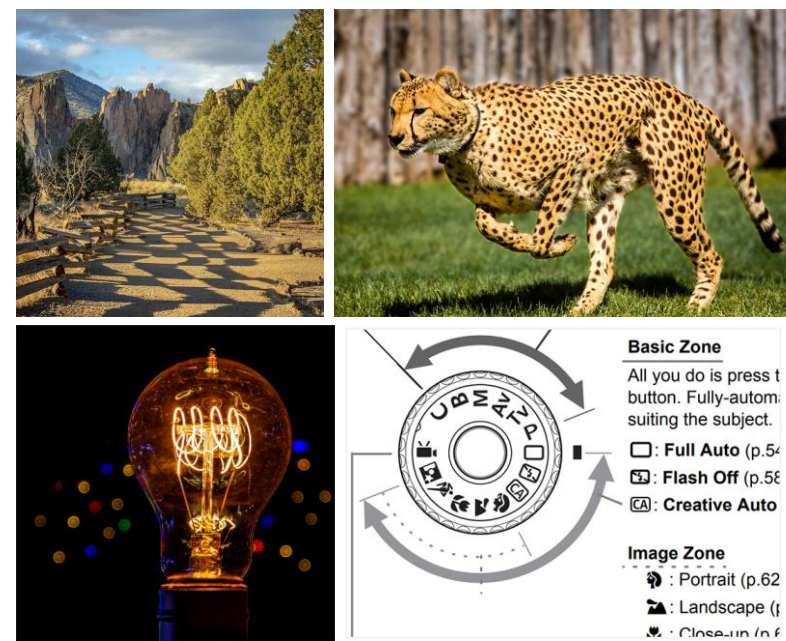


# Camera & Photo Basics



## Agenda



Camera & Photo Basics



Aperture with Composition



Shutter with Composition



ISO and Lighting with Composition

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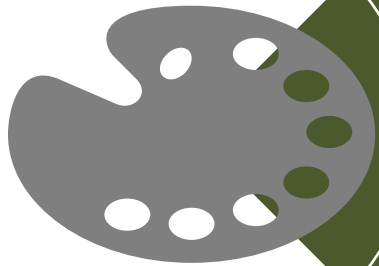
February 8, 2024

View at  
[FlagpolePhotographers.com](http://FlagpolePhotographers.com)

# Why Back to Basics?



Solidify the fundamentals  
to **experiment** beyond  
your comfort zone.



Boost your **creativity** with  
new ideas and develop  
your artistic eye.

# Camera & Photography Terms to Know

## Exposure

*“Well Lit”*

- Today, we’ll leverage camera smarts
- No manual settings required

## Focus

*“Sharp”*

- Choose how much focus – Aperture
- Choose to freeze or blur – Shutter

## Composition

*“Pleasing”*

- Guide viewers to what you want them to see
- Creating photos that feel ‘OK’ with a sense of balance & harmony



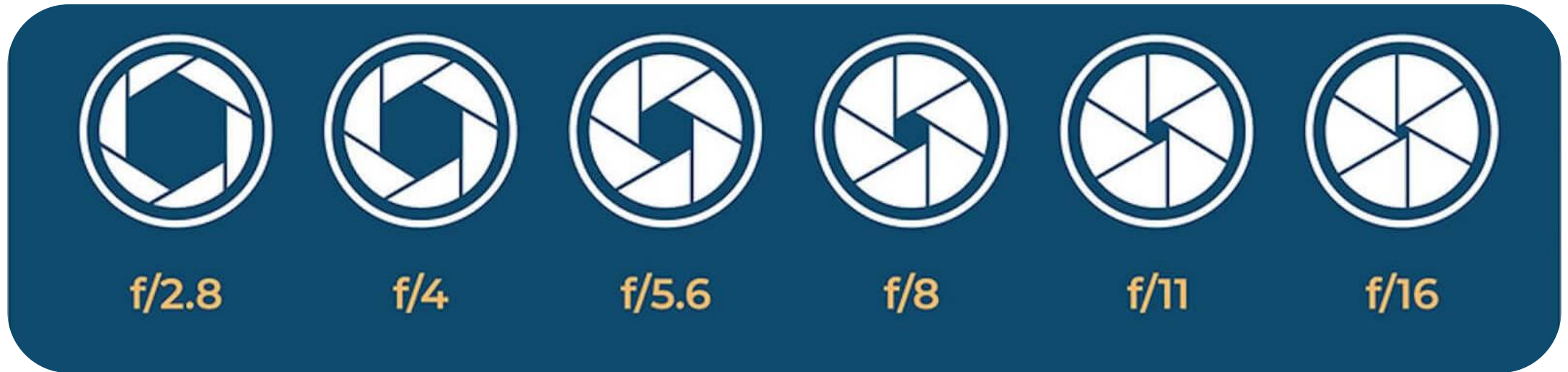
# Camera Terms to Know

**Aperture** - Like your pupil grows and shrinks.

Aperture is often fixed size on phones.

# Aperture Number is Opening Size as a Fraction

Often seen as 'F', 'f' or 'f/'. The 'f/' notation reminds us that aperture number is a fraction.



