

PHOTOGRAPHY CHEAT SHEETS



photography
explained

PHOTOGRAPHY CHEAT SHEET

Exploring your camera's manual settings

Aperture



f/2.8



f/4



f/5.6



f/8



f/11



f/16



f/22

Blurry background
BRIGHTER



Everything in focus
DARKER

Shutter Speed

Longer exposure

30' 15' 10' 2' 1' 1/25 1/50 1/100 1/250 1/500 1/1000 1/2000 1/8000



Blurry photos
Night shots



Outdoors
Sunny days



Freezes motion
Sports shots

ISO

Smooth images

100 200 400 640 800 1600 3200



Sunny
Outdoor



Indoors
by window



No window
night photos

Exposure

Under exposed

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



Perfect

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



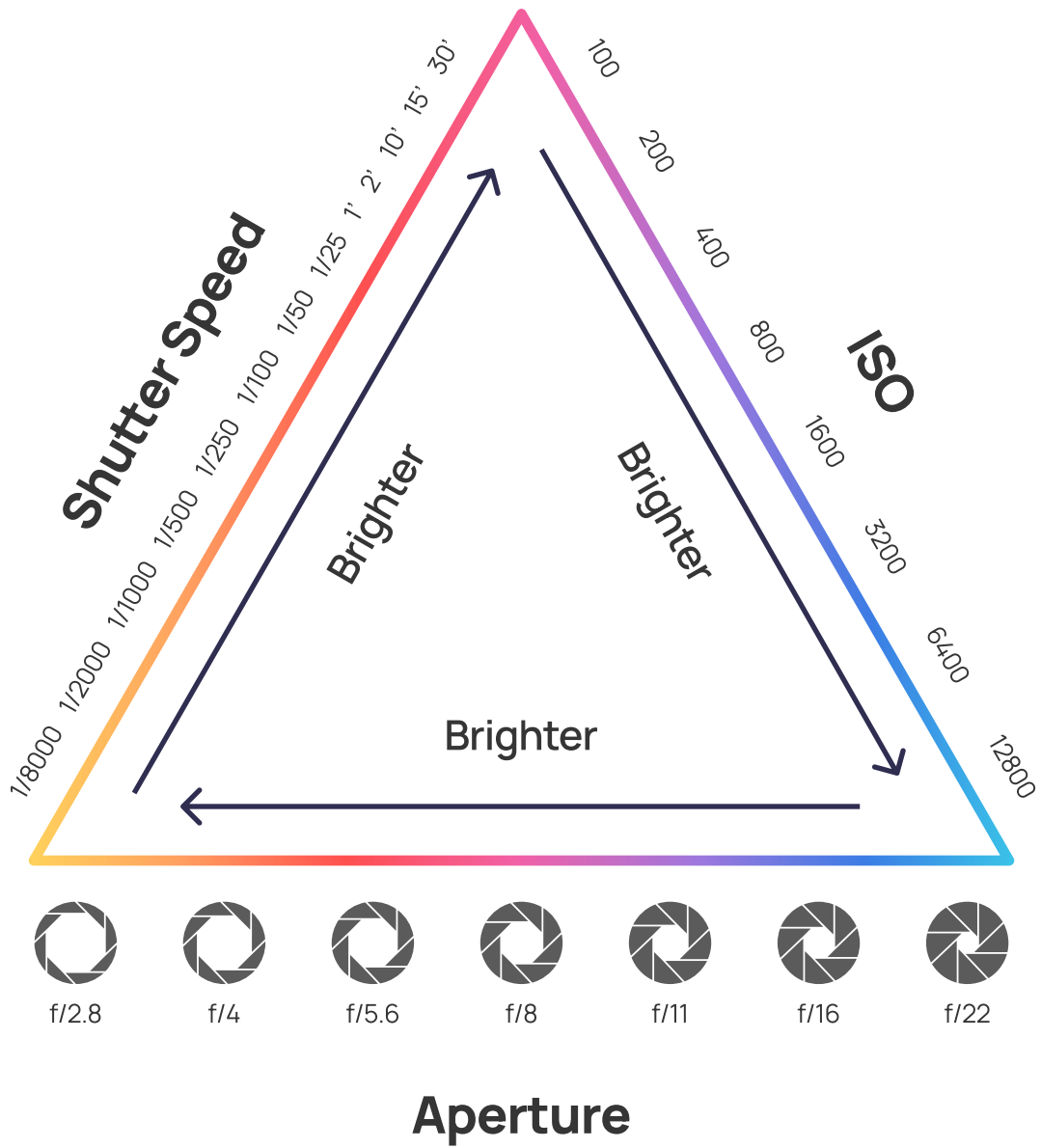
Over exposed

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



EXPOSURE TRIANGLE

Exploring your camera's manual settings



What's the best shutter speed to use for...?

1/4000 sec	Freezing extremely fast movement
1/2000 sec	Freezing birds in flight
1/1000 sec	Freezing fast motor vehicles



1/500 sec	Freezing cyclists, runners, etc.
1/250 sec	Freezing walkers, slow moving things
1/125 sec	Panning fast objects in motion up close



1/60 sec	Panning slower objects up close
1/30 sec	Panning fast objects from a distance
1/15 sec	Panning slower objects from a distance



1/8 sec	Blurring fast-flowing water
1/4 sec	Blurring people walking
1/2 sec	Blurring slow-moving water
1 sec +	Shooting fireworks
15 - 25 sec +	Shooting stars, astrophotography



How to adjust shutter speed on your camera

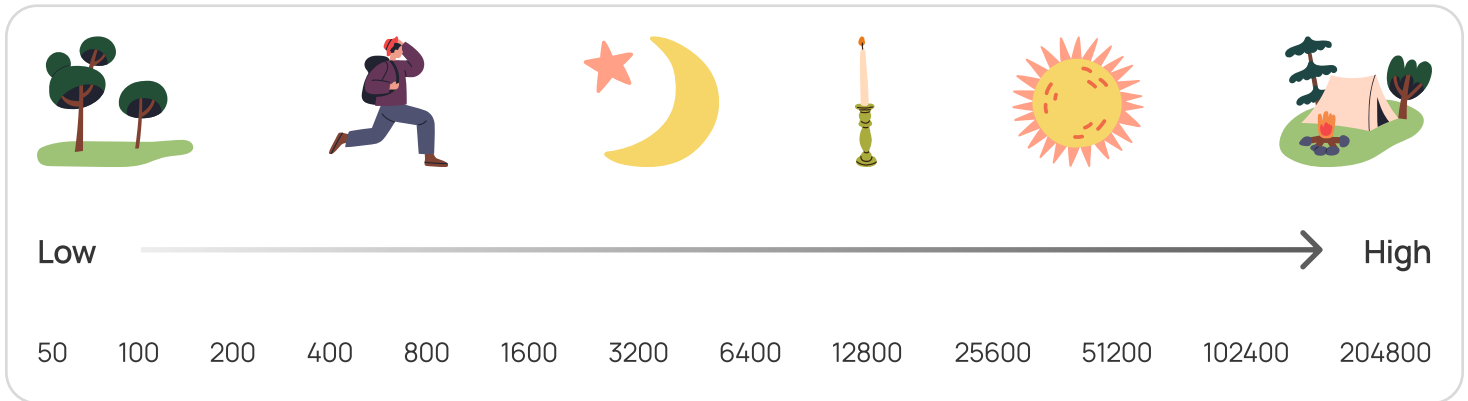
Option 1: Adjust it in Manual Mode

Adjust your shutter speed using the relevant dial.
Adjust your ISO as low as possible.
Then select an aperture to balance the exposure
(check the light meter in the viewfinder to get the
arrow in the middle of the scale)

