iCAMERA

master your digital camera

iPHOTOGRAPHY

Contents

Welcome!

Thank you for downloading iCAMERA

It looks like you're ready to take control of your digital camera and start taking some amazing photos.

This book has been designed to help your with one thing - and one thing only - to understand your camera. Whenever we ask photographers what are they struggling with, one of the most common answers is *'I don't fully understand my camera'*. Does this sound like you?

If so, don't worry. Over these few short chapters we're going to explain, clearly, quickly and concisely how to take control of your DSLR camera so you can become more confident that the settings you choose are the right ones whenever you take a photo.

Your Online Photography Club

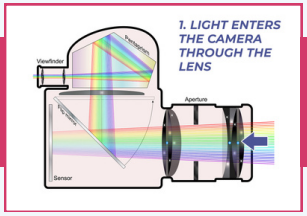
This book has been compiled by iPhotography. We've helped over 110,000 photographers, all over the world, how to master their camera and capture incredible photographs.

Through exciting online courses, monthly memberships and photo feedback we offer personal, practical and friendly help to make sure you're becoming a better photographer everytime you take a shot.

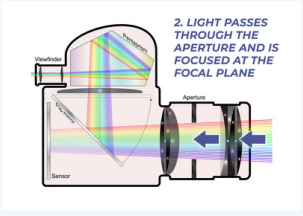
We've got lots of **photography** and editing **courses** to choose from.

How Does a Camera Work?

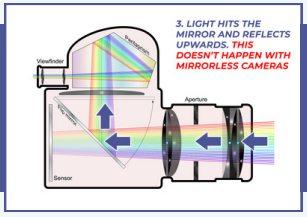
So let's start off by discovering how a digital camera actually works.



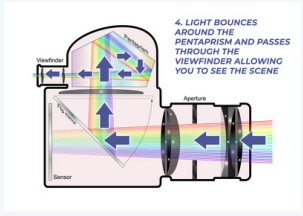
1. The light illuminating your scene bounces off your subject and travels towards the camera. It enters through the front of the lens.



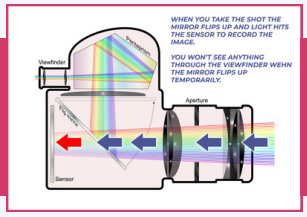
2. The amount of light that is allowed to go through the lens is regulated by an aperture. The aperture hole can be made bigger and smaller depending on how much light you need to correctly exposure the scene.



3. All of the incoming light is funnelled towards the focal plane which brings everything into focus. After this, it bounces upwards off an angled mirror. 'Mirrorless' bodies use a different process to allow you to see the shot on the back of the camera.



4. The upwards bouncing light travels through a pentaprism and out of the viewfinder on the back of your camera. This allows you to see the scene you're shooting before you take the photo.



5. When you press the button to take a photo, the mirror flips up to reveal the digital sensor, hidden behind the shutter doors, which open and allows the incoming light to be captured and digitally turned into a photo.

The Camera Dial

Most digital cameras will have some type of dial on the top. While there's no problem with shooting in auto, it's worth knowing how all the other camera dial modes work and when to use them.

AUTO MODE is the mode that most beginners opt for. The camera will choose all settings based upon its light meter reading which is taken milliseconds before you take a picture – so quick you won't even notice. Sometimes it may be symbolised by a simple green rectangle.

This icon is your **MACRO** function, which will allow you to unlock an extra focus range on your camera so you can get in nice and close to capture small details, ideal for floral, insects and abstract photography.

For the **LANDSCAPE** lovers, many cameras have a dedicated mode for bringing out the best in a scene. This option will automatically make the camera focus on as much of the scene as possible by using a wide depth of field. The camera may also use a slower shutter speed in some cases to compensate for the small aperture, so it's always worth using a tripod to avoid blurred photos.

Sometimes called **NIGHT** or **PARTY** mode, they both mean the same thing – its suitable for working in low light. Night mode forces the camera to use slower shutter speeds knowing there isn't much ambient (natural) light available.

It will fire your flash automatically to help with the exposure, so expect some quirky light trails along with freeze framed motion.

The Camera Dial

SPORTS MODE is ideal for action and rapid movement. It will do the opposite to night mode and make the shutter speed faster to ensure any motion is frozen still, and no motion blur occurs.

The camera will widen the aperture if necessary, to compensate for the fast shutter so you'll get an even exposure. The camera may implement a tracking focus mode so it follows the action, but this depends on the camera.

