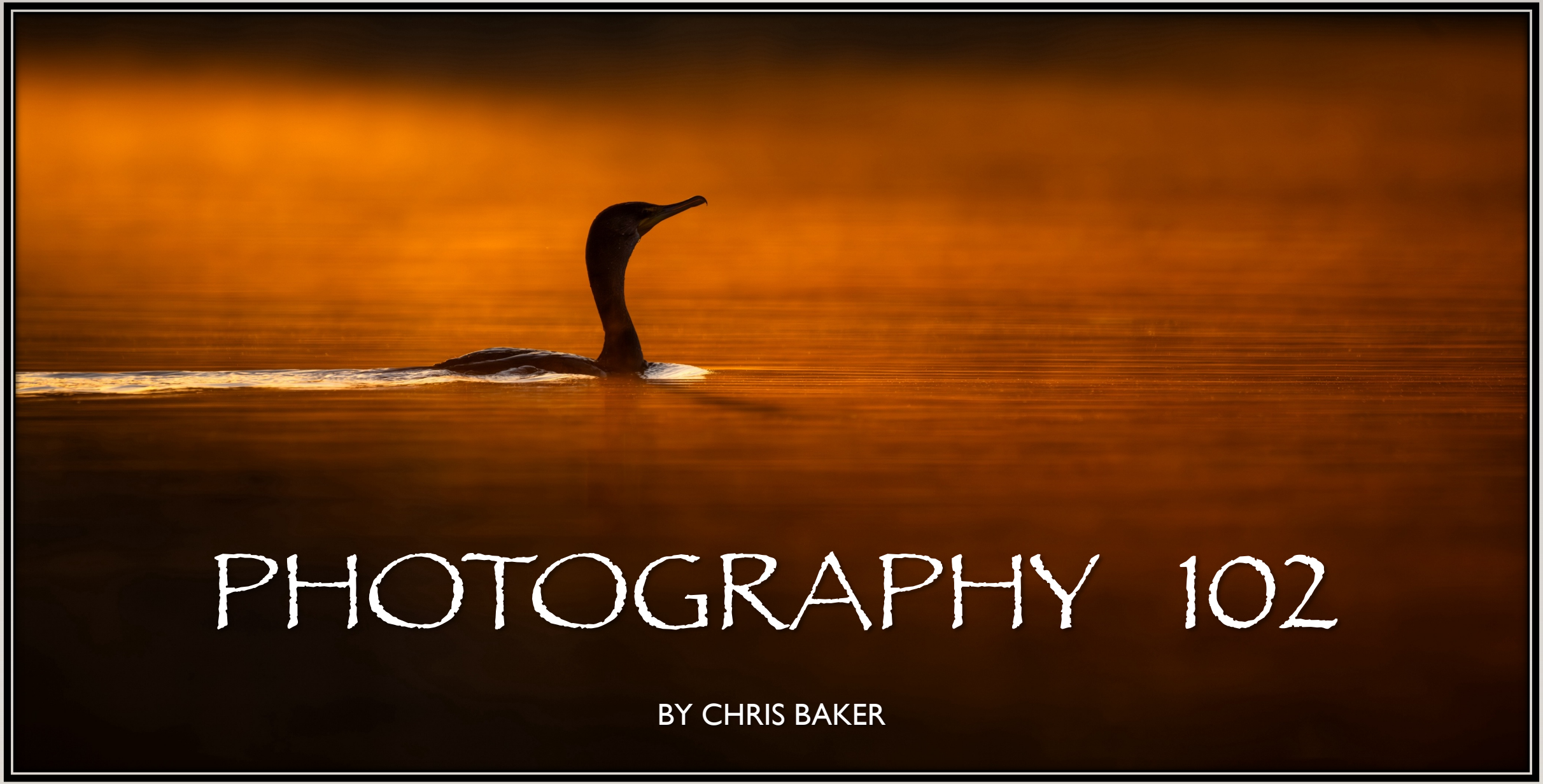


PHOTOGRAPHY 102

BY CHRIS BAKER

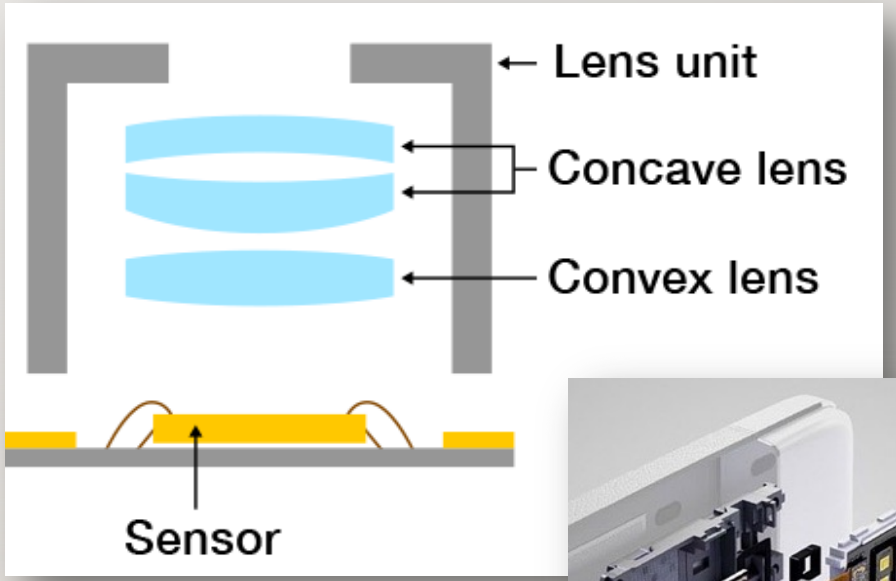
Scott Photography

2 TOPICS

- Camera Bodies
- Lenses
- Exposure Triangle Review
- Camera Shooting Modes
- Good Hand Holding Technique
- Diagnosing Focus Issues
- References

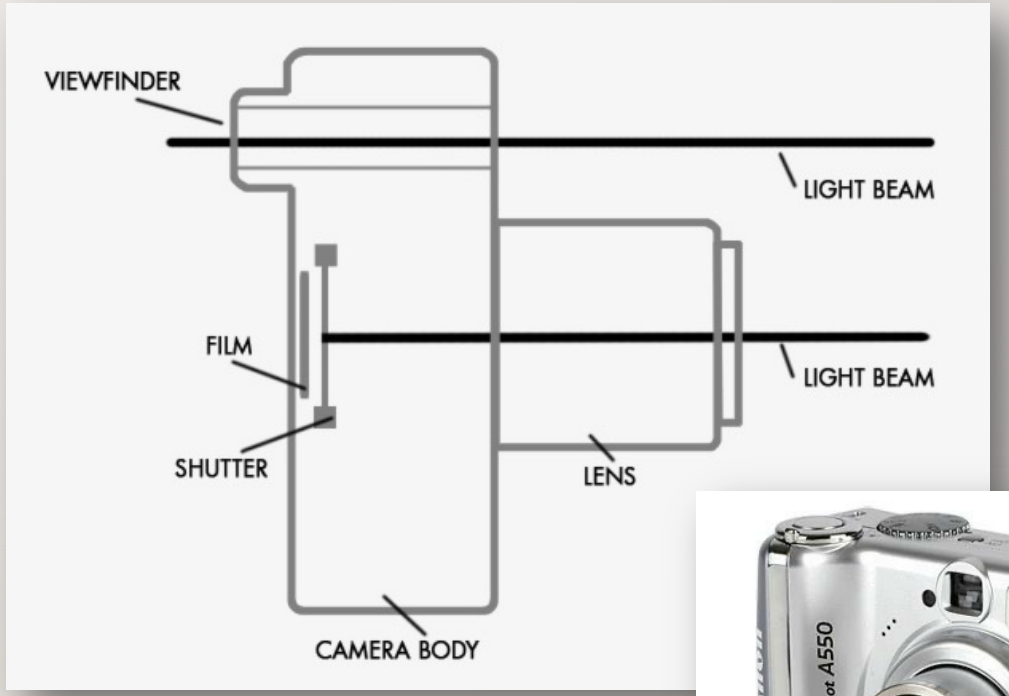
3 SMARTPHONE CAMERA

- Pros
  - Compact and lightweight
  - Zoom capability
  - Quiet shutter
  - Built-in flash
  - Built-in image processing
  - Immediate share capability
- Cons
  - Limited storage
  - Limited aperture
  - Small image sensor (lesser image quality)
  - Poor low light capability
  - Limited control customization



