

BASIC DIGITAL  
PHOTOGRAPHY  
Camera and Lenses

# DIGITAL CAMERAS



Camera Phone



Ultra Compact



Compact



Large Sensor Compact



Mirrorless



Bridge

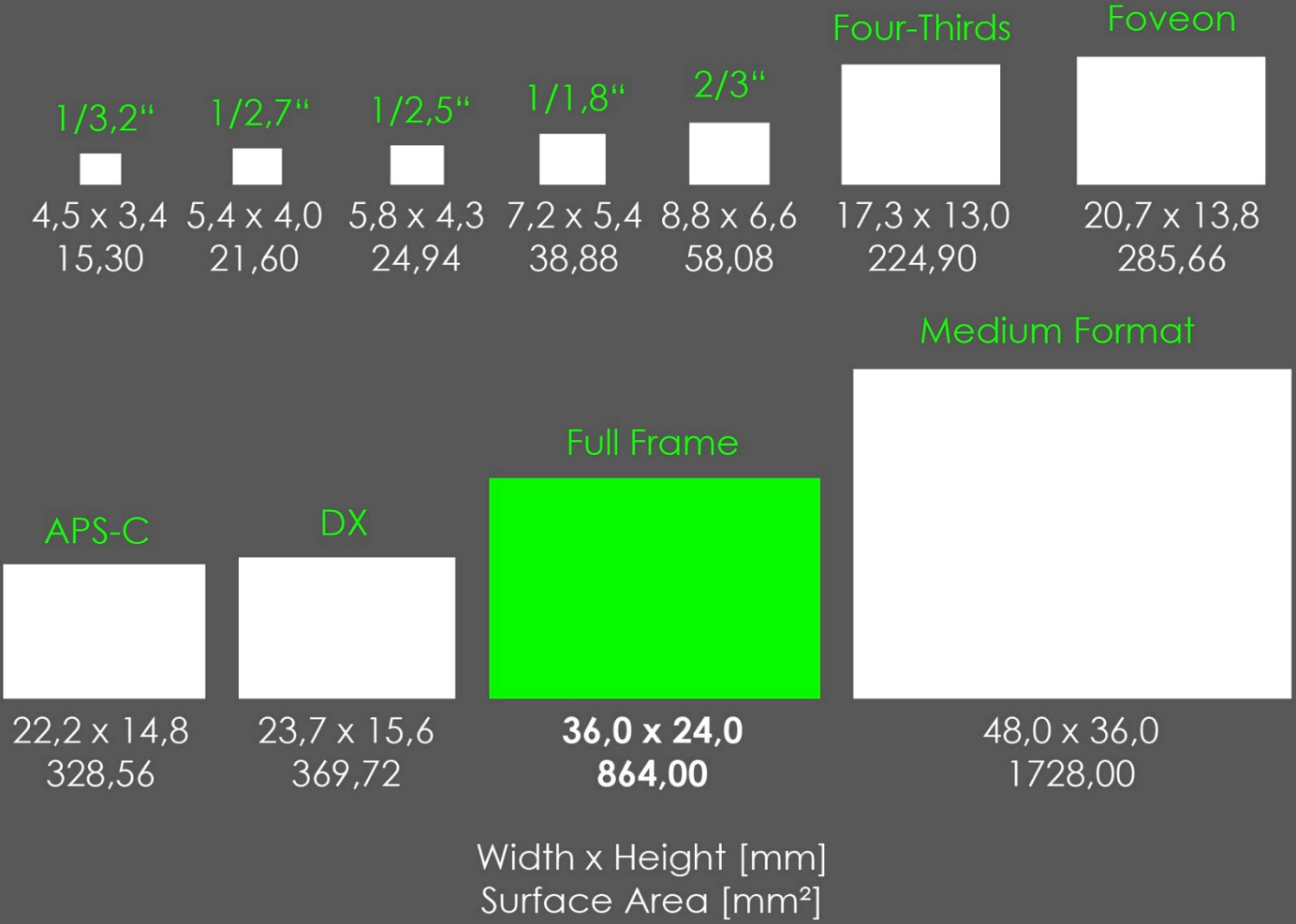


DSLR



Pro DSLR

# Camera Sensor Formats



# CAMERA HANDLING

USE THE STRAP!

