

NEW

Learn and perfect key photography skills with this ultimate guide

MASTER YOUR CAMERA

IN 4 WEEKS



Digital Edition

FUTURE SECOND EDITION

Control your camera • Get to grips with settings • Take incredible shots

WELCOME TO MASTER^{YOUR} CAMERA IN 4 WEEKS

Putting your camera phone down and picking up a high-spec camera can be a daunting prospect for anyone. DSLRs can appear terribly over-complicated in order to meet the needs of photographers of varying levels. What the beginner photographer really needs is a no-nonsense guide to the most important features on their camera written by experts. Master Your Camera in 4 Weeks aims to take you on a photographic adventure, from unboxing your camera to pursuing more creative endeavours. This book will take you from complete beginner to a skilled camera user in just four weeks. Learn how to compose your images, understand shutter speed, aperture, ISO and more. At the end of each week take on eight simple and practical tasks to help hone your skills, and then once you have completed week four use the last chapter to take things further. So, what are you waiting for? Start learning today!



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MASTER YOUR CAMERA IN 4 WEEKS

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A STEP FURTHER

Once you've mastered your camera head to p176 for some projects that will help you use your new skills. Shoot still life, street portraits, sunbursts and more!

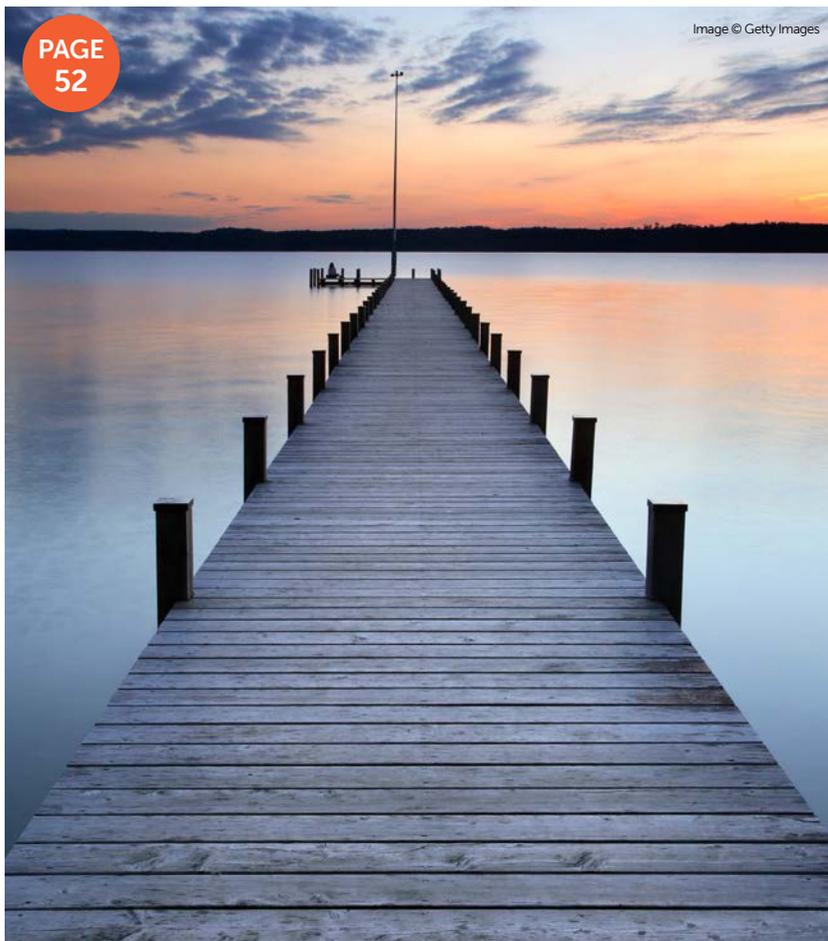
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Image © Unsplash, Giorgio Encinas



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GETTING STARTED



Main

Your new camera

With so many camera models and accessories to choose from, yours should be easy to use yet have room to grow as your skills progress. Make sure every purchase fits your budget and preferred genre, too.

Image © Unsplash; Jakob Owens

GETTING STARTED

Learn what to look for in a new camera, along with tips and techniques to help you take great photos



Getting a new camera – or even picking up an old one for the first time in a while – can feel like a daunting process. It can hard to know where to start with all the buttons, settings and techniques on modern models. That's why in this book, we're going to be showing you how to take full control of your camera – in just four weeks. That means being able to shoot landscapes, portraits and travel shots with ease and enjoyment. Once you fully understand how your camera works, as well as what it can do, shooting should become so much more intuitive and fun.

We'll be talking about switching to manual mode and controlling all the camera settings yourself, how to expose your scenes effectively, and later on, how to shoot in black and white.

If you haven't purchased a camera in several years and are looking to upgrade to a more recent model, start with a guide to gear here. There are many types of camera available today, and every one suits a different type of user. For example, if you want something small that can go with you on family outings, a compact might be your best bet. If you're looking for photography to become a serious hobby, and want a camera that will grow with your skills, then a DSLR is the best way to go. Don't get too bogged down in all the technical details. Take this book step by step and you'll soon be on your way to mastering your camera.

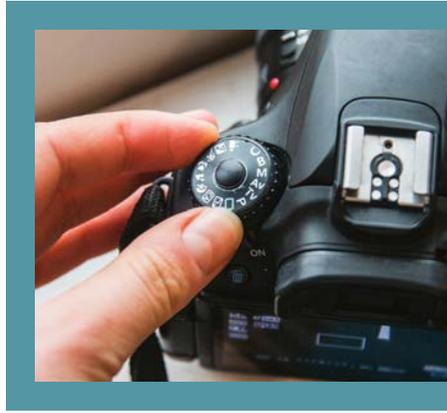


PICKING YOUR FIRST CAMERA

With so many models out there, getting the right one for you is an important first step

01 CAMERA TYPE

With so many camera options, which is for you? DSLRs are still the most popular – from beginners to pros – as they typically have larger sensors, plus a comprehensive range of compatible lenses and accessories. They can be bulky, though. Mirrorless cameras share many features with a DSLR in a smaller, lighter body, but the disadvantage is that their sensors are often comparably smaller than those in DSLRs.



03 SHOOTING MODES

Check that your intended camera has the option to select Manual mode (usually labelled with an “M” on a dial on the top). Though you might not use it straight away, this mode will allow you to take full creative control over the exposure of your images – which we’ll cover later on. As well as semi-automatic modes, beginner cameras often have specific scene modes such as Landscape and Portrait.

04 BUTTON LAYOUT

Technical specs aside, something to consider when choosing a camera is how it feels in your hands. If possible, have a go with some models in a photography shop. Can you reach all the buttons easily? How does the camera feel when you hold it? What’s the grip like? Shooting will be much more intuitive if you can navigate menus and access settings easily.



02 SENSOR SIZE

The size of a camera sensor determines how much light it uses to create an image. This is why, in general, larger sensors provide the best low-light noise performance and background blur (bokeh). DSLR cameras come with either full-frame or crop-frame sensors. If you’re starting out, a smaller (more affordable) crop-frame sensor should be ample for your needs. Full-frame mirrorless cameras exist, but they’re pricey and often pro-



05 BUILD & DESIGN

Cameras come in different shapes, sizes, and materials. If heavy gear isn’t an issue, choose a DSLR – you’ll generally get more for your money compared to an

equivalent-spec mirrorless. Mirrorless cameras or high-end compacts are good if travelling light is important, but be aware of any trade-off in image quality. Consider a weatherproof model if you plan to shoot outdoors a lot.



06 FEATURES AND FILTERS

More advanced, expensive cameras generally have more features built-in. Some are major, such as image stabilisation, which reduces vibration and shakiness when shooting in low light. Other features in a camera are fun, but not



essential. These include the ability to create double exposures, or add filters to your images. Although added features might make a camera enjoyable to use, they shouldn't always make or break your purchasing decision.

“Shooting will be much more intuitive if you can navigate menus and access settings easily”

07 CONNECTIVITY

Modern cameras are well connected, and GPS, Wi-Fi and Bluetooth are three main features to look out for. GPS is handy as it enables you to pinpoint exactly where you took your favourite shots when you get home. Wi-Fi can be used to upload, print and backup images to smart devices with one tap. Some cameras also allow you to control your camera settings using your smartphone via a dedicated app.



08 LCD SCREEN

As well as using the viewfinder to compose images, you can also use a camera's LCD screen. Some screens can be tilted or articulated, which is useful if you want to shoot at unusual angles. Touch-sensitive screens make it easy to check your focus point, review images and generally navigate the camera's menus. Find out if a camera offers screen guides such as grid overlays, which will help you to compose photos.

09 VIEWFINDER TYPE

DSLRs have an optical viewfinder, which shows exactly what the lens sees. Mirrorless cameras instead have an electronic viewfinder displaying information straight from the camera sensor. There are advantages and disadvantages to both – removing the mirror means that mirrorless models are smaller and more travel friendly than DSLRs, but optical viewfinders provide a clearer, sharper view. Check a camera's viewfinder coverage (how much of the scene is shown) too.



10 MENU SYSTEM

The Menu button is used to access a camera's many features and functions. Every brand has a different menu layout and style, so it's worth testing out several different models to see which you find easiest to navigate. Advanced DSLRs inherently have more complicated menu interfaces, whereas some affordable DSLRs such as the Canon 800D also have Guided interfaces. This Guided mode is more colourful and will explain shooting settings.





PICKING YOUR FIRST SET OF LENSES

Planning on wide landscapes or intimate portraits? Your lens choice will matter



01 FOCUSING RING

Most modern lenses have advanced autofocus systems that are capable of locking onto subjects. While you can change the focus to manual with a switch on the side of most lenses, some can only be used with manual focus – think macro or 'creative' lenses. Turning the focus ring on your lens adjusts the focus. On a zoom lens, there's also find a zoom ring closest to the body of the camera.

02 FOCAL LENGTH

When you choose a new lens, the first thing to consider is the focal length. This is number in millimeters that tells you whether the lens is a wide-angle or telephoto (zoom) lens. While a zoom lens with a large focal length enables you to get close to faraway subjects, a wider lens with a small focal length provides a wider view than the human eye, ideal for expansive landscape scenes.



03 WIDE-ANGLE

While a regular standard zoom or kit lens (the one that comes with your camera) will offer a wide-angle setting, this isn't always enough for capturing sweeping skies or spectacular interiors. In these cases, you'd be better off with an ultra-wide-angle lens such as a 14-24mm. Wide-angles also enable you to exaggerate perspective for creative effect. Just make sure you choose one that's the right fit for your camera format.

04 IMAGE STABILISATION

Some lenses have a stabilisation feature built into their design, which works to minimise camera shake. Manufacturers use abbreviations to show which of their lenses have built-in image stabilisation, such as IS on Canon lenses and VR (vibration reduction) on Nikon lenses. The stabilisation can be turned off using a switch on the lens barrel when it isn't needed, for example when the camera is on a tripod.

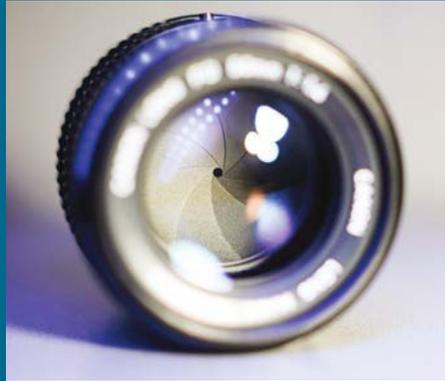




05 MACRO Opt for a macro prime lens if you want to capture small subjects close-up, such as flowers, insects or jewellery. True macro lenses give you full 1.0x magnification and impressive enlargement at their closest focus distance. A focal length of around 90-105mm will enable you to get close but not too close to what you're shooting, but check for the right lens mount if you're shopping around.

06 NIFTY FIFTY A 50mm lens is so special we've given it a section. If you're looking to build up a lens collection, then a simple 50mm prime lens is almost vital for your kit bag. This is because a 50mm is a 'standard' focal length, giving natural photos with a perspective that's similar to the human eye. Canon and Nikon both offer budget 50mm, f/1.8 lenses to get you started.

07 MAXIMUM APERTURE Every lens has a maximum aperture, a number which you'll find written after the name of the lens and usually printed on the lens itself. The aperture refers to how much light the lens can be let through to the camera sensor. The smaller the number, the wider the aperture (and the brighter the lens). Prime lenses have a fixed maximum aperture, but variable zoom lenses often have a range.



08 TELEPHOTO When you want a powerful magnifier to shoot wildlife or sports, a telephoto will take you to the heart of the action. The downside of long telephoto lenses is that they're also the largest, heaviest, and most expensive options. You'll find that a flexible 70-200mm telephoto lens will help you to shoot a range of subjects, whereas if you want a lot of reach, opt for 300mm or longer.



09 MINIMUM FOCUSING DISTANCE One spec that's often overlooked when lens shopping is how closely a lens can focus on a subject. The minimum focus distance – usually inscribed on the lens ring – is simply the closest distance you can be before a subject goes out of focus. It's not just special macro lenses that are able to focus extremely close-up, and the main benefit of having a lens that focuses closely is versatility.

10 FIXED OR ZOOM When you start out with a new camera, it's often better to buy a versatile zoom lens rather than a lens with a fixed focal length, called a prime lens. This is because you'll be able to zoom in and out to quickly change your composition and capture a range of subjects without changing the lens. On the other hand, prime lenses are usually lighter and provide higher image quality.





FILLING YOUR KIT BAG – ESSENTIAL ACCESSORIES TIPS

To get the most out of your camera, you'll want to get some valuable accessories to go with it

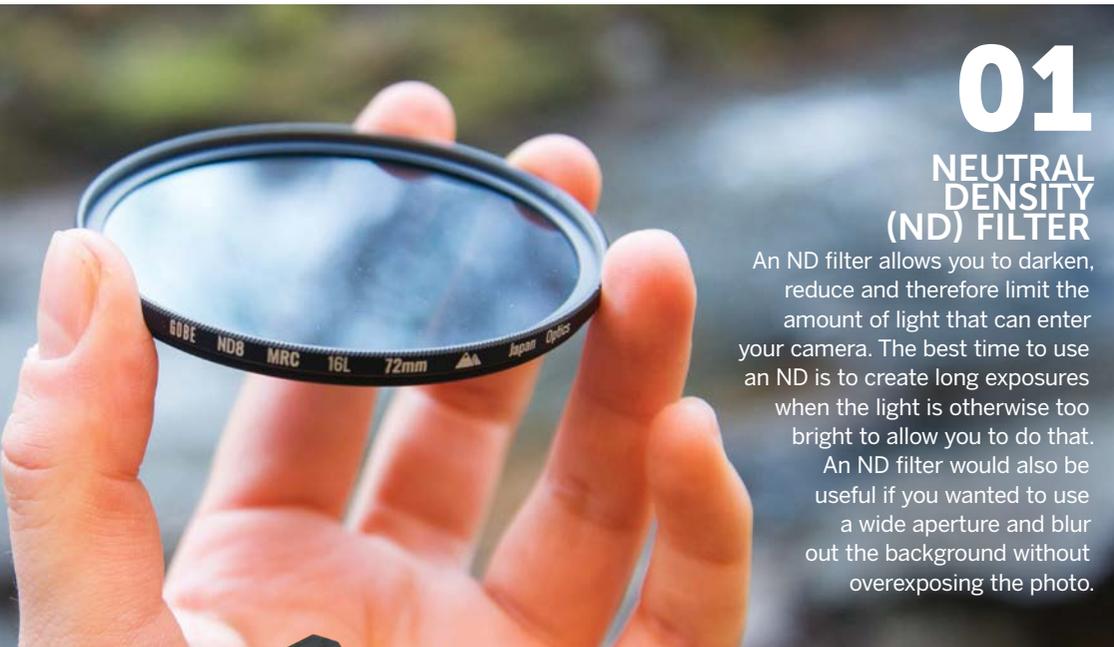


01

NEUTRAL DENSITY (ND) FILTER

An ND filter allows you to darken, reduce and therefore limit the amount of light that can enter your camera. The best time to use an ND is to create long exposures when the light is otherwise too bright to allow you to do that.

An ND filter would also be useful if you wanted to use a wide aperture and blur out the background without overexposing the photo.



02 TRIPOD

A sturdy tripod will be carried, rather than going in your camera bag. It's one of the most common bits of photography kit, offering stability to your photos. With your camera mounted on a sturdy tripod base, you'll be able to get more creative with composition, and to use settings such as long exposures for creative effects – without blurry images. A lightweight beginner model can be mounted to your bag.

04 CARD READER

To transfer photos from your memory card to your computer for editing or storing, you might need a memory card reader. The card slots into the reader, and then the reader's cable plugs into your computer. Some computers have an SD card slot built-in, so check this before you go out and buy a specialist reader. Many cameras now also enable you to transfer photos to a digital device via Wi-Fi.



05 FLASHGUN

While many camera have their own pop-up flash on the top, buying a speedlight will provide you with more creative options for adding extra light into your photos. If the camera manufacturers' own-brand models seem a bit expensive, look for other flashgun makes (such as Hahnel). You can usually buy a flashgun on its own and then mount it on your camera, or trigger it wirelessly with a kit.



03 MEMORY CARDS

Different cameras take different storage cards, but the most commonly found are SD and Compact Flash. There are different speeds and capacities of card available, and the right one to buy will depend on your usage – how large your image files are going to be, how often and how quickly you'll want to shoot. A 16GB option is a decent and affordable size to get started with.

06

POLARISING FILTER

Although many filter effects can be added at the editing stage, a polariser can't, and so is a very handy one to own. A circular polarising filter is designed to enhance or reduce reflections, as well as control the intensity of certain colours. Blue skies look much more vivid through a polariser. Most filters will onto the front of your lens, as long as you buy the right size to fit.

07

UV FILTER

A UV filter is another filter that's good to have in your kit bag, or more specifically, on your lens. Not only will it filter out UV rays that can cause hazy images taken in certain conditions, but it also protects the front element of your lens from dust and scratches, making it a worthwhile investment. Screwed onto the front of your lens, a UV filter can be left on when you're not shooting.



09

REMOTE CONTROL

Most cameras have a self-timer mode, but being able to fire your camera shutter remotely makes timing much easier. You can use a cable release (which plugs into a port on the side of the camera) or a remote control to take photos without having to press the shutter button yourself. This is a useful way to avoid moving the camera for long exposures, or if you want to be in the photos yourself.



08

CARD ORGANISER

There's no point learning how to master your camera and take great photos if they all get lost on your cards. Having a neat way to store your cards when they're not in use will keep you organised. You might want a small and foldable organiser, but rugged hard cases are a better option if you want to protect your cards from water damage or drops – better safe than sorry!



10

CLEANING SUPPLIES

As effective as they are versatile, microfiber cloths should be found in every photographer's kit bag. These small clothes are perfect for cleaning your lenses when dust spots appear, but they can also easily remove smears from your camera's LCD screen or viewfinder. Use a cloth alongside lens-cleaning solution to remove extra-stubborn marks. This will not only enhance your image quality, but also protect your lenses from damage.

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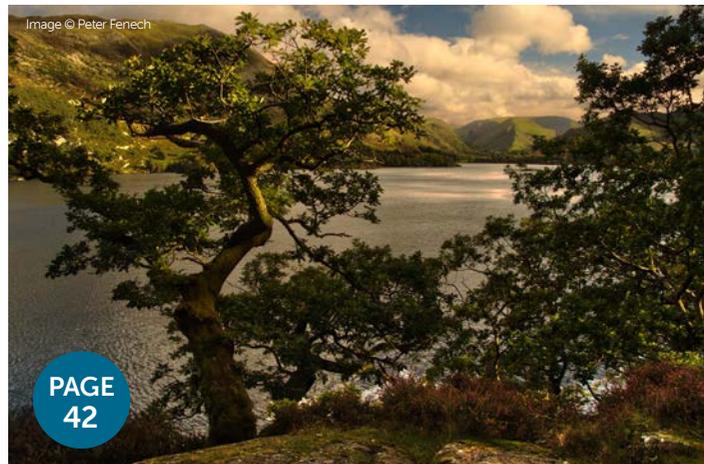


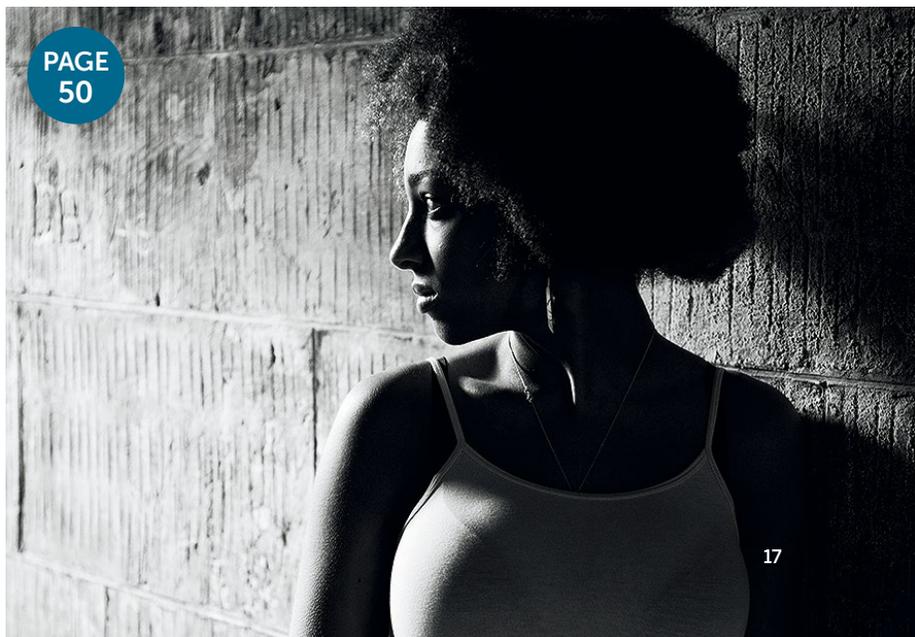
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UNBOX YOUR

DSLR

Take the first steps in setting up your DSLR, and get familiar with the accessories that accompany it

It's always the same when you buy something new (whether it's new-new or second-hand) – as soon as you get your new DSLR home you'll want to start using it straight away. And that's fine. But for the very best results it's well worth spending some time

familiarising yourself with your new camera and its accessories before you start shooting. So, to ensure that you know what's what from the outset, here we'll give you a quick guide to the basics.



SOFTWARE AND MANUAL

Your camera's instruction manual might not seem the most interesting read, but it will prove very handy if you ever get stuck, so make sure it's always in your kit bag. If you're unsure where to find certain features or your camera is doing something you weren't expecting, the manual will most likely provide a solution. You can also download a digital version of your camera's manual from the manufacturer's website. You'll notice, too, that your camera comes with free software that will help you to organise and edit your shots, and it's a good idea to install this right away. Simply insert the disc into your computer and follow the on-screen instructions. Keep the software running smoothly by downloading regular updates from your camera manufacturer's website.





2 BATTERY

Your camera will be powered by a Lithium-ion rechargeable battery, which slots neatly into the battery compartment. Different camera models will need a different battery type. If you need to buy a spare, check the battery body for the model number.

1 USB CABLE

The USB cable enables you to connect your camera directly to your computer or tablet, so you can transfer, look at, file and back up images without the need for a card reader.



3 LENS

If you haven't already done so, you'll need to purchase a lens. Many entry-level DSLRs are sold with a kit lens included in the price, and this is a good way to get started. A standard zoom lens, such as an 18-55mm model, is perfect for beginners, and you can invest in more flexible (and expensive) lenses as your photography progresses.



4 BATTERY CHARGER

The battery charger will come with a cable that attaches to a power supply. A small LED light will let you know when the battery is fully charged. It's worth charging your battery each time you return from a shoot so that your camera is always powered up. It's worth carrying a charged spare too.



5 MAIN CAMERA BODY

The first and most important thing is the body itself. Your camera will arrive with a protective body cap that should always be fitted when you don't have a lens attached. This prevents dust and dirt entering your camera and sitting on the sensitive image sensor inside. These 'sensor spots' will decrease the quality of your images.

REMEMBER

To take and save pictures, you'll need a memory card that's compatible with your camera. Most of the time these will be SD cards but are sometimes Compact Flash cards.

6 NECK STRAP

To hang your camera securely around your neck, and ensure your camera is always there and ready to shoot, you need to attach the neck strap.

STEP-BY-STEP FIT THE CAMERA STRAP

Attach the neck strap supplied with your DSLR to the body of the camera securely with our step-by-step guide



1 LAY OUT THE STRAP

Take the strap out of the box and lay it down on a flat surface in front of the camera body. Make sure the writing on the strap is facing upwards and is the right way around.



2 PLACE IN THE LOOP

Grab the small end of the strap and thread it underneath and through the bar on the side of the camera body. Pull about 10cms of the strap through the bar.



3 ADJUST THE BUCKLE

Grip the plastic buckle and pull out a few inches of the strap to make a loop. The next step can be a bit fiddly, so ensure you pull out enough slack now to make the next stage easier.



4 PULL IT TIGHT

Carefully thread the end of the strap up and down through the buckle so that it locks into place (see the image). You can now pull the strap tight.

5 REPEAT THE PROCESS

Carefully thread the end of the strap up and down through the other buckle so that it locks into place (see the image). You can now pull the strap tight.



STEP-BY-STEP GET YOUR CAMERA READY TO SHOOT

You've just got your SLR out of the box
– here's what to do next...



1 INSERT THE BATTERY

Without power your DSLR is useless. So step one in getting started is to insert a fully charged battery. Your DSLR comes provided with a Lithium-ion battery and charger. When the light stops flashing, your battery is charged. A spare battery can come in handy. If you want a backup, check the battery type. Find the code written on the battery body, it's usually letters and a number.



2 GET THE RIGHT MEMORY CARD

Next we need to insert the correct memory card. Most DSLRs take either an SD-type card (SD, SDHC, SDXC) or a CompactFlash card. Some take both. CompactFlash cards are bigger than SD cards. You should also consider the capacity of the memory card, and the writing speed. For beginners we recommend an 8GB or 16GB card that can write at a speed of 25mb/s or faster.



3 INSERT THE MEMORY CARD

The memory card slot will either be on the side of the camera body or in the main battery compartment. To insert the card, push it until it clicks into place. To remove it, either press the adjacent Eject button, or for an SD card, push it until it springs from the slot.



4 ATTACH A LENS

Finally, we need to attach a lens. Remove the back cap from the lens and the protective body cap from the camera. They both twist off. Line up the white or red coloured dot with the same coloured dot on the lens. Twist it in a clockwise direction until it clicks into place. To remove it, press the lens release button and rotate it.

FIVE WAYS TO MAKE YOUR BATTERY LAST LONGER

1 KEEP IT WARM

Your battery's power will drain much faster in the cold, so keep it (and any spares) as warm as possible. Carry multiple batteries when shooting in freezing temperatures, and keep your spares in a pocket next to your body.

2 AVOID DRAINING FEATURES

There are some functions that will drain your battery faster than others. Live View, autofocus, pop-up flash and image review will all use up power. If you're running low on battery life, resist the temptation to check your images on screen.

3 GET A SPARE

A spare battery is always a sound investment. That way you can be sure you'll never get caught without power as an amazing photo opportunity presents itself.

4 STORE YOUR CAMERA AND BATTERY SEPARATELY

If you don't use your camera for a long period of time – and we're talking a couple of months or more – it's best to take the battery out and store it separately. This will make your battery last longer.

5 USE A BATTERY GRIP

A battery grip is essentially an additional battery compartment that doubles up as a secondary grip for the camera. This provides double the amount of battery life, and can make the handling of smaller cameras easier for those with large hands.



5 LENS CHANGING TIPS

Changing the lens is easy, but there are a couple of important points to take on board. First, keep your camera switched off when changing the lens. You also need to avoid getting your camera's sensor dirty, by having your lens ready to hand when swapping over. Find a protected spot out of the wind to do it in. Your camera bag doubles up as a handy place for performing this task.



A QUICK GUIDE TO THE MENU

Discover how to access and customise the most important camera settings in your camera's menu system

1 MENU BUTTONS AND CONTROLS

On the back panel of your DSLR, you should see a Menu button. Press it and you'll gain access to all your camera's most useful features and functions. Your camera will also have a Display or Info button, and Set or OK controls that enable you to find and select features. The control buttons on the back panel (usually on the right-hand side in easy reach of your right thumb) can be used to navigate through the menu system, making it quick and easy to make changes to settings on the fly.



2 CAMERA SETTINGS OR SHOOTING MENU

Your camera's menu system will be divided into categories – how many depends on the make of camera you own, but the basics on a Canon camera, for example, cover Camera settings, Tool settings and Playback features. On a Nikon these are labelled as Shooting menu, Setup menu and Playback menu. The Camera settings menu can be used to alter things like Image Quality and flash control.

3 TOOL SETTINGS OR SETUP MENU

The yellow Tools menu on a Canon, or the Setup menu on a Nikon, enables you to change settings such as the LCD screen's brightness, and to format your memory card (permanently erasing its contents). It's a good idea to format your memory card as soon as you put it into your camera, and each time you transfer your images onto a computer for safekeeping.



4 PLAYBACK SETTINGS

The Playback menu options help you to protect your images and enable you to print images straight from your camera. Some DSLRs even have the technology to creatively process your image files through the Playback menu system.

5 TIME AND DATE

Setting the time and date should be one of the first things you do with your camera when you take it out of the box. This is because time and date information is saved into every image file, making it easy to search for images by date later. You can also apply copyright information to images here. To set the date and time, navigate to the yellow Tools menu on a Canon or the Setup menu on a Nikon, then follow the on-screen instructions



A CLOSER LOOK AT YOUR DSLR

Get to know your camera better by understanding where all the main controls and dials are positioned

On these pages, we'll give you a guided tour of an entry-level DSLR, the kind of camera you're likely to own if you're new to SLR photography. Of course, every make and model of camera will vary slightly in layout, but the basic features are all the same (your camera's instruction manual will tell you exactly what's where). Once you know where all the main features and controls are, it's much easier to get your head around how everything works.

1 FOCUSING LIGHT

When light levels are low, some cameras use an assist beam or IR light to help achieve accurate focus.

2 LENS

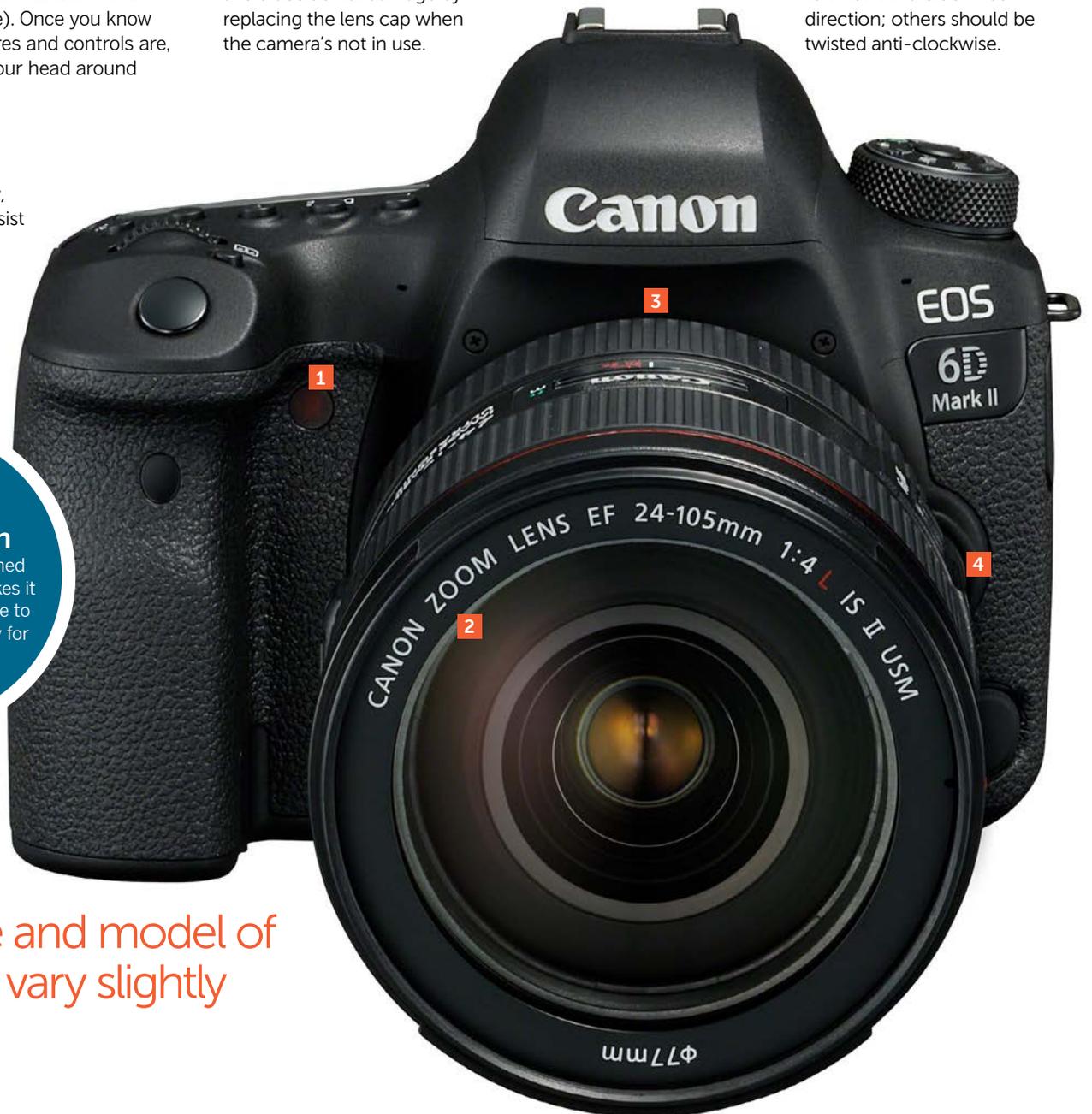
The lens is the camera's eye. This is where the image is projected through to the sensor. Make sure you keep the glass element clean (using a soft lens cloth) and avoid accidental damage by replacing the lens cap when the camera's not in use.

3 MIRROR AND SENSOR

When you take a photograph, the mirror inside your camera lifts out of the way to reveal the sensor behind it. This is where the image is recorded.

4 LENS RELEASE

To change your lens you need to press the lens-release button and then gently twist the lens itself to remove it. Depending on the make of your camera, you may need to twist it in a clockwise direction; others should be twisted anti-clockwise.



Comfortable grip and design
DSLRs tend to be designed with a deep grip that makes it comfortable and intuitive to hold. Making it less likely for it to slip out of your hand.

“Every make and model of camera will vary slightly in layout”

THE TOP PANEL

You'll find the mode dial, shutter release, pop-up flash and hotshoe mount on top of your camera

1 POP-UP FLASH

Most entry-level DSLRs have a pop-up flash unit built in. To activate it, press the small button next to the flash symbol. In your camera's Auto mode, the flash will engage automatically when light levels drop.

2 SHUTTER RELEASE

Here you'll find the on/off switch and the shutter-release button. To focus, half press the shutter release; press it fully to take the picture.

3 MODE DIAL

The mode dial features your camera's shooting modes, including Full Auto, various Scene modes, semi-automatic and fully manual options. Simply turn the dial to select. Some mode dials have a lock button in the centre that you must press before you turn the dial.

4 HOTSHOE

The hotshoe enables you to attach an external device to your camera, such as a flashgun or a remote shutter release trigger.

“Once you know where all the main features and controls are, it's much easier to get your head around how everything works”



AROUND THE BACK

The back of the camera contains a range of viewing options and quick-access buttons and dials

1 MENU BUTTON

Use the Menu button to access your camera's numerous features and functions.

2 VIEWFINDER

The image seen through the lens is reflected from the camera's internal mirror up to the viewfinder, where you can carefully frame your shot. This is what sets DSLRs apart from other cameras, because you see exactly what the lens sees.

3 LCD SCREEN

The LCD screen has multiple uses, with some offering touchscreen control of menu settings and some simply enabling you to look at images and menu options or get a real-time view in Live View as you shoot. Some models come with a vari-angled screen, so you can twist it away from the camera body if you want to shoot from unusual angles.

4 BACK PANEL CONTROL

On the right-hand side you'll find a control panel of sorts. Use this to navigate around your camera's main menu.

Weather-sealed and rugged design

Most DSLRs are now weather-sealed and dust resistant in order to keep them functional even when the weather is bad.



TOP TIPS FOR LENS CARE

1 CHANGE IN A BAG

When you remove the lens you expose your camera's sensor to the elements. If you're changing your lens outdoors, make sure you pick a sheltered spot to do it in. You can use the inside of your camera bag to stop the wind blowing in unwanted dust and dirt. If in doubt, however, leave the lens on!

2 PROTECT YOUR GLASS

When you remove the lens you expose your camera's sensor to the elements. If you're changing your lens outdoors, make sure you pick a sheltered spot to do it in. You can use the inside of your camera bag to stop the wind blowing in unwanted dust and dirt. If in doubt, however, leave the lens on!

3 USE A LENS CLOTH

A lens cloth is a must-have accessory. Before you shoot, make sure you check for rain spots or marks on your lens that could ruin the final result. If you wipe your lens with a sleeve or tissue, before long fine scratches will ruin the quality of your shots. A dedicated lens cloth will leave the front element spotless.

SIDE VIEW

Head to the side panel of the camera to access your camera's connection points

1 NECK STRAP ATTACHMENT POINTS

Thread your neck strap through these small attachment points so you can hang your DSLR securely around your neck.

2 CONNECTION POINTS

On the side of your DSLR, you'll find a rubber flap that covers the camera's connection points. These can be used to connect your camera directly to a computer or TV screen for instant storage or large-screen viewing.

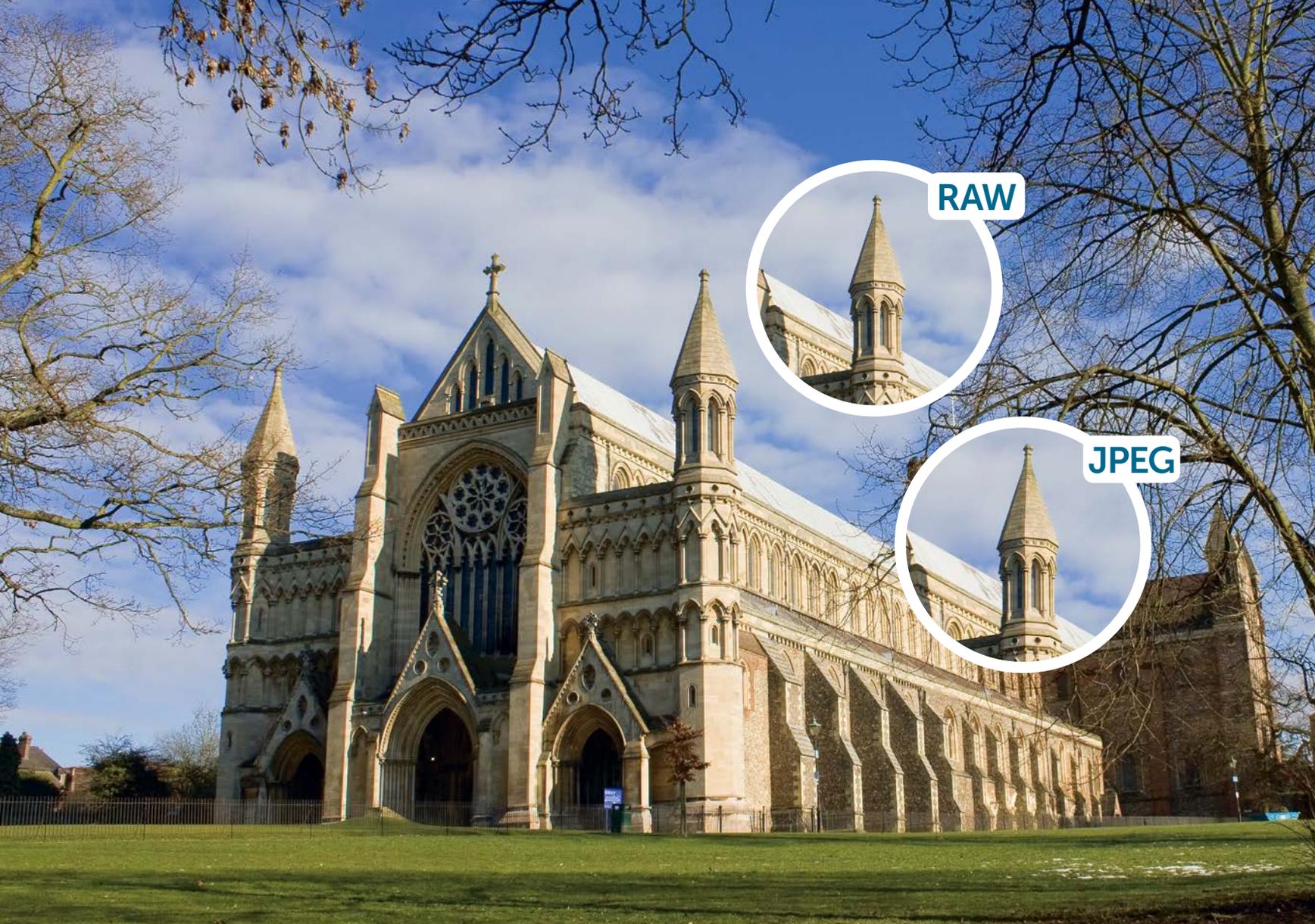
3 TRIPOD MOUNT

Flip the camera over and you'll see a small threaded hole. This enables you to attach your camera to a tripod. You'll also find the battery compartment and memory card slot here (although some are positioned on the camera's side panel).

4 MEMORY CARD FLAP

Insert the correct memory card and your images will be recorded and saved as you shoot them.





MEMORY AND FILE FORMATS

Discover how different file formats can affect your photographs and how you edit them

Your DSLR allows you to record your stills images in two different file types – RAW or JPEG. But if you switch between the two using your SLR's Quality menu you will see a wide range of different options. S or M, pieces of pie, staircase icons – what does all this mean?

JPEG is the world's most popular digital image format – and has the huge advantage

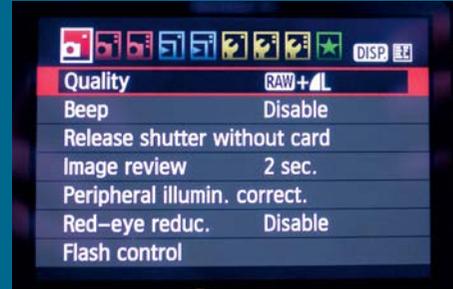
that these files can be opened by a myriad of different computer programs with no effort or conversion. Named after the Joint Photographic Experts Group that produced it, the JPEG also has the advantage that the file size is completely scalable. Images can be compressed so that the file size is smaller – a property that is particularly useful on the web, or with email. Unfortunately,

compression comes at a price – the more compressed a file is, the more the image quality deteriorates – creating visible squares and other artefacts in your pictures. On Canon DSLRs, for example, you just get two different levels of compression to choose from – the highest quality symbolised by a piece of pie and the lower-quality smaller-file-size option symbolised by the staircase-shaped icon.

BEGINNERS' GUIDE TO SETTING RAW



1 Your camera will come set to record in JPEG. If you want to try RAW, you need to press the Menu button.



2 Look through the tabs or options until you find the one that is labelled 'Quality', then press the Set button.



3 The number of options available varies from SLR to SLR. Choose either RAW alone, or RAW plus Large JPEG.



4 When you have highlighted the option that you want, then press the Set button to ensure your choice is activated.



Image © Chris George

PIXEL COUNT

In addition to this, your camera gives you a choice as to how many pixels you want your picture to be constructed of. To choose the maximum number your sensor allows select Large (L). For half this number, go for Medium (M) – or for a quarter of the maximum choose Small (S). To get the smallest file sizes and to fit the most pictures on your card choose – and for the best-quality JPEGs go for. In almost all situations, you should really record in – or choose the superior RAW format. The RAW option uses all the sensor pixels, and uses a minimal amount of compression to create a proprietary format – which stores the data in a semi-processed state (like a digital negative). It captures significantly more tonal information than a JPEG version – which is invaluable for editing purposes, even if the difference between a RAW and files are not immediately apparent. RAW files are considerably larger in size than JPEGs, so not only fill up your card quicker, but also take longer to process in the camera and be written to the card. For high-speed continuous shooting, therefore, you can shoot longer sequences without the buffer filling up if you switch to JPEG.

RAW PROCESSING POWER

RAW files need specialist software to be processed – and need to be converted to a file format such as JPEG if they are to be viewed on the web and other PC programs. However, the disadvantages of RAW files are well worth putting up with in order to have the increased flexibility at the editing stage – as you can change colour balance, contrast, exposure and saturation to a far greater degree than is possible with a JPEG. The compression used by RAW files is fixed, however, on more recent DSLR models, the number of pixels actually recorded in an image can be altered. The SRAW and MRAW options, therefore, allow you to retain the editing advantages of the RAW format, while enabling you to fit more images on to your memory card.



FORMAT OR THROW AWAY

There are two different ways to delete all of your pictures, once they are safely transferred to your PC. The Erase Images option will only remove the image files from the image folder that your SLR automatically creates on the card. It's good practice to use the Format option instead, which removes all of the files from the card (the card can store any digital file, just like a USB memory stick). Remember to Format new memory cards too before you use them.



LEARN HOW TO HOLD YOUR SLR CORRECTLY

Get it right from the start and produce better quality results by minimising the risk of camera shake

You may think there's only one way to do it, but in fact the way you hold your camera can have an instant effect on the quality of the pictures you take, and it's amazing how many photographers get it wrong. Here, we'll show you how to manoeuvre the camera, control the buttons comfortably, and minimise the chance of introducing the kind of camera shake that will make it impossible to keep your shots sharp. By placing your feet, arms, legs and hands in the right position, you'll be amazed at how much easier it is to get great results – plus you'll really look the part!



2 SHOOTING FINGER

Your DSLR is designed to be held in your right hand, so your right index finger should be used to press the shutter-release button on the camera's top plate.



3 EYEBROW

When the camera is lifted up to the eye, press the viewfinder against the eyebrow, as shown. This makes another point of contact on your body, and instantly increases stability.



1 RIGHT HAND

The right hand should be used to grip the camera body. Curl your fingers around the camera's rubber (or textured) grip panel, and leave your thumb free to operate the rear controls.



4 LEFT HAND

Put your left hand out. Place the lens in this hand, cupping the lens gently from below, and the weight of the lens and camera immediately becomes supported. You can twist the barrel of the lens with this hand to zoom or focus manually.



SHOOT IN THE PORTRAIT POSITION

The principles for shooting in the portrait orientation remain the same as for landscape shooting



1 RIGHT HAND
When you move the camera around, your right arm will immediately come up. Keep it as steady as possible.



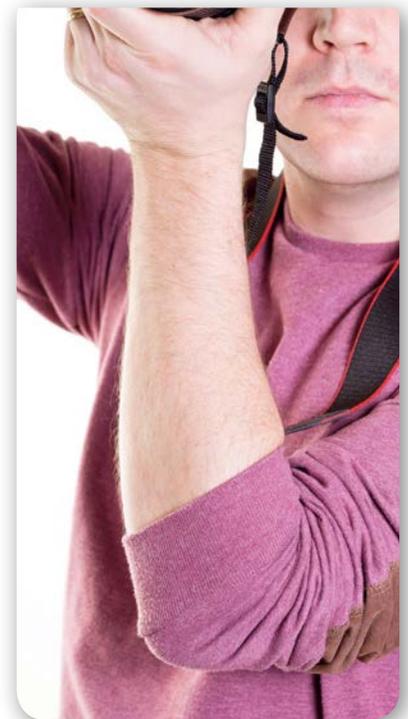
2 SHUTTER AT THE TOP
Turn the camera anti-clockwise so that the shutter button is at the top, as shown. Don't turn it the other way around, because you'll get your arms in a twist and find it much harder to shoot.



3 THUMB
With your hands and arms in this position your thumb can be used to press the buttons on the back panel when you want to adjust the camera settings.



4 LEFT ARM TUCKED IN
Keep your left arm tucked into your body for stability – in this position it's far more stable than it would be pointing out to the side.



FOUR WAYS TO STAY STEADY

Control your breathing and stance, or lean against nearby fixtures for steadier shots

1 BREATHING

Breathe out as you take the photo – you’ll move around far more if you hold your breath. Practise makes perfect here. You’ll be amazed at the effect that controlled breathing has on your shots.



2 ELBOWS

If you have a surface area in front of you, lean your elbows onto it to keep yourself as steady as possible.



3 ARMS

Another good way to keep your camera sturdy is by bracing yourself against something solid and immovable, such as a tree, wall or car.



4 LEGS

Place your feet a little apart so that you’re balanced. If you’re leaning in to take a shot, move one foot forward to create a body position that remains stable.



BE A HUMAN TRIPOD

If all else fails, get down on one knee to take the weight off your feet



1 CONNECT ARM AND KNEE

Bring your arm up and place your elbow on your knee to connect your leg and arm together. This creates a braced position so you don't move around.



2 RAISE A LEG

By coming down into a crouching position and bringing your leg up, you can turn your body into a human tripod that supports your camera effectively.



3 TAKE A MAT

When shooting outdoors in this body position, you might get a wet or dirty knee. Take a mat or a plastic bag to kneel on so that you don't ruin your clothes.



4 CORE STRENGTH

Try to keep the core of your body still. If you're steady through your centre, you'll find it easier to control your limbs.

HOW TO ZOOM IN WITH YOUR LENS

1 DO THE TWIST

Put your left hand out and place the lens in this hand. To zoom in to a subject you need to twist the main barrel of your lens. This is the moving part that's situated closest to the camera body. There are numbers marked just above the moving barrel, and these numbers dictate how close or distant the lens is to your subject. So, for example, at the widest angle, our lens will be in this position, at a focal length of 18mm.