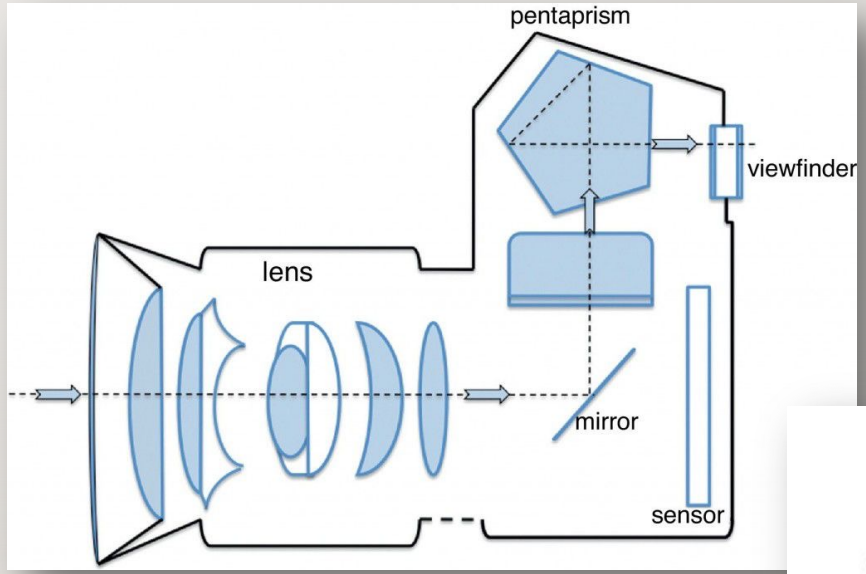
4 POINT AND SHOOT CAMERA

- Pros
  - Compact and lightweight
  - Large zoom capability
  - Quiet shutter
  - Built-in flash
  - Budget friendly
- Cons
  - Limited aperture
  - Lower quality image sensor
  - Limited control customization



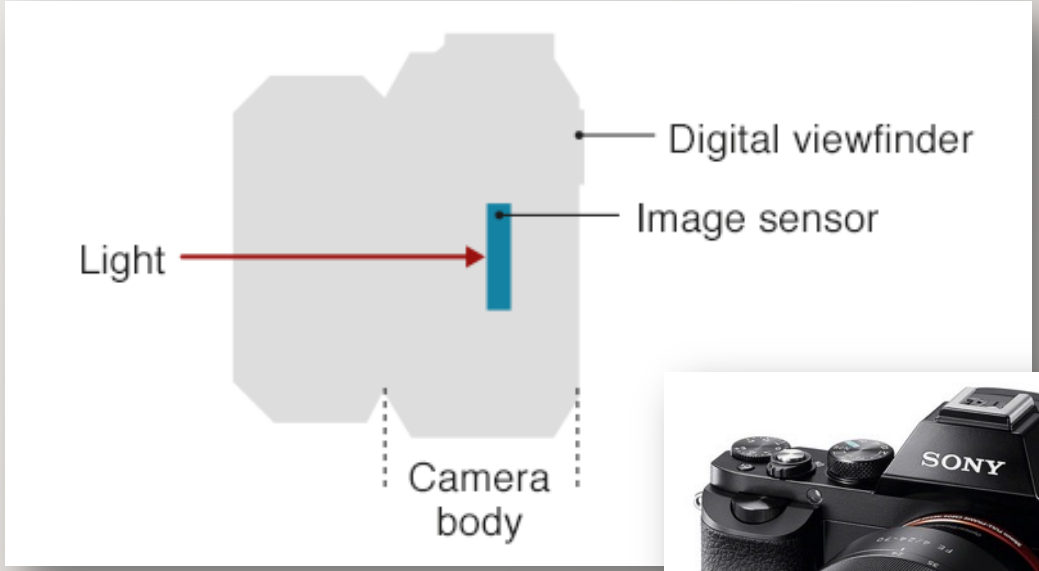
5 DIGITAL SINGLE-LENS REFLEX (DSLR) CAMERA

- Pros
  - Higher quality image sensors
  - Quality lenses available
  - Autofocus speed
  - Control customization
  - High burst shooting capability
- Cons
  - Larger bodies
  - Limited shutter actuations
  - More expensive
  - Loud shutter



6 MIRRORLESS CAMERA

- Pros
  - Higher quality image sensors
  - Quality lenses available
  - Control customization
  - High burst shooting capability
  - Smaller and lighter weight bodies
  - Quiet shutter
- Cons
  - Lenses required
  - More expensive
  - Autofocus speed slower than DSLR (but getting better)