**BRACE THE CAMERA**

Right Handed

PLACE THE CAMERA IN YOUR LEFT HAND WITH  
YOUR LEFT ELBOW BRACED AGAINST YOUR BODY

Left Handed reverse the technique

**BRACE AGAINST STABLE OBJECTS,  
WALLS, TREES etc.**

**Use a tripod or monopod**

Be creative

# EXPOSURE

AUTOMATIC

PROGRAMMED

SHUTTER PRIORITY

APERTURE PRIORITY

AVERAGED

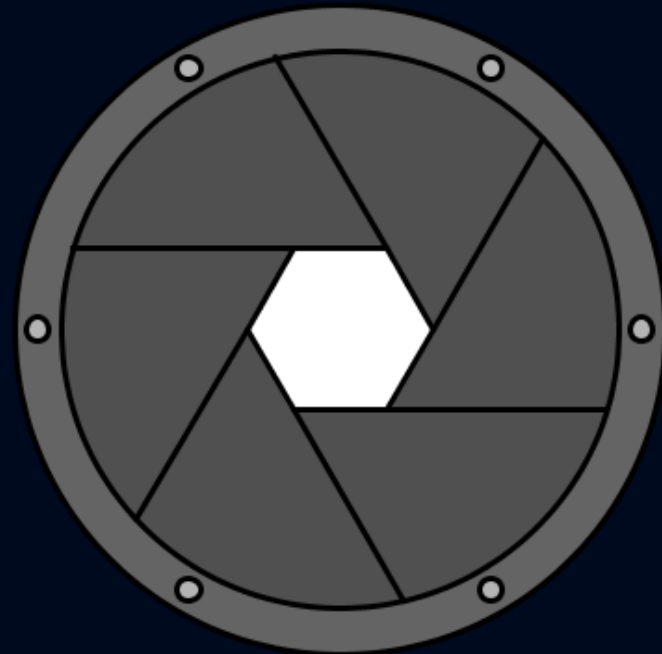
SPOT

CENTER WEIGHTED

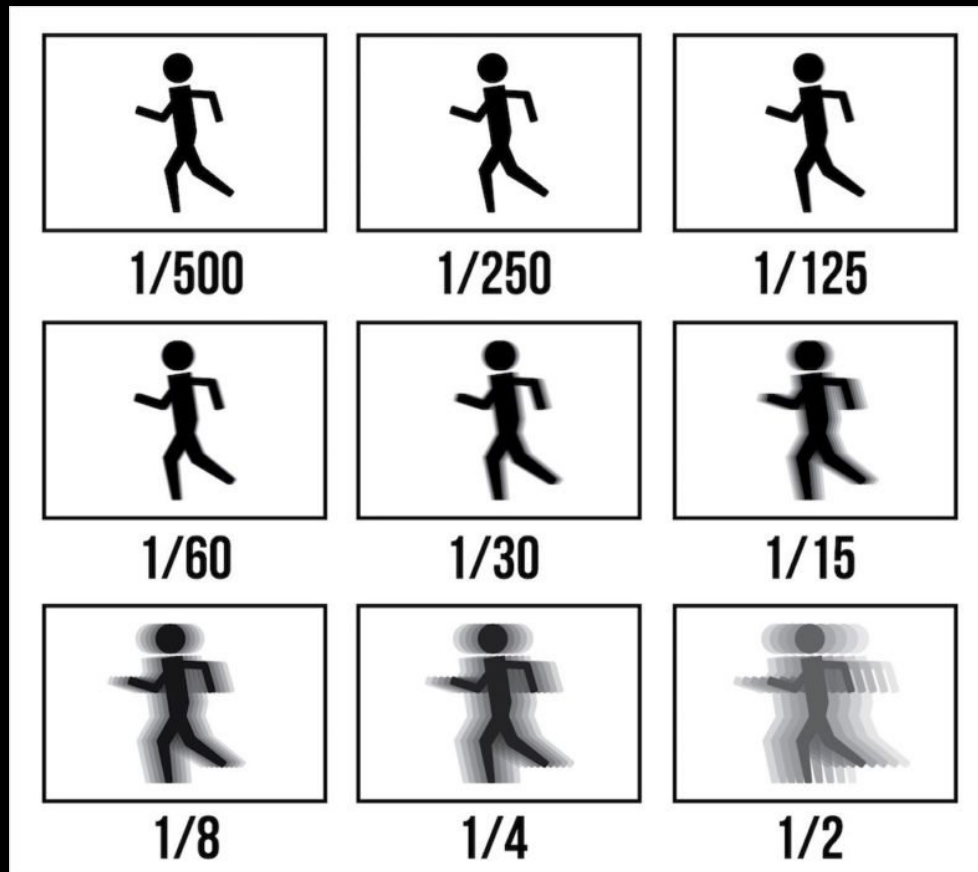
WHAT DOES IT ALL MEAN ?

