

# Dictionary of Photographic Terms

The ultimate dictionary to photographic terms, jargon, abbreviations and acronyms



There is a lot of jargon in photography. With a history stretching back almost 200 years, the dictionary of photographic terms has grown enormously. From the letters found on lenses, through the names of obscure lighting accessories, in the glossary below you will find a full A to Z of what these terms mean.

## 1-9

---

### **360 Camera**

A camera with two back-to-back 180+ degree fisheye lenses that can capture a full spherical view of the world around the camera.

### **4K Video**

Video with a horizontal resolution of around 4,000 pixels, including 4K UHD (3,840 pixels wide) and C4K (4,096 pixels wide).

### **5G**

5G simply means the fifth generation of standards for mobile networks. Using higher frequencies with much shorter wavelengths than 4G, 5G networks can far exceed fibre-optic networks, but wirelessly.

### **8K**

8K video is a high-resolution video standard for video with a horizontal resolution of around 8,000 pixels. It doubles the horizontal and vertical resolution of 4K video and is to 4K what 4K is to full HD.

### **10-bit Video**

Most video in consumer cameras uses 8-bit capture (just as JPEG images from cameras are 8-bit), but more advanced video cameras may offer 10-bit capture, which gives more editing leeway later on in post-production.

## A

---

### **Aberration**

An optical fault in a lens that creates a less-than-perfect image.

### **Abstract**

In photography, this term refers to images that concentrate on aspects of a subject such as shape, form, colour and texture, instead of a straightforward representation of a subject.

### **Adjustment Layer**

This is a layer containing an image adjustment or effect instead of image content. Like a red Cellophane overlay on a print, an adjustment layer will alter the appearance of layers below it, but not actually alter their content, making adjustment layers a cornerstone of reversible, 'non-destructive' editing. The adjustment can be altered, hidden or removed at any point. When you add an adjustment layer, a mask is also automatically created, so that the effect can be applied to a lesser extent (or not at all) in particular areas of the image.

### **Adobe Camera Raw**

A plugin included with Photoshop and Photoshop Elements that enables users to process and edit raw files. Adobe Camera Raw is frequently updated to support the newest camera models.

### **AE**

An abbreviation for automatic exposure. This camera feature enables the user to determine the shutter speed and aperture for an image, usually via a TTL (through-the-lens) exposure meter.

### **AEL**

Automatic exposure lock. This is a push-button control that enables you to select the part of the scene from which the camera takes its meter reading, and then lock this setting while the image is re-framed for better composition. The button can also be used for focusing.

### **AF**

Stands for autofocus, a function first introduced on cameras in the late 1970s, in which the lens is adjusted automatically to bring the designated part of the image into sharp focus. Many modern lenses for digital SLRs and mirrorless cameras have AF, which is achieved via one or more sensors and a motor either integrated in the lens itself or the camera body.

### **AF Illuminator**

This is a system used by some cameras and flashguns to assist autofocus operation in poor light. A pattern of red light is projected on to the subject, which aids the contrast-detection autofocus to adjust the lens correctly.

### **AI**

AI stands for Artificial Intelligence, 'deep learning' or 'machine learning' computer technology that can be used for everything from camera control and automation to 'intelligent' photo editing.

### **Ambient Light**

The existing light in a particular scene, which may be sunlight, moonlight or an artificial light already providing illumination. It excludes any light source added by the photographer, such as flash or studio lighting.

### **Anamorphic Lens**

A lens which squashes a scene horizontally to fit in the sensor area so that the image can be opened out again later to capture a scene much wider than the sensor could do normally. Anamorphic lenses were used widely in filmmaking and are making a comeback in the digital era.

### **Angle of View**

A measurement of how much a lens can see of a scene from a particular position, usually measured in degrees. The longer the focal length of the lens, the narrower the angle of view. Zoom lenses have adjustable angles of view.

### **Anti-aliasing**

A method of smoothing diagonal or curved lines in digital images to avoid a 'staircase' or 'stepped' appearance (also called 'jaggies'), caused by the fact that the pixels making up an image are discrete blocks of colour.

## **Aperture**

The opening in the lens that restricts how much light reaches the image sensor. In all but the most basic cameras, the size of the aperture is adjustable. The aperture setting used has an important role to play in both exposure and depth of field.

## **Aperture Priority**

Semi-automatic exposure system, where the aperture is set by the photographer. The shutter speed is then set by the camera to suit the light level reading taken by the camera's own meter.

## **APS-C**

This refers to the size of sensor used in some digital cameras, measuring around 22.5x15mm, and with a 3:2 aspect ratio. It gets its name and dimensions from the defunct APS (Advanced Photo System) film format, used in its Classic (C) aspect ratio.

## **Arca-Swiss plate**

A quick-release system adopted by many tripod heads, that allows L-mounts and tripod plates to be used on tripods made by a wide variety of manufacturers. The system is not quite universal though, as some makers stick to their own plate designs that are not cross-compatible.

## **Aspect Ratio**

The relationship between the width and height of a picture, which describe the proportions of an image format or a photograph. The aspect ratio of most D-SLRs is 3:2, while on most other digital cameras, it's 4:3.

## **Aspherical Lens**

A lens element that has a surface that isn't perfectly spherical. All camera lenses are made up of a number of individual lenses or elements. Many of these elements are spherical, as if cut from a sphere. Aspherical elements are less rounded and are used in wide-angle and wide-apertured lenses to help provide distortion-free images.

## **Astrophotography**

Photography achieved by attaching a camera to a telescope, and concerned with recording images of astronomical objects in the night sky such as stars, planets, comets, and the moon.

Astrophotography can also be used to record astronomical objects invisible to the human eye by using long exposures.

## **Auto-bracketing**

A feature on some cameras that enables you to automatically shoot a sequence of shots of the same scene at slightly different shutter speeds (or aperture settings) from the 'correct exposure'. This feature can be used if there's some doubt that the meter reading is accurate for a particular subject. It can also be used to shoot a sequence that's combined into one high dynamic range image. See HDR. Other autobracketing features available on some cameras include automatic flash, ISO or white balance bracketing.

## **Autochrome**

The name of the first colour photography process, invented by French brothers Auguste and Louis Lumière, and patented in 1903. A glass plate was coated in microscopic grains of potato starch, coloured red, green and blue, overlaid with a black-and-white silver halide emulsion.

## **AWB**

Automatic white balance. This is a system that automatically adjusts the colour balance of an image, according to the colour temperature of the light source, to make it look as natural as possible to the human eye.

## **B**

---

### **B (Bulb)**

A shutter speed setting that enables you to keep the shutter open for as long as the shutter release is held down, usually with a remote release. It's used for long exposures of up to several minutes.

### **Back Lighting**

An image is backlit when the light source is on the far side of the subject in relation to the camera. It means that there's more light coming from behind the subject than is directly on the subject itself. It's often used to separate the subject from the background to make a subject more dramatic, or to make a silhouette or rim-lighting effect.

### **Backup**

A copy of a digital file that's kept in case of damage to, or loss of, the original digital image.

### **Ball Head**

A type of tripod head in which the head mount, which holds the camera, is attached to a ball-and-socket joint. When the socket is tightened using the ball lock knob, it locks the head in place.

### **Barn Doors**

Four hinged doors fixed on the front of studio lights. The doors are used to modify the shape and direction of the light.

### **Barrel Distortion**

Barrel distortion is a lens fault or aberration that causes straight, parallel lines in an image to bow outward, and is seen when shooting with wide-angle lenses. The wider the lens, the greater the distortion. The appearance is similar to the effect you'd see if an image was wrapped around a barrel. It can be corrected using post-capture software.

### **Beauty Dish**

A studio lighting device used to give a flattering effect in portrait and fashion photography. It consists of a large circular dish-shaped reflector, usually around 40-50cm in diameter, with a light source in the centre. The light usually has an opaque cover so that only the diffused light reflected from the dish reaches the subject.

### **Bellows**

A conical tube made of flexible, light-proof material that separates a lens from the camera body. Bellows were first used on very early cameras in the mid-19th century, and are still used on large-format equipment today. They allow the plane of focus to be adjusted via a swing and tilt mechanism. Bellows are also used instead of extension rings on SLR cameras for making more finely adjustable macro images.

### **Bit**

The basic unit from which any digital piece of data is made. Each bit has a value of either 0 or 1. The sizes of digital files are usually counted in bytes, which are each made up of eight bits.

### **Bit Depth**

The number of bits used to record the colour of a single pixel. Digital cameras usually use at least eight bits for each of the red, green, and blue channels, providing a 24-bit depth, and a possible 16,700,000 colours. Many digital SLRs offer higher bit depths when set to record in the raw shooting mode.

**Bit Rate**

The speed at which data is captured during video recording and a rough but useful guide to the quality of the captured footage. High bitrates need more powerful cameras and more storage capacity, but produce better quality video with fewer compression artefacts.

**Blending Mode**

Blending modes determine how the pixels in a layer interact with the underlying pixels on other layers instead of simply covering them. Some blending modes are much more useful for photo editing than others. Multiply is used to darken an image, and Screen to lighten it; Overlay and Soft Light boost contrast.

**Blown out**

Bright areas in a photo that are over-exposed are said to be blown out. They don't hold any detail and will be bleached white.

**Bokeh**

Derived from the Japanese word for 'blur', this term is used to describe the aesthetic quality of the blur in out-of-focus areas of a picture, or the lens creating them. Smooth, circular out-of-focus highlights are a feature of 'good bokeh.'

**Bounce Flash**

Indirect flash-lighting technique, where the flashgun is angled to bounce off a wall, ceiling, or other reflector. This scatters the illumination, creating a softer lighting effect.

