

Understanding Your Camera

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- Technical aspects, some composition
- Proceed through levels of expertise
Snapshots, novice, amateur, (pro)
- Light, composition

Snapshots

- Power
 - Taking a picture
 - View pictures
 - Zoom
 - One end or the other
-
- Autofocus
 - Flash
 - Self timer
 - Burst mode



Point and Shoot 101

Half press to focus

- Rule of thirds

Point and Shoot 101

Flash settings

- Auto

- Off 

Tripod

- On 

Fill in flash

- Slow sync flash 

Flash plus long exposure

- About glass...

Fill in Flash ⚡

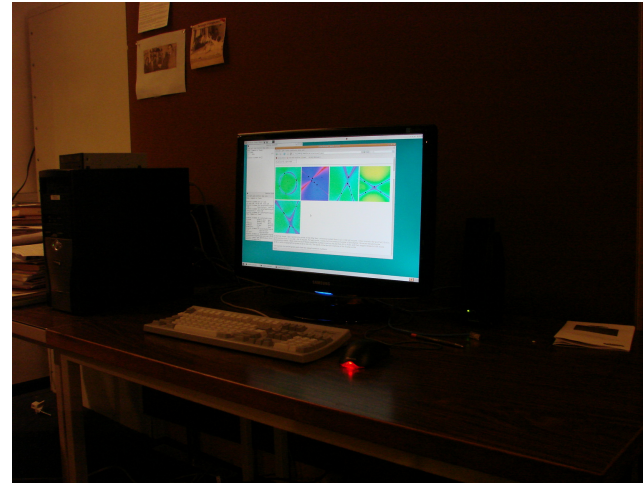


(self timer)

Slow Sync Flash ⚡^{SL}



Flash



No Flash



Slow Sync



About Glass



Point and Shoot 101

Adjusting The Exposure



(bracketing)

Point and Shoot 101

About the zoom

- Big nose portraits
- Framing
- Relative sizes

Relative Sizes



Relative Sizes



Burst Mode



Burst Mode



Burst Mode



Burst Mode



Burst Mode



Burst Mode



Single Lens Reflex

View finders:

- Cheap point and shoot:
Separate optical viewfinder
- More expensive point and shoot:
Show image on display
(some also have digital or cheap optical view finder)
- SLR:
Retractable mirror: optical viewfinder of what image will be

SLR Camera

http://web.uvic.ca/ail/techniques/camera_diag.gif

SLR—Settings

At least four things to set:

- Shutter speed

- Aperture

Depth of Field

- Focus

- ISO

Plus, pick your lens

Shutter Speed

- How long shutter is open
 - Longer it's open, the higher the exposure (brighter the picture)
 - Too short: picture too dark (underexposed)
 - Too long: picture too bright (overexposed)

Can digitally fix exposure problems afterwards, but...

- Typical speeds: 1/30, 1/60, 1/125 seconds
 - 1/30: motions start to blur
 - Film cameras often support 1, 1/2, 1/4, 1/8, 1/15 second
 - Slower than 1/30: careful to hold steady; tripod
 - Sports, etc: 1/250 or faster
- Bulb mode

The Aperture

- Aperture: size of opening for letting light into camera

$$\text{f-stop} = \frac{\text{size of aperture}}{\text{focal length of lens}}$$

But: rescale so numerator is 1 and then *omit the '1/'*

- Focal length: when focused at infinity, distance from image plane to “an optical measuring point”
- Large f-stop: small opening
Small f-stop: large opening

