Cameras, Composition and Lighting

Exposure Controls

Exposure Modes

P = Program

Controls Shutter Speed and Aperture
Customized Auto
Priority is to keep Shutter Speed fast enough to Hand-Hold the camera

A / Av = Aperture

You set Aperture, Camera sets Shutter
Depth of Field
Critical Focus

S / Tv = Shutter

You set Shutter, Camera sets Aperture
Motion blurring or freezing

M = Manual

You set both Shutter and Aperture

Presets or Scenes

Controls Shutter, Aperture, Focus and Flash

Cameras, Composition and Lighting

Aperture / Aperture Priority Mode

Amount of Light passing through lenses

*Measured in **f-stops** and EV*

Depth of Field

Determines the Plane of Focus
Zone or Range of focus in front of lens

All lenses - Depth of Field 1/3 in front of and 2/3 behind the spot focused on

The larger the number the smaller the opening

f 1.0 sees approx. equivalent to the eye

f 1.8 sees ½ the amount of the eye

Larger opening / Smaller f-stop number
Less Depth of field

Smaller opening / Higher f-stop number
More Depth of Field

Depth of Field also determined by

Focal Length

Lower mm number = more depth of field   24mm has more than 50mm
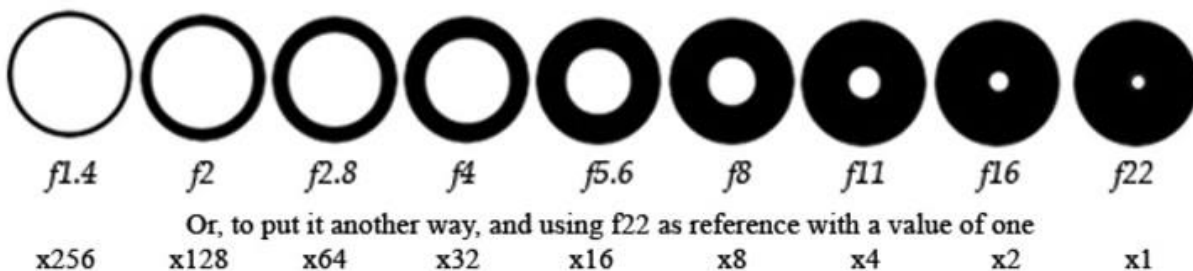
Proximity

Further away = more depth of field

Critical Focus

Aperture / f-stop that the lens is the sharpest

Lenses bend or refract light

If lens is f-stop 2.8 or slower = 3 f-stops   if 2.4 or faster = 3 f-stops

Each step on the aperture ring halves the amount of light entering the camera

f1.4	f2	f2.8	f4	f5.6	f8	f11	f16	f22

Or, to put it another way, and using f22 as reference with a value of one

x256	x128	x64	x32	x16	x8	x4	x2	x1

Cameras, Composition and Lighting

Shutter Speed / Shutter Priority Mode

Determines the amount of time light passes through lens

Controls amount of blur or freezing of subject

Slower

>   More blur

Faster

>   More Freeze

Rule for Hand held cameras

>   Shutter speed equal to or greater than amount of
>   zoom in 35mm equivalents   i.e. 1/focal length
>
>   Any lens below Equivalent 40mm = 1/40 second
>   Equivalent to 110mm = 1/125 second
>   Equivalent to 300mm = 1/300 second

	Shutter Speeds
	1 sec
	1/2
	1/4
	1/8
	1/15
	1/30
	1/60
	1/125
	1/250
	1/500
	1/1000
	1/2000
	1/4000
	1/8000

Shutter Speed Cheat Sheet

H	1/4000	Freezing REALLY fast moving objects (water balloon popping)
a	1/2000	Birds in flight
n	1/1000	Sports photography and fast vehicles
d	1/500	Slower sports, runners, moutain bikes, etc.
h	1/250	Children or slow moving animals
e	1/125	Panning vehicles, standard portraits
l	1/60	Panning runners and athletes.
d	1/30	Panning slower moving objects
T	1/15	Capturing a little movement (people walking, slow cars, etc.)
r	1/8	Blur fast moving water
i	1/4	Blur people walking
p	1/2	Blur slow moving water
o	1"	Milky water affect
d	1"+	Long exposure shots (star trails, night photography)