PORTRAIT MODE is one of the more common features on the camera dial. Obviously it's suitable for stationary humans and animals (if they're moving sports mode may be better).

The aperture will be widened significantly to reduce the depth of field, throwing the background out of focus and making your subject the obvious feature. Use it for formal portraits rather than candid shots, which can sometimes end up out of focus if there is movement.

The **FLASH** will not fire under any circumstances, ideal if you are trying to be discreet with some street photography. This mode is not common on many camera dials nowadays as it's normally included within the menu system under the general flash settings.

SCENES is an option for shooting specific specialised situations (sometimes called creative modes). The choices will vary brand to brand, so it is hard to detail all of them.

You may see options such as Candlelight, Autumn Colours, Dusk, Toy Camera Effect, Miniature Effect and High/Low Key. The camera may directly apply colour filters to your LCD screen so you can see the effect live.

The Camera Dial

MANUAL MODE The power is in your hands with manual mode, the camera will sit back and let you make all the decisions over aperture, shutter speed and ISO.

It will not help you balance the exposure if you get your settings wrong, but learning this function opens up a whole world of fantastic creativity!

APERTURE PRIORITY It's like a shared responsibility these next two options – part of the decisions will be made by you; the camera will help you out with the rest.

Aperture priority allows you to choose the size of aperture, but is shutter speed adjusted to give you the best exposure possible. It's great to use if you want to learn about aperture, but without the burden of other settings. The ISO will also change if it's set to AUTO ISO, otherwise, it won't.

SHUTTER PRIORITY If you understand aperture priority, then shutter priority will be a piece of cake! It's a fantastic tool to use if you want to learn about the effects of long exposures its relationship to capturing stunning motion photography.

The camera will continue to change the aperture and ISO based upon your chosen shutter speed, provided the ISO is set to AUTO already.

PROGRAM MODE Despite aperture and shutter speed being extremely important to photography, they aren't the only functions that need consideration on your camera and program mode will help you learn them.

Switching into program allows you to control ISO (if you're not in AUTO ISO) exposure metering and white balance whilst shooting. Ideal for those slightly more advanced users who like to perfect their work when out in the field.

Lenses

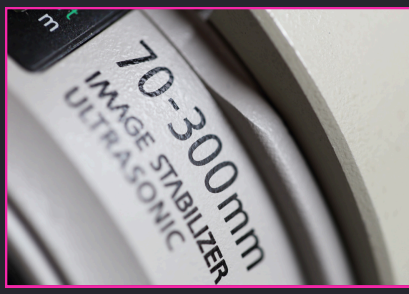
DSLR and Mirrorless cameras have detatchable lenses. You can swap lenses for different focal lengths. Meaning your subject can appear closer and further away depending on the lens.

Prime Lens

There are two types of lenses a photographer uses - prime and zoom. Prime lenses have a fixed focal length meaning you can't zoom in or out of the scene - your view is fixed. Because there are less moving parts in a zoom lens, the optics (glass), are better quality and make for a sharper image. Prime lenses tend to have wider aperture options compared to zoom lenses.

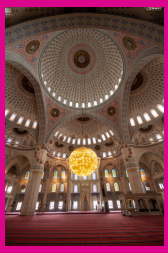
Zoom Lenses

Zoom lenses do what they say - they zoom in and out. They'll let you to get closer to a subject, like wildlife, without having to move. There will be two focal lengths displayed on a zoom - the widest and longest lengths it can reach (i.e. 70mm - 300mm). The bigger the range the more expensive the lens can be.



Focal Length

With longer focal lengths (150mm and higher) distant objects will look closer. Shorter focal lengths (35mm and under) will bring more width and height into the shot. Choosing the right focal length matters. 50mm is considered good focal length to shoot at for general photography due its lack of distortion.



Wide Angle
(<18mm)

Standard
(35-85mm)

Telephoto
(100mm+)

Supertelephoto
(300mm+)

Drive Modes

Long gone are the days where you just turned your camera on and take a shot. Now even that basic step has choices to it - how many pictures do you want to take? one shot at a time, or continuously? and when do you want it to start? **This is all decided in your camera's drive modes.**

Single Shot

Single shot is generally the default for most and means you'll only take one photo with each press of the shutter.

Until you're faced with a situation that warrants different drive mode, then single shot is your safest bet for 99% of your photography.

Self-Timer

Self-timers give you a little more time before the photo is actually taken.