Option 2: Use Shutter Priority Mode

Select 'S' or 'Tv' on your camera's top
dial or menu, then adjust your shutter
speed using the relevant dial.
Your aperture and ISO are adjusted
automatically by the camera.

UNDERSTANDING THE ISO SCALE



Landscape

ISO 50-200

Low ISOs give the best quality, and using a tripod will mean you don't have to worry about camera shake.

Sport

ISO 200-6400

The key to sports is capturing the action. Noise is secondary, so use whatever ISO you need if the light is low.

Astro photography

ISO 800-1600

This allows a shorter exposure to reduce objects movement across the sky.

Low light/candid

ISO 3200-12800

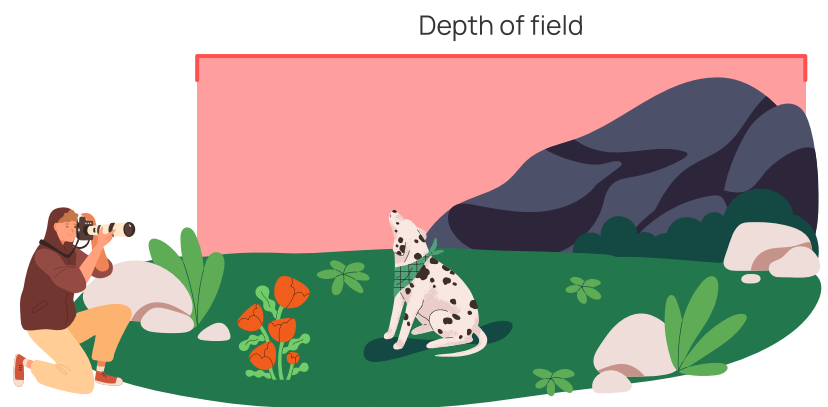
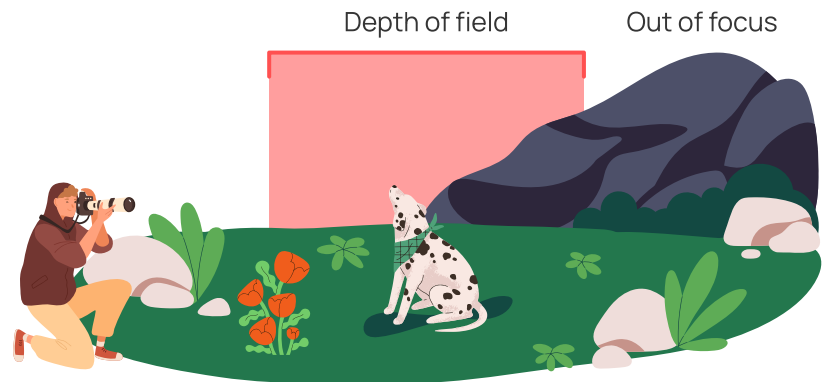
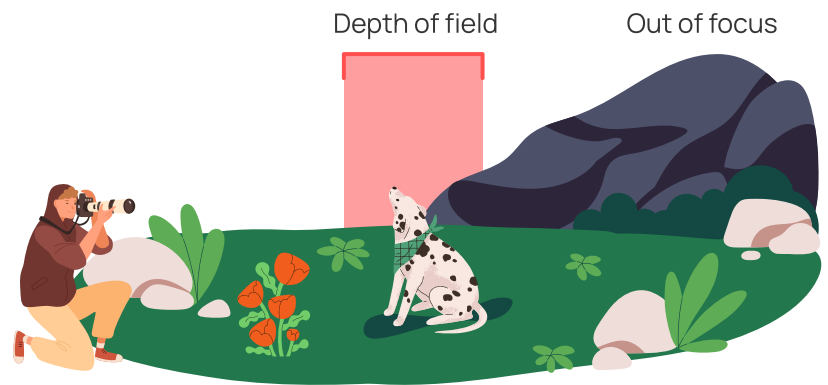
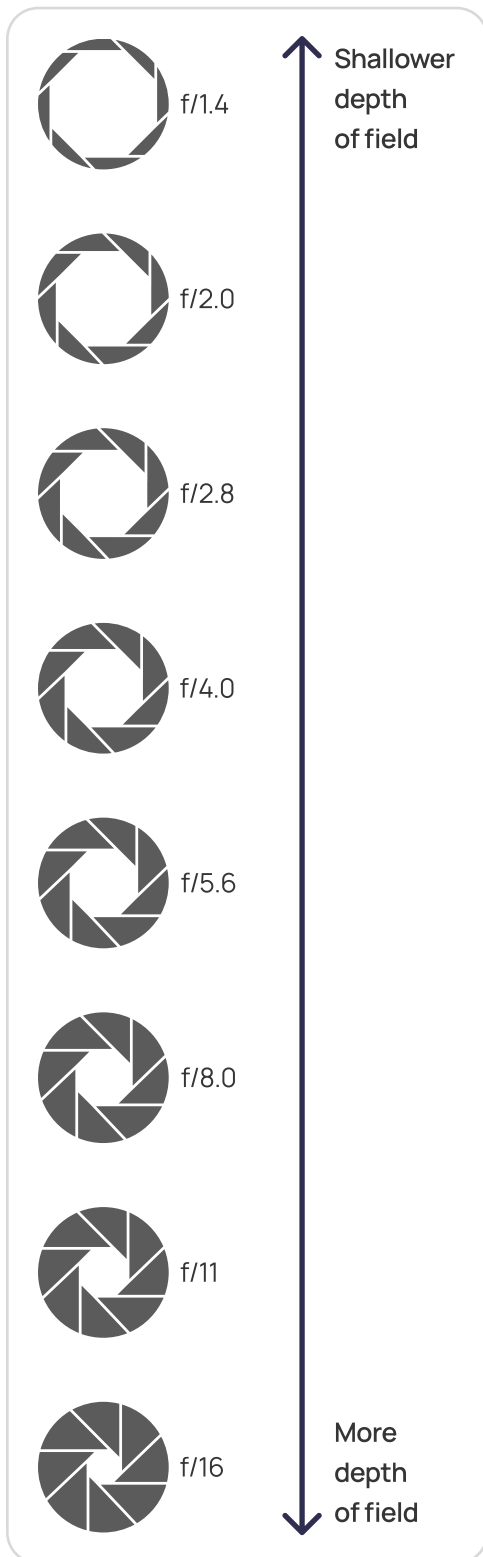
The most important things are to get sharp shots and preserve the atmosphere.

