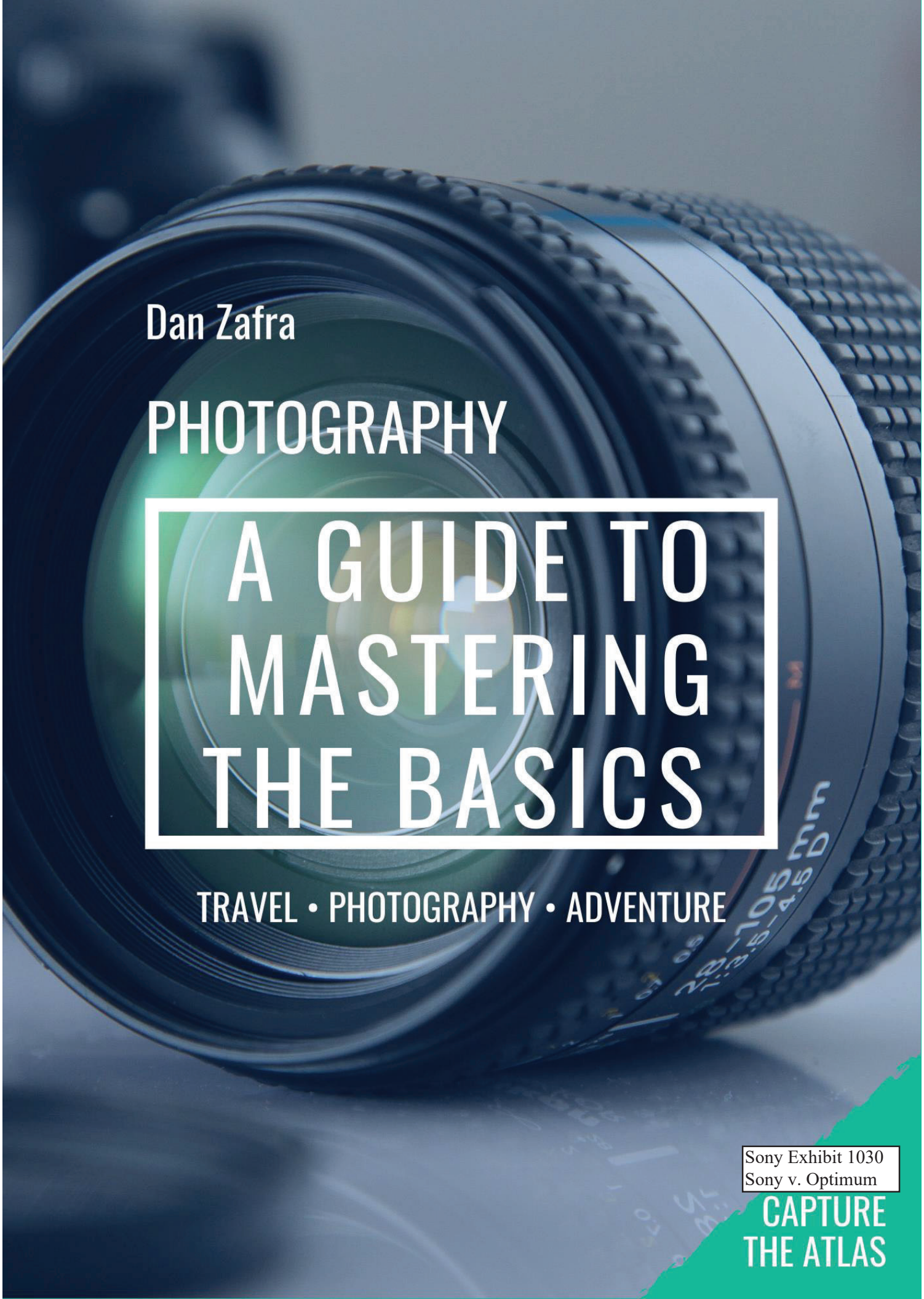

Dan Zafra

PHOTOGRAPHY

A GUIDE TO MASTERING THE BASICS

TRAVEL • PHOTOGRAPHY • ADVENTURE

Sony Exhibit 1030
Sony v. Optimum

CAPTURE THE ATLAS

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About Dan Zafra

Dan is a professional nature and landscape photographer, photography educator, and co-founder of the travel and photography website Capture the Atlas.

His basecamp is in Pennsylvania, USA, but he spends long periods exploring and photographing new locations around the world. Along with this, his main passion is to educate and share his experiences with others.

Dan helps other photographers improve their photography through his international workshops and photo tours in places like Iceland, Norway, the US, and Russia, as well as all the educational resources on **Capturetheatlas.com,** where he shares photography guides and inspirational articles.

Dan's work has been featured in international media like *Forbes*, *Insider*, *CNN*, the *Daily Mail*, and different publications in more than 20 countries. His images have also earned recognition in international photography contests like the Epson International Pano Awards and the International Photography Awards. He also writes for renowned photography websites like Petapixel and Landscape Photography Magazine.

INTRO

The **photography basics** are fundamental for anyone who is **beginning to work in photography**.

Regardless of your interests, gear, or goals, having a solid foundation of the **main concepts of photography** is key to capturing better images and improving your photography.

This **photography basics guide** is what I'd have loved to have had when I first picked up my camera; all the important information you need to **understand the main photography concepts** displayed in a logical and digestible order.

To help you in the process, I also included plenty of examples, infographics, and **photography basics cheat sheets** that will make the process easier.

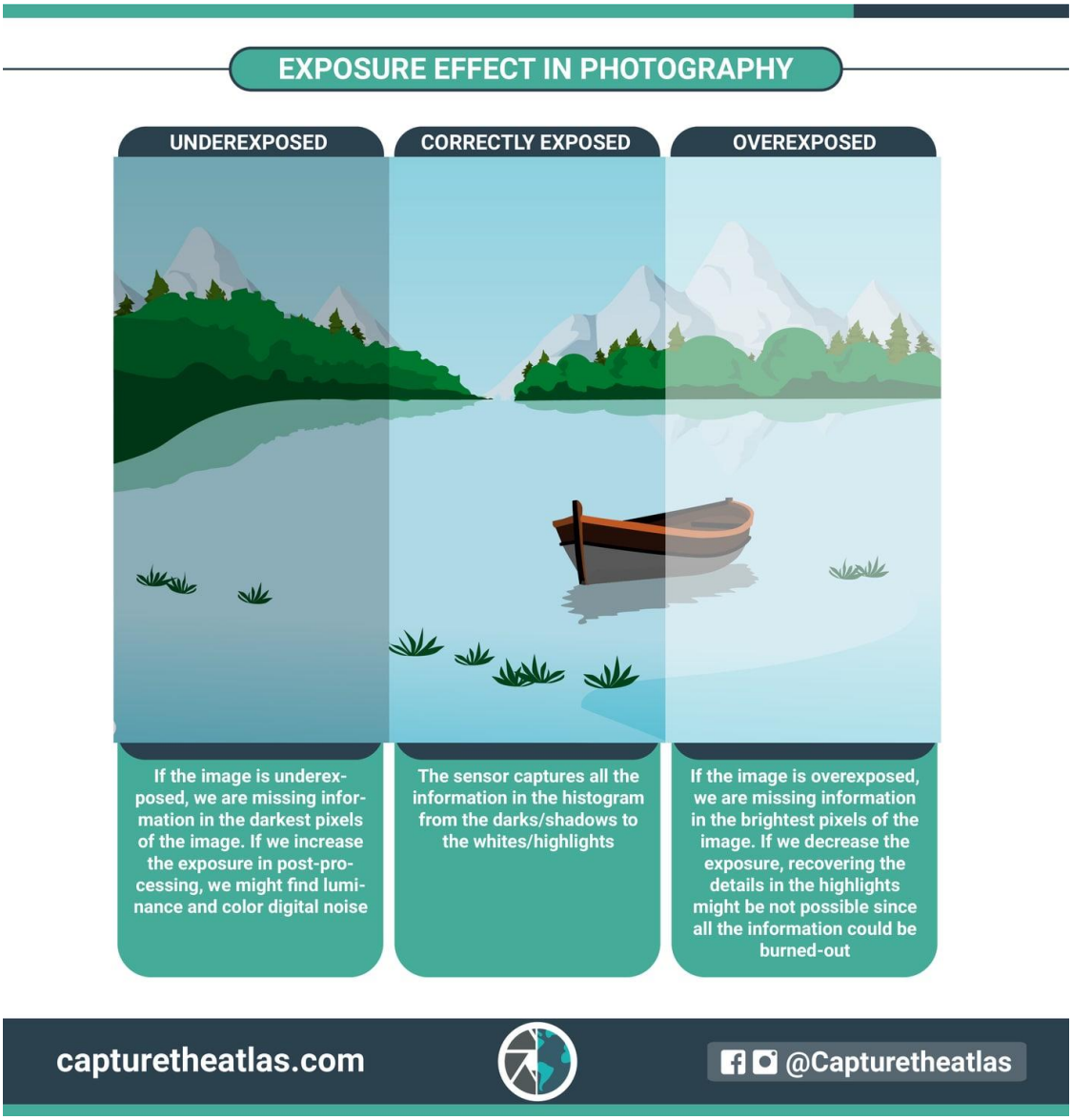
My recommendation is to start from the beginning since understanding the main basics are fundamental to put all the other pieces together. Some chapters also include links to specific articles on our website in case you want to complement the information and have a better understanding of that specific topic.

I hope you find this e-book helpful and you enjoy this new photographic journey. Let's get started!

1. EXPOSURE

Exposure is the **most important photography basic,** and the first photography concept that you need to understand.

The **photography exposure basics** are composed of different elements that we'll discuss below, like the **aperture**, **shutter speed**, and **ISO.** The fundamental thing to understand is the effect of exposure, which is to capture the image with a determined brightness (this is also called "Exposure Value").



Ideally, the image should be **correctly exposed**, that is, with the perfect amount of brightness where you can see all the detail in the highlights and the shadows.

The exposure basics also have other effects on the final look of the image, like the **depth of field**, the **motion**, and the **sharpness/digital noise**. We'll also get into this throughout this **photography basics e-book**.

This set of images is a good **example** of the same picture taken using different exposures:

Underexposed image – 1/50 sec, f/8, ISO 640

Correct exposure – 1/10 sec, f/8, ISO 640

Overexposed image – 0.4 sec, f/8, ISO 640

2. APERTURE

Aperture is the **first concept of the photography exposure basics.**

The **aperture** works like our pupils; it's the opening of the camera lens, which controls the amount of light that goes through the lens to the camera sensor.

The max. and min. aperture of the lens is defined by a value known as **"F-stop"**. The larger the F-stop number is, the smaller/narrower the aperture, and vice versa. This number follows a sequence like this:

Aperture effects in photography

- **Aperture and Exposure**: The **wider the aperture** (or lower F-values), the **brighter your image will be**, and the narrower your aperture (higher F-values), the darker it'll be. Large apertures are also known as fast apertures since they allow you to decrease the total exposure time, and small apertures are also known as slow apertures since they let you increase the shutter speed.

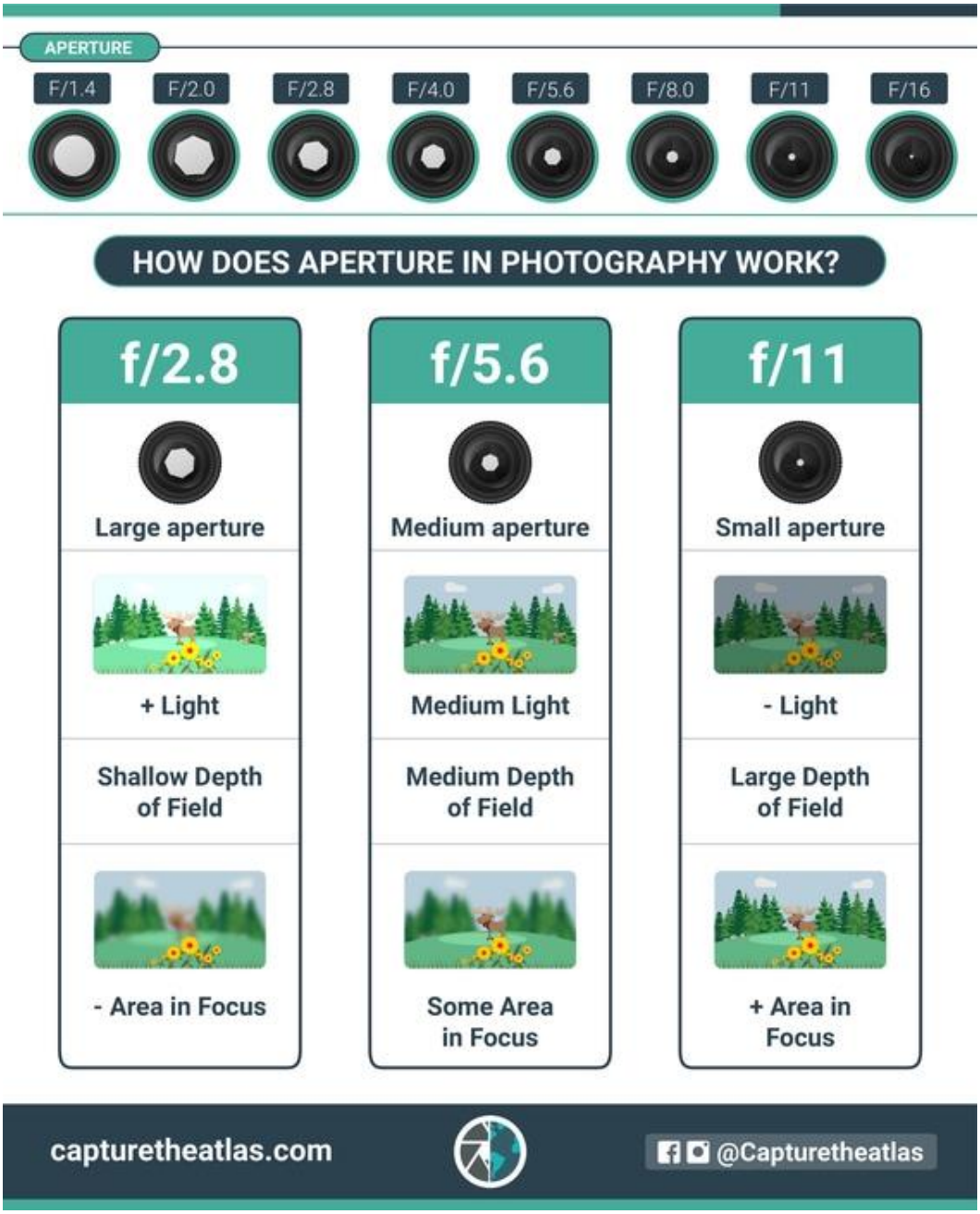
- **Aperture and Depth of Field**: The **depth of field** is the proportion of the image that is reasonably sharp and in focus.

  The larger the aperture you use, the shallower depth of field you'll be able to capture, meaning that more areas of your images will be out of focus and less sharp. Conversely, **the smaller the aperture you use, the greater the depth of field** you'll see in your image, meaning a larger proportion of the image will be in focus.

- **Aperture and Sharpness**: When you use a large aperture, your lens can't physically produce the sharpest results, and as you open your aperture below f/5.6 values, you'll be able to notice how your image loses **sharpness.**

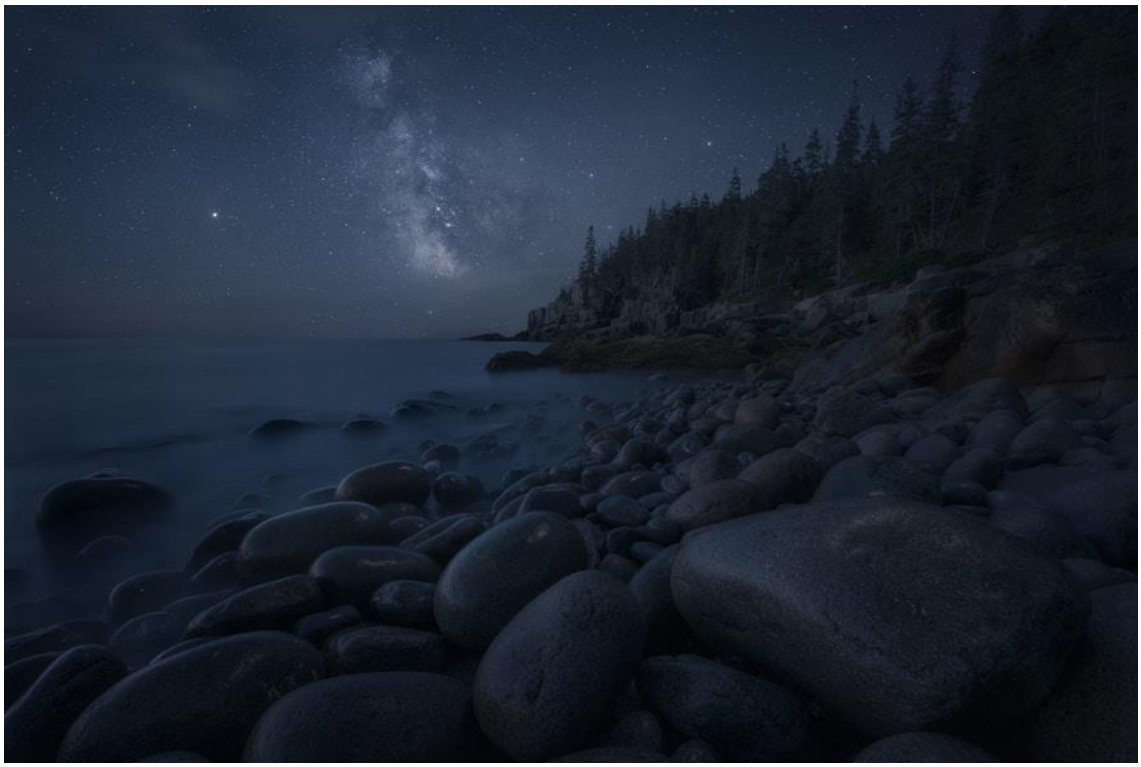
  The same thing happens when you set a very small aperture. In that case, there is a phenomenon called **diffraction**, which causes less sharpness when you start closing the aperture above f/16 values.