# FOUR FACTORS OF EXPOSURE

- SHUTTER SPEED
- APERTURE
- ISO
- LIGHT



# DURATION OF EXPOSURE



# Shutter Speed

1/8000	Freeze extremely fast action
1/4000	Freeze very fast action
1/2000	Freeze fast cars
1/1000	Freeze sports
1/500	Freeze, slower sports
1/250	Freeze Kids, slower Animals
1/125	Freeze water
1/60	Handheld Photos
1/30	Panning Shots
1/15	Blur Traffic
1/8	Blur fast water
1/4	Blur people walking
1/2	Blur Slow water
1 SEC	Silky Waterfall
2 SEC	
4 SEC	
8 SEC	Blur Fast Clouds
15 SEC	Smooth Water/Oceans
30 SEC	DSLR longest shutter speed
BULB	Shutter stays open for as long as you hold the shutter button

# SHUTTER SPEED

**Shutter speed guide:** note that a tripod should be used for speeds less than 30th to minimise blur.

	Normal	Try also	Comments
<b>Sport</b>	250-750	15-30 for speed blurs	Wait for peak of action to freeze subject's motion
<b>Air Displays</b>	180 to 750	125 is ideal for rotating props	Pan movement for sharper results, and for slower speeds
<b>Land-scape</b>	125 to 350	4 -20	Slow speeds will show movement effects of grass and trees on windy days
<b>People walking</b>	30 to 125	8-15 and pan	30 will show blurring of feet and hands
<b>Vehicles</b>	60-750	15-60 to show motion Pan movement	500 will freeze a car travelling at 70mph
<b>Birds in flight</b>	180-500	15	Slow speeds will show attractive wing tip blurs especially with flocks
<b>Panning</b>	15-125	2 to 8 for low light panning at fair grounds using tripod	Long lenses from 200mm give best panning results. It slows down the speed of rotation
<b>Star trails</b>	10 mins to 4 hours!	Travel out of town to avoid street lights	Wide angles give more radial blur of the stars. Set camera to <b>BULB</b>



# APERTURE





400 mm 2.8 LENS



28 mm 2.8 LENS

The aperture and shutter speed relationship to ISO is similar to filling a glass with water.

- Shutter Speed is the duration of the exposure measured in fractions of a second
- Aperture controls the amount of light allowed through the lens (think of the iris diaphragm of your eye).
- In Digital Photography **ISO** measures the sensitivity of the image sensor. Lower number equals better image quality

To fill a glass of water you can turn the faucet (aperture) on a little for a long period of time (long duration) or turn it all the way on (aperture) for a short period of time (short duration). ISO would be analogous to the size of the glass. Bigger glass = more water, lower ISO = more collected data, better quality image.