**Bounding Box**

In Photoshop, a rectangular border around a selected part of an image that can be dragged to transform, rotate, scale or move a picture element.

**Bracketing**

A system for increasing the chances of getting the correct exposure by taking a sequence of pictures with a slightly different exposure setting for each. See auto-bracketing.

**Bridge Camera**

A camera that is claimed to bridge the gap between compacts and DSLRs. They are similar in appearance and handling to small DSLRs, but they have a fixed, usually 'superzoom' lens, with some models offering up to a 125x optical zoom. Instead of a DSLR's optical viewfinder, they have an electronic viewfinder.

**Brightness Range**

This is the difference between the brightness of the brightest part of the subject and the brightness of the darkest part of the subject. Also known as Subject Brightness Range (SBR).

**BSI**

Stands for Back Side Illuminated. Technology used on modern camera sensors where the circuitry is positioned to deliver higher sensitivity, less noise and better all-round image quality.

**Buffer**

Temporary memory used by a digital SLR or mirrorless camera. The size of the buffer in a camera helps dictate the maximum burst rate, and the number of shots per burst. In general, the bigger the buffer, the longer the burst.

**Burn Tool**

A tool that can be used to darken parts of an image selectively during digital image manipulation. The tool gets its name (and its hand-shaped icon) from 'burning-in', a traditional darkroom process in which parts of a print could be made darker by giving some areas of a print more exposure than others. Also, see Dodge tool.

**Burst Rate**

The continuous shooting speed of a digital camera, which enables a sequence of images to be taken in rapid succession, measured in frames per second (fps). The rate can only be sustained for a certain number of shots.

**Butterfly Lighting**

A technique for lighting portraits achieved by pointing the flash down towards the front of the face and creating a distinctive butterfly-shaped shadow under the nose. A reflector is used to soften the shadow. This technique is also known as 'Paramount lighting' after the movie studio's glamorous portraits from the 1930s.

**Byte**

The standard unit for measuring the memory capacity of digital storage devices. Each byte can have one of 256 different values, and is equal to eight bits.

**C**

---

**Cable release**

A mechanical or electronic device for firing a camera from a short distance away, without physically pressing the shutter release. It's often used as a way to minimise vibration when using a slow shutter speed and a camera support, such as a tripod.

**Calibrator**

A device used to standardize the colour and brightness of a computer monitor so that images can be accurately adjusted.

**Camera Shake**

Blurring of the image caused by movement of the camera during the exposure. Handheld cameras are prone to camera shake, and the fastest available shutter speed needs to be used to reduce or eliminate the problem.

**Camera Trap**

A remotely activated camera used for documenting the behaviour of wild animals in a natural environment without the photographer being present. The camera's shutter is usually triggered when an animal's movement is detected by an infrared or motion sensor.

**Canvas**

A Photoshop term for the overall dimensions of the image file you are using. Like the canvas used for a painting, the Canvas may be the same size as the actual size of the picture, or it may be larger.

**Canvas Size**

The Canvas Size control enables you to increase the size of the canvas without affecting the pixels that make up the image itself. It can be used to add a border to a photo, for example, or to add a blank area into which more sky can be cloned.

**Catch Light**

A white highlight in the eye of the subject, which is a reflection of the light source. The shape, size and intensity of the highlight, as well as the number of highlights, will vary depending on the lighting setup.

**CCD (Charge Coupled Device)**

A type of imaging sensor commonly used in digital cameras, and an alternative to the CMOS sensor. See CMOS.

**Centre-weighted**

A type of built-in light metering system, provided as an option on some cameras. Centre-weighted meters measure light intensity across the entire image area, but bias the average in favour of light measured towards the centre of the frame. The system isn't foolproof; it's easier to predict when it will make an inappropriate reading than more sophisticated metering systems.

**CF Express**

A memory card format designed for speed, capacity and robustness and now used widely on cameras design for sports photography and professional video capture.

**Channel Mixer**

A feature in Photoshop that enables you to adjust the red, green and blue channels to increase or decrease colour saturation, or to convert an image to monochrome.

**Chromatic Aberration**

A lens fault common in telephoto lenses in which different colours of white light are focused at slightly different distances, creating ugly coloured haloes around the edges of a photographic subject. Software can remove or reduce the effect.

**Clipping**

Clipping occurs when the dark parts of an image become pure black or the light parts become pure white, so that image detail is lost in these areas. On a histogram, a clipped shadow or highlight is indicated by the graph being 'cut off' on the left-hand (shadows) or right-hand (highlights) side.

**Clone Stamp**

An image-editing tool that enables you to replace an area of the image with pixels taken from elsewhere in the image (or even another image). It's commonly used for removing blemishes and other unwanted objects from a picture.

**Close-up Lens**

A filter-like accessory that fits on the front of the camera lens to magnify the image. This low-cost and lightweight macro accessory can be used on most types of cameras and lenses. Close-up lenses come in a variety of different strengths, usually measured in dioptres.

**CMOS (Complementary Metal Oxide Semiconductor)**

This is a type of imaging sensor used in digital cameras. Located at the focal plane, it converts the focused image into an electrical signal. It's similar in function to the CCD sensor.

**CMYK**

Cyan, magenta, yellow and black (or 'key'), the four primary inks used in commercial colour printing. CMYK also refers to the printing process itself.

**Colour channels**

Every colour you see on a screen is created by a specific mix of red, green and blue light, and every printed colour by a specific formula of ink colours. In Photoshop, the component colours can be represented and seen as separate colour channels – RGB for most digital photos.

**Colour Filter Array (CFA)**

The pattern for red, green, and blue filters used over the photo sites in an imaging sensor. Usually, half the photo sites in a digital camera (which define pixels) have green filters, a quarter have red filters, and quarter have blue filters.

## **Colour Management**

An overall system that tries to ensure that the colours of an image are displayed and output in exactly the same way, whatever the device being used.

## **Colour Profile**

Description of how a camera, printer, monitor or other device displays or records colour. It provides a universal way in which different devices can produce similar-looking results. This is sometimes known as an ICC profile, because the standards are set down by the ICC (International Colour Consortium).

## **Colour temperature**

All light sources have a characteristic colour temperature: artificial (tungsten-filament) lights are warmer (more orange) than daylight, which is warm near dawn, turns cooler (more blue) during the day, then warms again at nightfall. Our eyes adjust for colour temperature much of the time without our realizing it, so that colour look pretty consistent. Digital cameras can make electronic adjustments using a white balance system to neutralize colours. When they get it wrong (or you use the wrong white balance setting on your camera), a colour cast results.

## **Complementary Colours**

Also known as 'opposite colours', these are pairs of colours that create a strong contrast. On the traditional colour wheel, they are red/green, yellow/violet and blue/orange, while the CMYK and RGB models use red/cyan, green/magenta and blue/yellow.

## **Compression**

The process of reducing the sizes of files such as digital images, so that they use less storage capacity and are faster to upload and download. See lossless compression and lossy compression.

## **Contact print/sheet**

Contact prints are photographic images made by laying one or more film negatives on a sheet of photographic paper, usually under a sheet of glass, and exposing it to light. In the traditional wet darkroom, a contact sheet is usually the first stage of printing an image.

## **Continuous Autofocus**

This is an autofocus setting in which the focus is constantly adjusted until the shutter is actually fired. It's especially useful for moving subjects such as in wildlife or sports/action photography, where it would be unhelpful for the focus distance to be locked as soon as it's initially found.

## **Continuous Lighting**

Lighting that remains on throughout a photo shoot, as opposed to the brief burst of illumination given by flash or strobe lighting.

## **Contrast Range**

A measurement of the difference in brightness between the very darkest and lightest parts of an image. See brightness range.

## **Converging Verticals**

A term used to describe the effect of parallel lines getting closer together, particularly the two sides of a building, or a section of a building, when shooting from a low angle of view. The phenomena occurs when the camera is tilted up or down to fit the entire building in the picture.

## **Crop Factor**

Sensors of several different sizes are used in digital SLRs, and this size affects the angle of view offered by a particular lens. The smaller the sensor, the narrower the angle of view. The 'crop factor' is to convert the actual focal length of a lens to the effective focal length. The crop factor for Micro



Four Thirds models is 2x; the crop factor for most popular digital SLRs (DX and APS-C) is 1.5x or 1.6x. Full-frame digital SLRs need no focal length conversion, so they have a crop factor of 1x.

### **CSC (Compact System Camera)**

These are cameras with no mirror mechanism, and are therefore smaller and lighter than D-SLRs, but still offer similar controls, high-quality images and interchangeable lenses. Depending on the model, there's either an electronic viewfinder or no viewfinder and only the LCD screen. CSCs are also referred to as mirrorless cameras.

### **Curves**

This powerful Photoshop feature enables you to adjust the exposure and contrast of an image. By altering the shape of the curve, different areas of tone can be lightened or darkened by varying amounts. By altering the curves for each of the different colour channels, the colour balance of the image can also be altered to create special effects, or simply to correct for unwanted colour casts. Elements' version of Curves, called Adjust Colour Curves, is more limited than Photoshop's Curves.

## **D**

---

### **Depth of Field**

A measure of how much of a picture is in focus, from the nearest point in the scene to the camera that looks sharp, to the furthestmost point that looks sharp. Depth of field is dependent on the aperture used, the distance that the lens is focused at, and the focal length of the lens.

### **Depth of Field Preview**

A device, usually a button, found on some digital SLRs that enables you to see the viewfinder image at the actual aperture you'll be using for the exposure. This gives a visual indication as to how much depth of field there is, and which parts of the resulting picture will be sharp or blurred. This is necessary because the viewfinder normally only shows the image as it would appear if the widest aperture available were used.