In the following **infographic,** you can see all the main aperture effects in photography:



Here, you can also find a few **examples** taken using different apertures:

Small aperture to capture the entire landscape in focus. f/11, 0.6 sec, ISO 100



Large aperture example to shoot the Milky Way and the stars. f/2.8, 25 sec, ISO 5000

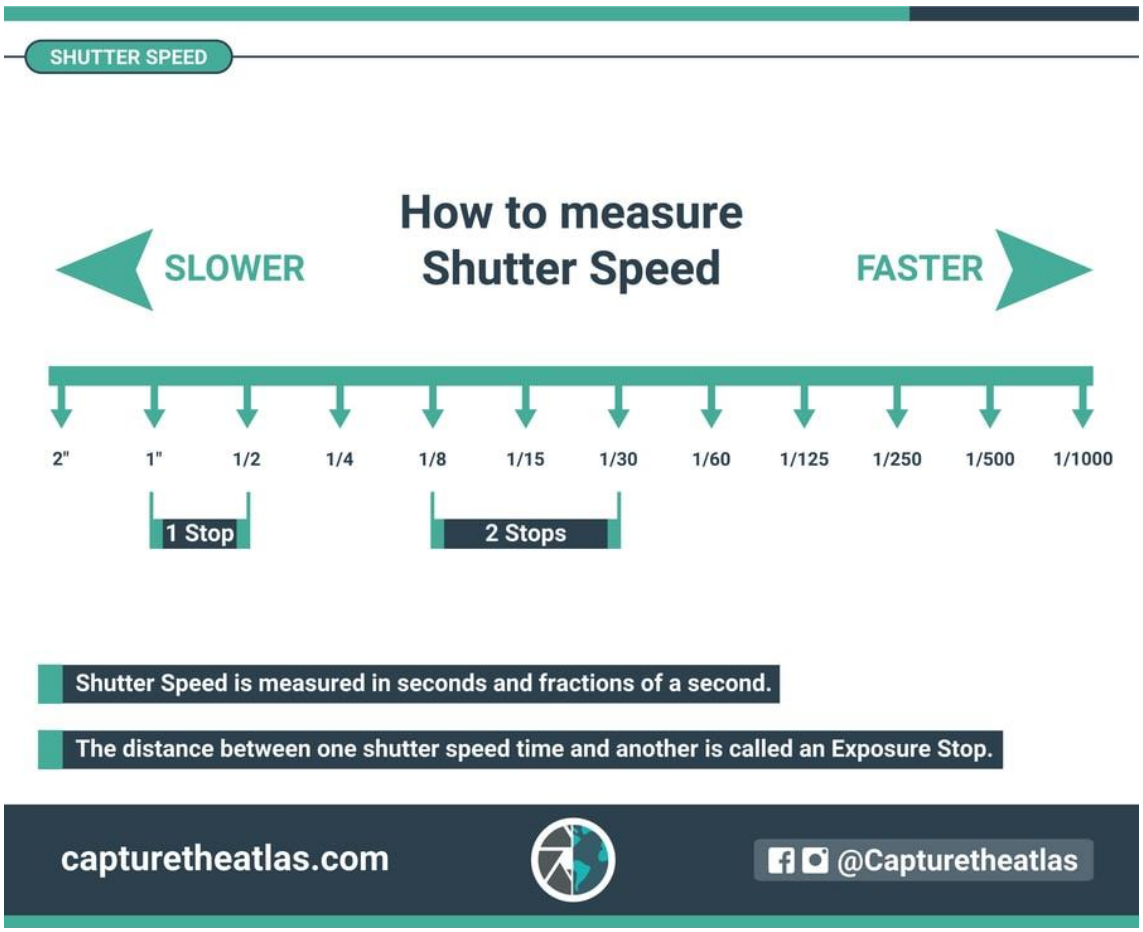
Very small aperture to get everything in focus with a close foreground. f/16, 1/125 sec, ISO 100

Very large aperture to photograph a portrait with a blurred background f/1.8, 1/3200 sec, ISO 200

3. SHUTTER SPEED

Shutter speed is related to how long the camera shutter is open and capturing light.

Shutter speed is measured in **seconds** and **fractions of a second**, following a sequence like this:



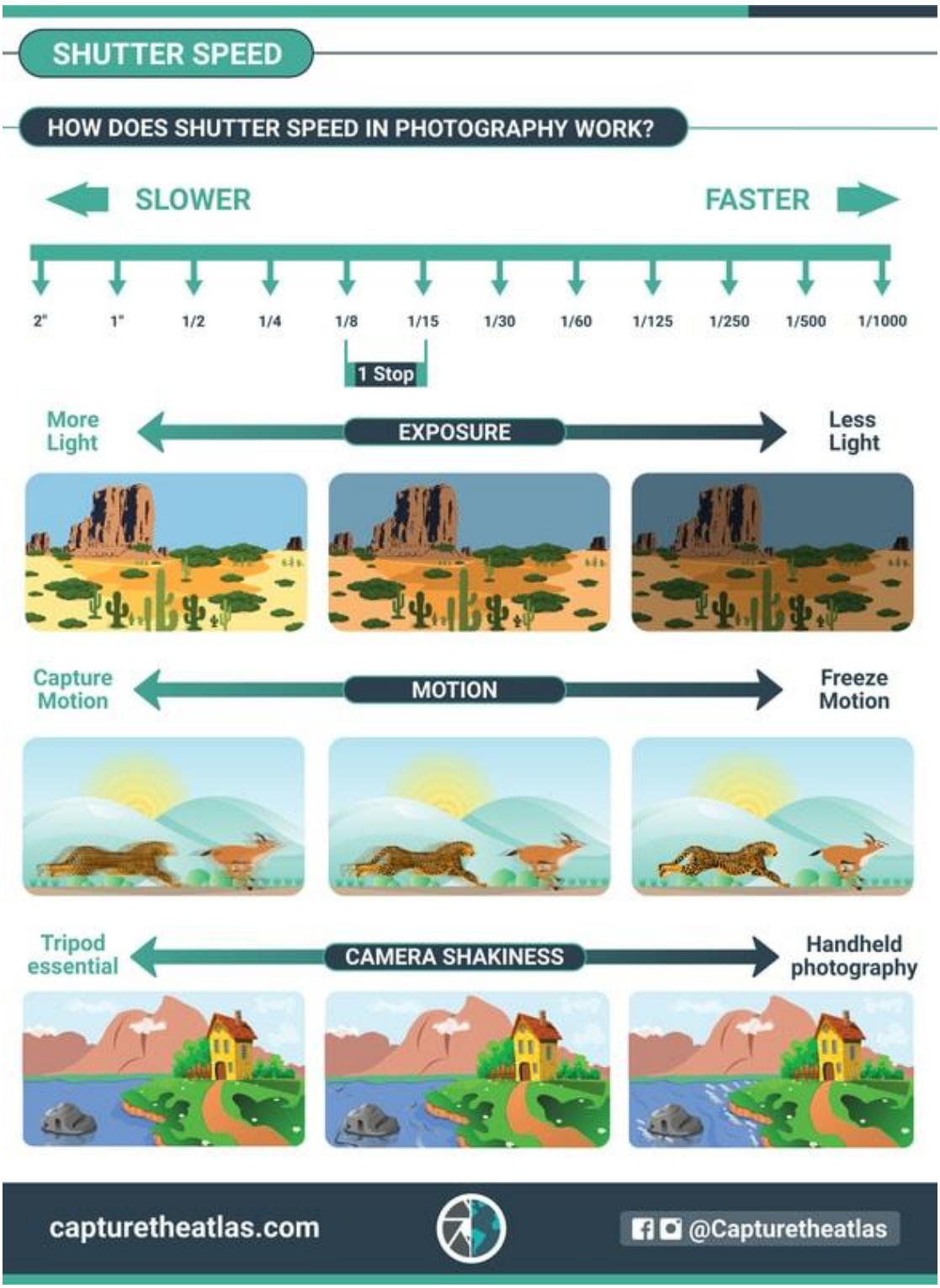
Shutter speed effects in photography

- **Shutter Speed and Exposure**: The faster the shutter speed, the darker the image will be, and the slower the shutter speed, the brighter the image will be.

- **Shutter Speed and Motion**: By using a slower or faster shutter speed, you'll be able to capture a more static or dynamic image, something that is also known in photography as motion. This is crucial since choosing the wrong shutter speed can result in a loss of sharpness and clarity in your photos.

- **Shutter Speed and Camera Shake**: The speed at which you're shooting, along with the focal length**,** will determine if you can shoot handheld or if you need to use some form of stabilization, like a tripod. As a reference, the minimum shutter speed rule for shooting handheld says that you shouldn't use a slower shutter speed than your camera focal length.

You can check this **infographic** to see the main shutter speed effects in photography:



Below, you'll find some **examples** of photos taken using different shutter speeds:

Slow shutter speed to create a long exposure effect – 0.5 sec, f/16, ISO 100

Fast shutter speed to freeze motion in this street image – 1/4000, f/1.8, ISO 200

Super-fast shutter speed to capture the action – 1/8000 sec, f/6, ISO 1600

Slow shutter speed to capture more light at night – 30 sec. f/2.8, ISO 3200

4. ISO

The **ISO** works by increasing the light information captured by the camera sensor.

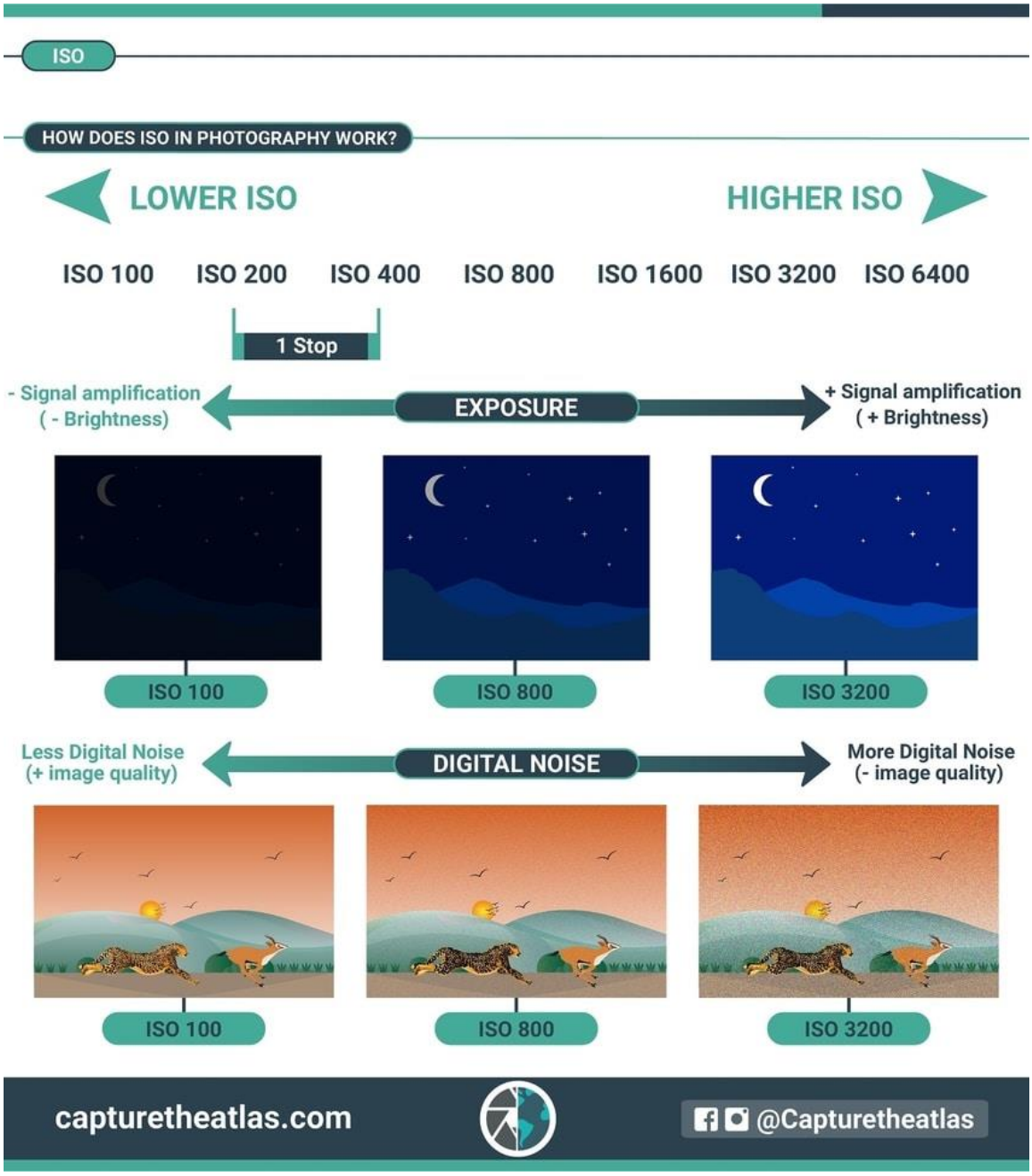
The ISO number is usually measured using "**ISO levels**", which follows this sequence:

ISO effects in photography

- **ISO and Exposure**: The lower the ISO, the darker the image will be, and the higher the ISO, the brighter the image will be.

- **ISO and digital noise**: When you raise the ISO, your camera is "artificially" increasing the light in the photograph, and this light amplification increases the quantity of grain and noise in your images. It's crucial to understand how ISO affects your images according to your camera since the sensor size and model will also play a key role in the final quality and sharpness of the images.

This **infographic** shows all the main ISO effects in photography:



Here, you can also see a few **examples** of images taken at two different ISOs:

Image taken in daylight at a low ISO to maximize the quality – 15 sec. f/11, ISO 100

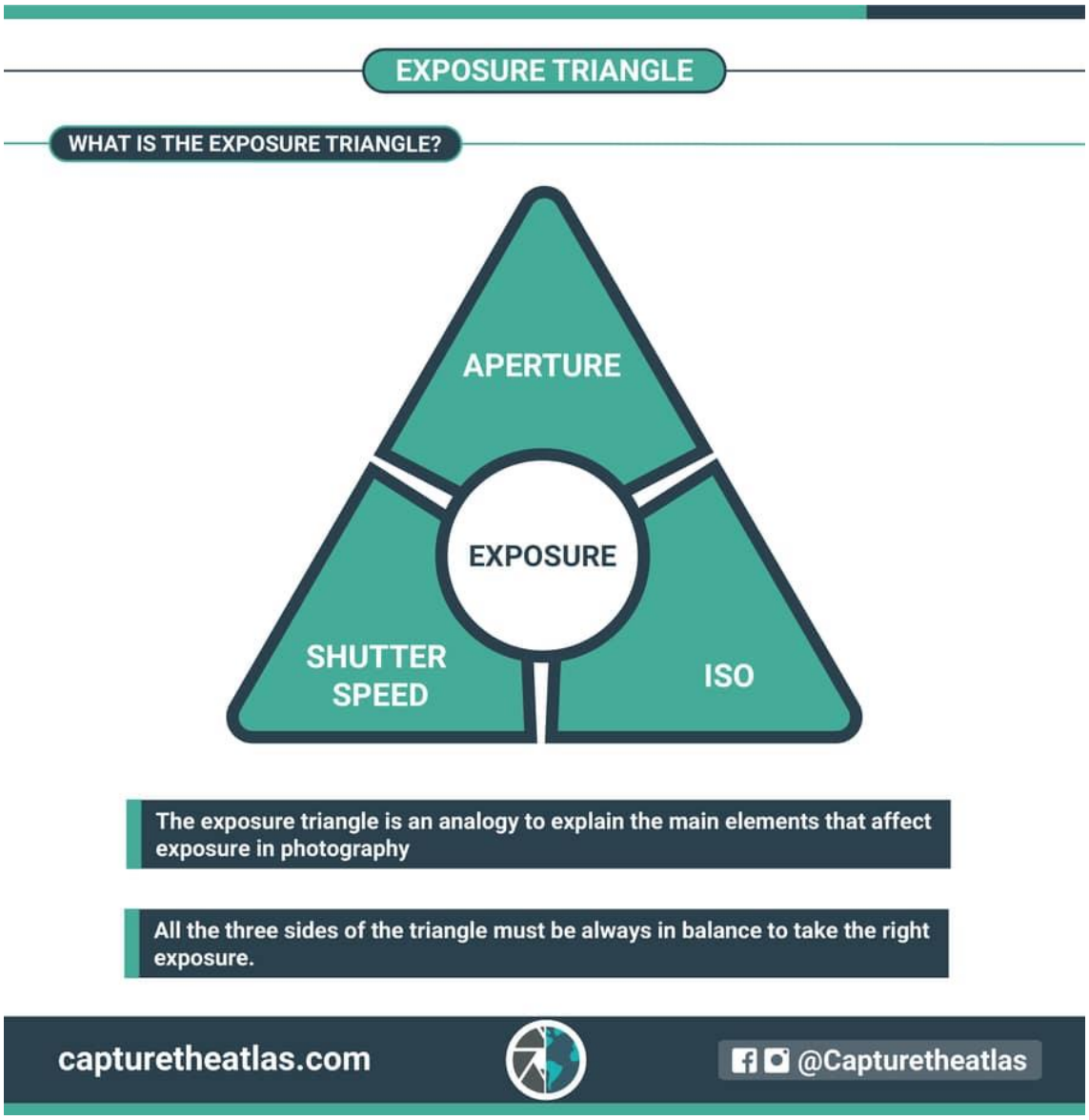
Picture taken at night using a higher ISO to freeze the movement of the Aurora - 4 sec, f/1.8, ISO 6400

5. EXPOSURE TRIANGLE

Once you **understand the photography basics of aperture, shutter speed, and ISO**, it's time to put them all together!

The best way to see how these elements interact with each other is through **the exposure triangle**.

The **exposure triangle** is simply an analogy to explain the effects and interaction of the main photography basics of exposure. According to this, **all three elements must be in balance** if you want to capture a correctly exposed image; when you adjust one side of the triangle, you'll have to either adjust one side or the two other sides if you want to keep the balance.



To understand how the exposure triangle works, it's important to be familiar with **photography stops**.

A photography stop is a way to measure light, and it means doubling or halving the amount of light that hits the camera sensor.

For example, if you adjust the shutter speed down from 1/4000th of a second to 1/2000th of a second, you're increasing by one stop and, therefore, doubling the amount of light. On the other hand, if you change your ISO 1 stop down from 400 to 200, you're halving the amount of light.

In the graphic below, you can see the relation between **stops and the photography basics of the exposure triangle** simplified:

EXPOSURE TRIANGLE

EXPOSURE TRIANGLE STOPS

Photography Stops	Aperture (F-stop)	Shutter Speed	ISO
1	32	1/4000	50
2	22	1/2000	100
3	16	1/1000	200
4	11	1/500	400
5	8	1/250	800
6	5.6	1/125	1600
7	4	1/60	3200
8	2.8	1/30	6400
9	2	1/15	12800
10	1.4	1/8	25600

The exposure triangle stops are key to calculate and balance the sides of the exposure triangle.

