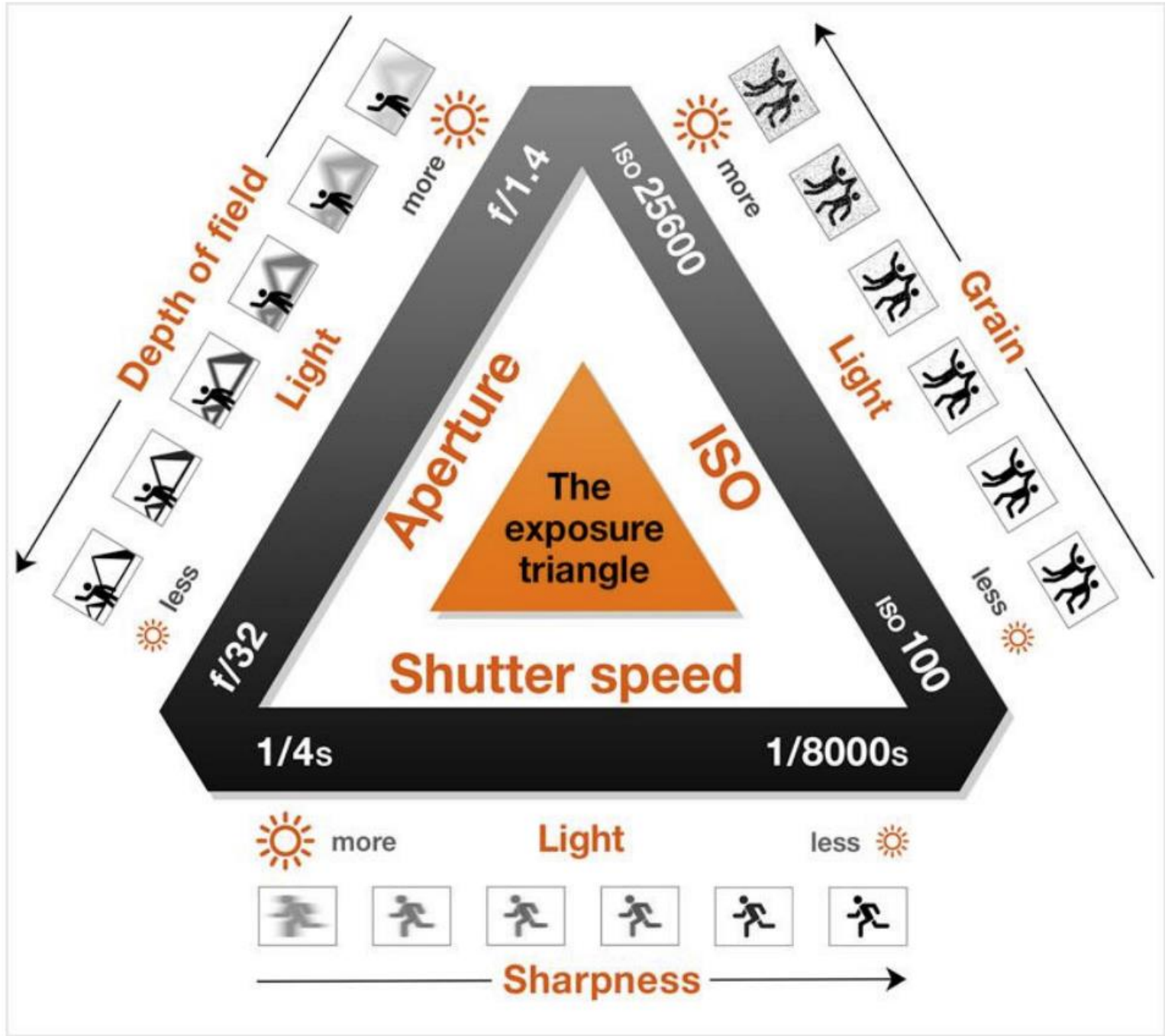
Shooting Situations and Considerations

Dennis Fritsche and Larry Petterborg

November 8, 2022


Depth of field
more
Light
less
f/1.4
ISO 25600
Aperture
ISO
The exposure triangle
Shutter speed
f/32
ISO 100
1/4s
1/8000s
more
Light
Grain
less
more
Light
less
Sharpness

The technical nature of photography is mainly deciding between bad choices.

