average exposure works well.

Problems start to appear in your pictures when the photograph you want to take is not evenly lit across the entire picture, and so has too much or too little light in a large part of the frame.

If this imbalance is in the background, then it can have a big impact on the exposure of the subject in your picture.

This imbalance can occur if there is a bright light source, like the sun or a light bulb, in front of you but behind the subject. The subject becomes very dark.

You get the same effect if a lot of the background is very light compared to the subject, like when you take a photograph with a window or open doorway behind the subject, or if a lot of the background is very bright or reflective.

The result again is the subject is too dark and it is spoiling the picture.

The opposite is also true.

If your subject is a much brighter object than the background, say it is a street light or a white object in the sunshine, then you will normally get a correctly exposed subject, but the background becomes very dark and you can struggle to make out any details.

A large area of dark background behind the subject which takes up a lot of the picture can cause your subject to become too bright.

This has the effect of making your subject look very washed out, with very little detail or definition.

In each of these cases, the imbalance has occurred because these bright or dark areas either form a large part of the image or they are significantly brighter that the subject matter.

Either way, this imbalance of light within the picture fools the sensor so that it tries to expose for the extreme light or dark areas.

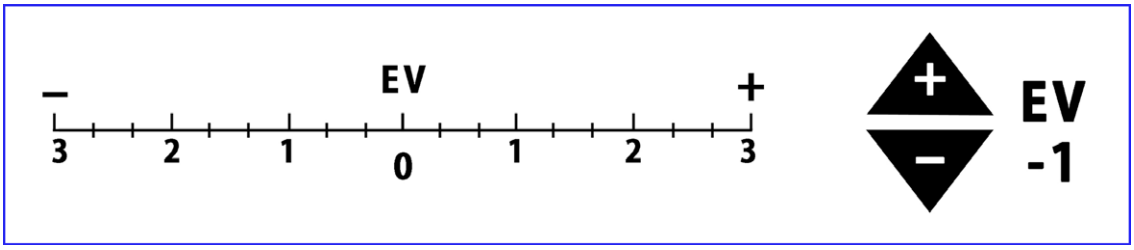
This results in the camera not giving the real subject the correct amount of exposure.

If this happens, then it's time to use the Exposure Compensation function to help rebalance your photograph.

Most cameras have a quick access to this function set on one of the controls on the back of the camera. This way, you don't have to start digging around inside the sub menus to find and change it.

When you activate the Exposure Compensation, you will most likely get a

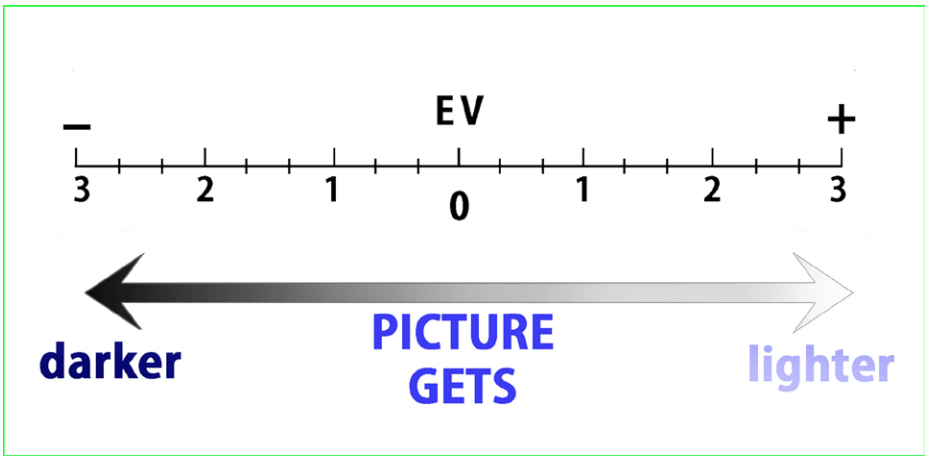
variation of one of these two scales on the back screen of the camera:



The EV scale is centered at zero and extends 2 or 3 stops in both + and – directions, graduated in 1/3rd of a stop intervals.

If you go up on the + side, you are letting more light in, so increasing the exposure. If you go up on the – side, you are giving the picture a shorter exposure, which lets less light in.

The EV scale uses the same principles as f-numbers and shutterspeeds. Each full stop in the + direction will double the amount of light allowed to fall on the sensor, so making the picture lighter, and every full stop in the – direction will half the amount of light allowed to fall on the sensor, so making the picture darker.



Try moving up and down this scale while watching the back view screen of your compact camera. You will see the way this changes the overall lighting on the screen and ultimately within your photograph, making it lighter or darker, depending on which way you move along the scale.

Consider this series of images that were taken using different amounts of exposure compensation.

Taking A Photograph Using Exposure Compensation

Starting at the centre picture, you can see the way the photographs get lighter as the positive (+) EV value goes up, and the pictures get darker as the negative (-) EV value increases.

By comparing the exposures like this, you can clearly see the effect of using Exposure Compensation has on the final photograph.

Is this a useful thing to know? Absolutely! It's probably the most useful and invaluable little tip you'll ever get.

What's more, once you get into the habit of using the Exposure Compensation on a regular basis, you will feel really proud of the results you get. And you will be able to spot occasions when you will need to use EV compensation BEFORE you go to take the photograph.

So what kind of situations would call for you to use Exposure Compensation in your photography?

Next we'll take a look at how to use Exposure Compensation to correct exposure problems AND how to start to use it to create interesting effects in your pictures.

6. CORRECTING YOUR PHOTOGRAPHS USING EXPOSURE COMPENSATION

There will have been times when you've taken a picture and the people are all really dark, but you can't understand why it has happened. Or you may have got the odd picture that is really bright and washed out. What went wrong?

These things happen because the sensor in your camera that takes the reading for the automatic exposure can get fooled by certain lighting conditions.

If you take a picture and there is a bright light source BEHIND the subject you want to take a picture of, that light source will send too much light into the camera.

Because the camera has no way to reason out what it is seeing, it has to rely on the information it can gather from the amount of light coming through the lens and falling on the sensor.

It then tries to average the exposure out whilst not losing any of the bright areas within the picture, so the camera ends up exposing for the light source and NOT the subject.

So when could that happen?

It could happen:

- If you take a photograph with the sun in front of you instead of behind you, (a sunset, or a group shot on holiday, for example)

- If you take a picture when someone is standing against a window

- If you are standing in the shade (like on a balcony or under a tree) and there is bright scenery in the background, like when you are on vacation and you are trying to get yourself and the view in the same picture.

- If there is a very light background, such as white stonework or a reflective surface like a mirror or glass

The opposite can happen too.

Taking a photograph with a large amount of dark background behind the subject forces the camera to over compensate for the darkness.

That causes the camera to let in more light than is needed to perfectly expose your subject. This gives you a photograph where the background is fine, but the subject you really wanted a picture of has been over exposed and is very pale with no detail.

This can happen:

- If you take a photograph when your subject is standing in front of a dark background.

Because the camera exposes for the dark area, the real subject gets too much exposure.

- If your subject is light in color and very bright compared to the background (like a wedding dress in the sunlight) you may lose the background altogether.

In this instance, the grasses in the sunlight are much brighter than the shaded background, so the camera has exposed for the bright subject, plunging the background into darkness.

Exposure Compensation is not a cure for a perfectly exposed photograph, but it is a very quick fix for a lot of exposure problems and produces a decent result in most cases.

BUT, and it is a big but, it can't be applied just to a small area in the picture to even it out. You have to remember, when you apply Exposure Compensation, EVERYTHING in the photograph will be affected by whatever change you make to the overall exposure.

Take the image of the bride and her mother. By reducing the exposure by 1, 1.5 and 2 stops using the EV control, the subjects have a better overall appearance.