A photography stop is a way to measure light, and it means doubling or halving the amount of light that hits the camera sensor.

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THE FINAL GOAL: BALANCE IN THE EXPOSURE TRIANGLE

The **basic exposure triangle rule** is to strike a balance. When the three sides of the triangle are in check, you'll have the right exposure value (EV), which is normally close to zero.

According to this rule, whenever you adjust one of the sides of the triangle, you'll have to compensate by adjusting either one or two of the other sides, always keeping a balance.

For example, let's say you have the exposure triangle in balance with the exposure value (EV) equal to zero, and you want to increase two aperture stops. To maintain balance so that the exposure value (EV) remains zero, you must reduce an ISO stop and a shutter speed stop. The other option would be reducing either two ISO stops or two shutter speed stops.

This might sound confusing at first, but it's very easy to understand with the next **graphic example**.

EXPOSURE TRIANGLE

HOW DOES THE EXPOSURE TRIANGLE WORK?

BALANCE IN THE EXPOSURE TRIANGLE

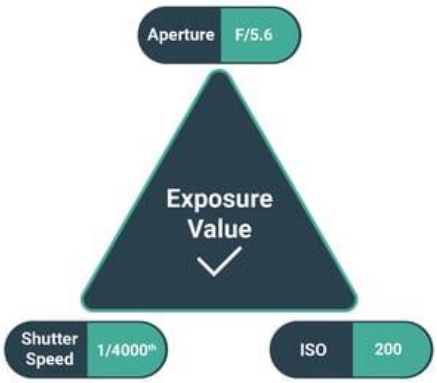
We want to capture a flying bird. To freeze motion,we increase the shutter speed from 1/2000th sec. to 1/4000th sec.

This Exposure Triangle provides a good Exposure Value

To balance the Exp.Triangle, we have to compensate increasing 1 Stop of light. We have 2 options

Increase the ISO(200→400)

Open the Aperture(f/8→f/5.6)



The goal of the exposure triangle is to strike a balance to have the right Exposure Value (EV)

If we adjust one of the sides of the exposure triangle, we need to adjust either one or the two other sides to keep the balance

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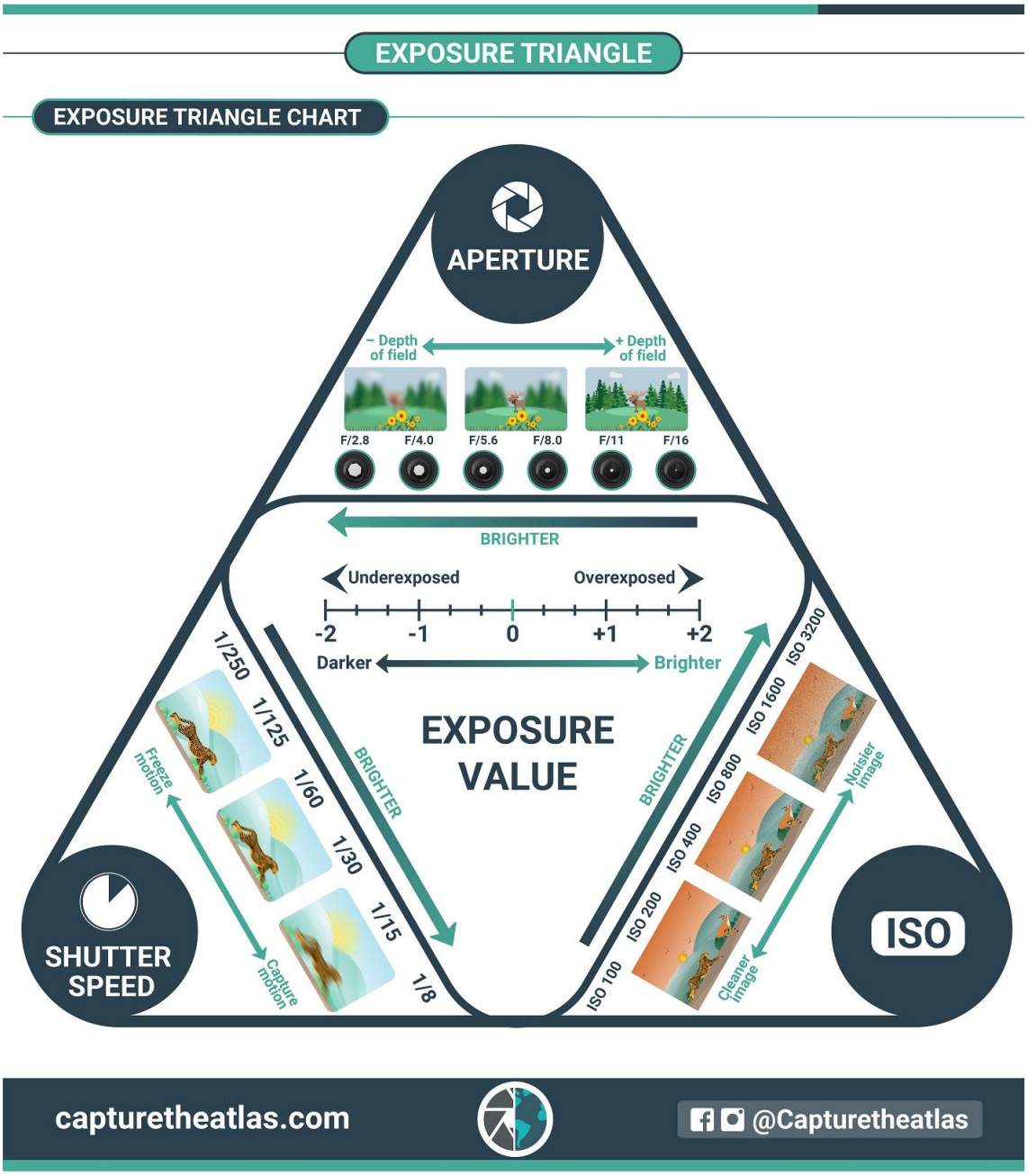
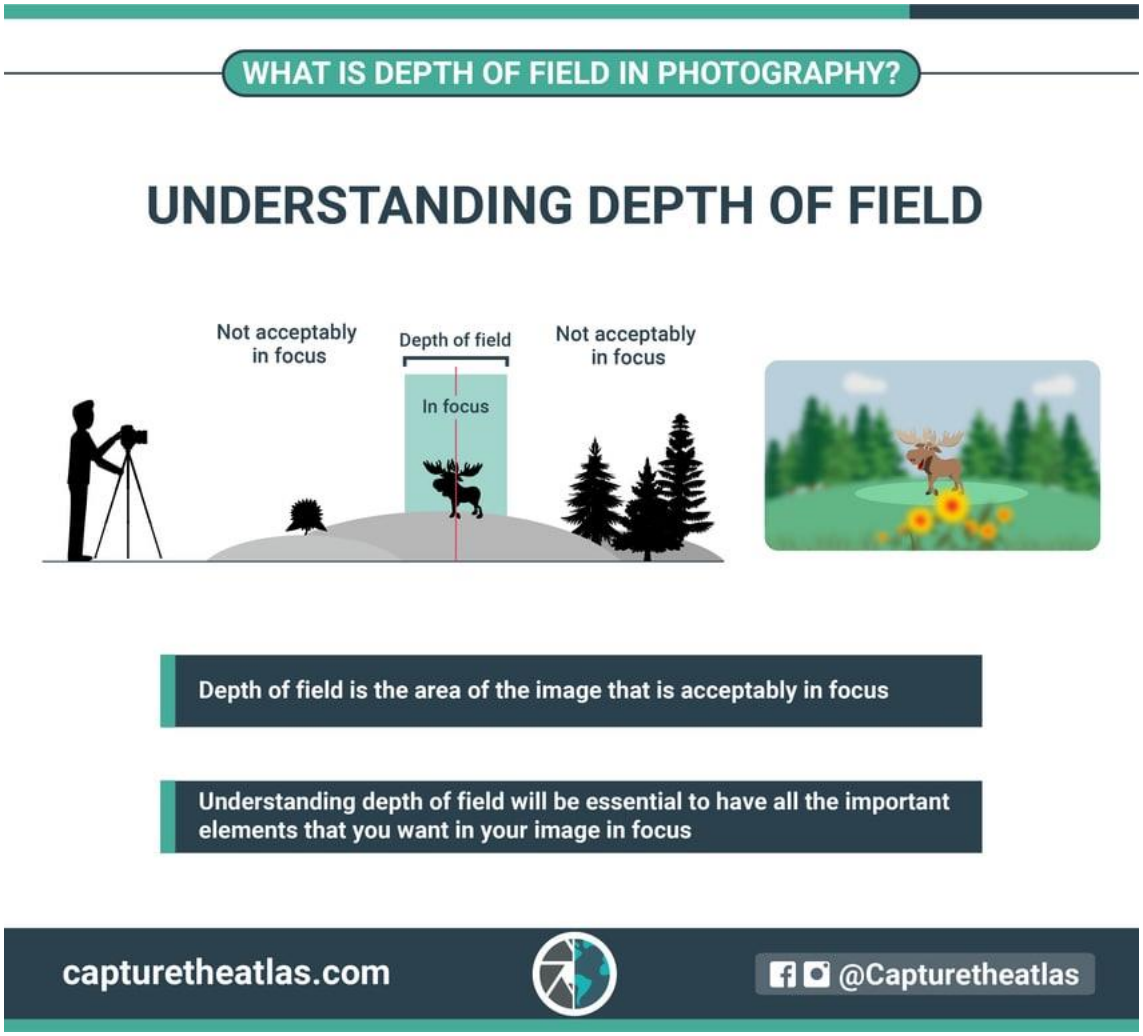
You can see a summary of all the exposure triangle basics and how the exposure triangle works in the following **infographic**:



6. DEPTH OF FIELD

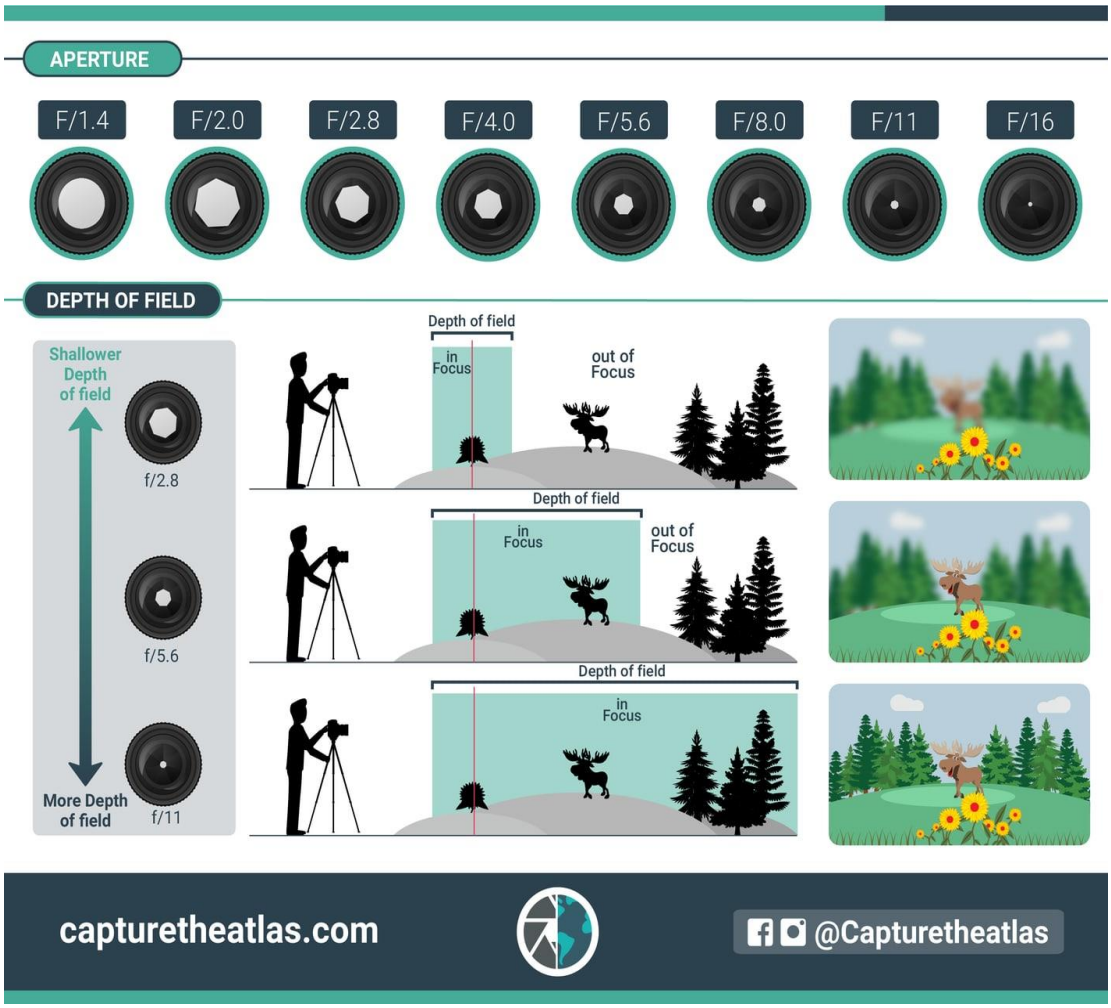
The **depth of field** is simply the space in the image that is acceptably sharp and in focus.

In photography, we can say that there's a **shallow depth of field** when just a narrow portion of the frame is acceptably sharp, whereas we speak about a **large depth of field** when a significant portion of the frame is in focus.

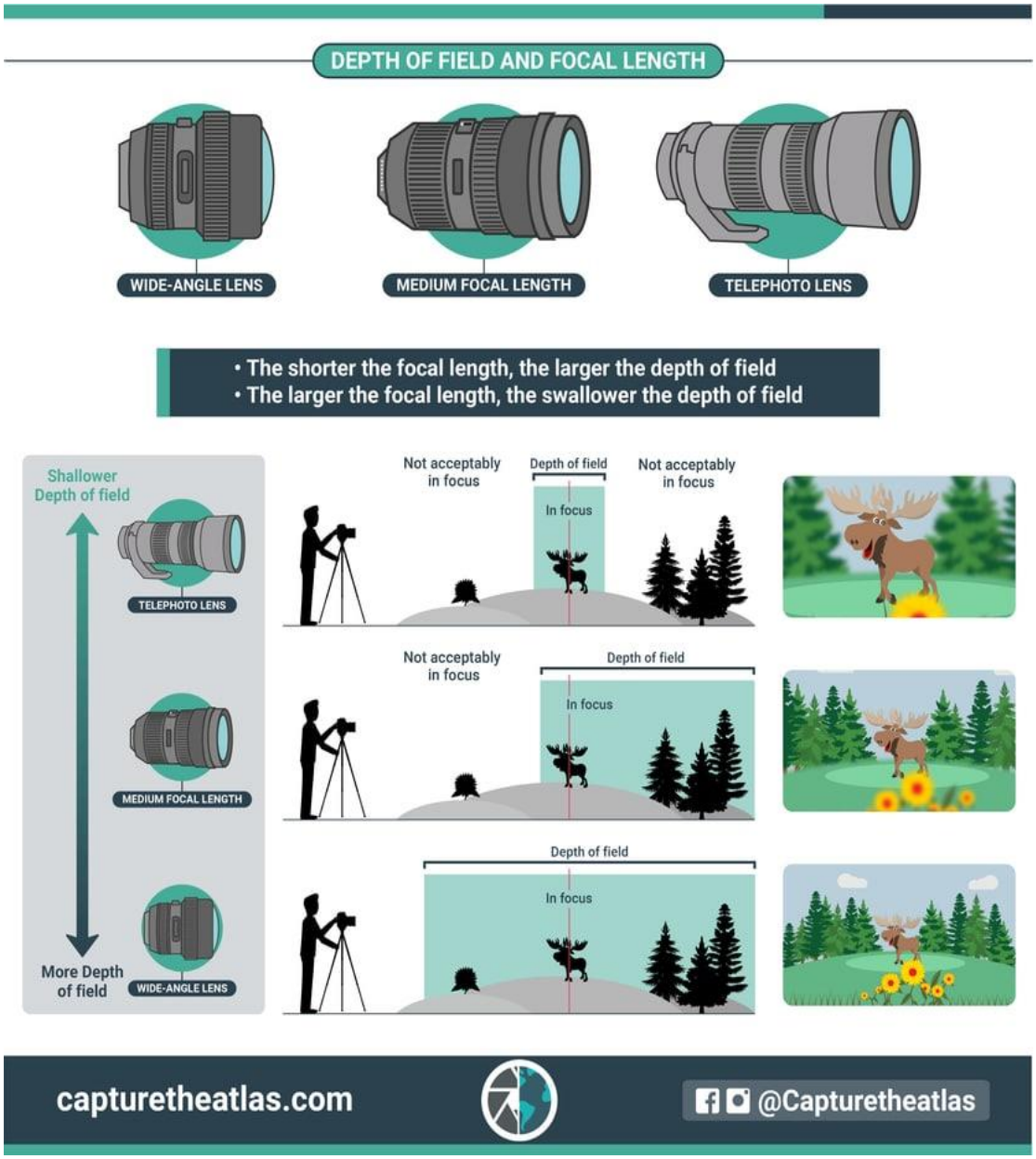


Several factors affect the depth of field:

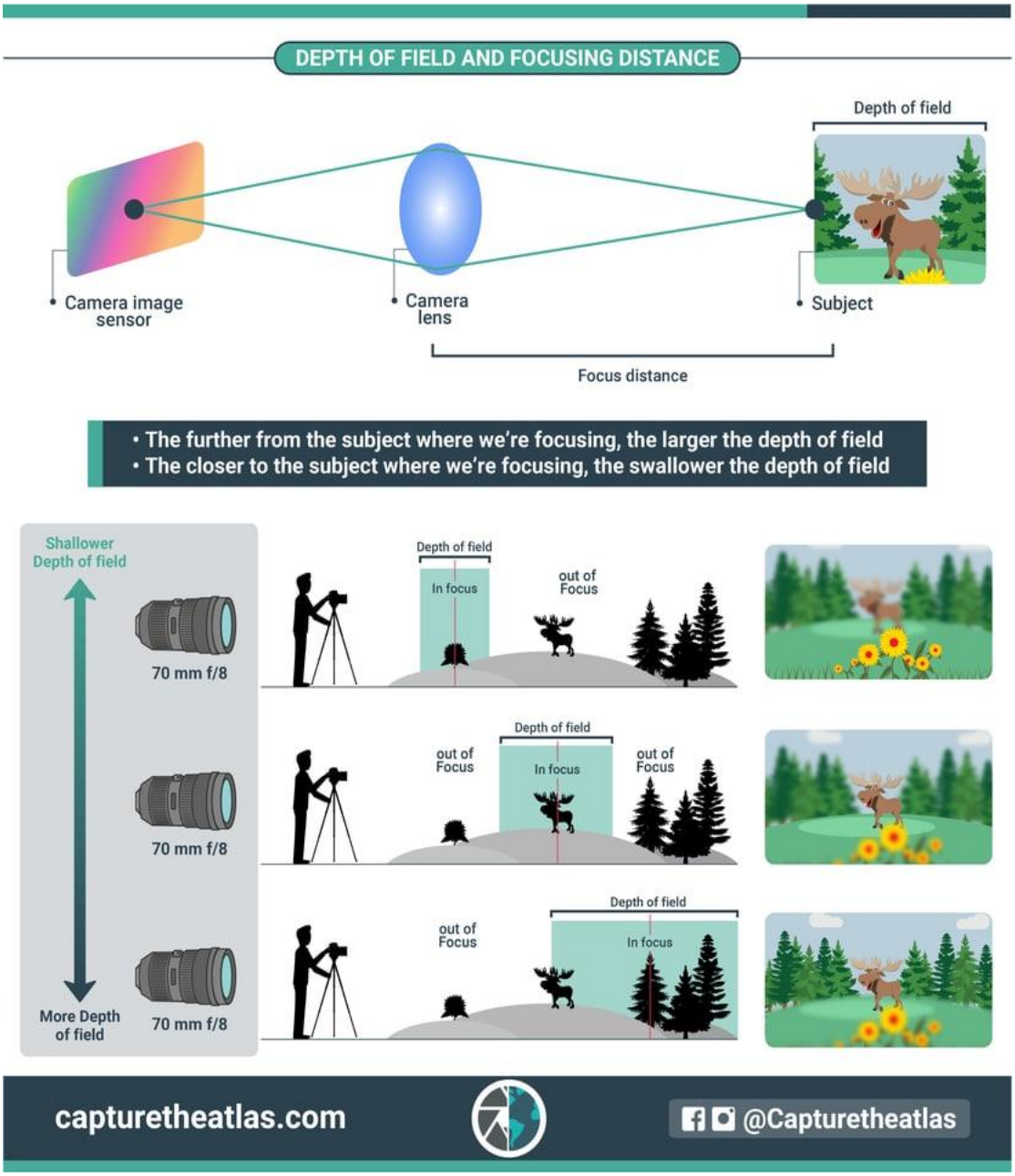
- **Aperture**: The wider the aperture, the shallower the depth of field.