Cameras, Composition and Lighting

ISO

Determines Quality of Detail

Lowest ISO setting captures most detail
>Requires most light

Highest ISO setting captures least detail
>Can shoot in the least light

Degrades Image due to Noise and Pixel Clumping
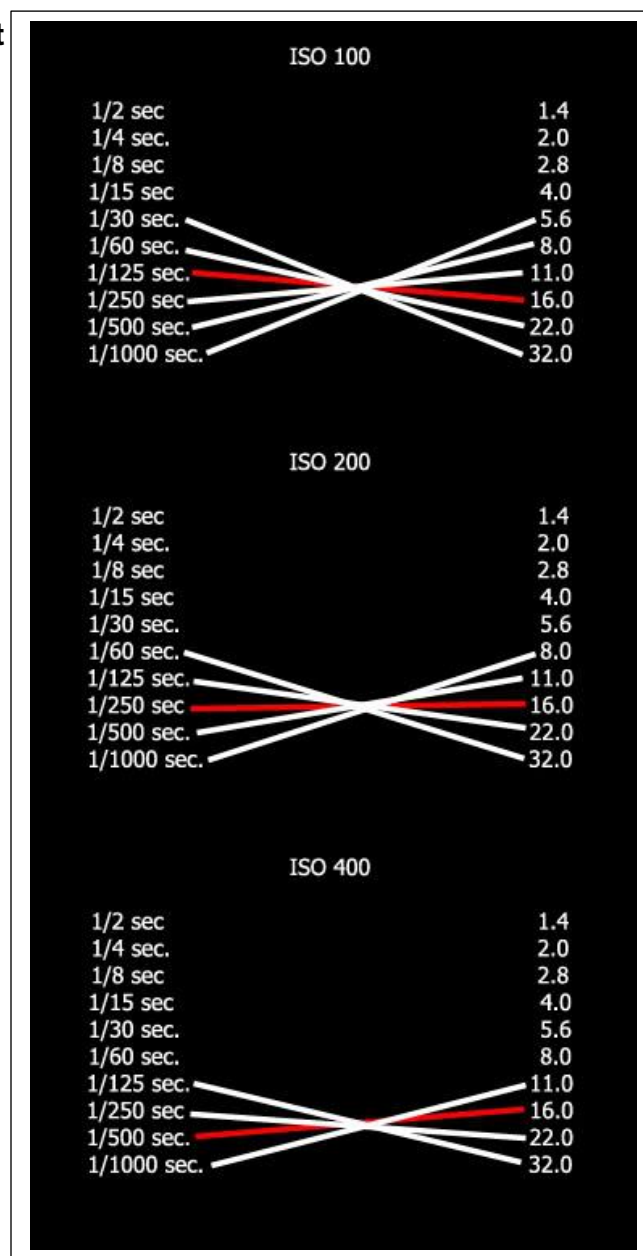
Adjusts Light Sensitivity to shoot it lower light