-1 stop EV

-1.5 stop EV

-2 stop EV

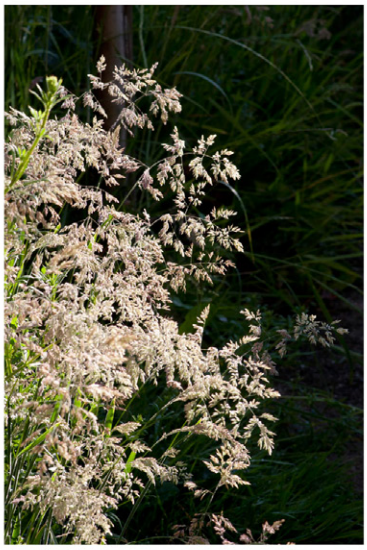
Although the background darkens slightly, overall the main subject matter has a much better exposure, giving a much more pleasing photograph.

By using the EV to reduce the exposure of the subject, there is now much more detail in the skin tones and other details. As the background doesn't contain anything important to the picture, it doesn't matter that much if it is too dark to make out any details.

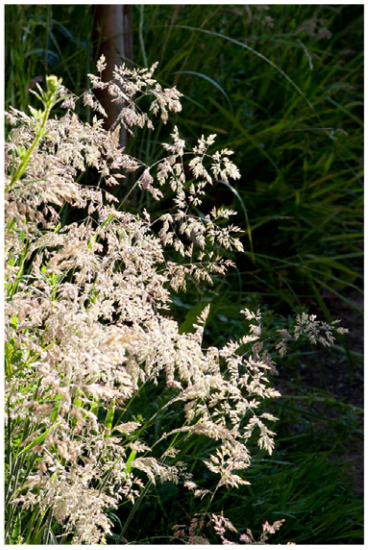
What happens if we need to adjust our exposure the other way to give the background some extra detail?

Looking at the photograph of the sunlit grasses, suppose we try to get some detail back in the background using Exposure Compensation.

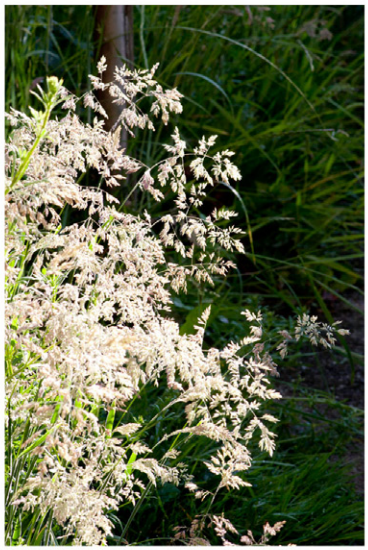
This time we need to give the photograph MORE exposure to help brighten up the shadow areas.



+1 stop EV



+1.5 stop EV



+2 stop EV

As the background is given more exposure, you begin to see some detail and texture beginning to appear, but notice too that the grasses are getting lighter.

With +2 stops of EV, the grass in the background is still dark but becoming quite recognizable.

However, the sunlit grass in the foreground is beginning to over expose.

This is about the maximum compensation to apply to this image, but what if we take it one step further and get the background to almost the right exposure?

You see now the subject grass is so bright that it contains almost no detail or any of the delicate purple hues of the original.

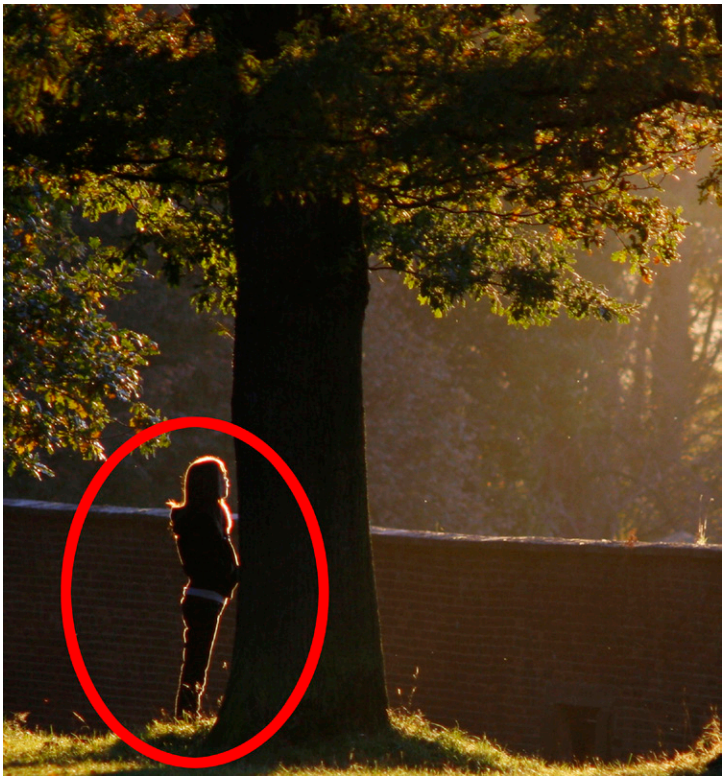
Because Exposure Compensation affects ALL the photograph, you need to get a balance you are happy with.

You may lose some detail from one part of the picture but gain it back in the subject matter of the photograph that you want. Only you know what part of the photograph is more important to you, so make sure that you get that part of your image correctly exposed.

But Exposure Compensation isn't just a quick fix for exposure problems.

Armed with the knowledge you have just gained, you can use it to create a few interesting or arty effects deliberately and not just by accident.

Like using backlighting to create a silhouette. Backlighting is a term used when you deliberately use a light source BEHIND the subject to light or highlight something about the subject.



The sun is a great light source to use for a number of effects. One of my favourite effects happens late afternoon. The sun can give objects rim lighting – that beautiful golden halo of light that traces around the outline of a subject.

Dropping the EV by 1½ stops, it has toned down the overall brightness, making the rim lighting on the girl really stand out.

Both the tree and the girl are starting to become silhouettes but because the sun is not directly in front of the lens, the camera does not get the full brightness of the sun and so there is still detail both in the girl and the tree.

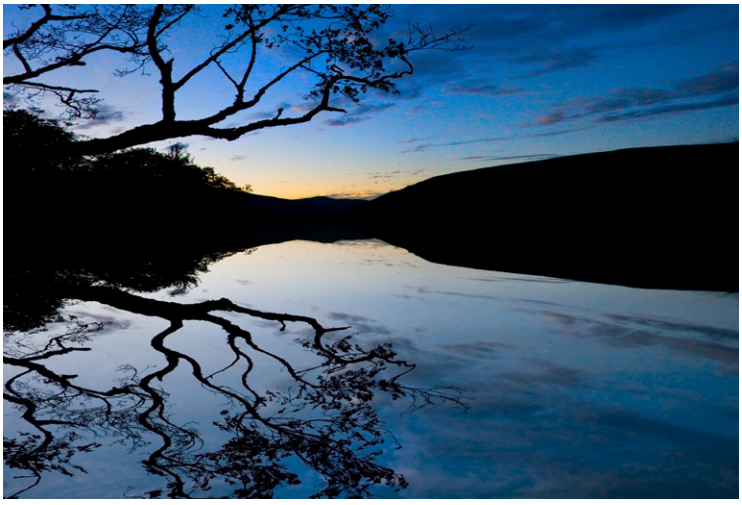
But you can use the sun if you want to create a silhouette deliberately. First, you need to be sure that the sun (or whatever light source you are using) is in front of you, behind the subject and that you can see it through the camera. Second, using your EV compensation, go down between -1 and -1.5 stops, depending on the effect you want.

This shot was taken at a concert using -1.5 EV.

It works well to isolate performers and produce an interesting mood.

Silhouettes work especially well when the light source is much brighter than the foreground.

Use the limitations of the sensor to your advantage to produce an interesting skyline when the sun is going down to behind it, or you could frame a landscape with dark tree branches to add mood and visual interest.



Because there is less light falling on the front of your subject, by exposing for the light behind the subject everything else in front will be virtually black, giving you deep, sharp silhouettes.

Don't be fooled by what you are seeing with your eyes. With the processing power of the brain, our eyes can adjust to help us to see details in an amazing range of highlights and shadows at the same time that a camera just simply hasn't got the sensitivity or processing skill to duplicate.

Once you get used to the way your camera sees light, you will be able to start experimenting with the look of some of your pictures.