### **Depth of Field Scale**

A scale found on some lens barrels that can be used to work out the depth of field for particular apertures, and that can be used for manual focus adjustments to maximize or minimize the depth of field.

### **Depth Program**

A program exposure mode in which the aperture and shutter speed are set automatically in order to provide the maximum depth of field, while maintaining a shutter speed that's fast enough for hand-held photography. With some cameras, the different subject distances measured by the multipoint autofocus system are also taken into account, and the focus is adjusted to suit.

### **Diaphragm**

Another term for the aperture. These are the adjustable blades that regulate how much light enters the lens and reaches the sensor.

### **Differential Focusing**

Controlling depth of field to ensure that one element in the picture is sharp, while others are as out of focus as possible.

### **Diffraction**

Scattering of light caused by deflection at the edges of an opaque object. Diffraction causes slight fuzziness in the image when the narrowest apertures are used.

### **Diffuser**

Any material that scatters the light as it passes through it, softening the illumination and making shadows less distinct. Diffusers are commonly used with artificial light sources such as strobes and flashguns. On sunny days, clouds act as natural diffusers.

### **Dioptre**

Optical measurement used to describe the light-bending power of a lens. The dioptre value of a lens is equal to the number of times that its focal length will divide into 1000mm. Dioptres are used to measure the magnification of close-up lenses, and of viewfinder lenses.

### **Dioptric correction**

The facility provided on some digital cameras for adjusting the viewfinder to suit the user's eyesight. Limited adjustment is built-in, and some cameras permit further modification with the use of additional dioptre lenses.

### **DNG (Digital Negative)**

DNG is a raw file format invented by Adobe and used by some camera manufacturers. An advantage of DNG is that, unlike other raw formats, it isn't specific to just one camera manufacturer or model, and it isn't just a read-only format – you can save your files in DNG format too. A free DNG converter application available from Adobe enables you to convert any raw file into a DNG.

### **Dodge Tool**

A way of lightening selected areas of the image during digital manipulation. The tool gets its name (and its spoon-shaped icon) from the traditional darkroom technique of 'dodging', where parts of a print are shielded from exposure and therefore given less light than other parts. See also Burn tool.

### **Doughnuts**

The name given to the ring-shaped bokeh created by the unique construction of a mirror lens.

### **DPI**

Dots per inch. Strictly speaking, a measure of the density of dots of ink that a printer lays down on paper. Compare image resolution (density of pixels) of a print or on-screen image at a certain size, measured in pixels per inch.

### **Duotone**

A duotone image is one made from two inks (usually black and another colour), and is often used in printed books to increase the tonal range of an image. It's also used by some fine-art photographers to add subtle colour to black-and-white photographs. A similar appearance can be achieved in Photoshop by converting a colour image to greyscale, then choosing Image>Mode>Duotone.

### **Dynamic Range**

A term used to describe the range between the lightest and darkest points in a photograph. The range that can be recorded by a digital camera is relatively small compared with the range that the human eye can perceive.

## **E**

---

### **EFL (effective focal length)**

A measure for comparing the angle of view and magnification of different lenses and lens settings, whatever the size of imaging chip being used. The actual focal length is converted to the equivalent focal length that would give the same angle of view on a camera using 35mm.

### **Element**

An individual optical lens. Most photographic lenses are constructed using a number of lens elements, placed parallel to each other along a single axis. Some are placed together in groups.

**EV (exposure value)**

The scale used to denote the exposure required without the need to specify either shutter speed or aperture. A particular EV setting has its own set pairs of possible shutter speed and aperture. Exposure values are often quoted in combination with an ISO speed to denote a specific light level.

**Evaluative Metering**

A metering system used on many cameras, in which light readings are taken from a number of different areas, or zones, across the image. These readings are then compared to data programmed into the camera, so it can work out an appropriate exposure setting. Information from the multipoint autofocus system is also used, to ascertain the likely position of the subject. This 'intelligent' metering system can avoid many of the failings of simpler systems. However, it's impossible to second-guess, so it can be difficult to predict the occasions where it will get the exposure wrong. It's also known as matrix metering.

**EVF (electronic viewfinder)**

An eye-level LCD screen, as found on hybrid cameras, bridge cameras, camcorders, and some compacts. The image seen by the lens is electronically projected onto the screen.

**EXIF (exchangeable image file)**

Camera settings recorded by many digital cameras as part of the image file. This data automatically notes a wide range of information about the picture, including the date and time it was recorded, aperture, shutter speed, model of camera, whether flash was used, number of pixels used, metering mode, exposure mode, exposure compensation used and zoom setting. The information can then subsequently be read by suitable software. To access this information in Photoshop and Photoshop Elements, go to File>File Info.

**Exposure**

The total amount of light used to create an image. The term is also used to describe a single shutter cycle, that is, the process of the camera's shutter opening, closing and resetting.

**Exposure Compensation**

A control for manually overriding the built-in exposure meter of a camera to provide more or less light to the sensor.

**Extension Tube**

An accessory used in macro and close-up photography that fits between the D-SLR body and the lens. The extra extension between the lens and sensor enables the lens to focus closer and to provide a higher image magnification than would otherwise be possible. Extension tubes are usually sold in sets of three, and are used singly or in combination to provide a total of seven different magnifications.

**Eyedropper**

A Photoshop tool used to sample the colour of an area, typically changing the foreground colour to the same shade. It can also be used in some adjustment tools for setting exposure or colour balance, by clicking a particular area of tone as a reference point.

**F**

---

**F-stop**

The aperture setting on a lens. The number is the focal length of the lens divided by the diameter of the aperture. As a result, larger f-stop numbers represent narrower aperture sizes. F-stop numbers are used so that exposure settings for a particular scene can be expressed without having to know the focal length of the lens used. The term, F-stop, comes from the Waterhouse stop (a series of circular holes in strips of metal that 'stopped' some of the light passing through the lens).

**f/X.X**

The f-stop number is the size of the lens's maximum aperture, measured as a fraction of the focal length of the lens. On some zoom lenses there may be two apertures quoted: f/4-5.6, for example. This means that the maximum aperture of the lens gets narrower as the lens is zoomed in. The maximum aperture on the lens barrel may also be expressed as a ratio, such as 1:4-5.6.

**Fast ISO setting**

An ISO setting that makes the sensor more sensitive to light than usual, and thus requires less exposure than usual. Fast settings are useful in low-light situations where long shutter speeds are not suitable. A drawback is that grain-like noise within the image becomes more pronounced as the ISO speed is increased.

**Fast Lens**

A lens that has a wider maximum aperture than is usual for that particular focal length or zoom range, allowing a shorter shutter speed. Fast lenses are not only useful in low light; they can be invaluable for throwing backgrounds out of focus to a greater extent than usual.

**Fast Shutter Speed**

Relative term for an exposure that is shorter than average, usually set to avoid the blur that would otherwise be created by movement of the subject.

**Feathering**

A way of softening the edges of an area that you've selected to work on in Photoshop. It adds a transition zone of transparent pixels, which enables any background to partially show through (like with the edges of a feather). It's used so that the join between manipulated and non-manipulated areas is rendered less obvious.

**File Format**

The way in which a digital image is stored. When you've finished editing your images, you usually get a choice of formats to use while saving. Common file types include JPEG, TIFF, PNG and PSD.

**Fill-in Flash**

Flash used as a secondary light source. A fill-flash feature is an option on many cameras with a built-in flash unit. With it you can soften shadows on foreground subjects, helping to avoid problems with backlighting. Fill-in flash can also be used to enhance the colours and contrast of foreground subjects in dull lighting conditions.

**Fill light**

In studio lighting, a fill light is used to give more detail to dark or shadow areas, and reduce contrast.

**Filter**

A general term used within Photoshop for a wide range of artistic effects and other utilities. Many are special effects, such as those that add grain and texture to an image. Others, such as the sharpening filters, are more utilitarian.

**Fisheye Lens**

An ultra-wide-angle lens that distorts the image in order to maximize the field of view. On 35mm cameras, the term refers to lenses with focal lengths of around 8-15mm.

**Fire Wire**

A method of transferring data such as digital images or video between devices. FireWire 400 was first introduced by Apple in the 1990s. The last widely-used version was FireWire 800. A FireWire 400 cable can be connected to a FireWire 800 socket using an additional adaptor.

### **Firmware Update**

A firmware update is like a free operating system update for your camera, typically fixing bugs or adding new features. You can download and install these updates yourself.

### **Flare**

Stray, non-image-forming light that reaches the sensor, creating unwanted highlights or softening the image. Lens coatings and hoods are designed to minimise flare. However, flare can still prove a problem when shooting towards a bright light source.

### **Flash**

A burst of artificial light used to provide all or some of the illumination for an image. Most cameras have built-in flash units, while some allow a separate flash unit to be attached via the hot shoe, or used off-camera. In studio work, large standalone flash units or strobes use mains power, and are triggered by a flash sync cable or radio signal. Flash durations are usually between 1/200 sec to 1/4,0000 sec and have a colour temperature of around 5,500-6,000K.

### **Flash Synchronization**

A process that ensures that the peak output from the flash tube coincides with the shutter being fully open. On digital SLRs with focal plane shutters, full synchronization is only possible at certain shutter speeds.

### **Flattening**

A Photoshop term for merging all the visible layers to the background layer, reducing the file size.