Less things in focus

More things in focus

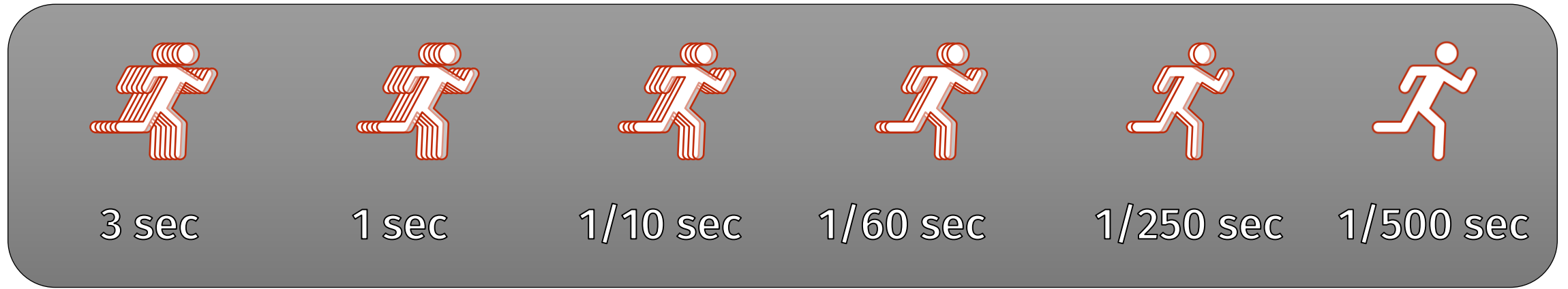
# Camera Terms to Know



**Shutter** – Opens to let the camera view the scene, then closes.

Shutter is electronic on newer cameras and phones.

# Shutter Speed is Time in Seconds



Blur Action

Freeze Action

# Camera Terms to Know

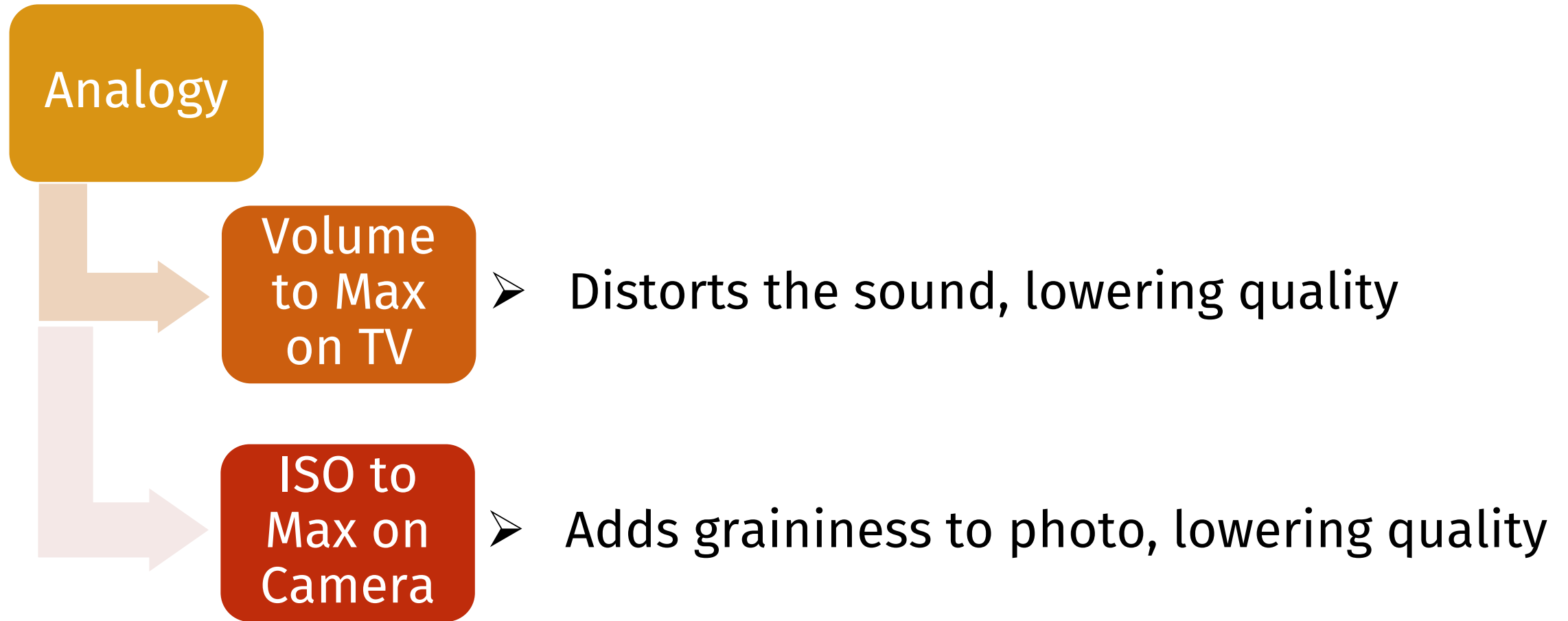


**ISO** – Amplification of light.

Many phones use automatic ISO.



# ISO Number is Amplification Magnitude



The camera's max varies by manufacture and model.