Maybe you want to get in the shot yourself? Or you're shooting some long exposure landscapes and don't want to touch the camera?

Either way, cameras will have options of 2, 5 or 10 second countdown timers to work with. As soon as your press the shutter button down the countdown begins signalled by either an audio beep or a quick flash of light.

Continuous / Burst

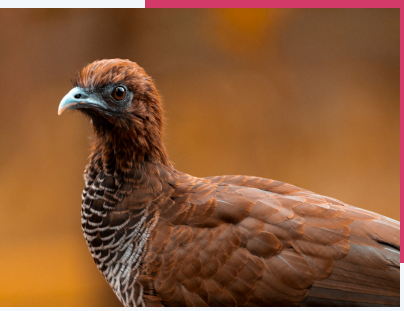
In continuous or burst mode your camera will keep shooting shots the images for as long as you are holding down the shutter. Any type of moving subject is ideal for this drive mode.

When you are reviewing your images, you can cycle through all the candidates and pick the best one.

Depending on your camera, you may only have access to one rate of burst or frames-per-second (fps) speed. 5-7fps bursts are common but it is not unheard of to over 20 in some bodies.

In cameras where there are multiple burst rates you may have the choice between low and high burst modes which changes how many shots are taken per second.

Drive Modes



Quiet Mode

Some cameras, which have a mirror door, that flips up and down to reveal the sensor behind it during an exposure, will create a sound during that operation. It's a little clicking sound that most of us get used to when taking pictures.

But there may be times you want to stay more discreet with your camera, for example in street photography. In this situation, a quiet drive mode is perfect.

It works in the same way to single shot drive mode, but the mirror door opens slower to avoid the clicking sound (it won't make a difference to your shutter speed).

Mirror Lock-Up (ML-Up / MLU)

To help reduce blur caused by camera shake, most DSLR cameras feature what is called the Mirror Lock-up drive mode. If it is not listed in your main drive mode menu then check other menus in case, it's a little hidden.

In ML-Up mode your camera will wait until the mirror has lifted to take a picture.

You can understand why lots of landscape, macro, night photographers use this drive mode as it helps with long exposure or close up situations where little vibrations make all the difference to the sharpness.

Some cameras will require you to press the shutter button twice: First press will lift the mirror, and then the second will take the shot.

Aperture and F/Stops

The aperture, the hole that light passes through to help create your photo, can be changed in size. The different sizes are known as F/stops.

Beware: Photography is Backwards!

The numbers that are assigned to F/stops can sometimes confuse a photographer. The lower the number, the wider the aperture. The larger numbers means the aperture is smaller.

Depending on your camera, the f/stop number you're using might be displayed on the back of your camera similar to this.

Use the circular dials on your camera body to change the the f/stop number higher or lower, depending on how bright the scene looks to you.

Aperture and F/Stops

If it doesn't appear on the back of your camera, you might find it on the top LCD screen instead, similar to this.

There is wide range of f/stop numbers, some cameras have more than others. Traditionally there are 10 'full f/stop numbers' photographers are used to.

As camera sensors get better at detecting smaller increments in light, more f/stop numbers have become available. These are called half stops and third stops.

Full Stops

halving the light / 'stopping down'

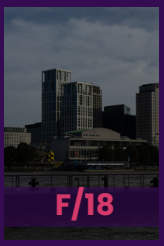
F/1.4 F/2 F/2.8 F/4 F/5.6 F/8 F/11 F/16 F/22 F/32

doubling the light / 'stopping up'

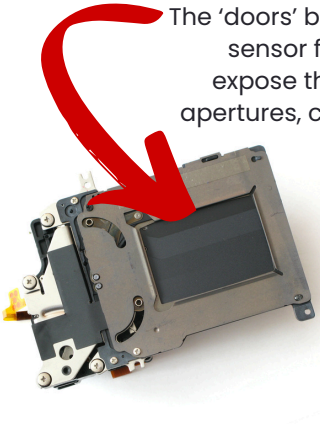
Every time you move to a smaller or larger aperture full f/stop you are either doubling or halving the amount of light coming into the camera, respectively.

Half Stops & Third Stops

F/1.4 **F/1.8** F/2 F/2.8 **F/3.5** F/4 **F/4.5** F/5.6 **F/6.3** **F/7.1**
F/8 **F/9** **F/10** F/11 **F/13** **F/14** F/16 **F/18** **F/20** F/22 F/32



Shutter Speed



The ‘doors’ behind the mirror in your camera protect the digital sensor from light. How long these doors stay open for, and expose the sensor to light, is called shutter speed. Much like apertures, cameras tend to follow a scale of common speeds, but this can change camera to camera.