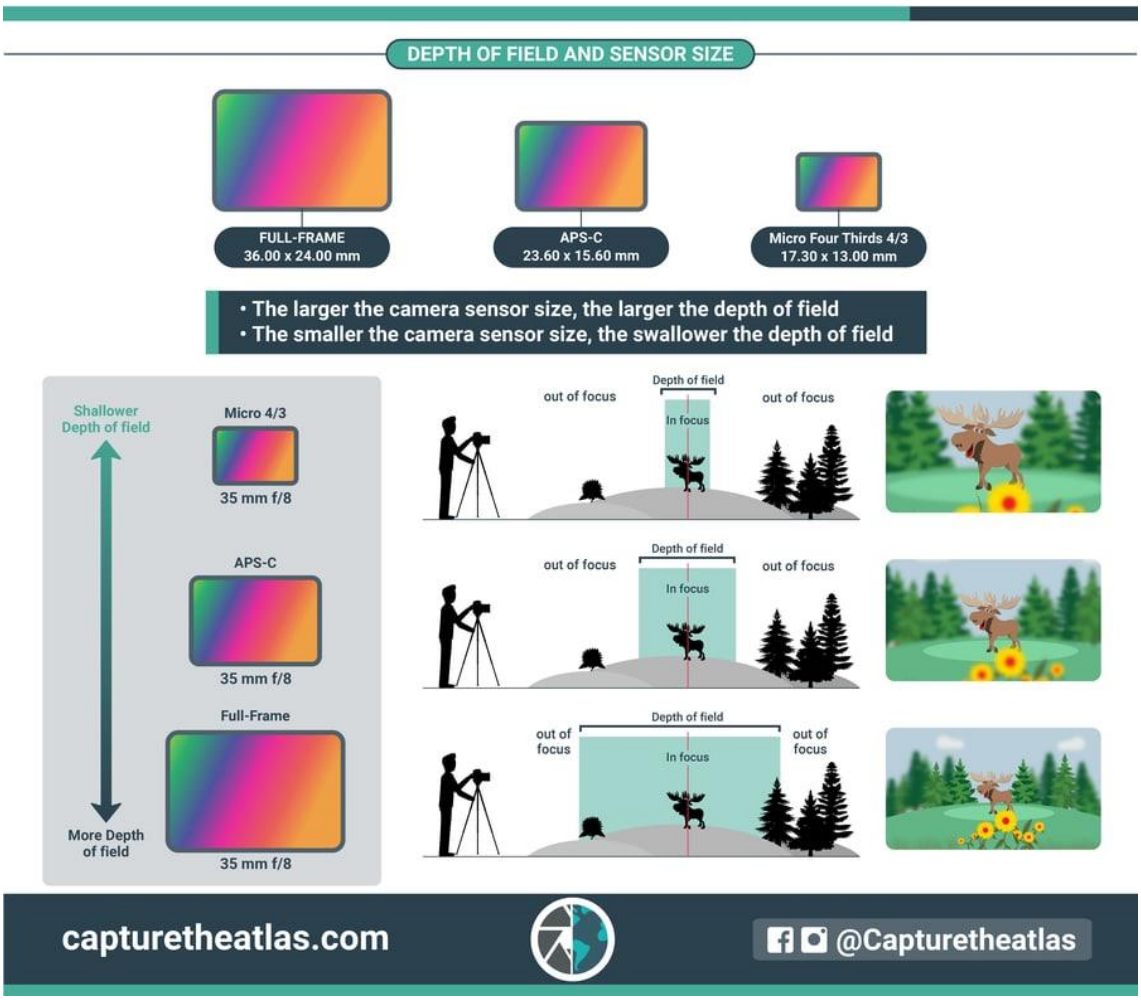
- **Focal length**: The longer the focal length, the shallower the depth of field.



- **Focusing distance**: The closer the subject to the lens, the shallower the depth of field.



- **Sensor size**: The smaller the camera sensor size, the shallower the depth of field (*using the same focal length).



A good way to **calculate the depth of field** is by using a depth of field app or calculator. It'll tell you the portion of your frame that will be reasonably sharp according to your camera, lens, and aperture.

Here, you can see two different **examples** of a shallow and a large depth of field:

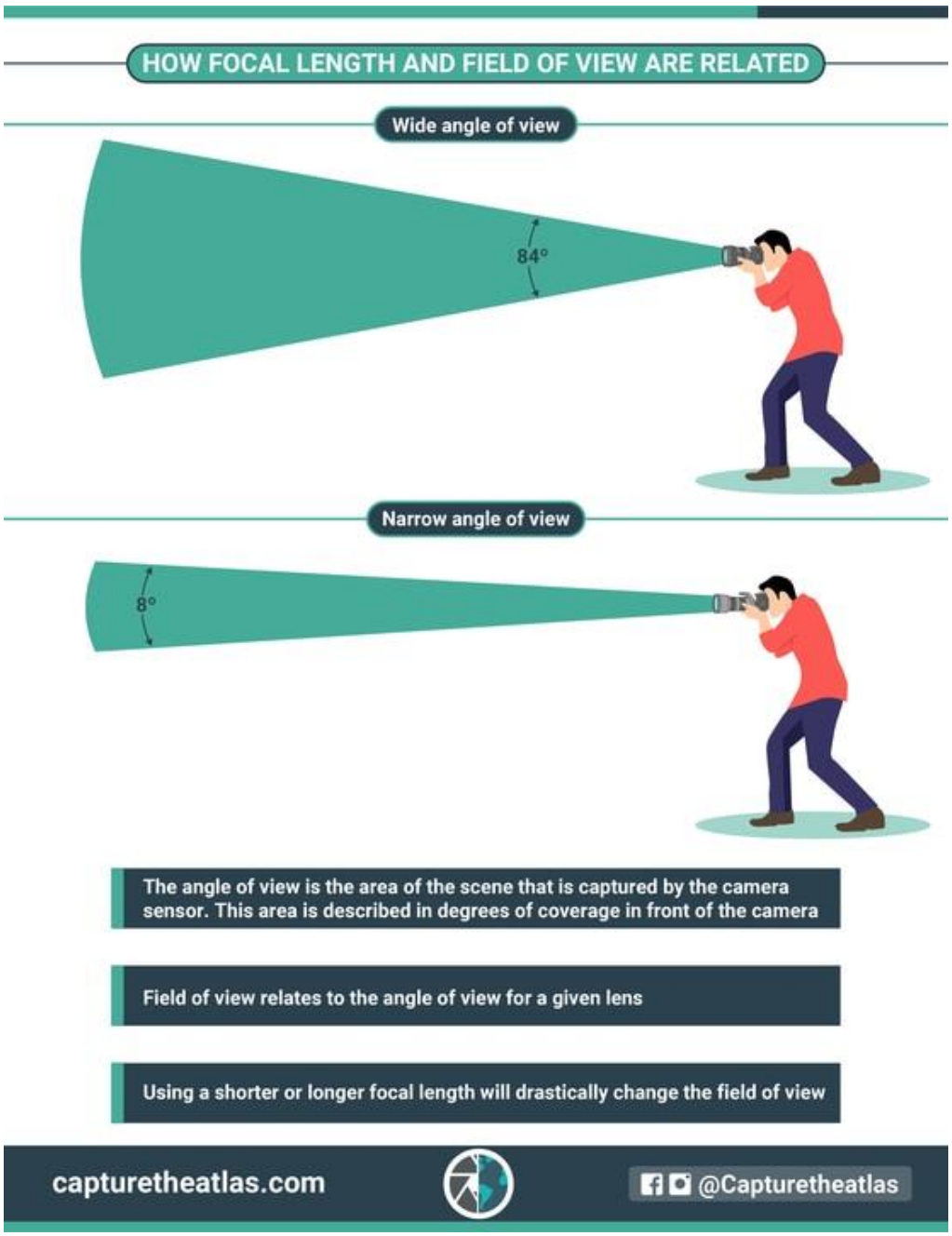
Shallow depth of field (just a small area of the image is sharp) - 35 mm (APS-C sensor) – 1/200 sec, f/2, ISO 200

Large depth of field (almost the entire image is reasonably sharp) - 55 mm – 1/500 sec. f/11, ISO 32

7. FOCAL LENGTH

The focal length you use is **vital** for creating your images and choosing the lenses that you'll need in your gear.

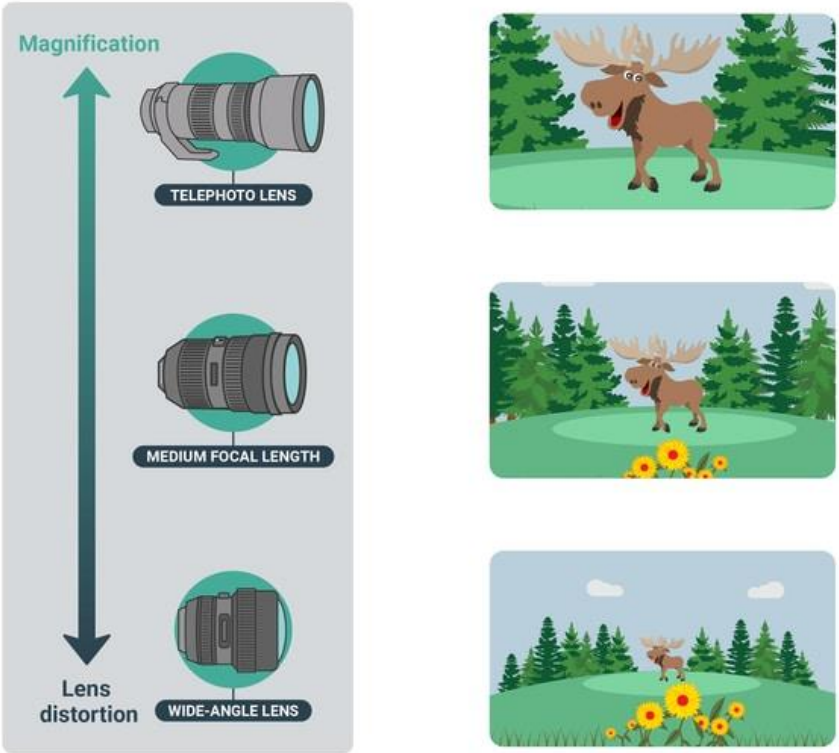
In photography, the focal length describes the length, in millimeters, of each lens' optical center to the sensor. Depending on how short or long the focal length is, it will have a direct impact on the **field of view** of your images and in other aspects, like the **depth of field**.



For example, **shorter focal lengths,** like wide-angle lenses, will have a **wide-angle view**, whereas **longer focal lengths,** like telephotos, will have a **narrower angle view**.

The focal length will also create different effects, like **distortion in wide-angle** view, and **magnification in narrower angle** views.

HOW DOES FOCAL LENGTH AFFECT AN IMAGE?



The focal length we choose affects the final look of the image:

Using wide-angle lenses, foreground elements are emphasized while background elements are diminished

Standard focal lengths show a natural perspective without distortions

Telephoto lenses create magnification, giving the impression of background elements closer to the subject

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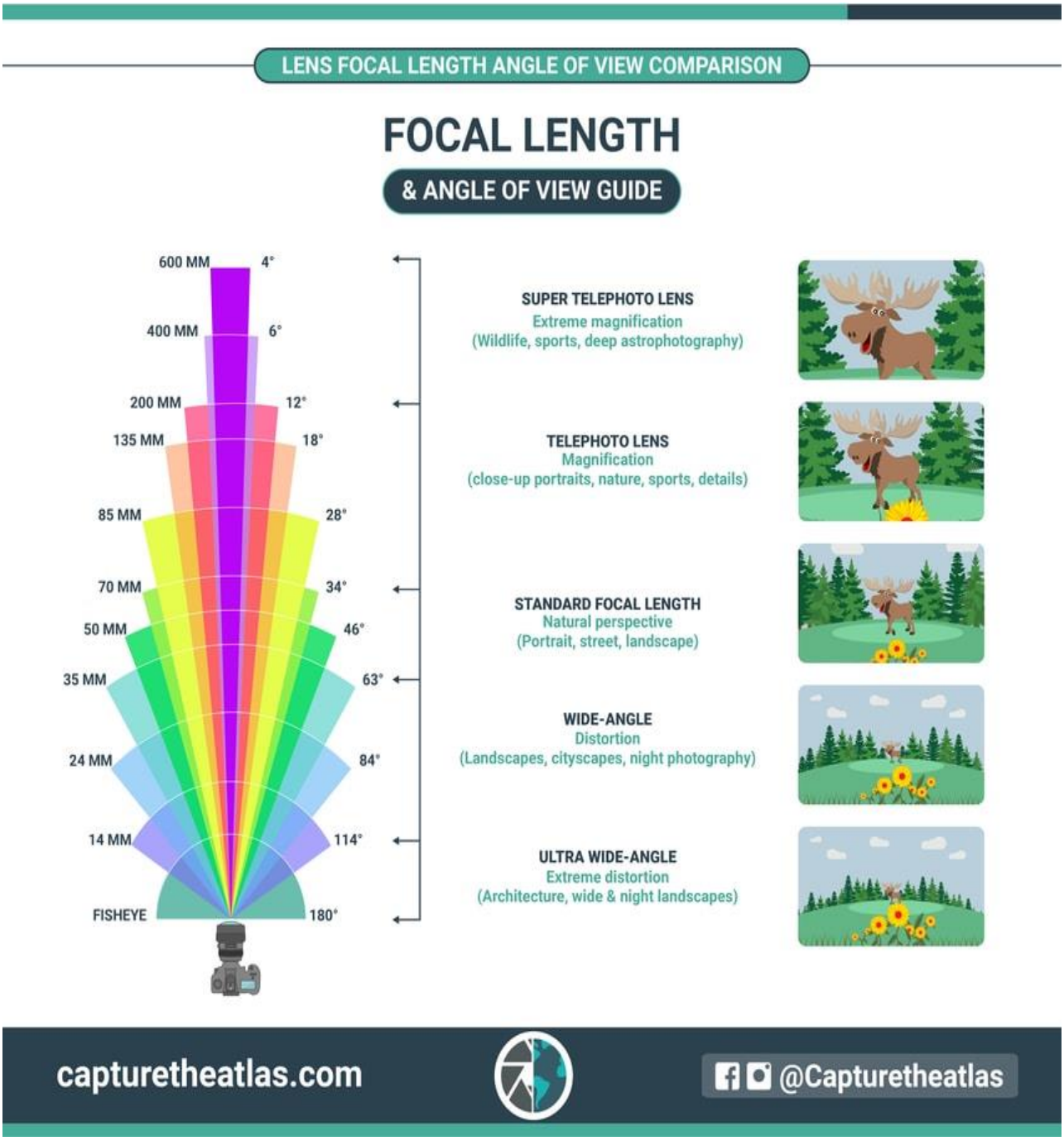
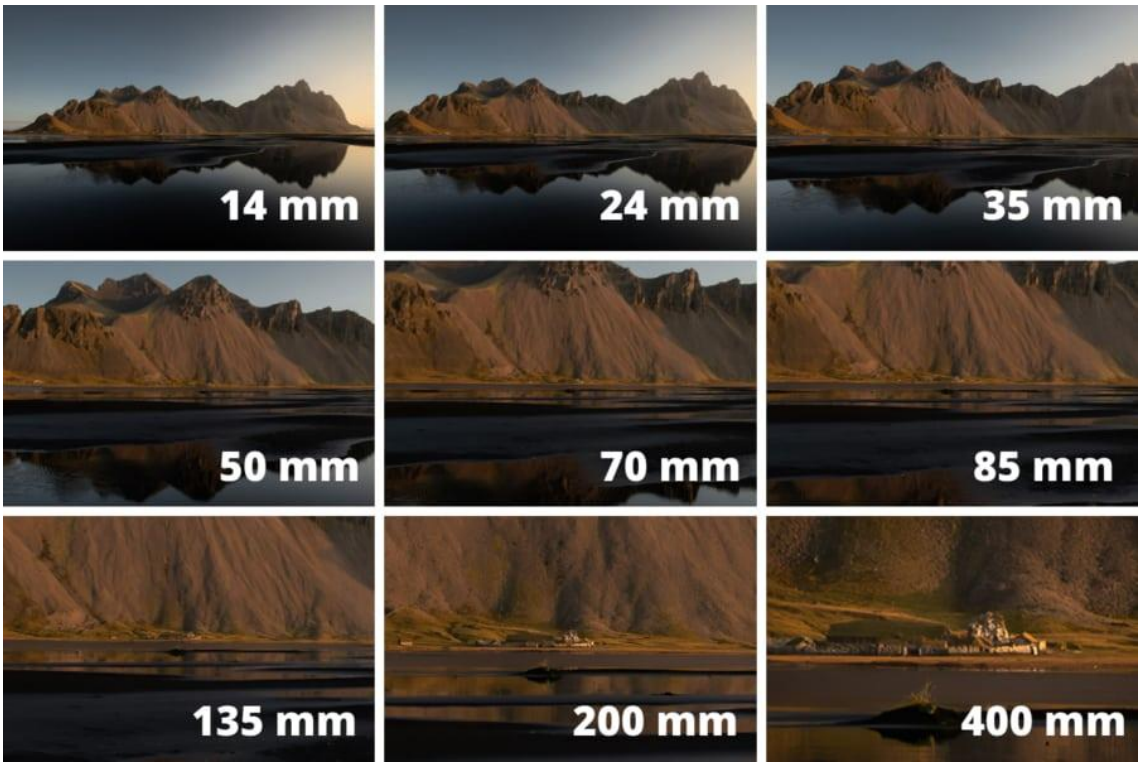
This **basic infographic** explains this **photography concept** in a simple way:



In the following **example,** you can also see how the field of view changes depending on the focal length you use:



8. SENSOR SIZE

The sensor is the region of a digital camera that's sensitive to light and records an image when active. Sensors are usually measured in millimeters (and sometimes inches).