# Camera “Smarts” Strive for a “Well Lit” Exposure



Under-Exposed is darker

Over-Exposed is brighter

**- 3 ... 2 ... 1 ... 0 ... 1 ... 2 ... 3 +**

# Camera “Smarts” Strive for a “Well Lit” Exposure

Demo

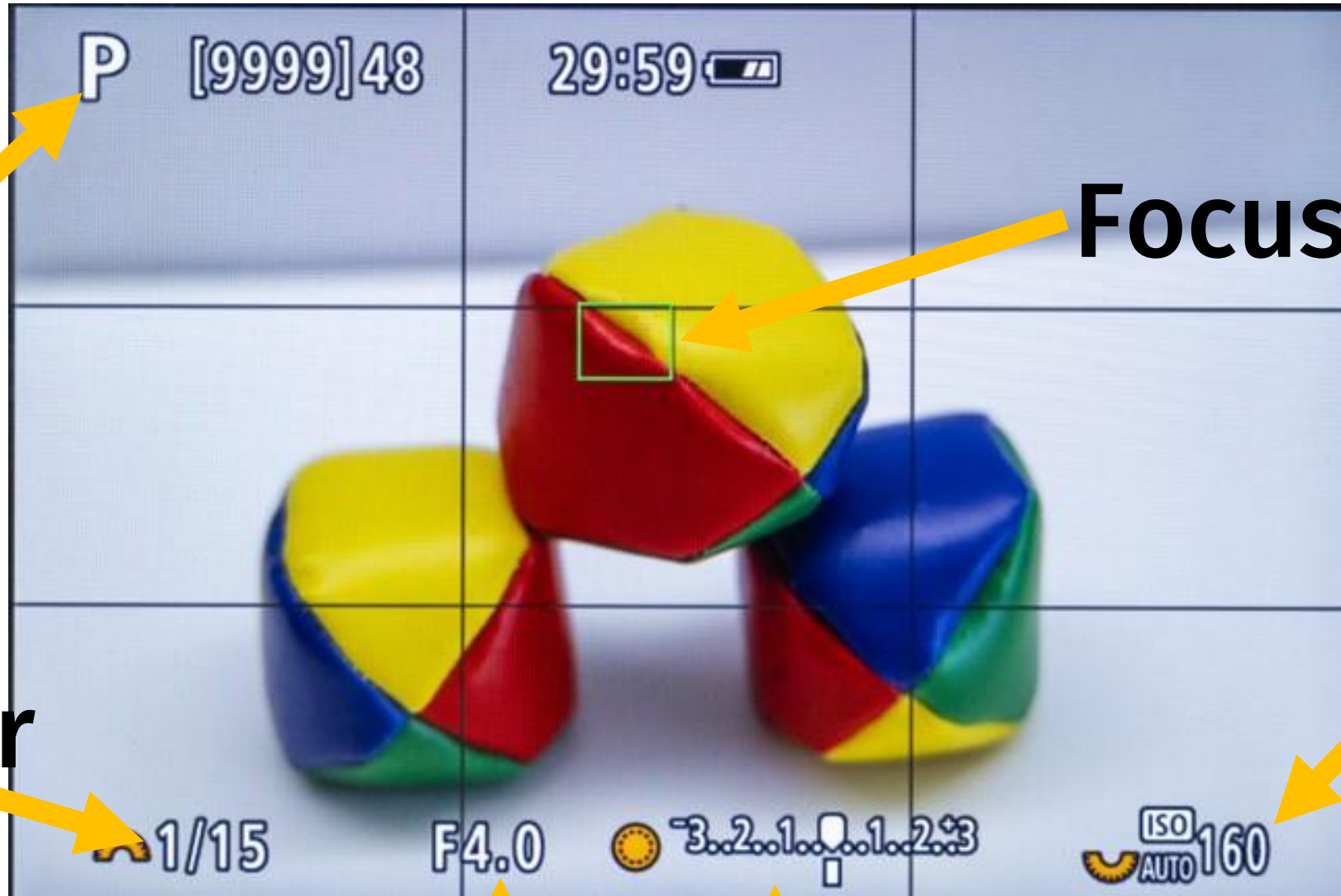


Under-Exposed is darker

Over-Exposed is brighter

**- 3 ... 2 ... 1 ... 0 ... 1 ... 2 ... 3 +**

# With “Auto” Modes the Camera Controls Aperture, Shutter Speed and ISO



May need to half press the shutter to see all values

**Mode**

**Focus Point**

**Shutter Speed**

**ISO**

**Aperture**

**Exposure**

Items Vary With Every Camera

# Camera “Smarts” Automatically Maintains “Well Lit”

Not Much light



Shutter: 1/25 sec, Aperture f/4, ISO 1600

Low Light



Shutter: 1/40, Aperture f/4, ISO 1600

Medium Light



Shutter: 1/160, Aperture f/4.5, ISO 4000

Highest Light



Shutter: 1/60, Aperture f/4, ISO 1600

Changing only the amount of light demonstrates how the camera adjusts the Aperture, Shutter Speed and ISO to keep the photo “Well Lit”

However, the camera does not know the photographers' artistic intentions. For example, all cars in focus.