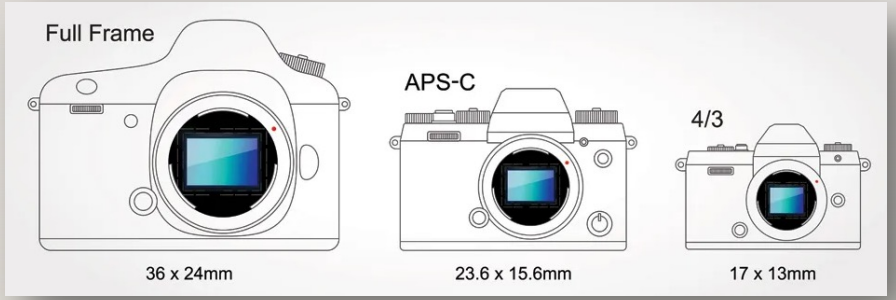
7 CAMERA BODY COMPARISON

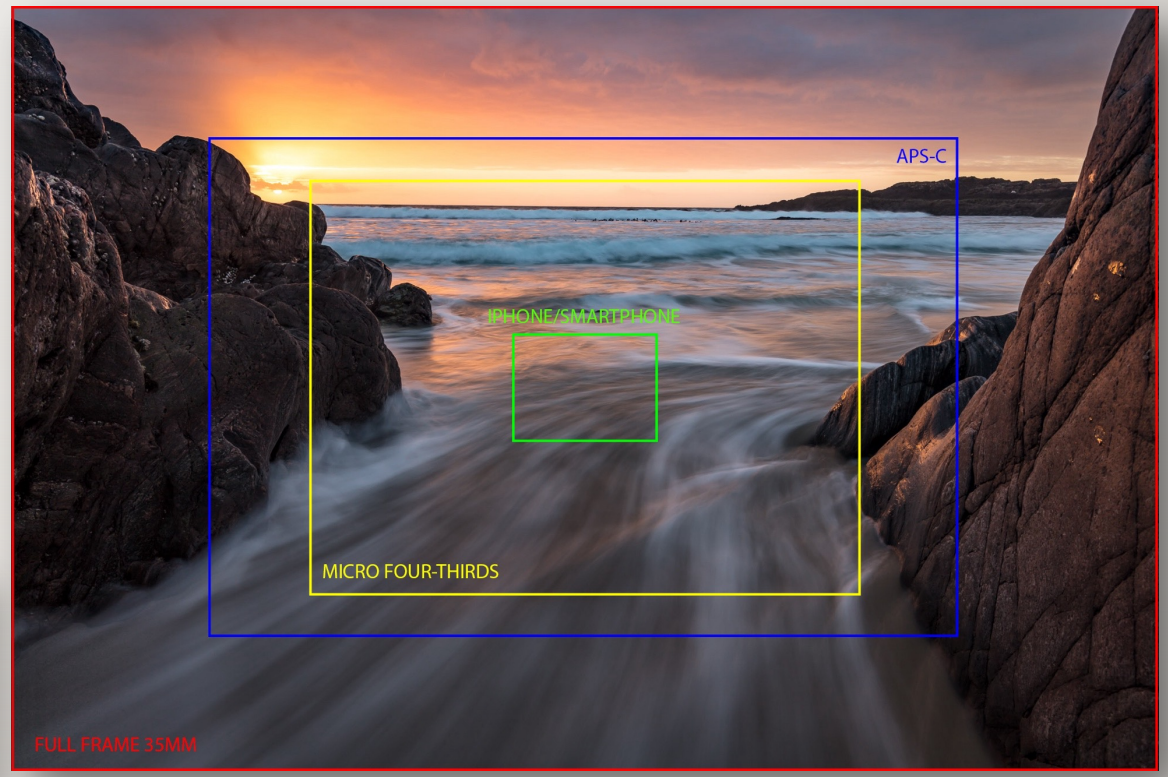
	Portability/ Weight/Size	Image Quality	Autofocus Speed	Quiet Operation	Customize Controls	Low Light Capability
Smartphone	Best	Worst	Worst	Best	Worst	Worst
Point and Shoot	Better	Worst	Worst	Best	Better	Better
DSLR	Worst	Best	Best	Worst	Best	Best
Mirrorless	Better than DSLR	Best	Better	Best	Best	Best

"The best camera is the one that you have with you" – Chase Jarvis

8 SENSOR SIZE

- Crop sensor cameras have a natural magnification for a given focal length lens
  - Less expensive
  - Good for wildlife and sports
  - Amount of crop expressed as a "Crop Factor"
- Full frame cameras have better high ISO capability due to larger pixel sizes
  - Good for low light situations
  - Good when higher shutter speeds are required
  - Not as critical with good light