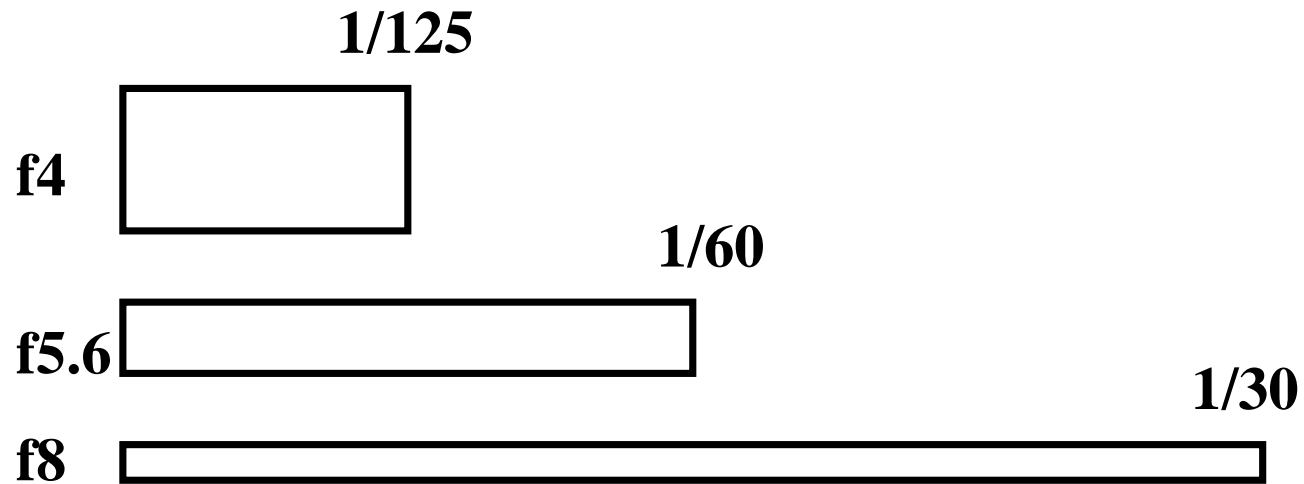
Aperture

http://web.uvic.ca/ail/techniques/camera_diag.gif

f-stops typically double aperture area

Exposure

Set aperture, shutter speed together to get desired exposure



Slower shutter speed \Rightarrow blurring due to motion

Depth of Field

- Depth of Field: range of distances in focus
- Pin hole camera: all distances in focus

As you increase size of aperture, depth of field decreases

[depth of field image:

more depth of field for small aperture;

more depth of field at longer distances]