Twilight/candid

ISO 12800+

Modern cameras have revolutionized low-light wildlife photography.

APERTURE



HOW TO USE THE RULE OF THIRDS

Portraits

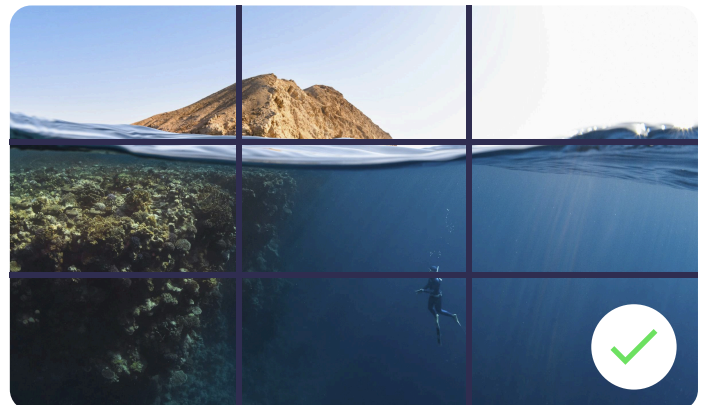


Portrait photos work best when the person's eyes overlap with the intersections on a 3x3 grid. Since those intersections are key focal points, this creates a better sense of eye contact and engagement than placing them dead-center.



If you have more than one subject, try to position them all so that they're near an intersection on the rule of thirds grid.

Landscapes



For landscapes, try to align the horizon with one of the two horizontal lines near the center of the grid (preferably the top one if the land is more visually interesting than the sky).

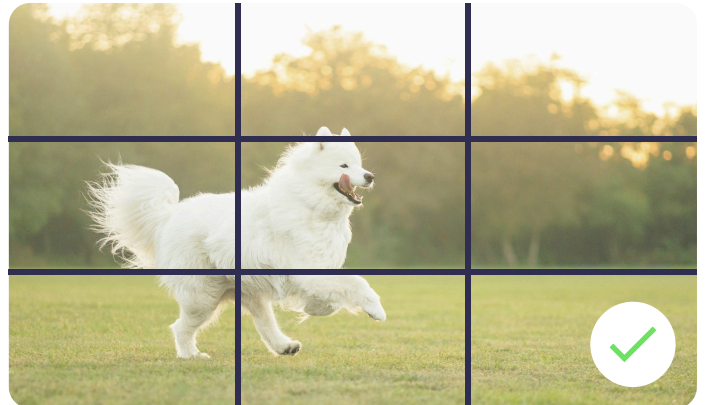
HOW TO USE THE RULE OF THIRDS

Architecture



Perfect symmetry can sometimes be advantageous when photographing architecture. Still, the rule of thirds is useful for drawing attention to a structure's most important focal points.

Action

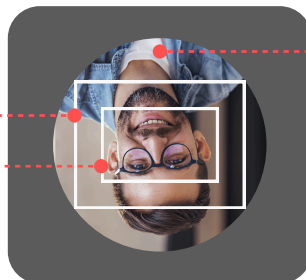


Be careful not to cramp your subject, especially when you want to create a sense of motion. Try placing the subject at one end of the grid and leaving space for their destination at the other.

Effective Focal Length (EFL)

The view on a full-frame camera (sensor size: 36x24mm, same size as 35mm film).

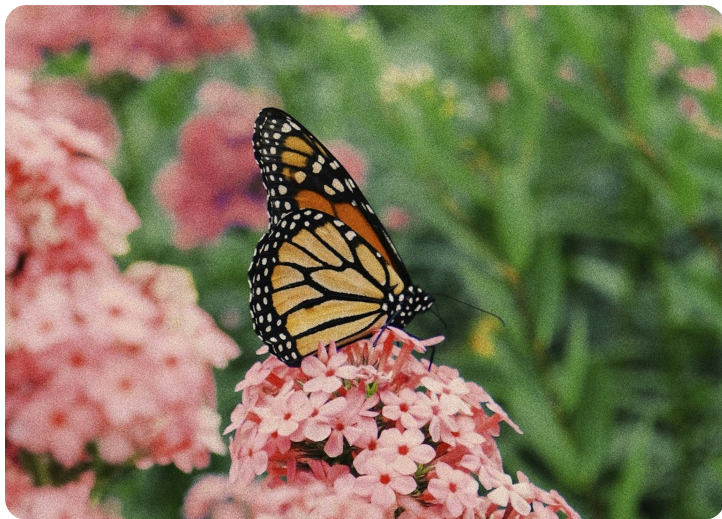
The cropped view on APS-C DSLRs, the EFL is increased and the angle of view decreased.



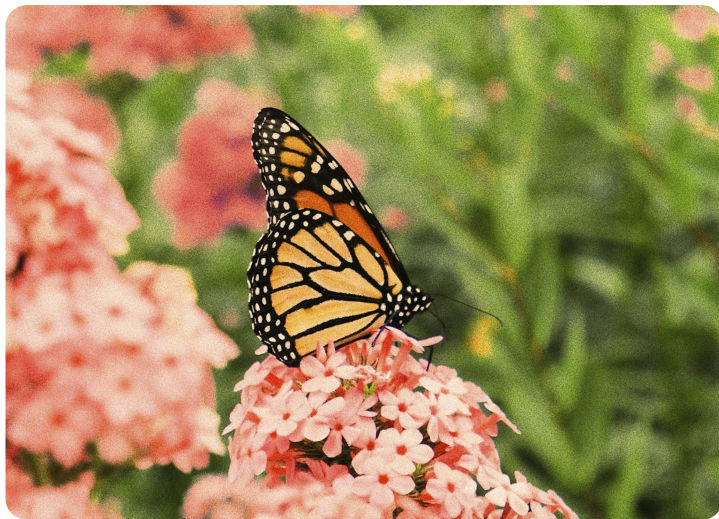
Your lens projects a circular, upside-down image of your subject: thanks to your SLR's prism and mirror, the image then looks the right way up in the viewfinder!