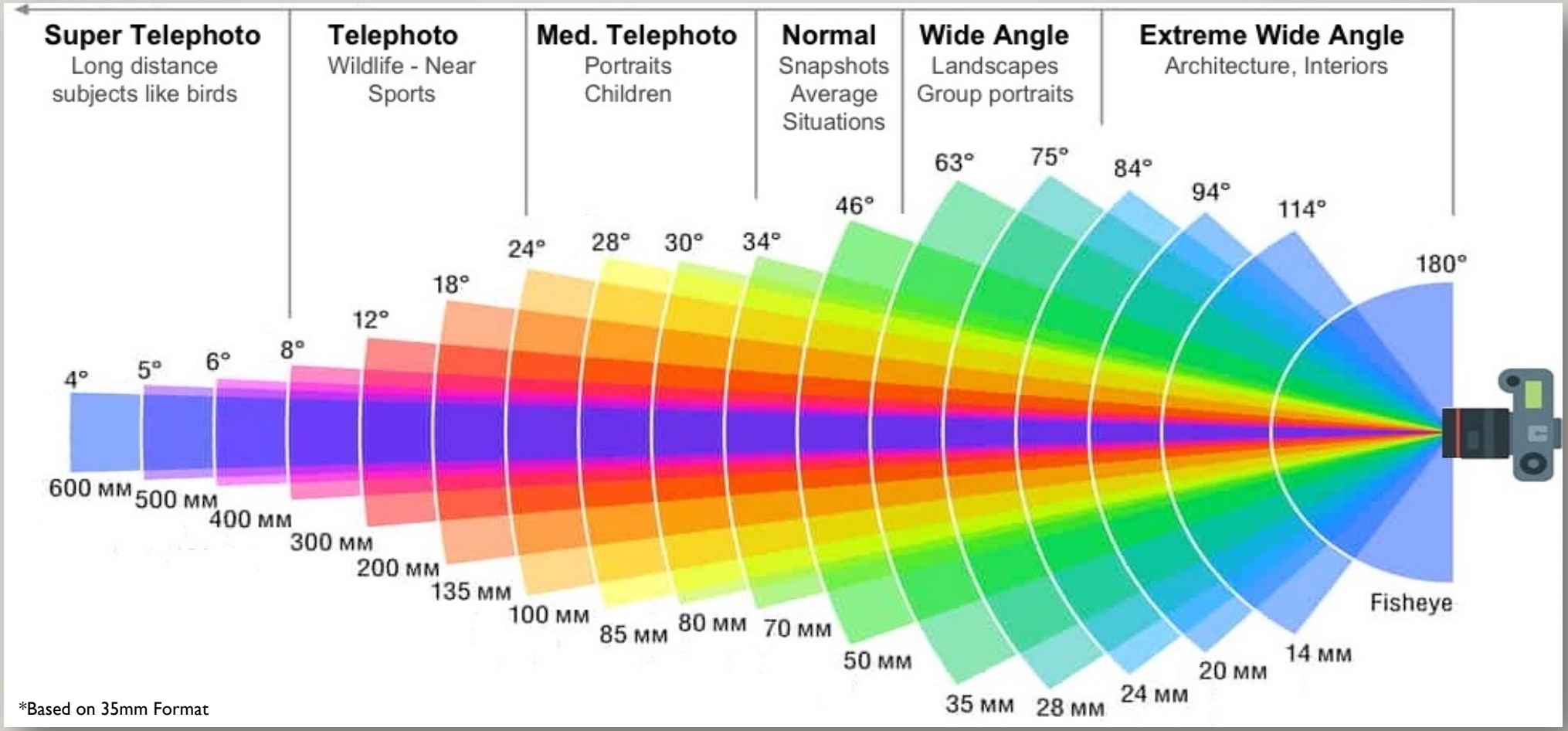




9 QUALITIES OF HIGHER PRICED CAMERA BODIES

- Weather sealing
- More control customization
- Less automation (e.g. no auto/scene modes)
- Higher quality sensor
- Larger sensor = high ISO capability (i.e. better low light performance)
- More autofocus points
- Faster autofocus
- Multiple card slots
- Digital screen on top of body
- Built-in vertical grip

10 LENS FOCAL LENGTH



11 FOCAL LENGTH EXAMPLES

12 EXAMPLE: ONE LANDSCAPE, TWO LENSES

14mm, f/18, 0.8 sec, ISO 64

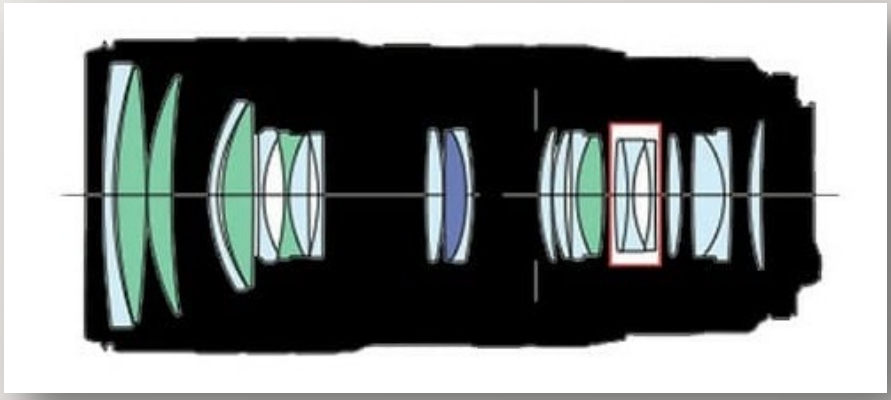
115mm, f/16, 0.6 sec, ISO 64

13 PRIME VS ZOOM LENSES

Prime Lens

- Single focal length
- Simpler construction
- Faster focus
- Wider apertures
- Sharper
- Zooming is done with your feet