Shutter: 1/6 sec, Aperture f/14, ISO 6400

# Activity - Let's Get Familiar with Viewing Photo Info

## 1. Using any setting

Take a couple photos from where you are sitting of different parts of the room

## 2. Review the photos

- Often a “play” button →
- Move forward and backwards
- View photo info

## 3. View camera settings

Did Aperture, Shutter Speed or ISO change?

## 4. Zoom in on photo

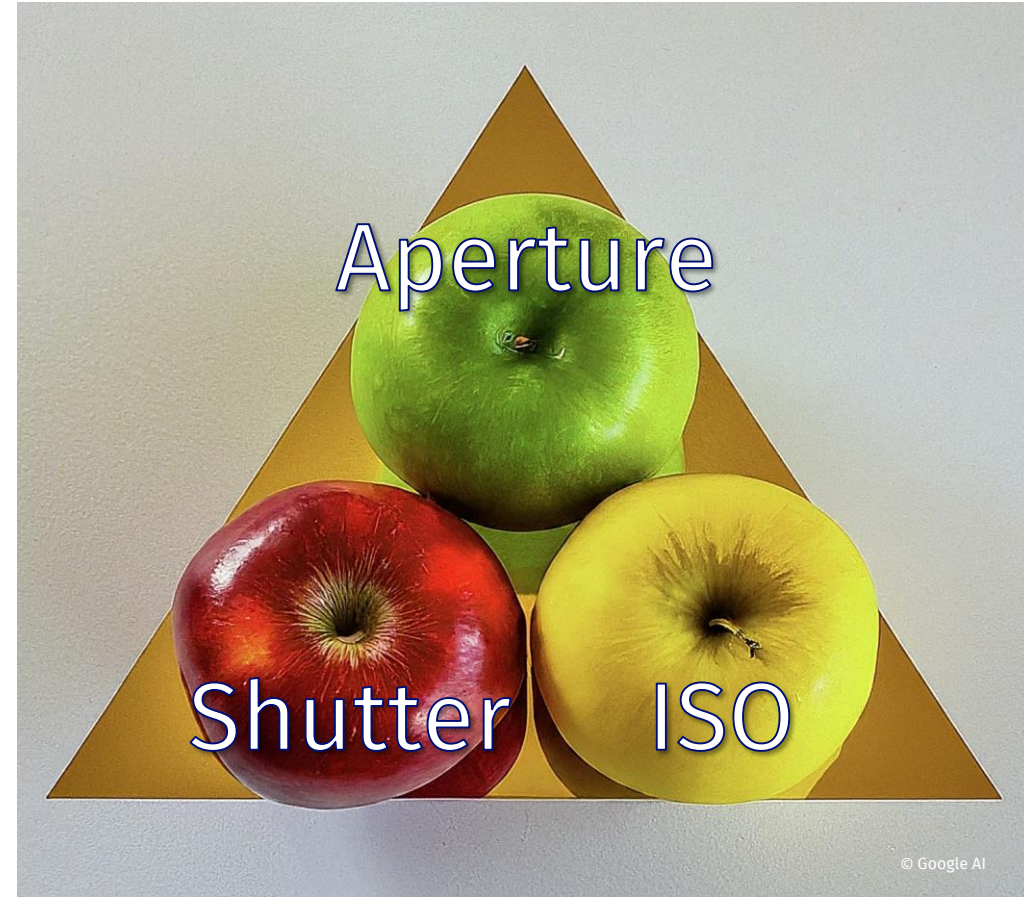
Zoom in to look at the details and move around