### **Fluorescent light**

The lighting produced by strip light tubes. The colour balance can vary enormously, depending on the type of tube, and manual white balance settings therefore often offer several fluorescent settings. Daylight-balanced fluorescent tubes are used in some studio lighting systems.

### **Focal Length**

Optical term describing the distance between the optical centre of a lens and its focal point. In practice, the focal length is a measure of the magnification and angle of view of a given lens or zoom setting. It's usually measured in millimetres. However, its usefulness as a way of comparing different lenses is diminished by the fact that the exact focal length required to give a particular angle of view will depend on the size of the imaging chip used by the camera in question.

### **Focal Plane**

The flat surface upon which the image is focused in a camera. This is the plane where the photo sites of the CCD or CMOS image sensor are positioned.

### **Focal Plane Shutter**

A shutter mechanism that sits just in front of the image sensor, in the lens's focal plane. It consists of two light-tight curtains that, when using fast shutter speeds, travel across the focal plane with a thin slit between them. Light passes through this slit to expose the image sensor or film. Using shutter speeds lower than the flash sync speed, one curtain crosses the focal plane to expose the whole sensor or frame of film, followed separately by the second curtain. This type of shutter is commonly used on DSLR cameras.

### **Focus Peaking**

An electronic visual aid in which the parts of an image in sharp focus are highlighted on a Live View screen, or electronic viewfinder.

**Focusing Screen**

The surface upon which the viewfinder image of a digital SLR is projected. Its textured surface is designed to accentuate the degree by which the image is sharp or not, thereby providing assistance when you're focusing.

**Four Thirds System**

A standard image sensor format introduced by Olympus and Kodak in 2002. It has a 4:3 aspect ratio (the sensor size is usually 18 x 13.5mm), while other DSLR and mirrorless systems use a larger sensor with a 3:2 aspect ratio.

**Fps (frames per second)**

Measurement of the continuous shooting rate of a camera.

**Framing**

A technique for highlighting a subject and giving depth to an image by using another feature within the image to form a frame around it. Examples include shooting a church tower through an archway, or a portrait of someone looking through a window frame or standing under the bough of a tree.

**Frame Rate**

The number of frames a camera can capture in a second (frames per second) and used both for continuous shooting modes in stills cameras, and for video capture.

**Frontal lighting**

Lighting directed towards the subject, and therefore positioned behind, or level, with the camera.

**Full-frame**

Used to describe a digital SLR sensor that has a light-sensitive area the same size as a frame of 35mm film – around 24x36mm.

**G**

---

**Gain**

Amplification of an electronic circuit. It's used in digital cameras and camcorders as a way of electronically boosting the sensitivity of the imaging chip in low light.

**Gamut**

The range of colours that can be printed or displayed by a particular electronic device.

**GIF (graphic interchange format)**

A digital file format that uses lossless compression. GIFs are sometimes used for graphics and images for use on the web. Its image palette is limited to 256 colours – much fewer than a TIFF, JPEG or raw file can contain – so its use to show photographs isn't recommended.

**Gigabyte (GB)**

Unit for measuring computer memory, roughly equivalent to 1,000 megabytes.

**Gimbal**

A handheld stabilizer that attaches to the base of a camera to allow you to shoot smooth handheld video footage. A gimbal uses a gyroscopic sensor and motors to keep the camera stable.

**Glass**

The nickname for the lens – the portrait photographer's best friend. Always buy the best 'glass' you can afford. Fast 50mm or 85mm lenses with a constant wide aperture are ideal for portrait work.

**Global shutter**

Actually a type of sensor design rather than a shutter mechanism, a global shutter can capture an entire image electronically and instantaneously. This is increasingly important in video in order to avoid 'rolling shutter' or 'jello' distortion with fast camera movements.

**Golden Hour**

A short period before sunset on a clear day when the landscape is bathed in a warm, 'golden' light, and a favourite time for landscape photographers.

**Guide Number (GN)**

A number on a flash unit that measures its capacity to light a subject at a particular distance and ISO setting. Usually, based on a setting of ISO100, the guide number is determined by multiplying the flash-to-subject distance by the f-stop setting needed to correctly expose the subject at that distance. A flash with a lower guide number produces a much weaker flash than one with a higher guide number.

**Graduated filter**

A type of optical filter that has a dark section and a clear section. These filters – commonly known as ND grads – are used to balance the brightness in high-contrast scenes, usually landscapes, with the dark area placed over the bright sky and the clear section over the dark foreground.

**Grain**

Metallic silver particles, random in shape and distribution, particularly visible in images made with black-and-white photographic film. It's present to a lesser degree in colour film. Grain is more noticeable in higher ISO film, but it's also visible in lower ISO film when making big enlargements.

**Grey Card**

A neutral grey card, usually with 18% reflectance, is used as a standard reference when determining consistent photographic exposure. It's used by placing it in a scene to be photographed and taking a reading from it with a reflected light meter. This avoids problems of over-exposure and under-exposure.

**Greyscale**

A digital image in which all the colour information has been removed, leaving only black, white and shades of grey.

**Grip and Rip**

A slang phrase for setting the camera to its highest continuous drive mode and keeping the shutter button held down to shoot as many frames as possible in a short space of time. 'Spray and pray' has the same meaning.

**Ground Glass Screen**

A sheet of glass, ground to a matte finish, which is used to look at images on large-format cameras. The image from the lens is projected upside-down on the screen. The image is examined and focused more easily by blocking out all other light with a dark cloth.

**Golden hour**

Although not necessarily an hour long, this is the period of time after sunrise or before sunset in which landscape photographers particularly enjoy working because of the favourable effect of the light on their images. The main reason for the term is the warm colour of the sunlight, which, together with its reduced contrast, gives outdoor scenes an especially attractive appearance. The low angle of sunlight also creates longer shadows and reveals more texture in a landscape.

## **GPS**

Stands for global positioning system. This geotagging feature is built into many more recently introduced camera models. Using satellite-based navigation, it records the camera's position when an image is made. This information can then be embedded in the image's metadata, allowing some software to show maps of where you took each photo.

## **H**

---

### **Half frame**

Type of film camera that uses 35mm film, but which shoots uses an image size that is half the size of 35mm cameras. This means that a 36-exposure roll allows you to shoot 72 exposures.

### **Halo**

A term used to describe the glow that's created around the edges of objects when they've been over-sharpened in Photoshop or other similar photo-editing software. They are even more prevalent in high dynamic range images.

### **Hand Tool**

A tool for moving your image around when you're zoomed in and can't see all the image at once, by dragging on the image. Press the H key, or hold down the space bar, to switch to this tool quickly.

### **HDR (high dynamic range)**

A digital imaging technique where a series of identical pictures of a scene are taken at different exposures and then combined into one image. This brings out detail in shadow and highlight areas that usually can't be captured in a single exposure, and is particularly useful for high-contrast subjects, such as brightly-lit landscapes, interiors and night scenes.

### **Healing Brush Tool**

An image-retouching tool that lays down copied pixels like the Clone Stamp tool, but in addition it analyses nearby colour and tone and attempts to blend the cloned pixels in with the surrounding area. Sometimes it produces better results than the Clone Stamp, but not always, because its blending effect will tend to blur detail. For seamless cloning, it's often a good option to use both tools.

### **High key**

An image in which the bright, white tones dominate the picture.

### **Highlights**

The brightest (whitest) areas of an image.

### **High speed sync (HSS)**

Flash feature that allows the use of shutter speeds with flash, faster than the usual sync speed. The flash pulses at high frequency to ensure an even exposure, even though the shutter blinds are never fully open during the exposure. The facility is useful for freezing close-up action in daylight, and for allowing the widest apertures even in bright light.

### **Histogram**

A graph that provides an instant guide to the contrast and exposure of a picture. It maps the distribution of tones, from the darkest on the left to the brightest on the right. The scale runs from 0 (solid black) to 255 (pure white), and the height of the graph at any point represents the relative number of pixels in the image with that brightness level. The overall shape of the histogram gives you an at-a-glance indication of the tonal range of the image and the presence of any clipping. You can use tools such as Levels to adjust the shape of the histogram and thereby improve the contrast and exposure of the image.



**Hotshoe**

An accessory shoe with an electrical contact, for mounting and connecting a flashgun.

**Hue**

Another term for colour. It tells you where a colour lies on the colour wheel without telling you how bright or dark it is.

**Hyperfocal Distance**

The shortest distance at which a lens can be focused so that depth of field stretches to infinity for a given aperture and focal length. When focused at the hyperfocal length, the depth of field will stretch from exactly half the hyperfocal distance

**I**

---

**Incident Light Meter**

A hand-held light meter that measures the amount of light falling on a subject.

**IF**

Stands for internal focusing, and is found on many lenses from many manufacturers. The lens is constructed so that it doesn't change in length as the lens is focused. It also means that the front element doesn't rotate – which can help with the use of some lens attachments, such as petal-shaped lens hoods and polarizing filters.

**Image file format**

A standard way of encoding information for storage in a computer file. File formats used in photography include JPEG, TIFF, PSD, DNG and GIF, all of which are suitable for particular uses.

**Image Sensor**

An integrated circuit chip that converts an optical image into an electronic signal. In current digital cameras, most are either CCD (charged coupled device) or CMOS (complementary metal-oxide-semiconductor) sensors.

**Infinity**

Optical term to describe objects that are so far away from the lens that light from them reaches the lens as parallel rays. In practice, it's usually used to mean objects that are on or near the horizon.

**Interlaced Video**

Video recording technology uses when processing power and broadcast bandwidth were limited. Frames were recorded in alternate 'odd' and 'even' lines and then spliced together (interlaced) for display. It's low-tech by today's standards and rarely used now.

