Many Cameras – Many Choices

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All Types of Cameras

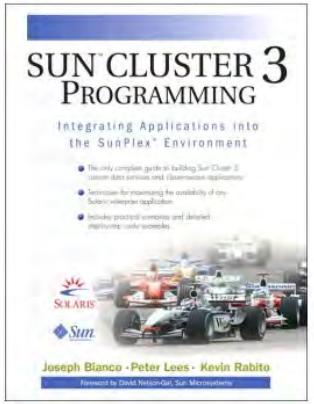
- There are more cameras on the street than ever before
  - There are many vendors, many models
  - Cell phones / Smart phones
- For consumers, abundance of camera choices is good
- Making a choice can be a bit overwhelming

They all take pictures, just need to figure out which one is best for you

Not Too Long Ago

Choices were a little simpler

LITTLE BIT ABOUT ME



- PROFESSIONALLY
  - IT INDUSTRY
    - Started as an Electrical Engineer
    - Moved into Computers – Servers and workstations
      - System Administration
      - Field Engineer
      - Architecture
      - Sales
        - Project Management
    - HIGHLIGHTS
      - Senior Member Technical Staff – Sun Microsystems
      - Book Published 2004
        - Programming with the Sun Cluster 3.x API

LITTLE BIT MORE

- Photography
  - Learned through my Dad. – As a hobby.
  - Film because there were no digital cameras.
  - Cameras I've owned – Kodak, Yashica, Canon, Minolta and Nikon
  - Started with digital 2005
    - At the time still thought my film camera was better.
    - First digital was a Nikon D70s
    - Taking photographs for IHS Football website.
  - Started Website to sell sports photos to parents
    - Professionally
      - Laid off 2008 from Sun Microsystems
      - While looking for a job responded to an ad at a Studio
      - Liked my portfolio and started part-time on weddings.
      - Now doing weddings and portraits myself and freelance through a studio. (All part-time)
      - Former Candlewood Camera Club President
      - Current website www.KevinRabito.com

Camera Groups

Point and Shoot - Compact Cameras

Just press the button, we do do the rest! (Kodak 1888)

Point and Shoot – I call them Crossovers

Point and Shoot – Fixed or Variable lens

- Light weight
- Generally easy to use
- Generally offer shoot modes:
  - Sports, Portrait, Landscape, Night
  - Face Recognition
  - Video
- Crossovers – Offers same functions as above
  - Slightly larger and costs a bit more
  - Adds in some control functions found in traditional SLR - DSLR's

Camera Groups

DSLR – Digital Single Lens Reflex

Consumer – Lower cost

- Compact camera functionality
- Add in SLR Control functions
- Case generally made of plastic
- Case generally not weather sealed.
- Slower, less sensitivity (ISO)

Prosumer – Mid range costs.

- Starts losing compact functionality
- Some models sealed and magnesium based frame.
- Adds advanced features
- Faster, increase sensitivity (ISO)
- May offer full frame sensors

Camera Groups

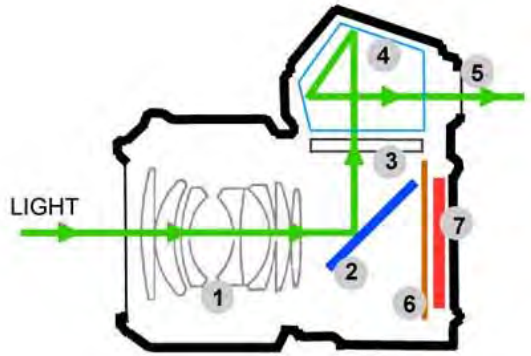
DSLR – Digital Single Lens Reflex

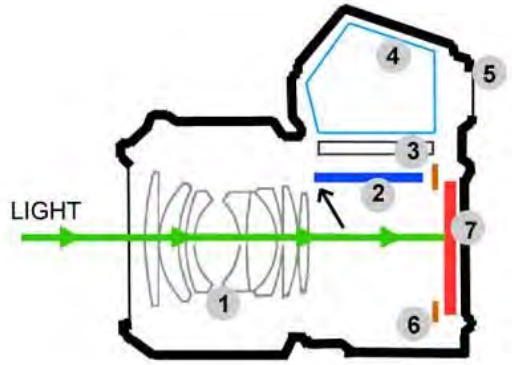
Pro – High cost

- No Compact camera functionality
- Magnesium Frame
- Case sealed
- Typically Full Frame Sensor
- Fast, high sensitivity (ISO)