2 GET SOME FOCUS

To focus your lens you need to twist the front ring on the lens barrel. If you're in the manual focus mode it moves freely. By moving it you can select the exact point in the image you want to make sharp. When using autofocus there's no need to touch the lens – the camera will do the focusing for you when you half press the shutter release. You just need to point the camera at the point you would like to appear in focus.



LENSES EXPLAINED

A big advantage of DSLRs over compact cameras is that you can change the lens for greater flexibility – here's a quick guide to using your optic

One of the biggest advantages of owning an SLR is that you can change the lens, which opens up a whole new world of opportunities for the creative photographer. Lenses come in a huge array of sizes (or focal lengths) that cover a range of viewing angles, from super wide to very long zooms. Whichever lens you use, it will be made up of a few components that work together to help you compose the scene you see through the viewfinder. Some lenses have a fixed focal length, but most – including the kit lens you may have bought with your camera – enable you to zoom in.

The numbers printed on your lens show you its focal length. Take a standard zoom lens. At

its widest focal length it reads 18mm, but at its furthest zoom setting it reads 55mm. These figures may vary from lens to lens, so yours could be 24mm at the widest setting and 70mm when zoomed in. Just remember, the lower the number, the wider the view, and the higher the number, the more you can zoom in.

Your lens may also have image stabilisation (IS) or vibration reduction (VR) technology built in. This means that your lens will try to compensate for any movement created when holding your camera to prevent blur in the resulting images. You should keep stabilisation switched on while shooting with the camera handheld. If you mount your camera onto a tripod, however, you will need to turn it off.



WHICH LENS SHOULD YOU USE?

Whatever subject you choose to shoot, there will be a type of lens that's perfect for the job



LANDSCAPES

Which lens do you need?

When shooting landscapes, a wide-angle lens enables you to fit as much of a scene as possible into the frame.

What's the typical focal length?

Wide-angle lenses range from 10mm to 35mm. Remember, though, that wide angles can make objects appear smaller in the frame, so you'll need to compose the image carefully. 35mm is the closest focal length to human sight.



PORTRAITS

Which lens do you need?

A fixed focal length lens will flatter your subject, and help you to get creative with focus and blur. Without a zoom, however, you'll need to move yourself forwards or backwards in order to adjust the composition.

What's the typical focal length?

Usually around 35mm, 50mm or 85mm. These lenses produce a high-quality result, and are really lightweight.

AF/MF SWITCH

Lenses are essential for focusing, and accurate focusing is the key to a successful photo. You'll find a switch on your lens that has the letters AF and MF (or A and M) written on it. AF stands for autofocus and M stands for manual. If you want your camera to do the focusing for you, then move the switch to AF. If you're shooting a subject where you want to take full control of the focusing, use the manual setting instead.



CLOSE-UPS

Which lens do you need?

If you want to capture the detail of an object at a one-to-one ratio or closer, then a macro lens is a must..

What's the typical focal length?

They vary, but 100mm is a popular focal length. Macro lenses can be quite pricey, so only invest in one if you're serious about this kind of photography. A cheaper alternative is to buy an extension tube, which sits between a camera body and a standard lens. You can use them to shoot flowers, insects, small objects and more.



WILDLIFE OR SPORTS

Which lens do you need?

For wildlife and spectator sports (or any other genre that requires you to shoot from a distance), you'll need a telephoto zoom. They are particularly good for wildlife as it means you can observe without disturbing the animals.

What's the typical focal length?

Telephoto lenses usually start at around 70mm, and go up to around 800mm. They can be heavy and expensive, due to the complex glass construction, but if you need that extra reach, they are well worth the investment.

LEARN HOW TO TAKE YOUR FIRST PHOTO

Learn all you need to know about how the shutter release button works, and start taking inspiring photos in Auto mode

Once you've familiarised yourself with your new camera and set it up to suit the way you shoot, you'll be keen to head out and start taking pictures. But if you're completely new to SLR photography, it's worth taking a few test shots in the comfort of your own home before you head out into the great outdoors. That way you can be sure that you're comfortable with

holding your camera, zooming your lens in and out, and getting the focus right, rather than fiddling around on location and missing the perfect shot.

To take an image, you need to press the shutter-release button, which is found on the right-hand side of your camera at the front. The shape of the camera has been designed so that you can comfortably grip your fingers

around the body and use your index finger to press the button. Here, we'll show you a straightforward way to take an image using your camera's Full Auto shooting mode, and with the focus mode set to automatic.

KEEP SHOOTING

Now that you have taken your first shot keep going! We challenge you to take a stroll around your house and garden and shoot a pattern, a green object, a texture, something symmetrical, some fruit and something red.



1 TURN TO FULL AUTO MODE

Turn your camera on, and then turn the Mode dial to the Full Auto setting (usually represented by a green, rectangular icon or similar). In this automatic setting your camera will control all of the settings for you. If there isn't enough light, it will engage the pop-up flash.



Image © Getty Images.



2 COMPOSE THE IMAGE

Hover your right index finger over the shutter-release button and bring the camera up to your eye. Look through the viewfinder, composing your image carefully and moving the camera around, or changing your position, until you're happy with what you see.



3 HALF PRESS TO FOCUS

With your lens set to AF (autofocus) mode, half press the shutter-release button and you'll feel and hear your lens focus automatically. Your camera will beep when the lens has locked focus, and the active focus points will be highlighted in red in the viewfinder.



4 NOW SHOOT!

In one continuous movement, press the shutter-release down fully. In a fraction of a second the mirror inside your camera will flip up out of the way of the sensor, allowing light to pass through and on to the sensor. The image will now be stored on the memory card.

TRANSFER PHOTOS TO YOUR COMPUTER

See your images on the big screen by connecting and downloading them directly from your SLR to your PC

Once you've taken a few photos, don't let them languish on your memory card. By downloading them to your computer, you can sort, check and edit, then save your images to your hard drive.

Once downloaded, you can delete the images from your memory card, freeing up precious space so you can head out and shoot more. It helps if you devise a filing system from the start, so that your images are easy to

find at a later date. Try putting them in folders labelled with the date they were taken, their subject, or even both.

There are different ways to get your images on your computer. The first is to connect your camera to your computer using the USB cable that came in the box.

The second is to use a memory card reader, which is more efficient. The third option, if your camera has wireless connectivity, is to transfer images wirelessly.



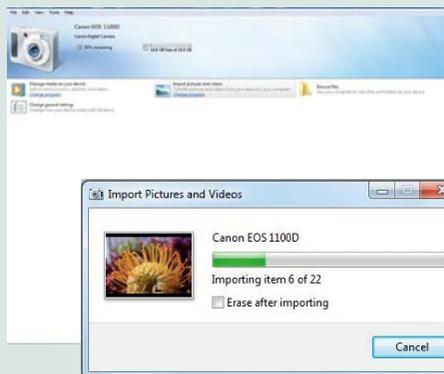
USE A CARD READER

A memory card reader is a small device that plugs into your computer via a USB connection point. You then simply eject your memory card from your camera and insert it into the correct slot on the reader. Your computer will recognise the device, and present you with a folder from which you can drag your images into a folder for safekeeping on your computer's hard drive.



TRY WIRELESS OPTIONS

Some modern cameras come with built-in wireless connectivity such as Bluetooth, NFC and even Wi-Fi, enabling you to transfer images without cables. These work in different ways, often involving pairing with an app on your tablet or smartphone so you can upload images to social media or to cloud storage services. If your camera doesn't have wireless built in, you could buy a Wi-Fi memory card that connects to your smartphone, tablet, PC or Mac, via a desktop or mobile app that enables you to transfer your images.



CONNECT CAMERA TO COMPUTER

Your DSLR comes with free image-editing software. Install this first by inserting the CD and following the on-screen instructions, or by downloading the software from your camera manufacturer's website.

Next, use the USB connection cable that came with your camera to physically link your DSLR and your computer. The small end plugs into your camera's USB

connection point around the side. Once connected, turn your camera on. Your computer should recognise your camera and open a program to download your images. Make a new folder on your hard drive and export all of your images into it. Name your folder – with the date, for example – so your images are easy to find later. Then disconnect the cable once you've finished downloading everything.

INTRODUCING THE VIEWFINDER

Learn how to read the information displayed under the image in the viewfinder

When you want to compose a photo there are two ways to do this on your DSLR. First, you can look through the viewfinder, or option two, engage the Live View feature and see the scene on the LCD screen instead. Each method comes in handy in different shooting scenarios.

Most photographers find the optical viewfinder to be much more useful for a couple of reasons. First, in bright light distracting reflections can make the LCD screen hard to view. But more importantly it's easier to keep the camera steady by holding it up to your eye rather than right out in front of you.



INTRODUCING THE VIEWFINDER





VIEWFINDER VS LIVE VIEW

The viewfinder and Live View features perform the same task, so which one should you use?



THROUGH THE VIEWFINDER

Let's take a look through the viewfinder to see what's what...

1 THE IMAGE

Through the finder you can see the scene. The mirror in front of the sensor enables this to happen. When Live View is engaged, the mirror is flipped out of the way, making the viewfinder temporarily unusable.

2 SYMBOLS

The symbols on the left-hand side of the screen vary depending on what feature or button is engaged. For example, if you pop the flash then a lightning symbol will appear. In this example the star button on the back of the camera is being held down.

3 CAMERA SETTINGS

In the middle of the screen, starting on the left is the shutter speed setting followed by the aperture. We then have the exposure compensation scale in the middle. When the needle is right in the centre of the scale, the camera considers the image to be well-exposed. To the right of this, the ISO sensitivity setting is displayed.

4 GREEN LIGHT

On the right-hand side of the screen a green light flashes on and off. This indicates whether the focus is locked. When the light is engaged, the focus is locked and ready to shoot.

5 NUMBER OF SHOTS

The number next to the focus indicator light indicates the total number of shots the camera can fire in a sequence. This will vary depending on how you have your camera set up.

6 FOCUS POINTS

Your camera's focusing system is made up of a grid of focus points. The point or points of the image that are in focus light up red.



**THE VIEWFINDER**

The viewfinder enables you to see the scene in front of the lens. To use it, bring it up to one eye and close the other. This masks out distracting elements, enabling you to frame up your shot. The viewfinder also includes information regarding your camera settings.

**THE DIOPTR**

To check your viewfinder screen is in focus you can adjust the dioptre. The dioptre is a small plus and minus dial that you adjust manually. At this stage we're not worried about taking a photo, but simply seeing if the screen inside the finder is in focus.

**THE LCD SCREEN**

To engage Live View, press the Live View button on the back of the camera. There's a variety of subjects you can shoot using this option such as still lifes or in low light. It works best when you have your camera mounted on a tripod. Avoid using it with your camera in your hands.

**LCD BRIGHTNESS**

If you're finding it hard to see the LCD screen, adjust the brightness. Head into the main menu and find LCD Brightness. Then use the back-panel multi-controller to adjust the brightness up or down the scale.

**LIVE VIEW SET UP**

When Live View is engaged, you can alter the screen display setup by pressing the Disp or Info button on the back panel of the camera. Most DSLRs have the option to include an overlay grid in this feature.

MULTIPLE ANGLES

if your camera has a vari-angle LCD then you can use Live View to compose shots at awkward angles or to shoot slyly from the hip if you are trying out some street photography.

LIVE VIEW IN ACTION

**1 ENGAGE LIVE VIEW**

Press the Live View button on the back panel to engage the feature. You'll hear your camera click. This is the mirror inside the camera flipping up out of the way of the sensor, making the optical viewfinder temporarily unusable.

2 COMPOSE THE IMAGE

You'll find it much easier to compose your image if you engage the grid line feature. Head into the main camera menu to select it. Most photographers use the thirds grid because it can help when composing a shot.

3 MAIN IMAGE

On the screen we can see live what's in front of the camera's lens. The image on the screen will adjust with the ambient light settings, so we can see what's going on. When we adjust camera settings it will also show on the screen.

4 CAMERA SETTINGS

To alter the setup in Live View we need to press the Info or Display button. The main camera settings can be found at the bottom of the screen. On the side you'll find some other useful settings such as the white balance.

5 CHECK THE HISTOGRAM

The histogram is a useful tool that enables you to check the exposure of the image. See our guide to the histogram on page 90 to find out how to read one. Don't worry – it's not as complicated as you may think!

6 FOCUS BOX

You can move the focus point around anywhere on the screen. Use the back-panel controller to do this. It's focused when the square turns green. Some DSLRs come with an advanced touch shutter and AF feature.

USING LIVE VIEW

We reveal all the dos and don'ts of using Live View

DO SHOOT STILL LIFES

Use Live View to shoot still-life scenes. You're not against the clock so we suggest you mount your camera on a tripod and use the feature to carefully compose your shot. If shooting by hand, however, we recommend you shoot using the optical viewfinder.

DON'T SHOOT ACTION

Don't use Live View when photographing action. Due to the mechanical workings of Live View, the autofocus is considerably slower compared with shooting through the viewfinder. Therefore we recommend sticking to the viewfinder for high-speed shooting.

DO USE THE GRID

Use Live View to help compose your image. There's an overlay grid feature that's useful when composing a scene. Head into the main menu and under the red camera setting section look for Grid Display and select from the options. This can be a great help when you're trying to compose your image using the rule of thirds or for when you're trying to keep the horizon straight. Many DSLRs also come with an electronic level feature, which can be useful when shooting landscapes.

DO CAPTURE VIDEO

Use Live View to shoot video. Actually, you have no other option because the camera automatically engages the feature, therefore blocking the viewfinder from use. It can be tricky in bright light to see the screen, so head into the camera's main setup menu to adjust the LCD screen's brightness.

DON'T DRAIN THE BATTERY

Don't use Live View when your battery is low. The feature will drain your camera's battery much quicker, so keep this in mind. If you plan on using the feature a lot on a shoot, bring along a spare.

DO MANUALLY FOCUS

Use Live View to manually focus. Do this only when your camera is set up on a tripod. First make sure your lens is set to the manual focus setting (MF). Then zoom into the 10x setting using the zoom button, and move the focus ring until the screen is sharp. This can come in handy when shooting landscapes and still lifes.

DO ENGAGE IN POOR LIGHT

Use Live View in low light. It can be tricky to see anything through the viewfinder when the light drops, and so switching to Live View is a handy way of seeing in the dark. Again, we recommend you mount your camera on a tripod in this type of shooting scenario.

DO SHOOT FROM AWKWARD ANGLES

Use Live View if you want to shoot from above or below. Some DSLRs include a vari-angled LCD screen, which enables you to be even more flexible with your shooting angle.

DO CHECK THE EXPOSURE

Use the Live View feature to help you check exposure. Unlike the viewfinder, which projects the view in front of you using a mirror, Live View will adjust the brightness and darkness of the scene for you, depending on the camera settings.

DON'T SHOOT PORTRAITS

Don't use Live View to photograph people. You'll find you have much more control over your camera if you hold it up to your eye and use the optical viewfinder. It's much harder to keep the camera steady when holding it out in front of you.

GET TO KNOW YOUR CAMERA

Understand how your camera functions by exploring the internal and external anatomy

At its most basic, a camera is a light tight box, into which light is only permitted via a tightly controlled path. Camera design has changed surprisingly little since the dawn of photography, only in the modern age has a digital sensor been introduced, in place of a frame of film. Light enters the front element of the lens, passes through the aperture diaphragm and is focused on the location of the sensor chip. Once the shutter release button is pressed, the shutter curtain opens and light is able to contact the sensor surface.

The sensor itself is where the pixels are found and these photo-detectors recognise and convert light into a digital signal, which is used to construct the image.

There are various types of camera, the most popular today being the Digital Single Lens Reflex (DSLR) and mirrorless Compact System Camera (CSC).

The DSLR uses a mirror placed in front of the shutter, to reflect the image being projected by the lens up into a prism, which refracts the light to form an image in the optical viewfinder. In a CSC, this mirror is absent and instead the sensor itself is used to create a preview image on the camera's rear LCD screen.

There are costs and benefits to both models. The mirror provides a 'real' viewfinder image rather than a digital reconstruction, which is the preference of some photographers, while the mirrorless design allows greater

continuous shooting rates, since the mirror does not have to swing out of the light path before an image can be taken. While the mechanical components can be easily observed, the digital processing involved is highly complex.

While it might be unnecessary for a camera user to know about these in detail, possessing a good understanding of how your photographic tools create the images you take will help you to recognise where you will encounter the greatest challenges in your quest for detailed, colourful photos. Furthermore, knowing your camera's strengths and weaknesses will enable you make the most of the features you have at your disposal.



Above
Vivid colours

A knowledge of how an image is captured on your camera's sensor will allow you to shoot accurate colour like a professional

© Peter Fenech

EXPERIMENT WITH FREELENSING

Try your hand at creative photography by manipulating how light enters the camera



Change your settings

Make sure your camera is set up to allow shooting without a lens attached. This option can be chosen from the menu. Ensure you are in a low dust environment though.



Tilt the lens

Detach the lens, hold it as close to the camera as possible and angle it slightly to shift the focus plane. Watch out for any distracting overexposure at the frame edges.



Play with your shutter speed

Adjust exposure using shutter speed (you'll have lost aperture control). Take many frames while adjusting lens position until you have a sharp subject with creative blurring towards the frame periphery.



Left Detached look

By unmounting the lens and slightly misaligning it relative to the sensor, a similar effect to using a tilt/shift lens can be achieved, for creative blurring of frame edges

© Peter Fenech

MASTER MIRROR LOCK-UP

As previously discussed, in a DSLR camera, the reflex mirror must move out of the light path to allow the sensor to be exposed. Since the mirror is a large physical component, which moves rapidly, it can send vibrations through the camera. At longer shutter speeds this reduces sharpness through

motion blur. It also generates noise, which can startle wildlife or interrupt an event. Try locking the mirror in the up position once your image is composed. Select this in the camera menu or on the mode dial, press the shutter button to lock the mirror up, then again to make the exposure.



By moving the mirror into the up position, the viewfinder image disappears, but the delay until exposure allows vibrations to dissipate

KNOW YOUR KIT

What's inside your camera?

1 PRISM

The component of a DSLR which creates the viewfinder image. Professional cameras often use a Pentaprism, which is a solid glass block. This produces a brighter image but is heavy. Entry-level models use a Pentamirror, which uses multiple reflective surfaces – a lower-weight option but with a duller image.

2 REFLEX MIRROR

This redirects the light entering the lens up into the viewfinder assembly, to create a 'live' image in a DSLR. This gives the photographer a through-the-lens preview of the final shot. Some light is allowed to pass through the centre of the mirror for use by the autofocus system sensors.

3 IMAGING SENSOR

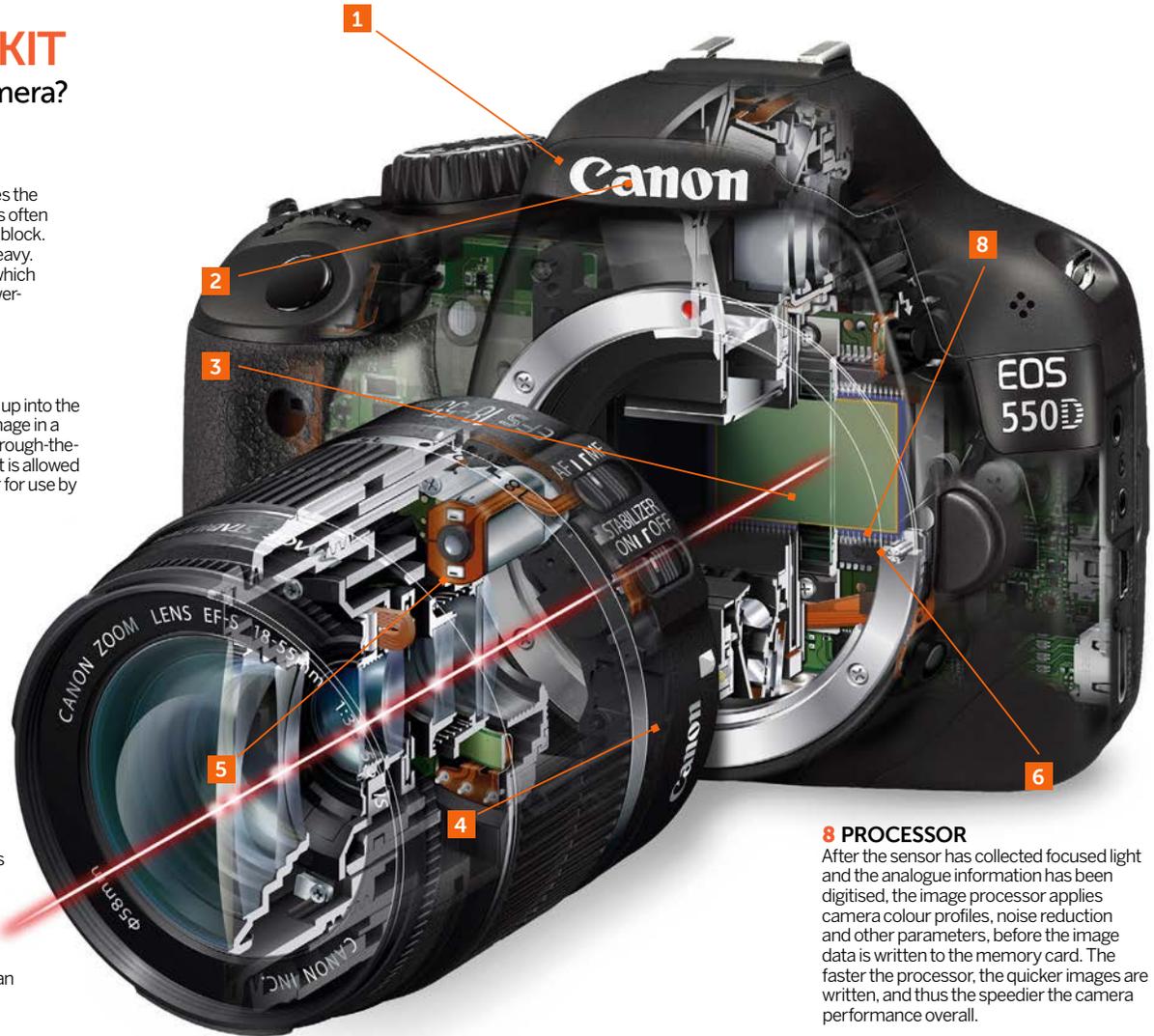
The sensor is the device which detects the light entering through the lens. Essentially performing the same role as the retina in our own visual system, the sensor is responsible for collecting light and passing on this information for processing and digital image construction. It may also be used for autofocus calculations.

4 LENS MOUNT

Each camera brand uses a different lens mount. Most use a bayonet type, for rapid attachment and removal of interchangeable lenses. The mount perfectly places the lens at the right distance from the sensor for a sharp image to be focused onto it. Adaptors can be used to bridge mount types.

5 A/D CONVERTER

The Analogue to Digital Converter is a special processor which interprets the information gathered by the sensor. By reading the amount of light captured by each pixel, the A/D converter can create a corresponding electrical charge which is used to form a digital image demonstrating an equivalent brightness level.



6 LENS CONTACTS

Modern lenses feature a great number of digital components that are either controlled by or must work in tandem with the host camera. Autofocus and aperture control, to name just two vital functions, are made possible by signals sent between the camera and lens, via these metal contacts lining the mount.

7 AUTOFOCUS SENSORS

DSLRs use a Phase Detection AF system where dedicated sensors 'look for' a focused image. Some light is transmitted through the reflex mirror and these sensors are able to detect when light is back focused or focused in front of the sensor plane. CSCs use on-image sensor contrast-detection AF.

8 PROCESSOR

After the sensor has collected focused light and the analogue information has been digitised, the image processor applies camera colour profiles, noise reduction and other parameters, before the image data is written to the memory card. The faster the processor, the quicker images are written, and thus the speedier the camera performance overall.

9 SHUTTER

The shutter either moves vertically or horizontally to expose the sensor to the light focused by the lens. It remains open for the duration selected on the camera screen. Some cameras feature an electronic shutter that engages one row of pixels at a time, rather than using a physical curtain.

UNDERSTAND OPTICAL VIEWFINDERS

Using the viewfinder correctly can result in dramatically improved results in your photography

The main benefit of the SLR design is that the viewfinder image is created using the same lens as the one used to make the final image, providing an accurate preview. Many photographers prefer an optical VF as the image can often be sharper, with more lifelike colours than an electrical model. Conversely however, the EVF gives a better preview of how the

scene will look once it has been captured, and many can adapt to lighting conditions to provide an easier view in low light. Both models offer a display of shooting settings, but an EVF can also show a virtual horizon.

Right

Modern electronic viewfinders are better than ever, but an optical model provides a more natural and arguably more attractive image.



UNDERSTAND YOUR SENSOR

Take a closer look at your camera's main component and discover how it impacts your photography

The sensor at the heart of your digital camera is what makes the images you shoot. While traditional film worked by a chemical reaction, a digital sensor captures and converts light into an electrical signal. Most new photographers are aware of what a pixel (picture element) is, but these points of light and colour in the final image correspond to the arrangement of microscopic photo-detectors on the sensor surface.

A sensor pixel is like a small bucket, into which falls photons – the components of a beam of light. The shutter opens for the exposure, the pixels fill with photons and, once the shutter has closed, the camera's processing systems scan the sensor and read how many are in each pixel. For every photon an electron is generated, which is used to

produce an electrical signal. This is how a digital camera understands brightness – the brighter the scene, the more photons that are harvested and the greater the charge produced, which is shown as a lighter final image.

Contrary to popular opinion however, the sensor cannot perceive colour, only luminosity (brightness), so the sensor alone can only create a map of light values. To address this, sensor manufacturers place a set of coloured filters – known as the Colour Filter Array – over the sensor. This consists of red, green and blue filters, the approximate arrangement of which is programmed into the camera. If a pixel has a blue filter assigned to it, the camera 'knows' this should generate a point of blue in the image. There are several types

REDUCE DUST SPOTS

When your sensor is charged it attracts dust and debris, which shows up as dark spots in the captured image. To avoid these try not to change lenses in dusty or sandy environments (sand can damage the sensor) to prevent ingestion. Perform regular automatic sensor cleaning, from within the menu and if manually cleaning, with a dedicated kit, use the provided sensor cleaning mode feature. This deactivates the chip while it is exposed to the elements, minimising further particulate attraction.

of sensor design. Early digital cameras used CCDs (Charge Coupled Devices)

while CMOS (Complementary Metal Oxide Semiconductor) sensors are most popular today. CCDs are theoretically capable of producing better-quality images but are more difficult to fabricate, so they are considerably more expensive.

Sensor size is also important for image quality. The larger the sensor, the bigger the pixels, and the more light that can be captured. Most entry-level cameras use the APS-C size, while pro models use the larger Full Frame chips. There are advantages to both formats, although ultimately camera cost will influence the decision of most buyers.

A CLOSER LOOK

What affects a camera sensor?

1 NOISE BENEFITS

Larger sensors have more space for large pixels. The more light that is captured the less image noise is apparent, producing a smoother, less grainy image in low light

2 DYNAMIC RANGE

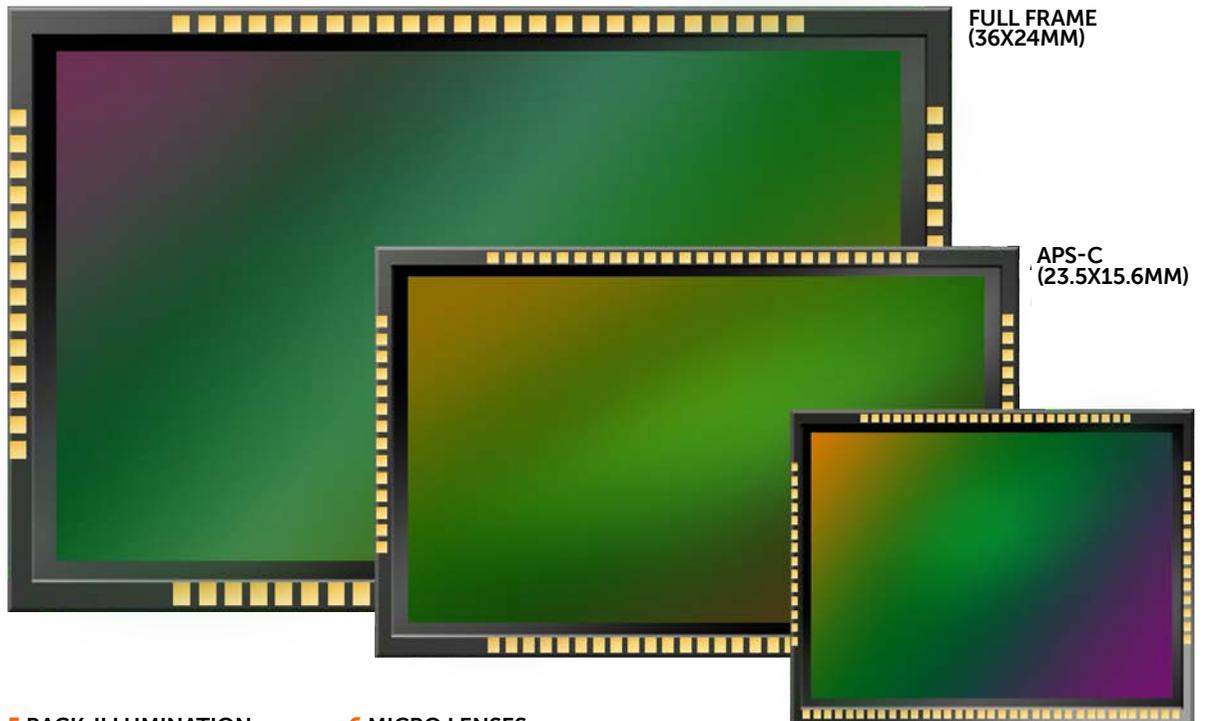
Pixel size also affects detail capture in bright and dark image areas. Bigger pixels fill more slowly, losing less detail in bright highlights. This in turn produces a more natural tonal range.

3 IMAGE AREA

The smaller the sensor, the less of the scene that can be covered. A larger sensor area captures scenes that appear wider at the same focal length than smaller-format units.

4 LENS SIZE

The bigger the sensor, the larger the projected image must be. This necessitates a larger lens, with more glass, increasing weight. APS-C and Micro 4/3 lenses have greater portability.



5 BACK-ILLUMINATION

Some cameras feature specialised sensors with the photosensitive areas placed closer to the incoming light and wiring moved to the back. This improves light capture but increases larger sensor costs significantly.

6 MICRO LENSES

Especially important on smaller sensors with higher resolutions, these direct stray light into the pixels to maximise light capture and reduce image noise. This improves quality in low-light shots.

MICRO 4/3 (18X13.5MM)



FULL FRAME

UNDERSTAND CROP FACTORS Know the effect sensor size on your lenses' magnification

As the size of the sensor is decreased, less of the projected scene can be included in the frame. This has a similar effect to cropping the image later in software or zooming in, using a zoom lens. This is a disadvantage for landscape photographers, who value wide-angle perspectives, but is beneficial for sport and wildlife shooters, who get an increased effective focal length, allowing a closer view of their subject without buying a more expensive, longer lens. Different sensor formats have varying crop factors. APS-C sensors have a magnification of approximately 1.5x, so a 16mm lens will give the same image as a 24mm lens on a Full Frame or 35mm film camera. Meanwhile, professional medium format cameras have a larger than Full Frame sensor, giving a wider view than the focal length stated on the lens. Crop factors are always measured as a comparison to a Full Frame focal length. If you own a Full Frame camera the crop factor is zero, so the stated focal length does not need to be recalculated. Manufacturers now compensate by making even wider lenses, such as 10-20mm, to deliver the wide perspectives enjoyed in the days of film.



COMPACT CAMERA



MICRO FOUR THIRDS



APS-C



FULLY AUTOMATIC & SCENE **MODES**

Let your DSLR take control of all the settings for you with the automatic and scene modes

When you first start using a DSLR, it can be a little overwhelming. Not only do you need to consider what subject matter you're shooting, you also may feel bombarded by the number of technical camera settings available and not understand what each one does.



AUTOMATIC MODES EXPLAINED

Your mode dial is full of auto shooting options. Here are the main three...



FULLY AUTOMATIC

This is marked on the mode dial by a green rectangle. Fully automatic selects all your camera settings for you. This sounds great, but you'll come up against limitations. Your camera may not always be accurate, and in low light, the flash will always engage regardless of whether you want it to. Plus, you as the photographer have no creative input to the final result. It's best to use the fully automatic mode until you get comfortable using your camera, and then progress to the creative modes.



Right
Let the camera do the thinking
 Keeping your camera in Fully Automatic is a great option when you are on the move or shooting something fleeting that you don't want to miss

CREATIVE AUTO MODE

The creative auto mode has been designed so that the user can alter certain camera settings without having to get too technical. Marked on the mode dial as CA, this setting is one of the most flexible and creative of all the exposure modes available. If you want to alter your image to black and white, or create a blurred background around your subject matter, then you can. Press Q and use the back-panel to adjust settings.



NO FLASH MODE

If you need to be discrete then the no flash mode can be useful. Marked on the mode dial by a lightning symbol with a cross through it, this mode will automatically control all your camera settings for you, but won't engage the pop-up flash in low light. This can be handy in a museum or art gallery where flash photography isn't allowed. We'd recommend you use your camera without flash for the most part.



SCENE MODES IN DETAIL

Scene modes enable you to define the type of shot you want to take

CLOSE-UP MODE

When shooting subject matter at close range, switch to the close-up mode. There are many subjects that work well for this type of photography. They include flowers, small fruit, and abstracts of household objects. If you want to take a step further look for insects in the garden or practice food photography.



SPORTS MODE

If you want to capture the moment, the sports mode option is the best. This is useful for photographing kids on the go or any type of energetic subject matter. In this mode your DSLR will change the focus setting to track your subject matter, giving you a better chance of keeping the image sharp.



PORTRAIT MODE

When you want to take a portrait, put your camera into the portrait mode. With this setting, your camera will blur out the background and adjust the tones in the image to smooth the skin and enhance the hair. Like with all the scene modes, you can fine-tune the mode options. To do this, press the Q button and use the back-panel multi-controller to navigate the settings. Press the Set button to select.



LANDSCAPE MODE

If you find yourself in an impressive landscape, switch your mode dial to the mountain icon. Under the default setting option (press Q and Set to engage) you can adjust the effect of the final result based on the light conditions you're shooting in, for example, at sunset. The landscape mode will aim to keep both the foreground and the background of the scene in sharp focus. It will also boost the colours in the scene.





PROGRAM MODE

Take more control over your exposures using the semi-automatic program mode

To improve your photography you need to start taking control of your DSLR, but don't worry – it's not half as daunting as it first sounds. To enter the program mode, simply turn the mode dial around to P. In program mode your camera automatically controls the shutter speed and aperture settings. But it also has a few other tricks it can perform.

Image © Getty Images

PROGRAM MODE EXPLAINED

All you need to know when shooting in your camera's program mode



1 SWITCH TO PROGRAM MODE

To enter program mode, turn the mode dial around to P and frame up the scene. When you half press the shutter-release button, your camera will set both the shutter speed and the aperture, according to how light or dark the scene is. But unlike the fully automatic mode where you can't alter the camera settings, in program mode you have more options to play with.

2 ALTER THE EXPOSURE VALUES

If you're not happy with the settings your camera selected, you can alter the combination of shutter speed and aperture using the command dial. You'll notice it changes both the aperture and shutter speed to match the light conditions.

3 ADJUST THE ISO

You can also alter the sensitivity of your camera's sensor in program mode. Press the ISO button and then alter it accordingly. When shooting in bright light, you want to keep it on a lower setting such as ISO100. However, if you're shooting in low light then you need to push it up to a higher number such as ISO800. This is extremely useful when shooting handheld to avoid a slow shutter speed blurring the end result.

4 EXPOSURE COMPENSATION

Unlike with the fully automatic mode, in program mode you have the option to alter the exposure compensation. This feature enables you to brighten or darken the final result in small increments. To do this on a beginner camera model, hold down the plus/minus button and use the command dial to move the needle up and down the scales. On an advanced model, use the back-panel multi-controller.





STAY SHARP WITH AUTOFOCUS

Let your camera take control of the focus, so you can concentrate on the composition

As we've explained on the previous pages, autofocus is brilliant for beginners. If you're trying to master a new SLR camera, by leaving your camera to focus accurately on your subject, you're left free to focus (no pun intended!) on other things, such as positioning and composition. You now know how to get started – ensure the switch on your lens barrel is set to AF, then actuate focus by half-pressing the shutter-release button and wait for the beep. As with all things, however, there are ways to get more from this feature, and things you should watch out for, as we explain here.

PROS AND CONS OF AUTOFOCUS

- ✓ Great for beginners – it takes full control of your focus setup, leaving you free to be creative
- ✓ It's very fast, and it's accurate most of the time
- ✗ Your camera might not focus on the part of the image you actually want to be sharp – it generally focuses on the closest object
- ✗ If there's not enough light, your camera will struggle to lock on to a focus point



AUTOFOCUS GRID

Your camera has a grid of autofocus points built in – you can see them as you look through the viewfinder. The number of focus points a camera has varies from model to model – high-end SLRs, for example, can have up to hundreds, making accurate focus far easier to achieve. In this example, our camera includes a nine-point AF grid, and in autofocus mode the camera will decide which of these points corresponds with the area you want to be sharp.



PROBLEMS FOCUSING

If your camera is struggling to lock focus (you'll hear the autofocus hunting backwards and forwards, struggling to lock on), it could be because there's not enough light. If this is the case, your camera won't let you fully press the shutter release down. To fix this problem, bring in some extra light by either shining an external light source such as a lamp, or moving your subject closer to natural light.

Your lens may also struggle to focus if it's too close to the subject. The solution? Simply move yourself back and recompose the shot. Just remember, if your lens can't lock focus you won't be able to press the shutter button down.



If you want to blur your photo on purpose and the AF setting won't let you, switch your lens to its manual focus (MF) setting and move the focus ring with your fingers until you get the desired effect. Just remember to switch back to AF when you've got your shot.

SHIFT THE BALANCE

The WB Shift/Bracket menu option allows you to fine-tune your white balance, shifting colours towards blue or red, and towards green and magenta. Great for getting slightly warmer shots when using AWB. A Bracket option allows you to take three shots at different colour temperatures.

Image © Getty Images

UNDERSTAND WHITE BALANCE

The white balance of an image can affect colour, so it is important to understand the theory early on

For those new to DSLRs, 'white balance' can be the one control that is completely new to them. The focusing modes, ISO setting, exposure options, drive facilities – and so on – are much the same as those found on the film SLRs that many of us once used. Up until the arrival of digital cameras, white balance would only have been familiar to those who delved into the advanced settings of a video camcorder.

White balance, or WB, is necessary because light does not just vary in brightness, but also in colour. Each light source has its own

individual colour or 'colour temperature' – which as you move through the visible spectrum can vary from red to blue. Human vision is very good at compensating for this, so that a sheet of white paper will look white whether viewed in daylight or by candlelight. It is the job of the camera's white balance system to compensate for the colour differences in the lighting – so that the colours in the scene look exactly as we would expect them. Your DSLR has a wide range of options for controlling the white balance to suit the colour temperature of the light in the scene.

However, your camera is supplied set to Automatic White Balance (AWB) – which will cleverly look after all this for you.

This AWB setting does a surprisingly good job of getting the colour of your shots right in most lighting situations. However, as with all your camera's automatic settings, it's not foolproof. Most importantly, it can only operate within a confined range of colour temperatures. Colour temperature is measured on the Kelvin (K) scale, and the AWB system can only adjust from around 3000 to 7000 K. It will struggle to get a picture that does not look all-over orange

when shooting in your front room at night, or when photographing a floodlit building (as the colour temperature of these light sources is lower). It will similarly struggle just before dawn or on a foggy day, when the light has a blue tone and requires a colour temperature higher than 7000 K if you want to avoid blue-rinsed imagery.

Your DSLR, therefore, has a number of manual white balance options that allow you to take full control. The easiest to access are the presets. These typically give half a dozen different settings designed specifically for different light sources – each represented by an appropriate symbol. A lightning bolt is used for flash lighting (5900 K). A light bulb is used for tungsten-filament bulb lighting (setting a colour temperature of 3200 K). For daylight, there are three options. The colour of daylight varies as it is always a mixture of direct sunlight and reflected skylight (light reflected back off the atmosphere, which is bluer in tone). On a sunny day, skylight is less dominant, so the sun symbol gives an 'average daylight' colour temperature of 5200 K. The cloudy and shady options, meanwhile, give filtration for slightly bluer daylight conditions (with colour temperatures of 6000 K and 7000 K respectively). These settings are useful for getting consistent colours within a sequence of pictures – or for tricking the camera into giving you slightly warmer- or colder-looking results. However, the range of options is as restricted as when using AWB.

K IS FOR KELVIN

For a greater range of colour temperature settings you need to use another manual option. Although not found on all DSLRs, the K setting allows you to set a specific colour temperature by setting the Kelvin value you want. This is great for precision control – as you can dial in any setting from 2500 to 10000 K using the appropriate option in the main menu.

Of greater use, and available on most DSLRs, is the Custom White Balance setting. This gives an even greater range of colour temperatures (from 2000 K to 10000 K) – and this is set by taking a measurement from a test shot you have already taken of the scene.

For accuracy, it is best to use a picture of a piece of white paper, or a specialist neutral-grey card, to set this. You can also buy special white balance filters that you can use too. Just ensure this reference card is in the centre circle in the viewfinder, and in the same lighting as that you want to take final pictures. In reality (and not many people realise this) you can get good results with this system simply with a picture of the scene, without the complication of including the test card.



Image © Getty Images

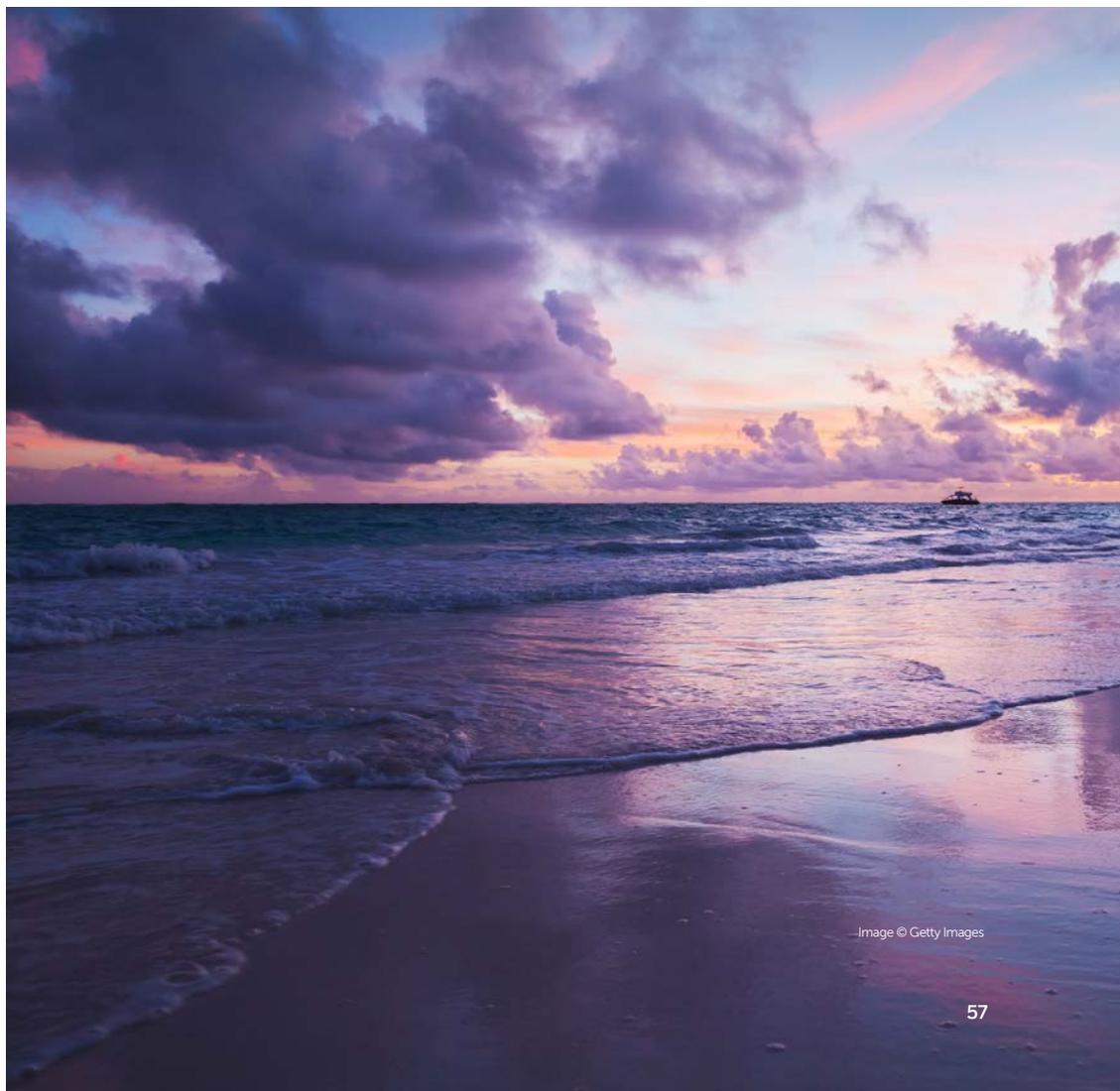


Image © Getty Images



WHY BOTHER IN RAW?

The white balance that you use is not set in stone. The colour of your shots can easily be changed at the editing stage to compensate for inaccuracies. In fact, if you set the file format to RAW (or the sRAW available on some models) you can easily alter the white balance after you have taken the picture (see opposite), and without any image degradation.

You could therefore argue that those shooting in RAW need not worry at all about white balance settings – as it can all be fixed in post-production. One good reason for taking white balance seriously, even if shooting RAW, is that the pictures displayed on your camera's back LCD are actually shown with the white balance as set on the camera. If you want your pictures to look at their best as our review them, and show them to others on the screen, it makes sense to try and get the white balance correct as you take the picture!

MIXED LIGHTING

Back in the days of film, colour temperature was adjusted using correction filters as the picture was printed (or on the lens, if using slide film). Filters are still used to correct colour in digital photography when shooting with two different light sources (known as 'mixed lighting'). When using flash in low light, for instance, the white balance cannot be adjusted for both the flash and the ambient light – typically creating a peculiar orange-coloured background.

By putting an orange filter (known as a gel) over the front of the flash, the colour of both light sources can be made similar, creating a more natural-looking result.



BEFORE



AFTER

FORCE CREATIVE WHITE BALANCE

Use some CTO (Colour temperature orange) gel over your flashgun to shoot a colourful portrait outdoors on a sunny day. Set your white balance to around 3850K. This is a cool way to create a striking effect that looks almost like it was shot at night.



HOW TO TAKE CONTROL OF WHITE BALANCE



1 To override white balance, you need to be in a Creative mode, such as P, Tv, Av or M.



2 Press the WB (White Balance) button, which you'll find on the top or back of your camera.



3 Your DSLR comes set to AWB (Auto White Balance) mode, but there are several other options.



4 Use cursor keys or wheel to access the manual options. You may also need to press Set.

TAKING THE RAW ADVANTAGE

Shoot RAW and you can edit white balance later

SOFTWARE OPTIONS

All RAW-editing programs allow you to alter white balance settings as you process the file.

PRECISE TEMPERATURE

DPP's Colour Temperature option allows you to set any Kelvin value you like.

PRESET MENU

A drop-down menu allows you to tweak colour temperature in the same way as on your SLR.



GET CREATIVE WITH WHITE BALANCE

It is not always necessary to get your white balance 100% accurate at the time of shooting. And this is not just because it is possible to tweak colours at the editing stage (particularly if you are shooting RAW). Getting the white balance 'wrong' can often actually help your picture taking. Here are three great white balance tricks to try for this month's homework!

1 FIND A SUBJECT

Find a suitable outdoor subject lit with normal daylight on a bright day. But rather than setting the white balance to AWB or Sunny, try setting it to Cloudy instead. This will make the picture warmer in tone, and can be a great trick when photographing portraits or architecture.

2 CHEAT WITH WHITE BALANCE

Sunsets often look rather less impressive in

photographs than you remembered when taking them. Cheating with white balance can make dusk and dawn look more golden. Set the WB to Shade, or if your camera allows, use the K option and set a temperature of 10000 K.

3 ADD SOME BLUE

Give your landscapes a moonlit look by setting the white balance to give an overall blue tone. Set the WB to Tungsten, or set a K value of 2500 K. Alternatively, use the Custom White Balance option (see left) and, rather than using a piece of white paper, use a piece of orange or red paper for your test card. This will trick your camera into giving you a blue-toned picture. The same trick works well for ghostly Halloween portraits.



WHAT IS ISO?

Much like white balance, ISO can greatly affect the outcome of your photographic endeavours

Back in the days before digital, film came in a variety of different speeds. The 'faster' the film, the more sensitive it was to light – allowing you to use faster shutter speeds than with 'slower' film. Using these higher-sensitivity film emulsions was useful for moving subjects – and particularly so in low light. This film speed was measured using a number of different scales – with two of the best known, the American ASA and German DIN scales, eventually being brought together to give us the standardised ISO system. Digital cameras, of course, do not use film – but the same ISO scale is now used to measure the camera's sensitivity to light. Although the camera's imaging chip cannot

be changed to suit the subject (unlike film), its sensitivity can effectively be boosted by the camera's circuitry. This is done with the ISO control. Think of ISO as being like the volume control on your radio. If the signal is weak, you crank it up to compensate. The signal from the sensor is simply amplified – and this helps you get the fast enough shutter speed you want in low light.