WHITE BALANCE

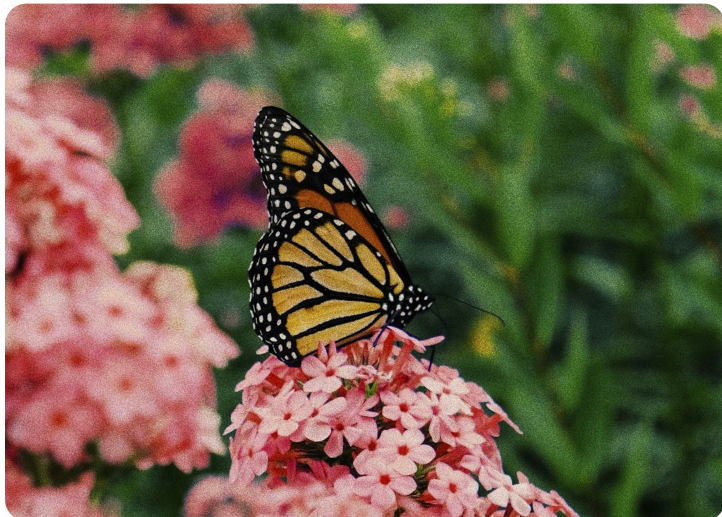
Daylight



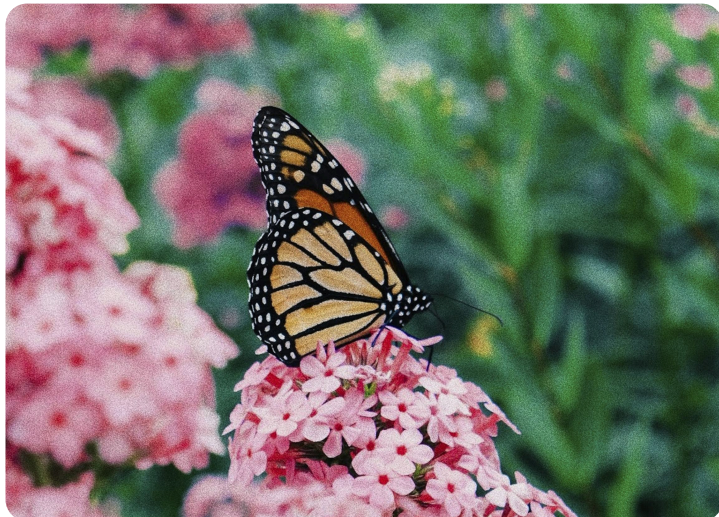
Shade



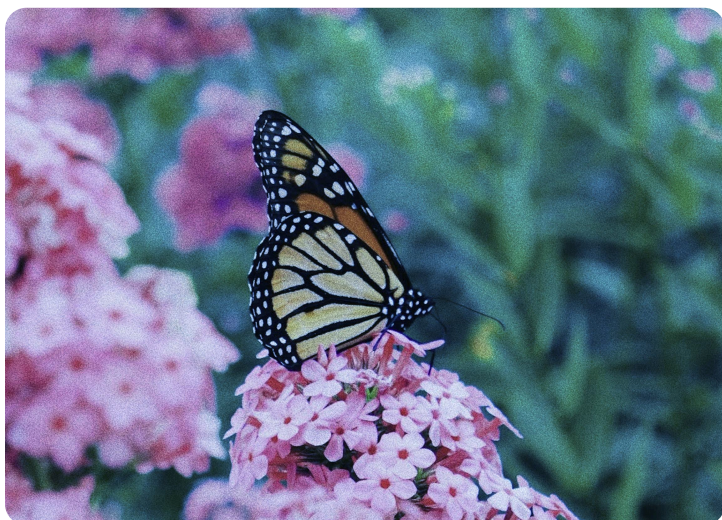
Cloudy



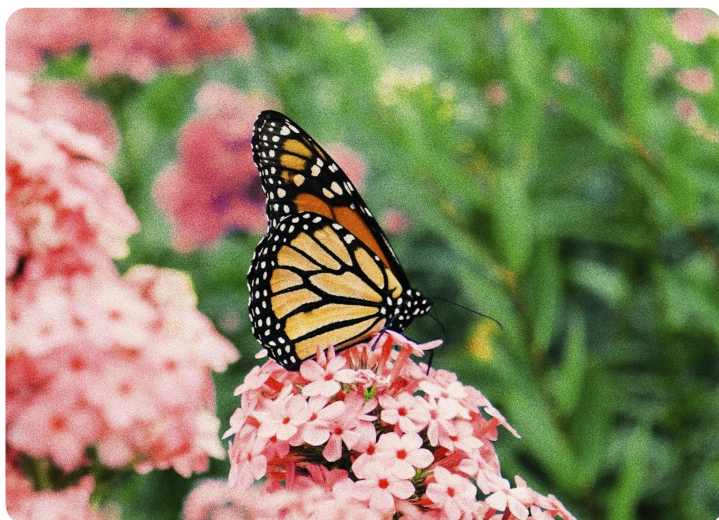
Tungsten



Fluorescent



Flash



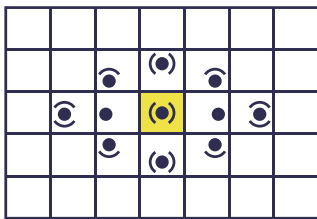
METERING MODES

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



Spot

Spot metering only measures the intensity of light over a small circular area around the active AF point, so you need to pay attention to where this is. The area corresponds to roughly 1.5-2.5 per cent of the frame, depending on which Nikon D-SRL you're using.

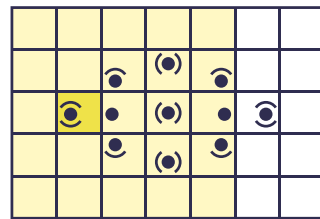


This graph shows how spot metering concentrates around AF point. The small area around the AF point gives an indication of the region covered by spot metering.



3D Color Matrix

The default metering mode Nikon D-SRL measures light distribution across the whole frame, together with color and focus data. It then compares this to an internal database of typical photographic scenes to arrive at a suitable exposure.

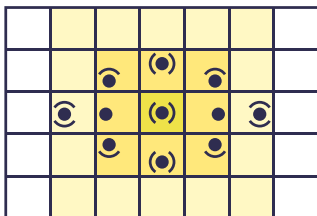


With matrix metering, the shape of the graph changes with each scene. Your current focus point is one the criteria used by matrix metering to work out the best exposure.



Center-weighted

This mode measures the light across the whole picture area. But strongly biases the resulting reading to the center of the view finder. On more advanced Nikon D-SRLs, you can adjust the size of this central area, and hence the overall bias.

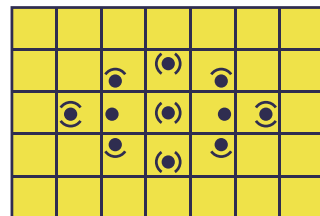


This graph is higher in the middle, where it's heavily "weighted". The exposure is based mainly on the central part of the image, though the outer part's an influence too.



