EXPOSURE TRIANGLE

Proper exposure is achieved by 3 camera functions coming into balance: ISO, f/stop and shutter speed. This is called the "Exposure Triangle".

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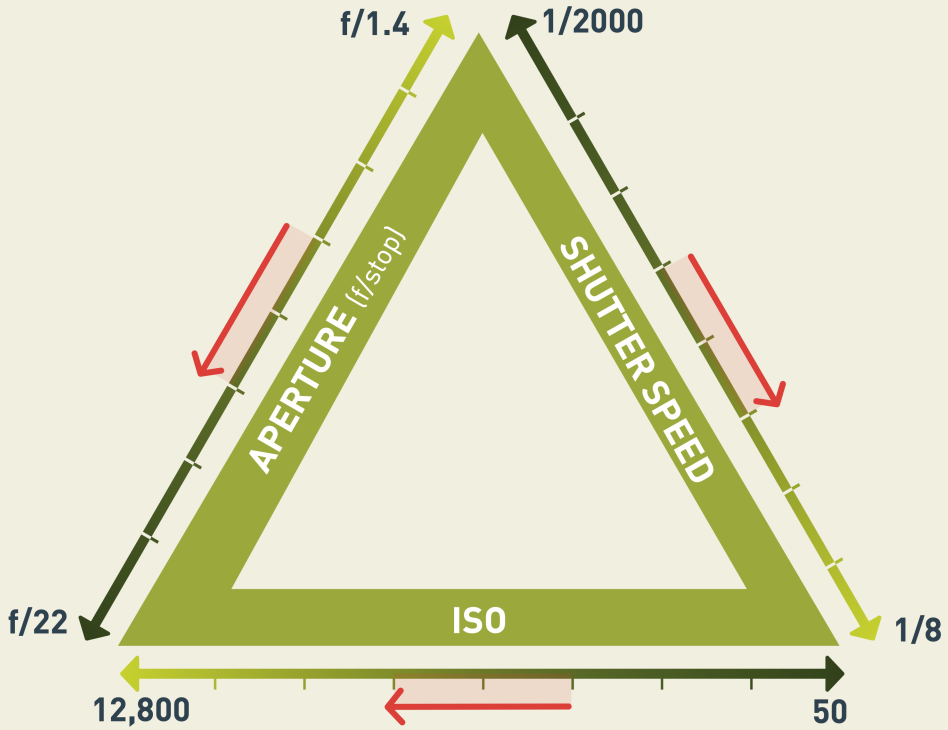

When one point of the triangle is moved in one direction, another point of the triangle must move the same distance in the the opposite direction to maintain exposure.

Look at the red arrows: If the aperture moves 2 points in one direction, for example f/4 to f/8, then the ISO or Shutter Speed should move two stops in the opposite direction.

PRACTICAL EXAMPLE

SUNNY - OUTSIDE

Initial camera setting:

ISO: 100

Shutter Speed: 1/125

f/stop: f/4

Situation:
Subject is fast moving, you need to increase the shutter speed to get a sharp image.

Improved camera setting, as per the exposure triangle:

ISO: 100 | No change

Shutter Speed: 1/500 **Move two stops up**

f/stop: f/2 **Move two stops down**

ADVANCED CAMERA EXPOSURE

UNDERSTANDING THE HISTOGRAM

This tool will give you a tonal analysis of your image, and thus allows you to get the best exposures on your photographs.

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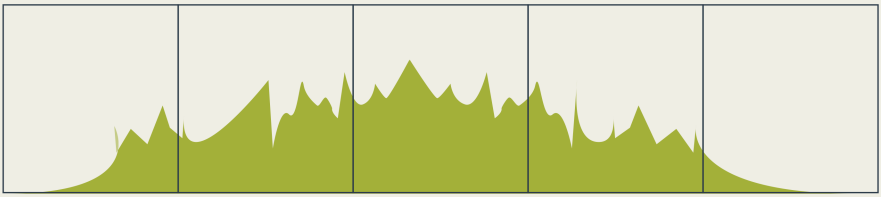
HOW TO READ THE HISTOGRAM



BLACKS
Darkest recordable blacks

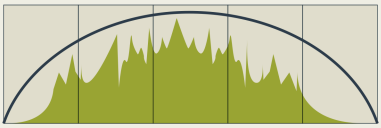
SHADOWS
Dark Exposure

MID-TONES
Medium Exposure

WHITES
Light Exposure

HIGHLIGHTS
Brightest recordable whites

WHAT THE HISTOGRAM TELLS US ABOUT EXPOSURE

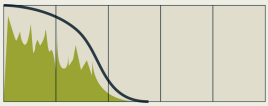


NEUTRAL EXPOSURE

This reading produces the **safest exposure.** Even when the tones look slightly brighter in camera, this can be easily post-processed.

