

Computer Science E-7

Exposing Digital Photography

Lecture 3: Exposure
September 19, 2011

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2s, ISO 100, f/13

Photo by Dan Armendariz, 2007

Shutter Speed

Effects

Shutter Speed

Stopping motion

Photo by Dan Armendariz, 2004
1/1250s, ISO 200, f/2.8





1/320s, ISO 100, f/9.0

Photo by Dan Armendariz, 2009

Shutter Speed

Mixing motion with still



0.8s, ISO 100, f/8

Photo by Dan Armendariz, 2011

Shutter Speed

Mixing motion with still



1/1000s, ISO 400, f/5.6

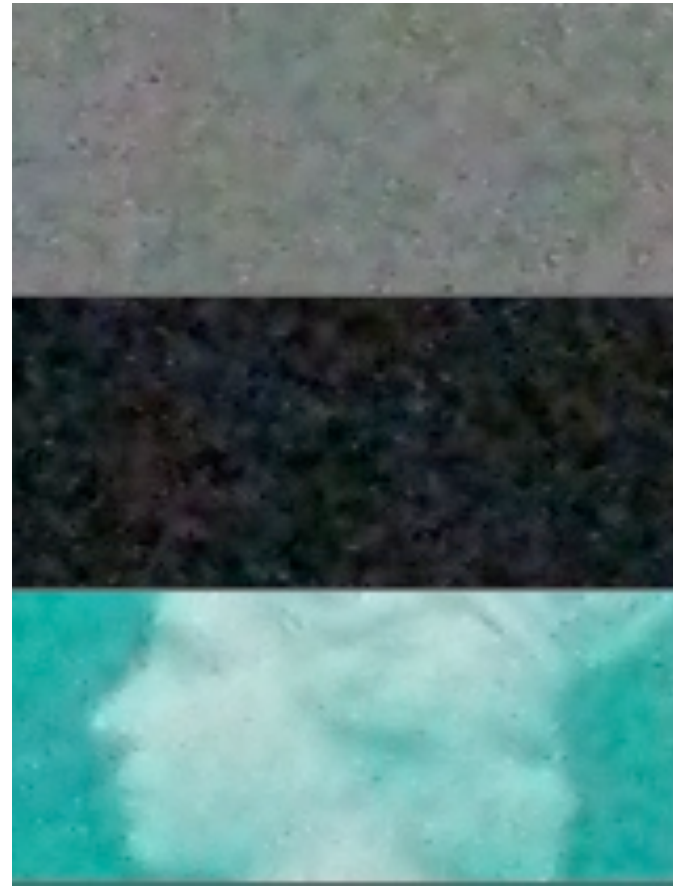
Photo by Dan Armendariz, 2007

Shutter Speed

Stopping motion



ISO 100

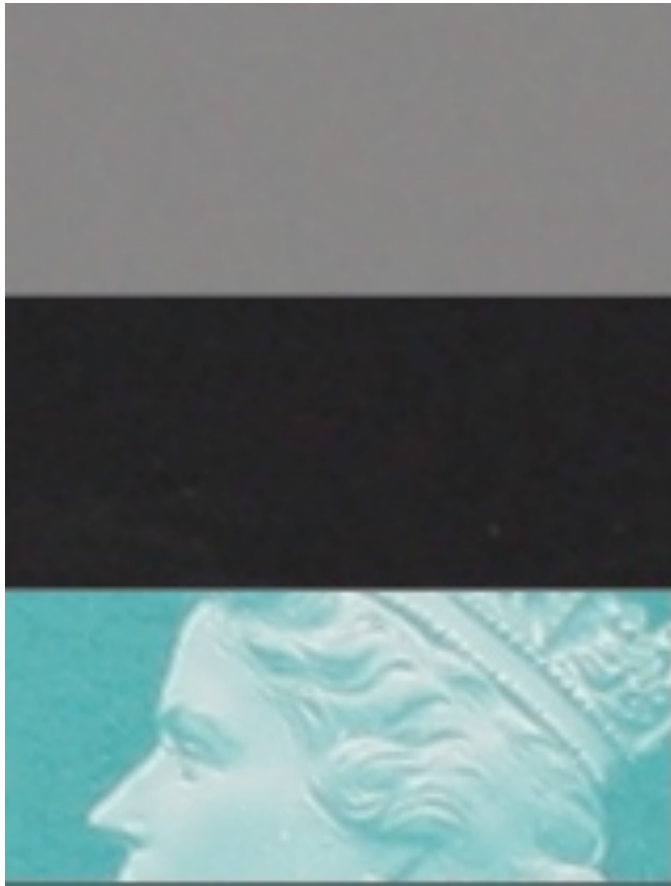


ISO 1600

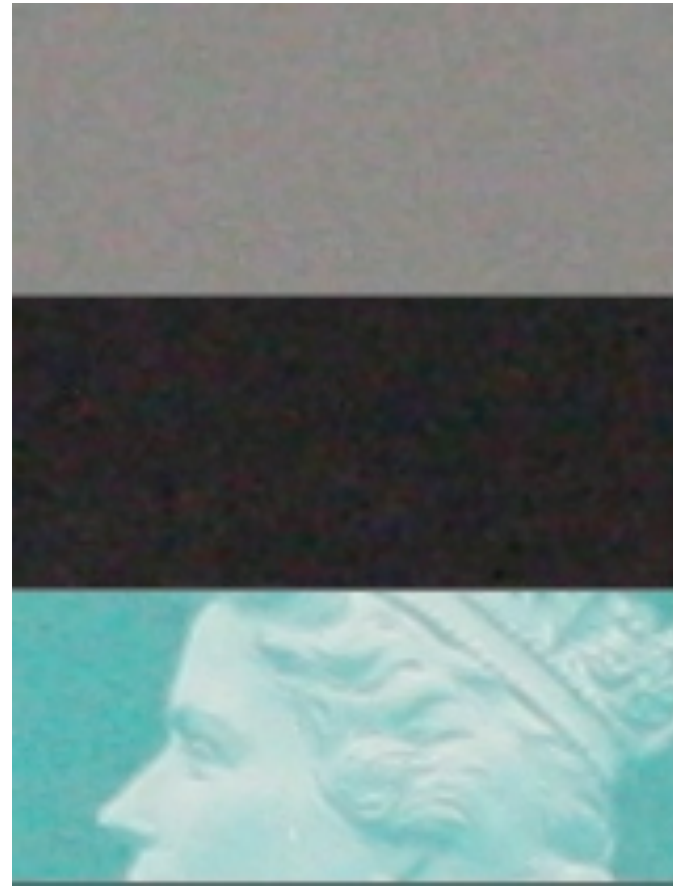
Images from <http://www.dpreview.com/reviews/canonsx100is/page6.asp>

Sensitivity (ISO)