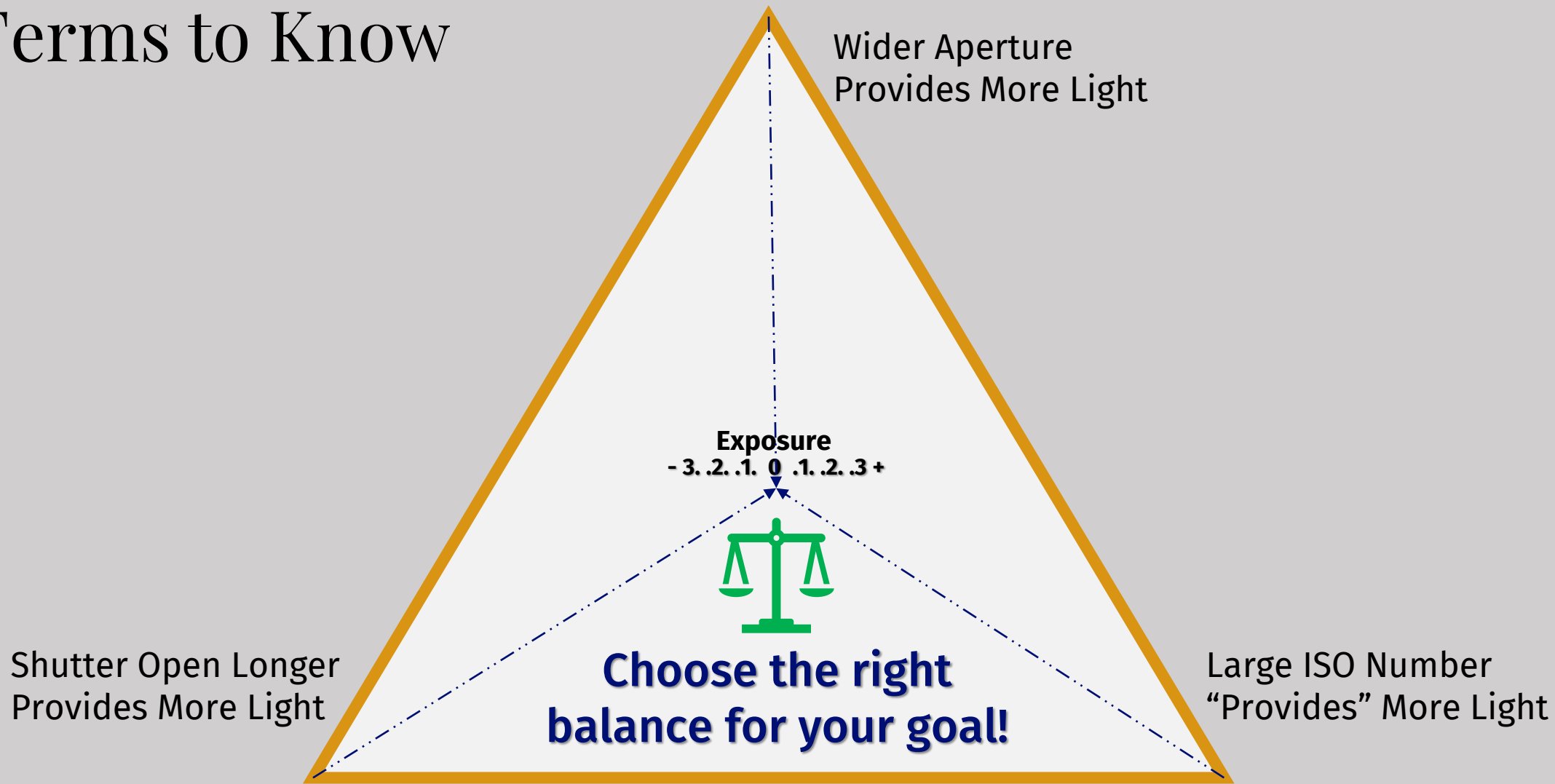
# When the Lighting Changes the Settings Change

These three elements  
(Aperture, Shutter and ISO)  
interact to create a properly  
exposed “well lit” photo

This interaction  
playground is called  
the **Exposure  
Triangle**



# Camera Terms to Know



**Exposure Triangle** – Aperture + Shutter + ISO



# “Interaction” of Aperture, Shutter and ISO



How much in focus?

f/18 more in focus than F4



Freeze motion or not?

1/4 sec more light than 1/200



How much light Amplification?

6400 more light and noise than 200

Remember, the “camera” does not know **your** goal!

What is your goal?  
Then, what camera settings?

The most important area?  
How much in focus?  
Freeze or blur motion?  
Available light?



# Leveraging Your Device's Intelligence

## Sample Camera Modes

### Auto (A)

- Guarantees a great exposure, but not great photo

### Portrait

- Blurs the background to highlight the subject

### Landscape

- Everything in focus from near to far

### Sports

- For a moving subject, a running person ... action

### Snow

- Improved exposure when everything is white

## Sample Phone Modes

### Night Sight

- Captures clear and bright photos in low-light

### Portrait

- Blurs the background to highlight the subject

### Long Exposure

- Creates blurry effects on moving subjects

### Motion

- Captures action shots with minimal blur

### Top Shot

- Multiple shots, find best focus & composition

# Aperture and Composition



Camera & Photo Basics



Aperture with Composition



Shutter with Composition



ISO and Lighting with Composition

# Principal Role – Deciding How Much in Focus

Larger Aperture Number allows more items in focus

- Range ...  $f/2.8$ ,  $f/4$ ,  $f/5.6$ , ...  $f/20$  ...
- Different lenses have different aperture ranges

Rule of Thumb

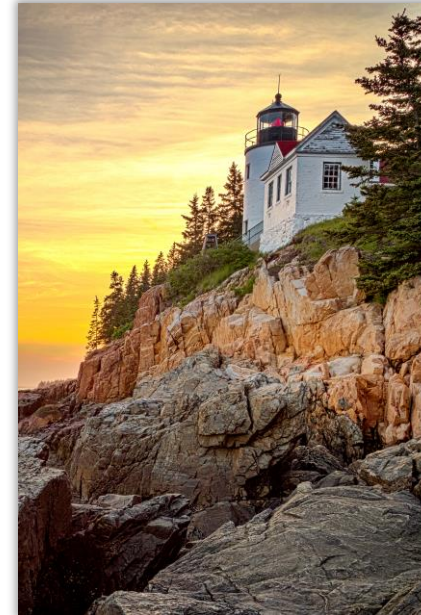
- A **small** number of things, a **smaller** Aperture number
- A **large** number of things, a **larger** Aperture number

What is Bokeh (“bo – KEH”)?