Dennis Fritsche 2022

Depth of Field (DOF) - Impact of Variables

Parameter	Focal Length	Aperture	Distance
Focal Length	Shorter = Greater DOF	Fixed	Fixed
Aperture	Fixed	Smaller = Greater DOF	Fixed
Distance to Subject	Fixed	Fixed	Longer = Greater DOF

Depth of Field – Portion of the photograph in "acceptable focus"

- Depth of Field determined by
  - Focal length
  - Aperture
  - Distance to subject

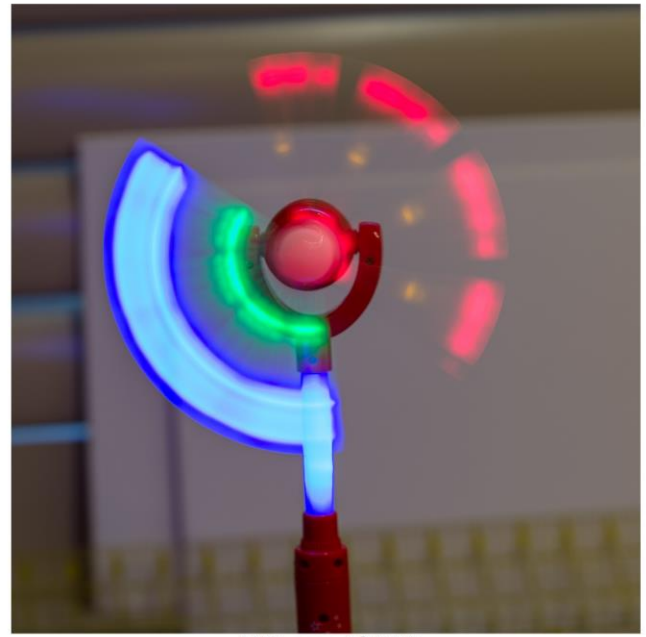
- Depth of field calculators online and for phone
  - I use Depth of Field Master online https://www.dofmaster.com/dofjs.html
  - And "Digital Depth of Field" app on my phone