All About Seconds

Shutter speeds are expressed in either seconds or fractions of a second. The longer the shutter doors are open the more light that is capture. The shorter the time, the less light is captured. (“ means seconds)

5" 2" 1" 1/2 1/4th 1/8th 1/16th 1/30th 1/60th 1/125th 1/250th 1/500th 1/1000th

longer time - brighter photo

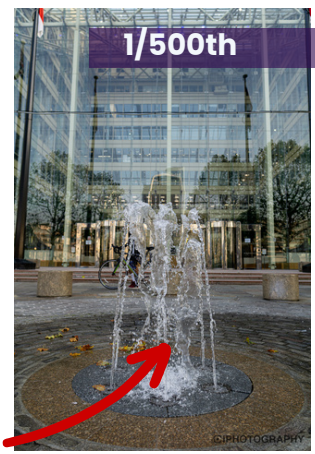
shorter time - darker photo

Remember...

Use longer/slower shutter speeds when the light is dim to brighten your photo.
Use shorter/faster shutter speeds when the light is bright to darken it.

Effects of a **slow shutter speed**. Any moving objects will look blurred when the shutter doors are open for too long.

Effects of a **fast shutter speed**. Any moving objects will look sharper and clearer when the right rate is chosen to match the speed of the subject in the shot.



Shutter Speed

Depending on your camera, the shutter speed rate you're using might be displayed on the back, or top, of your camera similar to these images.

Use the circular dials on your camera body to change the the shutter speed number either in manual or shutter speed priority mode.

Different situations may require you to change your shutter speed. The best way to think about it is to look at how much movement is in your photo.

If you're photographing moving cars the shutter speed needs to be fast to keep up. If there isn't much motion you can use a slower speed.

You can also use slow shutter speeds for creative effects such as to blur motion.

What's the Best Speed to Use?*

*use as a rough guide

1/500	1/250	1/125	1/60	1/30	1/15	1/8	1/4	1/2
Sports action / Animals & Wildlife	Sunny days / Slow moving cars	**Everyday shutter speed**	Slowest speed for handheld photos	Candlelight / low light flash	Inside dimly lit buildings	Short light trails	Night time / Blur water motion	Fireworks Effects

ISO

ISO is what used to be called film speed, back in the days of film photography. In a digital camera, ISO regulates how sensitive the sensor is the incoming light. You can increase and decrease the sensitivity which, in turn, makes your photo brighter and dark respectively.

Your camera might have a dedicated ISO button, scroll wheel, or menu option to be able to change it.

The ISO Scale

100 200 400 800 1600 3200

darker photo — brighter photo

Use low ISO numbers, such as 100 - 400 on bright sunny days. But raise the settings when you are in darker conditions.

With ISO Comes Noise!

As the pixels on the sensor are amplified to brighten the photo digital noise will start to appear. This can make a photo look grainy and low quality. All cameras have different thresholds and abilities to handle high ISO numbers. Check your manual.

Exposure Modes

Most digital cameras have built-in exposure meters. These meters read the amount of light in a scene to provide you with an even exposure.

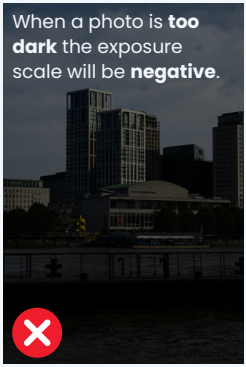
Exposure scales will range from -3 to +3. The aim is to keep the marker at 0 for a balanced exposure.

How to Read the Meter

Every time you half-press the shutter button your light meter will tell you how bright the the scene you're pointing the camera at is. The current exposure will be displayed on a little chart on your live view or through your viewfinder. It will look like this...

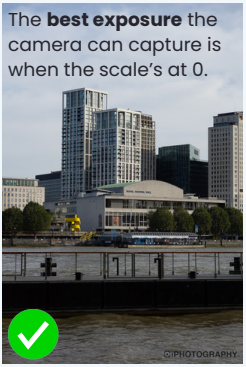
-2..1..0..1..+2

NOTE: Only semi-auto and fully manual modes will allow you to change it. You may not even see it when shooting in auto.