Average

This is a variation on the center-weighted mode that's only available on Nikon's pro D-SRLs. It measures light evenly across the whole frame, which makes it the least sophisticated metering system of all, but for experts it can be the easiest to interpret.

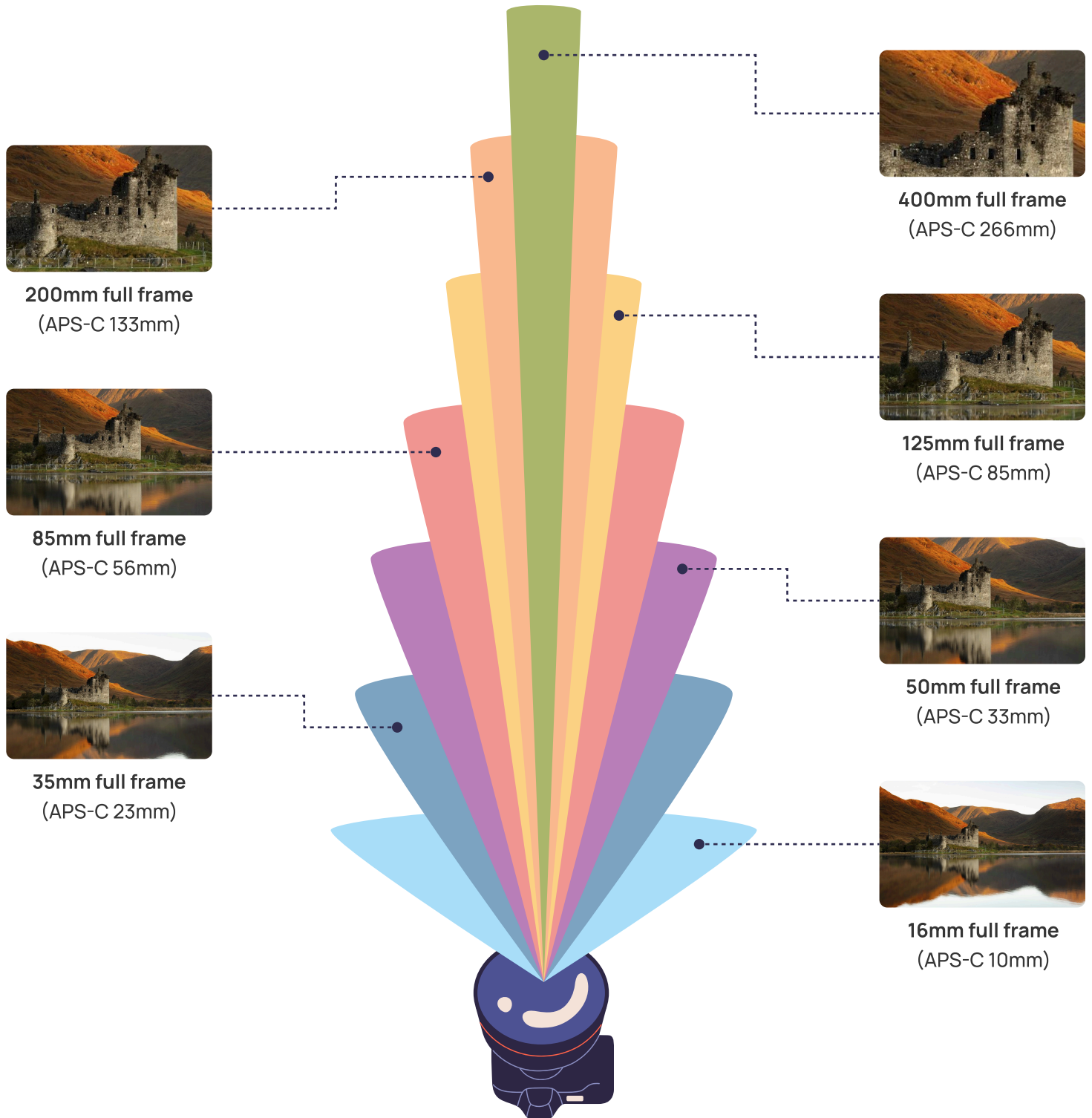


The graph for average metering is flat, as all areas are treated equally. The light across the whole frame is measured as single value. It's a crude method but can be useful.