**Inverse Square Law**

This law particularly relates to the use of studio lights or flash, and says that if an object is twice a particular distance from a point source of light, it will receive a quarter of the illumination. For example, if your subject is two metres away, and you increase it to four metres, the resulting fall-off means you'll need four times the amount of light to keep the same exposure settings. Alternatively, you'll have to increase the exposure by two stops.

**Iris**

Another name for the diaphragm, or aperture, of a lens.

**IS**

The abbreviation used for Image Stabilization.

## **ISO**

Stands for International Organisation for Standardisation. In photography, it refers to a system for measuring and specifying the sensitivity of digital imaging systems and photographic films. The higher the ISO number, the greater the sensitivity to light. Cameras have an ISO range, enabling you to choose an ISO setting that suits the situation in which you're shooting.

## **J**

---

### **Jack**

A socket into which a plug is inserted to make a connection, also known as a 'female' connector. A jack on a camera is used for connecting an accessory such as headphones or a remote shutter release unit.

### **JPEG (Joint Photographic Experts Group)**

A file format used for digital images. A variable amount of compression can be used to vary the amount of detail stored and the resulting file size. It's the standard format used by digital cameras (although raw or TIFF formats may also be options). It's a 'lossy' file format, which means it tends to degrade with each save.

## **K**

---

### **Kelvin (K)**

Unit used for measuring the colour temperature of light sources, named after the 19th century physicist and engineer William Thomson, first Lord Kelvin (1824-1907). Average noon daylight usually has a colour temperature of around 5500K.

### **Key light**

The main light on a subject used in studio photography.

## **L**

---

### **Lasso tool**

A pencil-like Photoshop tool that you can use to select an area you want to work on simply by drawing around it. It's used to make very rough selections.

### **Layer**

The digital counterpart of the cut-out pieces of paper in a collage or decoupage work. Layers containing cut-out objects can be stacked on top of an original image or background layer in order to create a composite image. Adjustments and effects can also be applied in the form of adjustment layers, enabling you to alter the exposure, colour, and so on, without actually altering the original. Layers can be opaque, translucent, or merged with layers in the stack below in a number of ways.

### **Layers Panel**

This Photoshop feature enables you to manage and organize the layers in a multi-layered image, add new layers or adjustment layers, and change the way in which layers interact with each other (such as their opacity and blending mode).

### **LCD - liquid crystal display**

Type of display panel used widely on cameras to provide information to the user. High-resolution colour LCDs are capable of showing detailed images, and are used as viewing screens on digital cameras.

**Leaf Shutter**

Also known as a diaphragm shutter, it uses overlapping 'leaves' of metal, which open and close to allow light to reach the image sensor or film. It's usually located between lens elements, and is commonly found on large- and medium-format cameras.

**LED (light emitting diode)**

Coloured indicator lamp used on many cameras.

**Lens Baby**

A selective focus lens with a flexible bellows tube section used for creating special effects. It allows the photographer to keep part of the image in focus while the rest becomes increasingly blurred. The point of focus can be moved by pushing or pulling the lens.

**Lens Hood**

Attaches to the front of the lens to prevent stray light from outside the image area entering the lens. The lens hood is important for preventing flare, and needs to be designed for a specific lens so as not to cause image falloff.

**Levels**

A tool used in digital image manipulation to adjust exposure, contrast and colour balance. Histograms are used as a guide to the corrections that need to be made to the image.

**Light Meter**

A device used to measure the amount of light and determine the correct exposure. Most cameras have built-in light meters that measure the reflected light from a subject, as do hand-held reflected light meters. Incident light meters measure the light falling on the subject, and readings are taken from the subject's position with the light meter pointing back towards the camera.

**Light Trails**

Lines of light recorded in an image by a moving light source during the exposure. Examples are vehicle lights on a motorway at night, lights on a fairground Ferris wheel or someone moving a hand-held torch. They can also result from shooting images of still lights and moving the camera during the exposure.

**Log Mode**

A mode in more advanced video cameras that compresses a wider tonal and colour range into the video recording which can then yield better dynamic range and more adjustable colour later on in editing.

**Long Exposure**

An exposure in which the camera's shutter is open for an extended time period. It may be used at night to capture movement, such as car lights on a motorway or star trails, or during daylight to blur water movement in a river running through a scene. Long exposures in daylight are usually made using a neutral density (ND) filter to prevent over-exposure.

**Long-focus Lens**

A lens used to magnify distant subjects that has a focal length longer than the diagonal measurement of the image sensor or film being used. In 35mm terms, this is any lens with a focal length longer than the 'normal' 50mm.

**Lossless Compression**

A process whereby the size of a digital image file is made smaller without losing information. Lossless formats include TIFF and PNG.

**Low key**

An image that is dominated by dark tones.

**M**

---

**Macro**

Term generally used to describe equipment for taking pictures at a closer shooting distance than usual, to provide a bigger image of the subject. Historically speaking, the term 'macro' refers to when the recorded image is life-size or larger than life-size, with a magnification ratio that is 1:1 or greater, as with macro lenses.

**Magic Wand Tool**

A tool that selects pixels on the basis of their colour. Click a pixel, and more pixels of a similar colour or tone will be selected. The Tolerance setting will dictate how close in colour other pixels must be in order to be included. A Contiguous option defines whether only adjacent pixels will be included in the selection.

**Magnification Ratio**

The relationship between the size of the focused image and the size of the subject. If the image is life-size, as offered by most macro lenses, the magnification ratio is 1:1.

**Manual Exposure**

An exposure made after the photographer has selected a shutter speed and aperture of their choice, usually after taking a reading from a built-in or hand-held light meter.

**Manual Focus**

Adjusting the camera's focus by turning the focusing ring on the lens barrel by hand. It's often used to choose a particular focus point in macro photography. It can also be essential in certain lighting situations, for example low light or mist, when autofocus can struggle to lock on to a subject.

**Marching Ants**

The dotted lines that flicker around areas that have been selected with a Marquee tool in Photoshop.

**Marquee**

The Marquee tools enable you to make regular-shaped selections such as ellipses or rectangles. The term 'marquee' is also used to refer to the animated dotted outline that indicates the border of a selection, which is also often referred to as 'marching ants'.

**Medium-format camera**

Any camera that uses film larger than 35mm, but smaller than 4x5 (large format) film. In digital photography, the term refers to cameras that use sensors larger than a 36 x 24mm image sensor.

**Megabyte (MB)**

A unit for measuring the size of computer memory and storage capacity in hard disks. Largely outmoded by the larger gigabyte unit (roughly 1,000 megabytes) as technology has improved to offer larger sizes.

**Megapixel**

A measurement of the resolution of a digital camera, equal to 1,000,000 pixels.

**Memory Stick**

Family of removable memory cards used by early digital cameras. Pioneered by Sony.

**Metadata**

Text information that describes an image file, such as EXIF camera settings and user-added captions.

**Metered Manual**

An exposure mode in which shutter speed and aperture are set manually by the user, although information as to their suitability is provided by the camera's own light-metering system.

**Micro Four Thirds system**

A standard for mirrorless cameras created by Olympus and Panasonic in 2008. It uses the same sensor size as earlier Four Thirds system DSLR cameras, but doesn't use the mirror box or pentaprism. This allows a smaller, lighter and more compact Micro Four Thirds lenses.

**Midtones**

All the areas of an image that aren't shadows or highlights. These are areas of brightness that, if the image were converted to black and white, would be a shade of grey rather than black or white. In a histogram, they correspond with the main central parts of the histogram graph.

**Mirrorless camera**

An interchangeable lens camera design that drops the mirror used in digital SLRs and older film SLRs and instead uses the main sensor to display the image in the viewfinder. Mirrorless cameras are smaller and lighter than DSLRs and are steadily taking over.

**Monopod**

A one-legged camera support. This doesn't provide complete stability to the camera, but enables slower shutter speeds to be used than would otherwise be possible with a handheld camera. Used widely by sports photographers due to its manoeuvrability.

**Motion Blur**

Out-of-focus streaking effect caused by the movement of the subject or camera during the exposure. Examples include a long exposure of a moving object passing through a static street scene at night, or panning the camera with a moving subject to create a background with blur.

**Motor drive**

A camera facility for taking a number of pictures in rapid succession. The camera continues to take pictures as long as your finger keeps the release down, or until it runs out of memory.

**Move Tool**

A tool used for aligning a layer by moving it around the canvas.

**Mugshot**

Taken from 'mug', the established slang word for 'face', the term originally applied to the stark police photographs of criminals, taken after arrest. It now refers to any simple head-and-shoulders portrait such as those found on a driving license or passport.

**Multiple Exposure**

An image created by two or more superimposed images.

**N**

---

**Neutral-density (ND) Filter**

An optical or electronic filter that reduces the amount of light reaching the image sensor equally across the entire field of view. It permits longer shutter speeds or wider apertures than would otherwise be possible in the lighting conditions.

**NFC**

Stands for near-field communication, a short-range wireless technology that has been introduced on many new camera models. It enables devices to communicate by using interacting electromagnetic radio fields. Images can be transferred wirelessly between a camera and a smartphone with NFC, simply by placing the devices close together.

**NFT**

NFT stands for Non-Fungible Token, and it's a way of assigning a uniqueness and a value to a non-physical digital object, like a photo or even a tweet.

**Noise**

Unwanted interference in an electrical signal, which is seen as a grain-like pattern in dark areas of a digital image. Noise increases in digital photos when a higher ISO setting is used.

**North Light**

The diffuse, reflected light that comes through a north-facing window, which is therefore not directly lit by sunlight. Its soft, flattering quality makes it popular in portrait photography.