Below
Noise levels

The lower the light levels the more likely you are to find grain and noise in your captures. Increasing the ISO helps to combat this

HOW TO CHANGE ISO

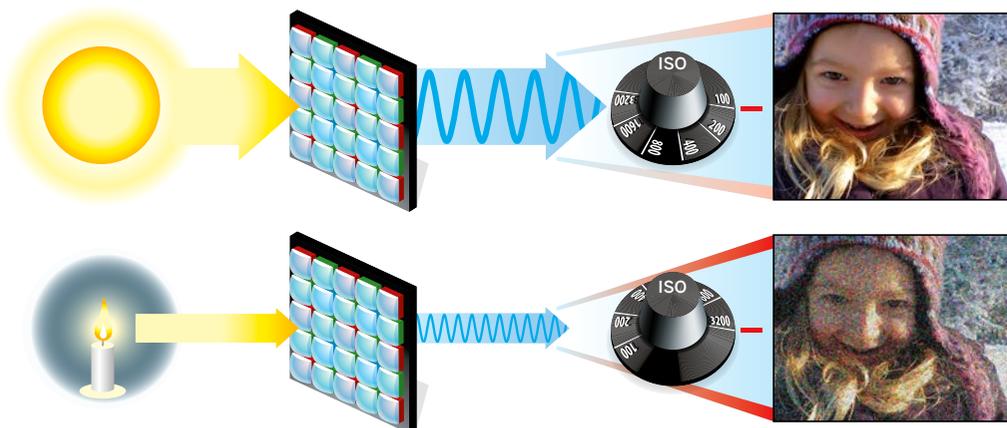
Take better pictures using the appropriate ISO setting

🔧 **Adjust the ISO** There are a couple of ways to adjust the ISO on your DSLR. You can either look for an ISO button on the top panel of the camera or use the Q button and navigate to the setting on the LCD screen. A typical range will start at ISO100 and will go up to ISO6400 or 12800.

🔧 **Low ISO shooting** When shooting in daylight you'll want to keep the ISO setting as low as possible. On your camera it's likely that the optimum ISO setting is 100. When shooting at this setting your camera will produce the highest quality results possible. If you're taking photos on an overcast day, you may need to push the ISO up to 400 to compensate for the lack of light.

🔧 **High ISO shooting** You should use high ISO settings when you need to increase your shutter speed setting in low light. It's important to know that the more you increase the ISO setting, the more the image quality deteriorates. Photographers call this 'noise', and it looks like small specks of grain in the image. It's a game of compromise between keeping the ISO as low as possible, and avoiding camera shake caused by slow shutter speeds.

🔧 **How it works in practice** Let's take a look at a shooting scenario and how we can use ISO to help us get the best results. Say we're taking a portrait and we want the aperture setting to be f/4. The ISO is set to 100, and in the ambient light conditions the shutter speed setting is 1/30 sec. What's the issue here? The shutter speed is too slow to shoot with the camera handheld. So what we can do is push the ISO up to ISO400, which is a two-stop difference. This means that now in the ambient light conditions the shutter speed setting will be 1/125 sec, which is fast enough to shoot by hand.



Inset
ISO 100
Image © Chris George



Inset
ISO 1000
Image © Chris George



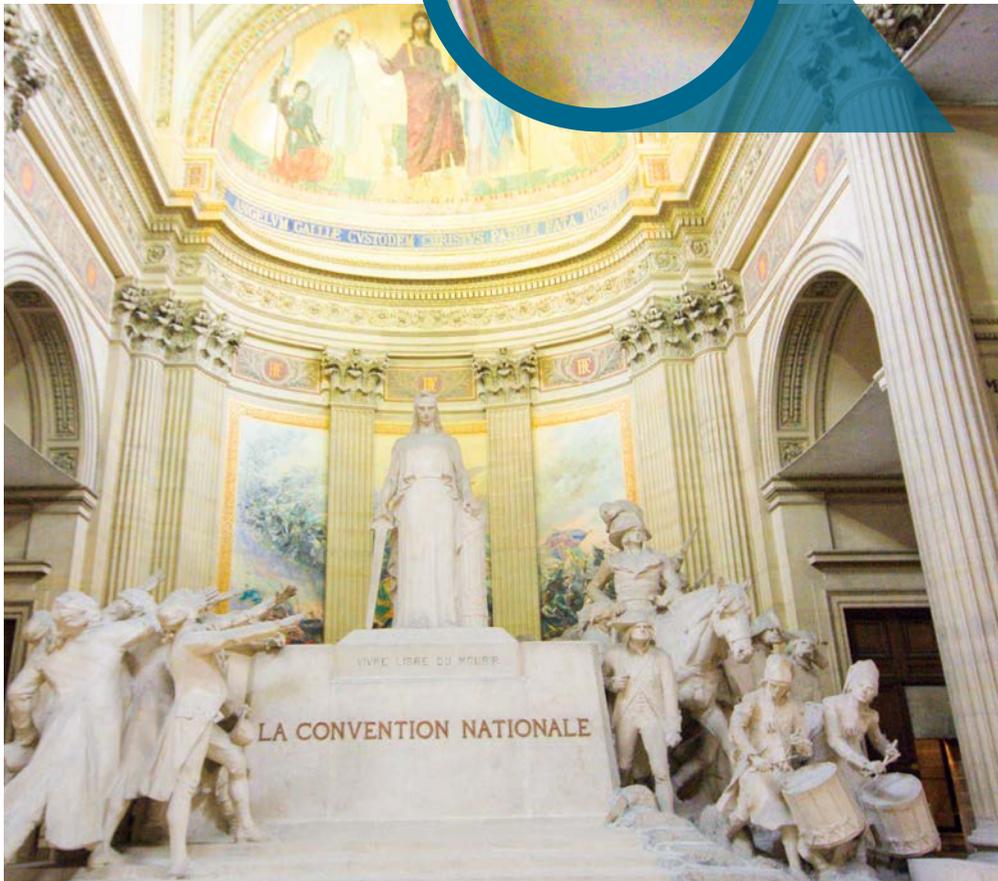
DIGITAL ADVANTAGE

The advantage of digital over film is that the ISO can be altered for each individual shot. This makes ISO a powerful tool for the photographer, helping you to get sharp shots in a variety of lighting conditions.

ISO is the name of the International Organization of Standardization: a body that creates thousands of agreed standards for a huge range of products, procedures and practices. For the photographer, ISO is simply a set of numbers. The base sensitivity of many DSLRs is ISO100. But this can be increased by pressing the appropriate button, then rotating the main dial (on some older cameras ISO is changed through the Menu button). The scale is such that doubling the ISO number doubles the sensitivity of the sensor. So increasing the ISO setting from 100 to 200 means that, to get the same overall exposure, you can use a shutter speed that is half as long (or twice as fast). Each doubling of the ISO also increases the sensitivity by a full exposure 'stop' – with the typical full-stop ISO scale progressing 100,

200, 400, 800, 1600, and so on. The top ISO setting varies depending on the age and cost of your DSLR – from ISO3200 to ISO204,800 on current models. Bizarrely, the top ISO settings on many models are 'hidden', and must be enabled using a custom option called 'ISO Expansion'.

The reason for this is that each time you increase the ISO setting, you also get a small decrease in image quality. Boosting the picture signal also amplifies impurities in the signal known as 'noise'. This noise shows up as grain and colour mottling in the image – and this gets progressively more noticeable the higher the ISO is set. Some manufacturers simply suggest that the highest ISO speeds produce so much noise that they should be used with a bit of caution!



TASK: HOW GOOD IS YOUR CAMERA AT HIGH ISO?

Lots of photographers are scared of grain, and deliberately avoid using high-ISO settings. But often the grain is nowhere near as noticeable as you might think. In this exercise, you are going to find out for yourself which settings you think give acceptable-looking results with your own DSLR.

STEP 1

Ensure that ISO Expansion is enabled in your Custom Functions (if available).

STEP 2

Set up a still life near a window indoors in daylight. Pick a subject with a good range of colours, detail and a decent expanse of black (we arranged some pencils on a black velvet jacket).

STEP 3

With your camera on a tripod (to rule out the effects of camera shake), take a series of shots at all the full-stop ISO settings your camera offers (100, 200, 400, 800 etc).

STEP 4

Look at your shots carefully on the computer, zooming in at 100% to look at the grain. At what ISO does this look unacceptable?

STEP 5

Check your Custom Functions to see what the High ISO Noise Reduction is set to. Change the setting and repeat the whole exercise.



ISO 100



ISO 1600

MAKING SENSE OF THE ISO SCALE

As ISO doubles, the camera becomes twice as sensitive to light

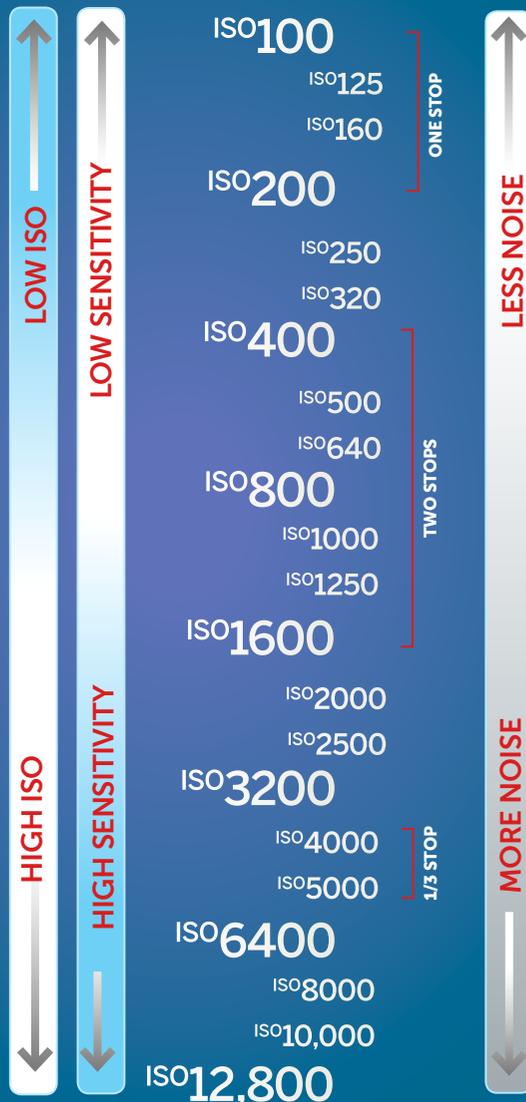


WHAT THE 'L' IS THIS?

Some top SLRs, such as the EOS 5D Mk II (above), have an 'L' or Low ISO setting, which is equivalent to ISO50 – and is half as sensitive to light to the lowest ISO100 setting found on most cameras. This option is loved by landscape photographers, as the lower sensitivity makes it easier to capture blur in moving water.

ISO204,800 RECORD BREAKER!

The maximum ISO setting varies from model to model. Some recent DSLRs have an even higher maximum than ISO12,800. Canon's high-octane EOS-1D X (left) can shoot at a staggering ISO204,800. Top ISO speeds have gradually increased over the years. Back in 1995, Canon's EOS DCS 1 had a top sensitivity setting of just ISO100!



CUSTOM ISO

Five settings that will help you capture stunning shots



STEP 1
A Custom Function lets you choose between full-stop or one-third-stop steps between each ISO setting. Using the full stop scale means you can make big changes quicker!



STEP 2
Some DSLRs offer an Auto ISO setting that sets the ISO sensitivity for you. This is ideal for handheld shooting...



STEP 3
A recent feature on EOS models is the ability to set the maximum ISO used by Auto ISO in the Menu options. This is good for avoiding unexpected grainy pictures.



STEP 4
Your SLRs topmost ISO setting (or settings) may be labelled H (High) – and only be accessed by enabling the 'ISO Expansion' option in your camera's Custom Functions.

THE FULL FRAME ADVANTAGE

The bigger the sensor that your camera uses, the less noise that you will get. Canon digital SLRs use three different sizes of sensor. Models in the EOS 5D and 1Ds families have the largest 'full-frame' sensors. EOS-1D SLRs use slightly smaller 'APS-H' sized sensors. All other cameras (including all the best-selling models), use the smallest 'APS-C' sensors.

The reason that a full-frame SLR (such as a 5D Mk II) gives an image with less noise than an APS-C model is that as the sensor is so much bigger, the individual light-sensitive 'photosites' are also substantially bigger – with a far greater surface area. This means that they collect more light in the first place, so the signal does not need to be amplified as much. Less gain equals less grain!

WHEN TO INCREASE ISO

Some photographers try to resist increasing the ISO at all costs in search of getting the best, grain-free images. However, pumping up the ISO often actually increases image quality overall, as this simple change lets you use a faster shutter speed – thereby eliminating camera shake. A grainy picture is always better than a blurry one! A higher ISO can also enable you use a narrower aperture – increasing depth of field, and thus increasing the resolution of a lens – to give you sharper-looking pictures.

Although higher ISO settings are invaluable in low light, they are not essential for all low-light situations, in fact, if you can keep the camera steady, they are often best avoided. If you are using a solid tripod, the slowest ISO setting (ISO100) is usually the best option – as you can then use a longer shutter speed to make up for the lack of light.

Similarly, if you are using flash, high-ISO settings are not needed (although increasing the ISO will increase the effective range of your flash).



Inset
17mm
Images © Peter Travers



FOCAL LENGTH

A further look at lenses

A major benefit of using a DSLR is that you can choose from a variety of lenses suited to particular photographic situations, and the main determining factor in picking a certain lens is its focal length. Focal length is measured in millimetres, with 35-50mm roughly equalling your field of vision. Lenses with focal lengths of less than 35mm are known as wide-angle lenses and enable you to fit more into your scene, so are good for landscape shots. Lenses with larger focal lengths, around 70mm and upwards, are telephoto lenses and will magnify your subjects, and are good for close-up portraits, sports and wildlife photography.

When we talk about the focal length of lenses, what we're really talking about is the 'angle of view' you can see through your DSLR's viewfinder. In simple terms, the longer your focal length (such as a telephoto lens at a focal length of 200mm), the smaller your angle of view and larger your subject appears in the frame. The shorter your focal length (such as a wide-angle lens with a focal length of 18mm),

the greater your angle of view. Focal length and crop factor This angle of view can be reduced further, depending on the Canon DSLR you use. The smaller the sensor, the narrower the angle of view the lens provides (as the smaller sensor sees a smaller section of the view seen by the lens). This phenomenon is known as the 'crop factor'. With popular EOS models, such as the Rebel, 400D, 450D, 1200D, 70D and 7D, there is a crop factor of 1.6x; this effectively magnifies focal length by 1.6. With telephoto focal lengths, this has the advantage of bringing you even closer to the action – a 200mm lens has an effective focal length (EFL) of 320mm (200x1.6) – which is helpful for wildlife or sports photography. Conversely, crop factor is seen as a disadvantage on wide-angle focal lengths, as it increases an 18mm lens to an EFL of 29mm (18x1.6), reducing how much you can fit in your frame – not so good when shooting indoors where space is limited.

Lenses with a fixed focal length are known as prime lenses – such as the Canon EF 50mm f1.8 lens, whereas lenses offering a range of focal lengths are known as zooms; an EF-S 55-250mm zoom offers all the focal lengths from 55mm to 250mm inclusive. Some people confuse 'telephoto' with 'zoom', yet you can have a zoom lens that isn't telephoto, for example the Canon EF-S 10-22mm f3.5-4.5 is an ultra-wide-angle zoom.

The Canon EF-S 18-55mm f3.5-5.6 standard zoom lens is also known as a 'kit lens', as it's often supplied with popular EOS DSLRs. The 18-55mm refers to the focal length range; 18mm is the wide-angle end, while the 55mm end is a mid-range focal length. The f3.5-f5.6 refers to the maximum aperture range; at 18mm it will be at its widest aperture of f3.5, while at 55mm it will be reduced to f5.6. However, narrower apertures are available at all its focal lengths.

Higher spec lenses, such as the EF-S 17-55mm f2.8 IS USM lens, have constant wide apertures throughout their focal length range, in this case f2.8 at every focal length from 17 to 55mm.

JARGON BUSTER

FOCAL LENGTH

Measured in millimetres, the focal length is the distance from the lens's optical centre to your camera's sensor.

ANGLE OF VIEW

What you actually see through the viewfinder. The longer the focal length (eg 300mm), the smaller the angle of view. Conversely, the shorter the focal length (eg 18mm), the greater the angle of view.

ZOOM LENS

A lens that has a range of focal lengths – eg 18-55mm. A zoom lens doesn't mean it's a telephoto lens!

PRIME LENS

A lens that is not a zoom, with just a single focal length.

CROP FACTOR

The value used to convert the actual focal length of a lens into the effective focal length. Most Canon DSLRs have a 1.6x crop factor.

GET TO GRIPS WITH FOCAL LENGTH

When you change your focal length you're changing the angle of view. So, at a short focal length of 18mm you can fit more of your subject in your frame compared to using a long focal length of 200mm from the same spot.

But focal length is much more than a simple cropping tool, and has other creative effects on your picture. Zooming also has an indirect effect on perspective – as telephotos are used from further away from a subject than telephotos. Wide-angles, therefore, make foreground objects look larger, and telephotos tend to compress objects at different distances so that they look closer together. Focal length also affects depth of field, a great creative tool that determines how much of your scene is in sharp.

STEP 1

Take three shots of the same subject standing in exactly the same position at three focal lengths: 18mm (wide-angle), 50mm (standard) and 200mm (telephoto).

STEP 2

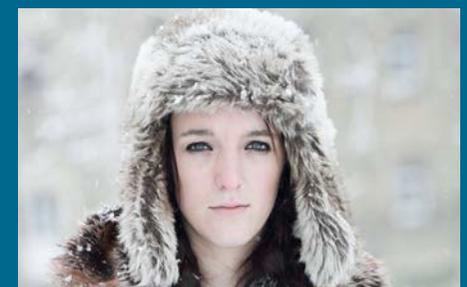
Take three shots of the same subject at different focal lengths – 18mm, 70mm and 200mm – this time moving so the subject fills the frame each time.



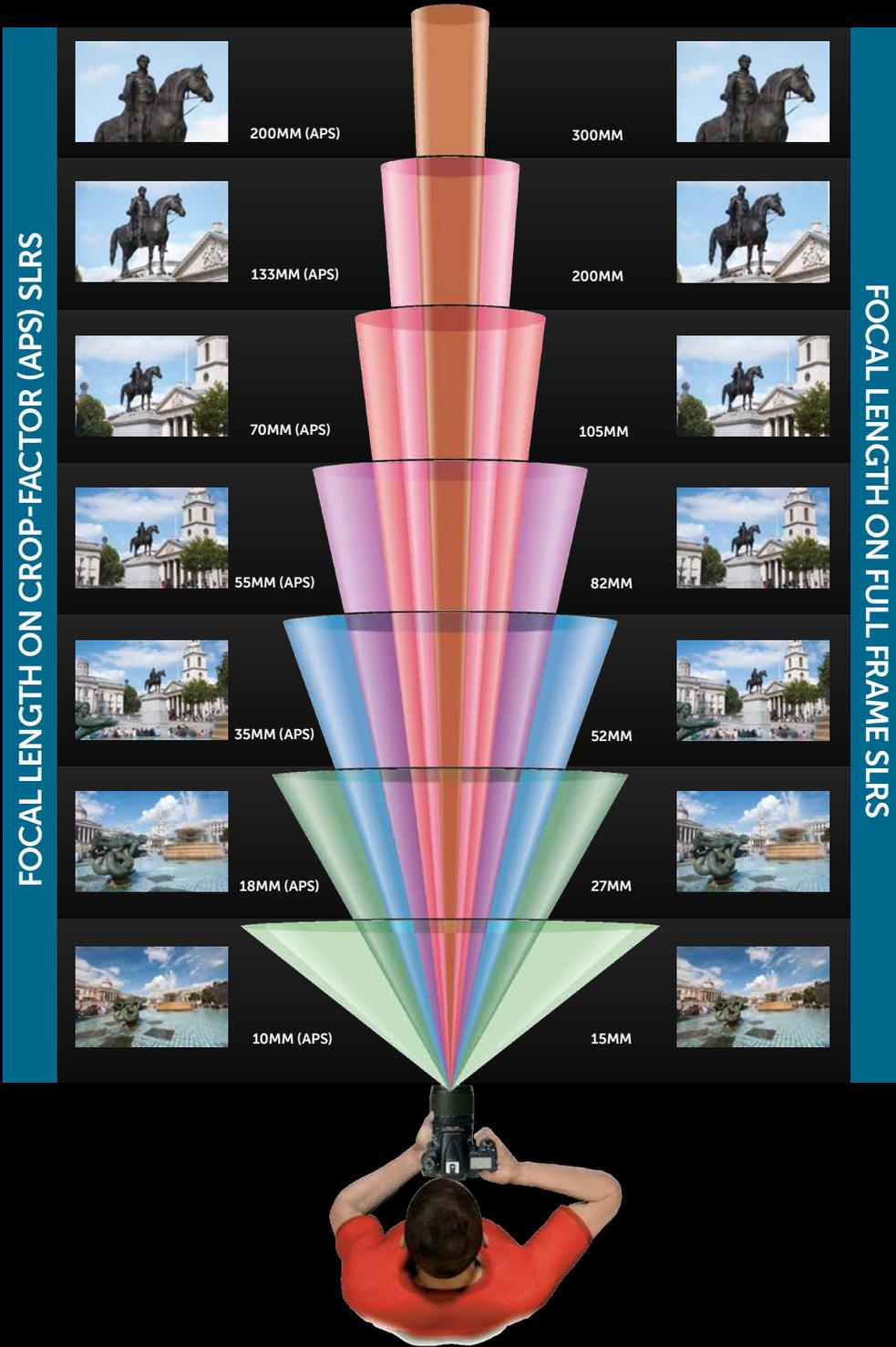
18mm



50mm



200mm



FOCAL LENGTH AND ANGLE OF VIEW

These two factors are closely related, but your camera's sensor size has an effect too - a smaller sensor needs shorter focal lengths

With 35mm film cameras you could get a good idea of a lens's angle of view from its focal length. This still applies with full-frame cameras. However, its smaller

format 'APS' cameras have a smaller sensor. This means you need shorter focal lengths to get the same angle of view.

HOW TO SWITCH LENSES



STEP 2

Lay your camera on its back on a soft surface, such as a jacket or kit bag, to protect your rear LCD, and so you'll have both hands free to switch lenses.



STEP 1

Don't do this in a dusty atmosphere. Ideally, switch lenses indoors or sheltered from the wind to avoid dust or dirt reaching your camera's sensor.



STEP 3

Have your new lens within reach to minimise the amount of time your DSLR's innards are open to the elements to stop dust getting in.



STEP 4

Use your left hand to press down on the Lens Release Button, use your right hand to turn your lens in an anti-clockwise direction and pull clear.



STEP 5

Put the lens down to one side. Remove the dust cap from the lens mount of the replacement lens and put it on the lens you've just removed.



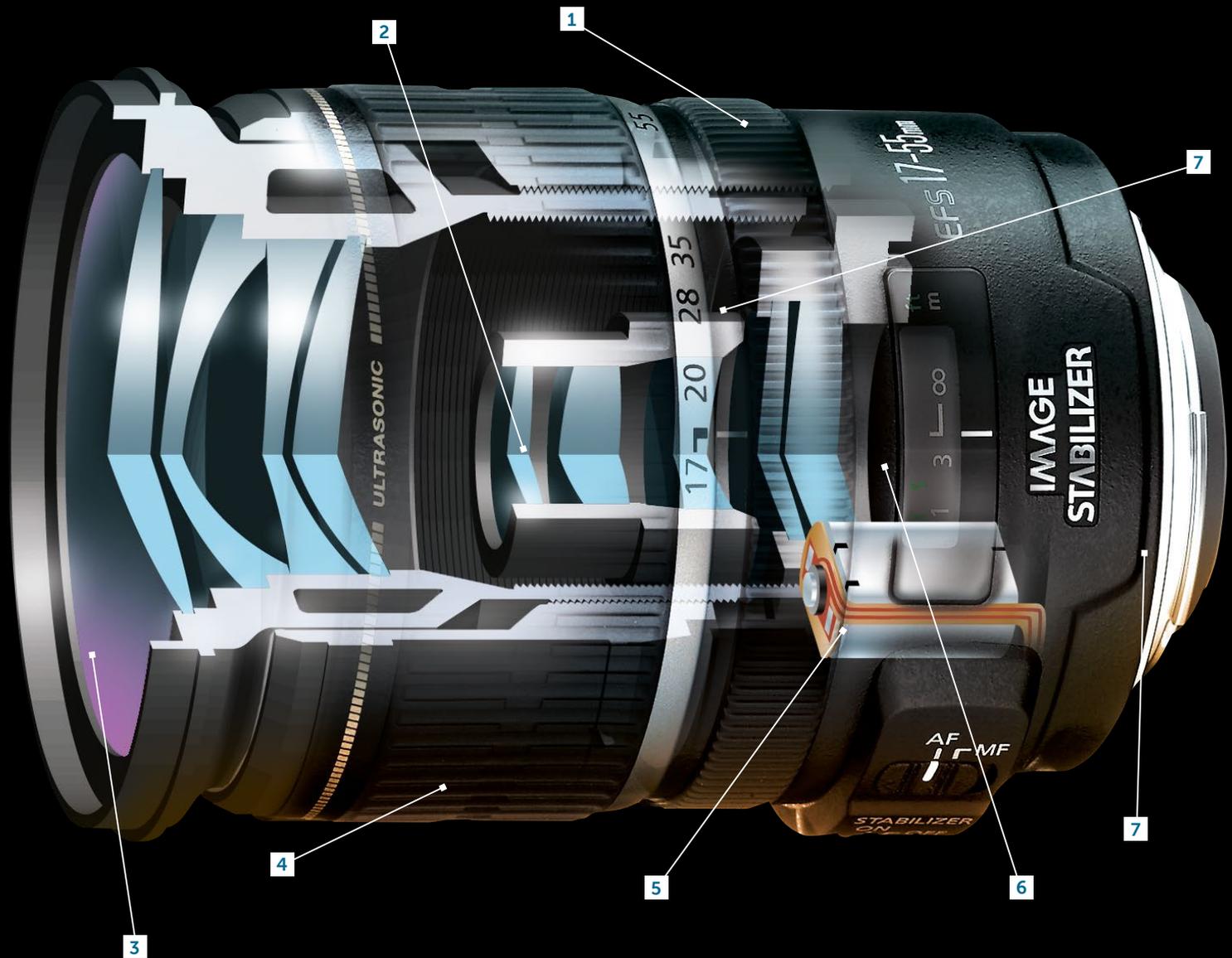
STEP 6

For Canon EF and third-party lenses, line up the red dots on the lens and camera. For EF-S lenses, line up the white squares on the lens and camera.



STEP 7

Slot the lens in, turn it clockwise until you hear it click. Take the lens cap off your replacement lens and you're ready to take some pictures!



Inset
Lenses

There are so many different lenses to choose from, which is the great thing about having a DSLR



THE ANATOMY OF A LENS

Have a closer look inside

1 FOCUS RING

Turn to manually adjust the focus – used when your lens is switched to MF (Manual Focus). The internal elements move together to focus the lens.

2 LENS APERTURE

The lens aperture (or opening) controls how much light is let in.

3 FRONT ELEMENT

The widest of all the lens elements, and the one that is easiest to scratch!

4 ZOOM RING

By turning the zoom ring, the internal groups of lens elements move to change the focal length.

5 LENS MOTOR

All Canon EOS lenses have built-in motors

to move the elements so the autofocus system can focus the image. Some lenses have an Ultrasonic Motor (USM), which is designed to be quieter and faster.

6 IMAGE STABILIZER

Canon's Image Stabilizer (IS) technology uses gyroscopic sensors and a micro-computer to detect and correct slight lens vibrations caused by hand shake.

7 BAYONET LENS MOUNT

Attaches the lens to your DSLR. Contacts supply power from your camera to drive the autofocus and IS, and allows the camera and lens to communicate.

8 FOCAL LENGTH

The focal length you're currently using is indicated by the number on the zoom ring that lines up with the central mark.



WEEK 1 SUMMARY

So far on your new photographic journey you should know how to use your camera in the most basic of ways and be on your way to understanding some more complex photographic theory that will help you to shoot impressive imagery. You should now know how to set up your DSLR, be familiar with the menu system, how to hold the camera correctly and how to shoot your first picture. You'll also know...

HOW LENSES AND DIFFERENT FOCAL LENGTHS CAN AFFECT THE IMAGES THAT YOU SHOOT

Landscapes lend themselves to wide angle lenses, portraits are most flattering with an 85mm lens, macro lenses allow you to get close to subjects and it's best to go super-telephoto for capturing the best bird and wildlife imagery.

THE DIFFERENCES BETWEEN THE FILE FORMATS AVAILABLE TO YOU

RAW images are far superior to JPEGs because they retain all of the image information available in the scene, which means the images are of a higher quality and they can withstand heavy edits in post.

HOW TO TAKE PICTURES IN FULLY AUTOMATIC AND SCENE MODES

Fully automatic selects all your camera settings for you, but has its limitations. Scene modes like Close-up, Sports, Portrait and Landscape, allow you to define the type of shot that you want to take, and the camera will choose the appropriate settings for the subject.

HOW TO TAKE A BIT MORE CONTROL IN PROGRAM MODE

Use a semi-automatic mode to get yourself used to the different settings in your camera. Unlike Fully Automatic you'll be able to use Exposure Compensation, ISO and alter the camera's selected shutter speed and aperture.

WHAT WHITE BALANCE IS

The colour temperature of light can dramatically affect how certain things appear in images. Auto White Balance is great but remember you can select specific types of light in your camera's menu. Manipulate it in post production or use gels with flash to manipulate it in camera too.

WHAT ISO IS AND HOW TO ADJUST IT

Take better pictures by using the correct ISO setting. Look for an ISO button on your camera or use the Q button to navigate to it on the LCD screen. In daylight you'll want to keep ISO low – around 100 on a sunny day and possibly 400 if it's overcast. At night and in low-light remember you'll need to crank it up, but watch out for noise.



Image © Peter Fenech



STILL LIFE BEGINNINGS

Gather a collection of items from your home, it's time to experiment with still life photography



- Find a solid, non-distracting, background to shoot on.
- Keep it simple and use natural light from a window or table lamp to light your shot adequately.
- Work on your composition. Try a mix of heights and textures to keep the image interesting.

EXPERIMENT WITH HIGH ISO

Experiment with high ISO values today to change the quality of your shot



- Bumping up the ISO level can produce an interesting 'filmic' look, which is very useful when there isn't enough light to get a bright, sharp image – or if you're shooting fast action with a fast shutter speed and smaller aperture.
- Try to experiment with a fast shutter speed, an aperture of f8-16, then increase your ISO by 200 up to around 6400.
- Don't be afraid of 'grain' or noise in your image – sometimes this can produce an atmospheric effect.

NATURALLY LIT PORTRAITURE

Natural light is everywhere. Practice using natural light in a portrait



- Grab a subject and get outside! Different times of day and weather conditions will result in differing kinds of light. Light in the middle of a sunny day is going to be intense and direct with strong shadows.
- Light can also be reflected naturally on objects around us. Colourful walls and greenery cast colour onto our subject.
- Try playing with open shaded areas (under a tree for instance) to soften the light in your portrait.

WHITE BALANCE

Our eyes adjust for subtle colour changes, cameras need a little help adjustment



- The auto white balance on your camera may not always be reliable, especially if you have an 'effect' you're going for. Most digital cameras have presets for different types of light.
- These presets are rough estimates for the lighting they work best for. Experiment on how 'natural' they appear under the situation they are designed.
- Try using the wrong white balance preset and see what happens. It can look really arty.

FOCAL LENGTH

Experiment with the angle of view and shoot the same scene with varying focal lengths



- Check your lens for your focal length: the number range will be the widest and narrowest your lens can go.
- Roughly, landscape photography benefits from the ranges of 10mm-18mm. Full body portraits (24-45mm), head shot (55-140mm).
- Not all lenses can change focal length (zoom), prime lenses are 'fixed' and so you would need to zoom 'with your feet'!

FAMILY PORTRAITS

Get your family involved and use them to practice natural looking portraits



- Get outside, using natural light is one less thing to worry about while shooting. Get yourself a tripod, this will allow you to carefully change your settings and give you time.
- Compose the shot, move your subjects, vary arm/leg posing and stagger heads.
- Don't be afraid to get out from behind your tripod too. Handheld shots will enable you to get more up close and involved with your subjects.

EDITING YOUR SHOTS

Now you have a SD card full of shots you need to download them to your computer to start editing



- There are a number of free and purchasable programs you can use to edit your photos. We can use cropping and the rule of thirds to improve your shot
- The image needs to be divided with 2 horizontal lines and two vertical with a rule of thirds grid. The intersection of these lines highlight the important elements of the image.
- We can then apply a crop to tighten the image – fill that frame!

AUTO FOCUS

Auto Focus is a useful tool for the beginner photographer, we can also use it in a creative way



- Most digital cameras have an automatic Auto Focus (AF) point selection, the centre box on display shows what will be in focus.
- Try locking the focus with the AF point box then recompose, changing the plane of focus.
- Practice this with a parallel change in focus- sliding left or right on the same plane.

WEEK 2

You've learnt the basics, so let's take it further

74 DRIVE MODES

Take a single shot, a burst or set the self-timer

78 SELECT THE BEST CAMERA MODE FOR YOU

Choose the right camera mode for your subject matter

82 HOW SHOULD I USE METERING MODES?

Perfect your exposures by learning about in camera metering

86 KEEP IT CLEAN

Cleaning your sensor every so often will help to ensure you shoot sharp

88 HOW TO CLEAN YOUR LENSES

It's important to keep your glass as clean as possible

90 KEEP YOUR KIT SAFE

Ensure your kit is protected from accidental damage with these tricks

92 COMPOSITION AND FRAMING

Improve your shots by understanding the technical and artistic theory

100 ILLUMINATE IMAGERY WITH FLASH

Understand how to light your images with flash

104 SUMMARY

A brief outline about what you should have learnt so far

106 PRACTICE TASKS

Eight practical tasks that will allow you to practice your new knowledge

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Right
Continuous shooting

Select Burst or High-speed shooting when trying to capture action as you'll be able to shoot images in quick succession to ensure you don't miss anything

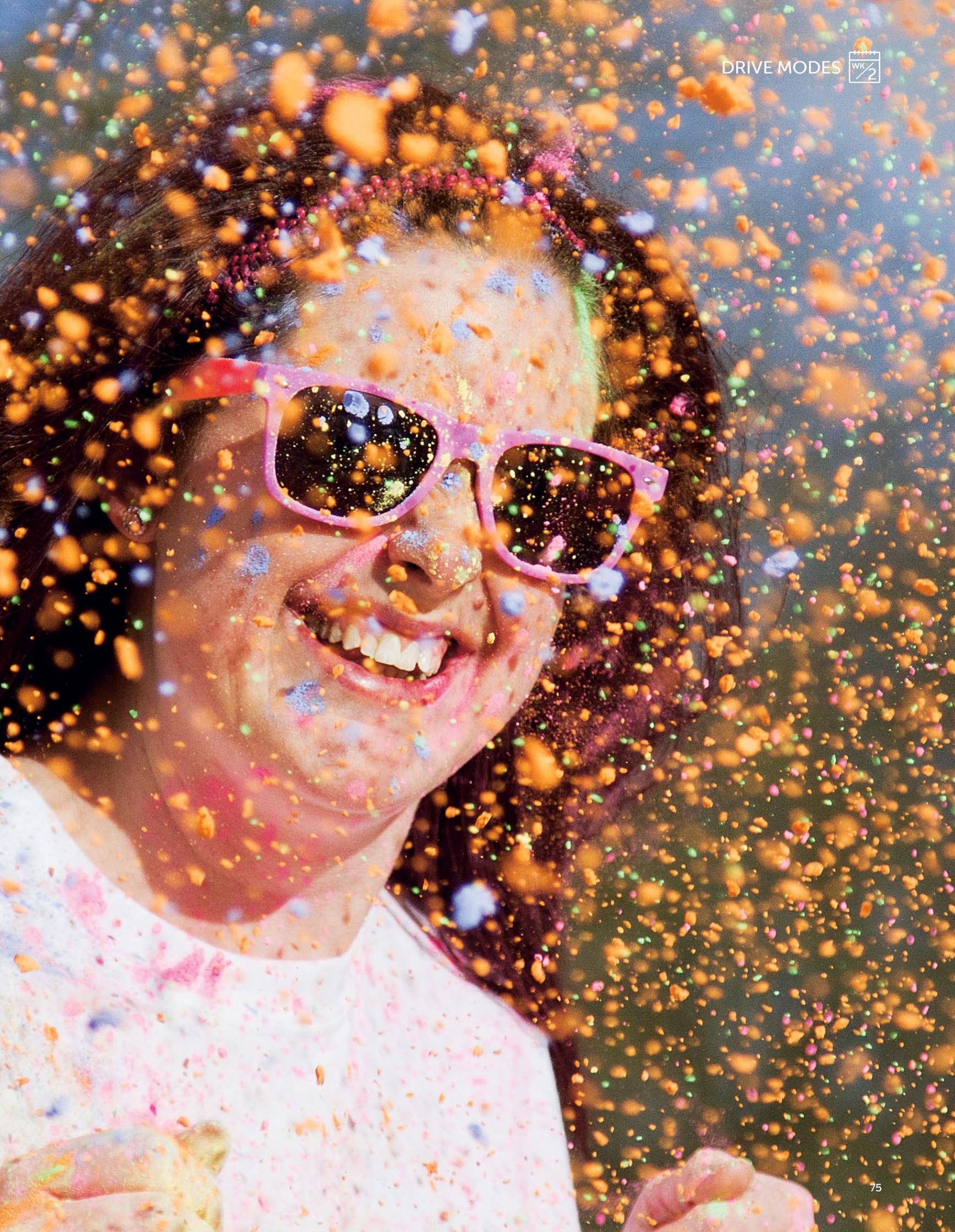
DRIVE MODES

Take a single shot, a burst of shots, or set the self-timer

Capturing the moment isn't easy, especially if you're photographing some sort of high-speed sporting event. To increase your chances of getting a good image, you can change the drive mode

on your DSLR to fire off a succession of shots. The drive mode button on your camera is marked by a stack of boxes, and is on the back panel. If you have a more advanced model, the button may be on the top panel of your DSLR.





READY, STEADY, SHOOT

Match the drive mode to the subject matter for more successful photoshoots

SINGLE SHOT

The first setting on the list is Single Shot, which you'll use the majority of the time. Your camera will take one photo when you press the shutter release. To take another shot, release your finger from the shutter, then press down again. Your camera will meter the scene and refocus.

SELF-TIMER

There's also the Self Timer setting in the Drive mode menu, which is good for taking a self portrait or for those group shots where you need to run in! You have two options to choose from, which are a two-second or a ten-second delay.

SELF-TIMER CONTINUOUS

There's also an option called Self Timer Continuous. With this mode you can key in how many images you want your camera to shoot once the shutter is triggered. Most models are capable of firing between two and ten shots in this mode.

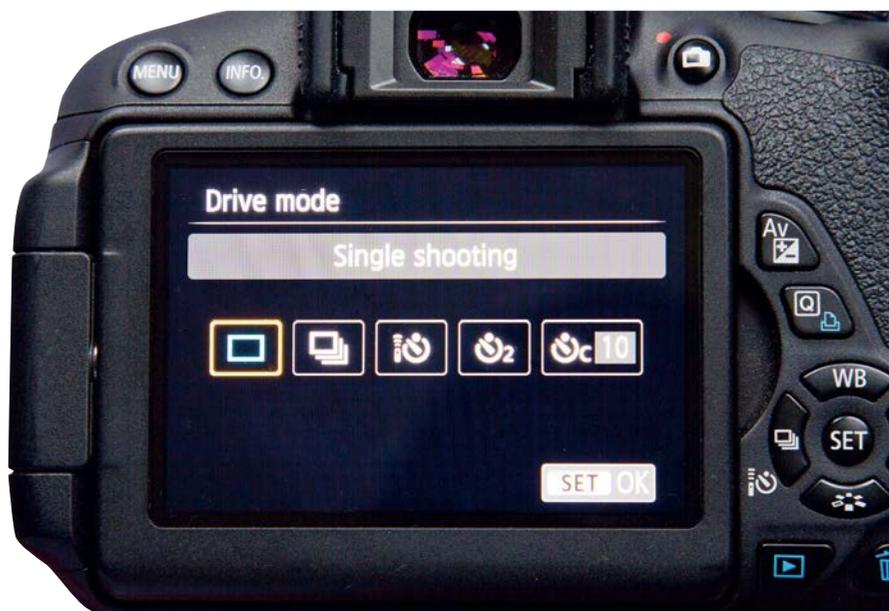
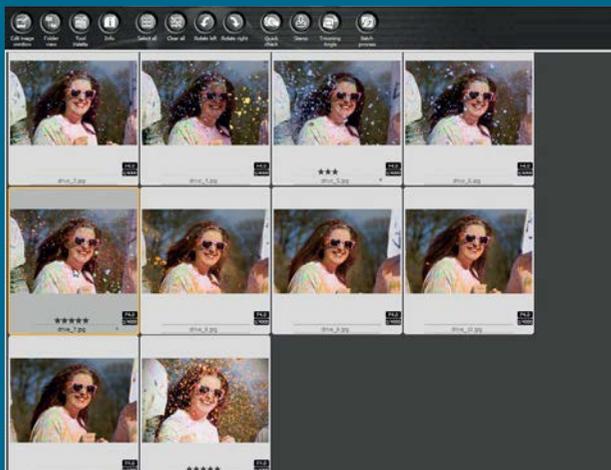


IMAGE PROCESSING

Remember that the more you shoot, the more you have to edit. Shooting continuously doesn't guarantee great results in every shot, but the idea is to try to get one or two decent images from the stack. You can use a software editing package such as Lightroom or Bridge, to sort and rate your photographs.





BURST MODE

The second most useful mode is Continuous Shooting. How fast your camera can capture a succession of shots is determined by a few factors. First, the camera model, because each varies in specification. If, for example, your camera can shoot at five frames per second, that means for every second you have your finger down on the shutter, it will take five photos. However, it can't do this indefinitely, and there are other factors to consider. These include the image quality and size, and the memory card capacity and writing speed.





Select the correct camera mode

The camera mode you choose can have huge implications on the image that you produce

Image © Getty Images



Semi-automatic

Although mastering Manual mode should be your photographic goal in some situations it's better to stick with an automatic mode

Image © Getty Images

INTRODUCTION TO CAMERA MODES

Choose the right shooting mode for you
and your subject matter

There's no one-size fits all when it comes to photography hardware, and the same is certainly true of camera settings. Cameras use different modes in order to give the photographer more, or less control over the aperture, shutter speed and ISO (among some other settings). This enables

the photographer to either concentrate fully on the composition and creative choice of framing, snapping photos at the right point in time.

This also gives the photographer full technical control over how the resulting image looks, including depth of field and motion blur or sharpness.

Here we'll look at when you would want to use each of the Program, Aperture-priority, Shutter-priority and Manual modes, and how each mode can save time, make important changes to photos or ultimately introduce potential problems, each depending on the subject matter.

WHEN TO USE PROGRAM MODE

It's not just an introductory mode for new photographers, it also serves as a tool for creative decision making

As an almost fully automatic mode, the camera takes care of all the important camera settings for the photographer, which leaves one free to make more creative decisions. This mode is best used to shoot fast-unfolding events such as children's birthday parties or street photography, where the action is unpredictable. Shooting scenarios like this require quick compositional changes in order to frame things desirably. There are also many differences in lighting conditions as you move throughout the environment, something which would be nearly impossible to keep up with in terms of camera settings changes. By freeing the photographer from these technical hold-ups, Program mode also allows you to shoot from the hip, without the need to place an eye against the viewfinder. This works well when shooting from lower angles, to capture children at their own eye-level. In terms of street photography this also has a great impact as it allows you to shoot inconspicuously, drawing less attention to the act of photo-taking, leaving subjects markedly more relaxed, with natural poses and expressions. It's also useful for those who are completely new to photography, as there are some settings that are still manual which allow a slow introduction into camera control.

PROGRAM MODE

Discover how to efficiently manage the action

Follow the action of a birthday party. With plenty of noise, movement and changes in lighting throughout a room or outdoor space, you should rely on the camera to make settings changes.

All the while, the photographer should concentrate on composition, focal length adjustment, and snapping the photo at the crucial moments to capture movements and actions.



Below

The changes in light conditions when shooting street photography results in a dizzying array of settings changes while you shoot

Bottom

In Program mode, moving the camera around will result in aperture, shutter speed and ISO being automatically adjusted



WHEN TO USE APERTURE PRIORITY

Control over the aperture means control over depth of field

In this mode you're able to have full control over the aperture of the lens, with the camera automatically adjusting the shutter speed to provide you with a balanced exposure.

Aperture changes the depth of field of an image, providing either blurred backgrounds with wide apertures, or allowing both foreground and background detail to be rendered more clearly with a narrow aperture.

For portraits, using a wide aperture may be useful to creatively hide busy or messy backgrounds when shooting on the street, for example blurring street signs or traffic.



However, with a narrow aperture dialled in, you would be able to create landscapes with sharp foregrounds like flowers or rocks as well as getting the distant background in focus at the same time.

Aperture priority mode is more of a 'depth of field mode', then, where photographers are able to decide on what and how much they want rendered in focus, and change their settings based on this creative choice.



Right

Within Aperture priority mode move the camera around the scene and notice how only the shutter speed is automatically adjusted, leaving the photographer to change aperture and ISO manually

Above

Opening the aperture wide, to say f2.8 or wider, will allow the background to fall into soft relief when photographing a portrait outside. That brings attention back to the subject, instead of the cluttered backdrop

TASK: INCREASE DEPTH OF FIELD

Work on your improving your landscape photographs by introducing interesting foreground elements. With the camera composed to include flowers, rocks or another foreground element, line up the rest of the scene in the background so that the eye flows throughout the frame. Set a narrow aperture of f11 or f16 to maximise the depth of field, thereby rendering the whole scene in focus.



WHEN TO USE SHUTTER PRIORITY

Shutter speed, or exposure time of the image sensor, is used to either freeze or blur motion

TASK: BLUR THE WATER

Take yourself to a river, waterfall or the sea – anywhere with moving water and compose the camera so as to focus on a rippling part of the water. The more detail in the water the better. Set the camera on a tripod to keep it still, focus up on the water and extend your shutter speed to between one and four seconds. When you take the photo you should now see that the water has been blurred into a creamy, milky softness. With longer exposure times even the roughest seas can be tamed to gentle stillness.



Shutter speed is the priority in this mode, and that means while the photographer adjusts the exposure length the camera works to change the aperture of the lens in order to create a balanced exposure. You can use this mode to either freeze or encourage motion in any given photo. For example, if you have an athlete running the 100m sprint, you would want to choose a fast shutter speed such as 1/2000 sec so that the athlete is captured



sharply, mid-sprint. When photographing a waterfall though, it might be more pleasant to slightly blur the motion of the water by using a longer shutter speed of between one and four seconds. We can take this further and extend the shutter speed to 30 seconds, or even minutes long in order to blur the motion of slower moving subjects, like clouds moving through the sky. This is particularly effective when shooting architecture on a tripod, as the stationary buildings remain sharp, while the clouds move and blur. To do this properly a tripod must be used because the camera should remain still while the exposure is carried out.



Left

A fast shutter speed means the image sensor is only exposed to light for a short duration. That results in sharp freezing of movement as somebody (even an athlete) moves quickly moves through the frame

Above

You will notice how when the camera is aimed at different areas of the scene only the aperture is adjusted, which leaves manual control of the shutter speed and ISO to the photographer

WHEN TO USE MANUAL MODE

Have full control over the exposure triangle for true mastery over your photographs

Manual mode gives full control to the photographer. Aperture, shutter speed and ISO are all controlled independently from each other, so you have to take note of the camera's metering system to expose your images correctly. It's perfect for those who want to generate their own style, deliberately under- or overexposing their photos. It also works well when using filters, especially when shooting with dark ND filters. Darker filters will confuse the camera's metering system, and in order to properly expose photos you should have full control in order to set their depth of field, using aperture



and shutter speed to determine the amount of blurring or sharpness in a photo. Complex, fast-moving shoots are probably best avoided in this mode, especially if light intensity changes quickly. Shooting a portrait outdoors using an ND filter will enable you to widen the lens's aperture, blurring the background and focusing to the model. At that point it's useful to have control over aperture, shutter speed and ISO to render a sharp portrait with a shallow depth of field.



Above
As the camera is aimed through a scene and the light levels change no settings will automatically adjust. It's up to the photographer to check the light meter and decide how to adjust all settings

Right
Sometimes outdoor shooting means direct sunlight, and you can't get your aperture wide enough to blur the background. Add an ND filter and you can do that in Manual mode

CONSIDER AUTO ISO

One setting neither semi-automatic nor manual modes have any influence over is ISO sensitivity. Most cameras have an automatic function for ISO called auto-ISO and, although not strictly a 'mode', it works similarly to aperture and shutter-priority modes. Auto-ISO will automatically adjust ISO based on the settings the photographer has selected. Use auto-ISO when there are big changes in light conditions, but you know how much depth of field and motion blur you want in the photographs.



WHEN TO USE EXPOSURE COMPENSATION

Exposure compensation manually alters whichever setting the camera has control over, in a semi-auto mode

TASK: EXPOSURE COMPENSATION

Head out to a nearby area with an abundance of snowfall, this may be a snow-capped mountain, or a snowy street in winter (aim up at the sky if you don't have snow). In either Aperture or Shutter priority, take a photo and notice how the snow (or sky) seems particularly dark in your photo. Now dial in some positive exposure compensation (making the image brighter) until the whites match their real-life brightness.



In Aperture-priority mode the camera controls shutter speed, and in Shutter-priority mode, it controls aperture, so you could make the argument these semi-automatic modes are inflexible. However, exposure compensation allows you to alter these settings by up to three stops in most cameras. For example, imagine shooting a wedding in aperture-priority mode only to find that the camera meters the bride's white dress to a grey. It's obvious the image is underexposed because the camera wrongly underexposed the bright white. In order to correct that, you need to add positive exposure compensation, to slow the shutter speed slightly and produce a proper exposure. The same is true of dark subjects, where cameras accidentally overexpose the image. Adding negative exposure compensation here will correct this problem and make the dark subject dark again.