1/2000 sec at f / 2.8

1/500 sec at f / 2.8

1/250 sec at f / 2.8

1/60 sec at f / 2.8



1/30 sec at f / 2.8

1/4 sec at f / 3.5

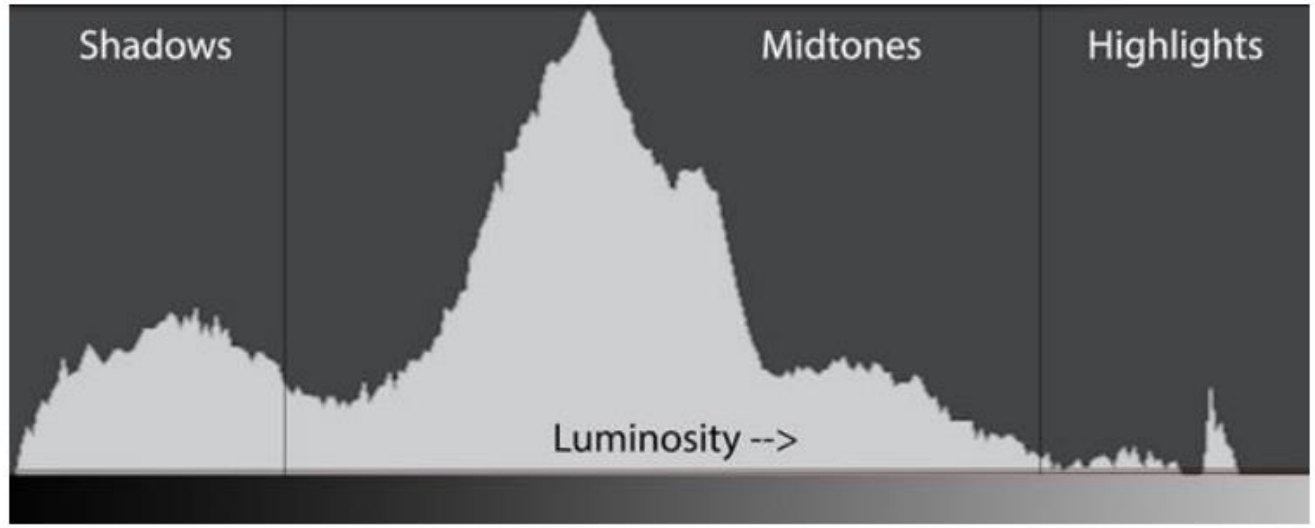
Tripod, monopod or Handhold

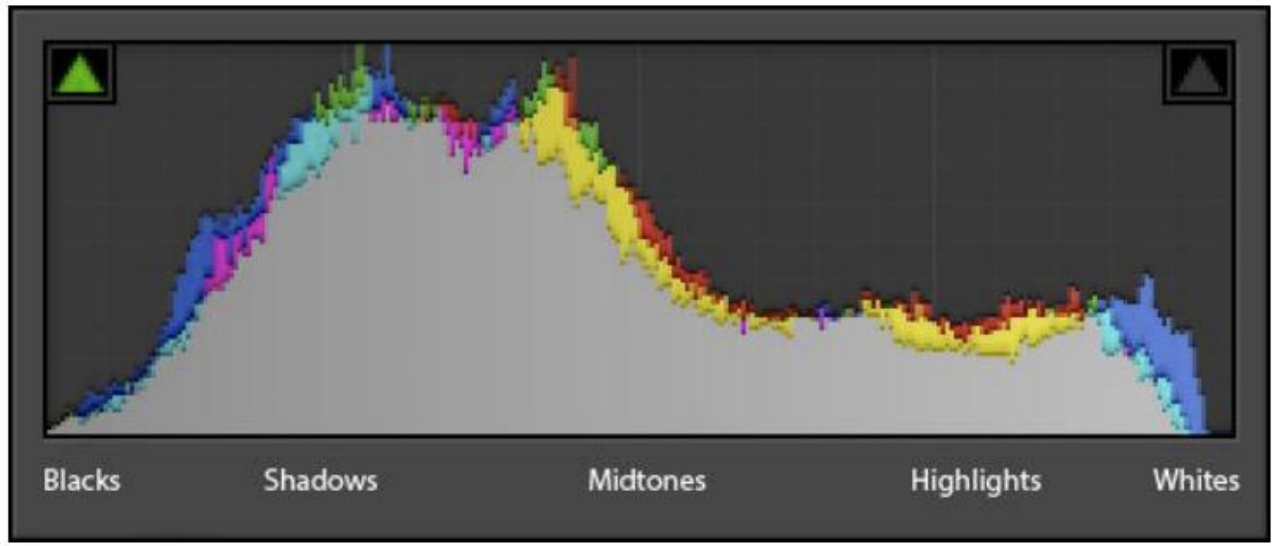
- Always better results on a tripod
- Sometimes a tripod is not practical or I’m just lazy
- May have to let ISO go up
- For a heavy lens, a monopod is handy
- For handheld shutter speed = 1/focal length of the lens

ISO

- Modern cameras and software make high ISO less scary and problematic than in the early years
- Get the exposure right and deal with high ISO noise later
- People obsess on “noise” too much
- Auto ISO is a key part of camera setup – I always have it ON when handholding and OFF on a tripod