## Aperture



more light

f/1

f/1.4

f/2

f/2.8

f/4

f/5.6

f/8

f/11

f/16

f/22

f/32

less light

less time



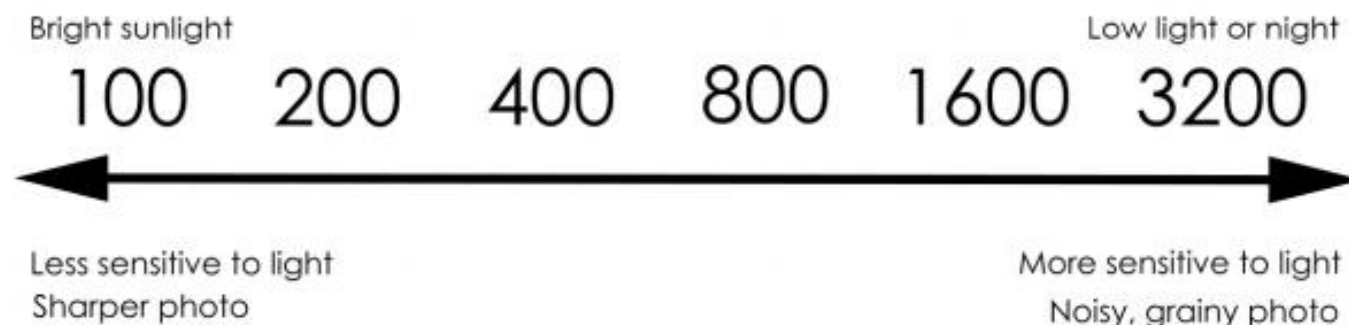
more time

## Shutter speed

Each step halves

Each step doubles

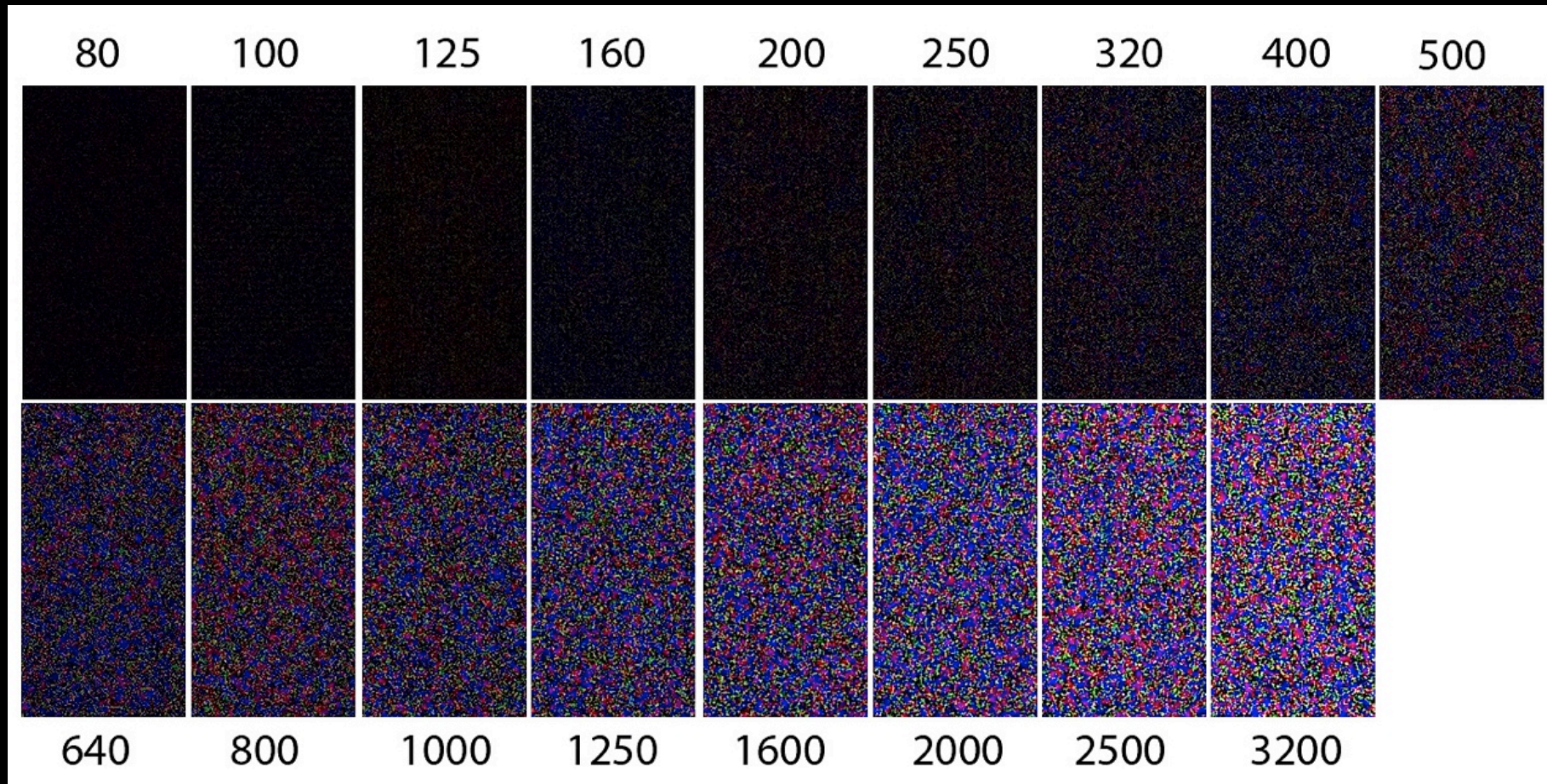
# ISO SCALE





# ISO NOISE PROFILE

the higher the iso number the more noise will appear in the image



Depth of field is the distance between the closest and farthest objects in a photo that appears acceptably sharp. *Focal length DOF comparison wide angle and telephoto FL (focal length)*