Above
Shooting directly into the sun will underexpose the scene. Add some positive exposure compensation to ensure the whites are white and the image is bright and true to life

Bottom
Most cameras offer at least three stops of exposure compensation both positively and negatively but some can even stretch to five stops or more

HOW SHOULD I USE METERING MODES?

Perfect your exposures by learning everything you need to know about in-camera metering

Measuring the brightness of the scene you are photographing is a crucial part of getting the right exposure for your pictures. Before you can start thinking about shutter speeds, apertures and exposure modes, you need to measure the brightness of the scene. This is where the exposure meter comes in.

Your DSLR has a built-in meter, of course – and you would be forgiven for thinking that its task was a straightforward one. But, unfortunately, it is not simply a matter of taking a single reading.

For starters, the brightness of the scene can vary enormously across the picture – the sky will usually be much lighter than the foreground, for example – so some form of average reading needs to be used. Arriving at the perfect average is not made easier by the fact that the key area of your image will vary according to your composition, and exactly what you want to highlight in your image. To allow for this, your SLR has not just one exposure meter system – but three or

four (basic models make do without the Spot metering option). Some of these are better in some situations than others. But there is not a single right choice – which of the metering mode options you use in a given scenario depends just as much upon personal choice and personal experience as it does upon anything else.

The main metering mode, and the one that you will be set to when you take it out of the box, is Evaluative (sometimes referred to as Matrix metering). This is the only option that you will get in some exposure modes (you have to switch to M, Av, Tv or P modes to get to use the other metering mode options).

Evaluative metering is by far the most sophisticated of the metering types. It looks at the scene in an intelligent fashion, trying to work out what sort of picture you are taking – then relaying its suggested average brightness used to create a shutter speed and aperture combination. This metering pattern breaks the scene into a number of zones – creating a range of readings, which are then analysed

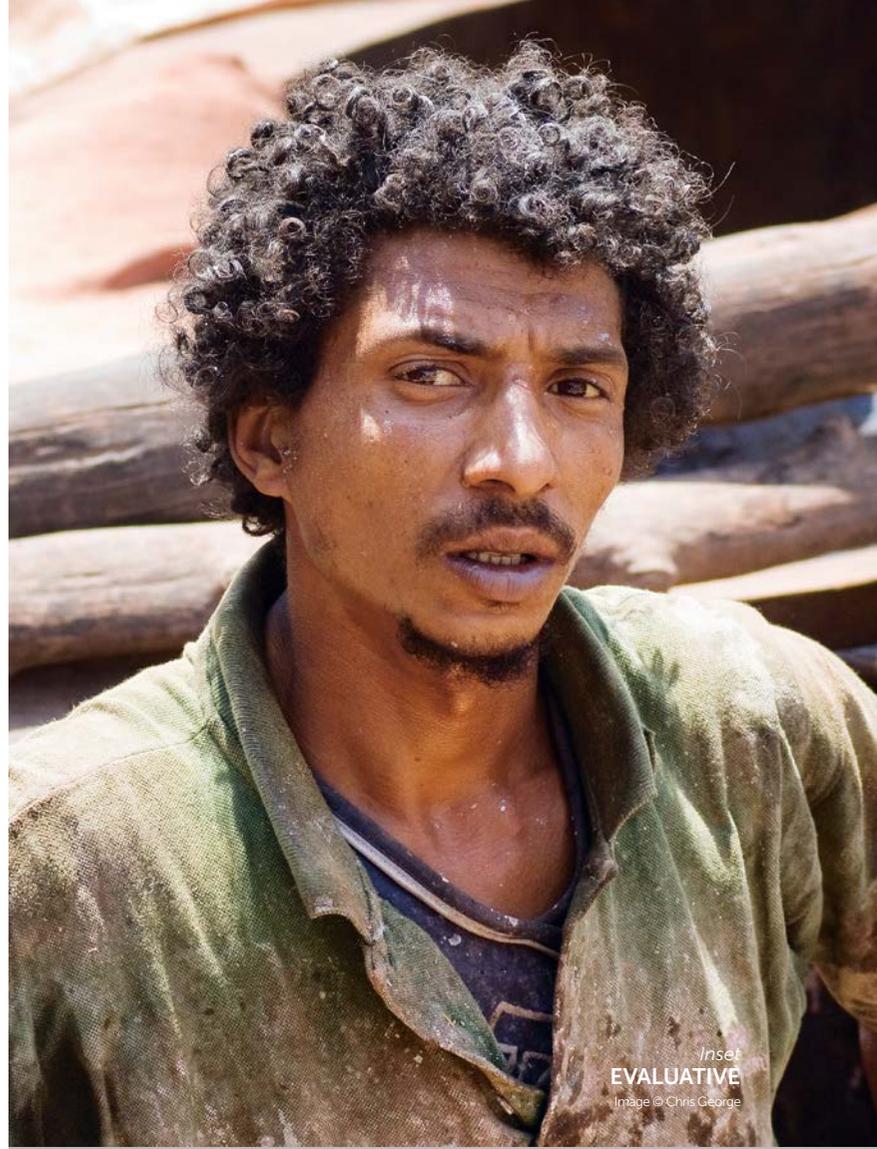
to work out the type of picture you are taking. Most importantly, it uses information from the autofocus system to work out where the subject is in the picture. So if the AF point on the left is used in a particular shot, it will pay more attention to this area when working out its average.

If you use manual focus, it will bias the metering to the middle of the screen.

Biasing the average towards the centre of the frame is essentially the game plan of the alternative Centre-weighted average metering mode. This doesn't take focusing into account, and just assumes that the subject is in the middle. It works well for most pictures – and it has the advantage is that this is the metering system that many older photographers grew up with. It is also easier to predict when this metering mode will get things 'wrong' so you can anticipate when Exposure Compensation will be necessary. And if the subject is not slap-bang in the centre of the frame, it can still be successful, simply by using it in conjunction with the Exposure Lock.



Inset
PARTIAL
Image © Chris George



Inset
EVALUATIVE
Image © Chris George



Inset
CENTERWEIGHT
Image © Chris George

LEARN TO USE EXPOSURE LOCK

Use this to keep your exposure steady



STEP 1

Gently press the trigger but of your DSLR, this brings the metering system to life, giving you an exposure readout in the viewfinder and on the LCD screen.



STEP 2

Point the camera at the subject or area of the scene that you want to take a meter reading from. Press the star key on the back of the SLR to lock this exposure reading.



STEP 3

A green star appears in the viewfinder to show the Exposure Lock is activated. Now re-frame your shot and take your picture using the meter reading that you have saved.



STEP 4

If you want to cancel the Exposure Lock, and not use the saved meter reading, press the button to the right of the star button once. The green star will disappear.

A QUESTION OF COMPENSATION



Don't always expect to find a metering mode that will give you the ideal exposure for the picture. It is often essential to use exposure

compensation to override the meter reading to get the result that you want. You will need this control most frequently when your scene does not conform to the mid-grey average that all four of the metering modes assume. An obvious example includes a scene that is made up mostly of light tones, such as a snow scene or bulbs of garlic on a white backdrop – as in the example on the right. Here you will need to dial in +1 or +2 stops of exposure compensation. With subjects that are dark in tone, an amount of negative exposure compensation will be needed.

SPOT CHECKS

Two further modes are also found on most DSLRs. The Partial and Spot metering modes take a much simpler approach and simply take a reading from a small area in the middle of the frame – ignoring everything else in the picture. The difference between the two is that the Partial metering area is about three times larger than that used by the Spot metering option. Spot metering is, therefore, the more precise of the two – but it is also harder to use

– as you have to pick the spot that you use for the reading with care.

Both are best used along with the Exposure Lock function – and come into their own when shooting subjects where the background is significantly darker – or lighter – than the subject (such as when you're photographing a spotlight actor on a stage, or when shooting a portrait of a skier surrounded by a snowy bright-white landscape).

STEP-BY-STEP HIT THE RIGHT SPOT!

Spot and partial metering modes are great for taking precise exposure readings – and can be a godsend when taking shots in tricky lighting conditions. But the skill is in deciding which part of the scene to take the reading from in the first place. Practice makes perfect – so try this exercise and see how you do...



STEP 1

Set up a back-lit scene, such as a person standing in front of a window. Frame the shot wide to include the room or area behind them.



STEP 2

Set your DSLR to spot (or partial) metering mode. Then take a meter reading from an area of the scene using the Exposure Lock. Take a shot, and review the picture to check the exposure.



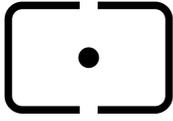
STEP 3

Repeat the second step several times – but each time lock in an exposure from a different area of the scene. Do these versions give better – or worse – results?

“Spot metering is, therefore, the more precise of the two – but it is also harder to use”

AT-A-GLANCE GUIDE TO METERING MODES

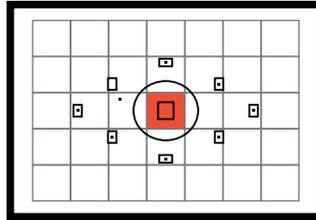
How each of the metering patterns works, and when to use them



SPOT METERING

Spot metering only measures the intensity of light over a small circular area in the centre of the viewfinder.

The average is calculated by measuring just 2-4% of the picture area (depending on the model, turn the page). Not all models offer spot metering.

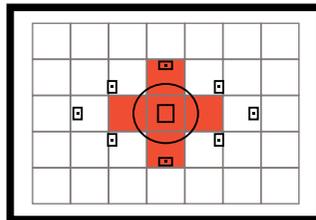


The centre circle in the viewfinder gives a rough guide to a spot meter's coverage



PARTIAL METERING

All EOS models offer this metering mode. It measures the intensity of the light over a larger circular area than in Spot mode. The average is calculated by measuring 8-13% of the picture area.

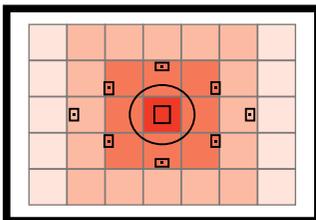


The coverage of the partial meter spreads out beyond the viewfinder's centre circle



CENTRE-WEIGHTED AVERAGE METERING

This light metering mode measures the light across the whole picture area, but strongly biases the reading to the centre of the viewfinder area. Unlike with Evaluative, it does not take the focus into account, so uses the same averaging pattern for every shot.

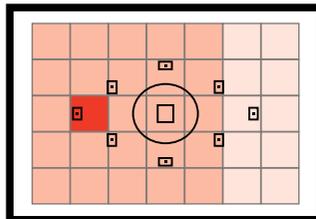


Main metering zone is bounded by the seven central focus points (SLRs with nine AF points)



EVALUATIVE METERING

The default metering mode on DSLRs, and the only option if you choose one of the basic automatic exposure modes (see previous lesson). Measures light across the whole frame, but strongly biases the reading to the area around the autofocus point currently being used.



Main zone of interest will depend on which of the autofocus points has been used

ERROR ALERT

It is important to realise that, whatever the metering mode you use, all will get the wrong result in certain situations.

The problem stems from the way these metering systems work; they measure the light that is being reflected by the subject, rather than taking an incidental reading that measures the light actually falling on the subject. Unfortunately this reflected reading is skewed by the colour and brightness of the

subject itself. Bright, white subjects reflect more light than dark ones. The averaging system, used by all the metering modes, assumes that the average from the zone or zones that it measures from is a midtone brightness (the '18% grey' often referred to by old-school photographers).

For this reason, Exposure Compensation is always needed when photographing particularly light-toned or dark-toned subjects.

HOW TO SWITCH METERING MODES

Discover how to switch between metering modes



STEP 1

Press the Metering Mode button on your camera – symbolised by an eye-shaped icon in a rectangle. On some recent models this is accessed using the Quick Menu button.



STEP 2

You will have either three or four metering modes. The four symbols above (from left to right) represent Evaluative, Partial, Spot and Centre-weighted options.



STEP 3

Use the Main Dial (or the right and left cursor keys at the back of the camera) to cycle through the options and switch from one metering mode to the next.



STEP 4

On some models you will need to press the central Set button on the back of the camera in order to confirm the change you have made to the metering mode.



Image © Getty Images.

THE 18% RULE

Each metering mode assumes there is an even spread of brightnesses through the area it is measuring from, which average out at an grey tone that reflects 18% of the light falling on this part of the scene. Every colour is taken into account in this average brightness.

Cleanup crew

Cleaning your sensor can seem daunting, but with the right kit and know how it's a good way to MOT your camera!



SUPER SENSOR BRUSH

There are plenty of sensor brushes on the market, with many of them taking the form of soft-haired brushes that resemble delicate paintbrushes with feathered bristles. If you're serious about cleaning your sensor, though, you might want to fork out for an Arctic Butterfly brush made by Visible Dust. They cost about £100, but possess supercharged rotating bristles that attract dust, as well as LEDs so you can see what you're cleaning.

KEEP IT CLEAN!

Seeing marks on your images even with clean lenses? Maybe your sensor needs a scrub...

We've all been there – you're reviewing images and you see a dot, mark or smudge all over your shots. Usually it's a simple solution: just whip out a lens cloth and give the front (and possibly rear) element of your lens a quick clean. Sometimes, though, even after you clean your lens there are still marks that appear on your images.

This occurs when dirt or dust particles land on the sensor of your camera.

This can easily happen when you change lenses, as particulates can float in when the sensor is exposed. It's especially risky when you're shooting somewhere like a beach, where there's lots of sand blowing around, and if you're using a camera and lens combo that isn't weather-sealed, dirt

can easily creep inside your body and onto the sensor, resulting in spots on all your pictures.

It goes without saying that prevention is preferable to cure, and being careful to expose your camera's sensor as little as possible should be enough to keep it speck-free. No matter how careful you are, though, sooner or later you're probably going to end up needing to give it a spring clean.

It's easy to feel squeamish when it comes to your sensor, and with good reason, since you shouldn't go poking around it unless absolutely necessary! However, you don't need to do much to check whether the sensor is dirty – and then, if you're feeling brave, giving it a bit of a clean is a surprisingly straightforward process.

CLEAN? CLONE!

Sometimes a sensor spot might be so stubborn that no amount of swabbing, brushing or blowing will budge it. Luckily you can get rid of sensor spots quite easily using something like Photoshop. Use the Clone or Healing Brush tool, select a source point that looks similar to the affected area, then simply paint it out. Alternatively, the Spot Healing Brush will paint it out automatically, but sometimes it works better than others.

SENSOR SAFETY

Protect your sensor to keep the dirt at bay

The best way to keep your sensor free from dirt is, of course, to stop it getting dirty in the first place! However, it's almost inevitable that sooner or later – whether it's an errant crumb from a sandwich or a grain of sand on a beach – a speck of something is going to land on your sensor. Still, by being conscientious with your kit, you can reduce the chances of this happening.

The key is to keep your sensor covered at all times, using a body cap to protect it whenever a lens isn't attached. Never pack or store your camera with the sensor exposed! Remember that your sensor is vulnerable whenever you change lenses, even if you use a DSLR with a mirror that obscures the sensor. So, when shooting outdoors, you should always shield your camera while swapping optics.

Mirrorless cameras obviously don't have a mirror to protect the sensor, but the Canon EOS R has 'blast door' shutters that close and protect the sensor when you turn the camera off, keeping it safe when you switch lenses.

STEP-BY-STEP HOW TO CLEAN YOUR SENSOR

Follow this definitive guide to proper sensor care for spotless photography



1 LOUPE-THE-LOUPE

To check if there are any particles on your sensor, you can invest in a sensor loupe, which costs about £100. Placing this over the lens mount, this will give you a magnified look at the mirror and the sensor – some also possess LED lights to give an illuminated look inside the camera, making it easier to spot foreign objects.



2 BLUE SKY THINKING

Another option to check for particulates on your sensor is to go outside with your camera on a sunny day. Set your aperture to f/22 and take a photograph of a bright blue. Now review the image, zooming in and checking around the frame – this will reveal any sensor spots that need to be dealt with.



3 AUTO-CLEAN

Some cameras have a built-in sensor-cleaning feature. This uses ultrasonic vibrations to shake the sensor, which should dislodge any loose fibres so that they fall into the dust trap beneath the sensor. Some cameras do this automatically on startup/shutdown, and there is usually an option within the menu to perform a clean at any point.



4 ROCKET POWER

If you still see particles on the sensor, some blasts of air can knock loose stubborn particulates loose. If you have a DSLR, go into the menus and activate 'mirror lockup' to move the mirror out of the way. Now turn your camera upside-down, so that the sensor points to the floor, and give it a few blasts with a rocket blower.



5 CLEANING KIT

For persistent dust and sensor spots, try a sensor-cleaning kit – you'll need to buy the right size for your camera's sensor. These kits include a sensor brush, some swab sticks, and sensor-cleaning fluid. Lock the mirror up if you have one, then start with the sensor brush to dislodge any particles that may have withstood the rocket blower.



6 SWAB THE DECK

Now take a swab and add some of the cleaning fluid. Insert the swab into the chamber and swipe across the sensor, with gentle pressure, lifting the swab away after one pass. Give the sensor time to dry, then take another shot to check the area where you had sensor spots. If they're being stubborn, repeat the process until they're successfully removed.



CLEAN YOUR CLOTHS

Lens cloths are generally cheap, but there's no need to keep replacing them. However, you do need to make sure you give your cloths a regular clean, as they don't work well when dirty or wet. Keeping them in a watertight container will ensure maximum effectiveness. A sealed ziplock bag works well, and is better than simply chucking them straight into the bottom of your camera bag.



HOW TO CLEAN YOUR LENSES

As the window to your camera sensor, it's important to remove grubby marks from the front of your glass

Once you've been using your camera lenses for a few weeks, there's a good chance that you will have accumulated some dust, not to mention the odd fingerprint, on the front element. Your delicate lens can be prone to spots and smears, and this potentially gets worse if you've been outdoors in harsh weather. Dust and dirt might be a normal sign of use, but showing your lenses some TLC on a regular basis will both improve image quality and avoid real damage further down the line.

Fortunately, it's easy to keep your lenses in top condition. As well as removing marks on the front of your lens with a specialist cloth, you should also keep the back (the part that mounts onto the camera body) clear. If you're worried about using cloths and solutions then try out dust blowers and brushes for hands-free cleaning.

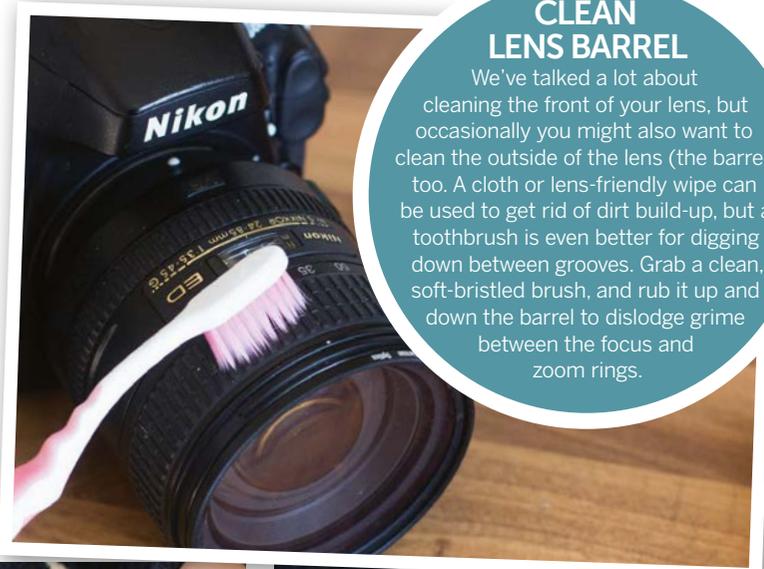
Prevention is key here too, so make sure you keep your lens cap on as much as possible, and consider adding a UV filter to protect the glass.

STEP-BY-STEP MAKE YOUR LENS SHINE

Learn how to keep your lens crystal clear for sharp imagery

CLEAN LENS BARREL

We've talked a lot about cleaning the front of your lens, but occasionally you might also want to clean the outside of the lens (the barrel) too. A cloth or lens-friendly wipe can be used to get rid of dirt build-up, but a toothbrush is even better for digging down between grooves. Grab a clean, soft-bristled brush, and rub it up and down the barrel to dislodge grime between the focus and zoom rings.



1 LENS BRUSH

Using a soft-bristled brush means you can get rid of unwanted debris without having to touch the glass with your hands. Look for a pen-shaped design, as this will be easier to store in your pocket or camera bag. Shake off leftover dust from the brush, hold the lens at a downwards angle, and gently brush the glass.



2 DUST BLOWER

Manually blowing air is a low-contact way to eliminate dust from the front of your lens. A blower can also be used to clear the lens contacts (the gold bits at the back of the lens). Keep a blower in your camera bag when you're shooting outdoors, and use it regularly to eliminate environmental dust.



3 MICROFIBRE CLOTH

It's best to use a cloth for cleaning only after you've tried a blower or brush. This is because there's less risk of you moving anything that might scratch the lens' elements. Before you pick up a lens cloth, remove any large debris that could scratch the lens. Next, wipe gently around your lens from the inside out.



4 CLEANING SOLUTION

If your lens still has more stubborn dirty marks to remove, use a lens-cleaning solution (from a specialist photography shop). Spray the solution onto a lens tissue, not onto the lens itself. Hold the lens firmly in one hand, and work in gentle circular motions to remove smudges and avoid leaving a trail of streaky marks.



5 PRE-MOISTENED WIPES

You could also buy tissues that have already been moistened. Individually wrapped wipes are handy to keep in your camera bag, and designed for one-time use. Check that they are suitable for coated lenses, and use them in a similar circular way to lens tissues for scratch-free removal of fingerprints.



6 ADD A FILTER

Screwing on a UV filter to your lens is a preventative – rather than strictly cleaning – measure. But it's a good way to avoid extreme amounts of dirt removal in the future. It's worth buying a good-quality UV filter to retain the best image quality, as there's no point putting a cheap bit of glass on a high-quality lens.

KEEP YOUR KIT SAFE

Protect precious equipment from damage with these common-sense approaches

INSURING YOUR GEAR

Some insurers specialise in cover for photographers, and there are a range of basic or bespoke options on the market to choose from – which include theft, damage or loss. Shop around for comparison quotes, but be sure to tailor the insurance to meet your own specific needs. If you want to travel abroad with your camera, for example, look for a plan that covers damage to kit stored in an aircraft hold.

01 AVOID DUST AND DIRT

Environmental elements such as grit and sand can play havoc with both the outside and inside of your camera. It's not possible to completely eliminate these, but it's easy to minimise their effect.

For a start, try to avoid switching your camera lenses in strong winds. When your camera is exposed, this is where dust and sand can be blown in. If you have to change your lens outside, try sheltering the sensor with your body (or even changing it inside a carrier bag) and facing away from the direction of the wind.

If seascapes are your thing, be wary of sand getting anywhere near your lenses – there's nothing more abrasive! A simple camera cover can help to offer protection.

Right

Protect your sensor

Only change lenses outside when you really have to. Dismount your lenses in the shelter of a car, tent, or even inside a standard plastic carrier bag



02 INVEST IN A BAG

It makes no sense to spend money on a shiny new camera, then throw it at the bottom of an old rucksack to gather dust and scratches from being bumped around. The best way to look after your kit is to pack and carry it around in a good-quality camera bag.

Padded bags offer extra security, and moveable padded sections provide a flexible way to organise your gear. If you're mainly an outdoor shooter, consider how weather-friendly your bag is, too. Some come with an elastic waterproof cover, whereas more expensive models are likely to be made from a water-resistant fabric.

Right

Keeping it snug and tight

Look for a bag with pockets and compartments to separate camera bodies, lenses and personal items. This Manfrotto RedBee-310 helps kit to be organised in a versatile, practical and convenient way



03 BEWARE OF TEMPERATURE

Condensation can occur when cameras go from very cold places to very hot ones very quickly – think about coming into a cosy house after shooting outside on a cold winter's day.

You'll already know that moisture forming on your camera (which is, after all, an electrical item) is a bad idea.

When you head to a warm environment (or vice versa), try to give your camera some time to acclimatise to the sudden change. Why not leave your camera bag in an intermediate environment like a porch for a hour or so? You could also put gear in air-tight bags, and let it adjust to the inside temperature. This minimises condensation from forming during the warm-up period. Memory cards and batteries are also susceptible to damage from cold environments, so keep spare batteries stored inside coat pockets. Cold drains battery power very quickly, but your body heat should prevent them from getting too chilly.

04 USE THE STRAP

When the immediate novelty of a new camera has worn off, it's easy to get complacent when it comes to handling. If you're not careful, it can be easy to drop or damage a camera. Be mindful of common pitfalls to look out for when taking photos – both handheld and with a tripod.

In most situations where you're holding a camera, it's a good idea to attach the strap and wear it around your neck. That way, if you do lose grip for any reason, the camera body won't go plunging to the ground.

If you're using the camera on a tripod, then make sure it's securely fastened to a tripod plate before you let go. If it's not screwed on properly it might rotate round and fall. The tripod plate also needs to be mounted onto the tripod head. Hold onto the tripod as you mount your camera, and check how stable it is on the ground. Splay the legs out further if the tripod seems to wobble, and weigh it down in strong winds.



Main Above
Hanging on

Wearing a strap (around your neck or shoulder) is a surefire way to secure the camera, protect it from long drops and free up your hands when you're not shooting.



Above
Close to your chest

In cold climates, store any small accessories inside your coat, rather than on the outside pocket of bags. This will keep them warm and hopefully, functioning at their full capacity

05 WET CONDITIONS

You may have noticed that a lot of camera kit is labelled as 'weather-sealed' or 'rugged.' While this implies that it's designed to be used outside, it doesn't mean you can shoot without even thinking about protecting it from the elements – especially damp.

If you know you're going to encounter rain or even just fog on a shoot, consider wrapping your camera in a basic raincover. If you're caught out in rain unexpectedly, don't panic. Simply shield the camera with a plastic bag or even an umbrella until you can find better cover.

Moisture of any type is bad news for camera gear, so always avoid

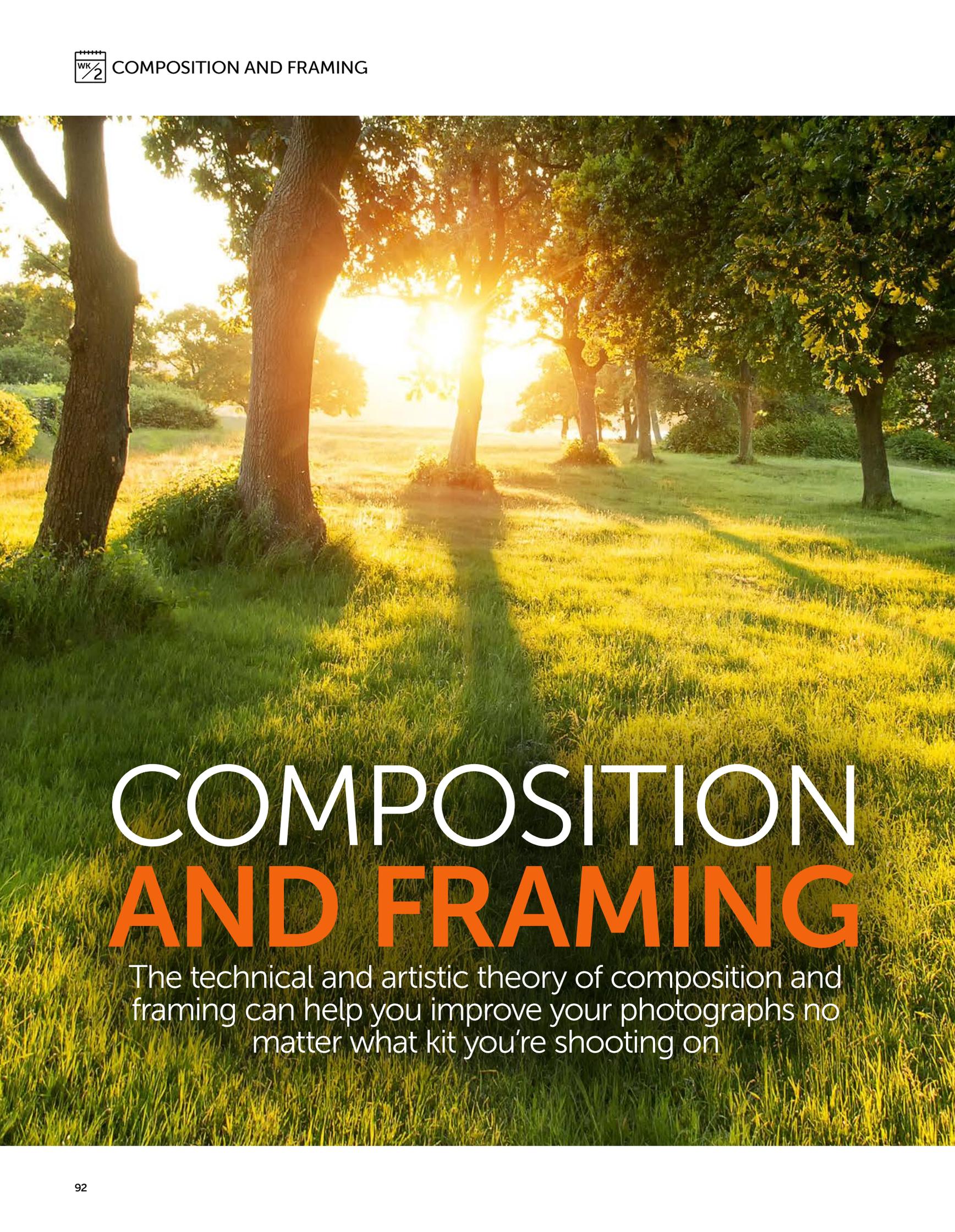
putting a wet camera body straight into in a bag and zipping it up. The humidity and condensation will start to accumulate, which could over time create problems with your camera's sensor and mirror.

Use a dry cloth (or piece of dry clothing) to give your gear a wipe down before you pack up. It sounds odd, but if you keep some silica gel packs handy (those small sachets that comes with new shoes and accessories) these will help to absorb moisture. Let your kit dry out naturally when you get home.

Right
Staying dry

Even water resistant gear needs drying out properly after a damp shoot. Better still, avoid getting it wet in the first place. Lens covers can be found for telephoto lenses





COMPOSITION AND FRAMING

The technical and artistic theory of composition and framing can help you improve your photographs no matter what kit you're shooting on



Image © Getty Images

TASK: SHOOT WITH LEADING LINES

A leading line should invite the viewer to move their gaze through the frame, but it can also encourage their instinct to travel into your photograph. In this image we can see stone steps that wind from the bottom-left of the frame up into the centre. Find a scene to photograph with leading lines that will draw the viewer in. Look for lines on the ground, parallel patterns or winding rivers.

When we first get started in photography, it can be a dizzying prospect. The jargon tends to get in the way for the beginner, and a long list of numbers, letters and acronyms may put many amateurs off. But in reality, because of the plethora of automatic and semi-automatic modes now available in digital photography, even a newbie can pick up a camera and get a halfway decent snap. Transforming these into fully fledged photographs requires some decent photography theory though, and none are more important than composition and framing.

To help construct our photographs, we use techniques that first break down the frame into constituent parts. We do this by carving up space on the vertical Y axis, the horizontal X axis and by splitting up a scene into foreground, middleground and background to denote the Z axis.

Allowing us to layer objects in this way adds depth to the image. We can adjust placements of objects in the frame along the three axes by moving the camera position, changing the focal length of our lenses and dialling in specific camera settings.



Left Leading lines

Long shadows of the trees draw lines that lead directly to the bright setting sun that backlights said trees. They send the eye from the bottom-right of the frame, right through to the top-left

Let's look at the rule of thirds. This device is used to cut our frame into three sections vertically and three sections horizontally. The theory goes that placing subjects along these lines, especially at their intersections, is much more aesthetically pleasing. However, this only accounts for the X and Y axis, with the Z axis (depth in the photo) being explored through the use of leading lines, or lines that start in the foreground and end up in the middle or background.

Making a frame within a frame is the art of placing objects around the main subject in an attempt to force the eye more towards the subject. At the end of the day, the only thing we are trying to do is direct the viewer's eye through our photograph. We are controlling what people look at in our image, and where their gaze travels as they study the photograph. The best images will allow the eye to naturally explore the whole photograph, and keep the attention inside the photo, instead of encouraging it out of frame and onto something else.

That's why we need compositional techniques: to make order of the two-dimensional image. As humans, we're used to exploring the world in three dimensions, so when given a flat photograph it's hard to



Above
Golden ratio
Perfect examples of the golden ratio, a mathematical formula, appear in nature. Search for nautilus shells to capture this phenomena

Right
Rule of thirds
The tall grasses sit on the lower horizontal third of the image, with the two subjects walking through and passing the two vertical centre lines



“Making a frame within a frame is the art of placing objects around the main subject to force the eye more towards the subject”

USE GRIDLINES TO HELP FRAMING

On the inside of your viewfinder, or even on the back of your LCD display, you can enable gridlines to help with framing of your subject. These fall on the rule of thirds, which help for third-framing, but also

provide another job, namely to ensure that horizons are level or vertical subjects are lined up with the edge of the frame. Use them to help level out the horizon on a lake or seascape.



decipher where everything in the scene is actually placed without intentional drawing of attention to specific areas.

After deciding on subject placement across our two-dimensional image, we can move on to the theory of visual weighting. The 'weight' of a subject is used to describe the size, shape and imposition of a particular object or area. For example, if we have a large dark rock on the left of our image, with nothing but bright blue ocean to the right, the visual weighting pulls to the left. Our attention is pulled to the left because of the visual emptiness of the right. We can experience this weighting with a balance of light and dark. Theory goes that our attention is drawn to the brightest part of an image first. If that's true, we must ensure that our most important subject should be the brightest part of the frame.

This weighting is none more perfectly balanced than with the use of symmetry and patterns. Pick up a Romanesco cauliflower and look at the top of the plant. You'll notice a concentric circle that spirals inwardly from the outer edge of the plant. This beautiful pattern

SHOOT WITH THE RULE OF THIRDS

Sticking to the rule of thirds exactly is a bit like brushing your teeth with the exact amount of strokes each night – it gets a little boring and predictable. Instead, push the limits of this technique to the extreme by exaggerating their placements. A low foreground in this foggy shot sits in the bottom-third of the frame, but doesn't even reach the bottom horizontal third line. Placing a tree to the left of the frame gives visual dimension through the photograph, but a thick fog adds a layer of negative space.

USE THE GOLDEN RATIO

This technique isn't reserved for just shells. Follow those theoretical lines around your image, and you can create a subconscious leading line around your frame and into the point of interest. Here, the golden ratio line starts in the top-left of the image, and as the line travels down and through to the bottom-right there's an increasing amount of interest to hold the gaze. It stops right over the model which encompasses the final few swirls of the ratio, and where most interest in the frame lies.

BREAKING THE RULES

Purposefully break the rules you already know for more original photographs

Once you learn the rules of composition it's time to break them. The theory of composition is only that, and if all photographers stuck to the rule of thirds, balancing visual weight in the frame and using leading lines then every photo would look the same. Sometimes by placing a subject centrally we get more of an impact because it's rarer to see this in photography. Breaking the rules is about being mindful of the structure of a photograph, but then making it our own. Originality means purposeful neglecting of the rules, not a lack of awareness of them. Say you're framing a subject but there's a big tree sticking out of their head. Normally this is a no-no, as it looks awkward, but you can get away with it if you use a wide aperture and longer focal length to blur the tree into obscurity. Even uneven horizon lines are acceptable if done for a purpose, like demonstrating the speed and agility of a formula one car as it speeds down a race track.



Blur with bokeh

The tree trunk appears to come straight out of the bear's head, but because it's so far away the shallow depth of field diminishes its importance in the frame



Image © Getty Images

TASK: PATTERNS AND SYMMETRY

Even the most mundane of subjects can be transformed into an artwork. Take this image of different cups of tea, with gradually increasing levels of milk and an orderly arrangement of the cups. Search for patterns or matching objects around your home and shoot some symmetry.

is known as the Fibonacci sequence, which is mathematically identical to the golden ratio. Now, we don't have to learn the mathematics of the golden ratio to understand what it looks like and how to use it. If plotted into a graph it's a simple but graceful swirled line that starts on one side of a rectangle and gradually winds itself into tighter and tighter spirals across to the other side of the rectangle. Have a look at nautilus shells, and you'll see exactly what we mean. This can be a useful compositional device to frame your photographs. When composing your scene, look for subjects that have an increasing level of detail surrounding them along the imaginary lines of the golden ratio. Leave plenty of negative (empty) space

on the opposite side to put emphasis on the main subject.

These techniques can be used on a subject as a whole, such as a portrait of a friend, a landscape or even a wildlife photograph, as well as being applied to abstract images. Abstraction is the process of being free from the

original representational qualities of a subject, so instead of photographing a flower, we might push in close with a macro lens and capture only a tiny part of a petal. It might be nice to use the leading lines theory to allow the edge of a petal to draw its way through the frame from one side to another, or even diagonally. By doing this with a wide aperture, we can let the rest of the flower fall away into abstract blur. It's still recognisable as being part of a flower if told about the subject, but on its own is quite difficult to identify.

Most beginners approach their photography in the same way – shooting all their images from eye level. This generally is about 5-6 feet away from the ground, and so we see lots of photography with the same view point, and this can be detrimental to our composition. Sure, photographing a friend of similar height

“When composing your scene, look for subjects that have an increasing level of detail surrounding them along the imaginary lines of the golden ratio”

Left
Abstract imagery

A good abstract image will extrapolate the intrinsic values of a subject and convey them in a manner that isn't apparently obvious, like a close-up on a street



Image © Getty Images

Below
Changing perspective

Try new angles to get fresh perspectives. For example, instead of shooting a winding road from road-level, hike up a mountain to capture it twisting through the mountains



BACKGROUND ELEMENTS

We have several options at our disposal for ensuring background elements aren't distracting from the main subject of the image. For one, as in our image example here, we could simply ask people to move out of the background, or simply tidy up the background by moving objects around. This might not work for all scenarios though, like if we're shooting a portrait out on the street. So we can move our camera position until there's a less distracting background behind the subject, use a telephoto lens and zoom in to force the background to blur, or use a wide aperture to ensure a shallow depth of field. All of these technical devices can be employed simultaneously if you're in a particularly troublesome area with lots of distracting elements.



might look good, but stay at that height when photographing a child or a pet, and we'll get a top-down look that shows nothing but the ground behind the subject. Conversely, aiming upwards towards flying birds or up at buildings can give exposure issues with a bright sky overexposing the frame, forcing the subject into shadow and lacking detail.

So the next step beyond practicing the theory outlined above is to adjust camera height and angle to better connect with the subject. Crouch down to get eye-level with the child whose portrait you're taking. From here we see the world as the child sees it, opening up the background to provide depth through the shot. It also gives the child more opportunity to connect with the person behind the camera, and gives a more natural expression in the face, as they are no longer looking upwards. Their whole body can now be in focus as well, as the head and body are placed equidistantly from the camera, so shallow depth of field isn't so much of a problem when trying to get an in-focus shot.

Of course, the rules are there to be broken. Being a slave to rules, or missing photographic

opportunities because they don't fit into a particular regime of theory is restrictive and something to avoid. Think of these compositional rules as a guide – a foundation of knowledge to help you when you're unsure how to compose the scene in front of you. But also be aware that every other photographer is using these rules, placing subjects in the same way across the frame. So in order to be original it's important to break the rules from time to time. We may even find that a subject doesn't fit into any of the usual categories – there are no leading lines, no depth, perhaps not even any X, Y axis directionality. Maybe it's just a dot, or a circular subject that looks particularly interesting. If it feels right but doesn't tick any of the theoretical boxes, take the shot anyway. It's likely that you've found something unique and will help your photograph stand out against the crowd.

That being said, it's important to know some of the rules when starting out to give a structure to cling to and learn from, so let's take a look at some of the most common devices used in composition and framing.

Below

Balancing elements of an image

By placing a large, brightly lit tent on the bottom-left of the image, it is balanced by the fading sunset in the top right, helping the eye glide over the whole photo.



“Every other photographer is using these rules, so in order to be original it's important to break the rules from time to time”

Above

Frame your subject

Use objects in the scene to frame subjects. Anything that surrounds the subject in-part or wholly will do, so long as you can still see the subject clearly



Include depth

Shoot a subject that has many layers from foreground to background to introduce depth. Here the bridge moves from foreground to background as it stretches out

STEP-BY-STEP PERFECT COMPOSITION IN POST



1 LEVEL YOUR HORIZON

We've used the Straighten tool in Photoshop CC to draw along the horizon of the water for a perfectly level shot. Photoshop will do this automatically if double-clicked, but it doesn't always do so perfectly.



2 CROP IN

We wanted to evoke the rule of thirds to improve compositional structure, so we've cropped in on the image to allow the top and bottom third lines to sit along the top and bottom of the sea stack.



3 BOOST SHADOWS

We've increased the shadow brightness in the image to reveal detail in the darker rocks and foreground. This helps to balance visual weight from the bright sunrise all the way through to the darker areas of the image.



4 DROP IN A GRADUATED FILTER

Introducing a graduated neutral density filter allows us to darken the highlights in the top of the frame. This helps prevent overexposure in the top of the frame, again adding to a balance of visual weight throughout the shot.



5 REMOVE DISTRACTIONS

We've used the spot-removal tool to eliminate the flare in the bottom of the image. By adjusting the size and feather amounts we can let Photoshop automatically place adjacent texture over the top, removing the artefact.



6 FRAMED SUBJECT

We've cropped in on this photo and eeked out detail in the shadows and highlights, and removed distractions to reveal the Sun as it rises over the stack, itself framed by the rocks. We've dropped the highlights to accentuate this.



ILLUMINATE YOUR IMAGERY WITH FLASH

Knowing how to use flash well and understanding how light falls will separate your imagery from amateurs

There is a time and a place for flash. It will often kill the atmosphere at a party, so is best avoided. But conversely can be the essential ingredient for a successful shot – in daylight or in the dark. The secret to success is to use the built-in flash on most SLRs with caution. The key to getting good results is often a matter of exposure – ensuring

you use settings that make the flash look as natural as possible. Using flash adds an extra complication to the usual problems of exposing an image correctly. You not only have to judiciously choose the shutter speed and the aperture and set the ISO to suit the occasion, the flash power must also be fed simultaneously into the exposure equation. A flashgun provides a very brief burst of

light – but the actual duration can be varied by the camera or photographer to alter how much flash 'power' is added to the scene. The amount of power needed to light a subject, of course, will depend on the aperture used (the wider the f-stop setting the less power required). The ISO setting is also an important factor – the higher the sensor sensitivity, the less flash power required.



WITHOUT FLASH



WITH FLASH

Above
Use flash
 A burst of flash is great when shooting portraits outdoors – improving contrast and colour in most lighting conditions. Use your SLR in Av mode for natural-looking results.

Images © Chris George

SYNC SPEEDS

Interestingly, the shutter speed is often not a significant factor in the flash exposure calculation. The way that the 'focal plane' shutter of your DSLR works means that you do not have the full range of your camera's shutter speeds on offer anyway. In normal flash modes, you need to ensure that the shutter speed is set at or below the 'sync speed' for your camera. Canon SLRs have sync speeds of either 1/200 sec or 1/250 sec, depending on the model; if faster shutter speeds are used then part of the image will be obscured by the falling shutter curtain.

Fortunately, most of the factors that need to be taken into consideration when calculating flash exposure are handled by the camera. A suitable sync-friendly shutter speed is set for you, unless you use the camera's Manual (M) exposure mode – and as long as you are using the pop-up flash or a dedicated hotshoe flash.

An extra complication is that flash has a relatively limited range. The maximum power varies between the flash used – but once the

subject is more than a few paces away, flash has little effect. This ensures that there are plenty of subjects where the use of flash is impractical.

E-TTL AND E-TTL II

Exposure metering for flash is handled in a slightly different way than for non-flash 'ambient light' exposures. Your digital SLR uses either E-TTL (Evaluative Through The Lens) metering, or the more recent E-TTL II metering.

With both of these systems, flash power output is set by the flashgun firing briefly just before the shot is taken, and then measuring the light reflected back by the subject using the usual exposure metering sensor. This 'preflash' is all-but imperceptible to the human eye.

The E-TTL II system, found on all current Canon DSLR models, refines the original E-TTL measurement by also taking the subject distance into account – as measured by your lens's autofocus system. This helps ensure

TOP BUILT-IN FLASH TIPS

Engage the flash

To pop the flash, press the lightning symbol button. You can manually activate it in any of the creative shooting modes (P, Av, Tv, or M). It's worth noting that it will automatically engage in low light in the fully automatic and scene modes (apart from the no flash option).

Fill flash

It's easy to think that on a sunny day you don't need extra light, but you'd be wrong. It's the perfect time to pop some flash into the shadows created by the harsh sunlight. In the shot to the left, notice the unflattering shadows across the face. If you simply pop the flash you can see how it's lifted the face and removed the ugly distractions.

Built-in flash settings

Your camera has a few handy options in the flash control menu. You'll find this setting in the red part of the main menu. One of the most useful features of the 'Built-in flash func. setting' menu is you can adjust the strength of the flash. It works exactly the same as when you control the exposure compensation. Simply turn the 'exp. comp.' setting up the scale for more light and down for less. Again, this scale is measured in a stop system, and is split into thirds of a stop for finer control.

Flash sync settings

Your DSLR has a flash sync shutter speed setting. That may sound complicated, but it's actually quite simple. As the flash light fires, if the shutter speed setting is too fast, then the flash light can't reach your camera's sensor in time. The maximum shutter flash sync speed varies between 1/200 sec and 1/250 sec depending on the camera. Of course, you can use a shutter speed setting that's much slower than this, which can be effective if you want to capture movement in the scene and freeze the beginning or end of the frame. It can work effectively with people dancing or performing an action sequence.

Image © Getty Images



SYNC SPEED

Unless you use HSS mode, you need to ensure you use a shutter speed of 1/200 sec or slower (1/250 sec or slower on some cameras) – if you shoot at a faster speed you will get a black horizontal band obscuring part of the picture.



INCORRECT SYNC



CORRECT SYNC

a more naturally balanced exposure – and minimises flash power errors caused by light-toned and dark-coloured subjects.

Inevitably, despite the sophisticated metering, automatic flash will not always give the results that you want. For complex flash setups, such in a studio, it is often best to switch to Manual mode, set the shutter speed to a suitable sync speed, adjust aperture to give the depth of field you need, and then simply manually adjust the flash power to give the lighting level that you want.

With built-in and hotshoe flash, however, your camera provides two simple ways in which to get your exposure spot-on, even when using auto settings. For most flash pictures, you are best off using the Av (aperture priority) exposure mode from the camera's Main Dial. As long as the Custom Functions have not been set to do otherwise, in this mode the camera tries to ensure that the background and foreground are both exposed perfectly. Essentially, the camera uses the flash power setting and the

aperture to control the exposure of the flash-lit foreground, then adjusts the shutter speed to make sure the background is neither too light or too dark.

DIFFUSE OR BOUNCE THE LIGHT

Often direct flash can be a bit overpowering and make portraits look unattractive and harsh. If you are using a hotshoe flash, try pointing it towards the ceiling or a nearby wall in order to diffuse some of the light. You can also shoot flash through a snoot or softbox in order to change the quality.

FLASH EXPOSURE COMPENSATION

On the other hand, if you find that the flash power is too strong or too weak, you can adjust this using your camera's Flash exposure compensation facility.

On high-end cameras, a top-plate button gives you fast access to this override; on other models you will have to delve in the DSLR's menu options in order to reduce or increase the flash output.

In order to adjust the brightness of the background in the image (the area of the image that is not lit by the flash) you use the main exposure compensation facility. With cameras like the Canon 700D, this means pressing the +/- key whilst turning the Main Dial. With cameras like the 7D Mk II or 5D Mk IV, you use the thumbwheel on the back of the camera to make the adjustment.

ALTER BACKGROUND BRIGHTNESS

Use some exposure compensation with your flash

Using flash usually gives you nicely exposed foregrounds, but the backgrounds can often appear to dark or too dark. Shoot at night, and a cityscape or a living room can look too dark – lacking the details you can see with your naked eye. Outdoors during the day, blue skies can end up looking bleached white in your fill-flash shots. The answer to both problems is to use exposure compensation...



Image © Getty Images

1 SHOOT A PORTRAIT INDOORS

Try shooting a portrait indoors after dark (or on a lit street outdoors). Shoot with your built-in flash (or hotshoe flash if you have one) with the Exposure Mode set to Av. Shutter speeds may be slow – if so use a tripod, if possible, or increase the ISO to around 800, to avoid the background looking blurred.

2 TRY AGAIN

The background in your after-dark image will typically look too dark. Set exposure compensation to +1 (or possibly +2) and then reshoot.

3 NOW SHOOT OUTDOORS

Shoot a flash picture outdoors on a bright day. The background in your shots will often look too bright – particularly if they include a large area of sky. Set exposure compensation to -1 (or possibly -2) and reshoot.



© Chris George

ANATOMY OF A FLASHGUN

What goes on under the shell of your strobe

1 DIFFUSER SCREEN

A translucent plastic screen in front of the tube tries to spread the light so that the coverage is as even as it can make it.

2 CAPACITOR

A reservoir of electrical charge. A transformer ups the voltage from the batteries to the 300 volts needed for the flash tube.

3 FLASH TUBE

A glass tube filled with xenon gas, which the high voltage charge passes through to create the flash. An electrical coil around the tube excites the gas particles to give the arcing process a helping hand.

4 REFLECTOR

A silvered surface ensures that as much light as possible is directed towards the subject.



QUICK AS A FLASH

A built-in or hotshoe flashgun regulates the amount of illumination that it provides by varying the duration that the flash of light lasts. This can be anything between 1/1000 sec and 1/50,000 sec. In low light, a brief duration of flash can freeze events invisible to the naked eye.