**O**

---

**OLED**

Stands for organic light-emitting diode. OLED screens use a thin film of organic compound between two conductors that emits a bright light when an electric current is applied. These screens make flexible, high-quality displays that are lighter, thinner and faster to respond than LCDs. They are becoming increasingly common on high-end cameras.

**1080p**

A format for recording full HD video with a resolution of 1920 x 1080 pixels, offered on many current digital cameras.

**Optical Filter**

A glass or plastic accessory placed in a holder or attached to the front of the camera lens. They are used to alter the image being recorded by allowing light of particular wavelengths to pass through while blocking others. Most of the traditional optical filters are only used in film photography, because their effects can be replicated by in-camera digital filters or by using post-processing techniques on a computer. The types of optical filters still used widely in digital camera capture include the polarizer, UV filter, ND filter, ND grad and infrared filter.

**Optical low-pass filter**

A filter built into many digital cameras and located in front of the image sensor. It reduces the combined effect of moiré and false colour in digital images.

**Orientation Sensor**

A sensor used in some cameras that detects when you turn the camera to take a vertical shot. It stores this information so that it displays the image correctly when played back on the camera LCD or computer screen.

**Over-exposure**

Exposing an image for too long to suit the subject in given lighting conditions. As a result, details in highlight areas are lost or 'blown out'. Some photographers choose to over-expose when creating a particular effect. They may also use over-exposure to compensate when the camera's light meter gives an incorrect reading – when shooting snow scenes, for example.

## **Over Sampling**

A video processing technique often used on cameras with a higher resolution than is needed for video, e.g., a 24MP camera being used for 4K video. The video is captured (oversampled) at the camera's full resolution then down-sampled to the required video resolution.

## **P**

---

### **Pack Shot**

A short form for 'packaging shot', this is a photograph of a product with labelling clearly displayed, and is usually taken for advertising or other commercial reasons. Studio setups for pack shots can vary from the simple to the elaborate.

### **Paint Bucket Tool**

A Photoshop tool that fills a complete area with a particular colour. As with the Magic Wand tool, you can adjust the Tolerance to change the effect. It can be useful for creating masks.

### **Painting with Light**

Creating images with a mobile light source. One way of painting with light is to shoot a scene in the dark, whether indoors or outdoors, with the camera on the B (bulb) setting. While the shutter is open, objects in the scene can be 'painted' with light from a hand-held flash or other light source. The other technique also involves shooting in the dark with the shutter open, but in this case the light source is moved while being pointed towards the camera, often to create a 'light trail' shape in the final image.

### **Pan-and-tilt Head**

A tripod attachment that provides independent movement of the camera in both horizontal and vertical planes, giving the photographer greater flexibility.

### **Pancake Lens**

An ultra-slim lens, usually a prime lens but sometimes a zoom, that's slimmer than it is wide and designed for compactness, portability and light weight.

### **Panning**

Moving the camera along a horizontal plane during the exposure to follow a moving subject.

### **Panoramic**

An elongated image in which the width is at least twice the height. Panoramas are made by cropping one image, made using a specially designed panoramic camera, or by combining several images together using 'stitching software'. Aspect ratios for panoramic images can be 4:1 or higher.

### **Partial Metering**

A type of metering system where the exposure reading is taken from a small area in the centre of the field of view. It's similar to spot metering, but the reading is taken from a larger area of the image.

### **Passive autofocus**

An autofocus system that adjusts the focus of the lens by analysing the image itself, rather than actively measuring the subject distance. Passive autofocus is used by most digital cameras, and is also known as phase-detection or contrast-detection autofocus.

### **Parallax**

An effect in which the image seen through a camera's lens is not the same as that seen through the viewfinder, resulting in parts of the scene missing in the photograph. It's found in any camera in which the viewfinder and lens are separate, such as Leica rangefinder and twin-lens reflex cameras.

**PASM modes**

PASM stands for Program AE, Aperture priority, Shutter priority and Manual, the four main exposure modes found on more advanced cameras to give you exactly the degree of automation or manual control you need.

**PC Lens**

Stands for perspective-control lens, another name for a shift lens.

**PC Socket**

A simple electrical connection socket found on some DSLRs for connecting a flash to a camera to enable synchronization. It's widely used for connecting studio flash.

**Pentamirror**

A low-cost alternative to the pentaprism (see next entry) used in the construction of some D-SLRs. They offer the same functionality, but use mirrors for the viewfinder construction rather than a prism.

**Pentaprism**

The five-sided prism used in the eye-level viewfinder of SLR and DSLR cameras. It ensures that the image appears the right way up and the right way around in the viewfinder, correcting the effects of the mirror and the lens.

**Perspective**

Perspective is used to translate a three-dimensional scene into a two-dimensional image. It gives the viewer a sense of depth in the image, for example, through the use of converging lines in a landscape. Perspective allows us to interpret the size and distance between objects, relative to the camera's viewpoint.

**Photobomb**

To appear in the background of an informal portrait and upstage the person being photographed, without them being aware.

**Photobook**

A book largely consisting of photographs. It's a means by which photographers have displayed their work since the earliest days of the medium.

**Photojournalism**

News journalism using a camera to record events. The 'golden age' of photojournalism's lasted from the 1930s to the 1950s, before television took over as the main source of news, but it still plays an important role in the media.

**Photo-merge**

A group of 'automated' features designed for combining a number of similar or related shots together, including Photo-merge Panorama for combining an overlapping sequence to create a panoramic view. Elements includes additional Photo-merge tools not included in Photoshop, such as Photo-merge Group Shot (for combining the best features from a series of near-identical group portraits).

**Photomicrography**

Photographic images of things invisible to the naked eye, created using a microscope. DSLR cameras are connected to a microscope using an adaptor, and the degree of magnification is determined by the power of the microscope.



**Photoshop**

Industry-standard software program produced by Adobe that enables photographers to edit digital images on screen and save them as a JPEG, TIFF, PNG or GIF.

**Pict Bridge**

A system for printing directly from a camera to a compatible photo printer without the need for first uploading images to a computer.

**Pictorialism**

An artistic approach to photography, dominant during the late 19th and early 20th century. Instead of being straightforward documents of reality, photographs were given a more painterly, soft-focus appearance. Processes such as bromoil, gum bichromate and platinum printing, which involved manipulating a photograph's tones and texture using brushes, pigments and inks, were popular among Pictorialists.

**Pincushion distortion**

A lens fault or aberration that causes parallel lines in an image to bow inwards towards the centre, and is seen when shooting with telephoto lenses. The effect is similar to one you'd see if an image was printed on a pincushion. It can be corrected using post-capture software such as Photoshop.

**Pinhole Camera**

A camera that uses a small hole instead of a lens to project an inverted image on to photographic film or a digital sensor. Exposures are usually manually operated and can range from several seconds to hours in duration. DSLRs can be converted to pinhole cameras by replacing the lens with a piece of plastic drilled with a hole of around 0.3mm in diameter. Alternative pinhole cameras have been made with anything from wheelie-bins to shoe boxes.

**Pixelated**

A digital image in which individual pixels can be clearly seen, either due to very low resolution or high magnification of a small part of an image. Pictures are sometimes deliberately pixelated, for example when someone's face is obscured in a newspaper for legal reasons.

**Pixels**

Every digital photograph is made up of millions of square-shaped dots called pixels (the term derives from "picture elements"). Like the tiles in a mosaic, they blend together to create a photorealistic image. Zooming into your images using the Zoom tool in Photoshop/ Elements enables you to see, and then edit, each of these building blocks if you choose.

**Pixel Binning**

An image processing technique used in some cameras to combine the light values from several pixels to produce an image with lower resolution but better light sensitivity. It's also used in some video cameras where the native sensor resolution is much higher than the video resolution required.

**Plugin**

A piece of software that adds functionality to an existing computer program. Plugins are available for many digital image-manipulation programs, including Photoshop, Photoshop Elements and Lightroom, providing an increased range of effects and transformations.

**Polarizer**

A filter that only transmits light vibrating in one plane. It can be used to deepen the colour of part of a picture, such as the sky. It can also be used to eliminate or reduce reflections on non-metallic surfaces, such as water or glass. It must be rotated in front of the lens until you achieve the desired effect.

**Positive**

An image that gives an accurate representation of the composition, tones and colours of the original subject being photographed, as opposed to a negative in which the subject's composition, tones and colours are reversed.

**PPI**

Pixels per inch. A measure of the resolution (density of pixels) in a photo print or on-screen image.

**Predictive autofocus**

A sophisticated autofocus setting on cameras where the focus is not only adjusted until the shutter is actually fired, but continues to be adjusted during the delay between pressing the shutter and the picture actually being taken. This enables the camera to focus more accurately on moving subjects.

**Prefocusing**

A manual focusing technique used for photographing moving subjects. The lens is focused on a point or at a distance, which you anticipate the subject is going to move through. The shutter is released when this point is reached.

**Prime Lens**

A non-zoom lens, that is, a lens with a single and fixed focal length.

**Program Exposure**

Any exposure mode where the camera defines both the aperture and the shutter speed.

**Program Shift**

A program exposure mode in which the camera sets the shutter speed and aperture automatically, but the photographer has the option of altering the bias between the two readings to set a preferred shutter speed or aperture without changing the overall exposure.

**Progressive Video**

Type of video capture where each frame is recorded in full, as opposed to the older and inferior 'interlaced' video technology of the past.

**PSD**

Photoshop's own file format, which preserves components such as layers and transparency that aren't supported by some formats (including JPEG). It's worth saving an edited photo as a PSD if you might want the option to revisit layers or adjustment layers at a later time.