Mirror less

Camera Technology Basics





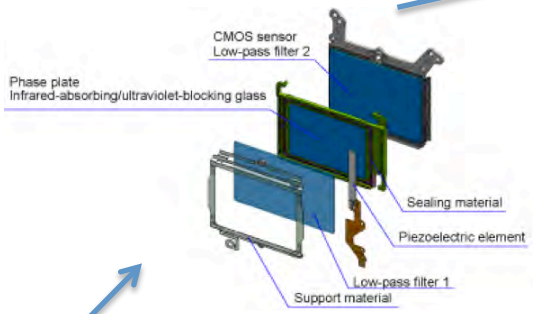


Image Processor

CF or SD (Storage)

Sensor Types

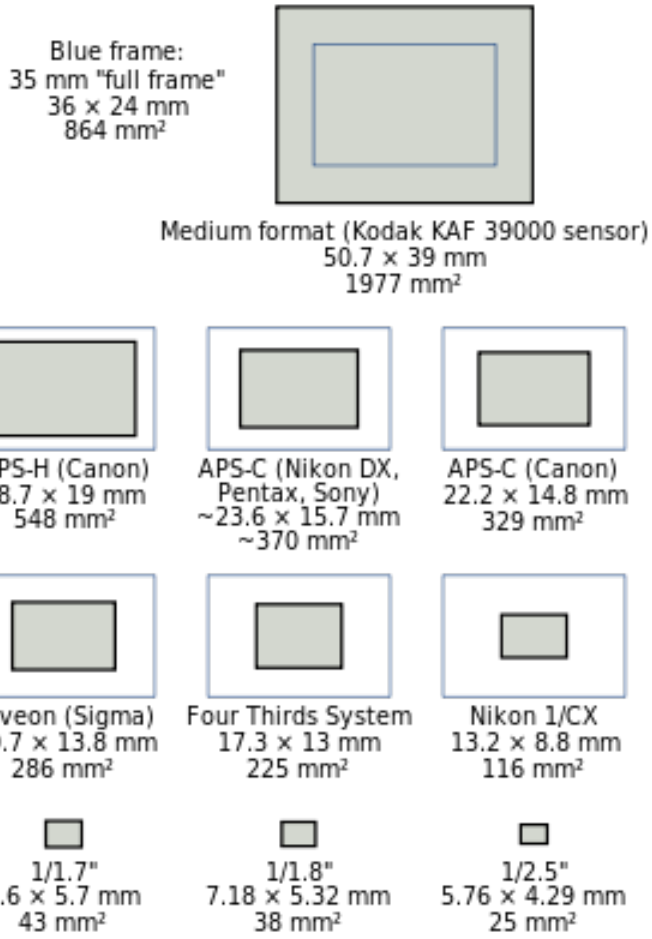
CCD versus CMOS

CCD image sensor is an analog device. When light strikes the chip it is held as a small electrical charge in each photo sensor. The charges are converted to voltage one pixel at a time as they are read from the chip. Additional circuitry in the camera converts the voltage into digital information.

CMOS imaging chip is a type of active pixel sensor made using the CMOS semiconductor process. Extra circuitry next to each photo sensor converts the light energy to a voltage. Additional circuitry on the chip may be included to convert the voltage to digital data.

Doesn't Matter – Vendors use CMOS sensors

Sensor Sizes



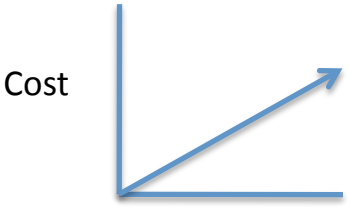
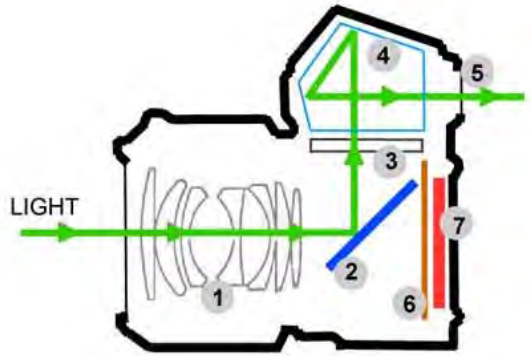
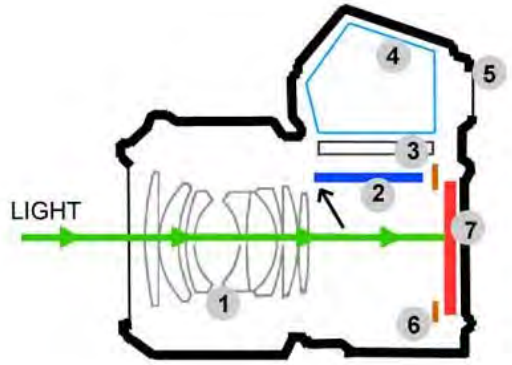


Image Process – Flash Storage

Does it matter when picking a camera?