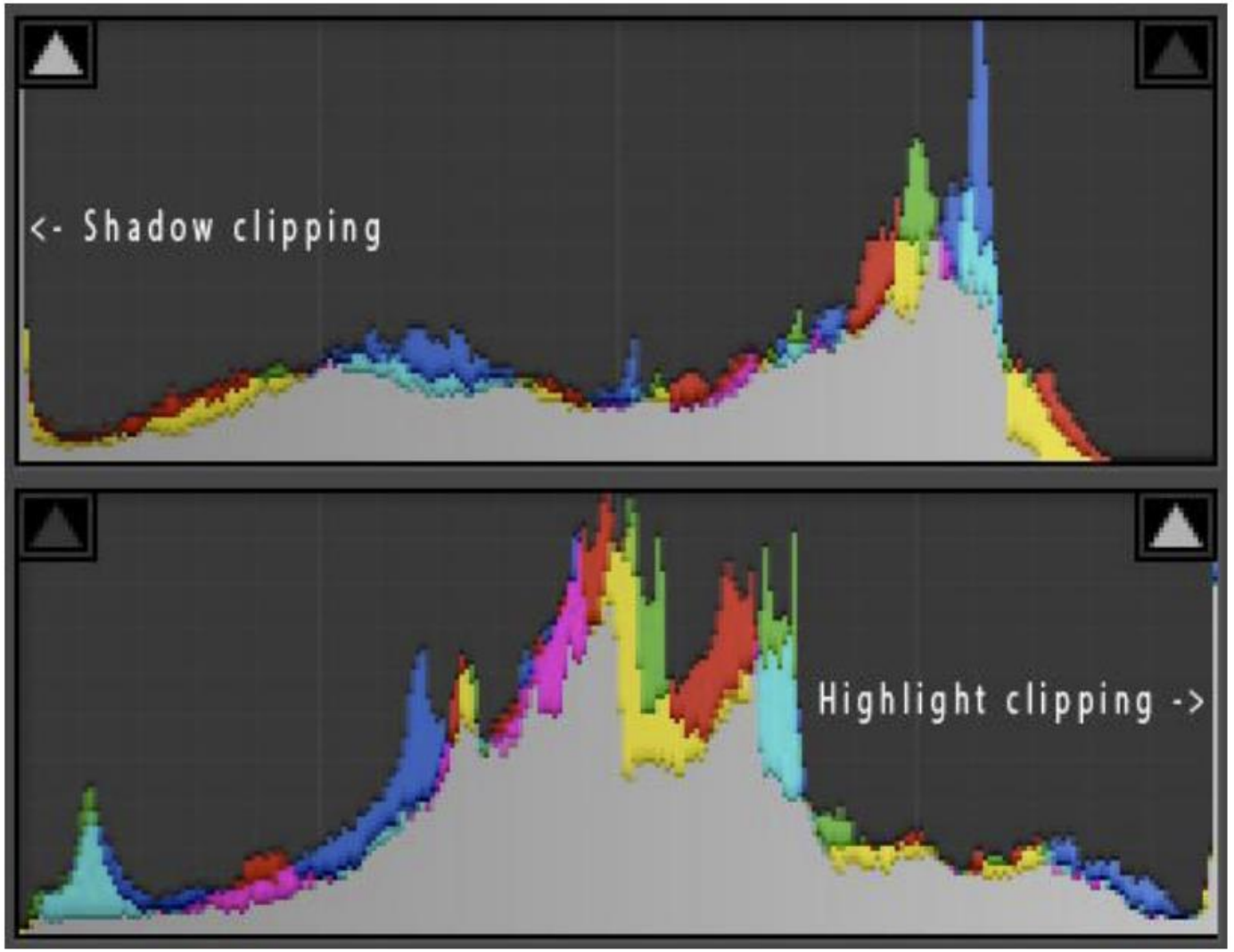
HISTOGRAMS


Shadows
Midtones
Highlights
Luminosity -->


Blacks
Shadows
Midtones
Highlights
Whites

HISTOGRAMS

Not preferred, but workable



Bad

EV	Real-World Situation for Proper Exposure
-6	Nighttime landscape under quarter moon
-5	Aurora borealis of moderate brightness
-4	Nighttime landscape under gibbous moon
-3	Nighttime landscape under full moon
-2	Nighttime snow or beach landscape under full moon
-1	End of blue hour
0	Late in blue hour
1	Middle of blue hour
2	Distant cityscape at night
3	Indoor scene lit only by dim window light
4	Floodlit monuments or fountains at night
5	Typical artificial indoor light
6	Bright indoor lighting
7	Fairs and theme parks at night
8	Bright window displays and advertisements at night
9	Nighttime sporting events under bright light
10	Moment after sunset on a clear day
11	Daylight on a foggy day
12	Moment before sunset on a clear day
13	Typical subject on a bright, cloudy day
14	Typical subject on a day with hazy sunlight
15	Full sunlight on a cloudless day, typical subject
16	Full sunlight on a cloudless day, bright subject (i.e. the beach)
17	Full sunlight on a cloudless day, highly reflective subject (i.e. snow)

[1]This chart assumes ISO 100. Situations adapted from my own photos and from Wikipedia.

Aperture/Shutter Speed at ISO 100

- There are many ways to achieve the proper exposure
- Balance what is most important – aperture or shutter speed.