Compact cameras



ISO 100



ISO 1600

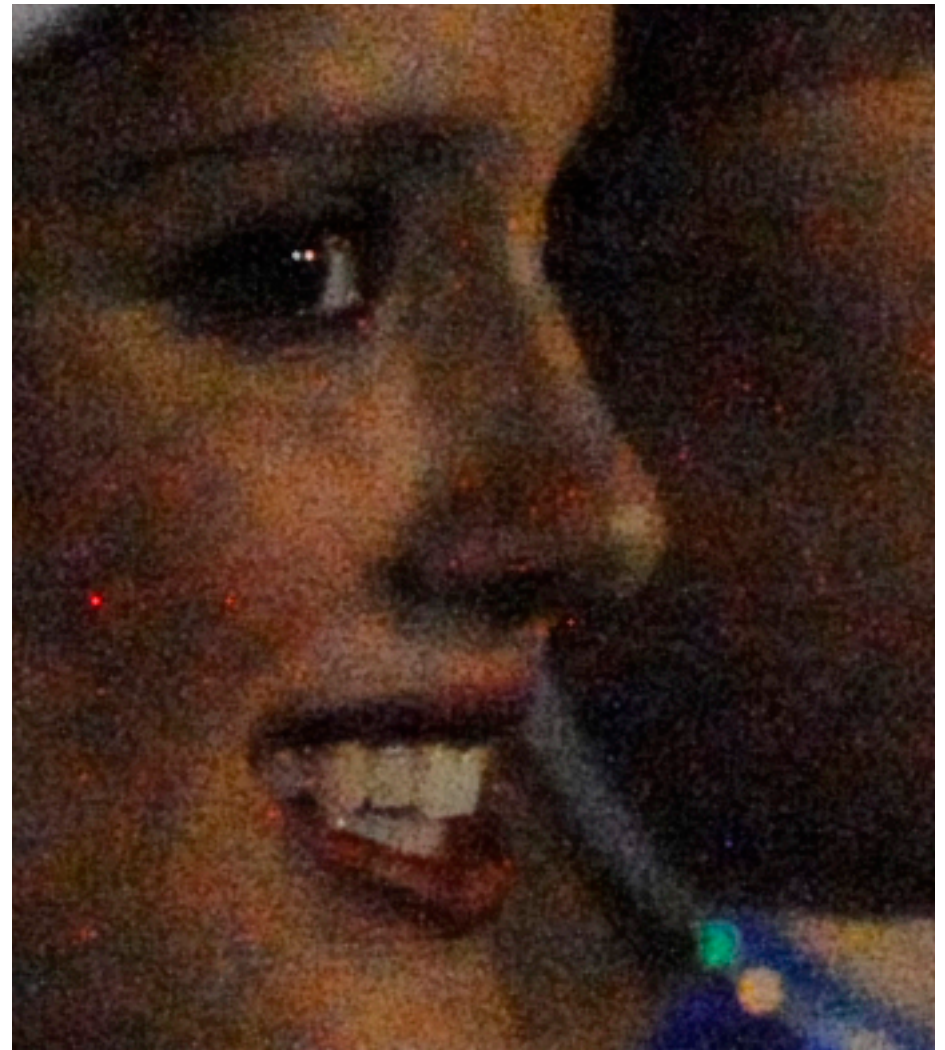
Images from <http://www.dpreview.com/reviews/canoneos40d/page18.asp>

Sensitivity (ISO)

Digital SLRs



ISO 1600 (film)



ISO 25600 (Nikon D3)

Images from http://en.wikipedia.org/wiki/Film_speed and http://www.robgalbraith.com/bins/multi_page.asp?cid=7-8745-9153

Sensitivity (ISO)

Film vs Digital



846s, ISO 400, f/8

Photo by Dan Armendariz, 2007

Sensitivity (ISO)

Combined with Shutter Speed



336s, ISO 800, f/8 (left) 846s, ISO 400, f/8 (right)



Photos by Dan Armendariz, 2007

Sensitivity (ISO)