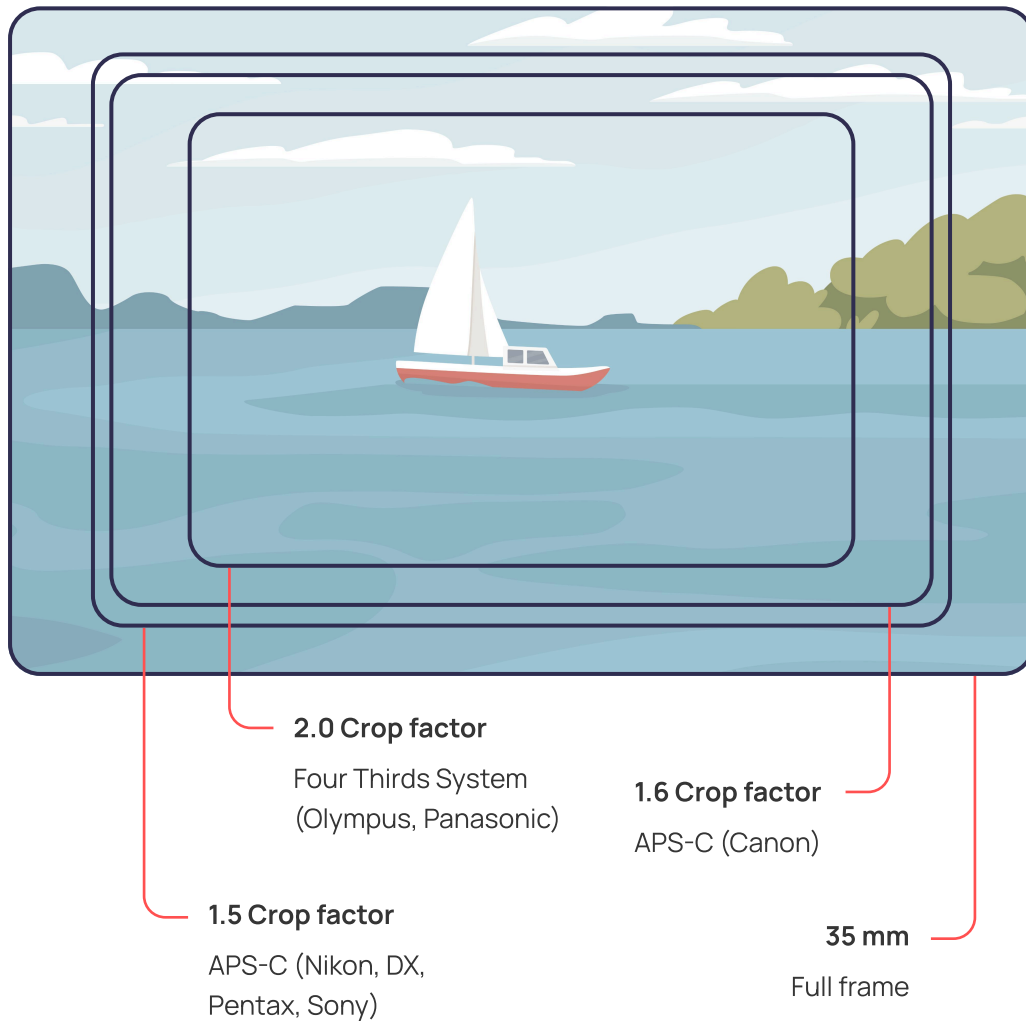
WIDE-ANGLE TO TELEPHOTO

Understand the difference between focal lengths, from 10mm to 400mm

Your lens focal length affects the angle of view you can see through your camera's viewfinder. To really see the difference focal length can make to the angle of view, it's good to compare a sequence of shots of the same subject taken at different focal lengths. See our examples for how much or how little of the scene you can capture in your frame, depending on your effective focal length (EFL).



THE CROP FACTOR



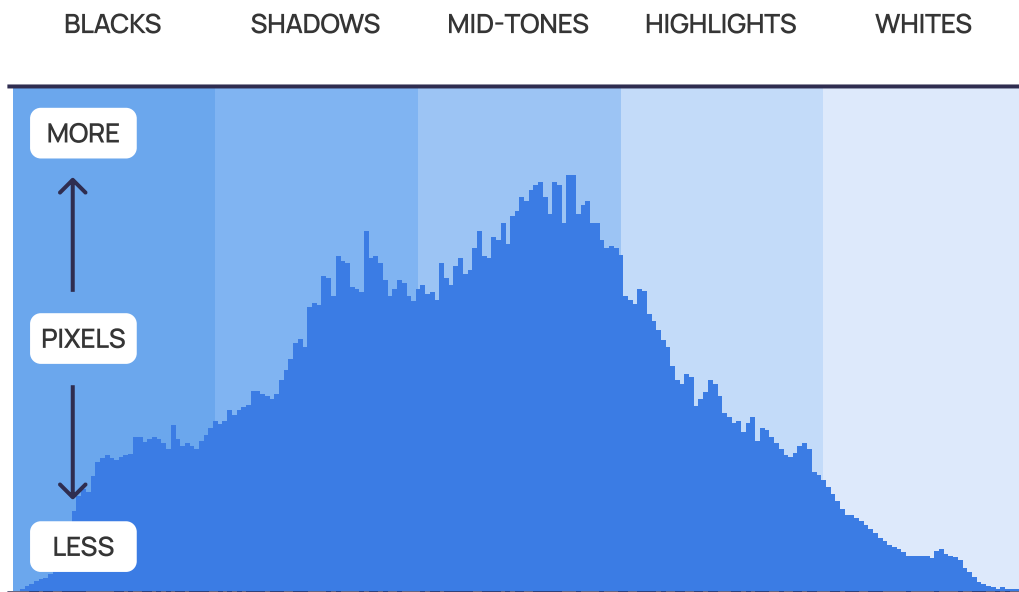
This is the magnification factor for the focal length when you use a sensor size smaller than full frame.

Use it to calculate effective focal lengths and compare lenses between cameras.

35mm	1.5x	1.6x	2.0x
14mm	21mm	22.4mm	28mm
18mm	27mm	28.8mm	36mm
24mm	36mm	38.4mm	48mm
35mm	52.5mm	56mm	70mm
50mm	75mm	80mm	100mm
85mm	127.5mm	136mm	170mm
105mm	157.5mm	168mm	210mm
200mm	300mm	320mm	400mm

HISTOGRAM

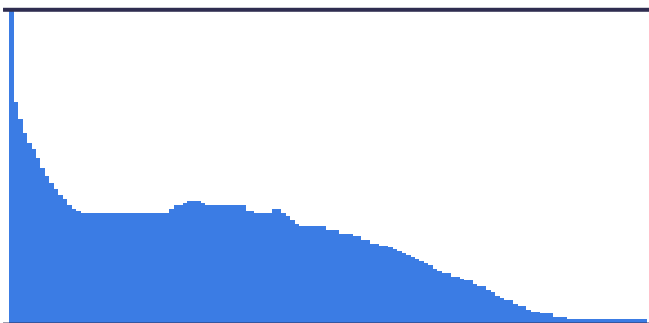
Well exposed



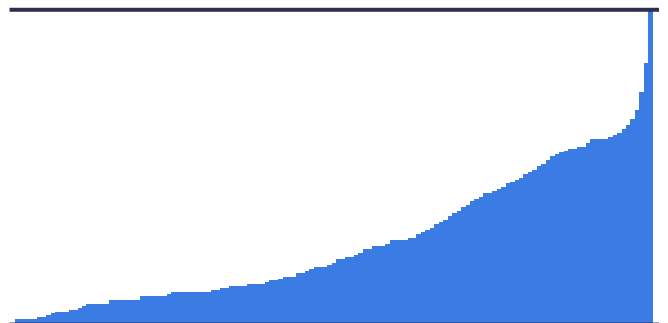
A histogram looks at the pixels in your photograph, and organises them in 256 columns, based on brightness. Black pixels go in the first column on the left, and white pixels in the last on the right. The remaining pixels are organised based on brightness in the rest of the columns.

A well exposed photograph tends to have no black or white pixels. This means you haven't lost information when taking the photograph and can recover the shadows and highlights when post-processing.

Underexposed



Overexposed



FOCUS & FOCUS MODES

AF-S / One Shot

Auto Focus for Still Subjects

Once you lock focus on your subject, the camera will not retain focus if the subject moves. Used commonly in portrait and landscape photography.

AF-C / AI Servo AF

Continuous Focus for Moving Subjects

The camera detects the subject's movements and follows it to keep it in sharp focus. Commonly used in sports photography.

AF-A / AI Focus AF

Auto Focus for Mixed Themes

The camera switches between the two AF modes depending on the subject you are focusing on.

When to Switch to Manual



Low contrast



Subjects behind bars, fences, etc.



Too many details



Background is larger than subject

SHOOTING MODES



AUTO

In **Auto** mode the camera controls the exposure.

P

Program mode controls most of the exposure settings, but allows you to set the ISO, white balance, and more.

S / Tv

Shutter Speed Priority allows you to set your desired shutter speed (and ISO), while the camera controls the aperture.