Allows more range in Aperture / f-stops
Allows more range in Shutter Speeds / Motion
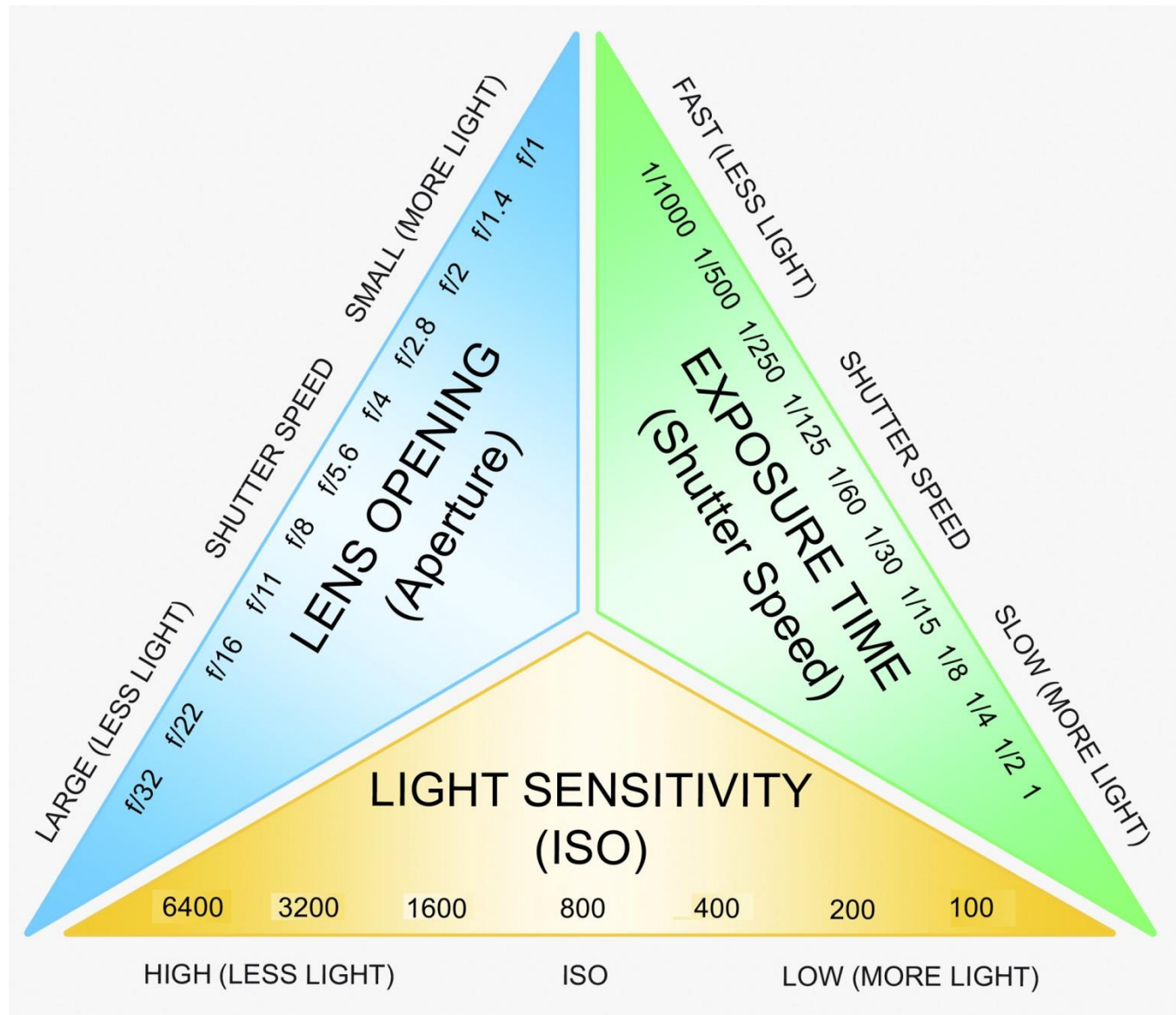
Aperture	f/4	f/5.6	f/8	f/11	f/16
ISO	100	200	400	800	1600

Shutter	1/125	1/250	1/500	1/1000	1/2000
ISO	100	200	400	800	1600

ISO 100

1/2 sec	1.4
1/4 sec.	2.0
1/8 sec	2.8
1/15 sec	4.0
1/30 sec.	5.6
1/60 sec.	8.0
1/125 sec.	11.0
1/250 sec	16.0
1/500 sec.	22.0
1/1000 sec.	32.0

ISO 200

1/2 sec	1.4
1/4 sec.	2.0
1/8 sec	2.8
1/15 sec	4.0
1/30 sec.	5.6
1/60 sec.	8.0
1/125 sec.	11.0
1/250 sec	16.0
1/500 sec.	22.0
1/1000 sec.	32.0