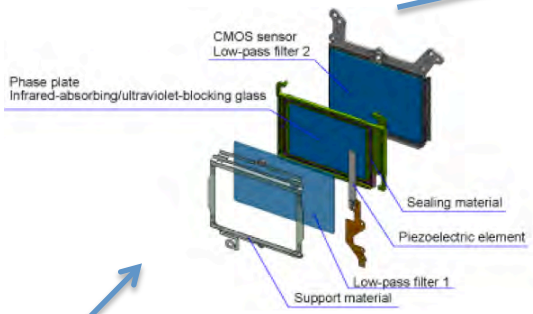
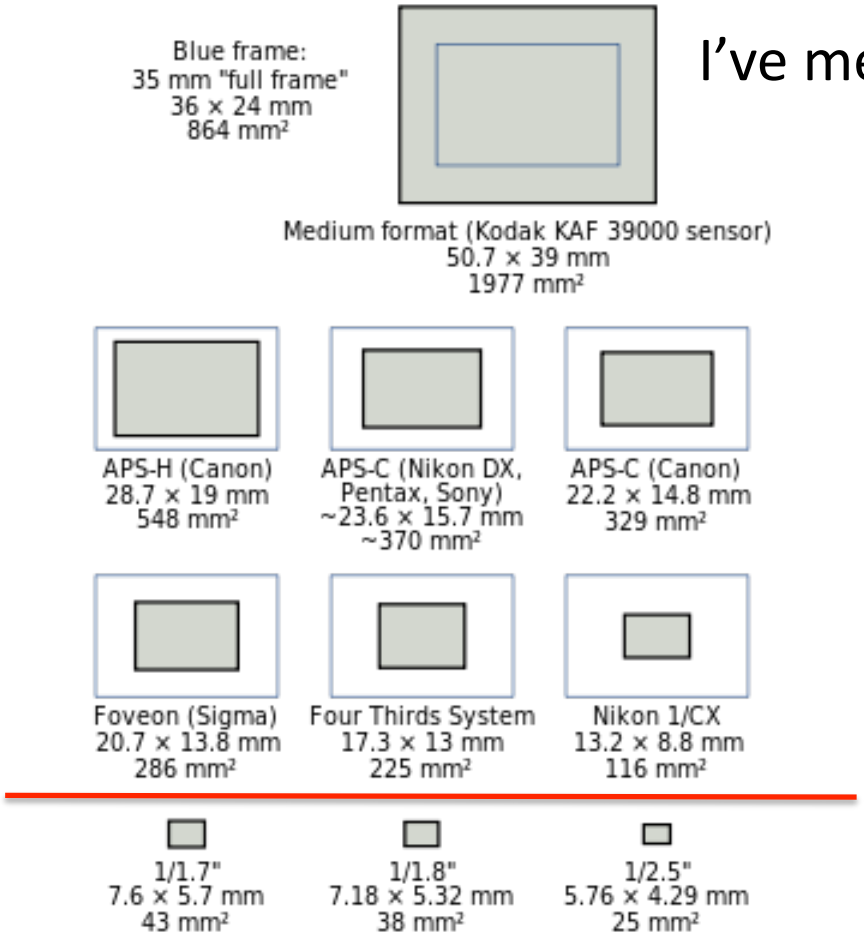


Image Processor

CF or SD
(Flash Cards)

Did You Notice?



I've mentioned nothing about MEGAPIXELS?