- Out-of-focus blur outside of the focused area
- Often used to isolate the subject

Tradeoffs

- The larger the Aperture number the more light is borrowed from shutter speed and ISO



$f/14$ ,  $1/10$  sec, ISO 400  
Everything in focus



$f/5.6$ ,  $1/500$  sec, ISO 800  
Background blurred

# Aperture Impacting Focus

f/2.8, 1/200 sec, ISO 200



f/10, 1/15 sec, ISO 200



f/20, 1/4 sec, ISO 200



f/32, 0.6 sec, ISO 200



# Aperture and Composition Topics

Does bokeh require a small aperture number?



f/11, 1/4000 sec, ISO 1250  
Bokeh effect is dependent on  
background distance and aperture

## 1. Avoid camera shake

- Holding your camera steady

## 2. Focus point selection

- Where is the sharpest spot

## 3. Aperture

- Controls focus depth – how much should be in focus

## 4. Composition

- Directing your viewers

# Holding Your Camera Steady for Sharper Photos

## Hands

1. Rest the lens in your left hand
2. Grip the camera body with your right hand
3. Right index finger over the shutter release
4. Rotated, use same hands

## Elbows

1. Elbows tucked into your body
2. Or rest elbows on a surface
3. Light breaths

## Hands on Activity #2

1. Gently squeeze shutter
2. Half-press activates autofocus
3. Change viewfinder for your eyesight

## Legs

1. A little apart so you're balanced
2. Maybe sit or take a knee
3. Lean against a wall or tree
4. Tripod, rock, car



# How to Tell Your Camera What to Focus On

Sometimes as easy as touching the screen

Moving the focus location with a camera button

Half-press shutter button and reframe scene

# Learn How Aperture Directs Viewers' Attention



f/2.8, 1/640 sec, ISO 400  
Attempting to hide a  
very busy and bright background

Directing  
using blurry  
areas

- Gaze simply skips past blurred areas

Directing  
using sharp  
focus

- Gaze is drawn to objects with the sharpest focus

What aperture  
is best?

- It depends on your vision for the photo. There is no magic aperture value.

Everything in  
focus?

- Try focusing about 1/3 past the foreground and use a large aperture number

# Directing viewers with Leading Lines

Use a line to lead the viewer to the most interesting item



f/7.1, 5 sec, ISO 100

Attempting to have the viewer look at the knife slicing the yellow squash

# Composition – Breathing Room and Negative Space

**Breathing Room for movement**



Squirrel is facing right, leave room on the right.

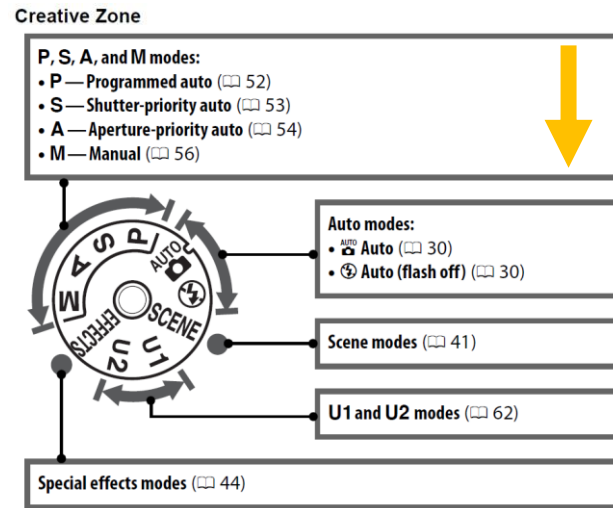


**Negative Space** can also balance or add context for the subject

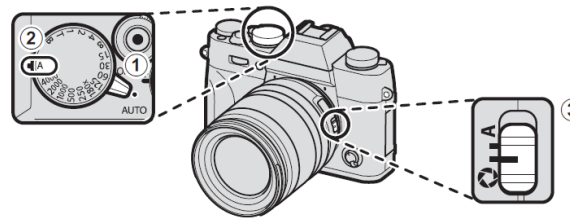
# Activity – Setting “Aperture Priority” Mode

Sometimes on the screen  
 Sometimes a button  
 Sometimes more obscure

Nikon – “A”, Canon “Av”



Fujifilm – “A”

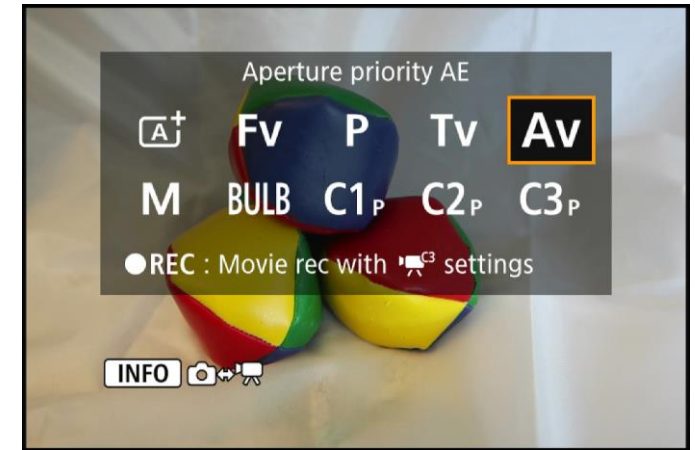


Adjust settings as follows:

- 1 Auto mode selector lever: ●
- 2 Shutter speed: A (auto)

**Aperture:** Select and rotate the lens aperture ring to adjust aperture

Canon – “Av”



- Canon → Av
- Nikon → A
- Sony → A
- Fujifilm → A
- Olympus → A
- Panasonic → A

Ask if not sure?