Marks on lens indicate depth range

Depth of Field

http://en.wikipedia.org/wiki/File:Jonquil_flowers_at_f32.jpg

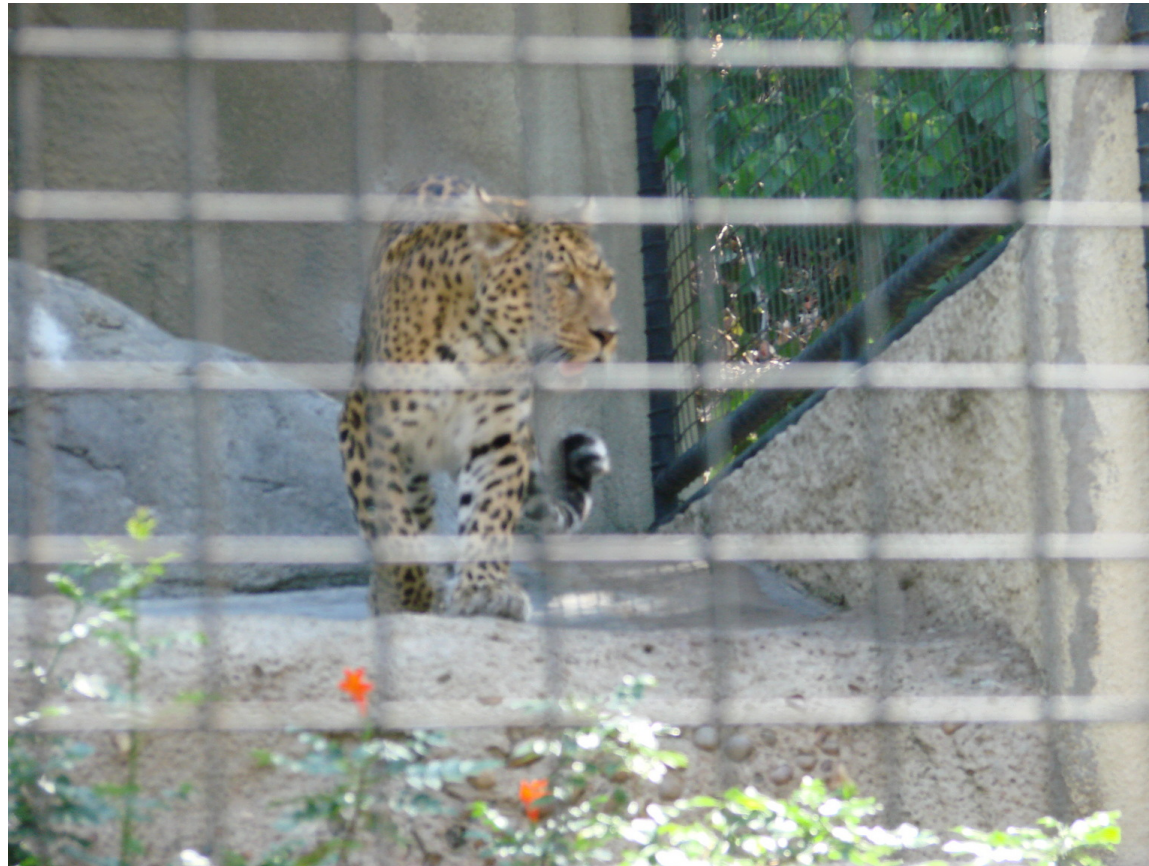
http://en.wikipedia.org/wiki/File:Jonquil_flowers_at_f5.jpg

SLR Manual Focus

- Focus ring
- Depth of field
- Full aperture
- Depth of field preview
- Digital issues

Why Manual Focus?

- Autofocus failures



- Faster shot time

ISO

- Film sensitivity to light

Grain

- CCD

Five ISO techniques for determining digital ISO

Higher ISO \Rightarrow more grainy

- Higher ISO means shorter exposure time

Settings Example



ISO 320, 1/40s, F2.8



ISO 80, 1/10s F2.8



ISO 200, 1/25s, F2.8



ISO 1000 1/60s, F4.0

ISO Example



ISO 200, 1 Sec, F2.8



ISO 1000, 1/5 Sec, F2.8



Lenses

- Common types:
 - “Normal”
 - Wide angle
 - Telephoto
 - Zoom
- Multiple “elements” (glass)
1–20 (3 or 4 for “normal” lens; 15+ for wide angle)
- Multicoated

Lens Issues

Vignette

http://farm4.static.flickr.com/3080/3103757730_98bbcb768d.jpg

?

Lens Issues

Barrel distortion, pin cushioning

Lens Issues

Flare

[http://www.photoanswers.co.uk/upload/2190/images/Lens flare.jpg](http://www.photoanswers.co.uk/upload/2190/images/Lens%20flare.jpg)

Lens Issues

Light, light, light

Indoor sports photography: very large lenses to get enough light for fast shutter speed

Filters

- Polarizing: Reflections, clouds

<http://www.paddling.net/sameboat/Images/filter3.jpg>

http://farm4.static.flickr.com/3121/2568106905_2849b96de5.jpg

- Artificial light
- Special effects
- Close up (macro photography)

Point and Shoot vs SLR

- Most cameras have light meters
- Point and shoot adjusts aperture, shutter speed to get “proper” exposure
- SLR allows photographer to adjust aperture, shutter speed to get desired lighting

Light meter gives indication of too light, too dark

- Manual adjustments allow choice of
 - Freezing motion
 - Motion blur
 - What’s in focus/out of focus
 - What’s properly lit

And much more!