ISO 400

1/2 sec	1.4
1/4 sec.	2.0
1/8 sec	2.8
1/15 sec	4.0
1/30 sec.	5.6
1/60 sec.	8.0
1/125 sec.	11.0
1/250 sec	16.0
1/500 sec.	22.0
1/1000 sec.	32.0

Exposure Triangle
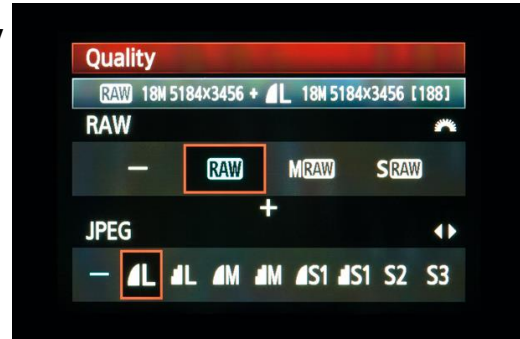
Cameras, Composition and Lighting

Camera Settings

Capture Mode / Image Format / Image Quality

JPEG – Uses manipulated and compressed data

Raw – Uses Raw data from Sensor

Raw+ JPEG

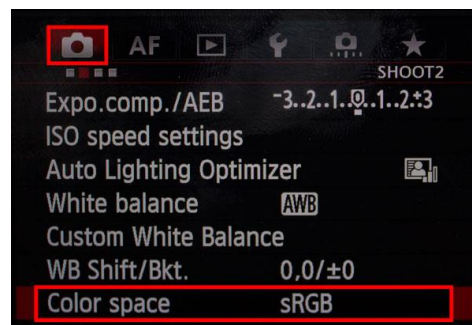### Color Space

sRGB

Default – Very small Gamut

Adobe RGB

Larger Gamut
Available on most cameras

ProPhoto RGB

Available on most Pro cameras
Largest Gamut

White Balance

Auto / AWB

Default on most cameras
Used 80% of time

Daylight

Normal Ourdoor Lighting

Shadow/Cloudy

Cloudy Shadowed Outdoor Lighting
Bluer than Normal

Tungsten

Indoor with older filament bulbs

Flourescent

CFLs

Custom

Focus full frame on White Sheet of paper
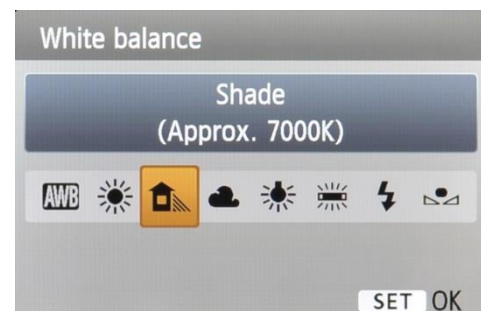
Cameras, Composition and Lighting

Erase / Format Memory Card

Erase
One or All

Format
After you download ALL images
Repairs memory card and erases **ALL** files and folders
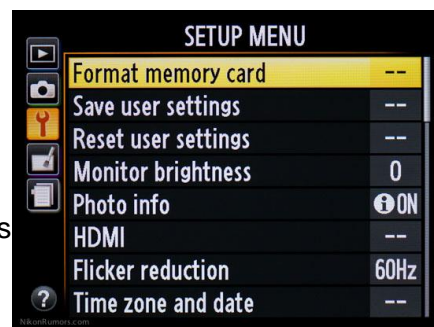
Exposure Meter Setting

Nikon Metering Modes

- Matrix metering mode
- Center-Weighted Average metering mode
- Spot metering mode

Canon Metering Modes

- Evaluative metering mode
- Partial metering mode
- Spot metering mode
- Center-Weighted Average metering mode

Evaluative / Matrix
Reads entire area
Has programmed priorities multiple areas
Best for general photography

Partial Metering
Reads entire area
Best for Backlighting

Center Weighted
Reads entire area but gives more weight to objects in center

Spot
Only reads object in Center Spot / Focus Point
Good for theatrical lighting
Moon

Cameras, Composition and Lighting

Composition

How to make your photos more interesting

Simplicity

Tell one story

All parts must be important

Closeness

Easy Identity

Crop – Fill Frame

Remove extraneous image area

Cleans up backgrounds

View Points

Bird's Eye

From above

Worm's Eye

Low angle

Framing

Use objects at edges of image

Trees, Clouds, Etc.