Camera sensor size and image quality are correlated, but bigger doesn't always mean better; smaller sensors have some advantages that can be beneficial in some types of photography.

This **camera sensor size comparison chart** represents the most common camera sensor formats on the market.

CAMERA SENSOR SIZE COMPARISON CHART

	MEDIUM FORMAT	FULL-FRAME	APS-C	MICRO 4/3	1"	1/2.55"
PICTURE						
SENSOR SIZE	53.0 X 40.20 MM	35.00 X 24.00 MM	23.6 X 15.60 MM	17.00 X 13.00 MM	12.80 X 9.60 MM	6.17 X 4.55 MM
CROP FACTOR	0.64	1	1.52	2	2.7	5.62
CAMERA						

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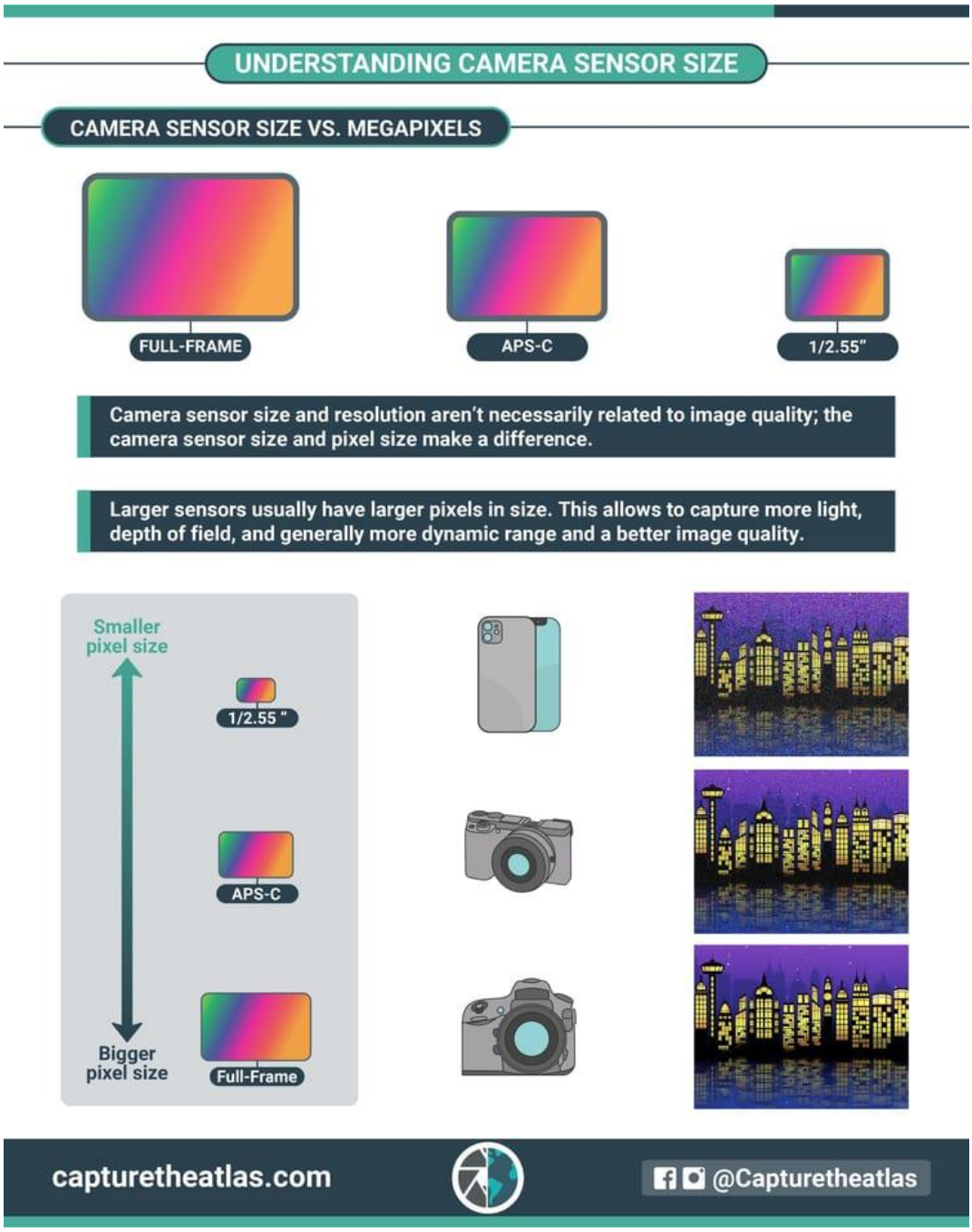
THE IMPORTANCE OF CAMERA SENSOR SIZE

CAMERA SENSOR SIZE VS MEGAPIXELS

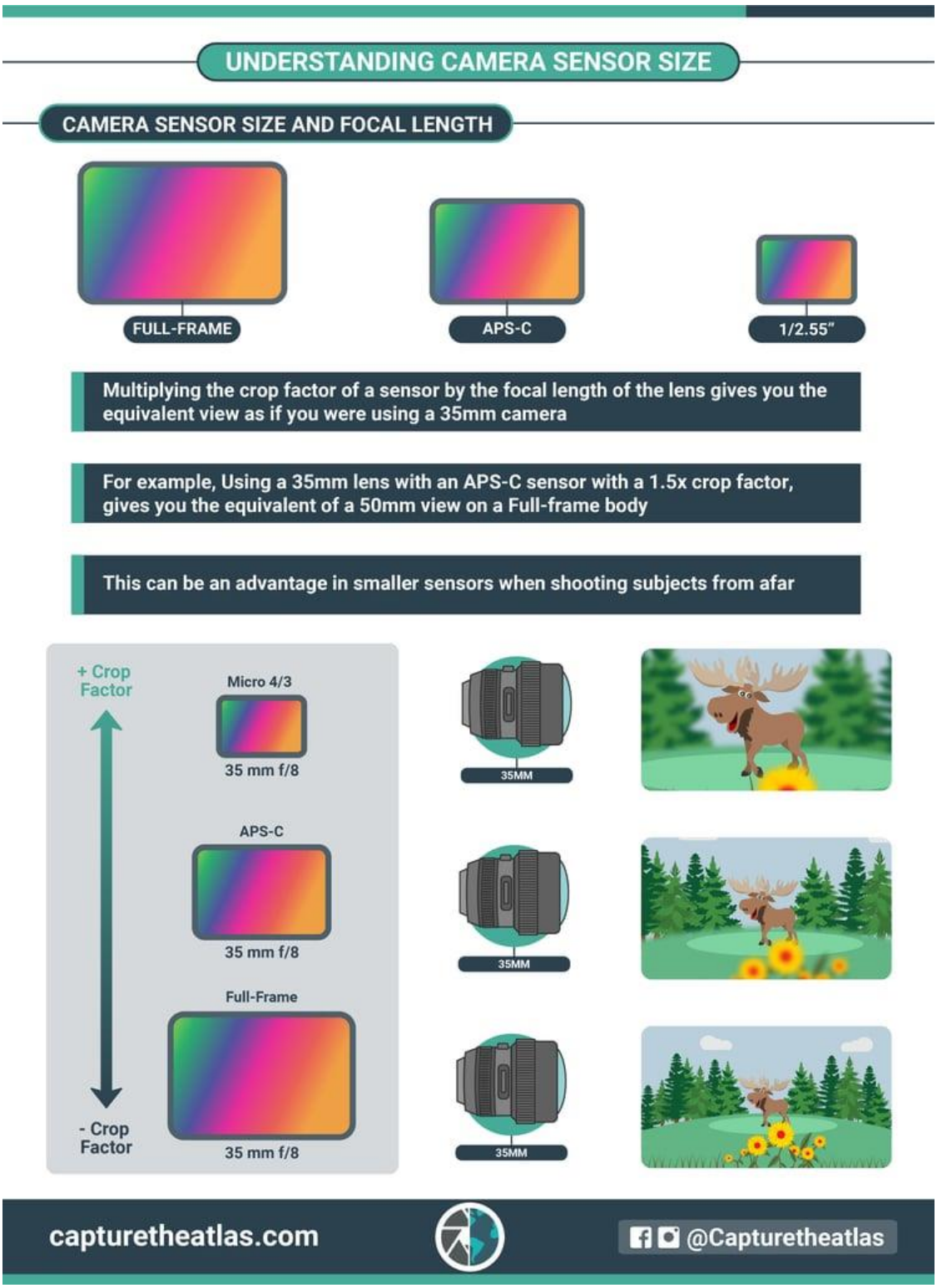
Larger sensors allow you to have larger pixels relative to a smaller sensor with the same resolution. For example, the larger pixels on the full-frame cameras are more efficient at gathering light and, therefore, at capturing better quality photos.

In good lighting the difference is marginal, but this becomes evident as the lighting conditions become more challenging.



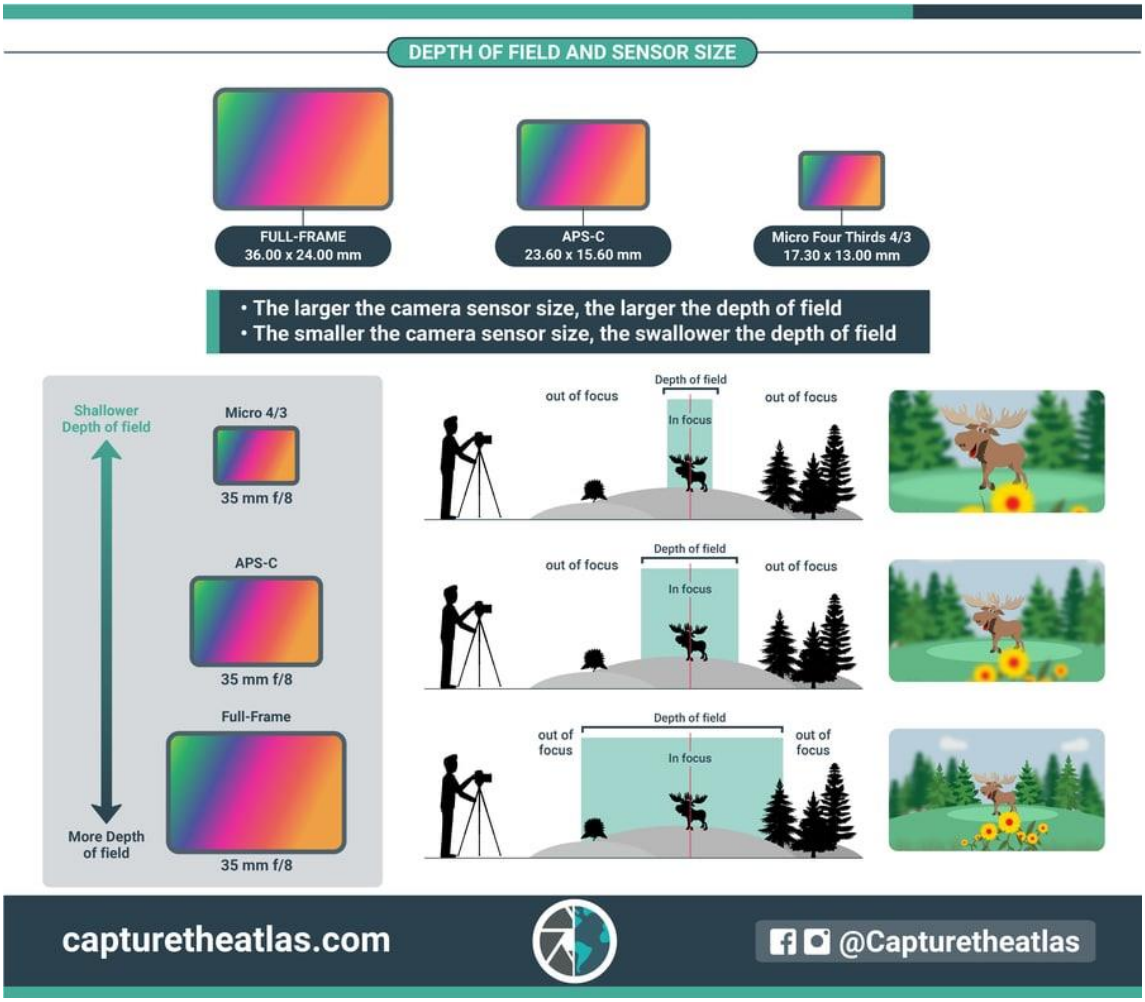
CAMERA SENSOR SIZE AND FOCAL LENGTH

Multiplying the crop factor of a sensor by the **focal length** of the lens gives you the equivalent view as if you were using a 35mm camera (a full-frame camera). For example, using a 35mm lens with an **APS-C sensor** with a 1.5x crop factor gives you the equivalent of a 50mm view on a full-frame body.



CAMERA SENSOR SIZE AND DEPTH OF FIELD

Smaller camera sensor sizes offer a **smaller depth of field** as compared to bigger camera sensor sizes (when using the same aperture and focal length).



Please note that we're considering the **same focal length in this **camera sensor size vs. depth of field comparison**. If we consider the **same field of view**, the **depth of field** will be narrower in cameras with larger sensors and larger in cameras with cropped sensors.*

9. FOCUS

Focusing consists of adjusting the lens to find the maximum sharpness, contrast, and resolution for a chosen subject.

There are **two ways to focus in digital photography**:

- **Manual focus**: Using your hands to tweak the focus ring until you get to the best focus.
- **Automatic focus**: Using the camera's and lenses' internal motors to focus on a given subject.

Using manual or automatic focus will depend on your camera/lens, the light conditions, your focusing skills, and your artistic goals. Generally speaking:

- More advanced cameras/lenses are better at focusing than entry-level cameras.
- Focusing in low light is always more challenging and in some genres like night or astrophotography, it's recommended to use manual focus.
- Focusing manually requires more practice and experience. If you're a beginner and there is plenty of light, it's better to use automatic focus.
- Sometimes you need to focus on a specific area in your frame for an artistic reason. In those cases, use manual focus.

UNDERSTANDING CAMERA FOCUS MODES IN PHOTOGRAPHY

MANUAL FOCUS MODE (M)

- With Manual Focus, you have to adjust the focus of the lens by hand using the focus ring
- It is the best way to focus when the autofocus is not reliable, like in low-light conditions or when the AF selects the wrong area/subject to track
- **Genres:** Astrophotography, Macro, Stills

Astrophotography

Macro

Stills

AUTOFOCUS MODE (AF)

- Autofocus allows you to use internal lens motors and camera software AI to focus
- It is the best way to focus in most situations, especially when you need to track moving subjects
- **Genres:** Wildlife, Sports, Street photography

Wildlife

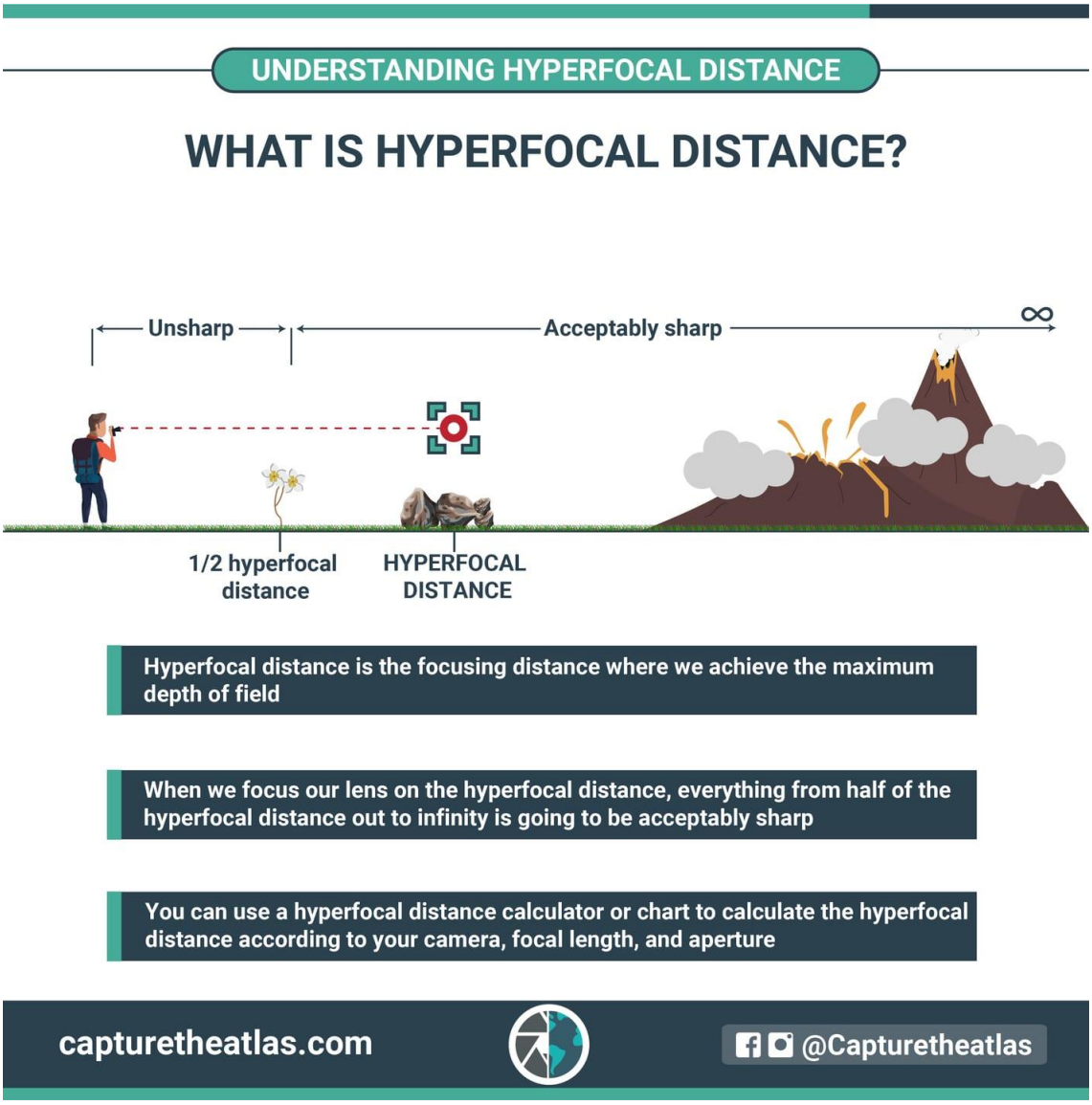
Sports

Street

Generally, the use of autofocus will depend mainly on your subject, the light, and the limits of your camera technology

In some genres like landscape and portrait photography, it is more common to use both focus modes depending on the above conditions

In some genres like landscape photography, you can focus on a specific distance that will help you achieve the maximum depth of field (or reasonable sharpness). This is called the **hyperfocal distance,** and it's one of the **best photography basics to learn**.