# Shutter Speed & Composition



Camera & Photo Basics



Aperture with Composition



Shutter with Composition



ISO and Lighting with Composition

# Principal Role – Blurring and Freezing Action

## Slower shutter speed = more time

- Range: ... 30 sec ... 1/60 sec ... 1/1000 sec ...
- Different cameras have different ranges

## Rule of Thumb – for handheld shooting

- Use 1 over lens. 100 mm lens = 1/100 sec
- Use 4 times slower with camera stabilization

## What is “silky” water?

- Visual effect where water appears smooth and continuous, like flowing silk fabric

## Tradeoffs

- The faster the Shutter Speed the more light is borrowed from aperture and ISO



f/10,  
20 sec  
ISO 50



f/11,  
1/5000 sec  
ISO 3200  
Exposure -1

# Shutter Speed Impacting Action



f/4.5, 1/250 sec, ISO 2000



f/11, 0.5 sec, ISO 100

f/4, 1/1000 sec, ISO 6400



f/4, 1/50 sec, ISO 320





# Shutter Speed and Composition Topics

## 1. Shutter Speed

- Control of freezing or blurring

## 2. Focus Tracking

- Letting your camera change focus as the subject moves

## 3. Drive Mode

- One Shot or Continuous shooting

## 4. Composition Techniques

- Storytelling



f/5.6, 1/8000, ISO 1250, 200 mm



f/11, 1/4000 sec, ISO 1250, 400 mm

# Capturing the Decisive Moment - Freezing Action

## What freezes movement?

- 1/4000 - Hummingbird wings
- 1/2000 - Birds in flight
- 1/1000 - Trains, autos, bikes
- 1/500 - Runners, horses, soccer
- 1/250 - Walkers
- 1/125 - Light wind

## What is “motion blur”?

- Freezing a moving subject by panning your camera sync'd to the subject's motion



## Silky waterfall?

- Try 1 sec



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1/1000 of a second, f/4.5, ISO 1000, 70mm

# Activity – Using “Shutter Priority” Mode

- Changing to Shutter Priority is similar to how you changed to Aperture mode
- Canon – “Tv”, Nikon – “S” Modes

## Creative Zone

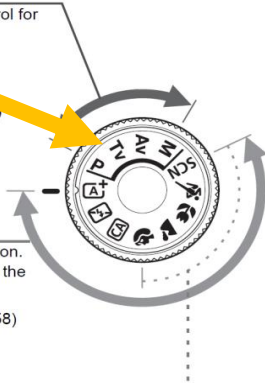
These modes give you more control for shooting various subjects.

- P** : Program AE (p.86)
- Tv** : Shutter-priority AE (p.110)
- Av** : Aperture-priority AE (p.112)
- M** : Manual exposure (p.115)

## Basic Zone

All you do is press the shutter button. The camera sets everything to suit the subject or scene.

- A+** : Scene Intelligent Auto (p.58)
- ☒** : Flash Off (p.63)
- CA** : Creative Auto (p.64)



## Adjusting Speed

- Turning the <img alt="shutter speed dial icon" data-bbox="688 318 712 342"/> dial to the right sets a faster shutter speed, and turning it to the left sets a slower one.



Canon → Tv  
 Nikon → S  
 Sony → S  
 Fujifilm → S  
 Olympus → S  
 Panasonic → S

# Continuous Shooting Mode

## Continuous Shooting

- Also known as burst mode or sports mode.

## Multiple Photos

- Allows for the capture multiple photographs in rapid succession by holding down the shutter button.

## Ideal

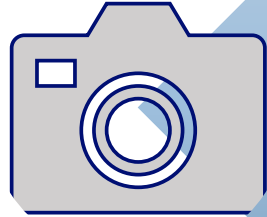
- For fast-moving subjects like sports, wildlife, or children at play.

## Perfect Shot

- Maximizing the chance of capturing the decisive moment.

Canon → C, CH  
Nikon → C, S  
Sony → Hi, Lo  
Fujifilm → CH, CL  
Olympus → H, L  
Panasonic → H, L

# Focus Tracking: Continuous Auto-Focus



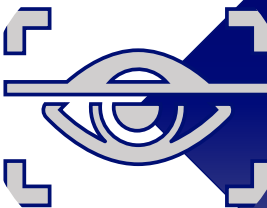
## Continuous autofocus

- Camera to continuously adjust focus based on changes in the scene.



## Produces sharper action shots

- Focusing even when they change speed or direction.



## Eye Tracking

- Cameras are starting to add “eye tracking” to focus on the eye of a moving subject.
- Eye tracking is also handy in people portraits.

Canon → AI Servo AF  
Nikon → AF-C  
Sony → AF-C  
Fujifilm → C  
Olympus → C-AF  
Panasonic → AFC

# Shutter Speed Impacts Visual Storytelling



f/4, 1/1000 sec, ISO 500, 50mm  
Freeze the motion unveiling the invisible.



f/4, 30 sec, ISO 400, 45mm  
Smooth the water to increase reflection and  
add cloud motion to show time is passing.