SECOND-CURTAIN FLASH

With normal flash, the flash fires as soon as the shutter is fully open. But when the shutter speed is slower than usual, this can lead to some peculiar results when shooting moving subjects.

Blurred lines created by the ambient light appear in front of the subject, which look particularly out of place if the subject is moving in a straight line. A more natural effect, with the blurred ghost image appearing behind the subject, is achieved if the built-in or hotshoe flash is set to second-curtain sync. In this mode, the flash fires just before the shutter begins to close

(see below).



FIRST CURTAIN



SECOND CURTAIN



WEEK 2 SUMMARY

You will hopefully be feeling pretty pleased with your quick progress so far and be keen to put your new knowledge to the test. At the end of week two you'll now also know...

HOW TO KEEP YOUR SENSOR AND LENSES IN THE BEST CONDITION

Now that you'll be going out on daily photographic adventures, it's essential that you know how to keep your lenses and sensor blemish free, and protect your kit from accidental damage.

HOW TO COMPOSE AND FRAME FOR THE BEST RESULTS

Separate yourself from quick amateur snaps by taking the time to consider your compositions. Use the rule of thirds for perfectly balanced imagery and make sure you are always mindful of distracting background elements.

HOW TO ILLUMINATE YOUR IMAGERY WITH FLASH

Although often flash isn't necessary all of the time it's important to understand how it works and will affect an image.

HOW TO USE METERING MODES

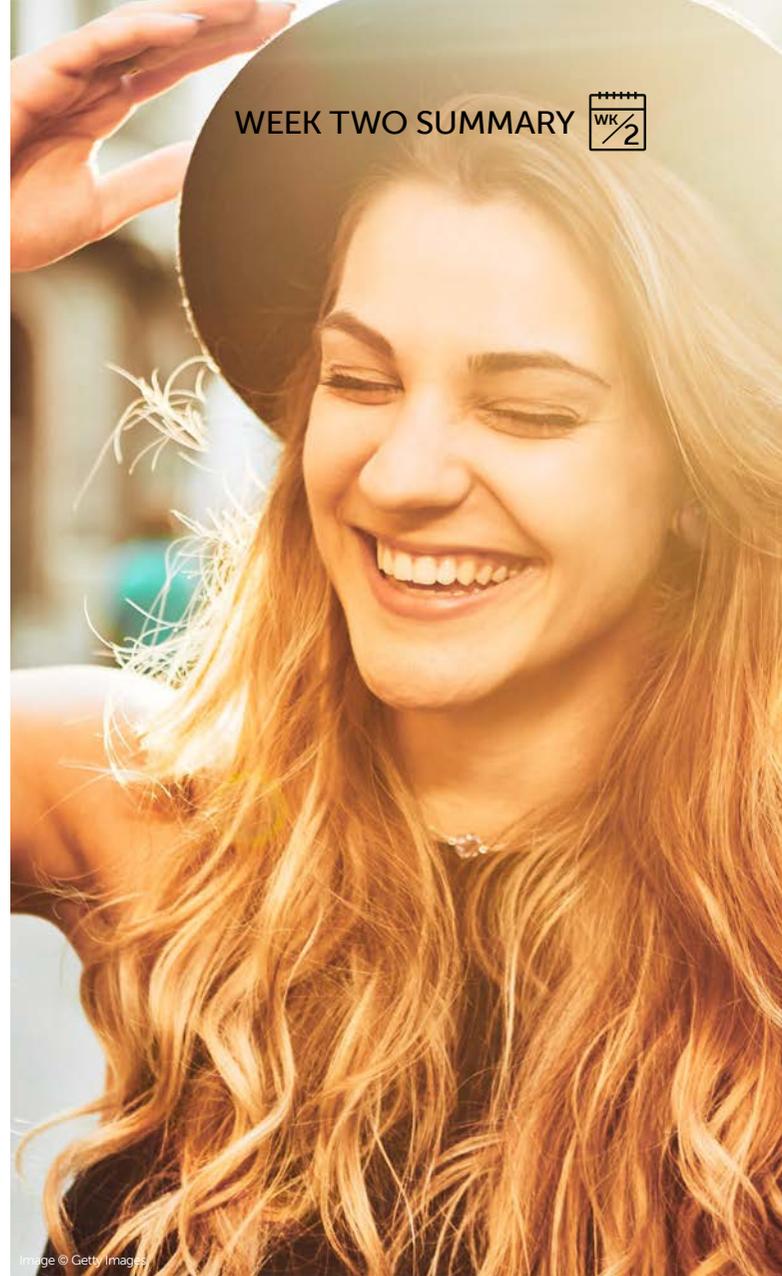
Measuring the brightness of a scene is essential for getting the exposure right for your imagery. Use Spot metering to measure a small portion of the light in a scene, or Evaluative and Center-weighted for a more general reading of the scene as a whole.

HOW TO CHOOSE THE BEST MODE FOR YOUR SUBJECT

It can be tricky to choose between Program, Shutter Priority, Aperture Priority and Manual Mode sometimes, or when to use Exposure Compensation.

WHAT THE DRIVE MODES ARE

Make sure you don't miss a moment by selecting the correct drive mode. Continuous shooting is often the most useful as it allows you to take a series of stills in super quick succession, meaning you never miss a moment.



CREATIVE COMPOSITION

Look for reflective surfaces like glass and puddles and experiment with creative composition



- Try to shoot a lesser seen angle of something mundane or a familiar landscape.
- Play with expected formats, try a 45 degree angle or use a portrait format where you may expect landscape, and vice versa!
- If shooting a subject use a shallow depth of field to knock out a busy background.

PET PHOTOGRAPHY

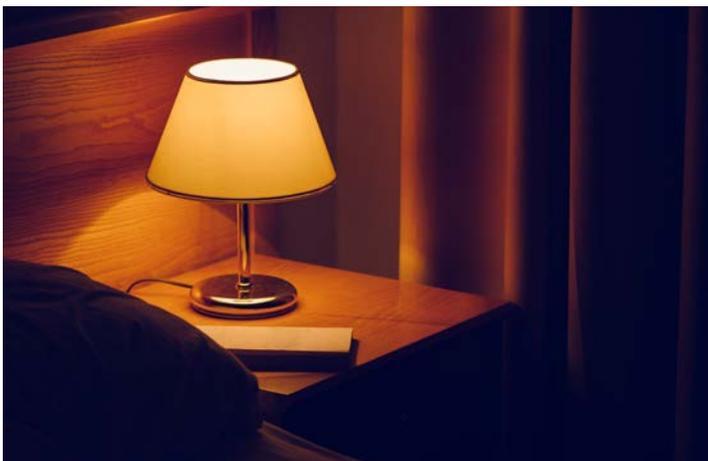
Shooting pets can be a challenge as animals generally don't sit too still or respond to direction!



- Change your angles, try getting down low to get a different perspective and let them play! Often action shots are more successful in capturing the pet than a posed image.
- Borrow a pet and get hold of treats or toys to reward and distract the it.
- Fast shutter speeds and burst mode will ensure you catch the action of a moving pet!

WHITE BALANCE EDITING

White balance levels are sometimes correct while shooting but often you may need to edit after



- Many photo editing software have drop down menus to change the white balance options as on a camera; i.e. 'cloudy', 'tungsten', 'fluorescent'.
- Colour cast can also be removed; you will be given a dropper tool to select an area of your image that was supposed to be pure white. The image will then change.
- Temperature sliders are also useful to bring images back to 'true', or to neutralise tints with opposing colours.

DRIVE MODES

Step away from single shot mode this week to experiment with drive modes



- Start by selecting burst mode to capture moving action and consider how you want you image to look- focal length will knock back the background.
- Begin shooting before the action will occur and track the action with your camera.
- Successful burst mode photography takes practice and experimentation so keep working on it.

SPOT METERING

Pick a small part of your image to take a light reading from and experiment with the affects



- Aim centre of AF point at the light source, like a beam of light or sunset
- Lock the exposure and then shoot.
- Try over/under exposing with this method – you will get some interesting results.

POP UP FLASH

Pop up flash sometimes has a bad reputation but for beginners it's fit for purpose.



- It is possible to change the power of the flash with flash compensation in Manual, Aperture Priority or Shutter Priority modes with the +/- button.
- Pop up flash has a range of roughly 2-12ft.
- Play around with using the, different levels of, flash in daylight to fill flash out strong shadows and knock out strong shadows.

SHUTTER RELEASE MODE

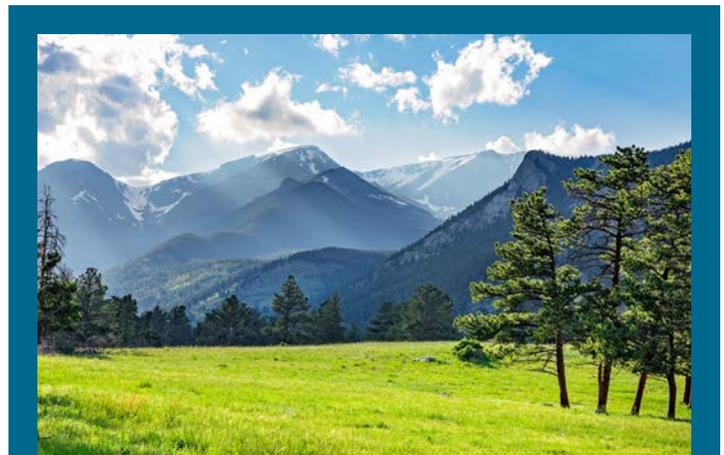
Self-timer mode has more scope than just getting yourself into shot by pressing and running!



- Very low light photography also benefits from a self-timer with a long exposure when using a tripod. However with a longer exposure it becomes less important to use the timer as the shake becomes less obvious.
- We can use the self timer mode to reduce shake when shooting as hands are off the camera.
- Macro photography amplifies camera shake, so a very short delay to ensure the camera is stable will really help when shooting close.

EVALUATIVE METERING

Evaluative metering mode is standard on cameras, a light reading is taken across the whole scene



- Landscape shots are good to experiment with evaluative metering as the camera is looking to make an exposure that is an average across the image.
- You need to look for an evenly lit scene.
- Evaluative metering will usually give you the correct exposure in all camera modes.

WEEK 3

Now it's time to take things further

110 EXPOSURE TRIANGLE EXPLAINED

Understand how exposure is affected by three variables

112 MASTER MANUAL MODE

Choose your own settings and capture images the way you see them

118 USE YOUR HISTOGRAM

Learn how to read the histogram for accurate exposures

120 USING YOUR DSLR FOR VIDEO

Take your stills skills further and shoot some video

124 UNDERSTAND APERTURE

Learn how to perfect depth of field and exposure by controlling the light

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Discover how to take control and focus with your eye

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A brief outline of what you have learnt so far

142 PRACTICE TASKS

Eight practical suggestions that will enable you to use your new skills

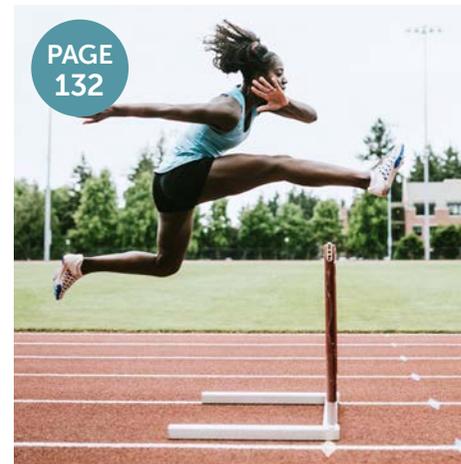
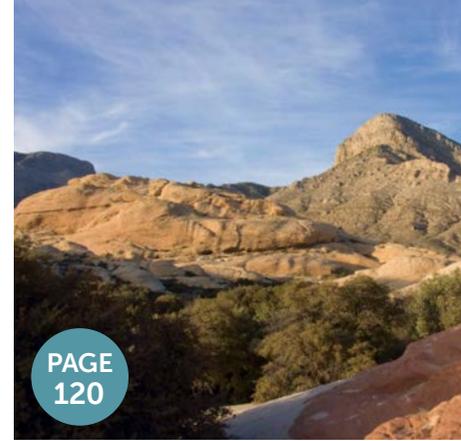




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EXPOSURE TRIANGLE EXPLAINED

Understand how exposure is made up from a balance of shutter speed, aperture and ISO

When you're ready to stop relying on your camera's automatic exposure modes, it's vital to get to grips with setting the shutter speed, aperture and ISO yourself. But with so many possible combinations to set, where do you start?

To take images that are properly exposed – not too dark or light for your subject – try thinking of exposure in terms of a triangle that needs to be balanced.

Imagine an exposure triangle (or study the diagram here) that contains the shutter speed, aperture and ISO on each side, with the biggest and smallest values on each corner. Essentially, when you change one variable, you'll need to change another relatively to let the same amount of light in. For example, if you make the shutter speed faster and lower the amount of light hitting the sensor, you'll need to increase the ISO to retain the same brightness of image.

IMAGE STABILISATION
 Many photographers mistakenly think that the image stabilisation feature on their lens or camera will help them to override the idea of the exposure triangle. Stabilisation can enable you to use slower shutter speeds than you normally would (along with smaller apertures for greater depth of field or lower ISOs for more detail) this is only to reduce the movement from camera shake. You can't use a slower shutter speed for moving subjects.

When photographers used film cameras, the ISO was set by the type of film. Nowadays, however, ISO can be set on the camera, giving you more control than ever before.

Each of the three variables can be set (and changed) depending on your subject at hand, the light conditions you're in, and what type of photo you want to take. You'll often find that one of the three settings has priority – for example with wildlife photography, a fast shutter speed to freeze an animal in motion.

THE TRIANGLE

What do you need to adjust, and when?

The exposure triangle is a visual way of relating the three elements that determine a photograph's exposure: aperture, shutter speed, and ISO. Adjusting one variable also means adjusting another.

1 SHUTTER SPEED

This relates to how long the shutter is open and the image is exposed for. A shutter speed of 1/250sec is faster than 1/25sec.

2 ISO

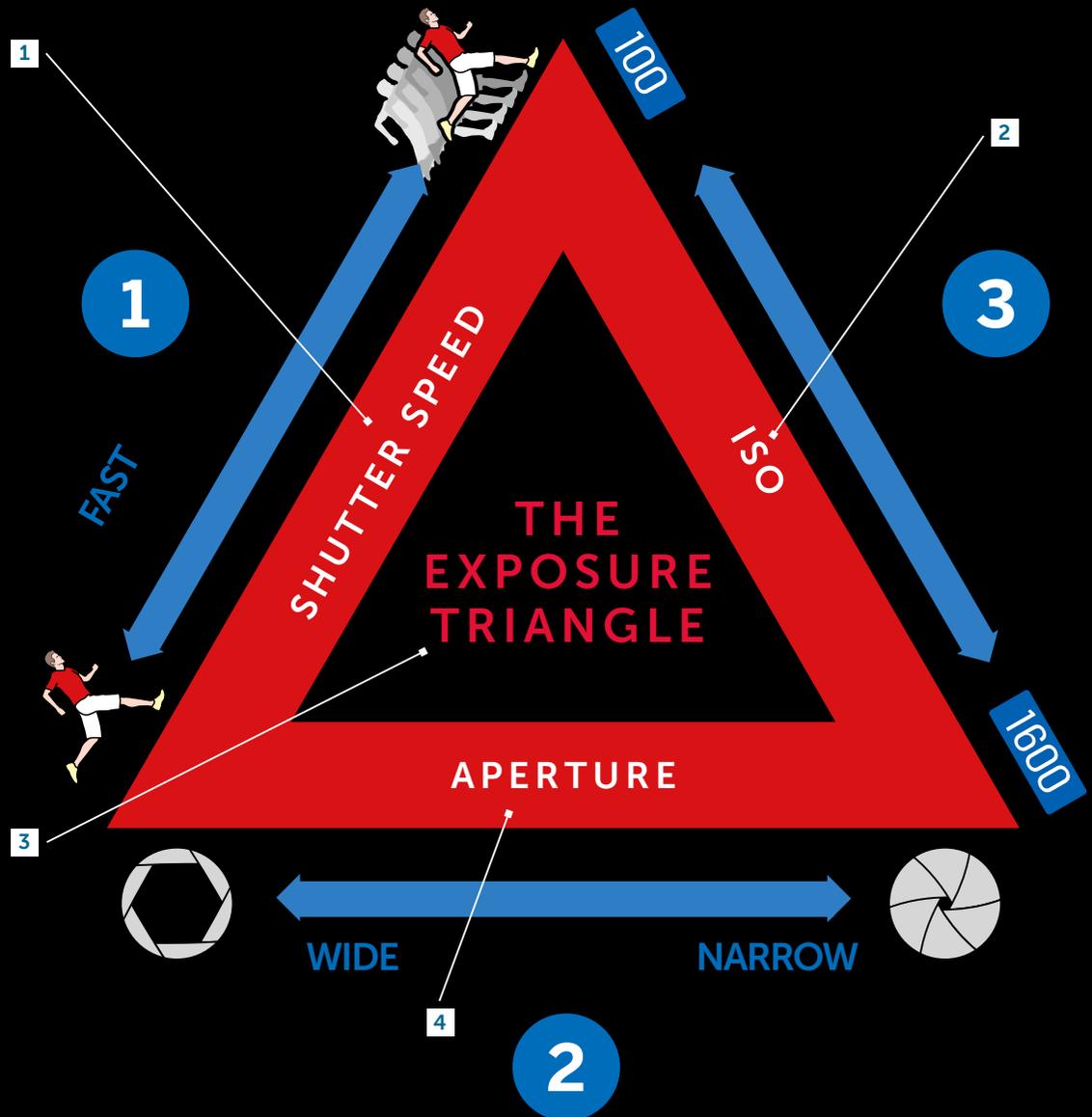
ISO relates to the camera sensor's sensitivity to light. The higher the ISO, the more sensitive, although very high ISO values can introduce noise and reduce image detail.

3 EXPOSURE COMPENSATION

You might want to imaging that the overall image exposure is in the centre of the triangle – a meeting of the three variables.

4 APERTURE

The narrower the aperture (the opening at the front of the lens) the less exposure to light. Bigger f/numbers mean narrower apertures.





**THE
EXPOSURE
TRIANGLE IN
ACTION**

For example, we started off shooting here with our lens's widest aperture. As we then narrowed the aperture in increments for each shot (letting less light onto the sensor) we also had to slow the shutter speed so that it was open for longer.



MASTER MANUAL MODE

Switch to manual control, choose your own settings and capture images the way you see them

MANUAL EXPOSURE

It's always a bit frustrating when your camera doesn't see the same image as you do. Although you may have already moved from full auto to the camera's semi-automatic modes (Program, Aperture Priority and Shutter Priority), in these modes the camera is still responsible for some of the exposure decisions. If you want complete control over how your images look, take the leap into Manual mode.

MEASURING EXPOSURE

We haven't talk about how light is measured by your camera meter yet, which is in units called 'stops'. You need to understand what

a stop of light is to understand the exposure triangle (so here goes).

A stop is the doubling or halving of the amount of light making up an exposure. When you add a stop of light by doubling the exposure, you'll brighten up an image. On the other hand, decreasing an exposure by one stop (halving the amount of light) will darken an image.

Adding or taking away a stop of light is achieved by changing the shutter speed, aperture, and ISO. Feeling confused? Let's take a look at them individually first.

The shutter speed is the exact length of time that light is allowed in to hit the sensor for. It is measured in seconds, and most commonly

seen as a proportion of a second, such as 1/250sec. To double the amount of light in the exposure, you need to double the length of the exposure. For example, going from 1/60sec to 1/30sec doubles the length of the exposure as it doubles the length of time that the shutter is open for.

The aperture is the name given to the circular hole in your lens, which lets light hit the sensor. It's usually closed until you press the shutter, when it opens momentarily – the amount of time it's open for is dictated by the shutter speed. The bigger the opening is, the more light that can reach the sensor – and the lower the ISO or shutter speed needed for the same exposure.



Below

Manual shooting

Difficult subjects and light work best when shot in Manual mode as you have more control of what the camera is doing

Image © Getty Images



ISO is the final variable in our triangle, and it's an easier scale to understand. ISO can be thought of as the sensitivity (to light) of the camera's digital sensor. A higher ISO means the sensor can gather less light to record the exposure. If you double the ISO – say you go from ISO 100 to 200 – this will give you a one-stop increase in exposure.

If you're struggling to know where to begin with your settings, it helps to think about your image, and whether the aperture, shutter speed or ISO is the priority. As yourself a few questions about what you're trying to shoot. Is it important for you to have a fast shutter speed to keep a bird sharp while it's moving? If so, a shutter speed would be the first variable to set. Alternatively, do you need to control the aperture? A wide aperture is often favourable for portraits and wildlife shots, throwing the background out of focus and honing in on the subject. If this was your focus, you'd set your aperture first and the shutter speed and ISO afterwards. Shooting in low light might mean that a high ISO is the most important component of the shot.

It's important to remember that aperture, shutter speed and ISO might also be limited by the camera or lens that you're using. The

widest lenses can range from f1.4 to f22. Shutter speeds range from 30 seconds all the way to 1/4000sec (or faster if you're lucky). The ISO generally begins at 100 and with modern cameras, can push 16,000!

Settings are a constant balancing act, so don't fret about finding the perfect combinations right from the beginning. Aperture and shutter speed aren't on a linear scale, so to get used to the difference in values, and use the dials on your camera to go up and down stops.

METERING

To tell you when your scene is 'correctly' exposed, your digital camera uses a built-in light meter to measure the light being reflected from the subject in the frame. These meters are calibrated to 18% grey, which is roughly the amount of light that gets reflected by an 'average' scene.

Most cameras offer a range of metering modes to choose from. The hard part is knowing which one is the best to use in a given situation and particular subject.

Evaluative (often called Matrix or pattern) metering is the most common option, and the one that you can rely on for most lighting

scenarios. It meters the whole scene that you see in the viewfinder, but adds weighting to what is being focused on. It works by using a wide range of readings from across the scene, comparing them to images in its memory and then effectively applying its own exposure compensation to the result.

Centre-Weighted takes a reading across the whole scene, but places more emphasis on subjects situated in the middle of the frame. It can be useful when the subject you're photographing is backlit – assuming it's in the centre of the frame.

If you need real precision in your images, Spot metering is the best metering option to go for. You should choose this option when photographing a light subject against a dark background, for example.

The spot meter will typically be fixed at the centre autofocus point, but some camera-metering systems can spot-meter from off-centre autofocus points as well. Spot metering is also a good option for photographing faces, when you want to ensure that the eyes and skin tones are accurately recorded.

To meter a scene effectively, compose the frame and focus first, then tweak your settings until you're happy with the exposure result.

MIST OR SNOW?

Bright areas often end up looking grey. All that white fools your camera meter into underexposing, so take back control for a result truer to the scene in front of you. In Auto mode, add a stop of positive exposure compensation. In Manual mode, tweak the settings so the light meter is about one stop over the given reading.



Image© Getty Images

Use your camera's light meter and shoot a vibrant portrait outside



1 EXPOSURE SETTINGS

Working in Manual Mode, start with a fairly wide aperture such as f2 (or the widest that your lens allows) and a low ISO. Switch the focus mode to One Shot, which is ideal for static subjects like portraits.



2 TRY SPOT METERING

Switch to Spot metering mode. This will enable you to expose more accurately for your subject's face as the main focal point, rather than allow the camera's meter to be skewed by bright elements in the rest of the frame.



3 PORTRAIT PICTURE STYLE

We set the "Portrait" Picture Style on our Canon DSLR, which adjusts the colour tones to suit skin and adds brightness. This meant that our subject's skin was captured more accurately, but also still with the correct exposure.



5 FOCUS AND SHOOT

Once you're ready to take the shot, make sure the main point of focus is over your subject's face – particularly the eyes. Check the camera meter again, and tweak your shutter speed so that the meter is over the zero mark.

4 CHECK THE BACKGROUND

When you compose, look at what's behind your subject in the frame. We positioned our model against some bright foliage, which added colour and made them stand out. In bright sunshine, move around them to avoid shadows on the face.



6 REVIEW YOUR SHOTS

If you find that the face is too dark or too bright, use Exposure Compensation to quickly add or subtract light. We underexposed our image slightly to preserve highlight information – we could brighten parts of the image when editing.



Set your own colour temperature for greater consistency and control



1 SET THE CAMERA

You can't set a Custom White Balance in Automatic mode, so switch to Manual. Set your camera's White Balance setting to Auto (AWB). Get into position and face the lens towards the subject you want to take a reading of.



2 GET YOUR REFERENCE

Next, hold a calibrated gray card or white balance filter (we used an ExpoDisc) in front of your camera, so that it fills the whole of the frame. This will be the reference point you use to set the Custom White Balance from.



3 FOCUS AND SHOOT

Autofocus will struggle with the filter or card so close, so switch to manual focus. Make sure your exposure settings are right, then take a shot of your reference card. The camera will use this picture to establish your custom White Balance setting.



4 SET THE BALANCE

Delve into your camera's shooting menu to find the Custom White Balance option – refer to the camera manual if you struggle to find it. Hit Set, then you'll be able to find the calibrated gray shot you just captured.



5 CHOOSE THE SHOT

Press the Set button again (this is often OK on some models) to select the displayed image as the reference for your custom white balance. Tap OK, and a message will confirm that the setting is now stored.



6 SET CUSTOM WB

Now your new setting is stored, you just need to switch from Auto to Custom White Balance before taking the final photo. You'll need to take a new gray reference image every time the light or your subject changes significantly.



Image © Getty Images

EXPOSURE ADJUSTMENTS

Your camera isn't perfect when it comes to metering 'correctly'. Some very bright or dark subjects can throw off a meter completely, as well as high-contrast scenes that contain light and dark objects within them.

This is because the camera meter is calibrated to target 18% reflectance – or roughly the amount of light reflected from a midtone subject. Anything that reflects much less or more light than this will start to cause problems for the meter.

Fortunately, as soon as you leave Auto mode, you have the benefit of an exposure indicator, which can usually be seen displayed in the viewfinder or on the top plate of the camera. This is a scale that typically runs from -3 to 0 to +3. Point the camera at something, and you'll see that the exposure indicator moves. The important thing for you to remember is that you don't always want the indicator to be set at 0. Even then, the scene could still be incorrectly exposed. The correct exposure just means getting the image, look and brightness you want. As we've said already, there's no 'right' exposure in any given situation.

As an example, consider a very snowy landscape. With all that white detail, the 'correct' combination of settings that your camera will give you (where the meter is at 0) are likely to render the scene as grey, in an attempt to provide a neutral exposure. To avoid the wrong exposure in this situation, you'd need to dial in some extra brightness, moving the scale to the right of zero. This would record the snow as it was meant to look, as a bright white. If you're confused when faced with a scenario like this, try to keep in mind the phrase: "add light when it's bright."



Image© Getty Images

MANUAL WHITE BALANCE

So far, we've talked about working manually in terms of exposure brightness, but white balance is another important part of your image (and another way to take control over the outcome of your shoot).

Our human eyes are very clever, because they make white objects look white. But to make white appear as white in digital photographs, colour temperatures need to be adjusted from within the camera – with a process called White Balance (WB).

When you set your camera's Automatic White Balance (AWB) or use one of the presets, the camera makes an educated guess at what colour temperature to use. Auto White Balance usually does a fair job at this, and you can edit colours later during post-processing. However, if there's a predominant colour in the scene, it's better to go manual and create your own White Balance setting.

To do this, you just need to take a picture of a piece of white (or grey) paper or card in the same light source as your subject. You can then save the data generated, displayed as Custom White Balance in most camera menus, and load it up before shooting.

If you know the specific colour temperature value of the light that you're photographing in, you can dial in a value in Kelvin (K). Blue and white are 'cool' colours with values over 7,000°K, while red and orange are warmer, located around 2,000°K.

If you're unsure, look for colour temperature charts online, then enter the appropriate value into the camera, found under Colour Temp in your menu. Remember; you will need to change the White Balance every time the lighting situation changes significantly.

LIGHT MATTERS

Different light quality requires different metering modes

METER LOW LIGHT IMAGES

Photographs taken in low light (or at night) can have great ambience. They can be tricky to expose, though. Firstly, use a tripod to keep things steady.

To meter accurately, try switching your camera meter to Spot metering, which will read light from a concentrated area around your chosen focal point. Aim the camera at your subject, focus, and tweak the settings so that the light meter is around the 0 mark.



Image© Unsplash; Jamie Fenn

SHOOT INDOOR PORTRAITS

For indoor photos of any kind, think 'fast and wide'. For portraits inside especially, it's best to set the widest aperture you can on your chosen lens, as this will let the most light into the sensor. Set a high ISO such as 400 to ensure your shutter speed is fast enough to avoid motion blur. Here, the photographer has used a window for even lighting.



Image© Getty Images

SHOOT BALANCED LANDSCAPES

Although you can correct many elements of a landscape in-camera, it's much quicker to get things right when shooting. For a balanced exposure like this, choose your metering mode carefully. Centre-weighted will be a useful tool if the main interest is in the middle of the frame. Add a graduated neutral density filter on the front of your lens to balance the brightness between the sky and the foreground.



Image© Getty Images

USE YOUR HISTOGRAM

Learn how to read the histogram for accurate exposures and balanced shots

Judging whether you have taken a decent shot and a decent exposure is simple with a digital SLR. As soon as you fire the shutter, a preview of your picture flashes up on the LCD.

You can instantly see if the shot is too bright, or too dark – so it seems unnecessary to have a second, more scientific, way of judging the

suitability of your exposure settings... So why bother looking at the histogram?

First, and foremost, displaying the histogram is not a replacement for looking at the image itself when you review a picture. This mathematical graph simply gives you some additional, but invaluable, information. It's a good thing to get into the habit of checking.

QUANTITY NOT QUALITY

The qualitative nature of the preview image means that it can be hard to see if an area of the shot is slightly too dark, or slightly too bright. The quantitative graph does not lie, and tells it to you straight. Once you learn to read them, histograms clearly show the exposure – and whether you need to use exposure compensation to darken or lighten the next image you take. But more importantly, it also tells you about the contrast of the scene. This allows you to avoid – or at least take special care with – subjects that have a greater range of brightnesses than your sensor can cope with. It also ensures that you get the best-quality results from your sensor when shooting low-contrast subjects.

The standard histogram – found on all DSLRs – plots the brightness (or luminosity, to use the scientific language) of every pixel in the picture. This brightness is measured on a 256-step scale (the number of permutations available in a JPEG digital image). This graph can also be displayed as you frame up a picture on cameras that offer Live View.

THE RIGHT IS BRIGHT

The darkest tone available is zero, and shown at the left-hand side of the graph. The lightest, whitest tone achievable is 255 on the scale – and is shown on the extreme right of the graph. The steps along the x-axis then fill in all the possible shades in between. The vertical y-axis then simply shows the number of pixels of each brightness.

Contrary to popular opinion, there is no such thing as an 'ideal' histogram. Some subjects will give shots that simply have more brighter tones than others – and ultimately no two histograms will be identical. It's the overall shape of the graph that is your secret weapon for assessing the shot's exposure and contrast. To get the best tonal range, and to

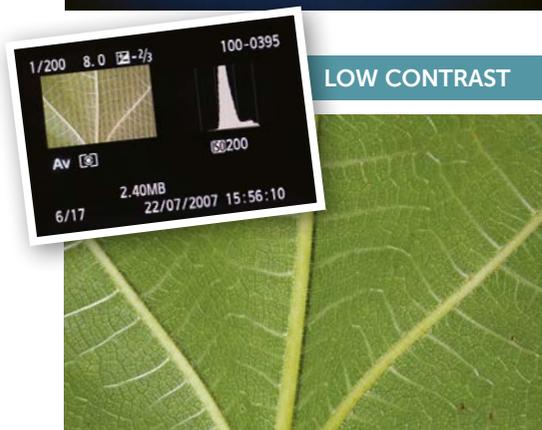
BLACK BACKGROUND



HIGH CONTRAST



LOW CONTRAST



HOW TO LOCATE THE HISTOGRAM

1 REVIEW YOUR IMAGES

Start off by pressing the Review button on the back of the camera – the one with the blue arrow in a square that you use to review the pictures you have just shot.



2 CHANGE THE DISPLAY

Your camera has several ways of displaying the pictures you have shot. To change the display mode, press the Disp or Info button (some models have one, some the other).



3 KEEP LOOKING

Keep pressing this button until the white luminance histogram appears alongside the picture. Other information will also be shown – such as exposure setting and file size.



4 TWO GRAPHS

Recent models offer a second histogram display mode (press the Disp/Info key again). This gives separate graphs for red, green and blue (RGB) colour channels.



ACTIVATE YOUR HISTOGRAM

1 TURN ON LIVE VIEW

You will need a recent DSLR that offers Live View. And you need to turn Live View on.

2 ENABLE IT

Press the Menu and find the Live View function options. Live View is preset to Disable. Enable, then press Set.

3 ACTIVATE

To use Live View, and see the image on the LCD, press the Live View or Set button (depending on your camera model).

4 ALTER DISPLAY OPTIONS

As with the Review button, Live View gives different display options. Press Info or Disp to scroll through them.

5 LOOK FOR THE GRAPH

Keep pressing the Info/Disp button until you see the histogram superimposed over the image on the LCD at the back of the camera.

SEE THE HISTOGRAM AS YOU SHOOT

Use Live View to see the graph before the shot is taken

1 LIVE HISTOGRAM

In Live View, the histogram is displayed over the image as you frame the picture. As you alter the framing, and adjust the exposure settings, the shape of the histogram will change

2 EXPOSURE SIMULATION

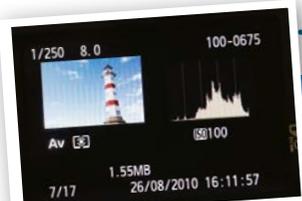
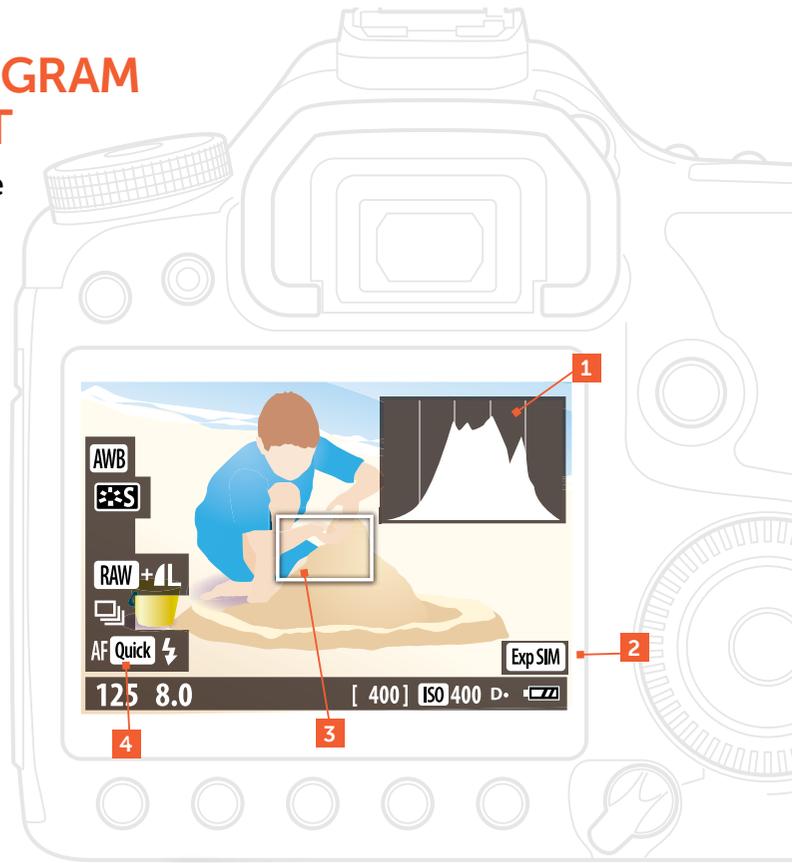
This menu option is invaluable in most shooting situations, as it means the picture darkens and lightens according to your settings – giving a good pictorial preview of what the shot will look like. Turn it off, however, to aid framing when using flash in low light

3 MAGNIFYING THE FRAME

This is the area that will be shown if you press the blue + zoom key on the back of your DSLR. Use the cursor keys to move it around the frame. Once zoomed in, the histogram will temporarily disappear

4 SETTINGS

The histogram display also shows settings currently being used by the camera



WELL EXPOSED



UNDER EXPOSED

avoid problems with underexposed shadows or overexposed highlights, the histogram should be vaguely bell-shaped. That is, the graph should drop down to baseline towards both left-hand and right-hand extremes. What you should try to avoid is an image with the graph stacked to the extreme right or left – as this suggests that detail has been lost or ‘clipped’ in the highlights or shadows.

DON'T BLOW IT

In digital imaging, overexposure is difficult or impossible to correct for at the editing stage – so with high-contrast subjects it is better to have an image that is stacked to the left, than one that is squeezed up tight to the right. As it's possible to recover underexposed areas using image manipulation software.

Caution must be used, however, when reading histograms. Firstly, the histogram only takes up a very small area on screen on most DSLRs, so it can be hard to see whether the graph is really at the extremes or not.

Secondly, the histogram is based on a JPEG image of the shot that you are taking. If you shoot in RAW, the camera will capture more tonal detail (as it is captured in a 12-bit or

14-bit form, rather than the 8-bit limit used by JPEGs); so you may be able to recover highlights that appear blown out in the graph using RAW conversion software.

It's also worth pointing out that parts of some images should be clipped – simply because they should be shown as pure white or pure black. Specular highlights (mirror-like reflections from a shiny surface) will blow out whatever you do – and a white backdrop in a studio is meant to look 'overexposed', if the background is not to appear dirty and grey.

While you should take care not to set the exposure to avoid unnecessary blown-out highlights, don't be overly cautious. With digital images, it is always best to expose images so that they are as bright as possible. The reason for this is that half of the camera's possible gradations of tone are actually devoted to the brightest 20% of the image. If you underexpose the shot, even slightly,

you are throwing away image quality. As a consequence, the darkest part of the image may end up with more noise and less detail. Recent DSLRs also give the option to show a colour histogram, in addition to the black-and-white luminosity version. This RGB histogram shows three separate graphs, corresponding to the red, green and blue channels that the picture is made up of.

RGB graphs can be useful for a number of reasons. If there is a marked difference in the three graphs, it can give an indication of a white balance problem (though this may simply show that one particular colour dominates the composition). With some subjects, clipped detail in the channels can also help you to ensure you get maximum detail in a particular subject (eg: the petals of a bright red flower). However, for most purposes, the simple black-and-white graph is all you need to avoid exposure pitfalls.

USING YOUR DSLR FOR VIDEO

Once you're feeling confident about your stills skills take things further by shooting some video

Video on DSLRs is like Marmite – some people love it and others hate it. Whatever you think, this feature is here to stay. But when you do try it out, you'll discover that there are a lot of new things that you have to think about, including the camera settings themselves.

The first thing to understand are the formats. Canon EOS SLRs record videos in a variation of the Quicktime (.MOV) format, known as H.264. Like with stills, you will change this to a different format to edit your footage, and to another format again when it comes to saving your blockbuster. But there are some options to choose from at the recording stage. An EOS with HD offers a choice of two or three different resolutions. 'Full HD' or 1080p offers the best resolution (the same as a Blu-ray Disc), but restricts the maximum length of each shot you record to 12 mins (taking up 4GB of memory). For those used to camcorders that can record continuously for an hour or more, this might seem a significant restriction. However, for



MAKING SENSE OF EOS VIDEO SETTINGS



1. TURN ON VIDEO MODE
Most HD video DSLRs have a separate control or mode setting for switching the camera into its video-shooting mode.



2. SELECT SYSTEM
In the Menu, switch Video System to PAL for Europe or NTSC for North America. This also dictates the range of frame rates that will be available.



3. CHOOSE QUALITY
The Movie Rec Size option sets resolution quality and frame rate – but will also dictate the maximum length of each clip you can record.



4. SET YOUR FOCUS
Autofocus modes vary from SLR to SLR. It's best to set your focus before recording, and use the option that disables AF as you record.

THE ANATOMY OF AN HD DSLR

The features and foibles of a video-shooting Canon EOS camera...

1 CARD

High-speed memory cards come into their own when shooting video. Canon recommends using cards with a write speed of at least 8Mb/s (approx 60x speed or faster)

2 SHUTTER RELEASE

You can take stills as you record video – however, the video footage will freeze for about a second as the still is written to the memory card

3 MOVIE MODE

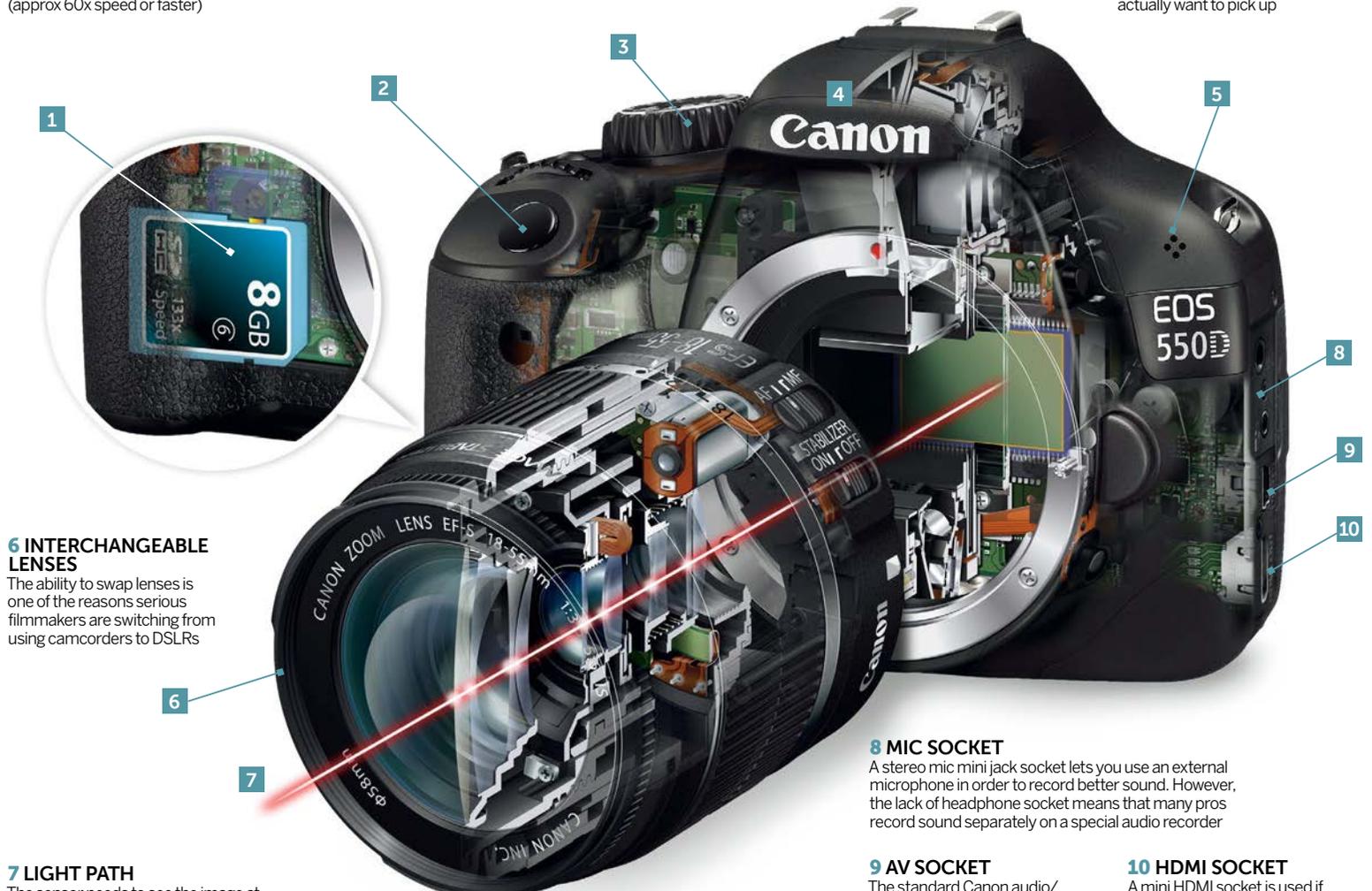
The EOS 550D has a simple movie setting on the Mode dial – but this is not standard on all Canon's HD models

4 FLASH

The pop-up flash is no use when shooting video. Special lights need to be bought if you want bright shots in low light

5 BUILT-IN MICROPHONE

This records in mono, picks up operational noise, and is unlikely to be close enough to the source of the sound you actually want to pick up



6 INTERCHANGEABLE LENSES

The ability to swap lenses is one of the reasons serious filmmakers are switching from using camcorders to DSLRs

8 MIC SOCKET

A stereo mic mini jack socket lets you use an external microphone in order to record better sound. However, the lack of headphone socket means that many pros record sound separately on a special audio recorder

7 LIGHT PATH

The sensor needs to see the image at all times as you shoot video – so the camera stays in Live View mode with the mirror raised. You therefore can't see anything through the eye-level viewfinder

9 AV SOCKET

The standard Canon audio/video output is not high definition – but you do get a

10 HDMI SOCKET

A mini HDMI socket is used if you want to see your footage on an HD TV. A special lead is needed (£9.99, www.keenelectronics.co.uk)

AVAILABLE FRAME RATES

The frames per second your DSLR can shoot depends on the model and the resolution

Resolution (dimensions)	EOS 500D Rebel T1i	EOS 550D Rebel T2i	EOS 60D	EOS 7D	EOS 5D Mk II	EOS 1D Mk IV
1080p (1980x1080 pixels)	20fps	30, 25, 24fps	30, 25, 24fps	30, 25, 24fps	30, 25, 24fps	30, 25, 24fps
720p (1280x720 pixels)	30fps	50, 60fps	50, 60fps	50, 60fps	–	50, 60fps
VGA (640x480 pixels)	30fps	50, 60fps	50, 60fps	50, 60fps	30, 25fps	50, 60fps

JARGON BUSTER

1080P

'Full HD' video format, with 1080 TV scanning lines (made up of 1920x1080 pixels); 'p' stands for progressive, and means that every frame uses every pixel.

HDMI

Stands for High Definition Multimedia Interface; these plugs come in two sizes: Type A for TVs, Type C for your EOS.

GET SET UP FOR YOUR SUBJECT

The best frame-rate and resolution depends on what you shoot...



SHOT LENGTH

It pays to keep each shot short (see Your Assignment, opposite) but with some events this is not possible. With a concert, you probably need to record the whole thing, not just a few seconds. But set quality to 1080p or 720p, and the maximum shot length is 12 minutes. Switch to VGA to get a maximum shot duration of around 24 minutes.



GET A CINEMA LOOK

To give your pictures a cinematographic look, you need to use a 1080p or 720p quality setting – as that will give you the widescreen aspect ratio. But also set the frame rate to 24fps – as this will match that of Hollywood movies and other big-budget pictures shot on real film, and make your results look more arty.



SLO-MO

A useful editing trick to have up your sleeve is to put some video sequences in slow-motion. It's a great technique for showing action events, of course, but can be just as useful for a family video of a wedding or party. To get the best slo-mo effect, set your Canon camera to either 50 or 60 frames per second.



STOP-MOTION ANALYSIS

You can't be too adventurous with shutter speeds with video. The slowest you can use is 1/30 or 1/60 sec, depending on the frame rate. But shutter speeds above 1/100 sec can create jerky playback with fast-moving subjects. However, if you want to analyse your golf swing or create a super-sharp freeze-frame, shutter speeds above 1/1000sec can be useful.

most types of video, each individual clip that you record will usually only be a matter of seconds long. A low-resolution VGA option lets you record continuously for up to 24 minutes. A third option (on most models) is 'Standard HD' or '720p'; this has the same 12-minute (4GB) maximum length for each clip, but offers a different range of 'frame rates'. The frame rate is essentially the number of shots taken each second to create the illusion of movement. The standard setting for European TVs would be 25fps, and for North America it is 30fps. However, a faster frame rate (50fps or 60fps, depending on your location) is useful for creating slow-motion sequences in post-production. An alternative 24fps is also available – which matches the look and frame rate of the big film cameras used to shoot big-budget movies.

Sound advice An HD EOS DSLR is also capable of recording synchronised audio alongside the video. The format allows sound to be recorded in ultra-high quality 'PCM' digital stereo form, but the reality is that getting good sound is not so simple. First, the SLR's built-in mic is not stereo. Second, sound doesn't travel as well as light, and the mic is in a poor position for recording the sound you actually want to record. A mic socket is provided on all models (except the 500D/T1i) which enables you to add a stereo mic that you can position closer to the sound source, and further away from rustling fingers on the camera. Yet, it's still not perfect – as there is no headphone socket so you can keep an ear on what you're actually recording. Professional users tend to use DSLRs to record the video alone, using a separate portable digital audio recorder to pick up the sound.

Focusing can also provide unexpected problems when videoing. Videos are made in Live View mode, and you get the same AF options as when



Images © Chris George

AWKWARD ERGONOMICS

DSLRs might produce stunning video footage, thanks to their large sensors and wide-apertured lenses – but their design does not lend itself to moviemaking. The eye-level viewfinder does not work, forcing you to use the LCD – which is awkward to look at while you are recording sequences that are whole seconds or minutes long. The EOS 60D (right), with its fold-out, rotating

screen, goes some way to easing the strain. However, a huge cottage industry has sprung to life, as people build ever-more ingenious contraptions that makes the traditional SLR easier to use for serious filmmaking. These include external monitors, viewing loupes, devices that allow smooth manual focus while recording, and Transformer-style support rigs.