Apart from silhouettes, you can use the difference in light levels to isolate and highlight your subject, especially if you can make the background go very dark.

If you place the light source very near to your subject and use your EV to give the subject the right exposure, you can really make your subject stand out.

You can achieve great results too using a small window.

Reduce the amount of light in the room by closing the curtains to a small slit, and then sit your subject in front of the gap. Using your EV scale, expose only for the subject and produce this stunning portrait effect.

With practice, you will be able to find and use the exposure compensation setting to enhance the look of your pictures quickly. You need never miss out on capturing perfectly those moments that are important to you.

So the next time you want to take a picture of someone standing in front of a window, you can dial in 1 or 2 stops on the + scale and amaze your friends by getting them perfectly exposed when their own photo will be too dark!

But Exposure Compensation isn't the final ingredient when it comes to ways of adjusting the exposure of your picture.

As well as being able to change the Aperture and Shutterspeed settings, there is a third factor – the ability to change the speed at which the sensor reacts to light.

This is known as the ISO and we'll look at that next.

7. ISO OR NOT ISO…THAT IS THE QUESTION

Most people leave their camera on Auto ISO basically because they have no idea what the heck this is!

Understanding ISO will give you another way to adapt your exposure to the kind of picture you want to take and give you more flexibility in your photography.

ISO stands for International Organization for Standardization (dull but true!). It is the speed that your camera sensor (or film) reacts to light, and it came about with film photography.

Using conventional film, the ISO speed of a film indicated how quickly a film reacted to light when exposed, in effect, how sensitive a film was.

Photographers needed a standard measure of this sensitivity so that they knew how much light to give the film to produce correctly exposure images.

A film is referred to as 'slow' or 'slower' because it needs to be exposed to more light to produce a photograph than a 'faster' film.

In effect, it is slower to respond (less sensitive) to light under the same conditions as a faster film.

So if you used both a fast and a slow film in the same camera to take an identical photograph of the same scene with the same lighting, the faster

film (higher ISO) would give you a quicker exposure time (smaller aperture, quicker shutterspeed or combination of both).

Confusingly, in the beginning, there were two main film scales, ASA and DIN. Both indicated how fast a film reacted to light, but both measured that sensitivity to light in a different way.

Rather like the way that we can use two different scales to measure the same temperature, Fahrenheit and Centigrade, or to measure the same distance, inches and centimeters.

Along came the International Organization for Standardization and ISO became the standard.

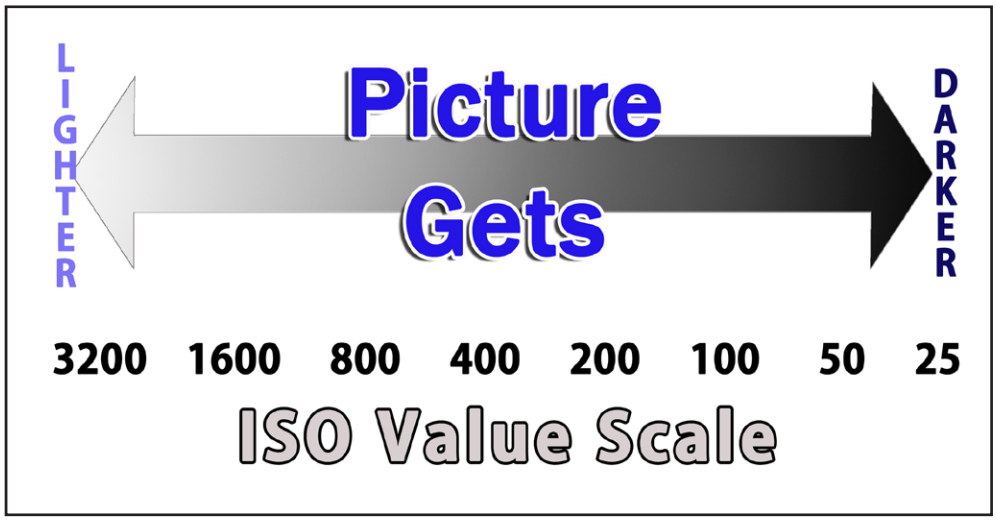
With film, if you wanted to change ISO you needed to put a new film with a different ISO into the camera.

Digital cameras have developed the ability to internally change the speed the sensor reacts to light without the need to add or remove anything. (This may add some extra exposure flexibility to digital cameras, but this flexibility comes with its own set of problems.)

Each ISO number is set to respond to a specific level of light. In a compact camera, the ISO range can run from 50 through to 3200 or even 6400 on some of the higher specification cameras, but an average range is 100 to 800.

Like Aperture and Shutterspeed, the ISO scale has been designed so that each time you move from one full ISO setting to the next, you are either doubling or halving the sensitivity of the camera (or film) to light.

The higher the ISO number, the faster the sensor reacts to light, so you need less light to take a picture.



The above scale shows the effect on your photographs if you were to keep the shutterspeed and aperture constant and only alter the ISO value.

ISO 200 is twice as sensitive to light as ISO 100. ISO 400 reacts to light twice as fast as ISO 200, but because of the doubling effect, ISO 400 reacts to light FOUR times as fast as ISO 100, (1 doubled = 2, 2 doubled = 4).

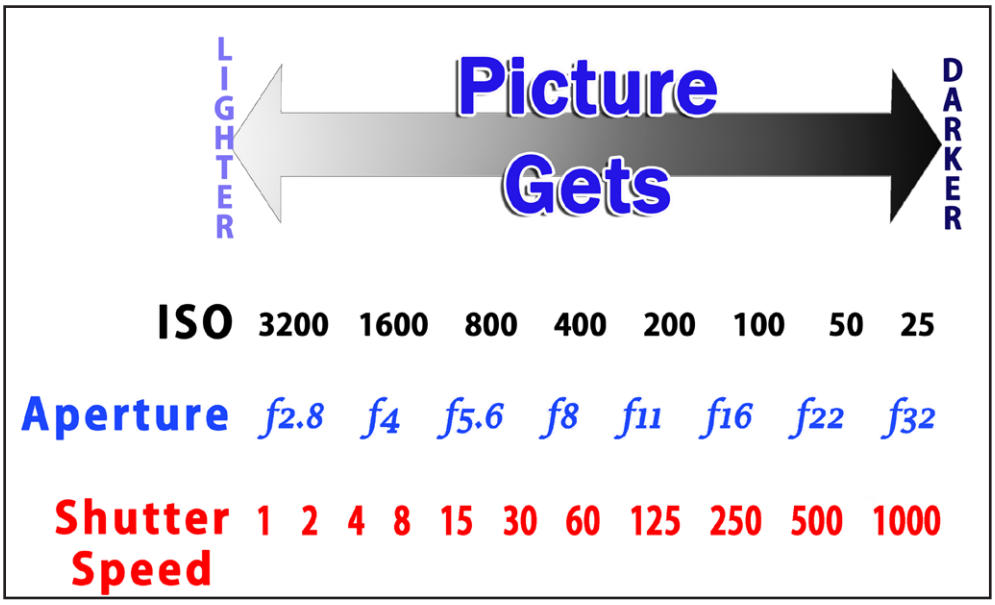
What this actually means is that your camera has another way to take pictures in different light conditions.

How does this relate both to the pictures you want to take, and to the other elements involved in exposure? ext we'll take a closer look at how you can use ISO to expand the capabilities of your camera.

8. UNDERSTAND ISO AND USE IT AS PART OF YOUR EXPOSURE

So far, we have discovered that there are three distinct functions on the camera that make a difference to the exposure – APERTURE, SHUTTER-SPEED and ISO.

These 3 functions were all designed to use the same rule when their scales were calibrated – moving a stop up or down any scale will double or half the light exposure of the photograph.



If you were to take a picture using the same sized aperture throughout, something that took 1 second to be photographed at ISO 100 would only take ½ second at ISO 200 because ISO 200 is twice as fast.

If you then used ISO 400, it would be twice as fast again, so it would only take ¼ second to photograph.