- Today's cameras have plenty of MegaPixels
- Create Large Prints – up to 16x20
- Able to crop the image smaller

(Within reason)

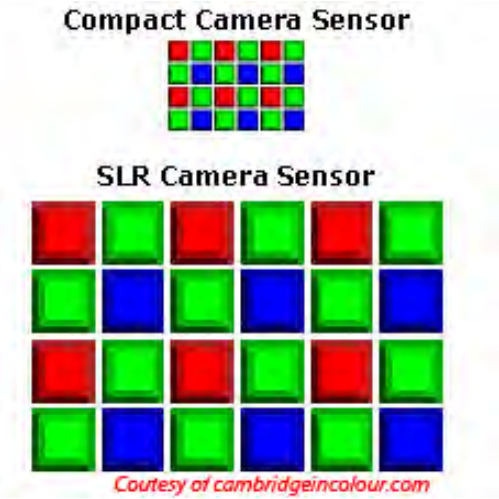
If your cropping to just 10% of the original photo you're doing something wrong.

- Larger sensors have more room for pixels
- More pixels, more resolution
- At some point, packing a lot of pixels on a sensor can create noise. Noise can be filtered in the image processor.

Camera Specifics

ISO (Industry Standards Organization) – Relates to film / sensor sensitivity to light

- Higher the number the more sensitive to light.
- Film ISO numbers: 50, 100, 200, 400, 800, 1600
- Digital Camera's same numbers apply, but can go between above numbers.
- Much higher ISO numbers available in digital: 1600, 3200, … 256000
- The higher the number increases the more chance of noise
- Sensors packed with more pixels generally will have more noise.
- Image processing does a great job of cleaning the noise to a point



Camera Specifics

Shutter Speeds – How fast the shutter opens and closes

- Speeds typically from multiple seconds to 1/8000th of a second
- B or Bulb mode can manual hold open the shutter
- Some digital cameras have higher speeds 1/16000th of a second
- I very rarely use 1/8000th of a second

Exposure Compensation (EV)

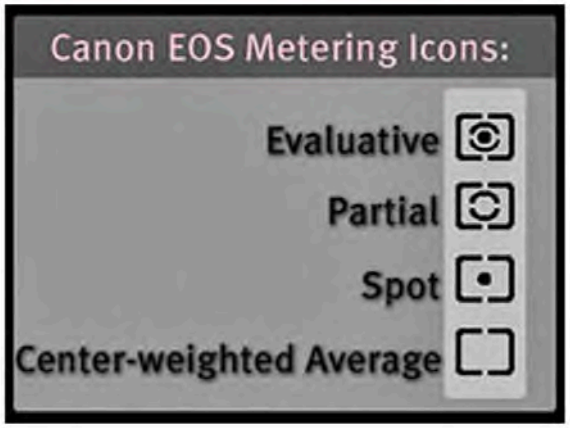
- Allows you to add or subtract from the exposure setting
- (+1EV) adds the equivalent of one-stop to the exposure
- Cameras typically have a EV range of +/- 3 EV
- This can help add or subtract (tweak) the exposure setting

Camera Specifics

Camera Meter Modes – Measuring the light coming in the lens

- Cameras are typically TTL (Through The Lens) metering
- Different modes are available in today's cameras.
- Typical modes below, other modes available
  - Matrix, Evaluative – looks at the whole view when metering
  - Center Weight, Partial – focuses on the center considering the outer area
  - Spot – meter in just that spot

Evaluative Metering

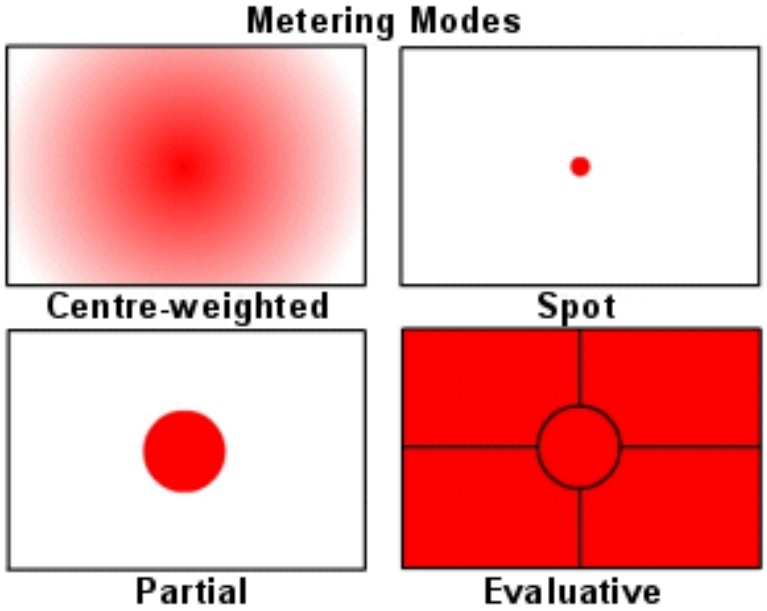


Matrix Metering

Camera Specifics

Camera Metering / Focus Points – Depends on the Meter Mode

- Depending on models – number of metering points
- Numbers range from 7 or 9 points to approx. 54 points
- Think of Matrix or Evaluative – 9 points divides the screen to 9 areas
- Cameras may have the ability to group the points.