Combined with Shutter Speed

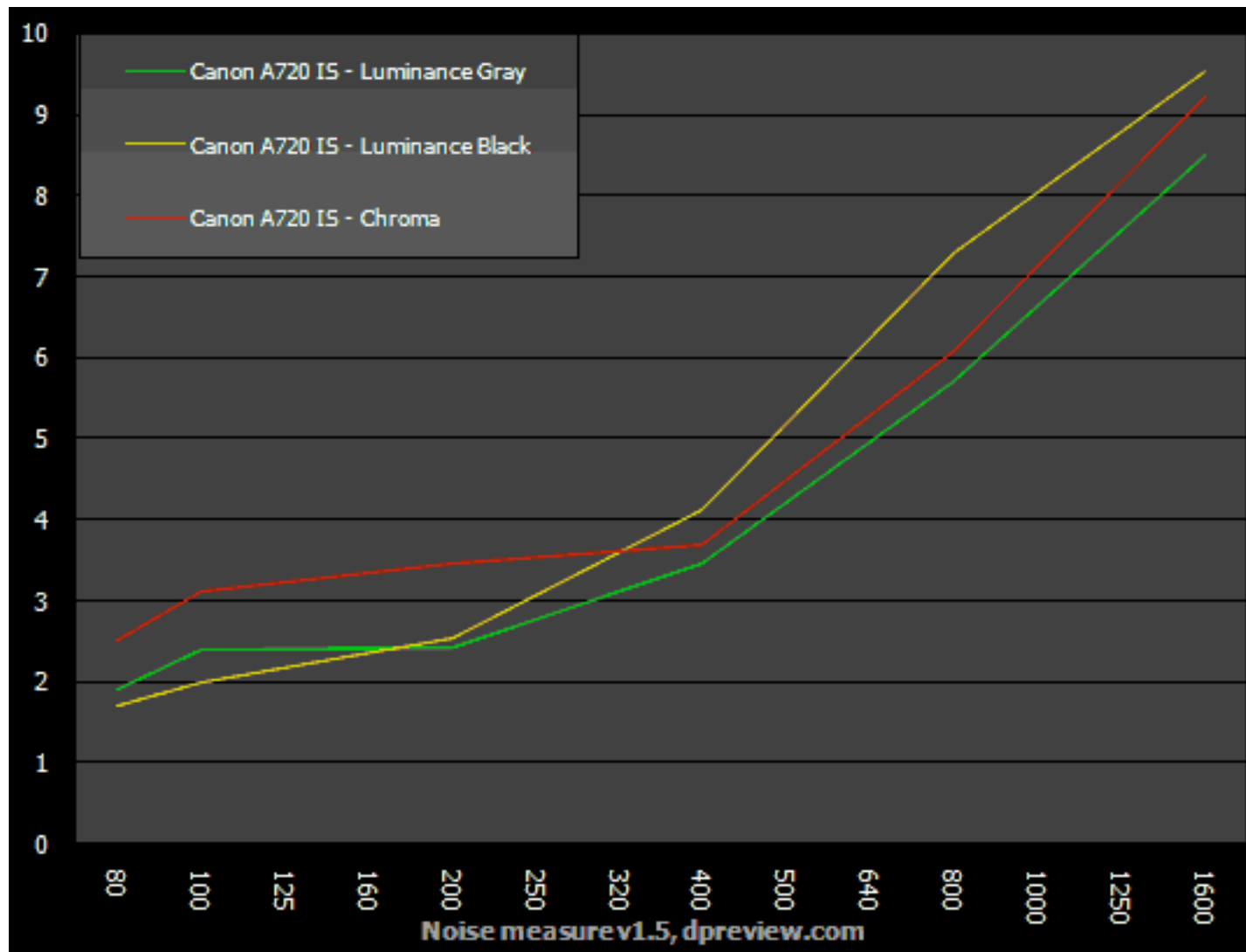