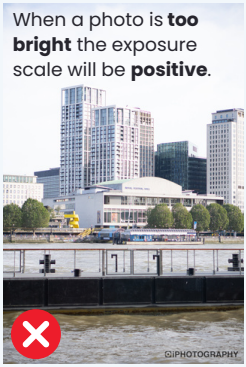
When a photo is **too dark** the exposure scale will be **negative**.

-2..1..0..1..+2



The **best exposure** the camera can capture is when the scale's at 0.

-2..1..0..1..+2



When a photo is **too bright** the exposure scale will be **positive**.

-2..1..0..1..+2

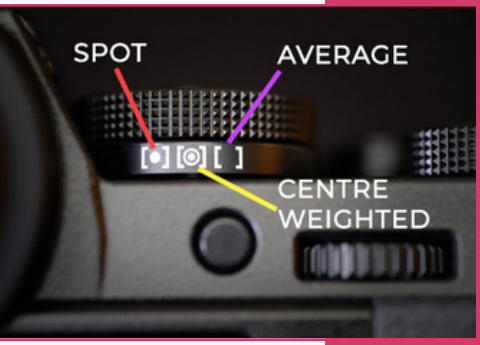
Tips to Remember...

To get your exposure reading to 0, adjust either your aperture, shutter speed or ISO setting accordingly.

When the marker is at 0, this is the camera's best assessment of a balanced exposure. It's the best the camera can achieve, but might not be what you want.

Exposure Modes

There are several exposure modes in a digital camera for you to decide how the meter reads the light, and from where in the scene.



Depending on your camera you might have a physical dial to change your exposure metering mode, but most cameras have the options in the menu system.

There are 3 common modes to choose from, but some might be named differently brand to brand.

3 Exposure Modes

Spot

Spot metering works by taking a reading from wherever the auto focus point is placed on the screen, because you can move it around.

Great for: Macro

Centre Weighted

Centre weighted metering reads an area of the image from the centre of the scene. Don't use it if your composition is offset from the middle.

Great for: Portraits

Average

The scene is broken down into 4 (or more) zones. Each zone is evaluated by the camera to give the best possible exposure per zone.

Alt names: Multi-Metering, Matrix, Multi-Segment or Evaluative.

What's Your Camera Dial Set to?

Be aware that exposure modes **don't work** in Auto or Manual dial modes. You'll need to be set to either Shutter, or Aperture priority mode, or Program mode. That's A/Av, S/Tv or P on your camera dial.

Focus Modes

Setting the focus on your camera is important to get right. Choosing the wrong mode can mean that your camera can focus on the wrong thing making your main subject looked blurred.

Look Through Your Menus

Spend a few minutes looking through your menu for the options of focus modes. They will differ brand to brand, but most options come with a brief explanation of what they do.

See The Focus Change Live

If you have a camera that supports Live View - that's when you can see the image on your back screen change as you alter the settings, then you can see where the auto focus point is.

It's normally a little red dot or square. When you successfully lock focus there might be an audible beep or the square changes to green.

To Track, or Not To Track

You don't always need to have auto focus tracking modes turned on. If your subject is stationary then keep to a one shot AF mode.

Each mode is designed for different types of situations. Even if your subject is still, it doesn't mean that any focus mode will be suitable.

Focus Modes

In a similar way that exposure meters can read light in several ways, you can also tell your camera how, and where, you want to place your auto focus point. Check your camera for the names of each AF mode as they might differ to what's written below.

AF-S / Single Shot

AF-S locks focus based on the distance to your subject. As long as your subject stays at that distance, your photo will be sharp.

You'll need to half-press the shutter button to lock focus per shot. This is the default AF mode.

AF-C / Continuous

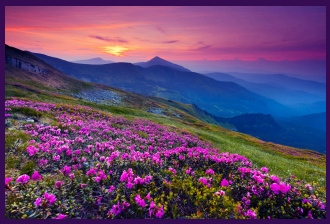
AF-C places multiple autofocus 'points' on your subject and continues to adjust these points while your subject moves.

You need to keep the shutter button half-pressed and your subject in frame as they move for the focus to track correctly.

AF-A / Hybrid

This method merges the functionality of the AF-S and AF-C. Basically, it begins as AF-S and as your subject moves it converts to AF-C. It gives you the best of both modes.

Don't use this as your default focus for all your photography.



When to Use AF-S / SIngle Shot?

You'll find that most of your everyday photography is done using AF-S. Landscapes, still life, macro, stationary portraits and product photography are ideal for single shot auto focus mode. Anything that stays still!