Most digital cameras include different **focus modes and areas** that we'll cover in the **photography basic settings below**.

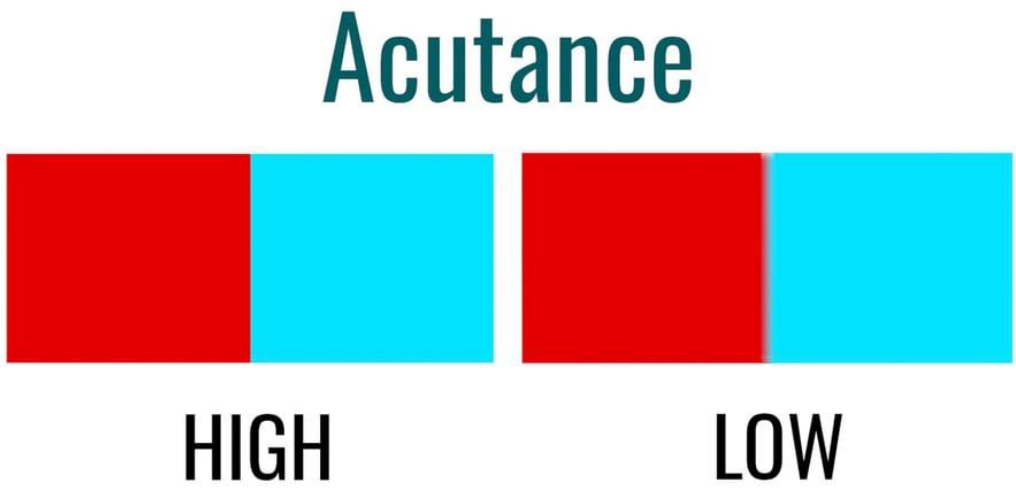
10. SHARPNESS

Sharpness is simply how clear the details are captured and processed in an image.

FACTORS AFFECTING SHARPNESS IN PHOTOGRAPHY

Acutance and sharpness

Acutance is a subjective perception. When abrupt transitions (or hard edges) within the image are enhanced, it creates a sense of the image appearing sharper. Fuzzier borders between edges create the appearance of a softer image.



Other aspects that affect the sharpness of an image are:

- **Camera resolution**: Generally, the more pixels, the more detail you'll see (considering the same sensor size, lens quality, and settings).
- **Sensor Size**: Larger sensors are usually related to more detail and image quality since they can offer not only a greater number of pixels but also bigger and more efficient pixels for capturing light.
- **Focus:** The focusing errors related to a lack of sharpness are usually related either to the camera (faulty design, low light conditions, etc.) or to not following the right focusing techniques.

- **Motion Blur**: When we use a shutter speed that's slower than the one we should be using, or when our camera is shaking because either we're shooting handheld, it's windy, or for any other reason, our image will suffer motion blur, with the consequent loss of sharpness**.**

- **Aperture/Depth of field**: Very wide and narrow apertures lead to a loss of sharpness.

- **Digital noise and ISO**: Higher ISOs will translate into more digital noise and a perception of less sharpness

- **Lens quality**: If the lens you choose doesn't have enough resolving power, your final image may not look as sharp as it could, and you won't make the most of your camera's megapixels.

- **Post-processing**: Any basic editing program, such as Lightroom or Photoshop, allows different photographic sharpening techniques to increase the perceived sharpness.

- **Viewing distance**: Images that will be seen from afar, like billboards, will need a lower resolution compared to the same images if they were to be seen up close.

This is an **example** of a low acutance image vs. a sharp image:

11. CAMERA SETTINGS – BASIC PHOTOGRAPHY SETTINGS

Once you **understand the basic photography concepts**, it's time to put them into practice using the main **photography settings on the camera.**

In short, these are the **best general camera settings in photography**:

1. **Aperture**: f/1.8 - f/5.6 in low light or for a narrower depth of field, and f/8 - f/16 for a wider DoF

2. **Shutter Speed**: From 30 seconds to 1/4000th of a second depending on the scene

3. **ISO**: 100-3200 in entry-level cameras and 100-6400 in more advanced cameras

4. **Camera Mode**: Manual camera mode or aperture-priority mode

5. **Metering Mode**: Matrix/Multi/Evaluative depending on your camera model

6. **Focus Mode**: AF-S for stills and AF-C for moving subjects

7. **Focus Area**: Single-point for stills and Dynamic/Zone for moving subjects

8. **White Balance**: Automatic WB

9. **File Format**: Raw File (plus JPEG if you don't want to edit your pictures)

10. **Drive Mode**: Single shooting for stills and continuous for moving subjects

11. **Long exposure noise reduction**: Off

12. **High ISO noise reduction**: Off

13. **Color Space**: sRGB

14. **Image stabilization**: On when shooting handheld and Off when shooting from a tripod

15. **HDR/DRO**: Off

12. CAMERA MODES

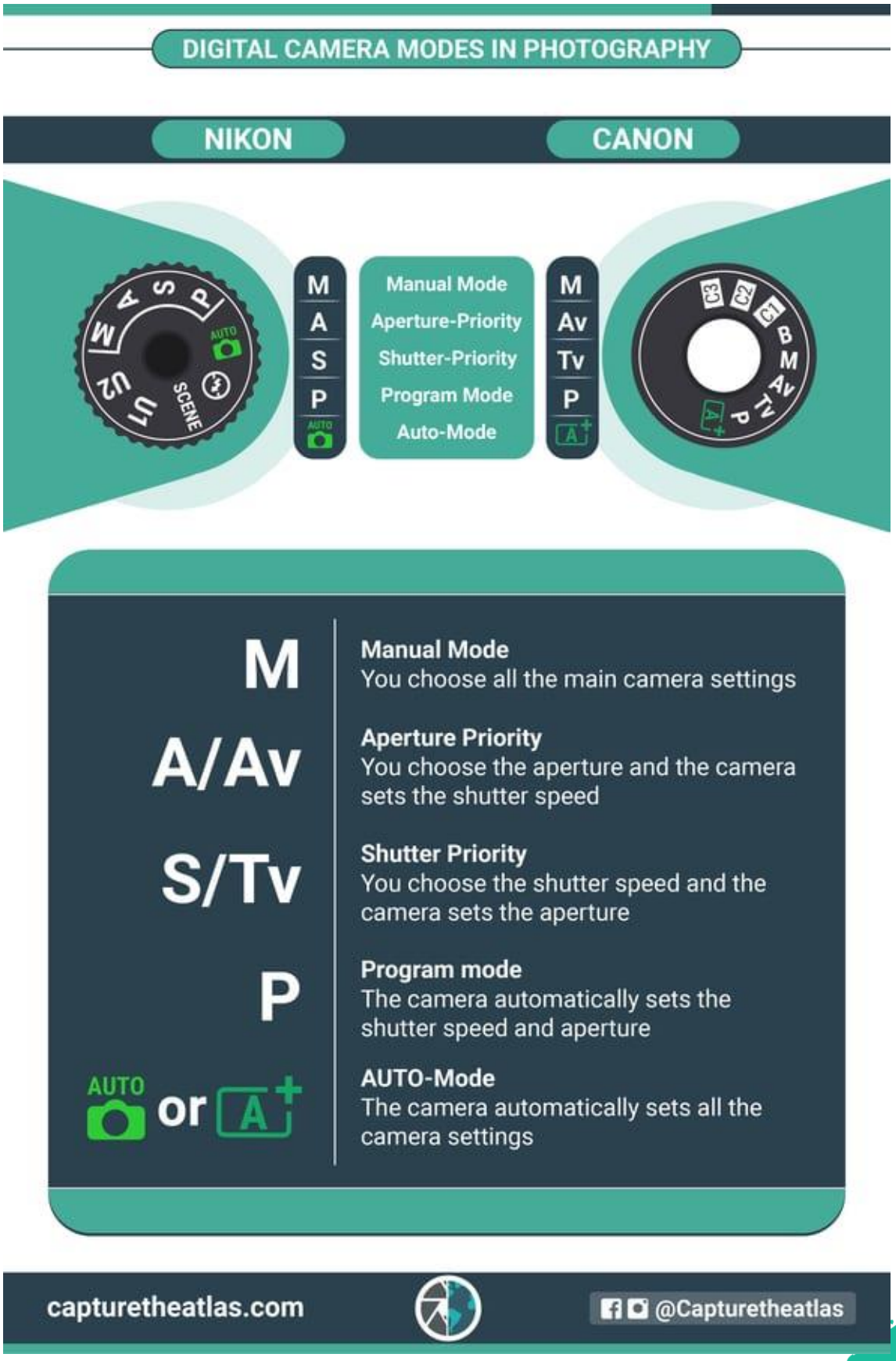
Camera modes are the camera controls that allow you to choose the main exposure settings for aperture, shutter speed, and ISO.

They're also called "**shooting modes",** and these are the main modes available in most digital cameras:

- **Program Camera Mode ("P Mode")**: With this mode, the camera automatically sets the shutter speed and aperture.
- **Shutter Priority Mode ("Tv/S Mode"**): You set the shutter speed, and the camera selects the aperture.
- **Aperture Priority Mode ("Av/A Mode")**: You set the aperture, and the camera sets the shutter speed.
- **Manual Camera Mode ("M Mode")**: You set all the main settings on the camera.

When you use each mode will depend on your subject and your photographic skills. Ideally, the manual and aperture priority modes are best for letting you control your camera.

You can see more information and the main camera modes icons in the following **infographic:**



13. METERING MODES

Metering modes are simply the way your camera calculates the Exposure Value (EV). This is very important when you're using a semi-automatic mode, since your camera will set the different exposure settings taking into account this value.

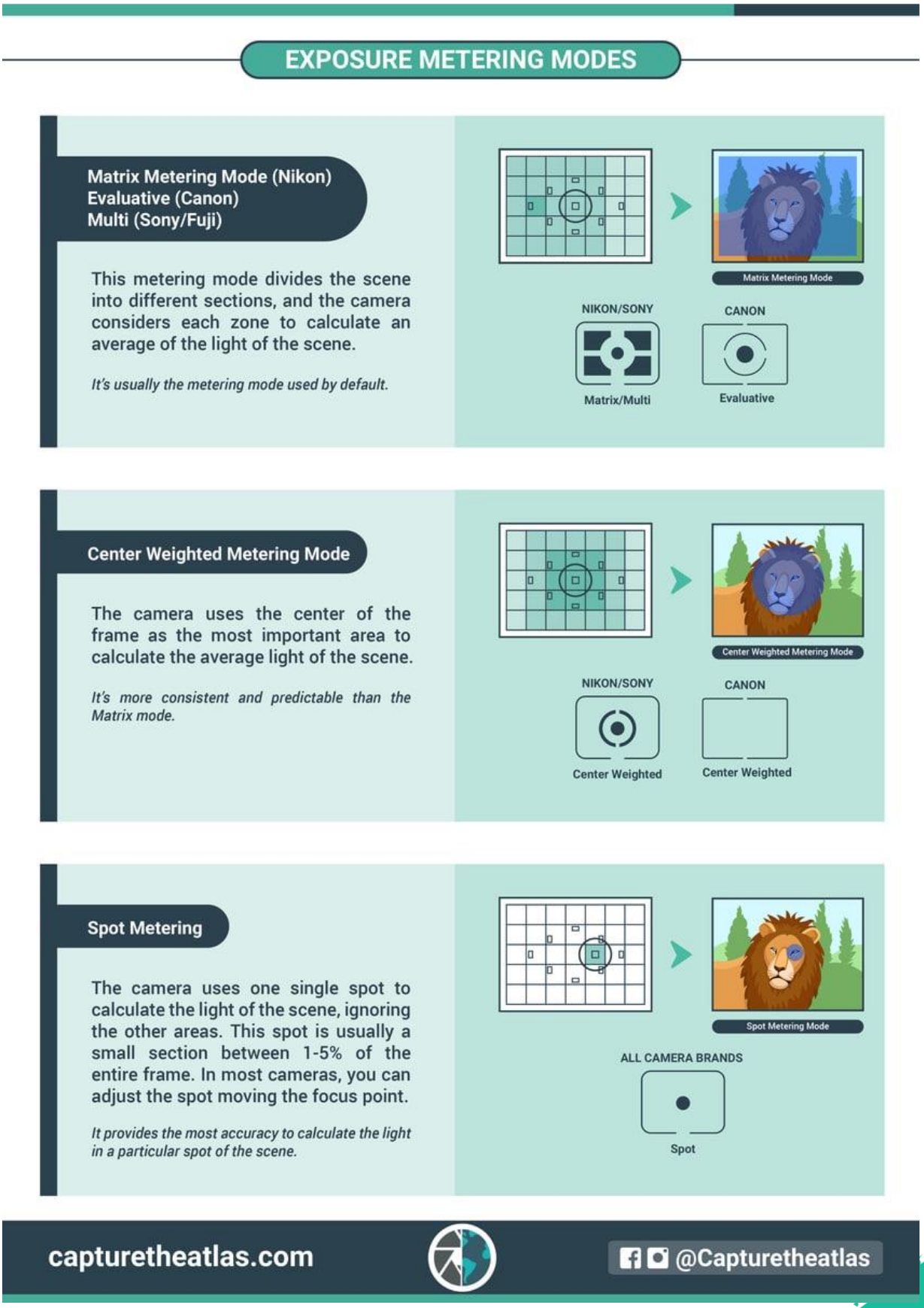
However, it's also very handy when shooting in manual mode, since checking the EV you will know if your photos will be well-exposed even before taking them.

All modern digital cameras include a **built-in exposure meter** to calculate the EV, using one of the next **basic metering modes**:

- **Multi/Matrix metering**: This mode evaluates the light in the entire scene by dividing the frame into different zones.
- **Center-weighted metering**: This mode uses the center of the frame to measure the light in the scene.
- **Spot metering**: In this mode, the camera uses a single focus point to read the light.

By default, one of the basic rules is to use **Multi/Matrix metering**, which will be accurate in most situations. However, in some particular scenarios, you might benefit from using either Center or Spot metering.

You can see a few **examples** in the following infographic:



14. FOCUS MODES & AREAS

Learning how to focus in digital photography goes beyond setting your focus on auto mode.

Depending on many factors and, especially on your subject, there are different focus modes and areas that will help your camera acquire focus according to your goals.

Focus Modes

The **focus modes** help you decide whether you want the camera to lock the focus on a subject or to keep adjusting the focus as the subject moves across the frame. The two main focus modes are:

- **Single Autofocus Mode (AF-S/One-shot AF)**: The camera locks the focus on a subject and, if the subject moves, you'll have to press the focus button again and repeat the process ➜ Best for stills, landscape, macro, astro, etc.

- **Continuous Autofocus Mode (AF-C/AI-Servo):** After focusing, the camera will track the subject when it moves within the frame. ➜ Best for action, wildlife, sports, street, etc.

Here, you can see how the different **focus modes** work and when to use them:

UNDERSTANDING CAMERA AUTOFOCUS MODES (AF)

AF MODES	HOW IT WORKS	WHEN TO USE IT
AUTOFOCUS SINGLE (AF-S / ONE-SHOT AF)	• It is the most basic AF option • Your camera will lock the focus on the subject that you want to photograph • If your subject moves, you'll have to focus again.	**Best AF mode for static subjects:** • Landscape • Still Portraits • Architecture
AUTOFOCUS CONTINOUS (AF-C / AI SERVO)	• It's a more advanced Autofocus Mode • Your camera will continue to track the subject even if it moves around the frame • The efficiency of this mode depends on many factors like the subject's movements, the light conditions, camera technology, etc.	**Best AF mode for moving subjects:** • Wildlife • Sports & Action
AUTOMATIC AUTOFOCUS (Hybrid Autofocus /AF-A / AI-FOCUS AF)	• Combination between Single & Continuous AF modes. • Your camera will switch between both modes depending on the movement of the subject	**Best AF mode for unpredictable/ erratic subjects:** • Wildlife • Children • Street photography & Events

Each camera manufacturer uses different nomenclature for the same Autofocus Modes. Check your camera manual to see your camera Autofocus names.

Focus Areas

Now, moving on to the **focus areas**, these will help you determine what the camera focuses on within a scene.

To do this, your camera uses different **focus points and AI technology.** In some genres, using a specific focus area is fundamental.

These are the **main focus areas in photography**:

- **Single Point Area Mode**: You can select a single focus point. ➜ Best for landscape, still portraits, macro, and architecture.
- **Dynamic Area Mode**: If your subject moves, your camera will use several focus points to track it. ➜ Best for wildlife, sports, and street.
- **Auto Area Mode**: The camera automatically decides the best focus points. ➜ Best for scenes where you need to focus on something easy and close to the camera.