Camera Modes and Functions

Scene Modes	Picture Control	Exposure Modes *	Focus Modes *
Auto	**Landscape**	**Aperture-Priority (A)**	**Auto (AF) Auto AF-S/ AF-**
Auto [Flash Off]	**Monochrome**	**Auto (Flash on or off)**	**Single-Servo AF (AF-S)**
Child	**Neutral**	Manual (M)	**Continuous-Servo (AF-C)**
Close-up Landscape Night Portrait Portrait Sports	**Portrait Picture Control can be Modified Standard Vivid**	**Program (P) Shutter-Priority Auto (S)**	**Full-time Servo (AF-F) Manual Focus (MF) Facial Priority**

* Modes found in traditional DSLR cameras

Lenses

Types of Lenses

-Wide Angle: 10-35mm – covers wide area
- Normal or Standard: 35-70mm
- Telephoto: 80-300mm, brings subjects in closer
- Telephoto: 400-1000mm – even closer, $$$$$$

Lenses Groups

-Prime: Lens is fixed view (ex. 50mm)
-Zoom: Lens view is variable (ex. 80-200mm)

Lenses f-stop number (Aperture)

Fast Glass – referred to lens with low f-stop number
- f2.8, f1.8, f1.4 – good use for sports, portrait.
-Higher costs associated with fast glass

Variable – f4-f5.6 lens associated with zoom lens
-A 80-200mm lens would be f4 minimum at 80mm
-At 200mm, f5.6 would be the minimum
-Lost cost is cheaper
-For most applications zoom variable f-stop is fine

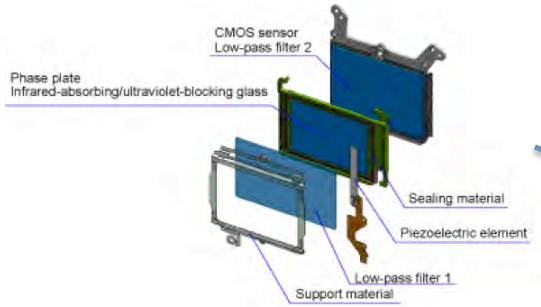
Camera is only as good as the lens on it!

So What New in Camera Technology?

Mirror-less Cameras

Relatively new – been out for a few years.

- Lightweight and smaller due to removal of mirror
- Interchangeable lens
- Models go from point shoot features to DSLR control modes depending on model

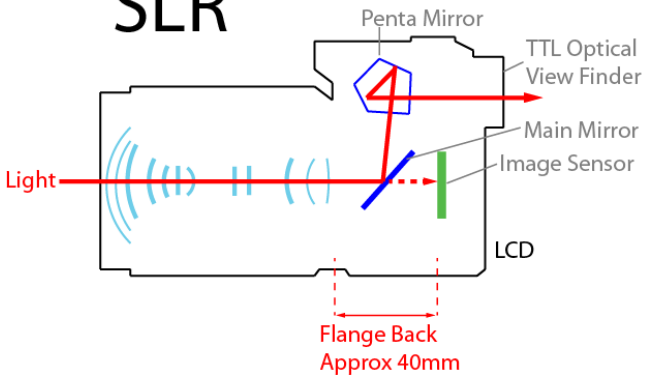


LCD or Viewfinder

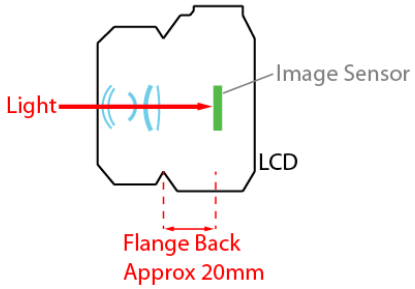
Image Processor

CF or SD (Flash Cards)

SLR



Mirrorless



Built-in WiFi

WiFi – more in the marketplace with in camera WiFi.

- Upload images to your computer.
- Depending on software – upload to social media.
- Print to wireless printers.

Android Meets Camera

Provides capability of the Android OS with a Camera.