Zoom Lens



- Multiple focal lengths
- Complex construction
- Slower focus
- Limited apertures
- Less sharp
- More convenient where movement is limited

"NIFTY FIFTY" – THE 50MM LENS

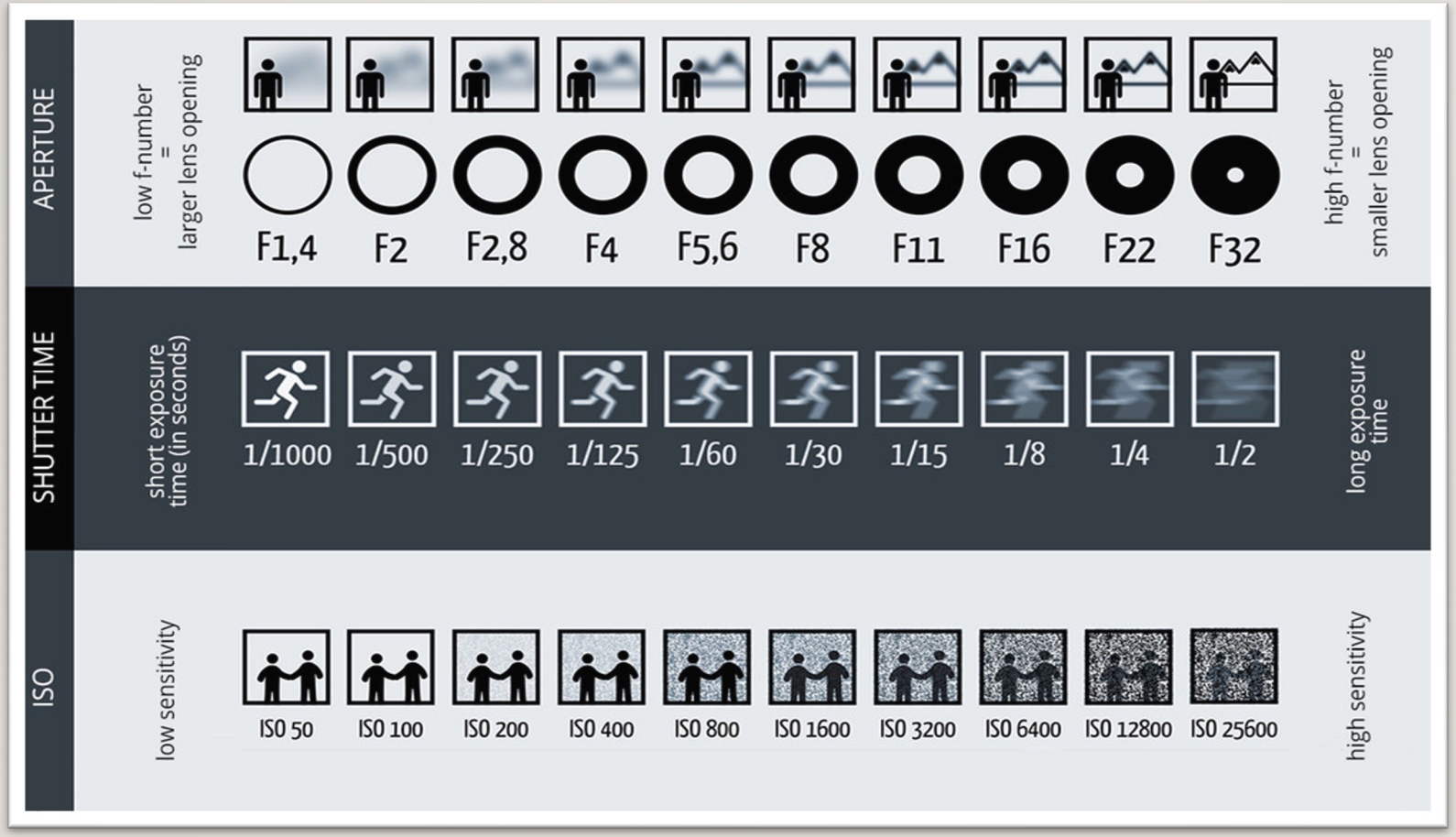
- 50mm is equivalent to what your eye sees
- All lens makers produce a 50mm f/1.8 lens that is often recommended as a first lens purchase
- Optics are simpler
- Sharp images
- Small and lightweight
- Less expensive
- Fast autofocus
- Versatile focal length