The ability to interchange values off one scale for another gives an incredible flexibility in the exposure of your photographs, and you can start to take more control over the way you capture your pictures in camera.

Why set the ISO yourself? After all, isn't that what the camera's paid for?

While it's true that the automatic camera setting does the job, sometimes it will choose an ISO slightly higher than is necessary, in order to give a slightly quicker shutter speed.

By choosing your own ISO, and starting to control exposure settings yourself, you can begin to control the quality and look of your final photograph.

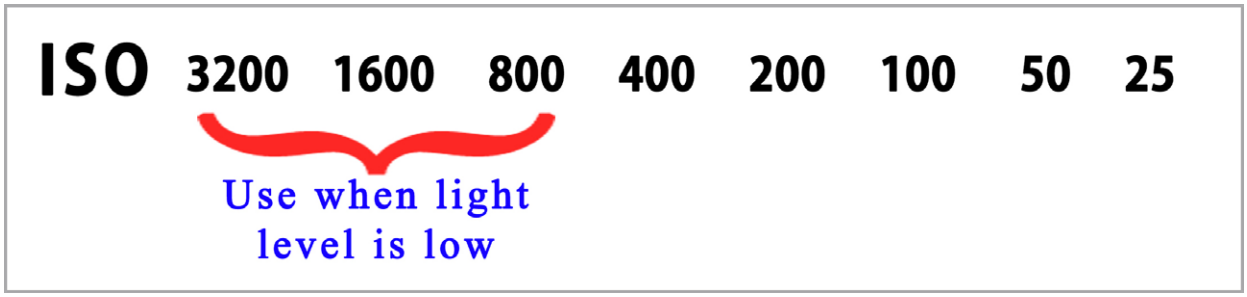
Adjust Your Camera Controls To Suit Conditions

Our eyes are fantastic. They are so good at adjusting to, and coping with, a wide range of light levels, that we don't always appreciate the restricted way that the camera sees.

Take dusk. Our eyes are constantly adjusting to the change in light.

They do it so well that we don't register just how dark it is, but for a camera, there simply isn't enough light to take a picture at a high enough shutter speed to avoid things like camera shake or motion blur, both of which give an out of focus picture that lacks detail and definition, or the picture is just too dark.

If it is not possible to change the aperture, one way to help the camera is to change the ISO setting.

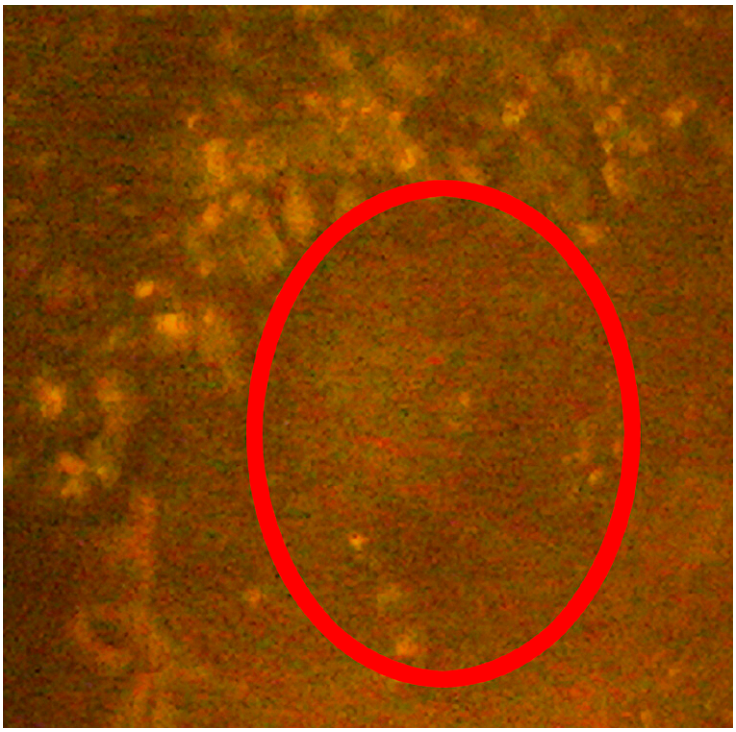


By setting a higher ISO, you are adjusting the camera's sensitivity to light to help the camera be able to take a better picture.

Turning the ISO up can also help do away with the need to use the built in flash.

A faster ISO will let you use a quicker shutterspeed and let you take more subtle and unobserved photographs.

The way the sensor increases the ISO is the major downside. While the higher ISO values react to light faster, you start to introduce more 'noise' into your pictures.



Noise is the little specks of colour that appear in a photograph, especially in the shadow detail, where the colours appear in visible clumps of colours.

This color noise gives a distinct mottling effect when printed out, but that is the compromise you make. You sacrifice some image quality to be able to take the photograph more easily.

There will be times when you are out and about and you come across a lovely evening scene that you want to photograph.

If you wish to minimize the amount of noise present in a night photograph, keep the ISO down to 100-400 and by putting the camera on a tripod, you can get a nice crisp, relatively noise-free image.

But what if it is one of the many times you aren't carrying a tripod with you?

There is almost always something to hand that you can rest your camera on, a solid surface such as a wall or ledge is ideal, but just by supporting your hands and camera on a fence or tree branch, you can minimize the camera shake and still take a relatively long exposure at a low ISO.

This shot was captured at ISO 200 without a tripod, by using a metal fence post to rest the camera on, so that there was no camera shake even with a shutterspeed of ½ second.

But you may want to introduce noise at some point to add mood or give a film grain effect to some of your black and white shots.

Here, converting a foggy night shot taken with ISO set to 1600 had converted the noise pattern into a grainy look which gives the final black and white image a moody slightly sinister feel.

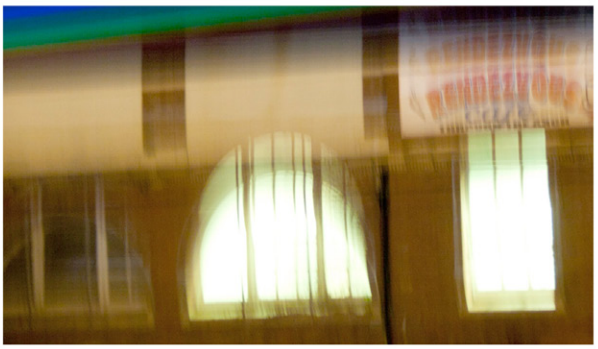
Manipulating Aperture, Shutterspeed and ISO For Effect

Once you understand the relationship between APERTURE, SHUTTERSPEED and ISO, you can start to explore a range of effects that can add new dimension and depth to your images.

Let me show you a few ways you can do this.

Movement is shown in photographs by a degree of blur shown in an area of the picture.

You have probably experienced camera shake at one time or another, which blurs the whole of your photograph and is caused because the camera was moved as the picture was taken.



Although caused by movement it is not a good effect because it destroys the image and makes people's faces unrecognizable.

To capture movement in a picture, only the object that is moving should be blurred and that means using a shutterspeed long enough to show the subject moving.

By keeping the ISO low, (and/or the aperture small), you can force the camera to use a longer shutter speed, letting you deliberately capture movement and motion.

A low ISO in this shaded spot has allowed an extended shutterspeed of 1/10th.

This, in turn, has given the water a misty, soft appearance.

Longer shutterspeed times can show speed or movement off to great effect

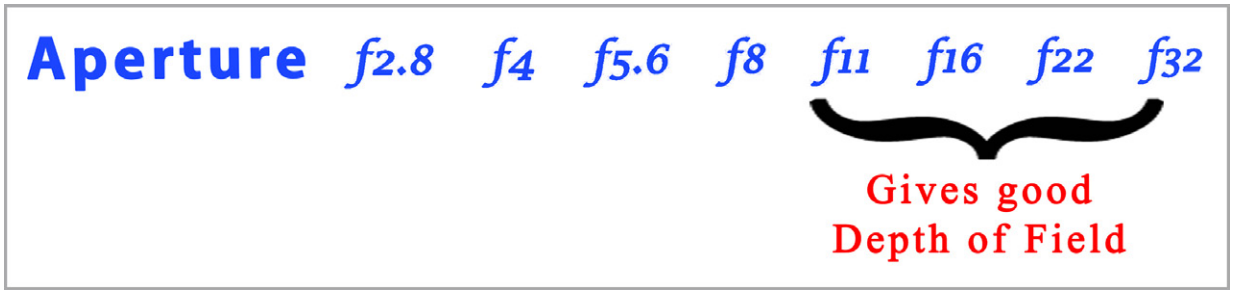
But what if there is too much light around to be able to get the pictures you want? For example, a very sunny day at the beach or in a sunlit building with white walls.