This **camera basics infographic** will give you a better understanding of the different focus areas:

UNDERSTANDING CAMERA AUTOFOCUS AREA MODES

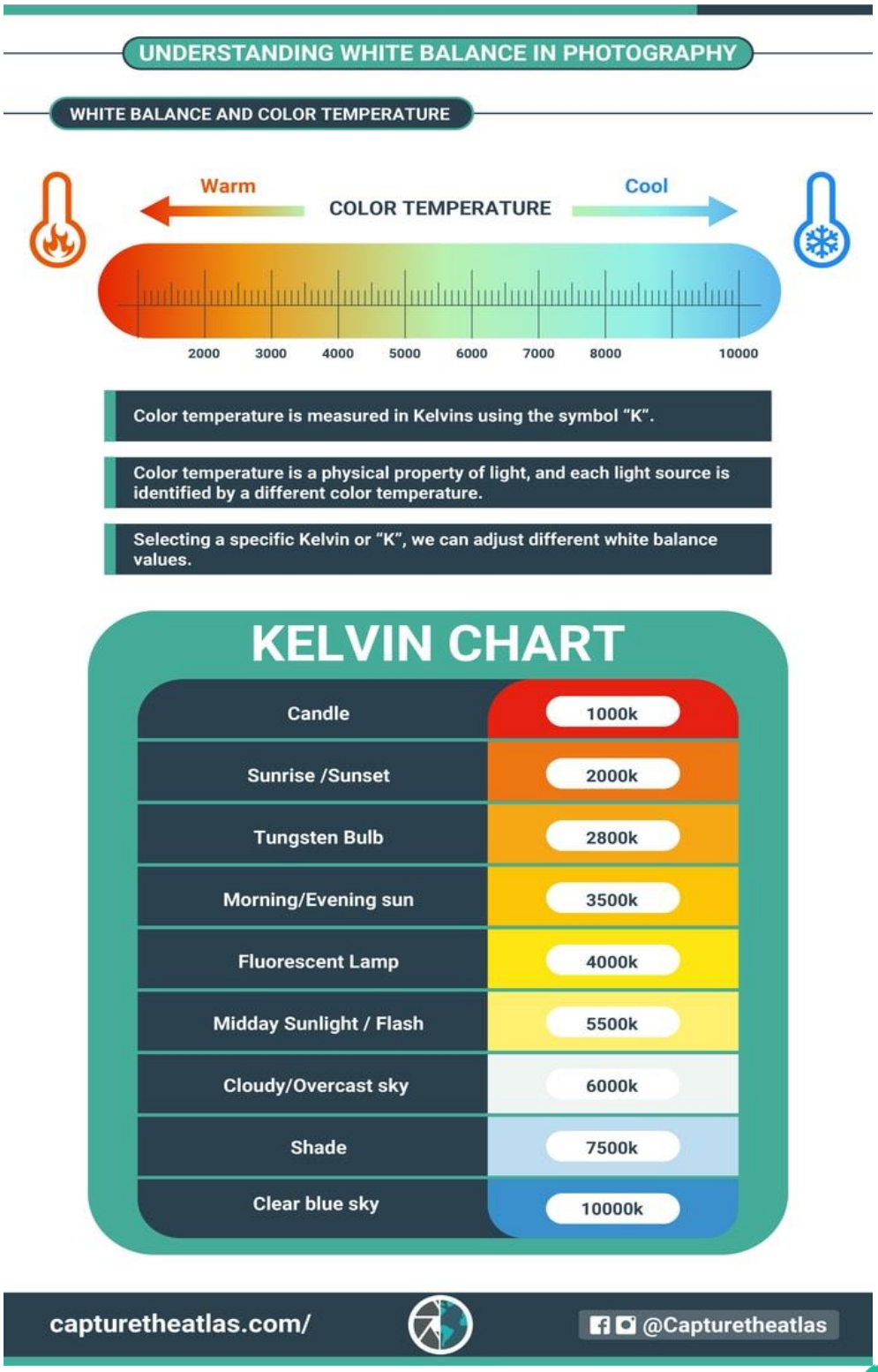
AF AREA MODES	HOW IT WORKS	WHEN TO USE IT
SINGLE POINT AREA MODE (SINGLE POINT AF / MANUAL AF POINT)	• You can select a single focus point • Gives more control and precision • The more focus points your camera has, the more precisely you can focus on your subject	**Best AF Area for static subjects:** • Landscape • Still Portraits • Macro • Architecture
DYNAMIC AREA MODE (DYNAMIC AF AREA / AF POINT EXPANSION)	• Once you select your focus point, if your subject moves, the camera uses the selected point as well as the surrounding points to keep the subject sharp. • Modern cameras allow to select different areas in groups of 9, 21, 51 points, etc, depending on your subject and movement.	**Best AF Area for moving subjects:** • Wildlife • Sports
AUTO AREA MODE (AUTO AF AREA / AUTOMATIC AF POINT SELECTION)	• This mode is completely automatic • The camera decides which focus points to use for a given scene • It can focus on the wrong subject/area. Not recommended when you need more control over your focus point.	**Best AF Area for:** • Scenes where you want to quickly focus on something easy and close to the camera
EYE AUTOFOCUS (EYE-AF)	• The camera automatically detects the subject's eye • Modern cameras can track the eyes of different subjects even if they're in motion	**Best AF Area for:** • Portraits of people/wildlife

Each camera manufacturer uses different nomenclature for the same Autofocus Area Modes. Check your camera manual to find your camera Autofocus Area names.

15. WHITE BALANCE

White balance is a tool aimed at capturing accurate colors in your image without being affected by the color of the light source.

White Balance is related to **color temperature**, which is measured in **"Kelvins"** or **"K"**. The higher the K number, the cooler the color will be.



On your camera, you'll have several **white balance options**:

- **Automatic white balance (AWB)**: The camera automatically adjusts the best WB camera setting.

- **White balance presets (Semi-Automatic White Balance)**: The camera includes different preset modes related to different color temperatures.

- **White balance manual camera setting (Custom white balance mode)**: You can manually adjust the white balance by either creating a custom white balance or setting a specific Kelvin number.

One of the **best photography basic tips** is to **set the white balance to automatic**. Thankfully, the white balance is a setting that you can change in post-processing without affecting the quality of the image, as long as you shoot in Raw.

UNDERSTANDING WHITE BALANCE IN PHOTOGRAPHY

SETTING WHITE BALANCE IN CAMERA

AWB	Automatic White Balance
	Shadow (7000k)
	Cloudy (6000k)
	Flash (5500k)
	Daylight (5600k)
	Fluorescent (4000k)
	Tungsten (3200k)
	Custom White Balance
K	User Defined

AUTOMATIC WHITE BALANCE	WHITE BALANCE PRESETS (SEMI-AUTO WB)	MANUAL / CUSTOM WHITE BALANCE MODE
AWB		K
• It's the most common WB setting in photography • We let the camera decide the best color temperature settings for a given scene • It works pretty accurately finding the correct White Balance from 3200-6500 K	• It's the best WB mode for environments where a single type of light dominates the scene • It allows you to adjust the White Balance setting faster	• Best mode for: • Scenes with several competing light sources and color temperatures • Multiple exposures/ panoramas • Situations when color accuracy is critical

16. HISTOGRAM

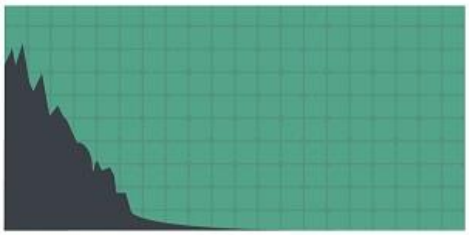
The **histogram** is just a **graphic representation of the exposure levels** within an image. Using the histogram, you'll be able to see a more accurate representation of the highlights and shadows of your picture.

Reading the histogram is one of the **basics in digital photography** and will help you see if your image is correctly exposed or under/overexposed.

This **photography basics infographic** will help you understand how to read the histogram.

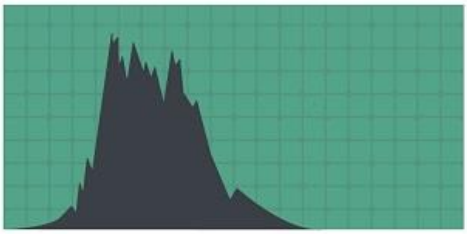
HOW TO READ THE HISTOGRAM

UNDEREXPOSED



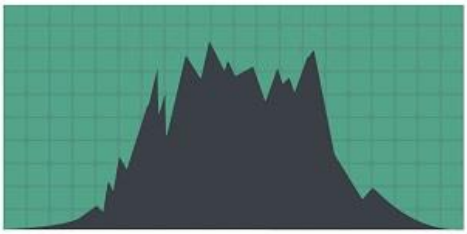
- The histogram is pushed to the left, clipping the shadows and dark tones of the image.
- If you try to recover the shadows in post-processing, you'll find color and luminance noise.
- The best way to correct this is to increase the exposure opening the aperture, using a slower shutter speed, or increasing the ISO.

EXPOSED TO THE LEFT



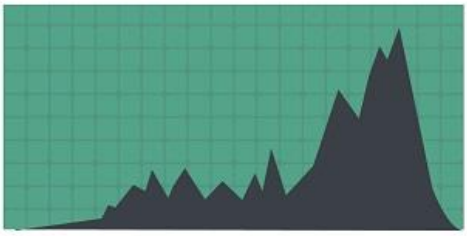
- The histogram is tilted towards the left side, but without crushing the blacks.
- It's the most common histogram in night photography, and you need to be careful raising the exposure/ shadows in post-processing since you could still find digital noise.
- If you don't have a high-end camera sensor, it's recommended to use a more neutral exposure to maximize the detail in your images.

NEUTRAL EXPOSURE



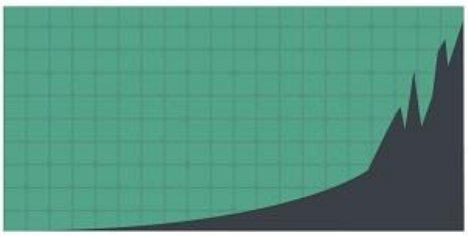
- The histogram falls under the midtones of the image.
- It's the best way to make sure that you are capturing all the information in the highlights and shadows.
- It might look too bright in your screen, but it can be easily adjusted in post-processing.

EXPOSED TO THE RIGHT



- The histogram is tilted towards the right side, but without blowing out the highlights.
- It's a very popular technique to avoid digital noise in your images.
- You need to be very careful since it's very easy to clip the highlights if you overexpose the photo further to the right.

OVEREXPOSED



- The histogram is pushed to the right, burning out the brightest tones of the image.
- If you try to recover the highlights in post-processing, you'll find white areas with unrecoverable information.
- The best way to correct this is to decrease the exposure closing the aperture, using a faster shutter speed, or decreasing the ISO.

17. COMPOSITION

Composition is the language of photography, and using different compositional elements and rules is fundamental to capturing and shaping your visual message. When you compose your image, you have to arrange the elements of the scene to make them attractive to the viewer. This will also help you represent your visual message in the most harmonious and impactful way.

Composition can be broken down into different parts:

- **Rules**: For example, the rule of thirds, the golden triangle, the rule of space, the golden spiral, the rule of odds, etc.
- **Elements**: Leading lines, curves, geometric shapes, colors, etc.
- **Techniques**: Symmetry, balance, repetition, patterns, scale, etc.

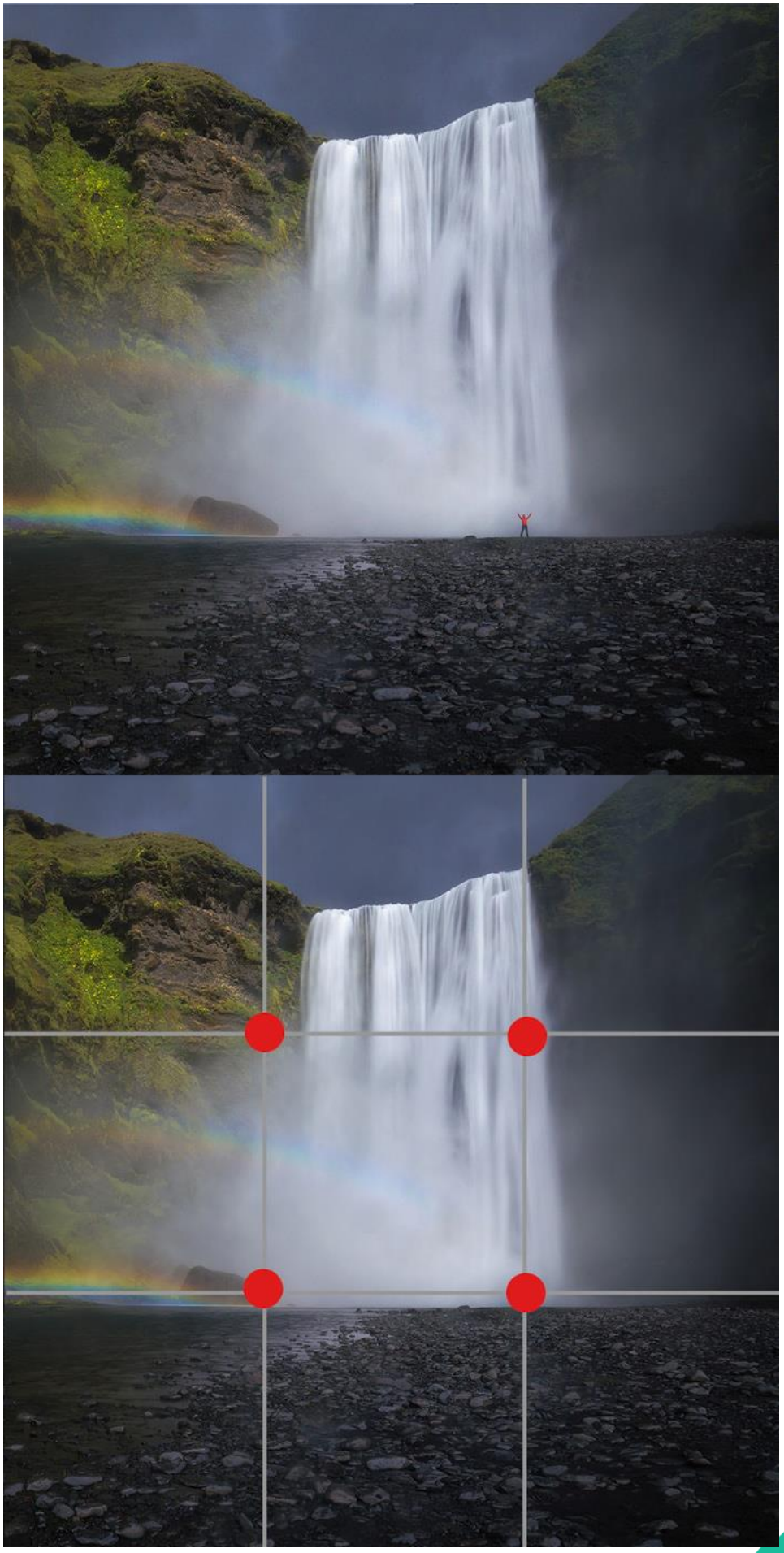
All these fundamentals are **basic photography knowledge** that you must learn if you want to capture the best possible images according to your vision.

Here are some of the most common composition elements and rules in photography:

Rule of thirds

The **rule of thirds** is a very simple and effective way to frame your composition.

According to this rule, if we divide the frame vertically and horizontally into 3 equal sections, we should place the important elements of the image on the lines or at the intersections of the lines.



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Leading Lines

Using **compositional leading lines** is one of the most powerful **guidelines of composition** to lead the viewer's eye towards the important elements in your frame.

The golden triangle

According to the **golden triangle principle**, if we draw a diagonal line from corner to corner and two perpendicular lines from the remaining corners, the frame is divided into four triangles of two different sizes.

Following this rule, we can use this division to place the subject in one of the triangles or to place our leading lines on the diagonal lines.

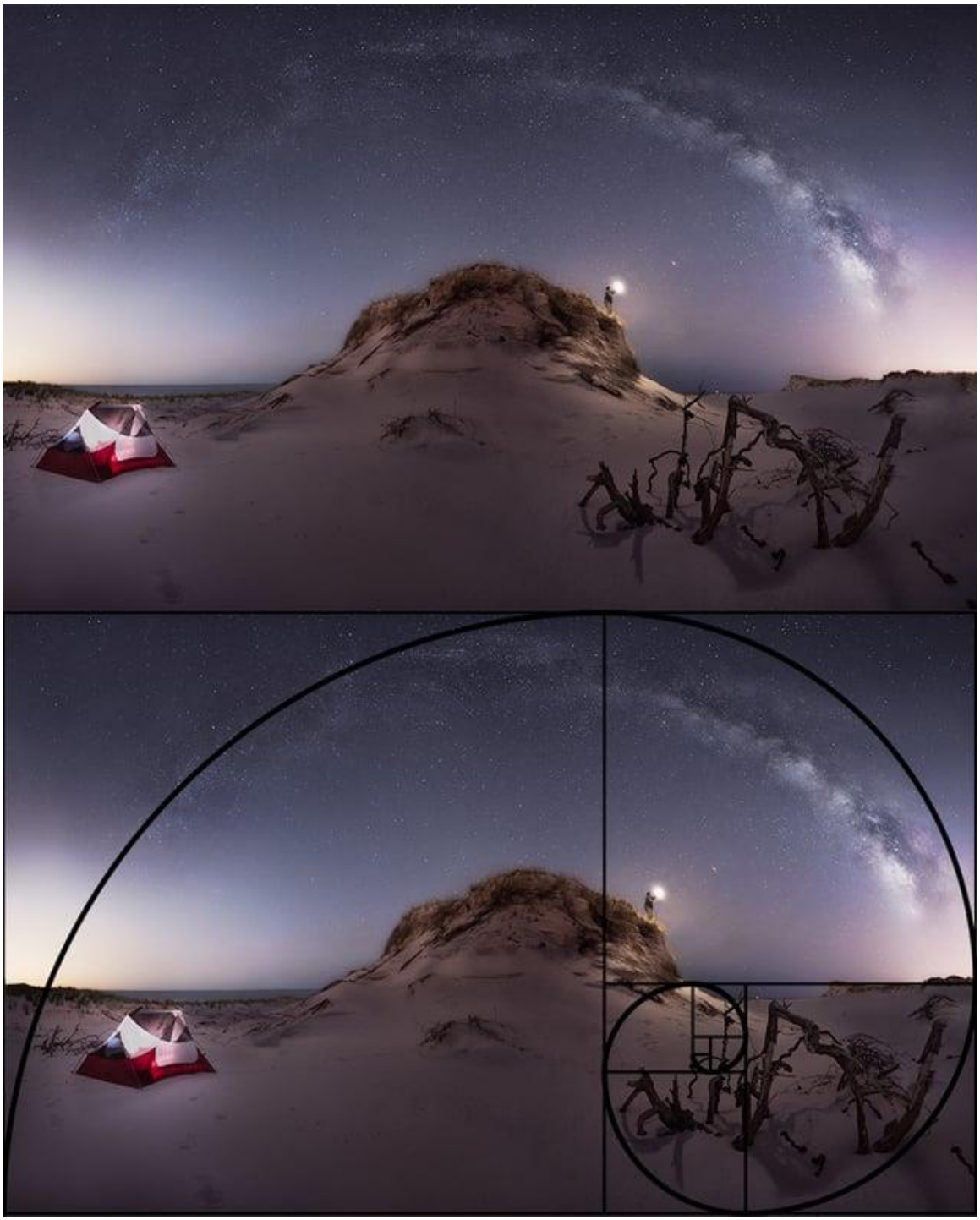
Curves

Curves are strong **compositional lines** that add depth and are easy to implement. There are many different types, but the **"S" shape** is one of the most powerful compositional curves in photography.