15 QUALITIES OF HIGHER PRICED LENSES

- Larger apertures
- Longer (i.e. telephoto) and shorter (i.e. ultra-wide) focal lengths
- Weather sealing
- Sturdier housing materials
- Specialized glass elements that reduce weight
- Coatings that reduce flare and dust/fingerprints

Canon EF 1200mm f/5.6 L USM ($90,000)

16 EXPOSURE TRIANGLE REVIEW



Aperture controls depth of field

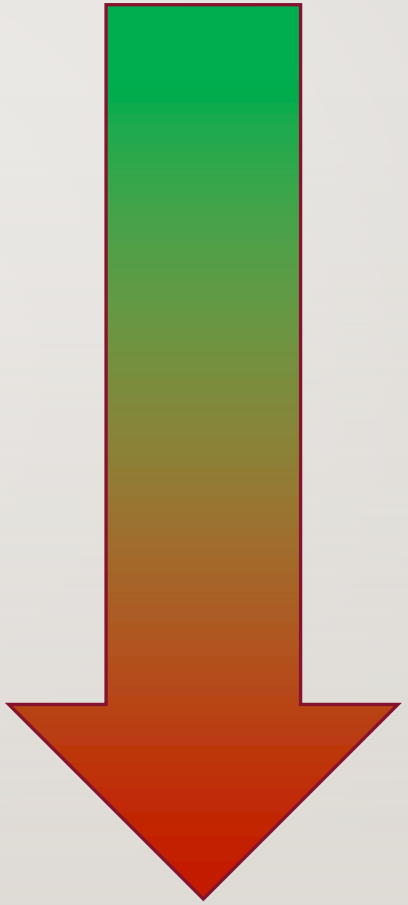
Shutter speed controls motion

ISO affects image quality

17 CAMERA MODE DIAL

18 CAMERA MODES

- Auto = Full Automatic
  - Camera sets aperture, shutter speed, and ISO
- Scene Modes = Custom Full Automatic
  - Camera sets aperture, shutter speed, and ISO but prioritizes based on scene selection
- P = Program Auto
  - User sets ISO
  - Camera sets aperture and shutter speed
- **A or Av = Aperture Priority**
  - **User sets aperture**
  - **Camera sets shutter speed and ISO**
- **S or Tv = Shutter Priority**
  - **User sets shutter speed**
  - **Camera sets aperture and ISO**
- M = Manual
  - User sets shutter speed, aperture, and ISO
  - TIP: ISO can still be set to Auto (highly recommended)

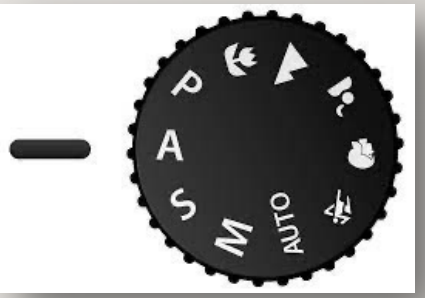


Least Control

Most Control

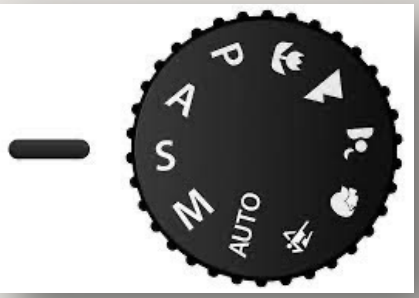
19 APERTURE PRIORITY

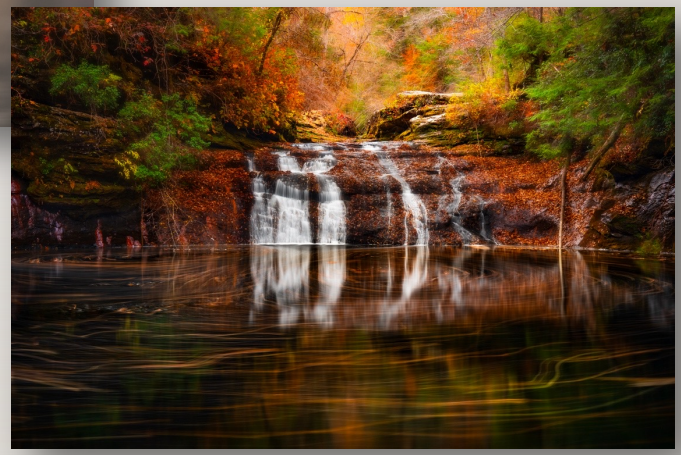
- User sets aperture
- Camera sets shutter speed and ISO
- Aperture controls depth of field
- Small aperture (large f-stop value)
  - f/11 – f/22
  - Large depth of field
  - Ideal for landscapes
- Large aperture (small f-stop value)
  - f/1.4 – f/5.6
  - Narrow depth of field (i.e. isolate subject)
  - Ideal for portraits