**Puppet Warp Tool**

First introduced in Photoshop CS5, this tool allows you to adjust or radically change the shape of parts of an image. Subjects can be selected and altered without affecting the background.

**Push/pull Processing**

In film photography, push processing means increasing the film's speed by shooting with shorter exposures than recommended and increasing the development time proportionately. This allows photographers to work in lower light conditions, but increases the grain size. Pull processing means using longer exposures than recommended and reducing development times, to give a negative with reduced contrast and grain.

**Q**

---

**Quick-release Plate**

A facility for attaching and removing a camera from a tripod. A plate attaches to the camera using the traditional screw-in arrangement, then the plate slots into a recess on the tripod.

## R

---

### **Rangefinder**

A camera with a separate lens and viewfinder, linked by a rangefinder mechanism. When looking through the viewfinder, two separate images are shown, one of which moves when the focus ring is turned. When the two superimposed images are perfectly aligned, the image is in focus.

### **Raw**

A file format option provided by digital SLRs, mirrorless cameras and some other top-end digital cameras. Image data is stored in a semi-processed state and needs to be fully processed on a computer. Raw files enable exposure compensation, image contrast, colour balance and other settings to be altered after the initial exposure, while still retaining maximum image quality. Raw images also offer a greater tonal range than the alternative JPEG recording quality options. Raw isn't an abbreviation, or even a single file type like JPEG; the format varies from manufacturer to manufacturer, and sometimes from camera to camera.

### **Rear-curtain sync**

Flash feature found on some D-SLRs and flashguns that synchronizes the flash output when the second shutter curtain is about to close. Usually, the flash fires at the point where the first shutter is fully open. The facility gives more natural-looking images when using flash in conjunction with slow shutter speeds.

### **Reciprocity**

The reciprocity law states that the density of a photographic image is in direct proportion to the intensity of light (aperture setting) and the duration (shutter speed). For example, if the correct exposure for a subject is 1/125 sec at f/4 and the aperture is increased by one stop to f/2.8, the shutter speed must be correspondingly decreased by one stop to 1/60 sec to maintain the same image quality, and vice versa.

### **Red-eye**

An effect often caused by a camera's built-in flash. The flash light reflects from the retina of a subjects' eyes and gives them a bright red colour. It can be reduced or corrected in-camera, or at the post-processing stage.

### **Reflected light reading**

The most frequently used type of exposure meter reading, which measures the amount of light reflecting from a subject. An alternative approach is to use an incident light meter, which measures the amount of light falling on a subject.

### **Reflector**

A piece of card or other flat material that reflects and increases the amount of illumination from a light source. Reflectors can be white, silver or gold, and are often used to 'bounce' light into shadow areas and make them brighter. An umbrella-shaped reflector on a studio light is used to create softer and more diffuse illumination.

### **Rembrandt lighting**

A studio portrait lighting technique named after the Dutch painter. It refers to lighting one side of the face so that it creates a triangle of light on the opposite cheek. A reflector is sometimes used to bounce light on to the side of the face in shadow.

### **Reportage**

The act or technique of news reporting. In photography, the term refers to the art of telling a news story through pictures. Many wedding photographers offer 'reportage style' pictures. This simply means that the day's events are approached as if it were a news event, and recorded in an informal and unobtrusive way. See photojournalism.

**Resize**

To create a new copy of an image with a different file size or resolution (pixel count).

**Resolution**

A measure of the density of pixels in a printed or on-screen image, usually expressed in terms of pixels per inch (ppi). A resolution of 300ppi is widely regarded as the optimum for professional-quality printing. Monitors typically display images at between 72 and 96ppi, although this can vary with monitor size and other factors. Changing a photo's resolution in the Image Size dialog in Photoshop won't change how big it looks on-screen, only in print.

**RF**

The rear focus feature is found on super telephoto lenses. With rear focus, the group of elements nearest the camera are used to determine the point of focus, providing faster autofocus.

**RGB**

Stands for red, green and blue. These are the three primary colours used by a digital camera to record a picture. Some tools can access and edit each of the three colour channels separately.

**Rim Lighting**

Light from behind or to the side of a subject that gives a thin line of light around some or all of the subject's edge, which sets it clearly apart from the background.

**Ring Flash**

A flash lighting system that uses a circular flash tube attached to the front of the lens to provide even, shadowless lighting. Ring flash is often used in macro photography, but is sometimes used in other kinds of photography including portraiture. Oversized ring flashes are available for studio use, providing doughnut-shaped catch lights when used for portraits.

**Rule of Thirds**

One of the best-known compositional 'rules', in which an image is divided, horizontally and vertically, into three parts, using two equally spaced lines. Important elements of the picture are then placed on one or more of these lines, which creates a stronger and more visually appealing composition than simply centering the subject.

**S**

---

**Saturation**

The strength of a colour or hue. An increase in saturation gives a more intense colour. Too much saturation, and the image will look unreal. An image with no saturation whatsoever will be black and white.

**Scale**

Scale gives us a sense of the size of an object or environment in an image, by using another object in the scene as a frame of reference. For example, by including a person in a landscape, the viewer is given a strong idea of the relative size of that landscape.

**Scheimpflug Principle**

Theodor Scheimpflug (1865-1911) stated: "If the lens plane is tilted down, when the extended lines from the lens plane, the object plane and the film plane intersect at the same point, the entire subject plane is in focus." This principle comes into play when using tilt-shift lenses or tilt-and-swing movements on view cameras. In practice, it means that if you're photographing a landscape, the lens can be tilted forwards until the plane of focus runs parallel to the ground. As a result, depth of field is vastly increased, even when shooting with the lens wide open.

**Scratch Disk**

Hard disk space used by Photoshop while processing an image to temporarily store information and make the process faster. It's used, for example, to store the history states that are essential for using the History panel.

**Screen Grab**

Also called a screen shot or screen capture, this is an image of all or part of a computer monitor display that can be saved as a graphics file.

**SD (Secure Digital) card**

A type of removable memory card used in some digital cameras.

**SDHC (Secure Digital High Capacity)**

A type of SD card that has a higher maximum capacity than standard SD cards (up to 32GB).

**SDXC (Secure Digital Extended Capacity)**

A type of SD memory card that has an even higher maximum capacity than SDHC cards (up to 2TB).

**Second Curtain Sync**

An alternative term for rear-curtain sync.

**Secondary mirror**

A mirror used in digital SLRs to project some of the light passing through the lens to exposure and autofocus sensors.

**Self-timer**

A camera facility that incorporates a delay between the pressing of the trigger and the beginning of the exposure. It has traditionally been used to enable the photographer to appear in the shot. It can also be used as a way of minimizing the vibration caused by pressing the camera shutter, when shooting a long exposure with the camera mounted on a monopod or tripod.

**Sensor Size**

The dimensions of the CCD or CMOS sensor in a digital camera vary greatly according to the type of camera. This has a major impact on image quality. Larger sensors collect more light and produce images with greater dynamic range and less noise than smaller sensors. Smartphone camera sensors measure around 4.5 x 3.4mm; compact camera sensors are around 6.1 x 4.5mm; D-SLR sensors are around 23.5 x 15.6mm, while a 'full frame' 35mm sensor measures around 36 x 24mm.

**Sepia Tone**

A chemical treatment used in traditional photography that converts metallic silver in a black-and-white photograph to silver sulphide. It has the effect of changing shades of grey into shades of reddish-brown. The appearance can easily be created in digital images, either in-camera or using Photoshop.

**720p**

A high-definition video recording format with a resolution of 1,280 x 720 pixels, offered as option on many digital cameras.

**Sharpening**

Sharpening boosts the contrast around the edges of objects to increase definition, which helps counter the inherent softening effect of digital capture. Inkjet printing has a further softening effect, so if you're going to print your image, it will need more sharpening than it would need for on-screen viewing. Over-sharpening can be a problem, leading to undesirable haloes.

**Shift Lens**

An interchangeable lens available for a small number of D-SLRs and medium-format cameras. The lens provides a limited range of camera movements, including a facility for the lens to be shifted upwards to avoid converging verticals when photographing tall subjects, especially buildings. Also known as a PC lens.

**Shutter**

A device for allowing light to pass through a camera lens to the digital sensor or film, usually for a precise period of time. See also leaf shutter and focal plane shutter.

**Shutter Lag**

The delay between the photographer physically pressing the shutter and the exposure actually being made.

**Shutter Priority**

A semi-automatic exposure mode in which the shutter speed is set by the photographer. The aperture is then set by the camera to suit the metered light readings taken by the camera.

**Shutter Speed**

Also called exposure time, this is the length of time the camera's shutter is open to allow light coming through the lens to reach the image sensor or film.

**Side Lighting**

This is illuminating a subject from one side across the camera axis, either using natural or artificial light, while the other side remains in shadow. It's often used in portraiture to give texture and depth to a subject. It can give a dramatic look, especially against a dark background. If desired, shadow areas can be lightened by using a reflector.

**Single Lens Reflex (SLR)**

A camera that uses a pentaprism and mirror to show the exact image being seen through the lens. When the shutter is released, the mirror flips up to allow the image to pass through to the sensor or film.

**Slave**

Device that triggers a flash unit automatically when another flash is fired. The slave uses a light-sensitive photoelectric cell, and cuts down on the number of cables needed in a studio.

**Slow Lens**

A lens with a narrower than average maximum aperture for the focal length. As a result, shutter speeds at the maximum aperture are longer than with 'faster' lenses.