- If you can't get what you want, adjust the ISO (at the expense of noise)
- Some choices are limited based on using a tripod or handholding

- Your camera knows all this and is here to help you.

	f/1.0	f/1.4	f/2	f/2.8	f/4	f/5.6	f/8	f/11	f/16	f/22
60 sec.	-6 EV	-5 EV	-4 EV	-3 EV	-2 EV	-1 EV	0 EV	1 EV	2 EV	3 EV
30 sec.	-5 EV	-4 EV	-3 EV	-2 EV	-1 EV	0 EV	1 EV	2 EV	3 EV	4 EV
15 sec.	-4 EV	-3 EV	-2 EV	-1 EV	0 EV	1 EV	2 EV	3 EV	4 EV	5 EV
8 sec.	-3 EV	-2 EV	-1 EV	0 EV	1 EV	2 EV	3 EV	4 EV	5 EV	6 EV
4 sec.	-2 EV	-1 EV	0 EV	1 EV	2 EV	3 EV	4 EV	5 EV	6 EV	7 EV
2 sec.	-1 EV	0 EV	1 EV	2 EV	3 EV	4 EV	5 EV	6 EV	7 EV	8 EV
1 sec.	0 EV	1 EV	2 EV	3 EV	4 EV	5 EV	6 EV	7 EV	8 EV	9 EV
1/2	1 EV	2 EV	3 EV	4 EV	5 EV	6 EV	7 EV	8 EV	9 EV	10 EV
1/4	2 EV	3 EV	4 EV	5 EV	6 EV	7 EV	8 EV	9 EV	10 EV	11 EV
1/8	3 EV	4 EV	5 EV	6 EV	7 EV	8 EV	9 EV	10 EV	11 EV	12 EV
1/15	4 EV	5 EV	6 EV	7 EV	8 EV	9 EV	10 EV	11 EV	12 EV	13 EV
1/30	5 EV	6 EV	7 EV	8 EV	9 EV	10 EV	11 EV	12 EV	13 EV	14 EV
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1/125	7 EV	8 EV	9 EV	10 EV	11 EV	12 EV	13 EV	14 EV	15 EV	16 EV
1/250	8 EV	9 EV	10 EV	11 EV	12 EV	13 EV	14 EV	15 EV	16 EV	17 EV
1/500	9 EV	10 EV	11 EV	12 EV	13 EV	14 EV	15 EV	16 EV	17 EV	18 EV
1/1000	10 EV	11 EV	12 EV	13 EV	14 EV	15 EV	16 EV	17 EV	18 EV	19 EV
1/2000	11 EV	12 EV	13 EV	14 EV	15 EV	16 EV	17 EV	18 EV	19 EV	20 EV
1/4000	12 EV	13 EV	14 EV	15 EV	16 EV	17 EV	18 EV	19 EV	20 EV	21 EV
1/8000	13 EV	14 EV	15 EV	16 EV	17 EV	18 EV	19 EV	20 EV	21 EV	22 EV