We know that too much light will over expose a photograph. It makes everything become ghostly and washed out.

Reducing the ISO setting makes the camera's sensor less responsive to light, so the camera is able to cope better with this abundance of light.

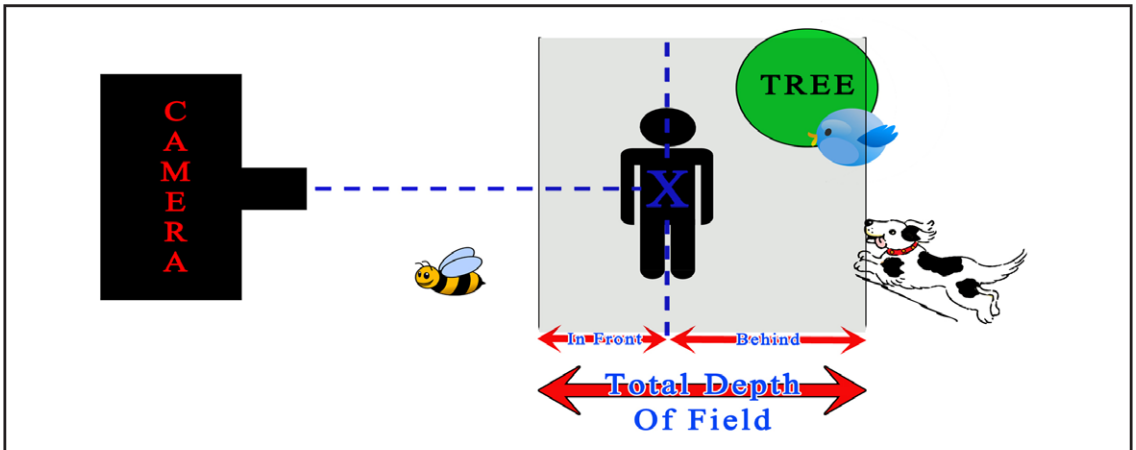
Consequently, it will be able to take a better exposed image.

Another reason you may want to manipulate your exposure settings is to control how much of your picture is in focus at any one time. You can do this using the Aperture.



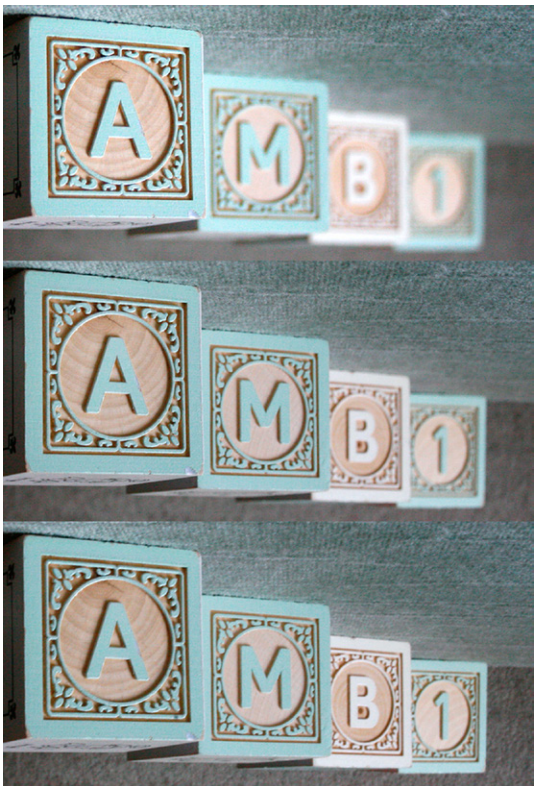
Depth of field (DoF) starts with the point in your picture that you focus on.

With every aperture size, there is a certain distance in front and behind the point that you focus on that will also be in focus. There is always more in focus behind the subject than there is in front (as you can see in the diagram below).



Depth of Field - When you focus on a point (X), depth of field is how much more of the subject is in focus, in front of and behind that point.

The smaller the size of Aperture you use, the larger the depth of field gets. So by using a smaller Aperture, more of your picture will be in focus.



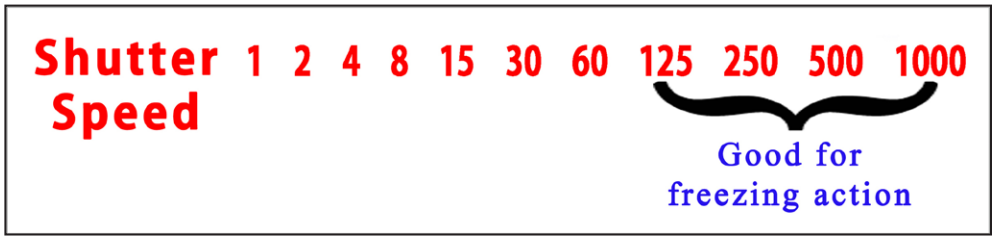
You can use a shallow DoF to isolate your subject from the background, making the background blurred (out of focus) by using a large aperture.

By making the Aperture progressively smaller, more of the subject comes into sharper focus.

Using a really small Aperture gives a depth of field which will allow the whole subject to be in focus from front to back.

Depth of Field varies with how close your subject is to the camera, what lens you are using and with how much zoom or magnification you are using, but by playing around, you will begin to grasp the effect Aperture has on DoF.

What if you want to photograph something really fast? Being able to select a fast Shutterspeed is a really good advantage.



Subjects like these need a quick Shutterspeed to freeze the action:

SPORTS

MOVING TRANSPORT

ACTIVE CHILDREN

WATER

Having the flexibility to alter all three exposure elements of Shutterspeed, ISO and Aperture helps you tailor your exposure both to the shooting conditions AND to suit your creative desires.

So next time your camera doesn't quite give you the exposure for the photograph you want to take, don't be afraid to give it a helping hand.

Use the relationship between Aperture, ISO and Shutterspeed to take back control over your pictures and get what you ACTUALLY want.

After you've put all this work in, you want to look at your printed photos and see an improvement in the quality of the finished image.

What if your pictures look great on screen but print out badly. Why could that happen? Could it have something to do with the size of your picture?

Next, we're going to look at why things are not always as they appear to be. We're going to look at Picture Size.

9. DOES YOUR PICTURE SIZE *REALLY* MATTER?

Many people mistakenly go for quantity over quality when taking their digital photographs and use the 'Less is More' principle for image quality and picture size. This may get them more pictures per memory card, but it comes at the expense of the final quality.

Quality should always win!

How can your camera settings have an effect on the quality of your printed photographs?

People often mistake picture size and image quality for the same thing.

Although they are linked, they are very different. Because of this, people tend to overlook one or both when setting up their camera.