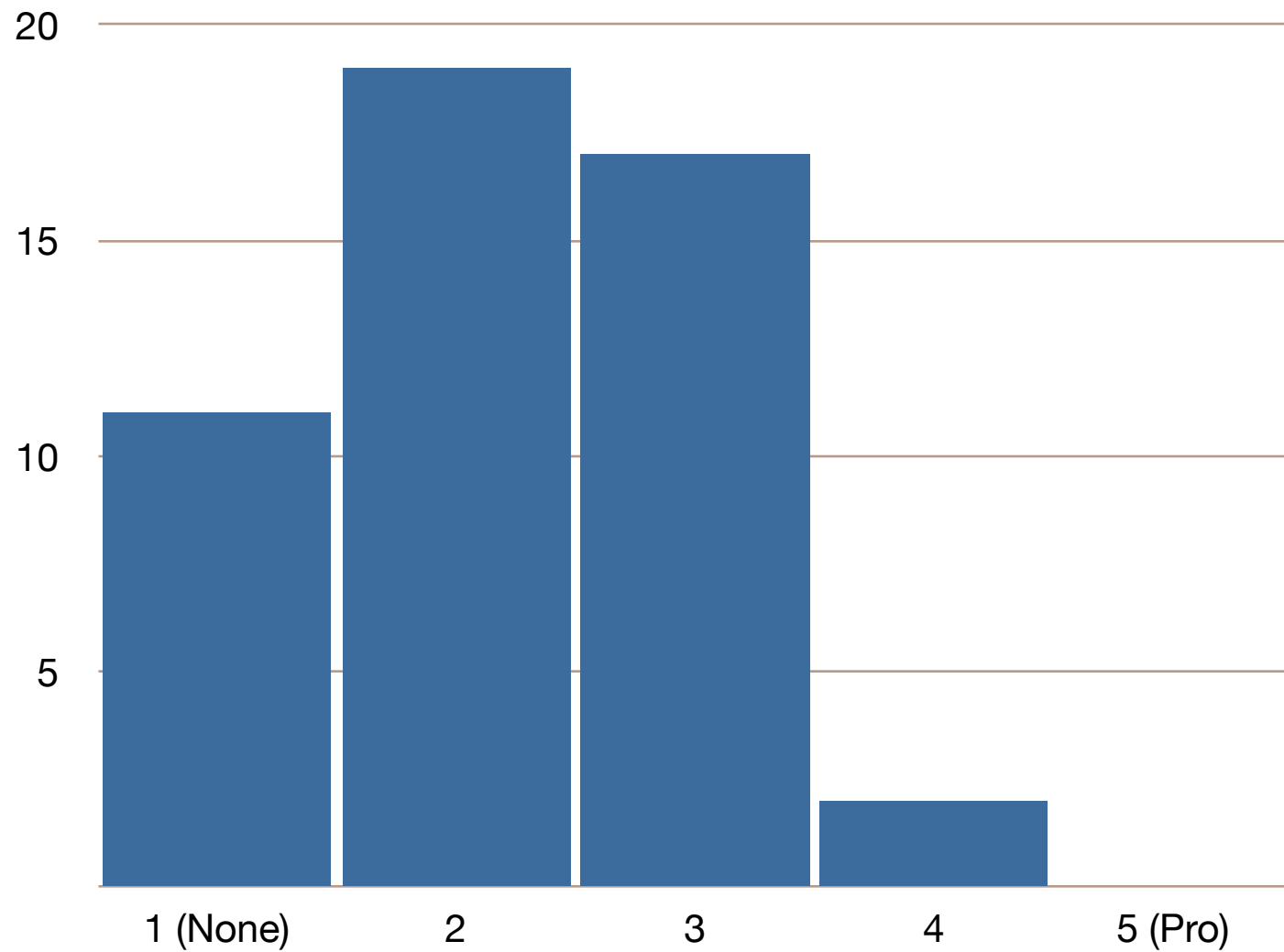