CHECKING THE SETTINGS ON SCREEN

The LCD doesn't just show you the picture as you record, it can double as an info panel

1 TIMER

Shows you remaining shooting time available, or the length of current shot – depending on whether the red record light is on or not

2 FRAME RATE

Number of frames recorded per second

3 VIDEO RESOLUTION

Number of horizontal pixels recorded – 1920 means you are using the top 1080p HD setting

4 AF MODE

Available autofocus modes will depend on the camera you use

5 EXPOSURE COMPENSATION

Key exposure control for video – allowing you to set the brightness of the recording accurately



6 RECORDING

The red dot appears when you start recording. Worth keeping an eye on, as it's easy to end up recording when you don't mean to!

7 BUILT-IN SPEAKER

Lets you monitor the audio of what you have just shot. As there is no headphone socket, use this to review a test recording to ensure you are picking up the sounds you want to

8 EXPOSURE MODE

This is either auto (as here) or manual (with an M)

9 ISO

More important for moviemaking than when shooting stills – as the range of available shutter speeds is more limited



shooting stills in Live View. However, the Quick AF mode (which flips up the mirror to set the focus) is unsuitable for use while recording, and the Live AF option is rarely accurate enough. Instead, it is usually best to set the focus before you start recording (with one of the AF options, or manually). As you are often forced (or want) to shoot video at wide apertures, the focus point needs to be selected carefully to allow for subject movement during the shot. You can set exposure manually, but unless you have plenty of time to set up each shot, the auto option is usually the best choice. Here the shutter speed, aperture and ISO are altered in order to achieve the calculated exposure. You can then use the exposure compensation (as you would do with stills) to brighten or darken the image to get the look that you actually want. In order to retain the ability to use the widest apertures, even in bright light, a useful accessory to have at your disposal is a variable ND filter (prices starting at £60, go to www.lightcraftworkshop.com).

THINK IN SHOTS!

Shooting a video is not just a matter of pressing the record button. You need to start thinking in 'shots'. A shot is the basic building block of a video – lasting from when you press the button to start recording until you press it again. Learning to capture enough shots to create an interesting sequence and tell a story is the real skill.

1. DO YOUR HOMEWORK

Turn the television on and watch carefully to see how often each shot lasts on screen – and how many are used in each scene.

2. WRITE IT DOWN

Keep a note of how many shots are used each minute. This will vary with the genre. An action movie uses more shots than a documentary; a 30-second TV ad will use even more.

3. THINK ABOUT THE SHOTS

Some shots last longer than others. Close-ups will be shorter than wide shots that show the whole scene; the tighter the composition, the less detail the viewer needs to take in, and so the shorter the duration.

4. BE MINDFUL OF YOUR SHOTS

When shooting your videos, try and apply these rules. Keep each shot as short as



possible, and vary the camera angle and the crop each time. A close-up detail should last on screen for perhaps two to five seconds. Wide shots with lots of detail might last as long as 30 seconds.

UNDERSTAND APERTURE

Aperture lets you control how much light enters your camera, allowing you to perfect depth of field and exposure

Regardless of how advanced modern camera technology becomes, the fundamental components of the image making process remain the same. Light travels the same path in every camera – it enters the lens, passes through the aperture diaphragm and is focused onto the sensor, once the shutter has opened. A combination of aperture diameter, shutter speed and ISO

sensitivity controls the brightness of the final image. Mastering how to control aperture and understanding how this setting influences the appearance of your images are critical skills if you are to create successful photographs.

WHAT IS THE APERTURE?

The aperture itself is simply an opening that permits light to pass through the lens and

into the camera body. This is formed by the placement of a series of movable, interlocking blades which slide past each other to alter the size of the aperture. Depending on the lens model, the aperture diaphragm can be seen clearly when looking into the lens, from the front, either in its closed position or wide open. Early camera lenses did not use an aperture diaphragm, but it was soon discovered that



Above
**Changing
the depth
of field**

One effect of varying the aperture is a change in the depth-of-field (DOF) in an image; the background and foreground to your shot may be slightly blurred

All images © Xxxxxxx



by focusing light through a smaller opening image sharpness could be vastly improved. This inclusion did have consequences for light gathering however, since there was now an additional barrier in the path of the light, on its way into the camera. In order for the photographer to have control over the brightness of the image, the aperture had to be variable in size. By changing the diameter of the opening, the amount of light entering the lens can be manipulated, so that if the resulting images are too bright at the current shutter speed and ISO, light can be cut by closing down the aperture. Inversely, if the image is too dark, the aperture can be opened wider to permit a greater quantity of light to reach the sensor.

UNDERSTAND F-STOPS

The current aperture setting is measured in terms of f-stops – numbers that form part of an equation used to calculate the relative diameter of the opening, from the position of the sensor (or film). The camera user needs not concern themselves with the mathematics, however, and using f-numbers is quick and easy to understand. A smaller number, such as f2.8, indicates a wider aperture setting than a greater number such as f22. By setting your lens to f2.8 you will be allowing a significant quantity of light to reach the camera's sensor, which is useful when light in the place you are taking photos is low, such as a building interior or a night-time street scene. In such an environment, you may find your pictures are either too dark or suffer from camera shake, which is caused by your camera trying to produce a brighter image by using a longer shutter speed. If this happens, select the lowest f-number possible. A lens with a maximum aperture of f1.8 or even f1.2 is perfect for these occasions. If you are shooting in bright sunlight and finding that your images are overexposed, select f16 or f22 to produce

a properly exposed frame. Professional lenses often have a single maximum aperture written on the lens barrel – this tells the user that the same brightness can be achieved at any of the focal lengths (if it is a zoom lens), which makes it easier to guarantee a proper exposure in poor light. An example might be 24-70mm f2.8, which means f2.8 can be used at 24mm or 70mm. Less expensive zooms have a variable maximum aperture, which is only able to let in the maximum amount of light at the widest focal length. For example, an 18-55mm f3.5-5.6 lens will be less 'bright' at 55mm than 18mm, meaning that the shutter speed would have to be lengthened or the ISO increased slightly at the longest focal length to maintain exposure.

DEPTH-OF-FIELD

Another effect of varying the aperture is a change in the depth-of-field (DOF) in an image. DOF is the amount of the photo that is in focus. Once you have used your camera's autofocus system or once you have manually focused the lens on your subject, you will find that not all of the scene is equally sharp. The background to your shot may be slightly blurred, as may be some areas in front of the subject, which are close to the camera. This is caused by

some objects falling outside the zone of focus, which is an area of sharpness extending away from the focused point. The width of this zone is defined by the size of the aperture. A small f-number such as f2.8 (a wide aperture) will produce a restricted zone of focus, which may only extend one or two feet in front of and behind the subject. Such a shot is said to have a shallow DOF. By selecting a smaller aperture of f16 this zone is broadened to include more of the background and foreground, producing an image with more even sharpness throughout – a deep DOF. For certain shots shallow focus is desirable, such as a portrait featuring a smoothly blurred background. By limiting detail behind the subject attention is drawn to their face, as the viewer's eye is directed towards the sharpest area of the frame. This is why many professional portraits are taken with ultra-wide aperture lenses, like an 85mm f1.2, which displays a very shallow DOF. For landscapes however, it is more often necessary to produce a deep DOF, to get everything from the close foreground to the distant background in-focus. For most landscape shots, you will need to set your aperture to at least f11 to achieve acceptable sharpness throughout the frame. f16 or f22 are better choices for ensuring sufficient DOF,

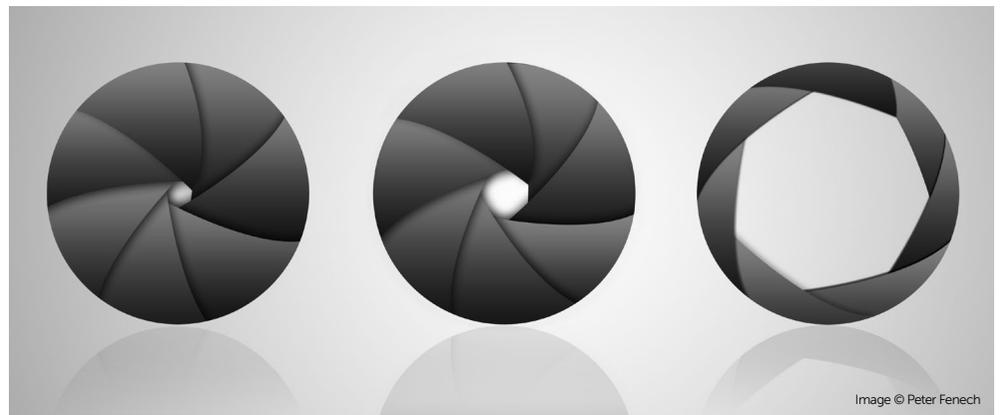


Image © Peter Fenech

TRY OUT DEPTH-OF-FIELD

Try varying the aperture setting of your lens to alter how much detail is visible in front and behind your subject



1 WIDE OPEN DEPTH

Here the aperture was set to f4 and the lens focused on a central subject. Since the aperture was at the widest available f-stop, DOF is greatly reduced, blurring the scene closer to and further from the camera position.



2 MID-RANGE APERTURE

For this shot the lens was stopped down to f11. This has significantly increased DOF as more objects are covered by the zone of focus. Since DOF is always greater in front of than behind the subject, the foreground is sharper.



3 STOPPED DOWN

For the final shot f22 was used, extending DOF to cover the entire frame and resulting in a much sharper image overall. While f16 would have produced less diffraction, the close distance between lens and subject required a very narrow aperture to widen the focused zone sufficiently.

STEP-BY-STEP UNDERSTAND DIFFRACTION EFFECTS

Discover how shooting at or close to your lens's optimum f-stop can improve image quality

Top-right Wider aperture

While sufficient depth is guaranteed at f22, this small aperture introduces significant diffraction, reducing sharpness unnecessarily. In this scene a wider aperture is able to cover the distance between foreground and background



Bottom-right Mid range

At f11, when the lens is correctly focused, a good balance can be seen between depth-of-field and lens resolution. The scene has front-to-back detail but diffractive softness is less noticeable



1 SET UP A TRIPOD

In order to ensure that you can accurately assess sharpness as influenced by the aperture, set up your camera on a tripod. Compose your image and turn off image stabilisation, as this can actually cause loss of sharpness.



2 FOCUS THE LENS

Use autofocus or manually focus on your main subject. Try using live view mode, so you can preview the image on the rear LCD screen and zoom in while you focus, ensuring the lens is correctly set to render the subject sharp.



3 SET F22

In aperture priority mode (rotate the camera mode dial until it is in the 'A' or 'Av' position) use the command dial to set the aperture to f22. Use the rear LCD or the top plate LCD if your camera has one to check the settings.



4 OPEN UP TO F11

Take a shot at f22 then, without moving the camera to ensure continuity between shots, reduce the f-number to f11. You can visualise the different aperture size by pressing the DOF preview button while looking into the lens.

5 CHECK FOCUS

Be sure to check that the lens focus ring has not been inadvertently moved, shifting the focus position, as this will be an unfair test of lens sharpness at different f-stops. Once again use live view to check the subject is correctly in focus.



6 MAGNIFY TO REVIEW

Take another shot using f11 then review this image, alongside the f22 shot. Try opening the images back on your computer and zoom in to 100% to see the difference in sharpness between apertures. Since your camera was stationary, you can be confident that any difference was aperture-induced.

STEP-BY-STEP SHOOT A SHALLOW DOF PORTRAIT

Experiment with wide aperture photography and learn to blur backgrounds for a professional, dramatic effect



Images © Peter Fenech



1 PICK THE RIGHT LENS

The best lenses for portraiture are in the 85mm to 120mm range. However using a lens up to a 200mm focal length compresses perspective, making it easier to blur the background. Try to make sure there is good separation between the subject and background objects.



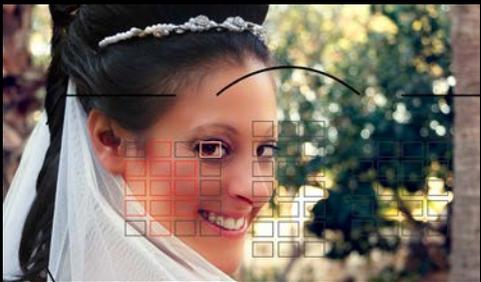
2 USE APERTURE PRIORITY MODE

To simplify the process, switch the camera to aperture priority mode, so that you can control the f-stop while the camera automatically adjusts the shutter speed. This will guarantee you are able to select the best aperture setting for your image and maintain a good exposure.



3 SET THE WIDEST APERTURE

To make the most of the shallow DOF effect, select the widest f-stop available on your lens. A 70-200mm f2.8 lens was used here, so f2.8 was chosen using the main command dial. Since shallow focus is the aim, don't worry that the max aperture won't give ultimate sharpness.



4 FOCUS THE SUBJECT

Compose your image as required then, looking through the viewfinder, move the focus point over your subject's eyes. It is possible to focus then recompose the shot, but with the shallow DOF this could cause a focus shift, making the eyes appear out-of-focus, reducing impact.

5 SHOOT AND REVIEW

Take your shot and review it in playback on the camera's LCD screen, magnifying the image to check focus accuracy. Try shooting multiple images to ensure at least one is perfectly focused, which can be challenging when working with such a narrow zone of focus.



6 FINE-TUNE FOCUS

Autofocus systems in modern cameras are incredibly accurate, but sometimes it may be necessary to tweak focus manually. Simply use AF, then nudge the focus ring slightly to see if the eyes can be any sharper than the AF was able to achieve.

however there is another complication to consider. Many beginners, having mastered the concept of DOF and aperture size, form the belief that the greater the f-number they select, the sharper their images will become. This is not entirely true. As the aperture diaphragm is closed, the space available for light travel past it is restricted and as such it can start to be deflected by the diaphragm blades themselves. A sharp image is created when light rays are tightly focused on a single point, so by scattering the light in this manner, the aperture softens the image, producing the effect of reduced sharpness. The higher the f-number, the greater this blurring effect, which is known as diffraction. While some optics have a minimum aperture as high as f42, using f22 and above will not provide the sharpest results your lens is capable of. It is also true that the widest aperture is not the sharpest – every lens has an optimal aperture, at which the greatest amount of detail can be resolved. As a rule of thumb, this is approximately two stops from the maximum aperture – so for an f2.8 lens this would be f5.6, or for an f4

model f8 would be the sharpest. Of course it is not always possible to use this setting. As already discussed, in a landscape with interesting detail in the close foreground and background f8 will likely produce insufficient DOF. The most important thing is to test your lens' performance at every aperture to find the setting that offers the optimum balance of DOF and resolution. In the case of our landscape, that may be around f11-14. For the portrait image, stopping an f1.4 lens down to f2 will give sharper results than shooting wide open, but will still introduce an attractively shallow DOF.

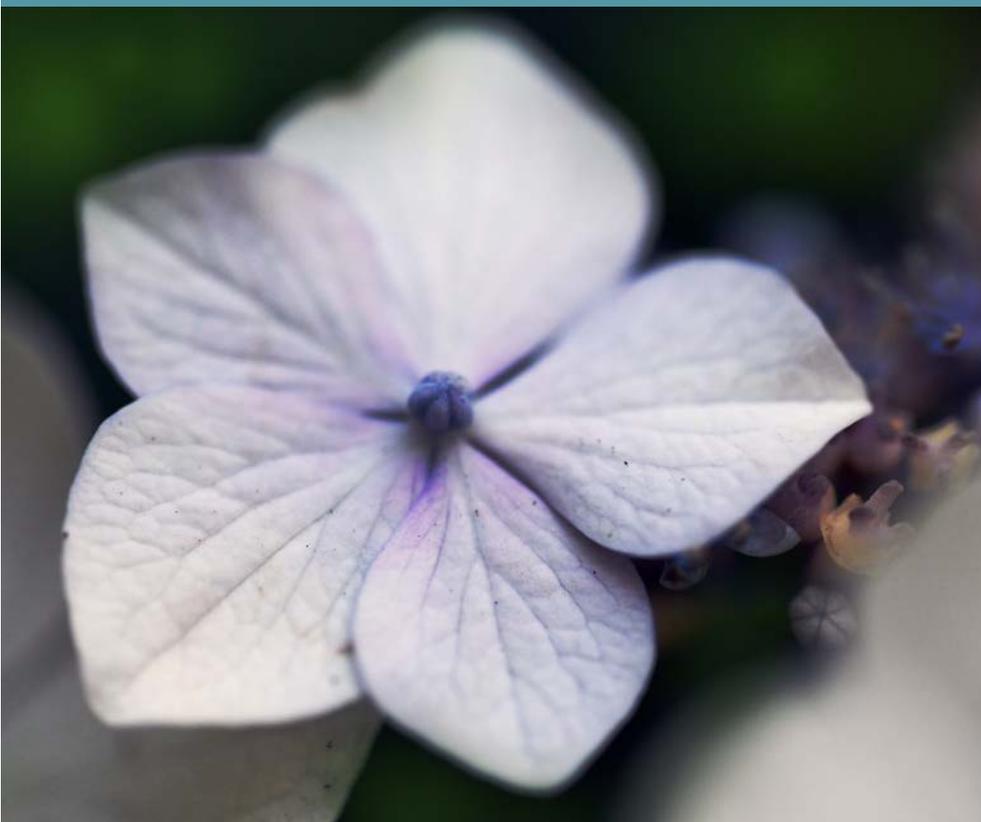
When using very shallow focus, be aware that it is important to keep the main areas of your shot sharp – it is easy to accidentally move the camera after you have focused, which, for example, could push the eyes of your subject out of the zone of focus, unintentionally blurring them. Keep your lens perpendicular to your subject to keep all of it within the focus plane, if you require even sharpness over a smaller region of the frame – both eyes in our example.

MASTER ULTRA-SHALLOW FOCUS

Create a very shallow DOF and capture shots that pack a punch

Limiting DOF can be a great way to make an artistic shot out of any subject. Find something you want to study, ensure there is a good distance from the background, set the widest possible f-stop and focus the lens

as close as you can. Try using a macro lens or the macro 'mode' on your kit lens to get closer – the shorter the working distance between the lens and subject, the easier it is to blur your background.



FURTHER CONSIDERATIONS

Now that you understand the relationship between aperture size, exposure and depth-of-field, it is possible to make informed decisions about the lenses you require – if you only want to shoot portraits, it is worth investing in a model with a maximum aperture of at least f2.8. There are other more advanced aspects to think about however. One such lens characteristic is the number of blades used to construct the aperture diaphragm. The greater the number of blades, the more rounded the aperture opening, which produces a more attractive bokeh – the term used to describe the out-of-focus areas of your photograph. A rounded aperture produces pleasant circular highlights in the blurred zones, rather than more angular shapes, which are not as smooth and can be distracting. Look for lenses with nine-bladed apertures rather than six- or seven-bladed models.

F-STOPS FOR AFTER DARK

Set the aperture based on available light, composition and your creative intent

While it is logical to use a wide aperture when ambient lighting is at low levels, there are occasions when stopping down can have creative uses. When photographing a night-time street scene, even when shooting at ISO 6400 and an aperture of f1.4, handheld images are still likely to suffer from camera shake. A better option is to use a tripod, permitting any shutter speed. Once you are free from handheld constraints, lower the ISO for better quality and consider using f16, which will turn points of light, such as street lights, into creative starburst effects. This is a popular technique among travel and architecture photographers as it adds extra interest and depth. Try f11 first, for better sharpness, then incrementally increase the f-number to strengthen the effect. The longer shutter speed will also turn car lights into creative light trails, introducing extra movement.



Above
Freeze the action
Use a fast shutter speed
with a wide aperture to
freeze the action in
an image

Image © Getty Images



UNDERSTAND SHUTTER SPEED

What is the shutter, how does it gain speed, and why would we ever change it?

Whether we're discussing an analogue SLR or digital SLR, there's one thing these camera bodies have in common, and that's the shutter. It's a physical barrier between the outside world and the film or image sensor, respectively. It's designed to block light coming in through the lens until exposure, when we press the shutter release

button, at which point it exposes the sensor to the light for a period of time determined by the photographer. This period of exposure time is also referred to as the shutter speed.

Shutter speed sits at one corner of the exposure triangle alongside aperture and ISO to determine the exposure of a photograph. It requires a careful balance between shutter speed, aperture and ISO in order to get a

correctly exposed – and visible – photograph. The length of time the image sensor is exposed for directly relates to how frozen or blurred any motion in the frame is. The more a subject moves during the exposure, and the longer that exposure time is, the more blurred the subject will be in the photo. Therefore, the shutter speed can be used as a creative device to either freeze motion or allow it to blur.



For example, let's look at an athlete that sprints. Their explosive speed on the track makes it difficult to get a clear image, as their whole body moves quickly while we take photos of them. Therefore, in order to get a clear image that shows the athlete sharply, we need a faster shutter speed (a short exposure time) in order to capture that split second of time as they power down the track. We measure shutter speed in seconds and fractions of a second, so a fast shutter speed, like we'd need for this situation, would likely be in the thousandths of a second – for example, 1/4000 sec. Most cameras will only go as fast as 1/8000 sec due to the limitations of physically moving the shutter quickly out of the way of the sensor.

It's hard for us, as humans, to visualise quite how the shutter moves quickly enough to expose the sensor at speeds of 1/4000 sec, so try this: take the lens off your camera, and in manual mode set a shutter speed of two seconds. Press the shutter release while looking at the lens mount, and you'll see the

mirror flip up and a black curtain behind shift quickly out of the way to expose the image sensor. The curtain will drop back into place quickly once the pre-determined shutter speed of two seconds is over to stop the sensor from being exposed further.

So if a faster shutter speed freezes movement, like that of an athlete, and makes photographs clear, why would we ever want to change the shutter speed? Surely a fast shutter speed would render every image clearly? Well, it depends on two things: light intensity and creative decisions. If it's an incredibly bright day, or you have some mighty powerful artificial lighting on your subject, you could set a fast shutter speed and get a well-exposed image. This is great if you're handholding the camera and want to reduce the risk of camera shake (blurring introduced by accidentally moving the camera during exposure of the sensor). However, your other two settings – aperture and ISO – may be at their maximum setting to do this, or you may be getting an underexposed (dark) photo as a

result. If you can't, or are unwilling, to open the aperture wider or increase the ISO, then your only option would be to slow down the shutter speed, increasing the length of your exposure or introduce more powerful lighting to brighten your subject.

Funnily enough, you can go surprisingly slow with your shutter speed when photographing most subjects. But there is a rule of thumb to adhere to if you want to reduce camera shake. The law of shutter speed reciprocals is simple, never let your shutter speed number fall below that of the focal length of your lens. For example, if you're shooting with a 200mm focal length lens, don't go slower than 1/200 sec shutter speed. That means a 1/100 sec shutter speed would be too slow, whereas a 1/400 sec shutter speed would be more than quick enough. Generally, it's easier to get sharp handheld photos using a wide angle lens, than a long telephoto lens, due to this rule.

After you've experimented with the shutter speed due to technical limitations of light intensity and focal length, the next approach



FAST SHUTTER

A fast shutter freezes the motion of this hurdler mid-leap, allowing us to see the athlete clearly in the photograph.



SLOW

A long shutter speed is used in combination with a wide aperture and high ISO to expose the dimly lit night sky.



MEDIUM

A medium shutter speed has been used here to maximise the available light for the portrait, but maintain a clear, sharp image.



FROZEN MOVEMENT

A fast shutter speed has frozen the movement of water drops as they fall into a tank of water, generating beautiful ripples that emanate outwards.



5 BLURRED MOVEMENT

A deliberately slow shutter speed combined with the stationary camera means the flowing water creates blurred lines as it moves through the still, in focus rocks.



7 SUPER HIGH SPEED

A super high shutter speed has been used to capture the very moment a shotgun fires the contents of the shell from its barrel, as the casing is cast out the side of the gun.



6 CREATIVE

Here, a longer shutter speed has been used to capture the movement of lit wire wool as it is spun from a string and flies off in every direction in a glorious blaze.



8 DAYTIME SLOW

A long shutter speed of between five and twenty seconds has been used to blur the movement of clouds in the sky during the day.

is creative. Suppose you're photographing a waterfall, or a flock or murmuring starlings as they fly above reed beds. Capture the subject first with a fast shutter speed to ensure you have a crisp, sharp image, and then experiment with purposely slowing the shutter speed enough to introduce your own intentional blur. Keep the camera on a tripod for this, as you'll want to keep some of your scene sharp. Take the waterfall example first: your camera is stationary on a tripod, and the rocks surrounding the water are not moving, so no matter the length of your shutter speed, the rocks will always remain in focus. However, the flowing water that crashes over the rocks is constantly moving, and so a longer exposure time results in blurred movement. This can be quite attractive in waterfall photography because the creamy texture of the flowing water juxtaposes against the craggy rocks.

This technique of extending the shutter speed applies not just to waterfalls, but to any subject. Clouds moving through the sky turn to bright white streaks as they soar through the air, people in the street disappear if the shutter speed is long enough, and stars turn into streaked trails as the earth rotates on its axis. In fact, astrophotography is one genre of photography where a long exposure time is required, but often not wanted by photographers. In order to capture pin-sharp images of stars, a photographer requires one of two things: an electronic mount that moves

with the rotation of the Earth, or a fast shutter speed. Electronic mounts are expensive and niche, so aren't the first option for many beginners, but the shutter speed is accessible to all. However, because the night sky is so dark, and the stars are mere pin-points of light millions of light years away, the photographer is required to expose the image sensor for as long as possible to get a clear image.

Opening the aperture and boosting the ISO high are two other things to do during astro, but lenses only open so wide, and ISOs only get so sensitive before noise spoils the photo and hides constellations. So photographers often balance correct exposure and clear stars by setting their shutter speed to between 30 seconds and two minutes. Long exposure times of over 10 or 20 minutes are best avoided, as image sensors generate their own electrical current, heat up, and record this interference in the final image with discoloured pixels and loss in data in the photograph. Some photographers choose to take several astro photos at 30 seconds during a period of several hours, and stack them in software later to produce star trails, but that's beyond the scope of this introduction to shutter speed.

For now, all you need to know is a fast shutter speed lets in less light but freezes motion, while a long shutter speed lets in more light but blurs motion. It's a trade-off between the creative look you want and how much light you have to take the photo with.

PERFECT SPEED

Experiment with these simple tips for your speed

FREEZE A SUBJECT IN MOTION

We recommend a speed of around 1/2000 sec. Keep both eyes open as you shoot with a telephoto lens and maintain a fast shutter speed.



LONG SHUTTER LIGHT TRAILS

Set a long shutter speed of around 10 seconds, ISO100 and an aperture with a suitable exposure. Snap when traffic passes in front of the camera.



BLUR PEOPLE MOVING

Use a neutral density filter to block the light entering your lens and dial down your shutter speed to something as slow as 30 seconds or one minute.



PREVENTING CAMERA SHAKE

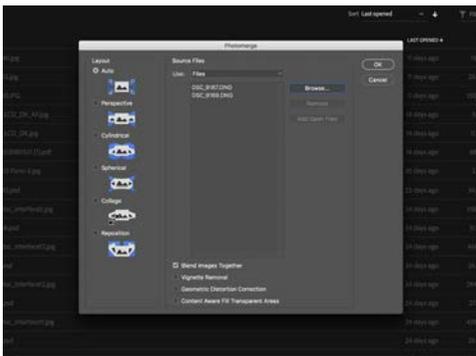
With a lens at 50mm focal length, don't use any shutter speed slower than 1/50 sec. When using a tripod, use the self-timer to delay the exposure.



"The creamy texture of the flowing water juxtaposes against the craggy rocks"

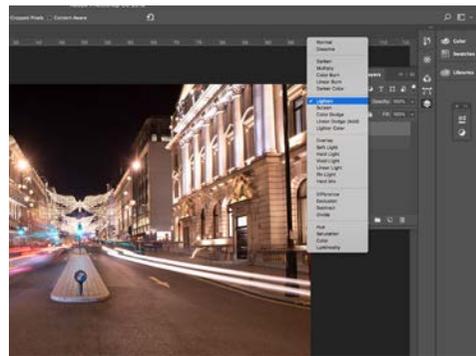
STEP-BY-STEP COMPOSITE YOUR LIGHT TRAILS

Make the perfect light trail images with multiple files stitched together in Photoshop



1 PHOTOMERGE

In Photoshop, head to File>Automate>Photomerge. Click Browse, then highlight your images and click OK. Click OK in the next window that appears, and Photoshop will automatically merge your light trail images together.



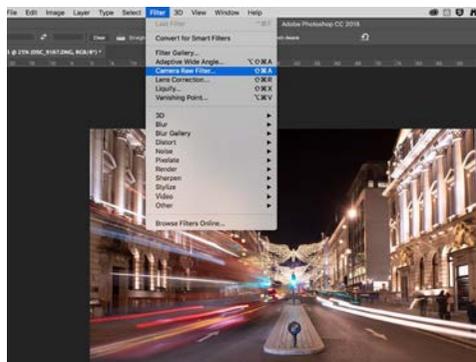
2 TRY CHANGING BLEND MODES

If you're not using Photoshop or want to try another method, open two or more images in one document in your editing software. Then change the top layer/s blending modes to Lighten in order to reveal multiple light trails in one image.



3 CROP YOUR SHOT

After you've merged files, there are often gaps on the edge of the frame. To remove these, select the crop tool and drag the transform controls at the edges closer into the image.



4 MERGE ALL LAYERS

Merge all layers to one single layer by pressing Cmd+Option+Shift+E (Ctrl+Alt+Shift+E on PC), then head to Filter>Camera Raw Filter to give greater flexibility when editing in the next step.

"After you've merged multiple files, there are often some gaps on the edge of the frame. Drag the transform controls at the edges closer into the image"



Inset
Flowing traffic
 Keep your ISO relatively low
 when shooting traffic light
 trails at night
 Image © Getty Images



5 MAKE THE SHOT POP

Increase the Contrast slider, reduce the Highlights slider to keep detail in the bright light trails and boost the Clarity slider to increase midtone contrast. Then add a bit of Vibrance.



6 ADD A VIGNETTE

Use the Radial tool in the Camera Raw Filter to add a dark vignette around the frame. Reduce the Exposure slider and drop the Highlights slider. Click and drag from the centre.

MASTERING MANUAL FOCUS

'Going manual' doesn't just refer to your exposure settings; it also means focusing by hand and eye!

Modern cameras are incredibly sophisticated – they effectively have microcomputers inside them that can automate every aspect of the photographic process. However, much like driving an automatic car, there are some situations where auto just doesn't quite cut it, and there are also situations where going manual is simply more fun!

When it comes to manual focusing, you are taking complete control of the point of focus in your image. Unlike pure autofocus (where the camera picks what it thinks is likely your desired subject in a given frame) or direct input autofocus (where you tap the LCD screen or move a focus point with a joystick), manual focus sees you manipulate the plane of focus by turning the focus ring on your lens.

This will 'telescope' the plane of focus deeper into or further out of your frame so that you can focus on subjects at any distance. However, while the plane of focus itself is controlled by turning the focus ring, the depth of field – the area within which your subject will appear sharp – is dictated by your aperture.

This is the F-number, which governs how wide the aperture blades on your lens opens.



FOCUSSING TIPS

Perfect your imagery with these simple suggestions

PEAK PERFORMANCE

As you turn the focus ring, the camera overlays a coloured highlight on the edges and textures in focus. This lets you see in real time what parts of your image are sharp.

ZONE FOCUSING

This enables you to achieve focus much faster than you could using autofocus. It pre-focuses the lens so that everything falling within a set distance is sharp.

GET IN THE ZONE

Line up your aperture with the orange line, and adjust your focus so the distance markings align with the '8' markings on the aperture. Everything from 1.5m to 2m will be in focus.

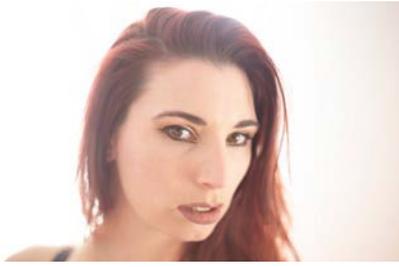
HYPERFOCAL FOCUSING

This is effectively one giant 'zone' of focus that extends all the way to infinity, ensuring that as much of the scene as possible is in focus.

TO INFINITY

It's helpful to use a lens with a focus and aperture scale. Google 'hyperfocal distance chart' or use an app like Photopills to calculate your hyperfocal distance.

Image © Getty Images



When shooting at apertures like f1.4, the depth of field is so thin that autofocus can miss the mark. Manual focus makes it easier to get sharp eyes.



The majority of vintage lenses don't possess autofocus, so you'll need to focus them manually – which is well worth it to achieve distinct creative effects on modern cameras.



Some lenses, like the Olympus M.Zuiko 12-40mm f2.8 PRO, have a 'shotgun' mechanism to switch them into manual mode by pulling down the focus clutch ring.



It can be hard to see a Live View display in daylight. An LCD screen viewer or loupe can both shield the screen and magnify the image.



Serious video shooters always use manual focus. There's no autofocus in Hollywood – on film and television productions, the focus puller is responsible for keeping the shot in focus.

A wider aperture (which, confusingly, is expressed as a lower F-number) will open the blades and allow more light to enter the lens and hit the sensor, producing a brighter image, but this will also produce a narrower depth of field, meaning that less of the image is in focus.

By contrast, a narrower aperture (expressed as a higher F-number) will iris the blades down and reduce the amount of light entering the lens. This produces a darker image as well as a deeper depth of field, meaning that more of the image will be in focus.

Let's say you are using a fast prime portrait lens, like an 85mm f1.2. If you open it all the way up to f1.2, you will be shooting with a wafer-thin depth of field; it will be so shallow that, if you get the eyes in focus, it is unlikely that the nose or ears will be sharp. However, if you 'stop the lens down' (meaning reduce the aperture) to f8, you will be able to get the eyes, nose, ears and hair in focus at the same time.

Compounding the issue somewhat is the fact that many lenses do not achieve peak optical performance until around f4, so if

you are shooting 'wide open' (which is to say, at its widest aperture) then the lens will not be as sharp.

So what does all this have to do with manual focus – surely, given how complicated it all sounds, it's just easier to leave the camera in autofocus mode? Actually, quite the opposite! Let's say, again, that we're taking a portrait with that 85mm lens at f1.2. The depth of field is so thin that, despite your best effort to place your focus point on the eye of your subject, the camera keeps focusing on the eyelashes instead. This happens all the time when shooting at narrow apertures, and sometimes the only solution is to focus manually!

Similarly, if you're shooting in low light, your camera can 'hunt' – this is when the lens pulses in and out, unable to secure a focus lock on your subject, because it's too dark to tell what's in focus. You might also be shooting macro shots of flowers, working with a slice of focus so tiny that the autofocus can't put it where you want it. And of course, no serious video shooter uses autofocus – so there are plenty of reasons to master manual focus!

“A wider aperture will open the blades and allow more light to enter the lens and hit the sensor, producing a brighter image”



Image © Getty Images

STEP-BY-STEP STAY FOCUSED!

Follow these steps to take control of your focussing



1 ENABLE MANUAL FOCUS

Tell your camera that you are manually focusing, otherwise it will keep autofocus! Some lenses have a switch on the side, some require you to 'shotgun' the focus ring back, and sometimes you need to tell the camera directly through the menus.



2 STAY STABLE

When you're learning to manual focus, we recommend starting with a stationary target – try a macro subject, like flowers or still life – and use a tripod to keep the camera steady so you only have to worry about focusing.



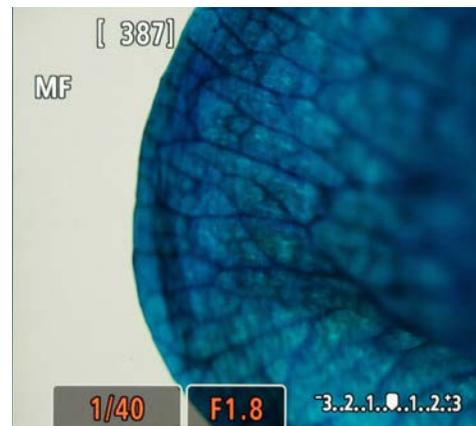
3 USE LIVE VIEW

Live View is something of a revelation for manual focusing. The large, backlit LCD screen makes it much easier to pinpoint your focus, especially in low-light situations where an optical viewfinder can be too dark to see anything.



4 COMPOSE/ZOOM FIRST

While autofocus enables you to move or zoom around, in manual you'll have to refocus every time your perspective changes. Select your focal length and compose your shot first, and don't zoom or re-compose, or you'll lose focus.



5 MAKE SURE TO MAGNIFY

The added benefit of using Live View on the back screen, or through the electronic viewfinder if you have one, is that you can magnify the image on a given point to make sure that it's sharp where you want it.



6 GENTLY DOES IT

Don't crank the focus ring too fast. Turn it slowly until you find your point of focus, and then gently rack the focus back and forth. This will help you to see where the exact biting point is.



WEEK 3 SUMMARY

You are now well on your way to truly mastering your camera! Now you should be feeling pretty confident with your skills. By the end of this week you should know...

HOW TO SHOOT IN MANUAL MODE

Take full control of your camera and all of its settings in order to shoot your most impressive imagery yet.

HOW TO USE YOUR HISTOGRAM

Check that you have taken a decent exposure by checking your camera's histogram. It will show you if you've clipped highlights or shadows and avoid a blown out image.

HOW TO USE YOUR DSLR FOR VIDEO

You can put all of the knowledge that you have learnt so far to good use by shooting some moving pictures, practice your compositional skills as well as shooting in Manual mode.

WHAT APERTURE IS AND HOW IT AFFECTS YOUR IMAGERY

Aperture lets you control how much light enters your camera, allowing you to perfect depth of field and exposure.

WHAT SHUTTER SPEED IS AND HOW IT AFFECTS YOUR IMAGERY

The length of time that you open your shutter can have a huge impact on how your images look.

HOW TO FOCUS MANUALLY

Auto Focus isn't always the best choice for your imagery. Going Manual can enable you to be more accurate and more specific.



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SHOOTING VIDEO ON YOUR CAMERA

Practice your composition and manual focus skills by shooting some video



- It is important to set your mode to manual, you'll have full control over your settings.
- Choose shutter speed and frame rate; 1/50th if shooting at 24fps for example. Faster shutter speeds create a choppy effect and slower shutter speeds give a dreamy effect.
- Set the correct frame size and frame rate; 1920X1080 at 24 or 30 fps/ or 60fps. Beware that at the higher rate SD cards will get full quicker.

PLAYING WITH SATURATION

Saturation means intensity of colour, to really make an image pop you may need to edit it in post



- When editing saturation, there no hard and fast rules (i.e X points this or that way)- remember to save an original and just try it out by adding a 'saturation layer' and playing with the slider options.
- Washing images out (by under-saturating them) can also change the mood of your image.
- Beware of over-saturation which can make things such as skin tones appear unnatural – unless that's the effect you're trying for!

JUMP INTO MANUAL MODE

Whilst scary, manual mode gives you total control over the exposure; aperture, shutter speed and ISO



- Start with your Aperture, remember a smaller number equals a shallower depth of field.
- Choose your shutter speed (i.e. faster for faster action) and pick ISO setting (to ensure a properly exposed image).
- Now time for final checks, a 0 on the light meter will result in a properly exposed shot. Keep experimenting – it will get easier.

BOKEH?

Bokeh is a pleasing soft out of focus light effect, usually applied to backgrounds



- Use a fast lens of f2.8 at least.
- Try to experiment with shooting mode Aperture Priority (changing the f-stop) or manual (choosing your aperture and shutter speed).
- Increase the distance between your subject and background, a shallow depth of field means that the background becomes more out of focus.

CAPTURE COLOUR

Hunt down some colour today to inspire you and step outside your comfort zone



- Try not to flood your image with too much colour, use and be aware of neutrals to make the brights pop.
- Harsh lighting may cause colours to bleed into each other, try an indirect light source or go outside if a cloudy day.
- Dial down the ISO and, if you have one, try a polarising filter to add more saturation.



FREEZE!

Action photography can be difficult to master but have some fun experimenting with it

- Match the speed of action with a fast shutter speed of 1/400 or 1/1250. Try a high aperture; if outside f3.5 or indoors at f2.8.
- Try to visualise what you want your shot to look like. Grab a model and have them try jumping, spinning, twirling and anticipate the action with your shot.
- Take lots of shots quickly, it might take some practice but you will get THE shot. Try reducing the shutter speed slightly to get some blur in your shot, this will help in showing movement.

EXPOSURE COMPENSATION

Use exposure compensation to capture high contrast scenes



- Try to under-expose a night scene to get truer blacks- 'normal' exposure can come out greyer and washed out.
- Use the +/- buttons, by holding that each click of dial usually changes the exposure by 1/3 of a stop.
- Experiment to find what stop level appears true to life, or achieves the look you're after.

WORKING WITH DEPTH OF FIELD

We can achieve some amazing results when playing around with depth of field



- In short, a large aperture (small f -number) results in a shallow depth of field and the background is knocked back.
- A small aperture (large f number) gives us a deeper depth of field and the whole scene is sharp.
- Experiment with portraiture on a busy background, what does the change in aperture do to the image?

WEEK 4

You're almost there! Time to get creative

146 10 TIPS FOR LONG EXPOSURE

Delve head first into the world of long exposures with these tips

152 CUSTOM FUNCTIONS

Get to know the features that make your shooting easier

156 EXPOSURE BRACKETING & EXPOSURE STACKING

Attain detail in areas otherwise obscured in a single image

160 PLAY WITH PERSPECTIVE

Use creative perspective to add to the overall look of your imagery

166 SHOOT BLACK & WHITE

Remove colour and add in dynamic elements like form and shape

170 SUMMARY

A brief outline of what you will have learnt in week four

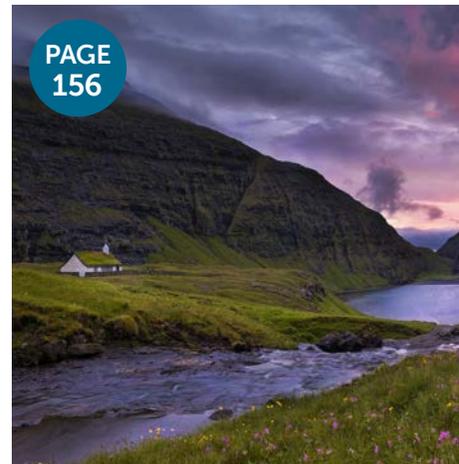
172 PRACTICE TASKS

Eight practical suggestions to help you use your new skills

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10 TIPS FOR LONG EXPOSURES

Delve head-first into the world of long exposures with these 10 ultimate tips

Exposure time refers to the length of time that an image sensor or cell of film is exposed to light. Anything that moves during the exposure is captured in motion, thereby looking blurred in the photo. The longer the exposure time, and the more motion there is in the photo the greater the blur. We can use long exposures to remove distractions in busy environments, such as

pedestrians walking through a busy street. But we can also use it as a creative device to unearth hidden beauty that is otherwise impossible to see with the naked eye.

Take a seascape, for example. We never see the water still, because of its salinity it never freezes, and waves constantly crash onto shorelines. However, using a long exposure of several seconds or even minutes, it's possible

to completely remove all evidence of crashing waves, so that the ocean looks like a glassy mirror, with no texture or features.

This can be helpful to juxtapose the ocean against stationary subjects like piers or rock stacks that sit out amongst the waves, as they will remain sharp during the exposure, looking more prominent in the photo as a result of the smoothing of the ocean.

Calming the sea

A long exposure, sometimes minutes long, is needed to calm crashing ocean waves into glossy, mirror-like reflections

Image © Getty Images

1 FLOWING WATER

A medium length shutter speed is all you need for smooth flowing water

When shooting rivers or estuaries like at the Thames in London, we're met with a vast body of water with thick waves from the natural current and from bow waves from passing sea vessels. They aren't huge, like you would find in the sea, so we can afford a slightly faster exposure time as a result. Shooting between 10 and 30 seconds will be enough to blur the water into a smooth surface, in which you can glean reflections from nearby buildings

or forests. This works particularly well at night because the streets and buildings are lit up by artificial lamps that will cast tall columns of light in the water which lifts the river out of darkness and adds interest to the scene. Just be careful not to overexpose brightly lit buildings when shooting night scenes. It's better to lift the shadows when editing later than it is to capture a photo with irrecoverable highlights.

2 SEASCAPES

The roughness and huge waves from the sea are difficult to blur for all but the very longest of exposure times

Out at sea giant swells constantly shift the ocean across the planet's surface, and white breaker waves crash onto the shoreline generating a frothy texture as they hit beaches and cliffs. Therefore, these huge differences in tonal values from the bright highlights of crashing waves and dark rocks of cliffs or stony beaches mean that a longer period of time has to pass during exposure before it appears smooth. Neutral density filters are almost always needed when shooting long exposure seascapes. The darker the filter the longer the exposure time required. Beyond the preset 30-second exposure times available to most camera users we must use an external shutter release cable or remote to pre-program exposure times of up to several minutes or even hours. Usually though, a two to five-minute exposure will be enough to turn even the roughest seas to a smooth gloss. For those wanting to go for a solid-looking water surface, we recommend using at least a ten-stop filter with a narrow aperture of around f16 and a low ISO of 100 or 64 to enable us to set an exposure length of 20 minutes.



3 LIGHT TRAILS

Patience and timing are the two factors for perfect light trails

Traffic light trails look fantastic in a busy city and shot at dusk or night time when the surrounding light levels are low, allowing the lights from vehicles to stand out brightly. With your camera set up on a tripod next to a busy road, frame the scene so that cars are flowing past you, preferably in a curve or bend in the road to get creative shapes. Set manual mode and keep the shutter speed dialed in to BULB mode, this means the shutter will remain open for as long as the shutter release button is depressed. In this mode it's important to use an external shutter release cable to avoid moving the camera during exposure. Keep an

eye on the timing of nearby traffic lights as stationary cars will not provide blurred light trails. Once the cars are moving again, press the shutter release and stop as soon as they slow down to give full length streaks through the shot. Buses and lorries, any bigger vehicles really, provide an extra swoop of light higher up in the frame and look impressive.

Light trails

Waiting for the approach of a double decker bus or a tall lorry will provide extra light trails from down low to high up in the frame



4 LIGHT PAINTING

Make creative shapes and incorporate the environment

In the same vein as light trails, this technique is about using BULB mode to keep the shutter open for as long as you need to complete your light patterns. However, instead of being at the disposal of traffic moving for you, you can get some fairy lights, or a light-up toy, and swirl patterns yourself for unique images. If you don't have anyone to twirl the lights, or press the button while you make light shapes, then get a remote shutter release like the Hahnel Captur which will allow you to trigger the shutter release wirelessly. Press and hold the button as you begin your movement, then let go once you're done. A high ISO might be needed to do this if your movement is over quickly (between one-ten seconds) depending on your aperture, which should be set as wide as possible. Any lights will work here, a torch on the end of some string is a good way to get perfect spheres and the technique involved in creating these spheres is to spin the torch over one spot on the floor whilst turning around in a circle around said spot. This is a little tricky to master though, so it'll take some practice.



A swirl of colour

Use a torch, fairy lights or even a light-up hula hoop for creative light paintings.



5 MOTION BLUR

Add motion blur to your sports or automotive photography

Using a slow shutter speed and moving the camera simultaneously, it's possible to blur the background while keeping any subject that moves with the camera in focus.

For example, take a look at any Formula One race car photograph and more often than not you'll notice how the background is blurred while the car remains sharp.

In order to do this you must choose a slow shutter speed, but not one that is so fast that it blurs everything. You only want the background to blur slightly, so a shutter speed of 1/60 sec up to about half a second will work best here.

Using Shutter priority mode with a high ISO of around 800 to 1200 depending on lighting is best, because it will enable a narrow aperture which maximises the depth of field on the subject, meaning it'll more likely be in sharp relief.



6 LONG EXPOSURE

Capture streaky skies using long exposure and filters

For good long exposure skies, you need patches of cloud and blue in the sky simultaneously. Since you'll likely be shooting during the day you'll need an ND filter to make the scene dark enough to set a long exposure. A variable ND filter will be the most flexible one to try as you can shift from light to dark easily without switching filters. Exposure length of around 30 seconds to 2 minutes works well in Manual mode.



7 BLURRED SKYLINE

Focus on a building to contrast with a flowing sky backdrop

Use the same technique from tip 6, but instead frame your scene with a building. Make sure you focus on the building and set a narrow aperture of f11 or f16 to ensure there's enough depth of field to render the building sharply. As the building and camera remain still during the capture, the building will appear clear in the final photo, with a blurred sky behind as the clouds drift past. This type of photo might benefit from a telezoom lens because your distance to the subject is likely to be greater than other types of long exposure images. Polarising filters also help to cut through glare and reflections on buildings.



Stillness and movement

A stationary building is kept in focus during a long exposure as clouds whizz by in the background, swept along by the wind and blurred by the long exposure

8 TOURIST ATTRACTIONS

Remove people from photos in popular tourist traps

Most of us have been there, visiting a wonderful location on holiday or as part of a tour group, only to find hundreds of others gathered in the same spot. It doesn't look particularly good in our photos and rather spoils the event of taking pictures. So why not put a neutral density filter like a ten or fifteen stop, to give you a super-long exposure time of up to 20 minutes or more? By doing this,

the moving people will be so blurred that you'll be left with only the tourist attraction and nothing else, and it requires minimal editing later, it's a win-win.

Make them disappear

Using an ND filter to reduce the light for long exposures during the day at busy tourist attractions, means people become so blurred, they're invisible

Image © Getty Images



9 EDITING WITH CLARITY

Colour and clarity make punchy light trails

As traffic drives past during a long exposure at night, there's likely to be long streaks of light with gaps in between. It's easy to fill those gaps by adding a little positive adjustment on the Clarity slider available in most editing software. This adds midtone contrast, especially against edges, such as those between individual vehicle lights and the darker background. As well as making tweaks to exposure and adding saturation to give the photo more colour, it's also fun to experiment with white balance. When shooting at night the street lights are often overwhelmingly orange-hued. Dropping the white balance down from 5-6000°K to 2-3000°K adds a blueish tone in the background for more warmly lit subjects like street lights and yellowish car lights to contrast against. Adjust the Tint slider as well to introduce green or magenta casts, but be careful not to overdo it.