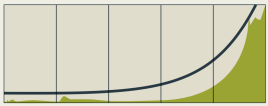
UNDEREXPOSURE

Try to avoid this reading. Use a wider aperture or a longer shutter speed. Undexposed photos are very hard to recover in post-processing.



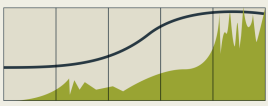
TO THE LEFT

This reading can produce an acceptable photo. It can be fixed in post processing, although it might introduce noise into the photo.



OVEREXPOSURE

This setting eliminates many details in the image by overexposing the highlights. Use a lower ISO number to avoid it. Overexposed photos are very hard to recover in post.



TO THE RIGHT

This reading can be fixed in post-processing fairly easily. The images will be less noisy, but it can be easy to slide into overexposure.

MANUAL MODE

Manual mode requires the photographer to physically set 3 camera functions: ISO, f/stop and shutter speed.

1 SET THE ISO

100	200	400	800	1600	3200
Sunny	Partly cloudy	Overcast	Indoor / Sports	Poor light	Dark / Night

Less noise / grain ← → More noise / grain

2 SET THE APERTURE

f/1.4 f/2 f/2.8 f/4 f/5.6 f/8 f/11 f/16 f/22

BRIGHTER
SHALLOW DEPTH OF FIELD
BLURRED BACKGROUND

DARKER
DEEP DEPTH OF FIELD
EVERYTHING IN FOCUS

3 CHECK CAMERA METER FOR PROPER EXPOSURE:

-2 | | -1 | | 0 | | +1 | | +2

Under Over

4 ADJUST SHUTTER SPEED OR APERTURE UNTIL PROPER EXPOSURE

Fast shutter speed: freeze action ← → Slow shutter speed: blur motion

Underexposed reading

-2 | | -1 | | 0 | | +1 | | +2

Adjust the shutter speed or the aperture until the meter reads 0.

Proper reading

-2 | | -1 | | 0 | | +1 | | +2

Overexposed reading

-2 | | -1 | | 0 | | +1 | | +2

Adjust the shutter speed or the aperture until the meter reads 0.

5 FINAL CHECK

- Adjust exposure based on the subject:
  Do you need to freeze action or increase the depth of field?

- Keep the camera meter indicating proper exposure:
  Is the image too light? Move the camera meter towards underexposure (under 0)
  Is the image too dark? Move the camera meter towards overexposure (over 0)

APERTURE (f-stop)

The aperture (f-stop) controls the amount of light reaching the sensor through the lens. The aperture size will regulate the sensor's degree of exposure to light.

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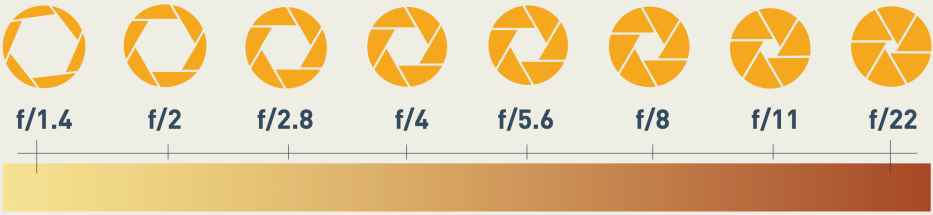
APERTURE SCALE

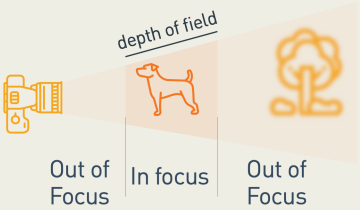


BRIGHTER
Allows MORE light in

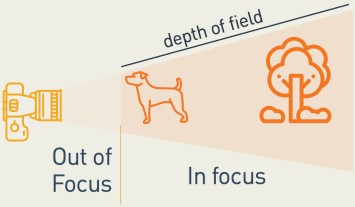
DARKER
Allows LESS light in

DEPTH OF FIELD FACTOR

BRIGHTER
SHALLOW DEPTH OF FIELD
BLURRED BACKGROUND



DARKER
DEEP DEPTH OF FIELD
EVERYTHING IN FOCUS



CREATIVE USES

f/1.4
Bokeh effect
Low light

f/2.8 - f/5.6
Portraits - Sports

f/8 - f/16
Landscapes

f/16 - f/32
Long exposure