Image from <http://www.dpreview.com/reviews/canona720is/page4.asp>

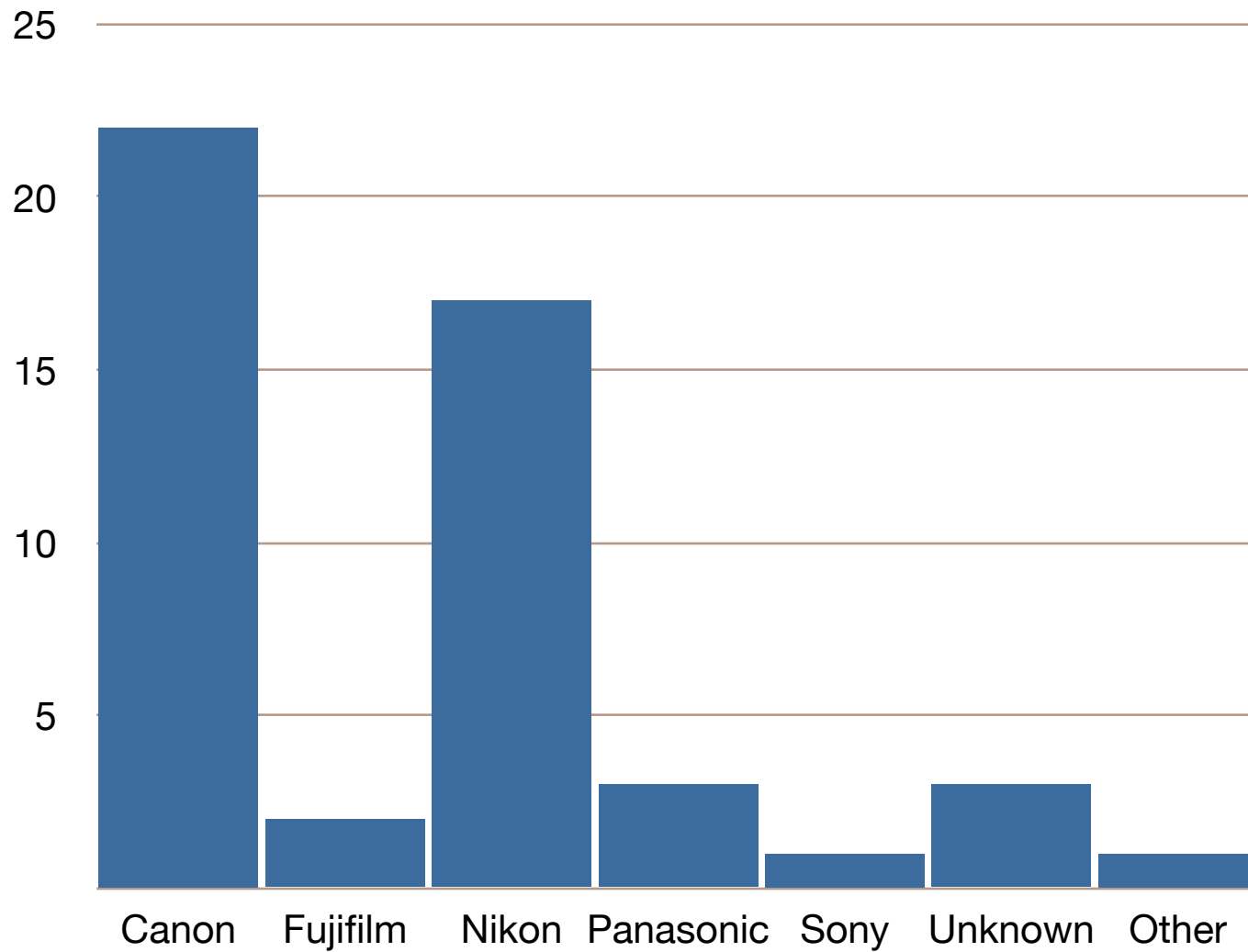
Sensitivity (ISO)