Scenarios 1 A and B - Bright Day/Typical Subject 24-70mm f/2.8

A – Isolate subject such as portrait

- Focal Length
- Aperture
- Shutter speed
- Tripod or No Tripod
- ISO

B – A landscape

- Focal Length
- Aperture
- Shutter speed
- Tripod or No Tripod
- ISO

EV	Real-World Situation for Proper Exposure
-6	Nighttime landscape under quarter moon
-5	Aurora borealis of moderate brightness
-4	Nighttime landscape under gibbous moon
-3	Nighttime landscape under full moon
-2	Nighttime snow or beach landscape under full moon
-1	End of blue hour
0	Late in blue hour
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4 sec.	-2 EV	-1 EV	0 EV	1 EV	2 EV	3 EV	4 EV	5 EV	6 EV	7 EV
2 sec.	-1 EV	0 EV	1 EV	2 EV	3 EV	4 EV	5 EV	6 EV	7 EV	8 EV
1 sec.	0 EV	1 EV	2 EV	3 EV	4 EV	5 EV	6 EV	7 EV	8 EV	9 EV
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1/125	7 EV	8 EV	9 EV	10 EV	11 EV	12 EV	13 EV	14 EV	15 EV	16 EV
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1/1000	10 EV	11 EV	12 EV	13 EV	14 EV	15 EV	16 EV	17 EV	18 EV	19 EV
1/2000	11 EV	12 EV	13 EV	14 EV	15 EV	16 EV	17 EV	18 EV	19 EV	20 EV
1/4000	12 EV	13 EV	14 EV	15 EV	16 EV	17 EV	18 EV	19 EV	20 EV	21 EV
1/8000	13 EV	14 EV	15 EV	16 EV	17 EV	18 EV	19 EV	20 EV	21 EV	22 EV

Scenarios 1 A and B - Bright Day/Typical Subject 24-70mm f/2.8

A – Isolate subject such as portrait

- Focal Length - 70mm
- Aperture 2.8-4
- Shutter speed - from table
- Tripod or No Tripod - either
- ISO - 100

B – A landscape

- Focal Length – 24mm
- Aperture – 11-13
- Shutter speed – from table
- Tripod or No Tripod - either
- ISO - 100

Scenarios 2 A and B – Dim Day or Late/Typical Subject 24-70mm f/2.8

A – Isolate subject such as portrait

- Focal Length
- Aperture
- Shutter speed
- Tripod or No Tripod
- ISO

B – A landscape

- Focal Length
- Aperture
- Shutter speed
- Tripod or No Tripod
- ISO

EV	Real-World Situation for Proper Exposure
-6	Nighttime landscape under quarter moon
-5	Aurora borealis of moderate brightness
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1/2000	11 EV	12 EV	13 EV	14 EV	15 EV	16 EV	17 EV	18 EV	19 EV	20 EV
1/4000	12 EV	13 EV	14 EV	15 EV	16 EV	17 EV	18 EV	19 EV	20 EV	21 EV
1/8000	13 EV	14 EV	15 EV	16 EV	17 EV	18 EV	19 EV	20 EV	21 EV	22 EV

Scenarios 2 A and B – Dim Day or Late/Typical Subject 24-70mm f/2.8

A – Isolate subject such as portrait

- Focal Length – 70mm
- Aperture – 2.8-4
- Shutter speed – from table
- Tripod or No Tripod - either
- ISO - 100