**Slow Sync Flash**

Technique in which a slow shutter speed is used in conjunction with flash. The flash usually provides the main source of illumination, but the ambient light creates a secondary exposure that can be useful in suggesting movement, or for providing detail in a background that would otherwise have looked unnaturally dark.

**Snoot**

A tube-like attachment in the shape of a cone or cylinder, which fits on the front of a flash unit or studio light. A snoot enables the photographer to control the direction and width of the light so that it concentrates on, or isolates, a subject.

**Soft Box**

An enclosure around a flash or continuous light. The insides are lined with reflective material while the square or round front screen is made of a white opaque material that diffuses and softens the light. Soft Boxes can measure anything from 40cm to 2m across the front, and are often used instead of umbrellas for diffusing harsh flash light.

**Soft Focus**

Slightly blurred and lacking in sharp definition. Images can be 'soft' due to a lens flaw, or made deliberately so to give a romantic 'glow' to an image. It can be achieved in-camera by attaching a soft-focus or diffuser filter to the lens, or by shooting through a piece of translucent material (for example, a section cut out from a pair of tights). It can also easily be added using post-capture software on a computer.

**Spot Meter**

Exposure metering system in which a meter reading is taken from a very small area in the centre of the frame.

**sRGB**

RGB colour space frequently used by digital cameras, but providing a narrower range of colours, or 'gamut', than the Adobe RGB space.

**Standard Lens**

A focal length of lens roughly equal to the diagonal of the image sensor area. Typically, standard lenses have an effective focal length of around 50mm.

**Still-life Photography**

Following in the centuries-old tradition of still-life painting, still-life photographs focus on single or small groups of objects. They can be shot indoors or outdoors, using daylight or artificial light, and are usually carefully arranged by the photographer.

**Street Photography**

Photographs taken in public places that record human behaviour or interaction in a way that comments on society or life in general. Street photographers aim to capture life as it happens and usually take pictures when people are unaware.

**Stitching**

Combining two or more overlapping images of a subject to create one seamless panoramic or high-resolution image.

**Stop**

A unit of exposure. Changing exposure by a single stop is equivalent to doubling or halving the amount of light reaching the image sensor. The distance between each of the standard aperture settings (f/2.8, f/4, f/5.6, f/8, f/16 etc.) is a full stop. Digital SLRs usually provide a number of intermediate half-stop or third-stop settings.

**Stop Down**

Close down the camera's aperture. The opposite term is 'open up'.

**Strobe Light**

Also called a stroboscopic lamp, this light source produces flashes of light (usually around 200 microseconds in length) at regular intervals. In photography, it's been used to make high-speed images of subjects that move too fast for the eye to see, such as a bullet zipping through the air. Strobe lights have also been used to capture multiple images of a moving subject in one image, for example in the photographs of dancers by Gjon Mili (1904-1984).

**Sync Speed**

The fastest shutter speed that can be set on a camera that enables synchronization with the flash. See flash synchronization.

**T**

---

**Table-top Photography**

Images of small objects or a miniature scene, arranged on a table top.

**Teleconverter**

A supplementary lens used between a primary lens and the camera body to increase the focal length range of the primary lens. For example, a 1.4 teleconverter on a 200mm lens will increase the focal length to 280mm, but causes a corresponding one-stop reduction in the maximum aperture size.

**Telephoto**

A term generally used to describe any long-focus lens (in full-frame photography, a lens with a focal length of 85mm upwards). However, telephoto technically refers to a long-focus lens in which the physical length of the lens is shorter than its focal length, a design feat achieved by its internal lens assembly.

**Terabyte (TB)**

Unit for measuring computer memory or disk storage capacity, which is roughly equivalent to 1,000 gigabytes.

**Time of Flight camera**

A camera that can measure the distance of objects in the scene in a fraction of a second and then use this information for collision detection, for example, or for augmented reality (AR) imaging or for depth of field simulation in camera phones like the Portrait mode in iPhones.

**TFT (thin film transistor)**

High-quality colour LCD technology, widely used for rear displays on digital cameras.

**Thumbnail**

A small, low-resolution version of a larger image. It's often used in image management applications such as Adobe Bridge and Organizer to make it easier and faster to search through and preview your photo collection. The small representations of each layer in the Layers panel in Photoshop and similar software are also referred to as thumbnails.

**Three-quarters lighting**

Used in portraiture, this style of lighting is created by placing a light at approximately 45 degrees from each side of the centre line of the face. It lights three quarters of the face, leaving a shadow area along the side opposite to the light that gives the face depth and volume.

**TIFF (Tagged Image File Format)**

Digital image format used to record files with maximum available detail. Files can be large, although this can be reduced using lossless compression.

**Time-lapse**

Technique where pictures are taken of the same subject at regular intervals, then combined into moving video footage. Some time-lapse photographers record an event that takes place over a long period of time, such as a butterfly emerging from a chrysalis or a flower opening its petals.



**Tone Mapping**

A technique used in image processing to reduce the range of tonal values in a high dynamic range image, so it looks more natural when shown on a computer monitor or in print.

**Toning**

Changing the colour of a black-and-white print or digital image. In traditional photography, black-and-white prints are usually toned using chemicals to change the metallic silver in the print emulsion to a silver compound. This happens in sepia and selenium toning. Other processes, such as platinum and gold toning, are known as metal-replacement toners. Similar effects can be produced in digital images using post-processing techniques.

**Transform**

A Photoshop tool used to scale, rotate, reduce, enlarge, distort or change the perspective of a layer, selection or shape.

**Travel Photography**

A genre of photography that concentrates on documenting the landscape, people, culture and customs of a country.

**Tripod**

A three-legged camera support.

**Tripod Bush**

Threaded socket found on the base of cameras, used for attaching tripods and other accessories.

**TTL****(through the lens) metering**

An exposure metering system in which the intensity of light is measured through the camera lens.

**Tungsten Lighting**

A type of bulb lighting that has a warm colour temperature of between 2,600 and 3,500K.

**Tv (time value)**

Abbreviation used for shutter priority on some cameras.

**U**

---

**Umbrella**

An umbrella is used in a studio to reflect and diffuse light from a flash unit, creating a softer and more even light. The most common types are the white shoot-through umbrella, which is used between the flash and the subject, or the black umbrella with a reflective silver or white underside that bounces flash light back on to the subject.

**Under-exposure**

An insufficient exposure for the subject to retain all the shadow details, so that darker areas become black or almost black. The greater the under-exposure, the darker the image. This may be a conscious choice for artistic reasons.

**Underwater Housing / Waterproof Housing**

A sealed container specifically made to protect particular cameras from damage in underwater photography, and that allow controls to be accessed and operated as normal.

### **Unsharp Mask**

One of the most popular Photoshop tools for increasing sharpness in a digital image. It gets its curious name from a traditional print process, where a soft-focus negative is sandwiched with the sharp original in order to increase edge contrast.

### **USB 3.0**

The third version of the Universal Serial Bus standard for connection and communication between computer peripherals (including digital cameras and printers) and personal computers. It was released in 2008 and was further updated to USB 3.1 in 2013.

### **UV Filter**

An optical filter that absorbs ultraviolet (UV) radiation. It can be used to improve visibility and quality in mountain and maritime landscapes. Many use them to protect the front of the lens.

## **V**

---

### **Vibrance**

A slider available in Adobe Camera Raw and Photoshop that enables you to increase the saturation of colours. It doesn't increase saturation universally – it concentrates on colours that are not saturated already, with a more limited effect on colours that are already intense. This often leads to a more visually pleasing result.

### **Vignetting**

Darkening of the corners of an image. This appearance is often deliberately created to highlight a subject in the centre of the image, and can be applied by digitally burning in corners in Photoshop. It's also commonly seen in images taken with toy cameras such as the Holga. If vignetting is unintended, it's usually due to lens fall-off, and can be corrected using post-processing software.

## **W**

---

### **Watermark**

An element embedded in a digital image, such as the photographer's name or a symbol, to show ownership and prevent images being used without the copyright owner's permission.

### **Waterproof/Weatherproof**

A waterproof camera is one that can be submerged and used underwater without harm, while a weatherproof camera can withstand rain, cold and dust but is not waterproof.

### **White Balance**

Digital camera system that sets the colour temperature for the scene being photographed. This can be set automatically, with the system attempting to set the colour so that it looks normal to the human eye. Most DSLRs also offer a wide selection of manual white balance settings – where the WB can be set from a reference source (such as a piece of white card), or to a particular Kelvin value, or to a lighting type (such as sunny daylight or tungsten bulb lighting).

### **Wide-angle Lens**

A lens with a focal length shorter than the 'normal' lens (that is, the lens that gives the most true-to-life field of view) for a given format. In the 35mm format, focal lengths from 35mm to 24mm are considered wide-angle, while lenses from 21mm to 12mm are generally described as ultra wide-angle.

## **X**

---

### **XMP**

Stands for extensible metadata platform. A labelling technology used by a number of image-editing programs, including the Photoshop family. It records information about a file, and is usually embedded within the file itself. With raw files, the XMP information is recorded separately.

## **Y**

---

### **Yellow Filter**

In film photography, yellow filters were often used by black-and-white landscape photographers to darken a blue sky and brighten the landscape.

## **Z**

---

### **Zone system**

The Zone system is a systematic technique for calculating the best possible film exposure and development.

### **Zoom**

A lens with a variable angle of view. On a zoom lens, the focal length can be changed while the focus remains the same.

### **Zoom Ratio**

The relationship between the shortest and longest focal length setting of a zoom lens. For example, a 14-42mm lens has a zoom ratio of 3:1, or 3x; a 50-500mm lens has a zoom ratio of 10:1, or 10x.