Use shutter speed to enhance what and how a photo communicates.



Camera & Photo Basics



Aperture with Composition



Shutter with Composition



ISO and Lighting with Composition

# ISO and Lighting

## 1. ISO

- Camera light sensitivity control

## 2. Lighting

- Critical attribute of a photo

## 3. Experimenting with Light

- Unleash Your Creativity

## 4. Composition of Subjects

- Small changes for better results



# ISO Range Example



f/22, 1/8 sec, ISO 400



f/22, 1/30 sec, ISO 800



f/22, 1/60 sec, ISO 3200



f/22, 1/1000 sec, ISO Max - Grainy

Why do the first three 3 photos look similar?

## Realities

---

Camera shake at low ISOs issues

---

Once in a lifetime, grainy wins over blurry

---

Know your camera's max that you tolerate

# Light

## The Unsung Hero of Composition and Storytelling



## Defines dimension, shape and roundness in a photo

- The strength of your subjects should be portrayed by the strong lighting choices you utilize
- Light from artificial, natural or added in post-processing, used properly enhances a photo
- Light also impacts the color of a photo because in low light human perception is monochrome

# Unleash Your Creativity - Experimenting with Light

Observe the source

- Where is it coming from? Above, behind, or diffused through clouds? Does it create harsh shadows or soft gradients? Each source offers unique possibilities.

Start with the basics

- While experimentation is key, a rule of thumb can be helpful. Begin with the light source behind your camera. This often creates balanced illumination and minimizes harsh shadows. Then, explore other angles and witness how the scene transforms.

Play with intensity

- Experiment with the strength of the light. Direct sunlight provides bold drama, while diffused light offers a gentler touch.

Embrace color

- Light isn't just white! Explore the nuances of color temperature - the warm glow of sunset, the cool hues of twilight. Remember, color can evoke powerful emotions and set the tone for your photo.

Be proactive

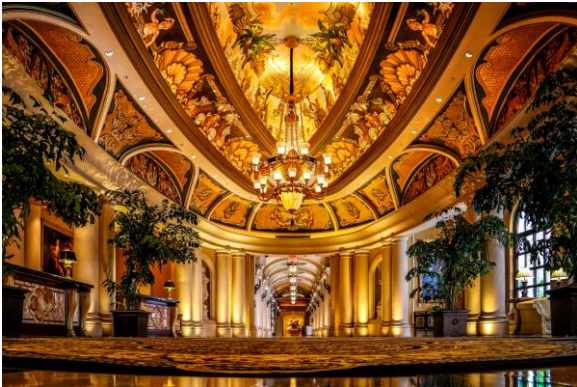
- Move around your scene and see how light interacts with your subject. Can you find shade under a tree or use a building to filter the light? Sometimes, a slight shift makes a large difference.

# Composition



## Rule of Odds

For visual balance and harmony use 1, 3 or 5 items. Conceptually, try arranging a large group of people using triangles.



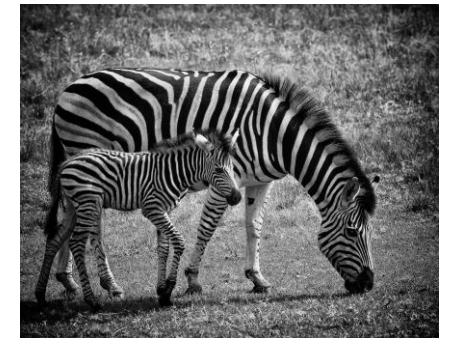
## Perspective

Experiment with different angles and perspectives to create unique compositions.



## Breaking Composition ~~Rules~~ Ideas

Sometimes, just two objects can evoke the right emotion to enhance a photo.



# Beyond "Well Lit": Exploring Under-Exposure and Over-Exposure for Creative Photos

## Exposure Compensation

- An easy way to change the look without using manual settings

## Why Under-Expose

- Overcoming camera limitations
- Maybe enhance exposure and shadows in post-processing

## Why Over-Exposed

- A large white area, think snow, may need it

Expose +1



0



-1



-2



-2



# Game Plan



1

Become a speed ninja and visit all stations

2

Lend a helping hand to your neighbors

3

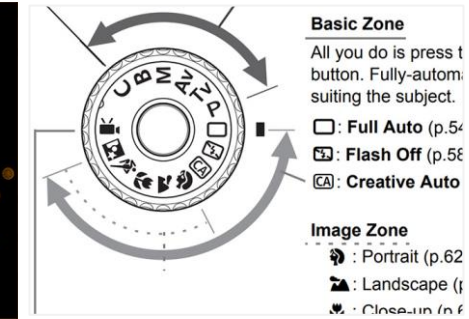
Leverage Aperture and Shutter Guides

4

Fix your ISO around 800 to clearly see how aperture and shutter speed affect your photos

**Practice! Practice! Practice!**

# Camera & Photo Basics



*Questions?*

## Agenda



Camera & Photo Basics



Aperture with Composition



Shutter with Composition



ISO and Lighting with Composition

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