20 SHUTTER PRIORITY

- User sets shutter speed
- Camera sets aperture and ISO
- Shutter speed controls motion
- Fast shutter
  - 1/200 – 1/4000 sec
  - Freeze motion
  - Ideal for sports and wildlife
- Slow shutter
  - 1/2 – 30 sec
  - Blur motion or low light situation
  - Ideal for waterfalls and night sky



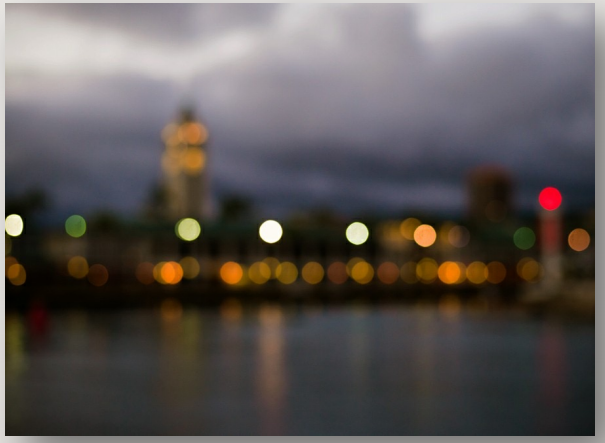


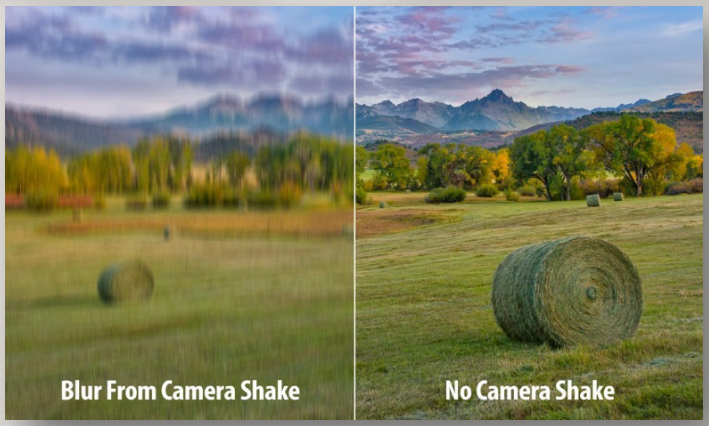
21 GOOD HAND HOLDING TECHNIQUE

- Right hand on the grip with index finger on the shutter
- Left hand supporting the lens from underneath
- Elbows
  - Brace against body for stability
  - Or rest on table or fence or railing
  - Or kneel/sit and rest on knee
- Viewfinder against your eyebrow for more stability
- Shutter release
  - Press gently and smoothly
  - Breathe out

22 3 SOURCES OF FOCUS PROBLEMS

1. Focus on subject is soft
   - Check focus mode
   - Try manual focus
   - Lens calibration
2. Motion blur
   - Use a faster shutter speed
3. Camera shake
   - Check hand-holding technique
   - Turn on image stabilization/vibration reduction
   - Use a faster shutter speed
     - Reciprocal Rule: Minimum hand-hold speed = 1 / [focal length]
     - Example: At 200mm, minimum shutter speed to hand hold = 1/200 sec
   - Use a tripod





23 PHOTO CHECKLIST

- ❑ IDENTIFY THE SUBJECT
- ❑ Choose the appropriate focal length lens
- ❑ Decide what to control … motion (i.e. shutter speed)? … depth of field (i.e. aperture)?
- ❑ Make sure your subject is in focus
- ❑ Make sure your subject is the most prominent feature in the scene
- ❑ Beware of bright or colorful objects in the background that distract from the subject (e.g. lights, reflections, etc.)
- ❑ Use the crop tool during post-processing to eliminate distracting elements and clean up edges

24 REFERENCES

- For tutorial articles and gear reviews:
  - Photography Life: https://photographylife.com
  - Ken Rockwell: https://kenrockwell.com
- For buying and selling gear:
  - GigaParts: https://www.gigaparts.com (new)
  - Adorama: https://www.adorama.com (new and used)
  - B&H Photo: https://www.bhphotovideo.com (new and used)
  - KEH: https://www.keh.com (used only, highly recommend)
- Huntsville Photographic Society: https://www.hpsphoto.org
- My Instagram: https://www.instagram.com/c_scott_photo/
- My website: https://cscottphoto.smugmug.com