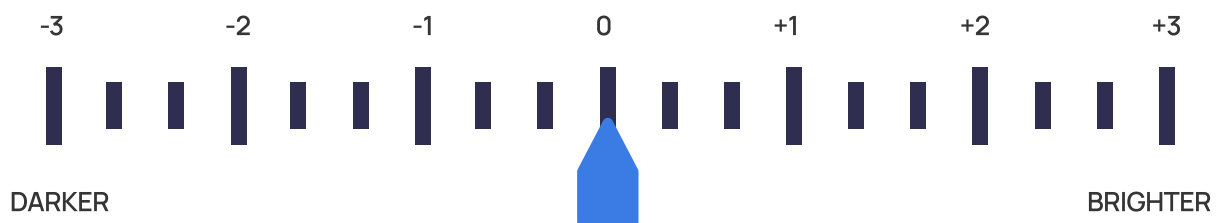
A / Av

Aperture Priority allows you to set your desired aperture (and ISO), while the camera controls the shutter speed.

M

Manual mode gives you full control over the aperture, shutter speed, and ISO.

Exposure Compensation



FOCUS & FOCUS MODES

Monochromatic



Analogous



Complementary



Split complementary



Diad



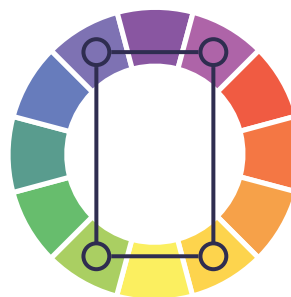
Triad



Square



Tetradic



TRIANGLES

Converging Triangle



If lines extend far enough into the distance, they create a converging triangle. They usually fall outside the frame.



Think of roads or train lines that disappear in front of you. These are often only two lines. The bottom of your frame makes up the third.

Implied Triangle



Triangles are a rare sight in the natural world. We need to imply the existence of a triangle even when we can't physically see it.



This can be through the placement of elements in a frame, forming either a triangle or pyramid shape.

Focus Attention



Triangles, like arrows, converge at a single point, drawing your eyes down their edges and onto the subject.

Three Figure Shot



Three subjects in a frame equal a triangle. No matter where they are placed, drawing a line between them creates a powerful shape.

LINES

Lines serve to create photographic composition in two ways. They add repetition, tension, or emotion to scenes. They lead the viewer's eye through the photograph, keeping their attention focused on the main subject.

Horizontal

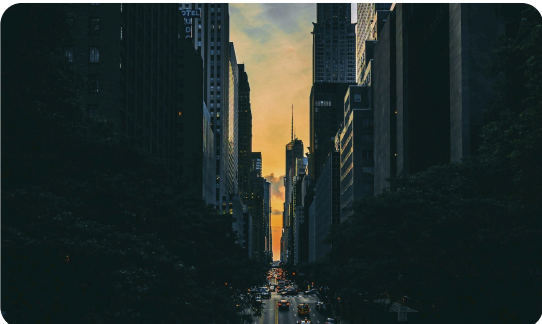


Horizontal lines express stability. Balance comes from their association with the ever present horizon.



Distance and breadth are also strong here. Use when capturing a scene to separate subjects or contrasting areas.

Vertical



Vertical lines appear in objects that either give into gravity or try to escape it. They represent strength.



They're best used for buildings or forests. This is a great area to show repetition through numbers.

Diagonal



Diagonal lines add a sense of action, or add a dynamic mood to a scene.

Jagged and Irregular



These lines do not follow any rules, so they add a sense of tension.

LEADING LINES

Leading lines are a composition technique where the viewer's attention is drawn to lines that lead to the image's main subject.

What can you use



ROADS

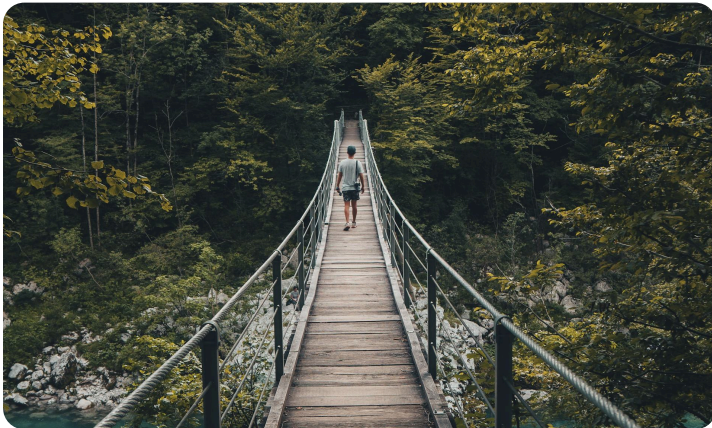


RAILS

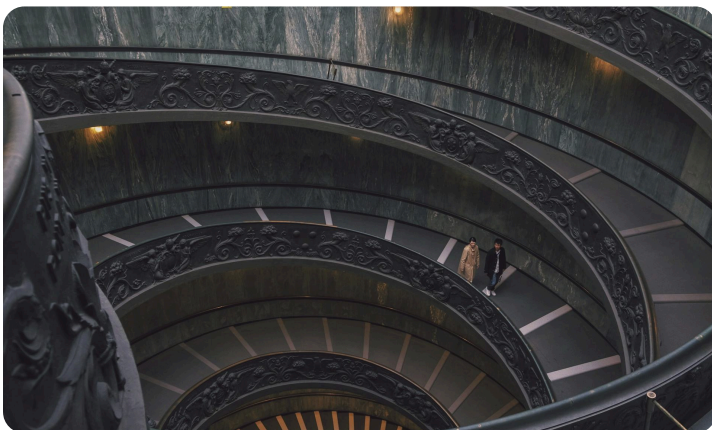


SHADOWS

How to use leading lines



Break the rule



Out of frame

Leading lines that pull your eyes in multiple directions create dynamic tension.

The competing directions for your eyes to follow make it hard to know where to look.

FRAMING

A frame within a frame emphasizes the importance of the subject. The viewer's eyes are drawn to it instinctively.

Natural Elements



Use arches as a natural frame for similar objects for continuity.

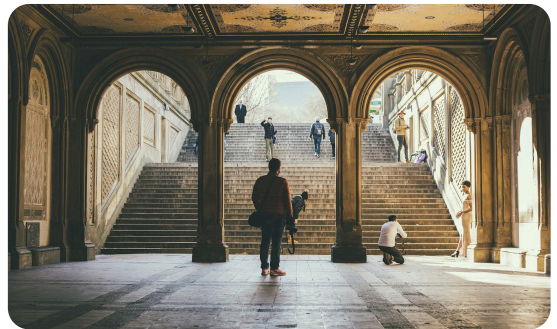


Trees are a perfect frame for urban areas. They add juxtaposition to your scenes.

Architectural Elements



Repeated designs are a great way to lead the viewer's eyes toward an off-center subject.