When to Use AF-C / Continuous?

For anything that moves in a fairly continuous motion. Think of sports and traffic. Remember to keep your finger on the shutter button as you move the camera to follow the action. This will help the camera keep the focus tracked on the action.

When to Use AF-A / Hybrid?

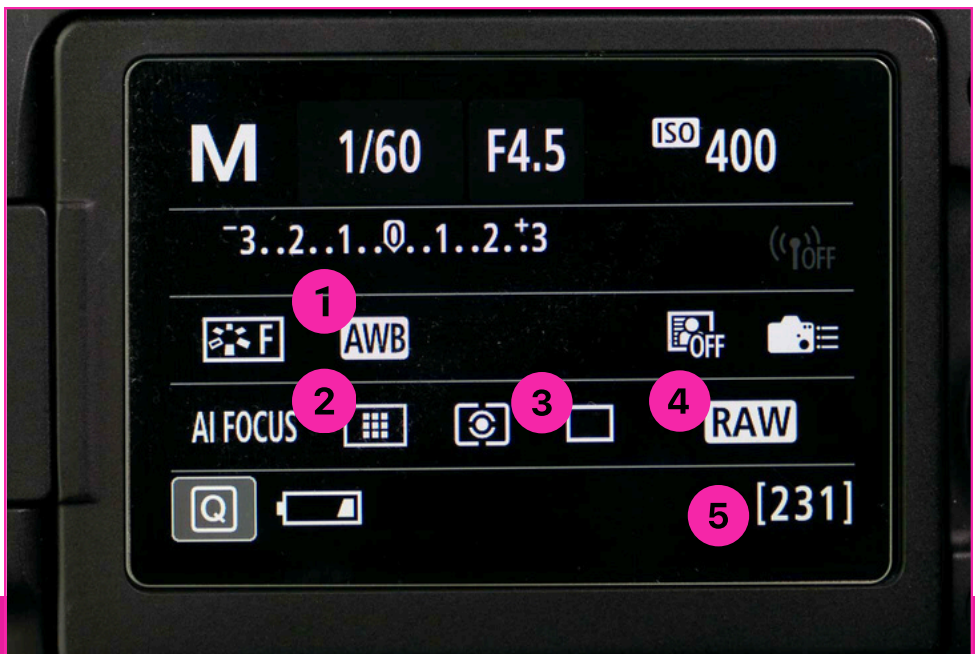
Hybrid is best used for the unpredictable - and what's more unpredictable than animals and wildlife?! If you can't control the subject and you don't know when it will move, switch the auto focus to hybrid mode and do your best to track the action as you shoot.

Other Buttons

Let's have a quick look at some other important settings and symbols you might come across.

The back of a camera will look different in the layout and the options available brand to brand.

The main screen or top LCD display, when not in Live View, gives an overview of your current settings.



1. White balance setting. AWB is the default and generally keeps colours looking accurate.
2. The auto focus points. The more points you use the more of your shot will be considered for focus.
3. This is the drive mode symbol. Single shot modes are normally represented by a long rectangle.
4. File format for capturing a photo. RAW is uncompressed and the highest possible quality. The alternative is usually JPG which is lower quality in comparison but faster to edit.
5. How many photos you have remaining based on the file format and memory card size.

Other Buttons

1. The menu button will give you on-screen access to lots of other settings and functions.
2. Sometimes called DISP. (display) this will change the information shown on your back screen.
3. Quick menus brings up access to the most commonly used settings and functions.
4. To look back at the photos you've taken press the play button and use the scroll wheel below (5) to cycle forwards and backwards through the images on your memory card.
5. The scroll wheel or D-pad is the navigation tool to move through your menus and change settings.

iCAMERA

Two Wheels are Better than One

Some camera might have a secondary function wheel near the shutter button. This can be set up to change the ISO or shutter speed with the back scroll wheel changing the F/stop number instead.

iCAMERA

master your digital camera

That's it, you're ready to begin taking amazing photos!

While all cameras will differ in the functionality and settings they have available you've now seen all of the common modes, functions and settings that you'll come across with a standard DSLR or Mirrorless camera.

There's Still More to Learn...

Photographers never stop learning, no matter how many years you've had a camera in your hands. There are still more advanced settings and modes you can try out with your camera that will further your skills and creativity.

Sign up to iPhotography's Beginner Course and start learning online from the comfort of your home. With lots of on-demand courses pick your favourite and learn in your free time.

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