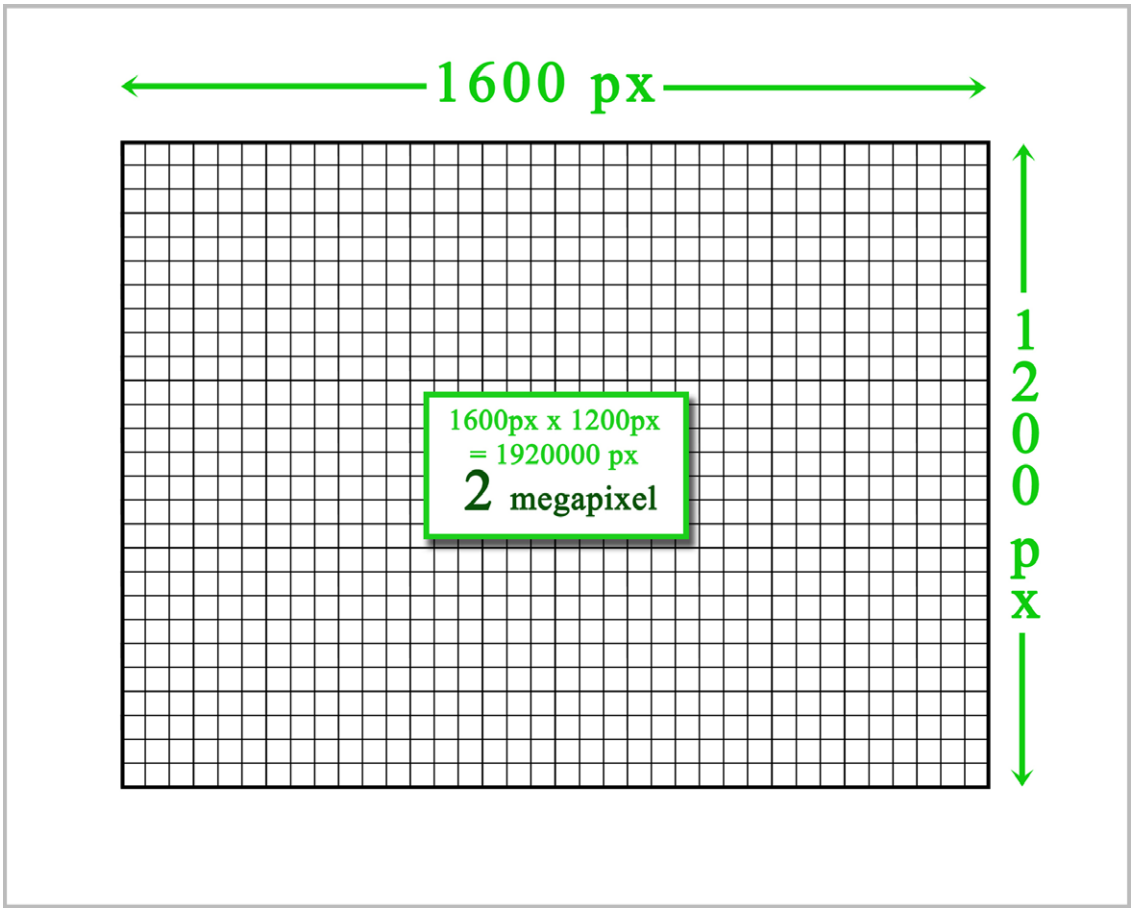
Or they think that because they don't see a problem with the picture when they look at it on the small screen of the camera, it doesn't make much difference to photographs if they lower either or both settings.

They succeed in cramming as many pictures on the memory card as they can but it's only later that they can see the effect doing this has on their pictures. So why is it wrong?

Because Picture Size and Image Quality have a direct effect of photographs when they're printed out!

Over the last two sections, we'll be taking a look at two important but often overlooked image settings. The first, PICTURE SIZE, we'll look at now. The second, IMAGE QUALITY, we'll take a closer look last.

Picture size is not how big the photograph is when you print it out.



Picture Size refers to the actual dimension size of the picture you take with the camera.

For example, taking a picture with the dimensions 1600x1200 is 1600 pixels wide and 1200 pixels high, giving a total of 1920000 pixels (2 megapixels) making up the final image.

When you select the Picture Size setting, the camera will show you several size options. Shown in pixels (the little building blocks that make up the image) as WIDTH x HEIGHT, e.g. 4000x3000, there is sometimes a letter L, M, or S next to each option to indicate that this or either a Large, Medium or Small picture size.

Your camera offers you the option to increase or decrease the number of blocks (pixels) that make up the image, which in turn changes the number of pictures you can store on your memory card.

So what Picture Size setting should you choose?

Your photograph is like a jigsaw made up of lots of small square pixels (px). You have a choice of how many squares you use to make the picture up.

Let's create the same image in two pictures, but use fewer pixels in one.

IMAGE 1
This version uses 600x600 px
to create picture

IMAGE 2
This version uses 200x200 px
to create picture

At first look, there appears to be very little difference between the two pictures. Image 1 looks a little crisper along the line edges but both appear to be quite acceptable versions of the image.

You can see what the picture is meant to be and you can make out all of the detail.

But which of these pictures ACTUALLY contains more detail? If we wanted to print these images out to the same size photograph, what would happen?

Here is a portion of each image enlarged to the same size.

IMAGE 1
This version uses 600x600 px
to create picture

IMAGE 2
This version uses 200x200 px
to create picture

Already, Image 2 is showing the effect a smaller picture dimension has on a printed photograph.

Because Image 1 uses more pixels to build up each part of the picture, there is more detail present, so the lines which give the outline around objects and detail are crisper and more defined.

Image 1 is still a perfectly acceptable picture but Image 2 is getting to the stage of being too blurred.

That is only after one very small enlargement. What would happen if the picture was of a special occasion, or a lovely holiday scene that you wanted to place in a frame? What would happen if you tried to get a reasonable size picture to print out?

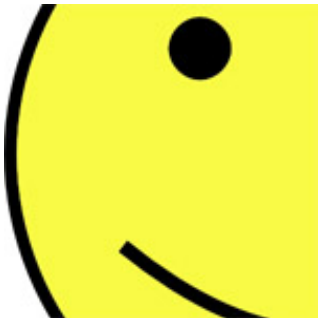


IMAGE 1

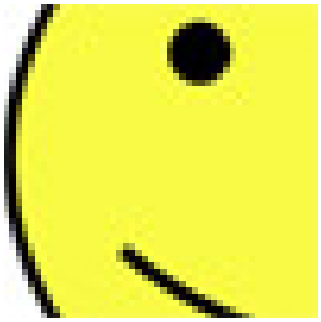
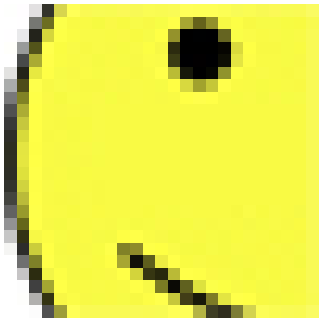
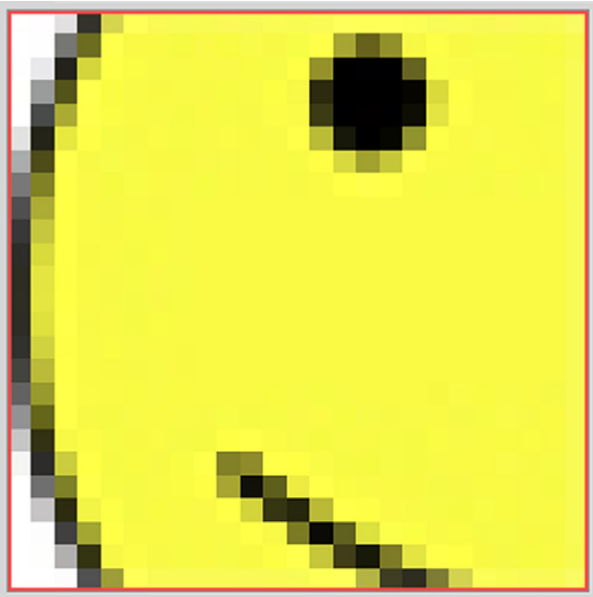


IMAGE 2



Now you can see that the lack of detail in the smaller picture size of Image 2 has made the image unusable.

When printed out as a photograph, Image 2 would have a massive amount of PIXELATION.



'Pixelation' is when you see the edges of the pixel building blocks when you view the picture either on screen or printed out in a photograph.

It happens because you are trying to view or print the image at a size that is too big for the dimensions of the picture size.

The way the computer screen enlarges the image to fit the size you ask for is by making every pixel in the image bigger.

When the pixels are enlarged past a certain point, the square pixels become visible, which you see as jagged lines, not the smooth edges objects should have.

There is some remedy by using software like Photoshop to increase the Picture Size, but this does NOT add detail in.