The golden spiral/ratio

This **photography rule of composition** follows what is known as the "golden number" which is simply a ratio of 1 to 1.618.

By using this number, we can arrange the elements in an aesthetically pleasing way. The easiest way to do this is to use two shapes that follow this compositional rule, the **golden rectangle**, and the **golden spiral**. Place the subject where the golden spiral's curl would be.



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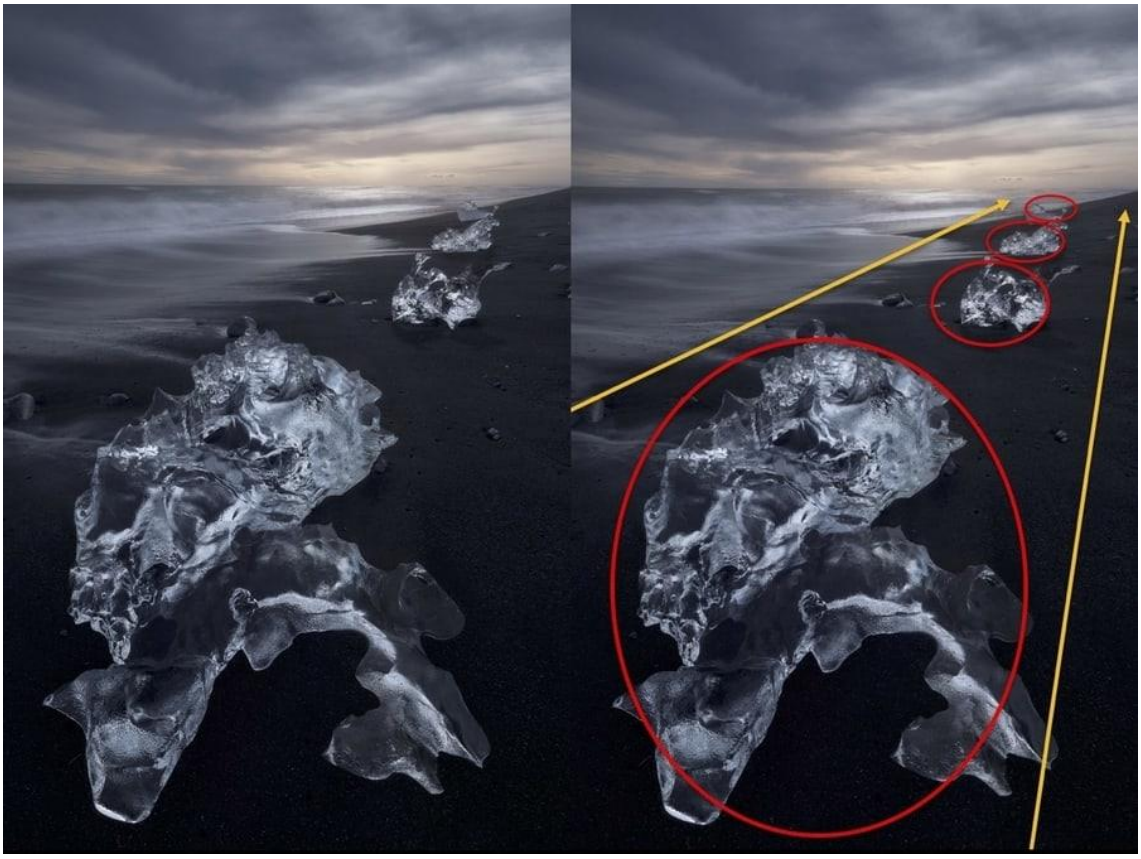
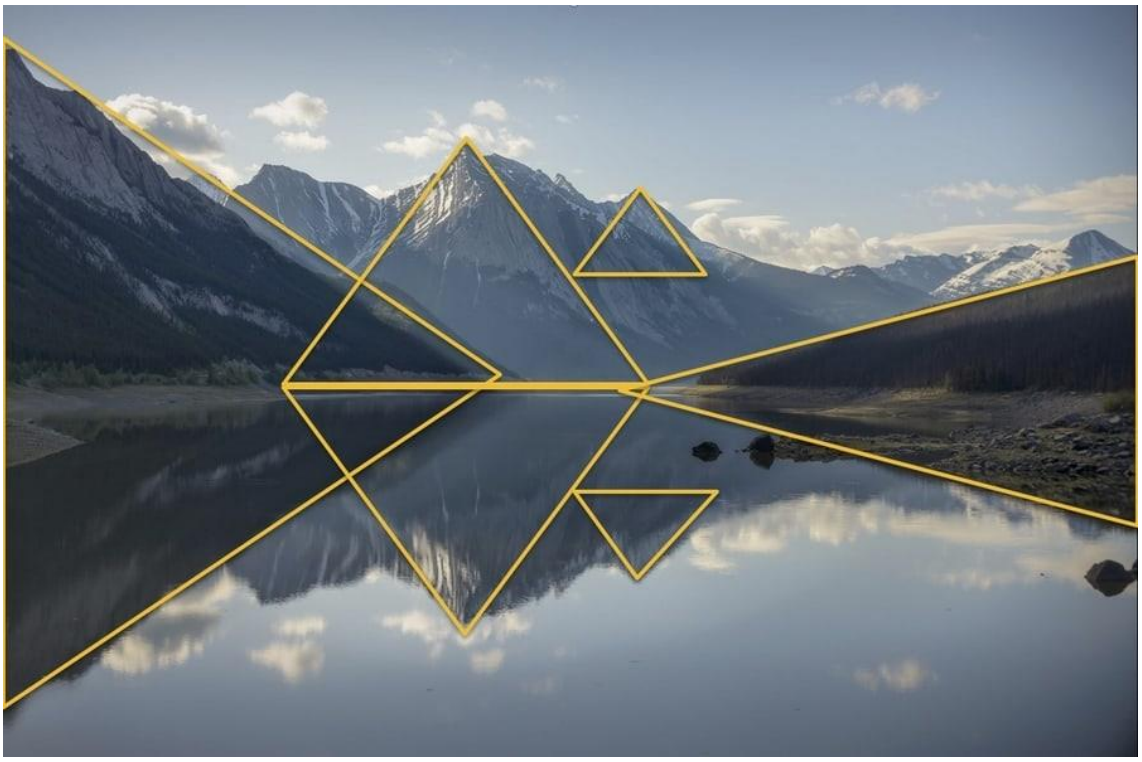
Repetition

Through repetition, we can use colors, shapes, lines, textures, and other elements in the composition to create an attractive visual flow for the viewer.



Geometric shapes

Look for triangles, circles, squares, rectangles, and even more complex forms like rhombuses or diamonds. The easiest place to find shapes is in architecture, but we can find so many of these compositional elements in nature, too.



Scale

Scale is a **compositional technique** related to the proportion of the elements and how they relate to each other in terms of size, distance, etc.

A **good composition tip** is to place a recognizable element in the scene to show a sense of scale, like placing a person or animal against a vast landscape.

Color

To **compose images using colors**, try to adjust them by following one of the principal color schemes like analogous, complementary, triads, etc. You can also create more depth by separating warm and cool colors. Don't forget about visual weight; too many vibrant and saturated colors could be distracting.

Rule of odds

This **compositional guideline** consists of capturing an **odd number of subjects** to create more visually attractive images, including 3 or 5 elements instead of 2 or 4.

You can find more compositional rules, elements, and techniques in our **Guide to photography composition**.

18. PHOTOGRAPHY GEAR

The **camera**, **lenses,** and **other gear** are your main tools to create images.

Basic photography gear includes the following elements:

- **Digital cameras**: The most basic piece of equipment is a digital camera; preferably a DSLR or mirrorless camera with interchangeable lenses.

- **Lenses**: They are equally as important as cameras to shoot quality images. The basic lenses include a wide range from fish-eye lenses of 7-8 mm to super-telephoto lenses like 600-800 mm.

The **brightness of the lens** is also crucial. Lenses with a large aperture, like f/1.8 or f/2.8, are usually aimed at shooting portraits and low-light photography.

- **Tripods**: A sturdy tripod is essential in some genres like landscape photography.

- **Lens filters**: These types of filters will let you create long exposures and achieve creative effects in your images.

- **Others**: There are many other pieces of gear like **camera bags**, **SD cards**, **batteries**, etc., and others that you might need depending on what you're shooting, like **flashes** and **external lights**, **photography gloves**, **star trackers**, etc.

18. EDITING

The **photography editing process** is aimed at striking a **balance in the exposure** between the highlights and the shadows, sharpening the image, managing the color, and generally fine-tuning the final image.

Some photographers also use post-processing to **create artistic effects** that can represent their vision. This, of course, depends on your personal taste, but editing and processing are **photography fundamentals** that you need to know to have well-rounded images.

Some of the most popular pieces of software for photographers are:

- **Adobe Lightroom:** Powerful software with a simple interface
- **Adobe Photoshop:** More advanced processing software
- **Topaz Denoise AI:** Software aimed at reducing digital noise
- **Sharpen AI:** Best software to fix out-of-focus/blurred images
- **Nik Collection:** The most powerful suite of editing filters
- **Luminar:** A cheaper alternative to Adobe Lightroom
- **Capture One:** Software aimed at professionals

20. PHOTOGRAPHY TIPS FOR BEGINNERS

I couldn't finish this **photography basics e-book** without a few **important photography basics tips and tricks:**

1. Understand how light in photography works
2. Get started in photography by shooting in Raw
3. Don't be afraid of the camera's manual mode
4. Learn how to properly hold your camera
5. Be aware of the importance of a tripod
6. Take your time to zoom in on your images to find mistakes
7. Study and look at as many photographs as possible
8. Ask for feedback from other photographers
9. Take your camera with you as much as you can
10. Focus on the process, not the results

You can find more tips and details in my **25 best photography tips for beginners guide.**

ADDITIONAL GUIDES & RESOURCES

In addition to all information in this e-book, you can find more in-depth information and examples in the photography section on Capturetheatlas.com

We also have **complete guides and articles** on more specific topics related to photography:

- **Long exposure photography guide**
- **Milky Way photography guide**
- **Photography composition guide**
- **Lens filters guide**
- **Northern Lights photography guide**
- **Digital noise reduction guide**
- **Best noise reduction software**
- **Seascape photography guide**
- **Best gear for night photography**
- **Camera equipment rental guide**
- **Our photography gear**

CONCLUSION

Learning the **photography basics** might seem daunting. There are so many **photography concepts to understand**, and all this information can be overwhelming when you are starting.

However, I'm sure that using this **beginner's photography e-book** will make the process easier for you. My advice is to learn the **main photography fundamentals** one by one. Understand the theory, check the examples, and most importantly, try to put them into practice!

That is probably the most important tip: shoot and practice as much as you can. Even when you don't have a camera, you can visualize compositions and observe how the light interacts with different subjects. The learning curve in photography is very steep at the beginning, and you will quickly see your images improve.

My last tip for anyone **beginning in photography** is to share your journey with others. Receiving feedback from other photographers is one of the best ways to improve your photography, and having the support of a community will be tremendously helpful. You're more than welcome to **join our Capture the Atlas Community** if you want to grow with us in the future.

I really hope that all the information contained in this e-book will help you along your own photographic journey. If you have any questions, feel free to contact me, and I'll always be happy to help!

Happy Captures!
Dan

Capture the Atlas Photo Tours

Would you like to learn and immerse yourself in photography while capturing some of the most fascinating landscapes on earth?

Join us on any of our signature photography tours!

Iceland

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Our **Northern Lights and Fall Colors Photo Tour in Iceland** is one of our most popular photo trips, and for good reason: Iceland is a photographer's paradise with plenty of contrasts and things to shoot like waterfalls, glaciers, geysers, volcanic beaches, canyons, etc.

During the fall, everything is even more photogenic, as the landscapes are painted in autumn colors.

This is also the **best time of the year to see and photograph the Northern Lights**, one of the most stunning natural shows on earth. During our tours, we chase the aurora borealis when the sun goes down, so every night is a little adventure full of excitement and fun.

Join a group of like-minded photographers in an unforgettable experience across the land of ice and fire!

You can find more information related to dates, itineraries, prices, etc. on our **Iceland Photo Tour page.**

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The Lofoten Islands

The Lofoten Islands is an archipelago in Northern Norway located above the Arctic Circle.

This area is full of spectacular sharp fjords that rise directly from the ocean, snow-capped vertical mountains, Arctic beaches, and picturesque fishing villages.

These islands are impressive throughout the year, but even more during the wintertime when you can find gorgeous white landscapes painted with the ephemeral arctic light. Sometimes the entire day is a beautiful transition from sunrise to sunset, which is any photographer's dream.

The nights are also exciting with the Northern Lights shows. At this latitude, seeing the aurora borealis is easy as long as there are clear skies, so if we can, we chase the "green lady" every night.

You can find more information related to dates, itineraries, prices, etc. on our **Lofoten Islands Photo tour page.**

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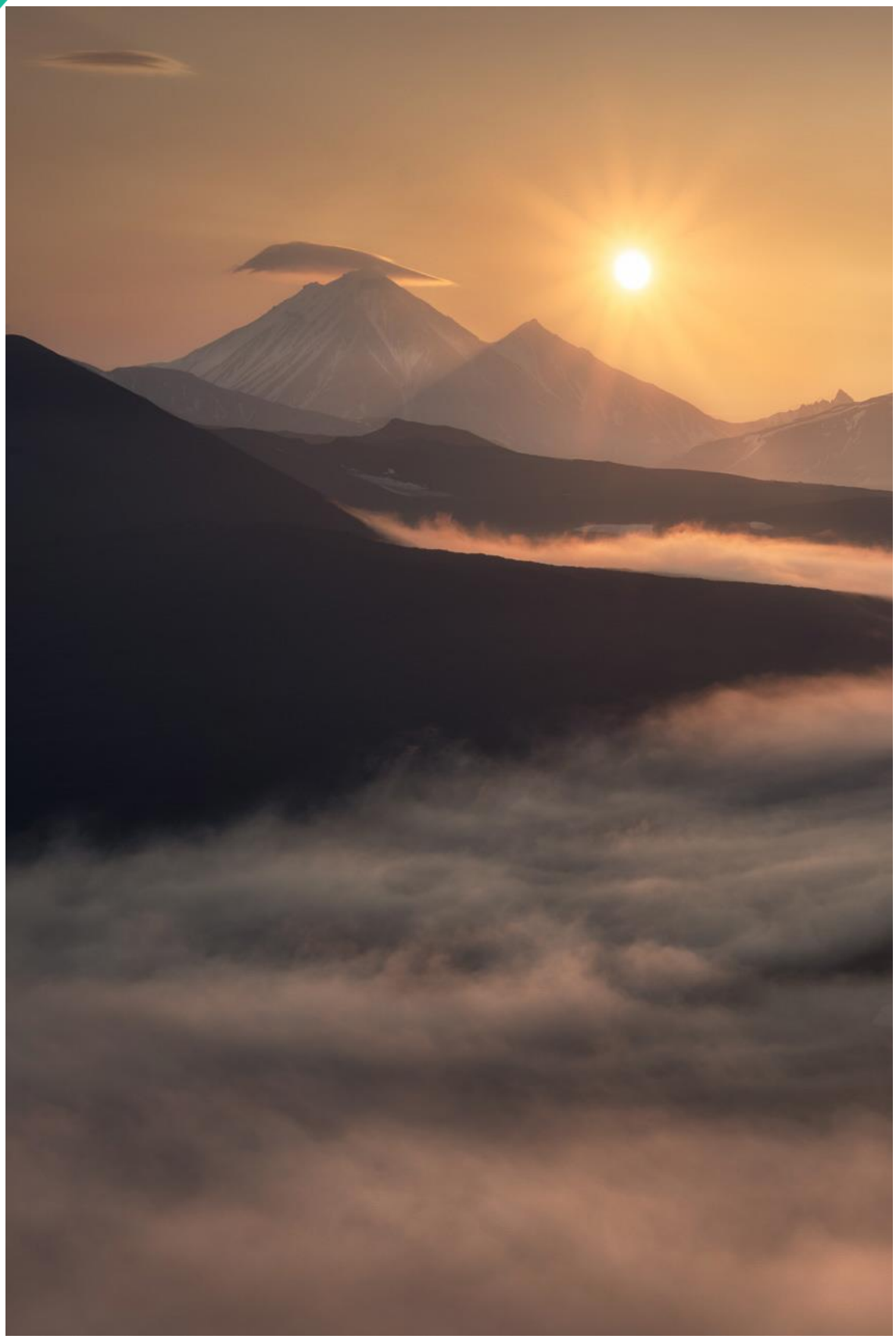
Kamchatka

If there's a place on earth for adventurous landscape photographers, it's the Kamchatka Peninsula.

This place, located in the far east of Russia, is home to the highest active volcanoes in all of Eurasia. It is a pristine area where the landscapes haven't been changed by humans, so you can enjoy nature in all its splendor: volcanoes, Martian landscapes, fumaroles, alpine valleys, glaciers, ice caves, wildlife, and more. There are many things to explore and see as long as you're up for getting out of your comfort zone for a few days.

On this tour, we travel in big 8WD Russian trucks, sleep in tents, and hike to the top of some volcanic cones to enjoy the best views. Participants should have a moderate fitness level and a thirst for adventure. We also have the support of a local team to help us get the best possible images.



You can find more information related to dates, itineraries, prices, etc. on our **Kamchatka Photo tour page.**

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