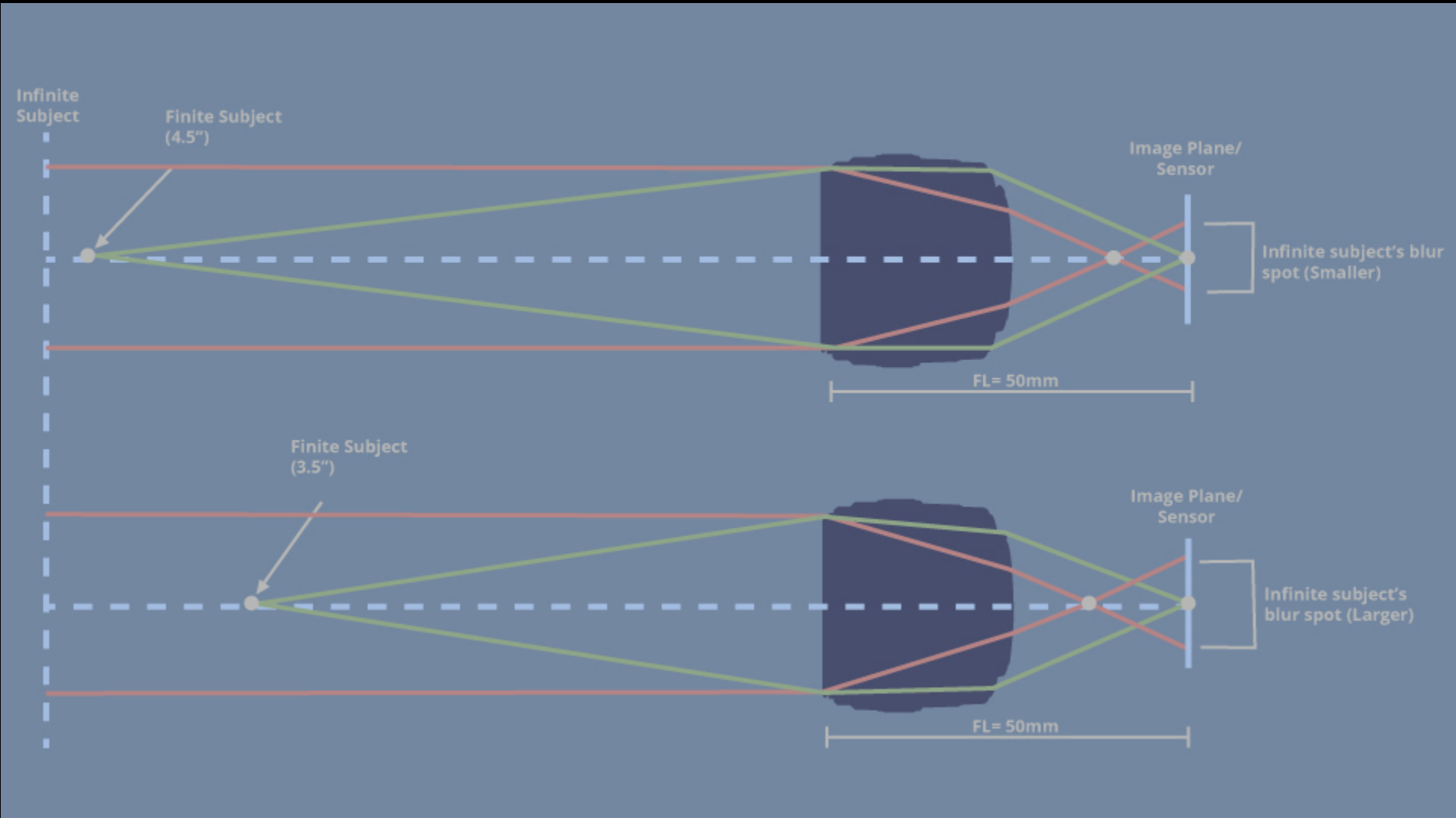


FL= 24mm



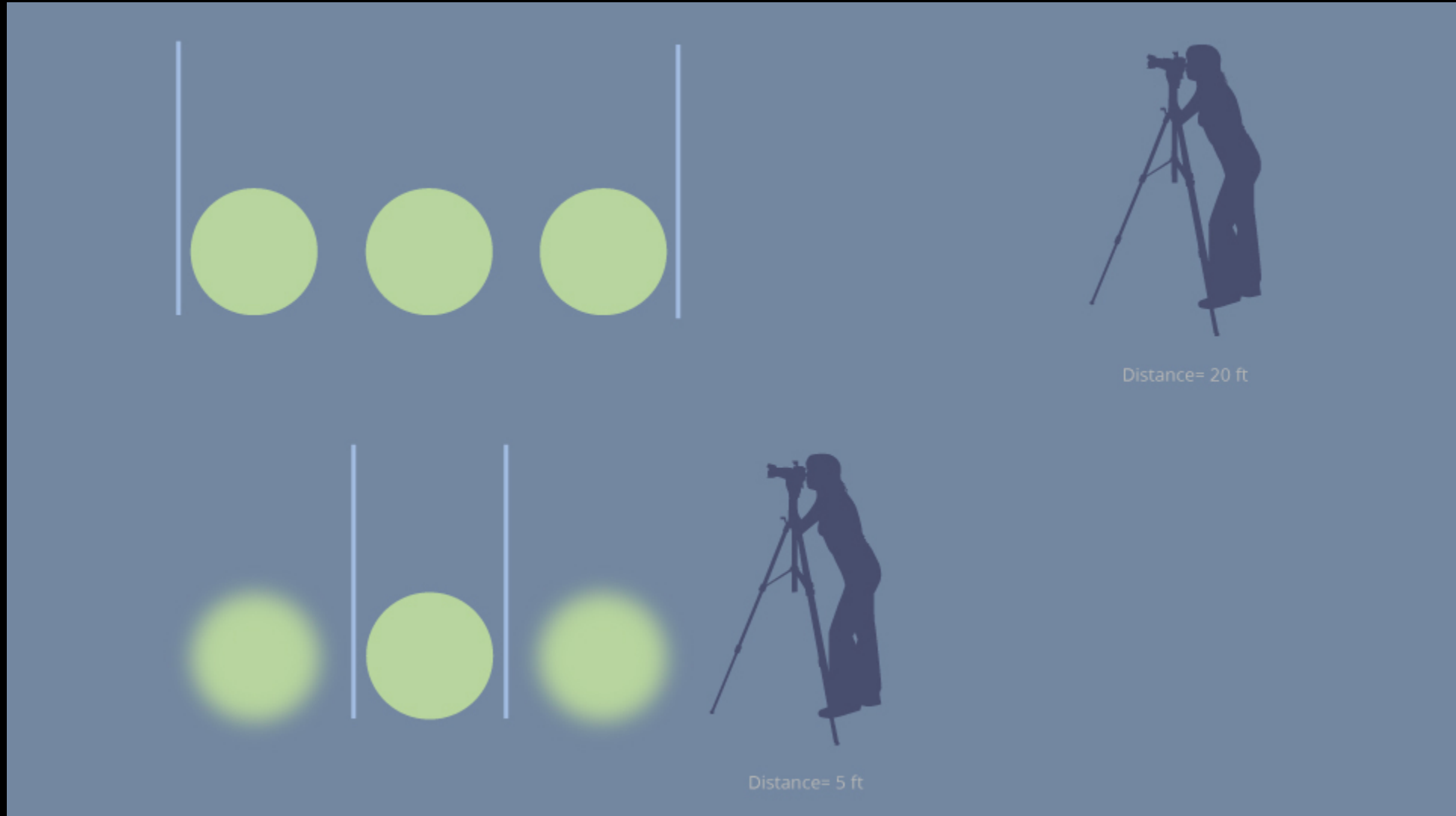
FL= 200mm

*Illustration of light from finite subjects at different distances passing through lenses shows the relative distance of the image points and the difference in the size of the infinite blur spots.*





# *Focal plane or subject-to-camera distance DOF comparison*



## Shallow DOF

Softer foreground and background focus

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1

Wider Aperture

Longer Focal Length

2

Closer to Subject

3

## Long DOF

Foreground and background more sharp

1

Narrow Aperture

Shorter Focal Length

2

Further from Subject

3