10 BLACK & WHITE

Darkening blue tones and going black and white make for awesome long exposure skies

Clouds inevitably contain bright highlight information, and a blue sky (especially when combined with a colour contrast-enhancing polarising filter) is dark by comparison. That's why converting your RAW images to black and white in software and darkening the Luminance slider (or Brightness slider in some softwares) of the blue tones help to increase this effect further. Dark blues turn to black and bright white clouds pop against this for a fine art look. Simply add positive adjustment to the Whites and negative adjustment to the Blacks sliders as well to increase this tonal contrast further to have more impact.

Add contrast

Adding midtone contrast with the Clarity slider and dropping the white balance down to 3000K makes light trails pop

Add some drama

By converting to black and white and darkening the Luminance slider we're able to create a dramatic sky

STEP-BY-STEP LONG EXPOSURE OF A WATERFALL

Use a combination of the right kit and technique to master this shot



1 USE A STURDY TRIPOD

Set your camera on a sturdy tripod on level ground to keep the camera still during the exposure. Anything else in the frame will now render sharp and clear, and anything moving will become blurred.



2 FOCUS ON THE SCENE

Engage Live view and zoom in on the back screen so you can see the environment clearly. Engage manual focus and adjust the focus ring on the lens until everything is sharp. Then try not to nudge the ring for the rest of the shoot.



3 ADD A FILTER

Use a neutral density filter to darken the scene enough to allow for a longer shutter speed. We used a six-stop neutral density filter, which should be more than enough to allow for a long exposure.



4 SET YOUR EXPOSURE

In Manual mode set a narrow aperture of f11 and a low ISO of 100. Now adjust your shutter speed to around 10 seconds to blur the water. Increase your ISO and lower your shutter speed if you want more definition in the water.



5 ENGAGE EXPOSURE DELAY

Exposure delay mode allows you to press the shutter release button instead of an external remote release and then delays the exposure up to three seconds after the button is pressed. You could also use the Self-timer mode.



6 REDUCE REFLECTIONS

Use a polarising filter to reduce the reflections from the water. This improves the contrast between white frothy water and a darker flow of water that isn't as turbulent, making the long exposure effect more apparent.

STEP-BY-STEP LIGHT PAINTING A STILL LIFE

Use a long exposure and a torch in a dark room to paint your own 3D light



1 SET THE EXPOSURE TIME

With your camera secured tightly on a tripod aiming at the still-life subject, set a long exposure in manual mode. For the shot we were preparing here, we opted for 8 secs at f8 and ISO100.



2 ENGAGE THE SELF-TIMER

We used a self-timer of 10 seconds to give ourselves plenty of time to get into position to get ready to light paint. Use longer if you think you need the extra time to get yourself ready for the shot.



3 EXPERIMENT WITH THE TORCH

Grab a torch and turn all the lights off in the room to avoid contamination of colour balances. Try angling the light behind the subject and running it along the back for a gorgeous backlit shot.



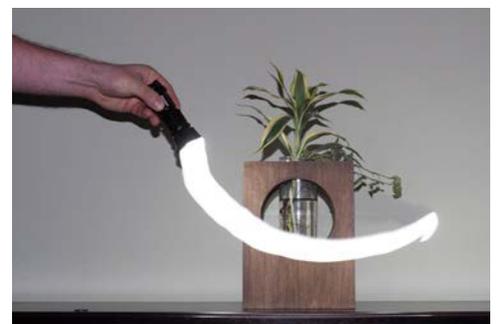
4 SWIRL THE TORCH AROUND

Make swirling loops around your subject with the torch. You'll find that the light trails feature in the end photo, so don't do too many and obscure the subject, but the trails can look rather attractive.



5 TWIRL FROM ABOVE

Create a generously proportioned key light from above by twirling the torch around in circles directly above the subject. If you don't want the trails in the shot, just make sure you twirl out of the frame.



6 COMBINE IT WITH FLASH

Turn on your pop-up flash, or attach a speedlight if you have one and keep the exposure long. Now as you create your painting the pop of flash will illuminate you, showing the artist in motion.

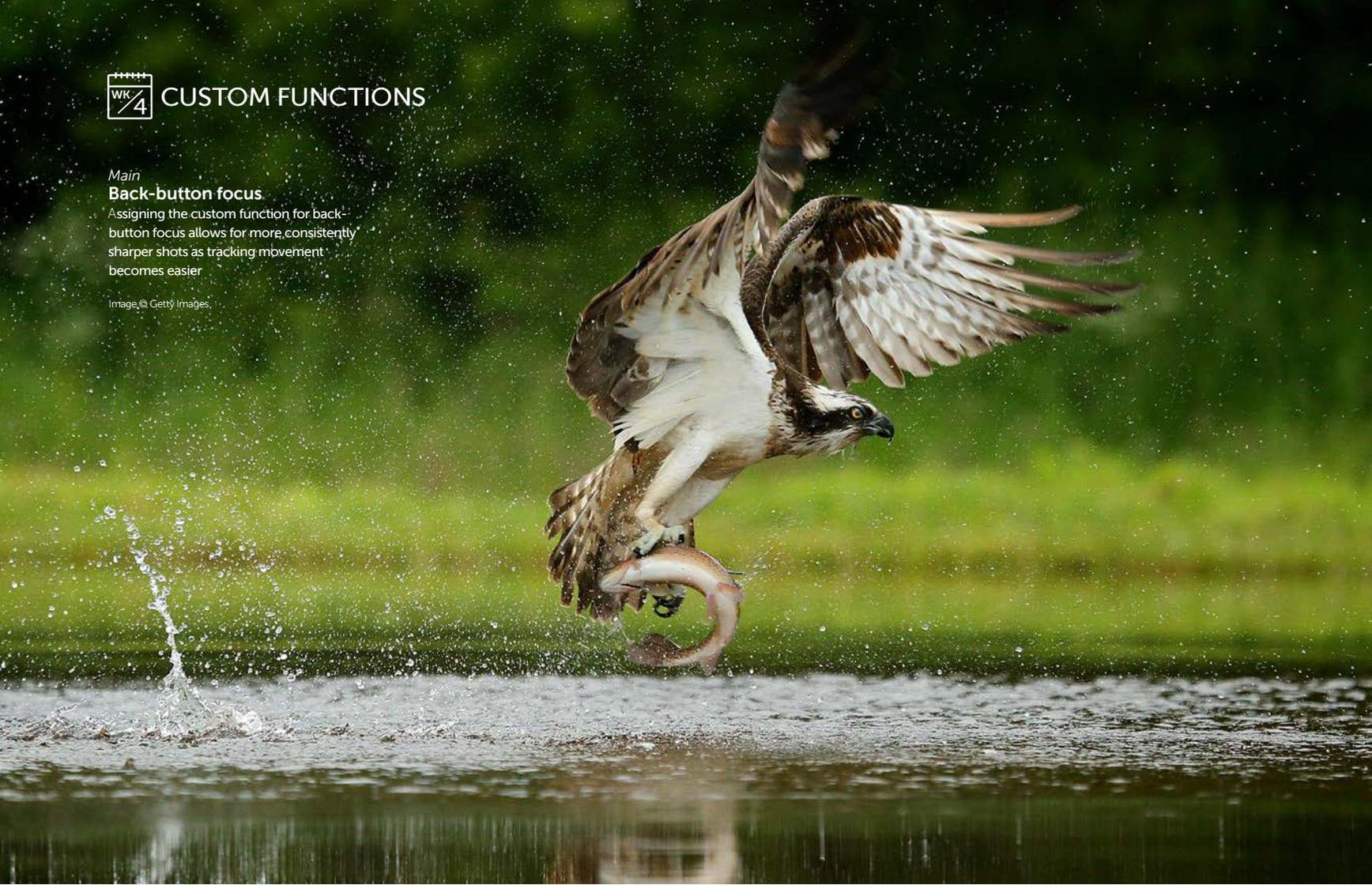


Main

Back-button focus

Assigning the custom function for back-button focus allows for more consistently sharper shots as tracking movement becomes easier

Image © Getty Images



CUSTOM FUNCTIONS

Digital cameras have custom functions built-in to make it easier to access camera settings that are otherwise hard to find

Custom functions are used to quickly access built-in camera settings that are otherwise unmapped to customisable buttons or quick-access menus. While each camera maker approaches this ability differently, either because the buttons and menus are literally in different places, or because they only allow certain settings to be customised, you can do this with most modern cameras.

For example, it may be useful to set up a button on the rear of the camera to synchronise with the focusing of the lens, this is called back-button focusing. It allows the photographer to move the focus controls from

the shutter release button to the rear button, (commonly the AE-L/AF-L button on most cameras). That makes sure the shutter release button now only controls when the camera fires a photograph, meaning the photographer is in full control of the pictures one captures.

So not only does the ability to customise functions on your camera have physical implications like back-button focusing, but it can make accessing hidden sub-menus much faster too.

Imagine you're shooting astrophotography. It's crucial to keep your night vision for as long as possible to make it easier to see stars, constellations and help compose your images.

As soon as light hits your retinas this night vision is dissipated temporarily.

So, having a custom function assigned to a button on the camera, linked to monitor brightness, makes it much easier to keep this disruption to a minimum. Over the following pages we'll take a look at common custom functions that you might want to employ to benefit your photography workflow, and how, in some cases, this might even improve your photography as a result.

HOW TO USE CUSTOM FUNCTIONS WITH OTHER BRANDS

Each camera brand has their own menu system and in it, the ability to customise buttons for different functions. For Canon users you'll find this in Custom Functions menu, and the locations of specific functions move around from model to model. For Sony it's under Custom Settings, Function menu set. On Fuji systems this is typically done by pressing and holding the DISP BACK button until the menu is displayed on the LCD screen. On Olympus this is under the Setup menu under Custom Menu.



DEPTH OF FIELD PREVIEW

Lenses automatically default to hold their aperture as wide open as possible, because it makes the image bright in the viewfinder, thereby making it easier to see what you're composing. However, that also means you'll only see a shallow depth of field due to the wide aperture. Some DSLR cameras have this function automatically assigned to a specific depth of field preview button or other custom function button. What this does is allow the photographer to press the button and preview how much depth of field there will be in the photo with the given aperture that's dialed in. When you have this set up you'll notice that the viewfinder goes dark once the button is depressed, and this is because the lens is then manually stopping down to the pre-determined aperture that is set on the camera, therefore blocking more light from entering the lens.

ADJUSTING SCREEN BRIGHTNESS

Aside from the rare few that only photograph in specific conditions, like product photographers in a studio or astrophotographers that only shoot with dark skies, most of us will experience a variety of light intensities as we move from location to location. This, of course, brings with it the problem of viewing the rear LCD screen on our cameras.

While some cameras may have automatic brightness adjustment, having manual control over the monitor control makes it easier for us to see what we're doing whether it's bright sunlight or darkest night. So setting up a custom function for monitor brightness is essential if you expect to be travelling around. Also, if you find yourself with low battery at a critical point, just drop your monitor brightness to minimum to conserve energy.



BACK BUTTON FOCUSING

We can set up a custom function where we link the focusing of the lens to a button on the back of the camera. This frees up the shutter release button to only release the shutter, taking the photo. It's easier to track movement with back button focusing engaged, as we can continuously focus on a moving subject, and then release whether or not the image is focused. That means

more photos, without having to wait for the camera to deem that the image is in focus enough. It may seem alien at first, because most of us haven't experienced this layout on a camera, but trust us, once you're used to it, there's no going back. Some cameras even have dedicated buttons listed as AF-ON whereas other camera systems allow customisation of the AE-L or AF-L buttons.

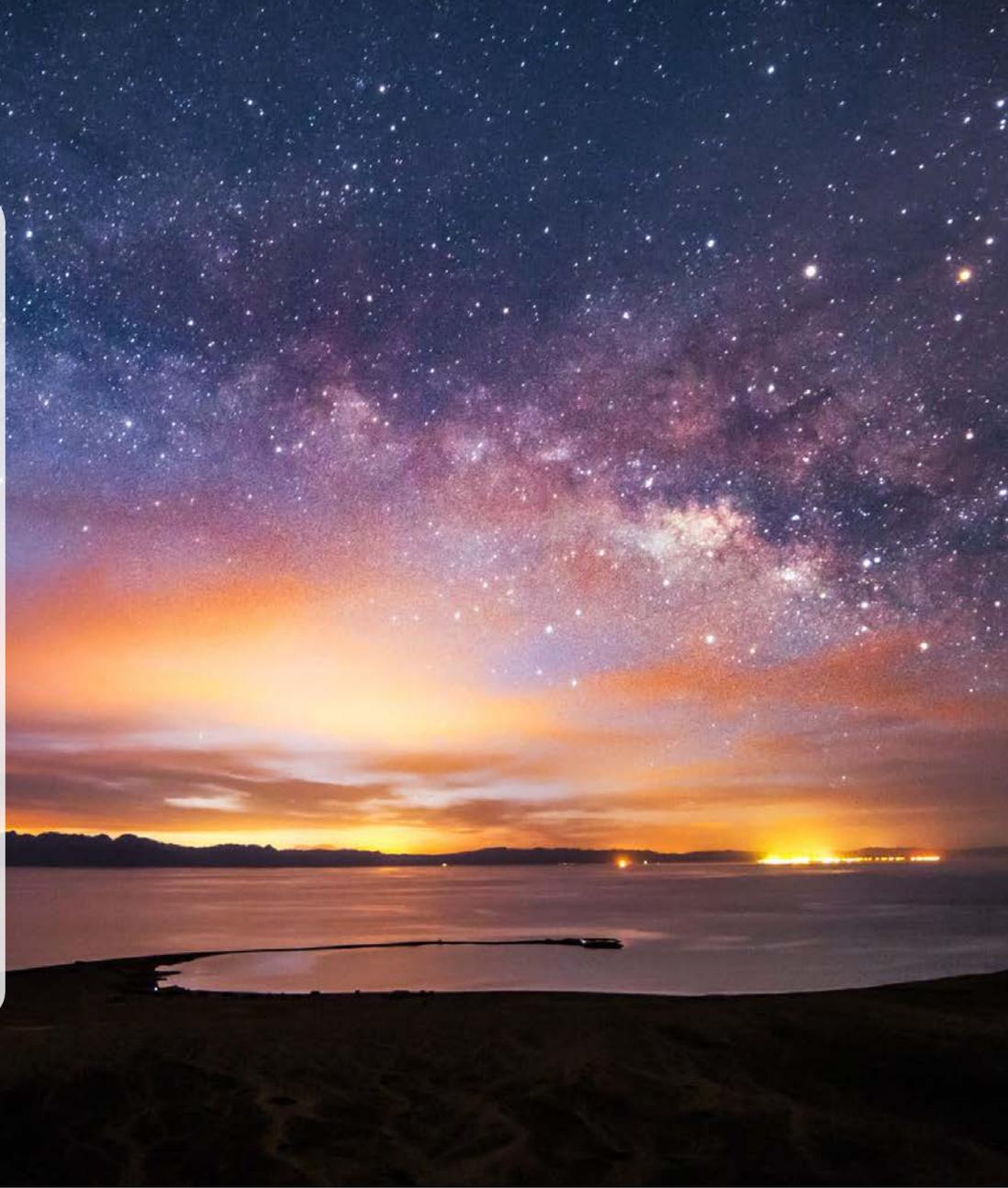


CHANGE IMAGE CONTROL

Picture control, picture style or picture profiles are all the same name for a function that controls how your images look before you've done any editing. These styles/profiles control basic visual characteristics of your photographs, such as: sharpening, clarity, contrast, brightness, saturation and hue. But of course, this only applies to JPEGs and TIFFs, as Raw file formats are completely editable and much more flexible. Still, you may have a camera that's incapable of Raw shooting, or still not be ready to take the dive into Raw editing, so these profiles help you achieve a look in-camera, without the use of a computer.



Image © Getty Images



“It’s crucial to keep your night vision for as long as possible to make it easier to see stars and constellations”

EXPOSURE DELAY

Also known as mirror lockup, vibration delay, extra mirror delay among other terms from various manufacturers, this



function is designed to delay when the image sensor is exposed to light, after the shutter release button has been pressed. Cameras with a mirror suffer from something called mirror shake, which is most noticeable when mounted on a tripod. The camera is steady, but as soon as the mirror moves out of the way, the small vibrations from this physical movement shakes the camera, and can introduce motion blur if the exposure length is long. By waiting for a second or two until the mirror is out of the way, you prevent this from becoming an issue. Setting this up to a custom function button saves you time in the field when trying to get that long exposure shot as sharp as possible.



STEP-BY-STEP ACCESS AND SET CUSTOM FUNCTIONS

Engaging custom functions with a Nikon camera



1 CUSTOM SETTING MENU

Turn your camera on and press the menu button on the back. Once it's started up, you should navigate to the Custom setting menu with the multisector or touchscreen and head to f (Controls).



2 ASSIGN FUNCTIONS

Depending on the model your menu should look like this. Here we can assign the Fn (function) button/s to control a whole host of parameters, including extra settings by pressing the Fn button and turning the Command dial.



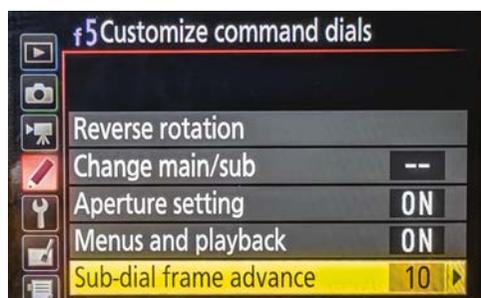
3 ASSIGN PREVIEW BUTTON

The depth of field preview button, appearing on some Nikon cameras, is also programmable should you wish not to use the depth of field preview option. We have ours set to the My Menu option.



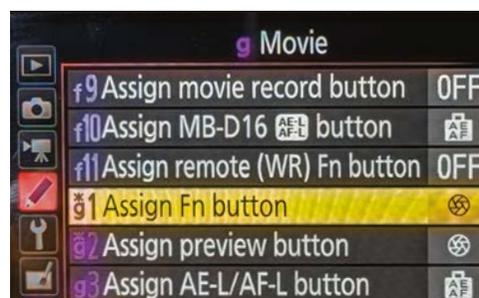
4 ASSIGN AE-L/AF-L BUTTON

For some Nikon users that don't have an AF-on button on the back of the camera you may want to assign back button focus to this button instead, as it's often in a handy spot easily accessible by the thumb.



5 CUSTOMISE COMMAND DIALS

We can change what the command and sub command dials do from this menu. It's helpful for non-touchscreen Nikon users to change the Sub-dial frame advance to 10 to quickly cycle through multiple images.



6 CUSTOMISE BUTTONS FOR MOVIE MODE

These buttons are also customisable for movie mode and are bespoke to this style of shooting. You'll also notice that the camera settings do not transfer from stills to movie mode either.

DARKEN YOUR SCREEN

We have a day-long shoot on the beach under bright sunshine, so we need the screen to be as bright as possible, but we're also staying out into the night to photograph the stars. Now is the time to adjust the monitor brightness so as not to blind ourselves (spoiling our night vision) with the screen when reviewing images. Head to your custom function button submenu and assign a button to LCD brightness, or monitor brightness (the name will change based on your camera system). Now drop the brightness down to the minimum and carry on shooting.

Above Clear vision

Quickly adjusting screen brightness from light to dark is imperative when you're shooting the night sky, as any prolonged exposure to bright lights ruins night vision

Left A punch of colour

Powerful changes to colour, sharpness, clarity and other settings are available with a change in picture control aka picture style without the need for a computer

EXPOSURE BRACKETING & EXPOSURE STACKING

Bracketing and stacking of different exposure values help attain detail in areas otherwise obscured in a single image

The term exposure bracketing refers to taking several images of one scene at different exposure settings. For example, if we're photographing a landscape we might take one photo at f5.6, another at f9 and a final image at f16. This will give us three photographs with different brightnesses (that are taken at exposures) with each photo giving increased detail in either shadows, midtones or highlights respectively. It's perfectly possible to do this

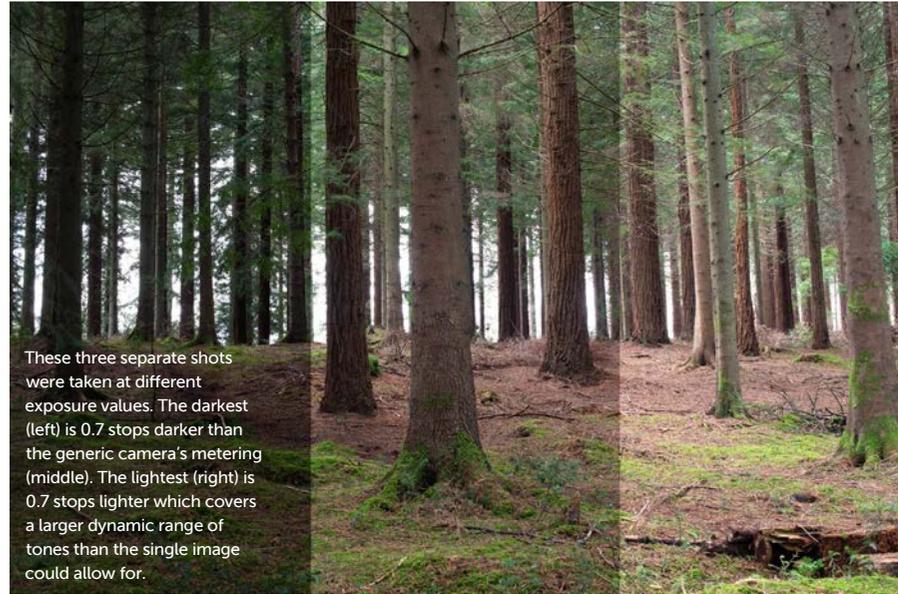
manually by adjusting the camera settings to give us three separately exposed images. However, most cameras have a built-in function called bracketing, which will allow the photographer to separate the shots automatically with a predetermined amount of images, and f-stop difference.

After attaining the multiple exposures, we'll need to combine these images together in order to keep all the detail in one photograph. We do this by using a technique

called exposure stacking. Some cameras have built-in functions to do this, so you don't need a computer to stack the exposures and is often noted as HDR or High Dynamic Range (because it extends the dynamic range limitation of the single image). However, many people use software like Adobe Photoshop, Lightroom or Affinity Photo to stack their exposures. It's arguably better to do this so you have more control over how the multiple photos blend together.

STEP-BY-STEP USE THE BRACKETING FUNCTION

It's possible to also do this manually, if your camera doesn't have this function



These three separate shots were taken at different exposure values. The darkest (left) is 0.7 stops darker than the generic camera's metering (middle). The lightest (right) is 0.7 stops lighter which covers a larger dynamic range of tones than the single image could allow for.



1 MAKE IT STEADY

Set your camera on a tripod and compose your scene. The camera needs to remain stationary during bracketing so that the photos can be stitched together easily later on. Otherwise we run the risk of generating ghosting artefacts and an unrealistic final shot



2 TAKE A TEST SHOT

In aperture-priority mode, set your desired aperture (we recommend f11) at ISO200 and take note of the shutter speed. Now head to manual mode and dial in those same settings; this will give a general mid-way point from which to bracket.



3 SET THE AMOUNT

Engage the bracketing function and set how many images you wish to take. Some cameras allow two differently exposed shots, while others allow up to nine. More shots means a more gradual tonal balance between images, making changes in light and dark more realistic.



4 SET THE EXPOSURE

Now set the exposure difference you want between shots. For example, setting an exposure difference of one stop means that every photo will be bracketed by one stop. If it's a bright sunny day with strong highlights and deep shadows you may want to set this higher, than if it's cloudy or if you're indoors where only a fraction of a stop would work better.



5 TAKE THE PHOTOS

In quick succession take as many photos as your camera is programmed to bracket. For example, if you have chosen to take three bracketing images, press the shutter release button three times, one after the other. Doing it quickly will avoid ghosting over moving parts of the scene like swaying trees or windswept grass, when stacking your photos later.



6 DOING IT MANUALLY

You can follow these steps by doing it manually, if your camera doesn't have a bracketing function. But be quick with your changes between each photo. For example, set f8, 1/200 sec shutter speed and ISO100. Take the photo, then change the aperture up or down, rather than the shutter speed as this will change the quality of any moving objects in the scene.

EXPOSURE STACKING

Now you have your bracketed photos, it's time to stack them together in one image

The bracketed photos we've captured have now gathered detail information in the shadows, midtones and highlights – meaning we have a wider dynamic range across the scene. However, this isn't much good unless they are stacked into one single composite image.

So we can either use the built-in HDR function of the camera to create our final shot for us, or – if your camera doesn't have this function, or you want to do it yourself – this needs to be stacked on a computer or smart device. Many of the most popular editing softwares will have a stacking feature and are labelled in a variety of different terms like photomerge, HDR, or image stack. The most common softwares you're likely to stack in are: Adobe Photoshop or Lightroom, Affinity Photo, PaintShop Pro, or Aurora HDR. However in the following steps we'll be walking you through how to do this in Adobe Photoshop CC.

What the software does is automatically mask off certain areas of each bracketed photo so that image detail is shown in all the crucial areas of the scene. For example, clipped highlights and shadows will be replaced with detailed sections from the separate exposures, into a seamless single image.

Revealing detail

Stacking multiple exposures can display hidden beauty in otherwise dark spots, like in this astro photograph

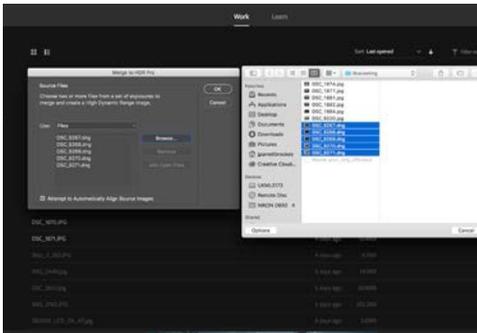
Image © Getty Images

STEP-BY-STEP EXPOSURE STACKING EDITING

In a few simple steps you can blend all your bracketed exposures together coherently

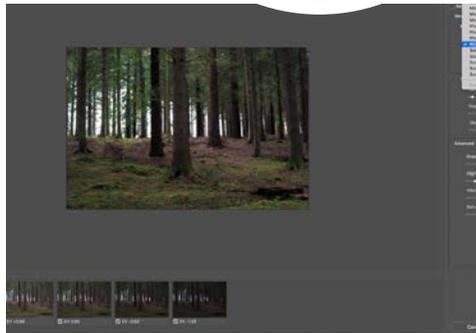
SHOOT A DOUBLE EXPOSURE

You can set your camera to take several exposures and combine them into one shot. It's like an exposure stack but your settings don't have to change.



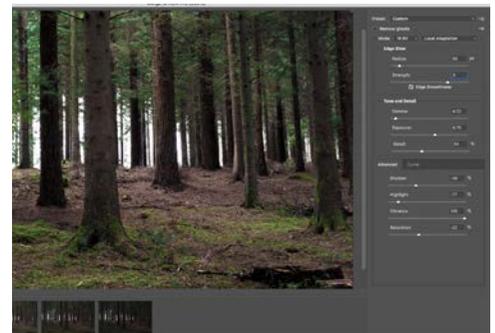
1 START IN PHOTOSHOP

First import all your bracketed photos onto your editing device and place them in a folder labelled 'Exposure stacking'. Head to Photoshop and click File>Automate>Merge to HDR Pro. Click Browse and navigate to your images. Then click OK to begin.



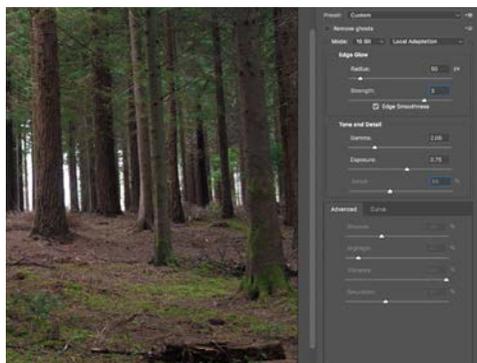
2 CHOOSE A PRESET

Now a new window has appeared displaying a rough stack of your bracketed images. From here you can make adjustments in the right-hand column. But first, let's choose a preset from the top-right drop-down menu that gets close to the look we desire. We'll choose RC5.



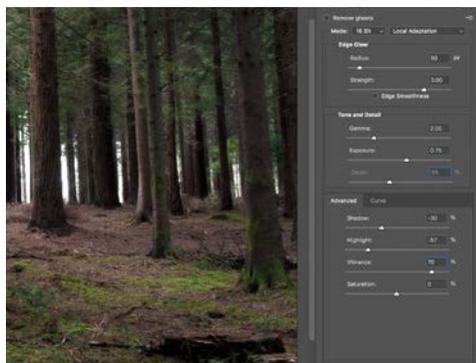
3 ADJUST EDGE GLOW

The edges of hard contrast in your photo are prone to halo effects if the radius slider is set too high, so it's important to bring that down as low as possible if you want a more realistic look. We set a Radius of 50, then adjusted the Strength to 3 and ticked Edge Smoothness.



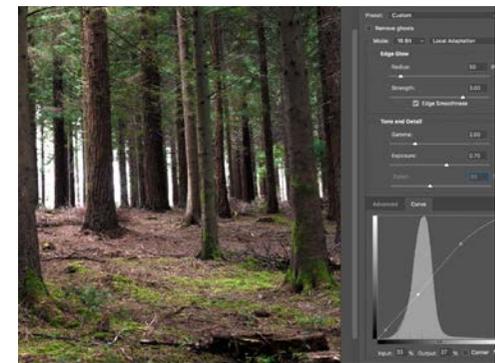
4 TONE AND DETAIL

The exposure in our photo preview on the left looks good, so we'll leave that slider alone, but we'll reduce the Gamma slider slightly (making it look a little brighter) and set the Detail slider to 55%. If you go any higher with the Detail slider and it will start to look surreal, with extreme contrast in areas of the scene that it lacked in real life.



5 ADVANCED TAB

The Shadows and Highlights sliders work by increasing or decreasing the relative brightness of either dark or bright areas in the scene respectively. Our preset did a good job for us in this image, so we left them alone. We did however, drop Saturation to 0 and boost Vibrance to 70, as this enhances weaker colours without clipping the stronger ones.



6 CURVES TAB

We did however, head over to the Curves tab to create a slight S-shaped bend in the graph. This helped soften the dark shadows slightly and boosted the contrast in the upper midtones to give our final shot a bit more depth and pop. We then clicked OK to finish, and went to File>Save as... to save our finished exposure stack.

An aerial, high-angle photograph of a city street intersection. The street is paved with dark asphalt and features a prominent white-striped crosswalk. Several pedestrians are captured in motion, crossing the street. The perspective is from directly above, looking down at the scene. The text 'PLAY WITH PERSPECTIVE' is overlaid in a bold, orange, sans-serif font in the center-right area of the image.

PLAY WITH PERSPECTIVE

We can use creative perspective to add to the overall look of our photographs, making them more appealing

Photography is the art of representing 3D objects and spaces on a 2D surface. Perspective helps us translate the true impression of them within the environment. However, perspective can also help the photographer warp and play with the environment as well.

We can change the perspective of our image with clever camera angles and different lenses. Whether we realise it or not, perspective has a huge impact on what we 'read' from an image. A high perspective shooting down can give your viewer feelings of power or scale and likewise a low perspective shooting up inspires feelings of awe or fear.

Keep an eye out for any leading lines to help 'pull' your viewer into the image. This use of man-made or natural 'frames' within the image take advantage of the subconscious way the human eye is drawn. These lines do not necessarily have to be straight or even going in the same direction! We can use and subvert the rule of thirds and symmetry with perspective, making implied triangles and diagonals appear more impressive – by shooting from below for example.

It is important as a photographer to understand perspective to ensure that your images are strong. Composition has rules but also use your gut instinct on what will make your shot go from 'okay' to 'wow'.

“We can change perspective with clever camera angles and different lenses. It has a huge impact on what we 'read' from an image.”

From above

Shooting from an elevated position is great for creating interesting shapes in a mundane scene

Image © Getty Images

Wide angle of view

Wide angle lenses help to create a sense of depth

Image © Getty Images



LENSES AND PERSPECTIVE CHANGES

Lenses alter our perception of a view, to our benefit or detriment as photographers. Wide lenses give volume to images, whereas telephoto lenses can bring everything closer.

However, incorrect use of these lenses can cause problems – leading to many forms of distortion. Images bowing out or pushing in can both be fixed in photo editing software. Wavy distortion (distorting both out and in) is trickier to fix and usually requires specialist software. A good example of the way perspective can distort images is how

buildings shot from their bases sometimes seem to bend up into the sky. You may hear the term compression being used when talking about lenses. In short compression is the situation when the background appears to be closer to the object in the foreground. If you shoot a portrait with a wide angled lens your subject will appear distorted with a background far from them and can be described as extension distortion. However, if the same portrait is taken with a telephoto lens (moving yourself backwards in the

process) the image is far more successful – no distortion to the subject and the background appears closer giving us compression distortion. Many people believe the ‘incorrect’ choice and use of lens is what gives these results; however the distance between the camera and subject is what actually results in these distortions. We shouldn’t let the lens do all the work. Sometimes you need to zoom (in or out!) with your feet to your subject to make the image work. Find a focal point and keep refining what you’re shooting.



Wide Angle Lenses

Wide angle lenses have a short focal length, meaning more will fit into your frame. We can use this kind of lens to create illusion of exaggerated perspective, where there appears to be a larger distance between objects in the back and foreground. Landscape photography benefits from a wide angle lens (the natural distortion in the lens isn’t as apparent). The deeper area of focus also means most of what you shoot will be in focus!

Telephoto Lenses

A telephoto lens allows you to photograph an object that is far away or magnifies the subject in your image. Telephoto lenses allow you to create images where the distances between objects seems to shrink. They can also create beautiful bokeh in backgrounds that do not distract from the object in the foreground. A telephoto lens is often a great choice for portraiture as it does not warp faces.



Tilt Shift Lenses

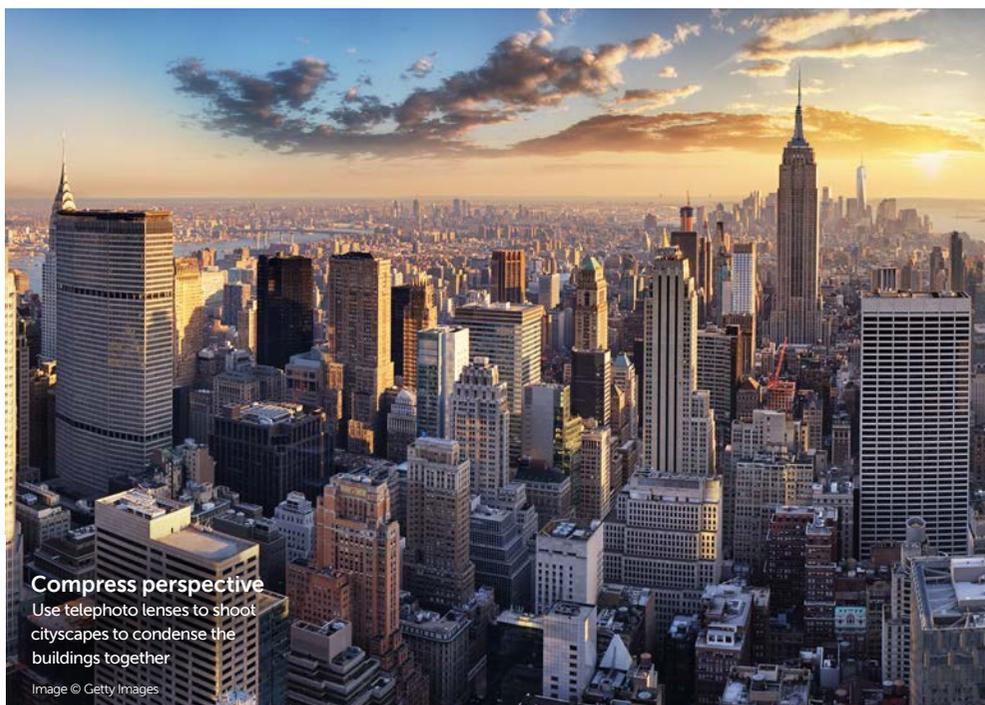
Tilt Shift photography is a type of perspective manipulation with the tilt-shift control lens. People and buildings often look like a model village or miniatures. The lens rotates relative to the plane (tilt) of the image or moves parallel to the image plane (shift). The shift ensures that angles remain correct in an image and the tilt allows you to pick out areas of focus and blurring the rest of the image.



Remember to look up
Use the lines of buildings or trees to increase the depth

Image © Getty Images

“Changing perspectives really enhances your composition. Shooting from a new perspective gives your images a unique feel”



Compress perspective
Use telephoto lenses to shoot cityscapes to condense the buildings together

Image © Getty Images

TELEPHOTO LENSES

Often we pigeon-hole a telephoto lens as being for distant objects. However, we can use it to compress perspective too

SET UP

The angle of view is reduced and made narrower with a shorter focal length. By setting up an object outside, we can see how much difference using the telephoto makes to the background with a 70mm lens.

ADJUSTMENTS

Adjust the lens to 135mm, step back to ensure the object is still in shot and that the composition remains the same and you will see the end result is the background image is compressed – it appears larger.

MORE ZOOM

When you up the lens to 200mm and back up even further, you can see there is even more compression.

SHOOTING FROM AN ELEVATED PERSPECTIVE

Shooting from an elevated perspective gives your images a unique feel. Changing perspectives really enhances your composition as you can scale up the level of elevation; moving from a step or two higher to a totally different view on top of a building. Your images will stand out from every other shots of that view.

Sometimes you need to be a little more physical when shooting; try to hold your camera above your head to get 'that' shot. The great thing about shooting digitally is it really doesn't matter if it doesn't work as you'll know instantly. When elevating your perspective you can shoot blind or by using a swivel screen.

When shooting from a high perspective keep in mind the story you want to tell. Do you wish to disorientate your viewer by shooting from very high? If so, you'll want to take away any frame or scale that acts like a reference point.

Bird's eye views are always fun to play around with too; if you can get up in a plane or safely use a drone, you'll be able to get some very interesting perspectives.



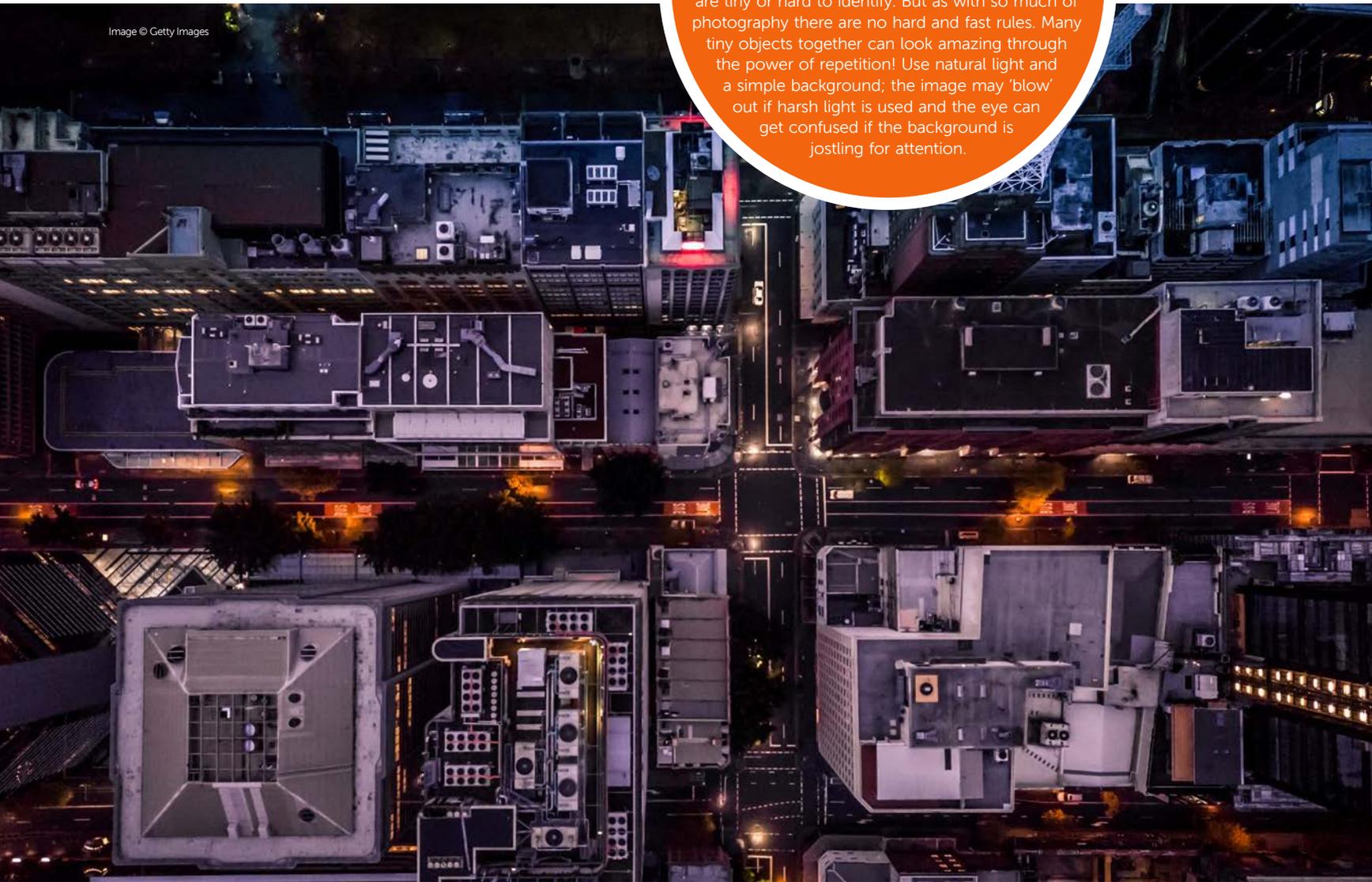
Left
Flat lay
Create stunning still life shots by shooting from above and get artistic with your layouts

Image © Getty Images

TELL A STORY FROM ABOVE

Flat lay photography is an easy way to tell a story through objects. Try to arrange your items around a theme, whether colour-based or object based. To ensure that the final image isn't too busy, stick with a few unifying colours and play with scale. A flat lay may not be as effective if the objects are tiny or hard to identify. But as with so much of photography there are no hard and fast rules. Many tiny objects together can look amazing through the power of repetition! Use natural light and a simple background; the image may 'blow' out if harsh light is used and the eye can get confused if the background is jostling for attention.

Image © Getty Images



Tall buildings

It can be tricky to get a decent image of a tall building, but warp lines and perspective with extreme angles

Image © Getty Images

A FISH-EYED VIEW

The fish eye lens gives photographers an extremely wide angle and create highly abstract images that are very distorted. Usually used for wide panoramas and sport photography. Circular fish eye lenses give us circular images with the edges being black; the 'traditional' fish eye image that we might expect. Full-frame fish eye lens, however, have 180 degree fields of view across the diagonal, so no 'bubble' effect and no black edges.



GETTING LOW

It's important as a photographer that you are always innovating. By changing your perspective regularly, you ensure that your shots don't begin to look similar or unexciting. Perspective makes an image stand out from every other shot of the same object or place.

We can use an ant's eye view – sometimes called a worm's eye view – to really lay with an extremely low perspective. Generally speaking, the lower you get, the more drama you will achieve in a shot. Think about how overwhelmed you may have felt when confronted with an especially tall building or natural landmark. Photographs can flatten this scale so try to bring it back through the perspective of your images.

Slightly higher with a children's eye view can also give us that impression of wonder. When shooting low, objects in foreground look larger, mirroring human perception. Playing with perspective will also involve getting physical with the environment you're shooting; you may have to get down on your front or even put your camera on the ground. Use something to protect the base of the camera if you're worried about dirt.

Wide angle lenses have a short focal length with results in a wider field of view; remember they aren't just for landscape shots. Wide angle lenses do distort, which is noticeable if you're looking at lines that should be straight. So try to make use of this for effect!



Above
Fish-eye lenses

Distort perspective with fish-eye lens and shoot creative imagery

Image © Getty Images

Above-Top
Creative framing

Shoot regular subjects from in alternative ways

Image © Getty Images

LEADING LINES

Try getting super low for your next shot. With leading lines you control where the attention is focused.

SET UP

Find your subject; tram or train lines, tiles and natural strata all work beautifully for creating strong leading lines. Get down low for your lowest angle to shoot from.

FOCUSING

Try focusing on a more macro-level when composing your shot; set your focus on a specific detail on the floor or something very close in the foreground and take your shot.

TRY SOMETHING DIFFERENT

It's rare that a photographer gets their shot immediately; try to train your eye to find the next thing to shoot. When down this low, your perspective has changed and the things you notice will be different.



Above
Food photography

Use the elevated perspective to shoot interesting food set ups

Image © Getty Images

SHOOT BLACK & WHITE

Remove colour, but add in dynamic elements such as form and shape

Black and white photography is much more than just a way to rescue bad exposures, or to use when you feel like an image isn't working. To start with the basics, a black and white photograph is an image where all colour has been removed (either with the camera's Monochrome Picture Style, or by editing the image to take away the colour). But then you probably knew that already! We're here to teach you what makes a black and white image timeless, dramatic and

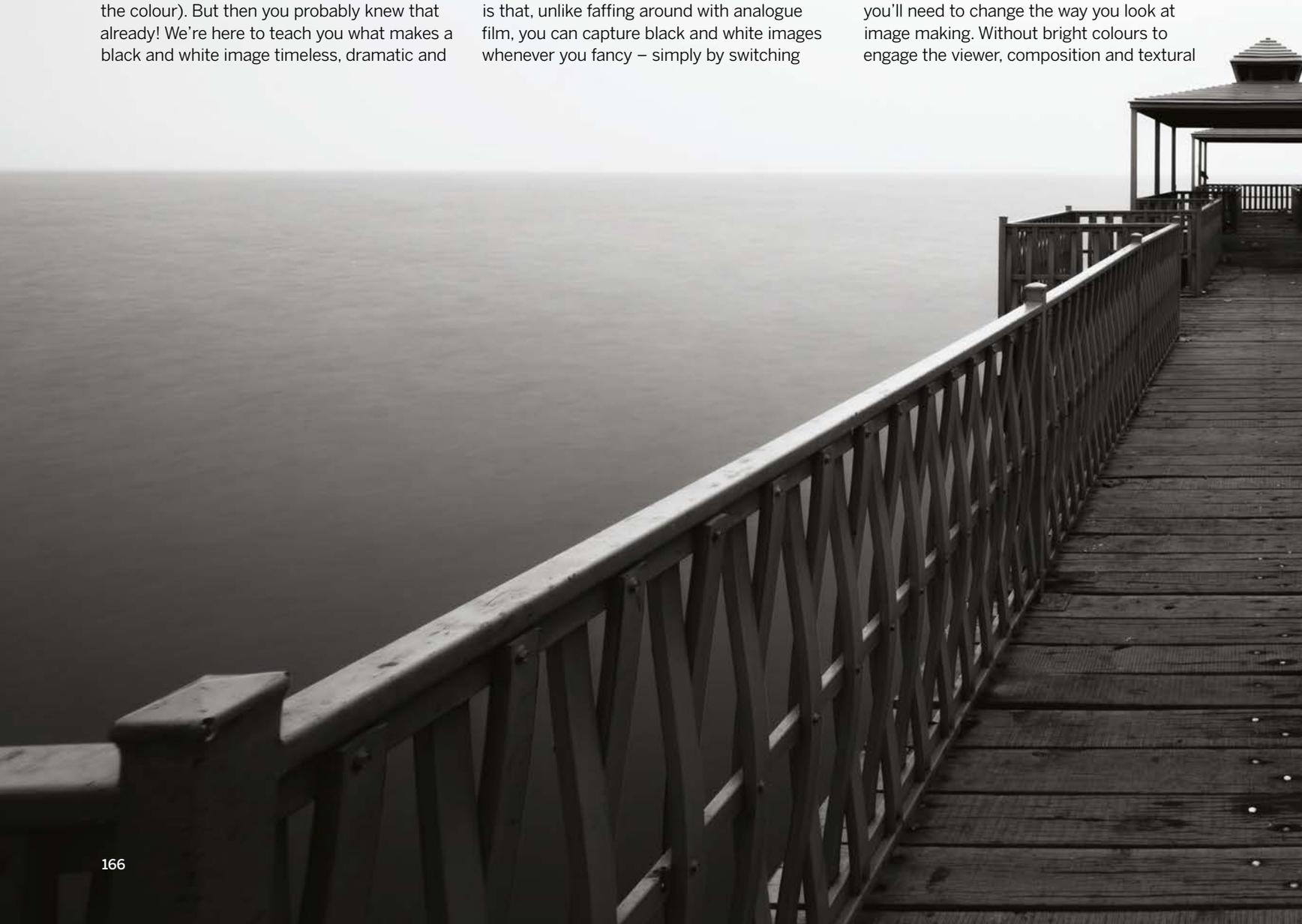
classic. Successful shots are those that have been made with the style in mind, so it's time to see your scenes a bit differently. When you strip colour out of a photo, instead of looking for bright hues that draw the viewer's eye, you need to find other visual interest – tone, form, shapes and textures.

A great advantage to digital photography is that, unlike faffing around with analogue film, you can capture black and white images whenever you fancy – simply by switching

between colour and black and white in the camera menu. As well as taking images in black and white, we'll also show you how to convert a colour image into a black and white shot with some simple editing steps.

WHAT TO LOOK FOR

To capture successful black and white shots, you'll need to change the way you look at image making. Without bright colours to engage the viewer, composition and textural



elements are going to become more important parts of your picture.

To start with, you might want to consider how shapes (how the subject looks in two dimensions) appear in the composition. Identifying the outlines of subjects – and knowing how best to arrange them in your images – will really help to improve your photography. In landscapes, for example, look out for leading lines and contrasting tones to create additional interest in your shot.