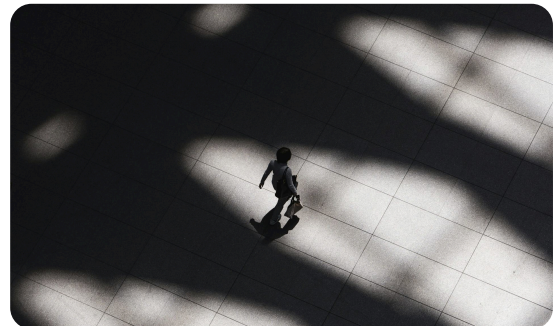
Use arches as natural frames for similar objects. This creates continuity.

Geometric Shapes



Stairwells are a great way to lead a viewer's eyes into the center of the frame.

Using Light/Shadow



Light acts as a frame in a dark room. It illuminates the subject it touches.

PERSPECTIVE & DEPTH

Perspective is the view point you take. It can affect the placement of elements within your scene.

Linear



Look for converging lines to create a vanishing point.

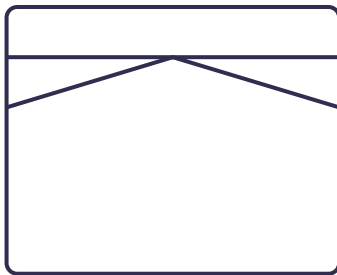
Diminishing



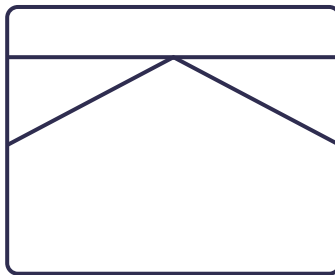
Create infinite depth and highlight subjects to draw viewer attention.

Convergence and Height

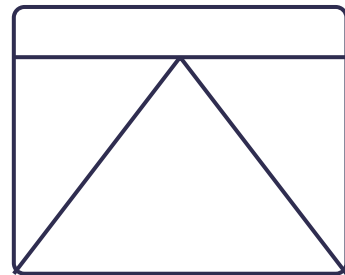
VERY LOW



LOW



MEDIUM



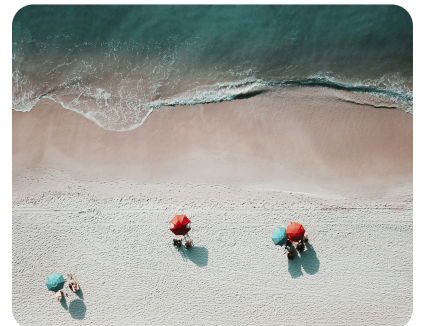
Change your point of view



LINEAR



FROM BELOW



FROM ABOVE

LANDSCAPE

Mountain Range



 Aperture: f/8

- Shoot long or shoot wide
- Compose using the rule of thirds
- Light rays work well here, as do clouds
- Include a foreground element for interest

Rivers and Waterfalls



 Aperture: f/16

- Compose using the rule of thirds
 - Shoot in all weather
- Capture blur by using a slow shutter speed
 - Cut out the sky and focus closer

Sunrise and Sunset



 Aperture: f/11

- Look for clouds as they will change color
- Experiment with horizon placement to highlight the most interesting parts of the frame
 - Switch to manual mode in low light
- Use a tripod to capture the same scene under different light

Lakes and Reflections



 Aperture: f/8

- Try a slow shutter speed to soften moving water
 - Use a polarising filter to capture detail under the water
- Fill the frame for an interesting composition
 - Choose a low perspective to capture more background

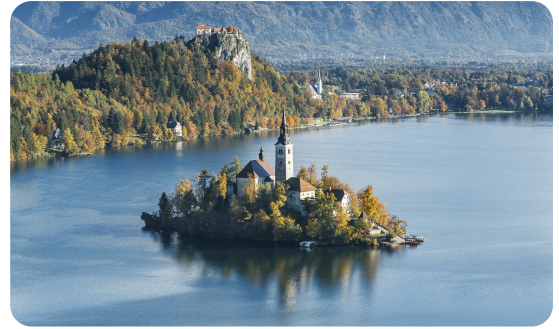
LANDSCAPE COMPOSITION

Foreground Interest



A foreground element adds a point of interest, drawing the viewer into the scene.

Visual Interest



Ensure your scene has something interesting for the viewer to focus on.

Leading Lines



Leading lines help to draw the viewer's eyes to an interesting element in the scene.

Negative Space



Balancing the weight of visual elements in your scene leads to a harmonious composition.

Framing



A frame within a frame helps to isolate the subject and emphasize its importance.

Visual Interest



Triangles are very strong shapes and suggest stability, leading to more dynamic scenes.

BLACK & WHITE

Shoot in RAW

This allows you to edit the B&W by adjusting the individual colors.

Look for patterns

Patterns help to extenuate the interest with in a scene.

Texture & contrast

B&W is a great way to highlight the form of a subject in your scene.

Compose your picture

Notice how visual weight changes in black and white. Adjust your balance accordingly.

Landscape



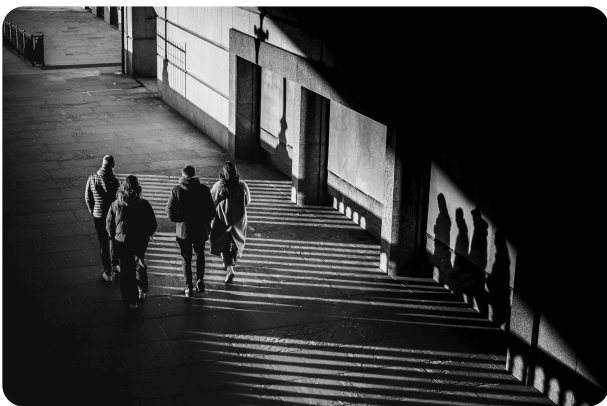
Follow the rule of thirds for interesting landscape images. Look for contrast.

Architecture



Harsh light in and around architecture makes for some interesting images.

Street



Street photography works well with textures and patterns. Find and use them.

Still life



For still life photography, look for strong shapes and lines for the best images.

LENSES

Main Types

PRIME



- Fixed focal length
- Wider apertures
- Better quality
- Sharper images

ZOOM



- Variable focal length
- Not sharp throughout
- Versatile
- Heavy

Other Types

WIDE ANGLE



This will give you a wide field of view, but you can also expect to see distortion around the edges of the frame. Best for large subjects or spaces.
Range from 11 to 35 mm.

STANDARD



The standard lenses show the least amount of distortion. These are used mainly for street and everyday photography.
Range from 35 to 70 mm.

TELEPHOTO



These allow you to photograph a subject from a distance. Best used for sports and portrait photography.
Range from 70 to 400 mm.

MACRO



These lenses operate like normal lenses, but they allow a much smaller focusing distance. This lets you get very close to a subject while offering 1:1 magnification.