- Better quality lens than a fixed lens smartphone.
- Adds the ability to add software to process images in camera such as Photoshop.

Software Everywhere!

Abundance of software available to process, organize, create albums, scrapbooks, video creation, etc..

I Want to Pick a Camera

What makes a good camera?

- The majority of the cameras (Name Brand) are good cameras
- What makes a camera good is picking the right camera for your needs
- If it doesn't do what you want it to do….. Frustration -> Goes in the Trash

What type of camera?

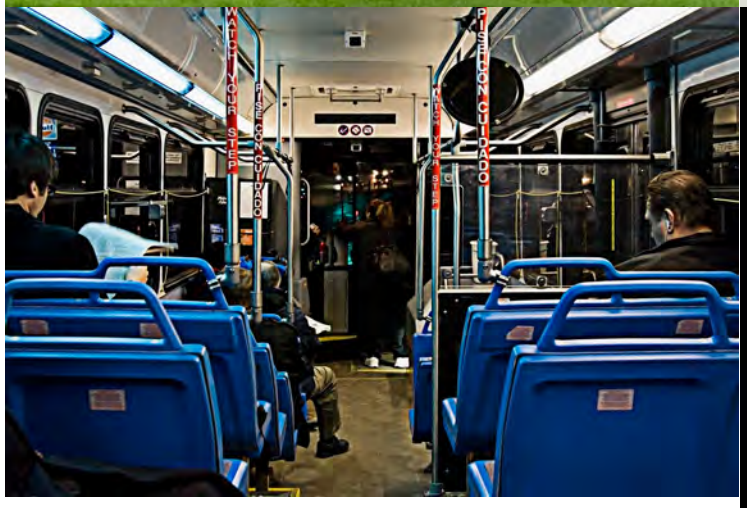
As my photography skills grow, do I need to purchase another camera?

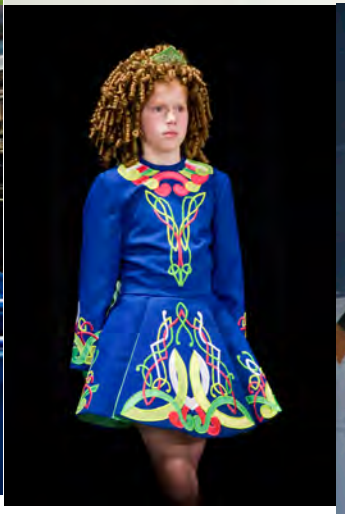
What Features?

What else will I need? (Accessories)

Need to ask yourself a few more questions!

What type of photography do you like?





What is your photography skills?

Beginner – Intermediate – Advanced – Pro

Do you want to increase your skills?

Yes or No

What is your budget? This stuff is not cheap!

Camera Fit for Types of Photography

Type of Photography	Point n Shoot Compact	Point n Shoot Crossovers	Mirrorless	DSLR
Nature		***(2)	**** (1)	*****
Photojournalism or Events	**	*****	*****	****(4)
Sports, Action	* (2)(3)	**(2)	****(1)	*****
Family	****	****	****	****(4)
Night Photography	*(3)	*****	*****	*****
Portraits	*	****	*****	*****
Wildlife (Animals)		**	****(1)	*****

(1) More capable as more lenses become available (2) Limited due to single lens
(3) Sports, Night Mode function very limited (4) Weight/Size maybe a factor

Type of Photography Camera Needs

SPORTS - ACTION	NATURE - WILDLIFE	Family Moments	Events and PJ	Night Photography
Typically a Telephoto or zoom lens is needed	Variety of lenses needed	Majority of cameras will fit this area.	Crossover to DSLR(2)	Crossover to DSLR
Camera capable of shooting multiple frames per second	Telephoto or zoom suggested for wildlife	May want to consider weight - size	External Flash (1)	Cameras with Night Mode very limited (2)
For indoor sports, able to shoot fast in low light	Able to mount a tripod	Tripod so you can join in the picture		Tripod
Mono or Tripod	Consider weight	External Flash (1)		Patience
	Camera Cover	(2)		

(1) External Flash offers better light the on camera flash
(2) Consider cameras with manual controls as you advance.

VERY IMPORTANT!

Before You Buy That Camera

Physically hold the camera – Is it to heavy or awkward to hold or use?
Are the control buttons and menu easy to use?

While there will be a learning curve with your new camera, you don't want something that is hard to use.

Questions