Form (the three-dimensional appearance of a subject) is another interesting element to utilise. Form refers to how a subject is lit to provide depth cues. Your aim is to capture a sense of depth, as well as tonal variations between light and shade.

Patterns – whether in natural or urban landscapes – help us to make sense of everyday life. More importantly though, they add interest to black and white scenes, as they're graphic in nature. Practice looking for patterns in your locations, and explore the best angle of capture.

The last element to look for is texture, the tactile sense of an object that invites us to reach out and touch it. In black and white photography, texture gives us important visual clues and information about the subject. Light from the side of a subject will bring out

textures, whereas light from the front can make them appear more flat.

WHEN TO USE BLACK AND WHITE

There's not really a right or wrong time to switch to black and white. But there are situations in which black and white can really thrive. Stormy landscapes – with dramatic clouds and weather – look affecting without colours because their main feature is contrast. In a similar way, portraits in dramatically contrasting light can become more striking when they only show shadows and highlights across the face. Long exposure images (where you keep the shutter open for a longer time than usual) can work well, too, especially if you can include moving water or clouds.

In truth, you can find great examples from every photographic genre. As we've already mentioned, if you're not sure about whether an image will look good in black and white, shoot it in colour and convert it when you get home in image editing software.

TONAL CONSIDERATIONS

Without differences in colours to separate elements in your scene, it's important to have contrasting shades in black and white photos.

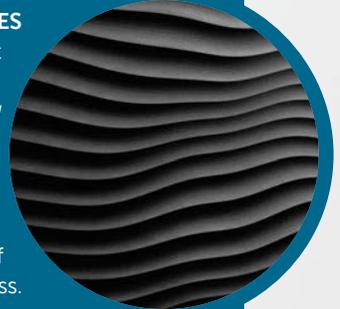
Shades (we can also call them tones) are different amounts of light and dark, that range

TOP MONO TIPS

How to capture interesting details in monochrome shots

LOOK FOR TEXTURES

Seek out scenes that include a range of textures or repeating patterns. Shots such as this wall look impressive in black and white and a narrower aperture of f7.1 ensures sharpness.



SHOOT A BLACK AND WHITE LANDSCAPE

When shooting outdoors, you'll need to work harder to create strong compositions. In this photo, the path acts as a leading line towards the castle.



SHOOT A BLACK AND WHITE PORTRAIT

Ensure your subject's eyes are well lit. Fill the frame with the subject, use spot metering to expose and avoid busy backgrounds with a wide aperture.



SHOOT A HIGH CONTRAST IMAGE

This is often about clever choice of subject and background. You may have to underexpose shots a few stops and use exposure compensation.



© Getty & Unsplash; Brandon-Wong

all the way from pure black to pure white. In terms of tones, a scene is called low key if it deliberately contains more dark tones and shadows. A high key scene will appear 'overexposed' according to the camera meter, and contain more light or bright shades.

Look at your camera histogram (the graph that maps shades) as you compose shots, and when you review them on the screen. This histogram represents blacks, shadows, mid tones, highlights and whites as the graph moves from left to right. You can use it to see the spread of tones in your photo, and to

tweak your exposure to let in more or less light, if you need to. Just because an image doesn't contain colour, it doesn't mean you can't use filters to enhance shots. A graduated Neutral Density (ND) filter will help you to balance a bright sky with a darker foreground, and a polariser can be used to minimise reflections and boost contrast. Various coloured filters (which are popular with black and white film photographers) can also be useful for creating digital images. For example, a red filter will make blue skies appear darker, and foliage look crisper and brighter. A green filter is

useful if your scene contains lots of grass, foliage or vegetation, as this will cause them to be depicted more vividly than normal.

TECHNIQUE AND TIPS

Now we've talked about the general approaches to black and white photography, how about a few specific camera tips? The first thing to do is switch your image format to camera RAW, if you haven't already. This means that your original image file will record the maximum dynamic range of highlights to shadows. It also means that you'll have



Many cameras also enable you to apply toning effects – the Canon EOS 5D Mark III offers sepia, blue, purple or green. Why not capturing a mono image with a particular hue?



The photographer deliberately underexposed this portrait to preserve the skin tones and create a moody feel. As long as you understand why, you can override your camera meter.



From light and airy to dark and broody, monochrome mode can be used to enhance the mood of your photos. Bring about select lightening and darkening of areas when you edit.



Unlike their name suggests, black and white photos can contain coloured tones. Based on a look from film processing, this cyanotype can be created in-camera or when editing.



Here, the photographer has used a black and white conversion to enhance the most striking part of the shot, the bright highlights of the eye.



Don't forget to shoot in RAW format. This way, you'll have the option to process the images in colour if you want to, even if you initially shoot in Monochrome mode.

STEP-BY-STEP EDITING

Take a specialist post-processing approach with your black and white shots



1 MAKE BASIC ADJUSTMENTS

Open up the image in your chosen software. Adobe Camera RAW allows you to process your images quickly (and in batches). You can then open up your black and white shots in Photoshop for more specific editing if needed.



2 TWEAK THE BASICS

When we first opened the image, we upped the Contrast, lowered the Highlights and upped the Clarity. This gave a punchy result, and brought back detail in the water. Refer to the image histogram as you edit.



3 SWITCH TO GRAYSCALE

Go to the HSL/Grayscale tab, and tick the box that says Convert to Grayscale to turn the image to black and white. Camera RAW will automatically change the Grayscale mix, so use the sliders to create a custom result.

the option to change shots taken in the Monochrome Picture Style back to colour.

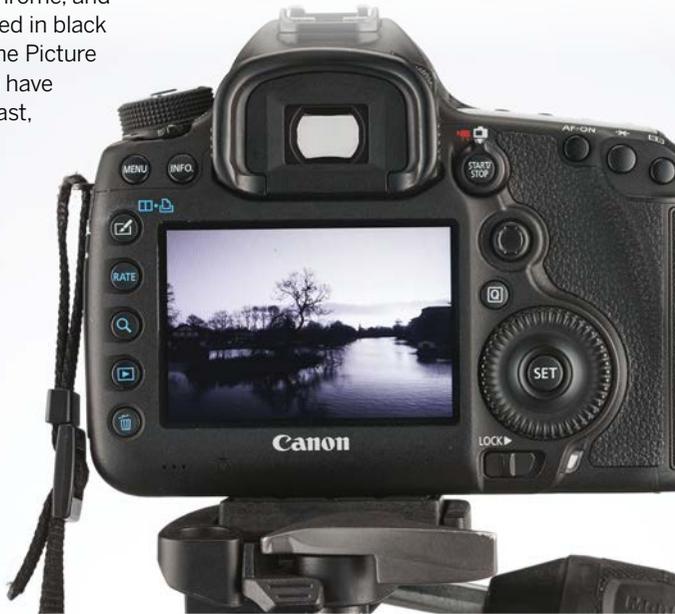
We've also mentioned the Monochrome Picture Style several times now, but haven't fully explained what it means. If you want to use the in-camera black and white mode (which means you'll see your frame in black and white using Live View preview), look for your camera's creative image modes. These might vary from model to model, but on most DSLRs, you simply select Monochrome, and all the images will then be captured in black and white. Within the Monochrome Picture Styles mode, many cameras also have controls for sharpness and contrast, filter effects in-camera and toning effects.

EDITING BLACK AND WHITE PHOTOS

Taking photos in colour and converting them to black and white afterwards gives you more flexibility than taking them in mono. But this means you need to know how to edit them.

There's more than one way to go about mono conversions, and Adobe Camera Raw, Lightroom and Silver Efex Pro are all popular programs. Whichever

you use, think about how you want to change the contrast, brightness and shadow. If you're struggling for a place to start, experiment, and if you don't like the effect, start again! As long as you're editing in RAW, you can revert to the original at any time.



SEE IN BLACK AND WHITE

Switch to mono to see shots in black and white



1. FIND PICTURE STYLES

Check your camera manual to ensure it has a monochrome mode. On this Canon, it was in the Picture Styles menu, but we could have used the Creative Mode button as a shortcut.



2. SELECT MONO MODE

Once you've found your creative styles, scroll through and select Monochrome. You may notice a warning in the viewfinder confirming you're shooting in black and white.



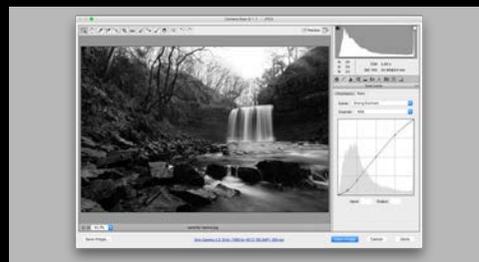
3. SORT THE DETAIL

Before shooting, you can customise the mode further by adjusting the Sharpness and Contrast, as well as adding coloured filters and tones. Experiment with these parameters to suit your scene.



4 SPLIT-TONING

To apply a tone such as sepia to your image, use the Split-toning tab. Colour the shadows and highlights, and up the saturation for a more pronounced effect. We tried out a warmer tone but didn't feel it suited the image.



5 UP THE CONTRAST

To boost the contrast across a whole image collectively, use the tone curve tab. We added a 'Strong Contrast' s-curve, which increased the highlights and lowered the black. Drag points on the curve to customise the result.



6 FINAL STEPS

Assess your image after you've applied the contrast, and decide if any areas are too light or too dark. In our shot, we applied a Graduated Filter from the top menu over the sky, to make it appear less blown out.



WEEK 4 SUMMARY

You've done it! You have now well and truly mastered your camera. By the end of week four you should feel confident and ready to embark on a future of photographic adventures. In week 4 you will have learnt...

TRICKS FOR SHOOTING LONG EXPOSURES

Add some creativity to your imagery by experimenting with long exposures. Shoot ethereal looking seascapes, blur clouds in the sky and add a bit of motion blur.

HOW TO SET CUSTOM FUNCTIONS ON YOUR CAMERA

Programme the custom functions on your camera for quick and easy access to settings that are otherwise hard to find.

HOW TO BRACKET EXPOSURE AND FOCUS STACK

Bracketing and stacking of different exposure values help attain detail in areas otherwise obscured in a single image.

HOW TO USE CREATIVE PERSPECTIVE

Get down low or up high to change the perspective of your photographs for more unique shots.

HOW TO SHOOT IN BLACK AND WHITE

Strip the distraction of colour out of your images and celebrate the form and texture of your subjects.

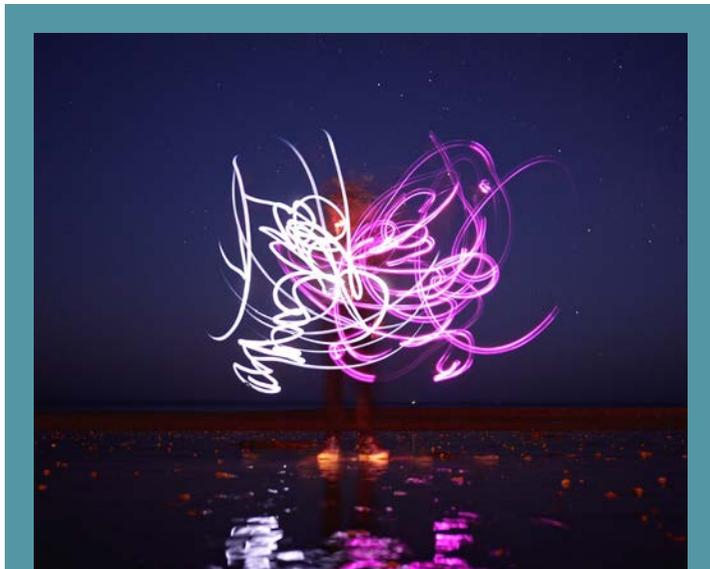


WEEK FOUR SUMMARY 



LIGHT PAINTING

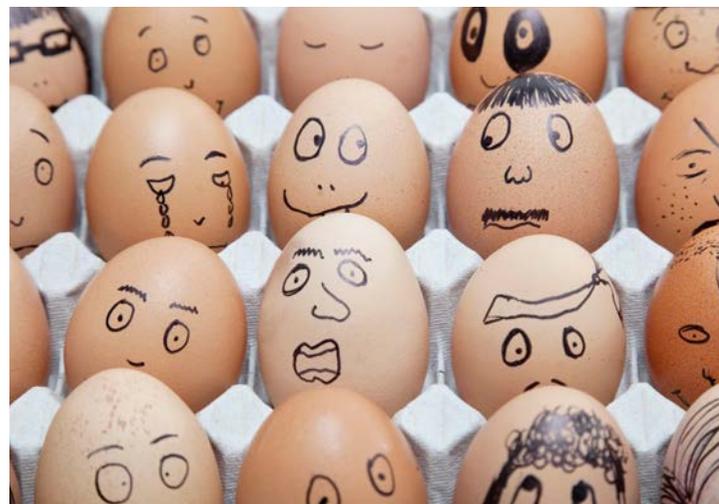
Long exposures can be creative, light painting is fun solo or with a group of assistants!



- Try light painting in a dark room. Gather a torch or phone for light source.
- Give yourself enough time to get in front of the camera with a slow shutter speed to write or draw with the light.
- Experiment with different colours or go outside to light paint at night!

CREATIVE STILL LIFE

Revisit still life photography today, have fun with it and try some creative storytelling



- While gathering items, try to stick with a theme. For example, colour families or items of the same type.
- Decide what story you are wanting to tell with your objects. You could shoot your lunch deconstructed!
- Flat-lays are an excellent way of presenting a still life, try a number of lay outs – don't be too pre-occupied with 90 degree angles.

DODGE AND BURN IN POST

Dodging and burning are a classic post-processing technique to bring additional light and shade



- **Burn:** Decide on the areas you would like to bring extra depth (darkness) to. Instead of using the 'out of the box' dodge and burn tools, try to mask out your area and reduce the exposure for this selection only.
- **Dodge:** Create more light by painting a new layer with a pale grey (if a BW image) and soft brush tool. Use an opacity and flow of around 20%.
- You can also create a vignette to add more dimension, also to focus your viewer's attention.

PERSPECTIVE

It is very easy to fall into trap of always shooting from eye level, try some different perspectives today



- Get into the city and shoot tall buildings.
- Go as low or as high as you can. Shoot both up and down, only if you can get there safely!
- Bend perspective and scale by removing recognisable landmarks or points of reference.

SLOW SHUTTER SPEEDS

Blur movement and light with a slow shutter speed – use it for landscapes and also light trails



- We can capture traffic light trails with a slow shutter speed.
- Set up high, with a strong composition for your rear and front light trails, you need a shutter speed of between 10-30 seconds.
- If cars bore you try looking up and capturing star trails with a 5 minute plus exposure.

ABSTRACT IMAGERY

For a successful abstract image you need to find an unusual angle and a lesser seen perspective



- Look for interesting textures that are not always noticed.
- Repeating patterns also confuse the eye, especially with hard lighting and shadow.
- Get close, try to confuse your viewer, by abstracting the image we stop 'seeing' the original item.

EXPOSURE BRACKETING

Capture images with a full range of tones, light and shadow by bracketing your exposures



- Set camera AEB (auto exposure bracketing). The camera will take three shots for you.
- These images are; one 'perfectly' exposed, one underexposed and the final over exposed. This is especially useful if the light is changing or feels challenging to get 'true to life'
- This results in multiple images to work with, to create the 'correct' light. These images can be useful if making HDR images in editing software.

STREET PHOTOGRAPHY

Street photography has had a resurgence in recent years – get outside and find someone interesting



- Keep in mind the ethics of street photography, you may be in a country with local culture and laws that differ from 'home'
- Be brave. It is best practice to ask permission before taking your shot, this won't always result in an overly posed image.
- Be friendly, and remember to respect subjects wishes, if they would like the photo deleted it's not worth an argument.

A STEP FURTHER

Practical projects for week 5 and beyond

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Make your own lightbox for next to nothing for still lifes at home

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Learn to easily capture stunning sunbursts in your imagery

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Perfect your still life shooting at home by changing perspective

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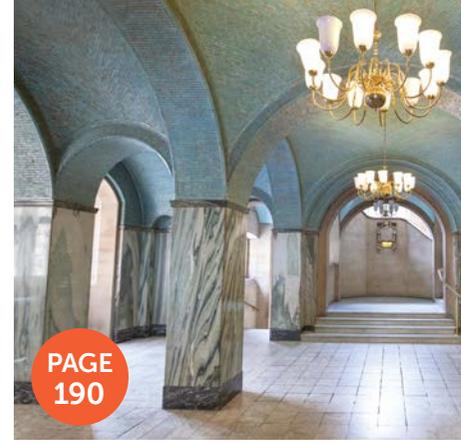
Hit the streets for natural portraits of strangers

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Capture impressive interior images with flash



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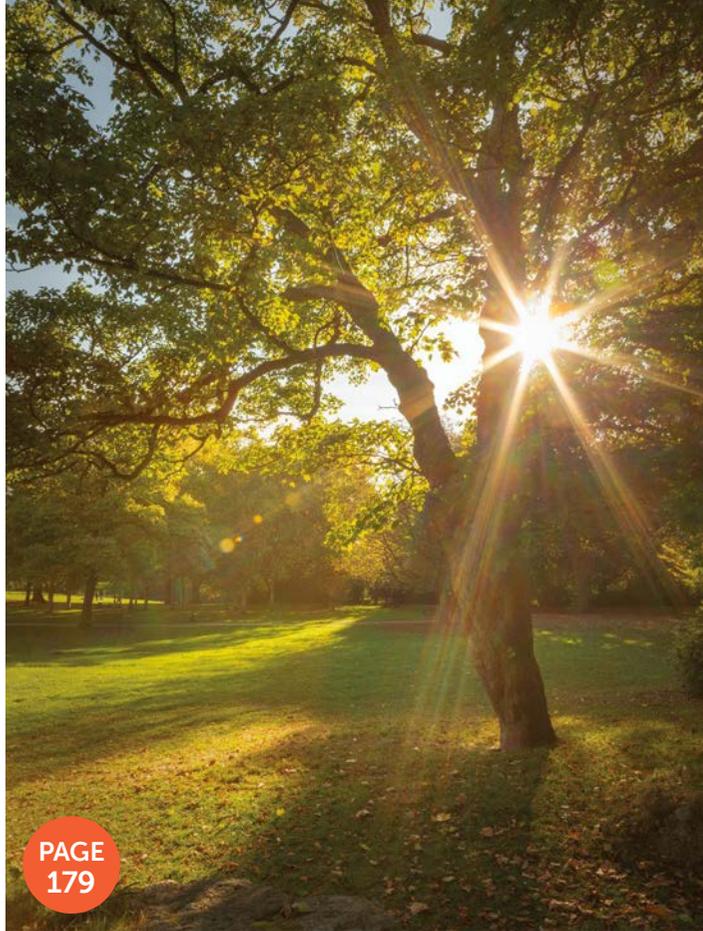


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THE MISSION

Craft your own lightbox to shoot product images

TIME NEEDED

15 minutes

SKILL LEVEL

Beginner

KIT NEEDED

- Cardboard box
- Scissors
- Box cutter
- Tape
- Tracing paper
- White card
- Two light sources
- Tripod

CRAFTING A LIGHTBOX

Want to take perfectly lit product shots? James Artaius shows you how to easily make your own lightbox for next to nothing

Having well-lit product shots is a great way to make your items look more appealing on eBay, or to show off your favourite finds on a blog or Facebook post. However, getting those well-lit shots can be difficult using natural or flash lighting.

The best way to get effective lighting is to use a lightbox (sometimes called a light tent). As you might imagine, this is a box (or tent) that you place a product inside of and flood with light. Using diffused illumination from multiple sources, it provides wrap and fill light for a pleasing and even look to the subject.

A decent one can cost between £50 and £100 on Amazon (cheaper ones are available, but as with most

photographic kit you get what you pay for), however, you don't need to spend even a tenth of that amount – you can make your own using household items, with a quick trip to the craft shop for anything you don't have in the cupboard. You don't even need "proper" lighting, although you will find it easier to get better results if you do. We've used a pair of cheap and cheerful Yongnuo flashguns, but you could use a pair of desk lamps, bedside lights, or even the torches on your smartphone – the stronger the light source, the better. Placing your camera on a tripod will also prove useful, particularly if your lights aren't very powerful, as you may need to drag the shutter a bit.

STEP BY STEP GET CRAFTY!

Create your own lightbox using a few household items



1 MARK BOX WINDOWS

Firstly, get your cardboard box. Turn the box on its side, then use a ruler and pen to mark outlines of “windows” on three of the four walls. These outlines should be about an inch from each edge of the box.



2 CUT OUT WINDOWS

Use a box cutter or Stanley knife to cut along those lines and pop out the windows. At the top of the box, slice off the three flaps above the windows. Leave the flap above the wall of the box with no window.



3 CREATE A SCOOP

Take a sheet of white card or poster board and cut it to the same width as your box. Tape the end of the card to the top of the back wall, then push the bottom of the card forward to create a “scoop” inside the box.



4 ADD DIFFUSION PANELS

Now add diffusion panels to the windows. You can use tracing paper, greaseproof or tissue paper – just cut the panels to size and tape in place. Don't worry if your handiwork isn't pretty – it won't be in your shot!



5 ADD YOUR LIGHTS

We're using a pair of flashguns, zoomed out to spread wide, but any light will do – try lamps, bedside lights or your smartphone's torch. If you aren't getting enough diffusion, add another layer of paper.



6 SET UP TRIPOD

You'll probably find it easier to put your camera on a tripod. This makes it easier to get consistent shots from the same angle, and enables you to use a slower shutter speed if your lights aren't very powerful.



I LOVE LAMP

Don't fret if you don't have two flashguns, you can simply use two electric lamps instead. As long as they have the same bulbs the lighting should be even. You may find electric lamps produce warmer light, so set your white balance by taking a photo of your white card under the lamp light, then use this to set a custom white balance in your DSLR's menu for accurate white colours.

STUNNING SUNBURSTS

THE MISSION

Shoot amazing sunburst images the easy way

TIME NEEDED

30 minutes

SKILL LEVEL

Intermediate

KIT NEEDED

Wide-angle lens

Learn how easy it is to capture cool sunburst images with Peter Travers

This is a simple yet effective photographic technique that works well whether you're shooting in daytime sunshine, or even at night! By following our easy tips you will be able to turn small light sources into beautiful light bursts. Sun light will turn into sunbursts, while street lights at night, and lights on your Christmas tree, will be transformed into starbursts. We've used the low evening sun as it shines through the trees. Winter is perfect for these shots as the sun is lower in the sky for much of the day. The key to this technique is to use a wide focal length and a narrow aperture of around f22. As you increase the aperture size on your lens, the sunburst

effect decreases. With a narrow aperture, the blades inside your lens close down to create a smaller opening. This creates light diffraction and transforms your small, bright light source – such as the sun – into a sunburst shape while you photograph it.

We've shot through a tree so its leaves and branches partially obscure the sun, helping to accentuate the effect of your narrow aperture and your sunburst. Now it's just a case of playing with your composition so the sun is hidden behind a tree's trunk, or leaves and branches. As you compose, move your camera slightly until the sun is poking out, then take your shot.

STEP BY STEP GET YOUR GEAR SET UP

Learn how these simple steps will help you turn sunlight into light bursts



AVOID BLOWN HIGHLIGHTS

Add in a bit of exposure compensation

If you were to shoot directly into the sun in the sky you'd find it near-impossible to capture the sun without the highlights being blown! So, remember to expose for the highlights. However you may find as you're shooting into the sun, although it's diffused through the trees, your camera will underexpose the image, leaving the rest of the comparatively dark scene very dark. So dial in some positive exposure compensation to fix this.



1 USE A WIDE FOCAL LENGTH

We've used an old EF 24-70mm f2.8L lens at 24mm – as a wider focal length means a larger sunburst. All lenses have aperture blades inside, and the more blades your lens has, the more light rays it produces!



2 APERTURE CONTROL

Shoot in Av mode on your DSLR so you can control the aperture of your lens. Now here's the key – use a narrow aperture of around f22! Note as you decrease the aperture, the sunburst effect.



3 INCREASE ISO

As we're shooting hand-held and with a narrow aperture, our resulting shutter speed is too slow at ISO 100, so we upped our ISO to 800 to achieve a faster shutter speed for a sharp shot.



4 DIFFUSE THE SUNLIGHT

Rather than shooting straight into the sun, we've used a tree and its leaves to diffuse the light – this means the sunlight isn't as bright, which helps balance the brightness of the overall scene for a better exposure.

PHOTOSHOP

Shoot in RAW and use Photoshop or Lightroom to boost shadowy areas afterwards for a more balanced photograph.

f16

f8

f5.6

Left
Narrow aperture

As you increase the aperture size on your lens (eg from f16 to f8 to f5.6), the sunburst effect decreases...

LOW-LEVEL VIEW



BIRDS-EYE VIEW



ON A BUDGET

If you don't have a studio lighting kit, two flashguns with softboxes attached will capture similar results like this

THE MISSION

Brighten up your still life photos with a simple home studio setup

TIME NEEDED

45 minutes

SKILL LEVEL

Intermediate

KIT NEEDED

-  Tripod with central column
-  Standard zoom lens
-  Studio lights and softboxes
-  White backdrop

STILL LIFE HOME STUDIO

Peter Travers shows you how to love shooting still-life setups with lights

We've met many readers over the years who are petrified of using lights. Don't worry, it's not as complicated as you might think. In fact, think of using lights as the best situation – as you have full control of your lighting conditions and, therefore, full control over your photos.

We're aiming to capture some still life images with really soft, gentle lighting and minimal shadows. By using Elinchrom D-Lite RX 4 flash heads with two 66cm square softboxes, we're able to create a lovely, soft light. Always remember: the bigger the light source, the softer the light. Which means less shadows and more flattering light – great for still life, as well as portrait photos.

We're shooting a 'flat lay' shot. Whether for a photo of a desktop for a commercial client, or clothes you're selling on eBay, it's a good skill to have in your arsenal. Now, carefully follow our steps for how we've set up our home studio, our tripod, which lens to use and Manual mode settings. Once you're ready, it's just a case of adjusting the light power on each head for a balanced exposure. On the D-Lites, the power goes up 1/10 stop increments, so setting 2.0 to 3.0 is one stop. Or you can simply move the lighting stands to brighten or darken your subjects, or to have a smaller or greater spread of light. We set both heads to a power setting of 2.7.

STEP BY STEP SIMPLE STILL-LIFE SHOTS

Learn how to easily set up your home studio, tripod, and DSLR and lens



TRIGGER HAPPY!

Have flexibility and don't get tangled in wires

We're using wireless triggers attached on top of our Canon 6D Mk II's hotshoe. Thankfully wired triggers are a thing of the past, and using wireless triggers offer more freedom of movement and better compositions, while triggering your lights remotely.



1 FLAT-WHITE BACKDROP

We simply used a 1.37m Lastolite Super White paper backdrop and rolled it out on our kitchen floor, and positioned both softboxes fairly close and three-quarters overhead for equal lighting across the frame.



2 VERSATILE TRIPOD

We're setting up a 'flat lay' photo, which is shooting straight down on top of our still-life subject; in our case, a peacock china set. We've used a Manfrotto tripod with extendable central column to compose.



3 LENS SETUP

We used our versatile 24-70mm lens so we can capture wide and tighter shots with the twist of the zoom. For the straight-down view, we zoomed into to 55mm to ensure the tripod legs didn't appear in shot.



4 CREATIVE COMPOSITIONS

When using flash lights, you'll need to use Manual mode to control both aperture and shutter speed. For enough depth of field we shot at f13, 1/160 sec, ISO 100, then we set our flash heads to 2.7 power.

Left
Flat lay
Photographing still life images from above can help you make something more creative and unique



THE MISSION

Become comfortable taking strangers portraits on the streets

TIME NEEDED

One hour

SKILL LEVEL

Intermediate

KIT NEEDED

☛ Fast prime lens

STREET PORTRAIT FUN

Do you want to take street portraits, but are too afraid to approach people? James Artaius has come up with an entertaining game to make it easier

Everyone who loves street photography knows the feeling: you see someone with a great face or a funky outfit and you'd love to take their portrait, but you can't summon the courage to ask.

The fear of being told "no" is enough to put anyone off asking for a picture. Here's the funny thing, though: when you approach people in the street, you find that far more of them actually say "yes". In fact, so many say "yes" that it's actually harder to find people who say "no".

So try playing our game, Just Say No. The rules are simple: instead of trying to find people to agree to have their picture taken, the aim is to find people who turn you down.

The game is only over when you've successfully asked five people who said "no"... by which time you'll have dozens of shots of all the kind folks that have said "yes" to you.

This will show you just how willing people are to have their picture taken, and give you the confidence to approach strangers because you want them to say no – so being turned down won't make you nervous! Try playing with a friend and see who's the first to get five "no"s – we're pretty sure you'll be shooting all day.

So go out and ask to take people's pictures. You'll find that they don't "just say no" – more often than not, they say yes!

QUICK TIP

Look for colourful characters! Not only do they make better photos but, mostly, they're likely to say yes to a cheeky picture.





STREET WISE SUCCESSFUL PORTRAIT SHOOTING

Get great looking street portraits while still making your subjects feel comfortable

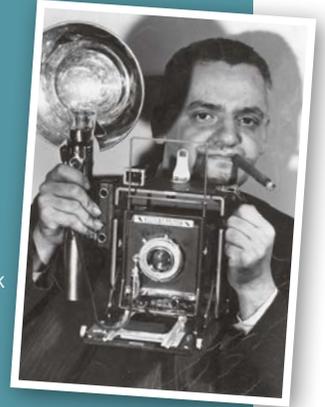


F8 AND BE THERE?

Quick-fire street portraits are more about capturing the moment than technical accuracy. Legendary New York street photographer Arthur 'Weegee' Fellig coined the mantra, "f8 and be there," which is as true today as it was in the 1930s.

Shooting at f/8 offers enough depth of field to hide focusing errors, while still enabling fast enough shutter speeds to avoid camera shake or blur.

The tendency can be to rush your pictures, since you've already bothered somebody enough by asking them to stop for a photo. However, it's definitely worth spending a few extra seconds to dial in your settings and get the shot you want – shooting with a wider aperture to melt the background will make your portraits stand-out.



1 KEEP IT NATURAL

Don't try to overpose the subject – just tell them to be themselves. If they want to pose or pull a face, great! Make them comfortable and work with what they give you.



2 SHOW THE RESULT

Don't just take your photograph and run away – show your subject what you've shot! Sometimes this will even encourage them to ask you to take another.



3 SHARE YOUR SHOTS

Whether you give them a business card, your email or your Instagram handle, offer a way for your subject to contact you so that you can share the photograph with them.

PERFECT FOCAL LENGTH?

Pick a dedicated portrait lens for the best results

While a zoom lens is often more practical, if you're shooting street portraits then we recommend an 85mm prime lens, a lens with a fast aperture will isolate your subjects from their backgrounds. We shot wide open at f1.8, and even in low light indoors, shutter speeds were 1/80 sec or faster, to overcome camera shake and blurry shots. You can also opt for a 50mm lens, as it's a solid all-round street shooter and a capable lens, particularly if you want to include more of their surroundings.





CREATING BOUNDS OF COLOURFUL OILY ART

THE MISSION

Create vibrant abstract art by utilising reflections in oil and water

TIME NEEDED

One hour

SKILL LEVEL

Intermediate

KIT NEEDED

- Flash or strong lamp
- Light stand
- Macro lens and tripod (optional)

James Paterson demonstrates how to shoot incredible abstract patterns by combining cooking oil, water and reflected light

As the saying goes, oil and water don't mix – but they can combine to create striking visuals. With just a few simple household items, a flash (or powerful lamp) and the right camera settings we can create bold and ultra vibrant abstracts.

The key here is customising our light source. By placing a colourful material in front of the light we can transform it into our own personally modified light box. This light will then be reflected in the oil and the water to create our very own oily abstract art.

Each and every little circular bubble and drop of oil is highly reflective, so at the right angle they reflect the light from our source towards the camera. The result is a seemingly endless array of bubbles – some on the

surface of the water, others drifting in the depths below – and each containing the shapes and colours of our light source in a rather miniature form.

We've used a colourful Union Jack flag for our oily reflection here, but you could use any semi-translucent material. Or if you like arts and craft you could fashion your own with cardboard, scissors and tracing paper or coloured acetate. Any bold shape will do, but it adds to the effect if the colours and shapes are familiar, recognisable and bold.

A small studio soft box lights our oil and water here, but if you don't have this kind of gear you can get similar results with all kinds of light-emitting devices, even a monitor or tablet screen.

THE SET-UP

OILY ABSTRACT PHOTOS

Discover how to light and capture colourful reflections in oil and water

1 ILLUMINATING LIGHT TEMPLATE

The key here is customising the light by placing a colourful material or template over the top. Any shape, pattern or colour will do – we used a Union Jack. When light is shined through the material, it results in vibrant reflections on the water and oil.

2 LIGHT SOURCE

We've used a studio flash and softbox. It's ideal as the modelling light lets us see the reflection and the flash gives us light. If you don't have one you could create a lightbox by shining a lamp through one side of a box, with your template fitted opposite.

3 WATER TRAY

A wide shallow container such as a baking tray is ideal for holding the water. Use a tray that's black and non-reflective. Fill it with water – this is usually best done by topping it up from a separate container once the tray is in place.



4 OIL

Any type of cooking oil will work for this, as long as it's clear. We add a few drops to our tray of water. After a while the oil may clump together, so give it a swirl. You may also want to refill the tray with fresh water now and then if the surface gets too slick.

5 MACRO LENS

A macro lens like this enables us to get up very close to the surface of the water. If you don't have one that's okay. Any lens that lets you zoom in close with a reasonably short minimum focusing distance will work.

6 ADJUSTABLE LIGHT STAND

An adjustable light stand is handy as we need to match the height of the light with that of the camera in order to find the right angle to see the reflections on the water; adjustable stand gives us the freedom to try out low and high camera angles.



STEP BY STEP SWIRL AND SHOOT

Use your camera and a few everyday items to make abstract art



RIPPLES IN THE WATER

Create more movement on the surface

If you like you can try adding ripples and drops to the water. Simply place a spoon or similar utensil in the water and focus on the base of it. Lift it out of the water, being careful to hold it directly above the focus point. Then capture the brief moment as drops fall from the spoon and hit the water. A tripod comes in handy here as it frees your hands to focus the lens and hold the spoon.



1 MAKE A TEMPLATE

Begin by making a template out of cardboard that'll fit over your light source. We cut a piece of cardboard to fit over our softbox, making sure the only visible light was shining through the flag. Be careful not to leave the cardboard over the light source if it gets hot.



2 CHOOSE A SHAPE

Choose a colourful shape like our Union Jack here. You could use any semi-translucent material or shape that creates a colourful reflection when light is shined through. A thin flag is ideal, but you probably have other materials that would work equally well.



3 POUR THE OIL

Once the light is covered with our template, we can place the tray of water in front and fill it with oil. As soon as the oil hits the water it forms tiny circles, each reflecting the light source to create a load of bubbles. Be ready with your camera to start shooting quickly.



2 MATCH THE ANGLES

Position the camera directly opposite the light source and at a similar height so as to pick up the colourful array of reflections. At the correct angle, we can capture both the reflections on the surface of the water, and those in the minuscule bubbles of oil.

ESSENTIAL SKILLS OFF-CAMERA FLASH

Use your camera and a few everyday items to make abstract art...



A single studio flash head is the ideal light source for this project. The flash enables us to use a low ISO and high f-number for maximum quality and increased depth of field. We set up the light and use a sync cable or wireless release to trigger it.



It's best to use Manual mode for exposure with studio flash. A good stock setting for flash indoors is to set shutter speed to 1/200 sec, aperture to f11 and the ISO to 100. Then we can tweak the strength of the light to suit our exposure.



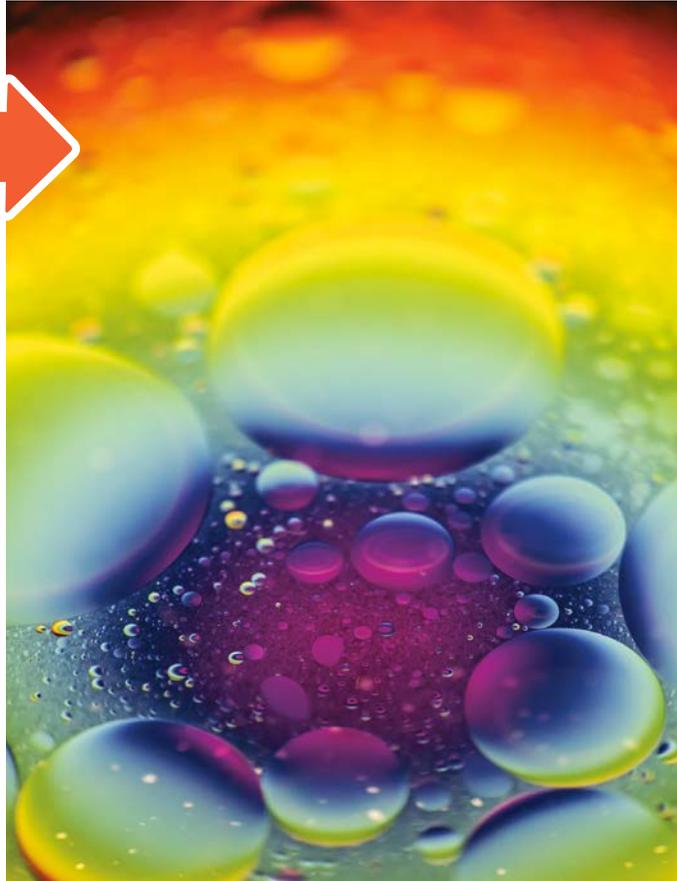
SET UP 1 OILY ABSTRACTS

SHAPE A TEMPLATE

You can use all kinds of light sources for this, even a monitor or tablet screen. We positioned the oil and water in front of a monitor then made a simple circular gradient in Photoshop. Of course, even with brightness turned to the max a monitor screen isn't nearly as powerful as a flash so we need a high ISO and a wide aperture. But be sure to wait until the water is still, and use a self timer, or a remote shutter release, so as not to disturb the camera when pressing the shutter button.

KIT NEEDED: DSLR, oil and water, monitor or other digital screen, tripod

EXPOSURE: 1/8 sec, f5, ISO 4000



OPTIMUM DEPTH OF FIELD AND SHARPNESS

Whenever we photograph things that are close to the camera our plane of focus becomes very narrow – perhaps only extending to a few centimetres across. We can expand our depth of field by choosing a narrow aperture – the narrower the aperture and higher the f-number, the greater the depth of field. We used f11 here, which is a good mid-range aperture for macro photography. Most lenses have a sweet spot. It's usually a couple of stops from the widest aperture – around f8 to f11 on most lenses.



SET UP 2 OILY ABSTRACTS

SHAPE A TEMPLATE

You can use all kinds of light sources for this, even a monitor or tablet screen. We positioned the oil and water in front of a monitor then made a simple circular gradient in Photoshop. Of course, even with brightness turned to the max a monitor screen isn't nearly as powerful as a flash so we need a high ISO and a wide aperture. But be sure to wait until the water is still, and use a self timer, or a remote shutter release, so as not to disturb the camera when pressing the shutter button.

KIT NEEDED: DSLR, flash, cardboard, scissors, tape

EXPOSURE: 1/200 sec, f11, ISO100





THE MISSION

Learn how to take great architectural interiors with a wide lens and high ISO settings

TIME NEEDED

30 minutes

SKILL LEVEL

Intermediate

KIT NEEDED

- Interesting building interiors
- Ultra wide-angle lens

ARTISTIC INTERIORS

“Capture great interior images without flash or a tripod,” says Peter Travers

Interesting buildings and architecture in your local city can make great photographic subjects – as long as the weather is good, the light is in right place, and you can include the whole building in shot. But it’s easy to overlook the insides of these buildings for great photo ops! For our main image, we recently captured abstract viewpoints in the Gaudí designed Casa Batlló, in Barcelona. The key to the success of these images, is to learn to look for striking interior shots inside inspirational buildings, like the Bristol Central Library (insets), where we shot the archways and supports, and straight up to the blue, symmetrical ceiling.

For interiors, you need a wide lens to work with in confined spaces. Using an ultra wide-angle lens, we’re aiming to show the size and shape of the interiors. Canon’s top-end EF 16-35mm f2.8L is ideal for full-frame cameras like the 6D Mk II we’re using, offering L-series build and image quality. For APS-C crop-sensor cameras, like the 800D or 7D Mk II, you’ll need an ultra-wide angle lens such as Sigma’s 10-20mm, giving you an equivalent of 16mm. At 16mm, we can use a wide aperture of f5.6 and still capture good DoF. This is helped by the fact the library atrium isn’t as deep in the field of view compared to a landscape from foreground to horizon.

STEP BY STEP HOW TO TAKE CREATIVE INTERIORS

Set up your DSLR for low-light interiors and work on your compositions



BRACKETING IN BURSTS

Merge exposures to ensure a good range of tones

We simply shot one Raw image for each composition, and then boosted the shadows and darkened the highlights in Adobe Camera Raw for an image with a good range of tones. However, you can also bracket your exposures and merge them together for an HDR image. For bracketing when shooting handheld, switch your DSLR to continuous drive mode to take three exposures in quick succession, making it easier to merge them together in Photoshop later.



1 NO FLASH OR TRIPOD ALLOWED?

Interiors can be fairly dark, and you may find you’re not allowed to use flash or tripods inside. This is when your DSLR’s low-light, high-ISO performance will shine so you can confidently shoot handheld.



2 DSLR MANUAL MODE

Set your DSLR to Manual mode. For our exposure in the library atrium, we set an aperture of f5.6, and at ISO 1600, we could also shoot handheld with shutter speeds of around 1/50 sec for sharp shots.



3 GOOD DEPTH OF FIELD

Using a wide-angle focal length around 16mm on a full-frame camera, we can obtain good depth of field even at a wide aperture of f5.6 for detailed interior images so the whole scene is acceptably sharp.

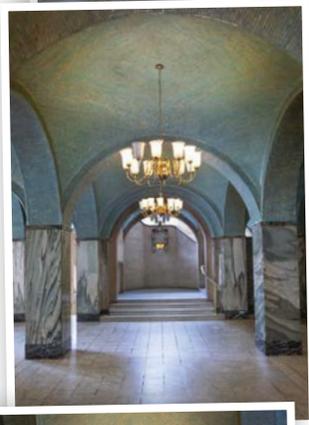


4 CREATIVE COMPOSITIONS

Now it’s all down to creatively composing. Look for interesting elements, rather than shooting the whole place. In Casa Batlló and Bristol Central Library, we shot straight up for artistic viewpoints of the ceilings.

LOOK UP!

As well as taking wide interior views horizontally, also shoot vertically, and make sure that you look up to shoot the ceilings as well.



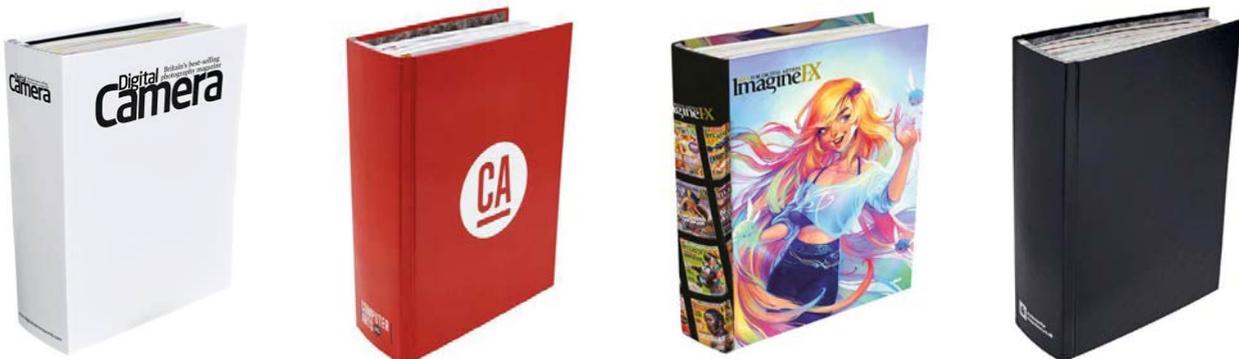
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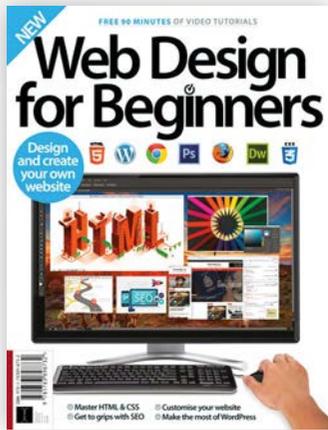


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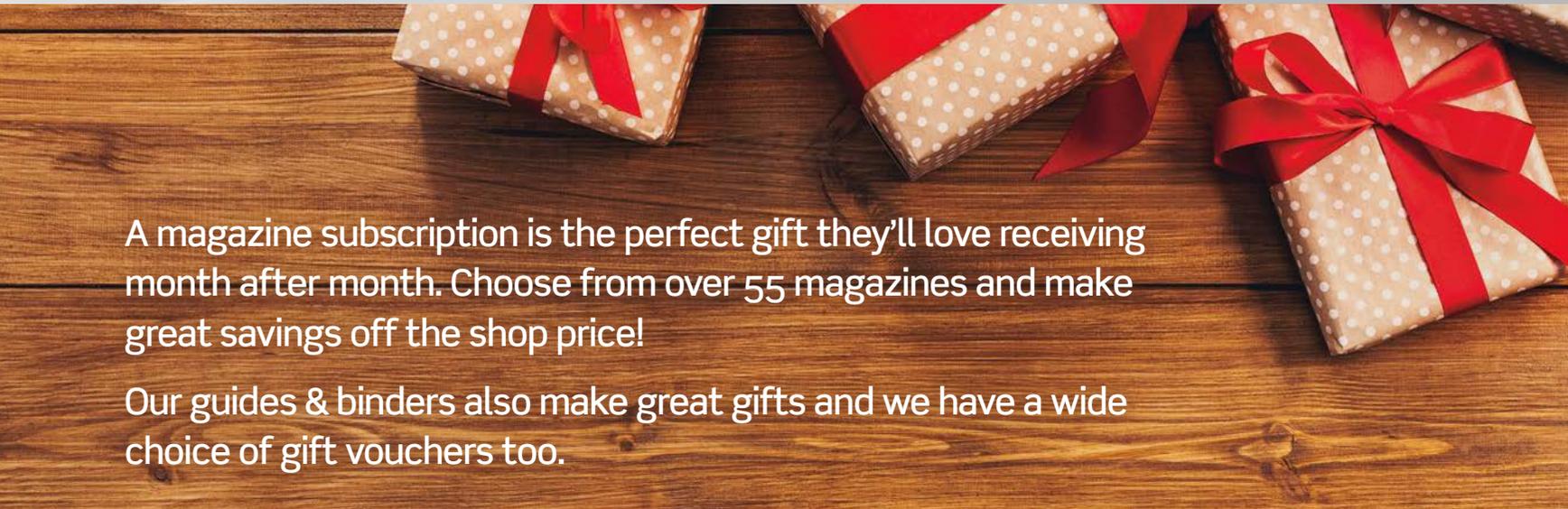
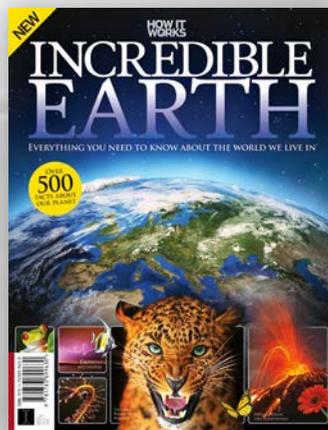
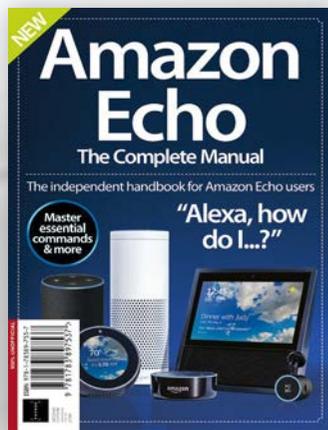
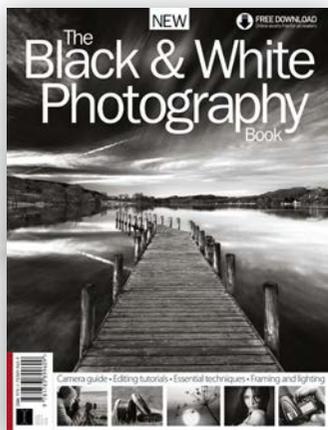


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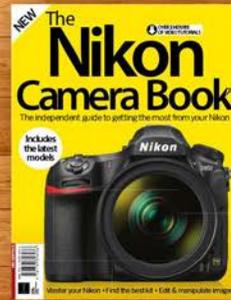
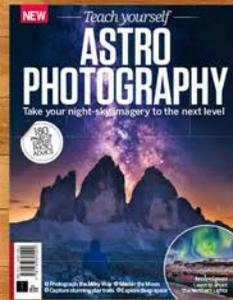
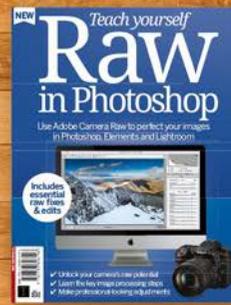
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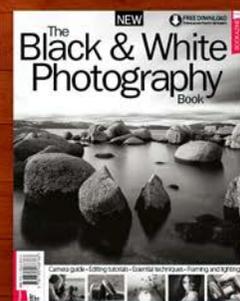
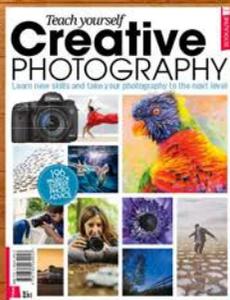


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