Adds depth

Contains eye within photo

Leading Lines

Shoot image with foreground object directing line of sight to subject

Subject Placement

Eye reads from lower left to upper right

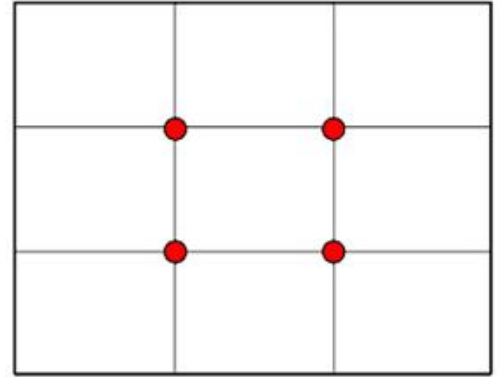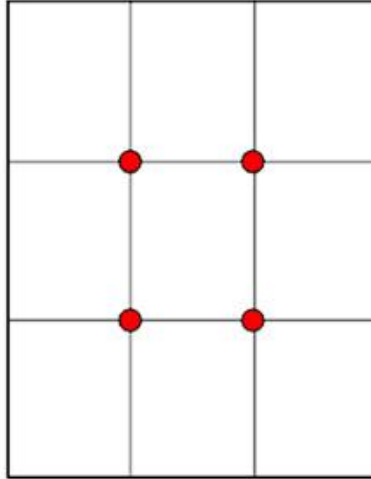## *Cameras, Composition and Lighting*

Rule of Thirds

Divide viewfinder into 3 equal sections vertically and horizontally
Place subject at points where lines intersect

1 - Upper Right
2 - Upper Left
3 – Lower Right
4 – Lower Left

Diagonals

Gives sense of motion

Cameras, Composition and Lighting

Lighting

Times of Day

Dawn - Twilight

Before Sunrise
Deep Blue skys and lighting
Glow due to atmospheric scattering
Long, soft shadows

Sunrise / Golden Hour
Golden amber light
4,000˚ Kelvin
Distant clarity
Long, Harsh shadows
Sharpness due to high contrast between reddish sun and blue shadows

Morning
Warmer reddish blue light
Shorter, soft blue shadows
Good Portrait modeling

Noon
Blue Light
Harsh Shadows
Due to Brightness and Shadow angles
Bad Portrait Modeling
If you MUST shoot in this light – Use Fill Flash

Afternoon
Reddish Blue light
Paler than morning due to Atmospheric dust
Shorter, reddish blue shadows
Pale Blue skies
Due to haze
Good Portrait Modeling

Sunset / Golden Hour
Reddish yellow light
More diffused by dust
More interesting with clouds
Read exposure from clouds, not sun

Dusk / Twilight
Violet blue light
Long, soft shadows
Great time for Architectural shots

Cameras, Composition and Lighting

Outdoor

Ambient
    Natural Light from sun
    5,500˚ Kelvin

Shade or North Side of Buildings in Northern Hemisphere
    Up to 10,000˚ Kelvin
    Diffused bluish light due to atmospheric bounce

Fill
    Flash
    Reflector

Indoor

Ambient
    Window light
    Subject close to window
    Can adjust contrast with placement
    Closer to leading edge creates more contrast

House (Tungsten or Florescent) Lights
    Fill
        Flash
                Bounce off ceiling and wall corner
                        Will pick up color of walls

        Reflector
                Commercial Photography Reflector
                Sheet
                Piece of Paper