The software increases the size by spacing out the pixels already present in the photograph and then tries to fill in the gaps with the best match to the pixels around that gap.

As long as you don't try to make a really small picture too big, you end up with a reasonable result. The downside to it is that it does make the photograph a little 'softer', less defined, but usable. So whilst reducing the number of pixels in your picture size allows you to get more pictures on the

memory card, the images contain less detail and definition which produces inferior quality photographs.

Is it worth losing all that information when you consider the amount of space that a spare memory card takes up? It won't cost anymore to use a larger Picture Size but the memories you will get to keep are priceless.

My advice, when taking any photograph, would always be to take the BEST quality picture you can. Set your camera to the highest quality settings you can.

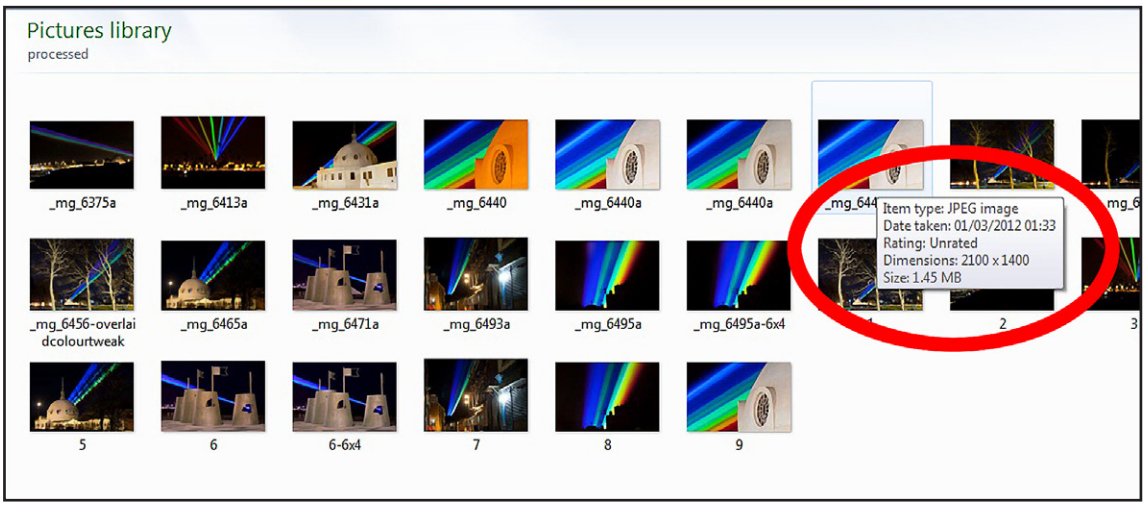
Who knows when you may take a stunning shot worth millions?

What is the difference between Picture Size and Image Quality? We'll find that out next.

10. THE IMPORTANCE HIGHER IMAGE QUALITY HAS IN BETTER PICTURES

When choosing a digital camera today, most people will take into consideration the megapixel size of picture the camera is capable of taking, but very few give any attention to what happens to that image after they have pressed the shutter.

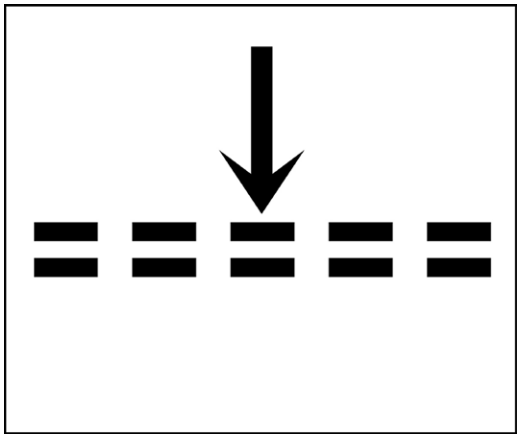
Although your camera has a certain Mega-Pixel rating, you may have noticed that when you store the pictures on your computer, the picture file size is a lot smaller compared to the camera specifications when you took it?



The file may only be 2 or less megabytes, compared to the 8Mb photographs your camera is supposed to take. Why does that happen?

When you take a picture, your camera processes the image by converting the light containing the image into digital information and stores that information on the memory card in a little file, normally as a JPEG picture. (JPEG is the universal file format for pictures, and the most common way for a digital compact camera to produce images.)

One of the settings vital to how your camera will process that information is IMAGE QUALITY as it dictates the processing and storage rules for the final JPEG image. It is normally shown as an icon similar to this.



Everytime you press the shutter, the processor in your camera has to convert the image of what your camera sees into a different format – small pieces (bytes) of digital information.

This digital information is stored as an individual 'file' on the memory card, which can be read and converted back into a digital image either by a computer or printer at a later date.

It's a bit like the mechanics of turning speech into written text. Your brain acts like the camera's processor, allowing you to convert what you hear into words that you can write on a page.

Your brain can then decipher the written words at a later time and allow you to convert them back into the original verbal sound that makes sense to someone else.

To convert an image to a JPEG file, the processor first has to convert the image into digital information. It converts it to an image made up of digital pixels.

It then has to store the file on a memory card.

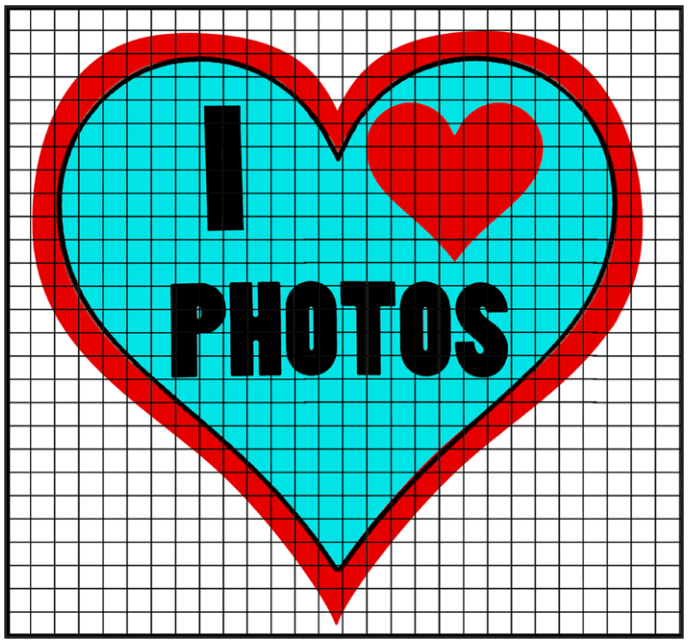
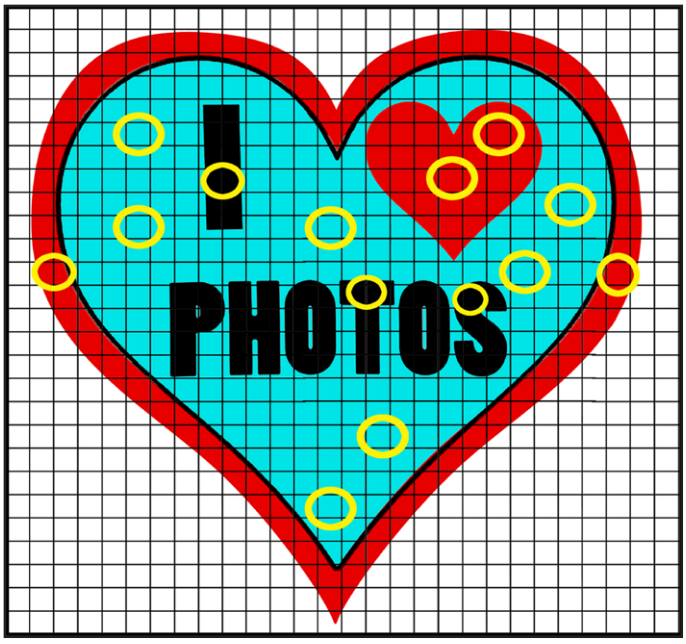
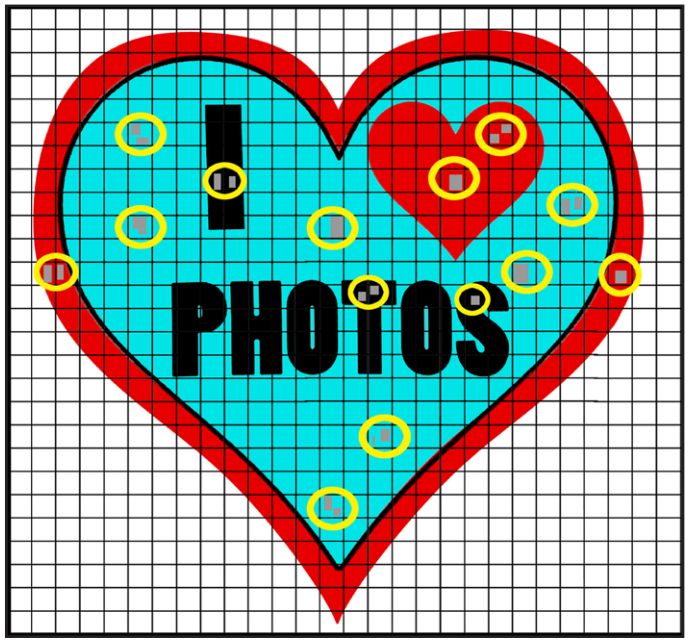