B – A landscape

- Focal Length – 24mm
- Aperture – 11-13
- Shutter speed – from table
- Tripod or No Tripod - Tripod
- ISO – or increase ISO

Scenarios 3 A and B – Typical Indoor Stadium such as Mesquite Rodeo
70-200mm f/2.8

A – Freeze Motion

- Focal Length
- Aperture
- Shutter speed
- Tripod or No Tripod
- ISO

B – Blur Motion

- Focal Length
- Aperture
- Shutter speed
- Tripod or No Tripod
- ISO

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4 sec.	-2 EV	-1 EV	0 EV	1 EV	2 EV	3 EV	4 EV	5 EV	6 EV	7 EV
2 sec.	-1 EV	0 EV	1 EV	2 EV	3 EV	4 EV	5 EV	6 EV	7 EV	8 EV
1 sec.	0 EV	1 EV	2 EV	3 EV	4 EV	5 EV	6 EV	7 EV	8 EV	9 EV
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1/15	4 EV	5 EV	6 EV	7 EV	8 EV	9 EV	10 EV	11 EV	12 EV	13 EV
1/30	5 EV	6 EV	7 EV	8 EV	9 EV	10 EV	11 EV	12 EV	13 EV	14 EV
1/60	6 EV	7 EV	8 EV	9 EV	10 EV	11 EV	12 EV	13 EV	14 EV	15 EV
1/125	7 EV	8 EV	9 EV	10 EV	11 EV	12 EV	13 EV	14 EV	15 EV	16 EV
1/250	8 EV	9 EV	10 EV	11 EV	12 EV	13 EV	14 EV	15 EV	16 EV	17 EV
1/500	9 EV	10 EV	11 EV	12 EV	13 EV	14 EV	15 EV	16 EV	17 EV	18 EV
1/1000	10 EV	11 EV	12 EV	13 EV	14 EV	15 EV	16 EV	17 EV	18 EV	19 EV
1/2000	11 EV	12 EV	13 EV	14 EV	15 EV	16 EV	17 EV	18 EV	19 EV	20 EV
1/4000	12 EV	13 EV	14 EV	15 EV	16 EV	17 EV	18 EV	19 EV	20 EV	21 EV
1/8000	13 EV	14 EV	15 EV	16 EV	17 EV	18 EV	19 EV	20 EV	21 EV	22 EV

ISO	100	200	400	800	1600	3200	6400	12800	25600
+ EV	0	1	2	3	4	5	6	7	8

Scenarios 3 A and B – Typical Indoor Stadium such as Mesquite Rodeo
70-200mm f/2.8

A – Freeze Motion

- Focal Length – 100 to 200mm
- Aperture – 2.8
- Shutter speed – 1/1000
- Tripod or No Tripod – No Tripod maybe monopod
- ISO – Auto 3200 to 6400

B – Blur Motion

- Focal Length – 100 to 200mm
- Aperture – 2.8
- Shutter speed – 1/25 to 1/100
- Tripod or No Tripod - No Tripod maybe monopod
- ISO – Auto 320 - 600

My Typical Camera Setup

- Aperture Priority – I set aperture and camera calculates shutter speed. (Aperture mostly f/5.6 to f/11)
- On tripod – ISO fixed at base (64)
- Handheld – ISO Auto with minimum shutter speed set at 1/focal length of lens (with some extra for long lenses.)
- Use histogram to adjust exposure compensation for bright but no blown highlights
- Modern mirrorless systems often allow setting exposure compensation from the lens whiling viewing live histogram.

Specialty setup

- Manual – I set aperture and shutter speed
- On tripod – ISO fixed at base (64)
- Handheld – ISO Auto with shutter speed set depending on the need – slow or fast subject
- Use histogram to adjust exposure compensation for bright but no blown highlights