Image Quality tells the processor how big or how small to make the stored file. To store the file, it has to squash, or COMPRESS, the file down by taking some bits of image information out.

To do this, it performs some rather complicated steps on each pixel.



The processor removes various amounts of colour and brightness information from different pixels until it can reduce the overall size of the stored file down to the chosen Image Quality size, but it doesn't always remove the same amount of information from each pixel.



The information that is removed from the pixels chosen is then discarded – that is, it is deleted out of the stored image permanently. The smaller the size you tell the camera you want, the more information it removes from your picture before storing it.

It's a bit like telling it you want to store it in a small, medium or large box.

The bigger the box you ask for, the more of the original information you keep and so the better the quality you keep in your photographs.

But beware! Once deleted, this original information cannot be restored.

When you re-open the stored file to view or print the image, the computer makes a decision on what information to put back in that is based on the limited amount of information remaining in each pixel. So small changes in colour and detail will have been lost because the computer has nothing to tell it what was there before.

You may find your camera has two or three different setting – Fine, Medium, Small/Normal. These give a misguided impression that the lowest image quality will still produce a good acceptable image, but this is not necessarily the case.

Let's go back to the analogy of converting spoken words into written words.

Sentence (1) has been condensed using the camera's compression criteria for producing Fine/Best setting for Image Quality. Try to convert the written speech back to a complete verbal sentence.

(1) Ther wil b som los of detal, bt yu cn mak out wht is beng rcrded.

Even though some of the sentence had been deleted out and you only had the other letters to guess what the missing letters were, you could probably still make out most of the sentence and get the meaning. (If not, the answer's at the bottom of the last page!)

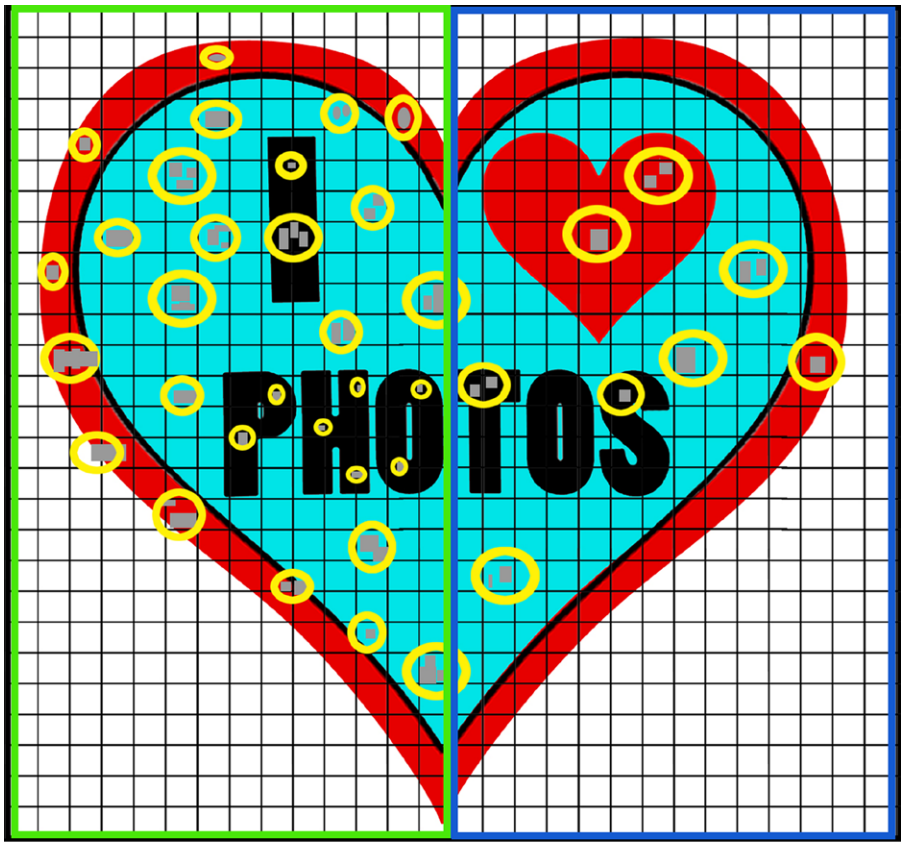
However, if you decide to use a lower Image Quality setting, more letters of the original sentence will be removed before writing the speech down.

This would result in a sentence looking like option (2). See how much of it you can read.

(2) Tn i wl tk ot mr f te ptgh t rdce i dn

(If you can't quite make the words out, the answer is at the bottom of the last page.)

It was more difficult for you to make sense of the second sentence because there were fewer points of reference to associate the words with.



Saved with Low Image Quality Saved with High Image Quality

Image quality is the same - the smaller the image quality you ask for, the less of the original remains, and the bigger the gaps for the computer to rebuild so as to convert the file back into a visual image.

To convert the digital file back into a photograph, the computer has to make an educated guess at what information originally filled the gap taken out by the camera processor, a bit like trying to put the missing letters back into the sentence.

The more information the computer has to put back in, the more impossible it becomes to accurately put back all that was taken out. This results in the loss of fine detail and delicate colors.

If the image quality is too small, then your image becomes unusable as a printed picture. It may look ok on a computer screen, but a screen requires far less information to display a picture compared to printing a picture out.

On a computer screen, you see 72 dpi (dots per inch) but it requires 300dpi to print a good photograph.

An inch square of photograph contains more information than almost TWENTY square inches of screen image.

That is why, when you try to print a photograph that has been compressed too much there simply isn't enough original information to fill in all the compression gaps and so the finished photograph looks rough with very little detail or definition.

So never compromise quality for quantity. It is far easier to take the quality out than to put detail and quality back in once it has been deleted. Always try to use your camera on the best settings. If needs be, get a larger memory card, or carry a spare!

So now that you're armed with new knowledge on how to improve your photography, try to go out as often as you can to practice your new skills.

Book Recommendations

If you want to learn more about digital photography or Lightroom, I recommend you check out the following books:

Digital Photography

Click! How to Take GorgeousPhotos of Your Kids

Perfect Portrait Bundle: Making the Shot, Taking the Shot, Striking the Pose

Living Landscapes: A Guide to Stunning Landscape Photography

Lightroom Books

The Adobe Photoshop Lightroom 5 Book: The Complete Guide for Photographers by Martin Evening

The Adobe Photoshop Lightroom 5 Book for Digital Photographers by Scott Kelby

Be sure to visit http://valeriegoettsch.com for more free Lightroom tutorials to learn how to organize, process and enhance your images. Plus get great weekly coupon codes for photo books, prints and gifts.

If you have friends who love taking photos, **feel free to forward a copy of this ebook to them.**

Answers to the missing letters (see page 62):

(1) There will be some loss of detail, but you can make out what is being recorded

(2) Then it will take out more of the photograph to reduce it down