Noise measurements



Setup Survey

Self-reported photographic skill



Setup Survey

Camera brands



Image from <http://www.dpreview.com/reviews/panasonicfz8/>

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Cameras



Image adapted from <http://www.dpreview.com/reviews/canoneos60D/>

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Cameras

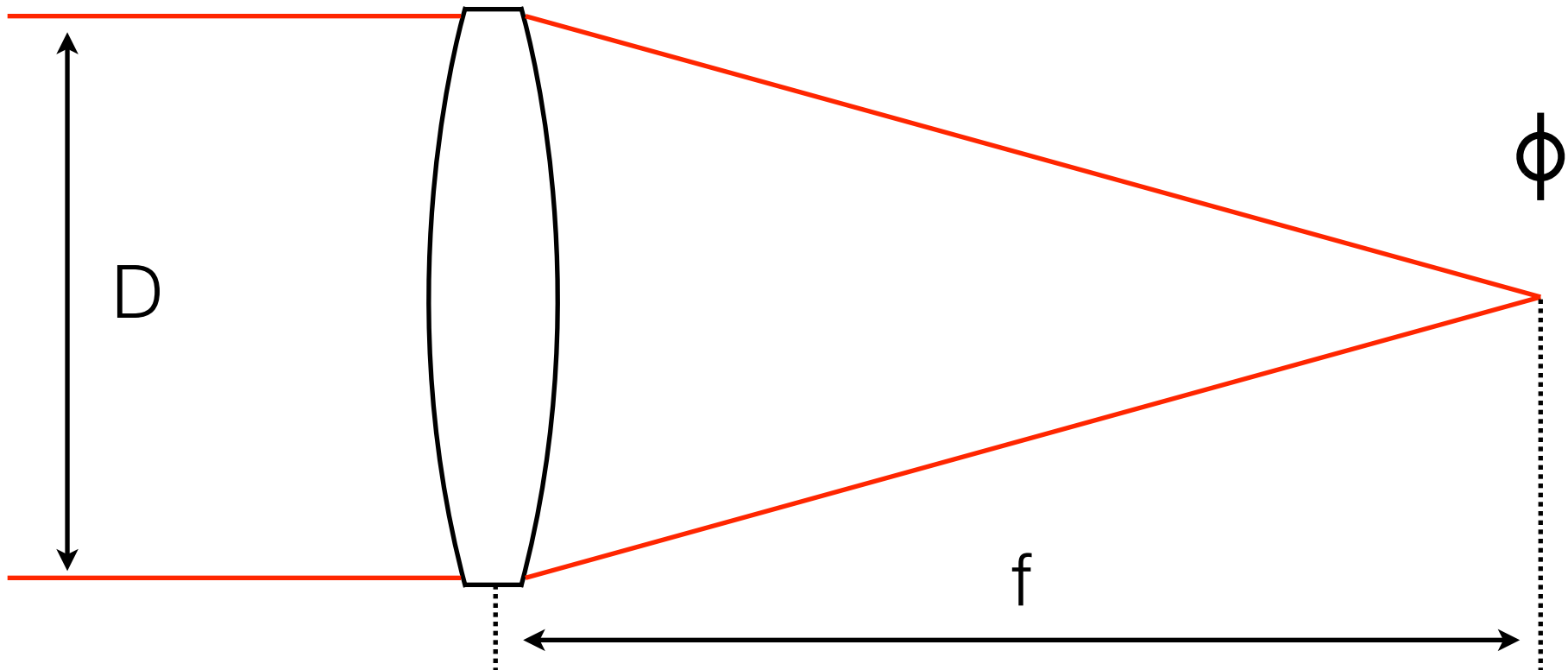
Day	Time	Location
Mondays	7:35 to 9:35	Sever 206
Wednesdays	5:30 to 7:30	Online

<http://cse7.org/sections>



Exposure

Aperture



Aperture

$$\text{F-number} = f/D$$



1/6s, ISO 100, f/16

Photo by Dan Armendariz, 2005

Aperture

Don't worry!



Aperture

Pinhole math

Aperture

Background blur



Photo by Dan Armendariz, 2004
1/1250s, ISO 200, f/2.8



10s, ISO 100, f/8

Photo by Dan Armendariz, 2004

Aperture

Making everything sharp

- Amount of available light
- Shutter speed
- Sensitivity (ISO)
- Aperture

Exposure

The Big 4

Bright Sunny Day:
Shutter Speed: 1/100s
Sensitivity: ISO 100
Aperture: $f/16$

Exposure

Sunny 16 Rule

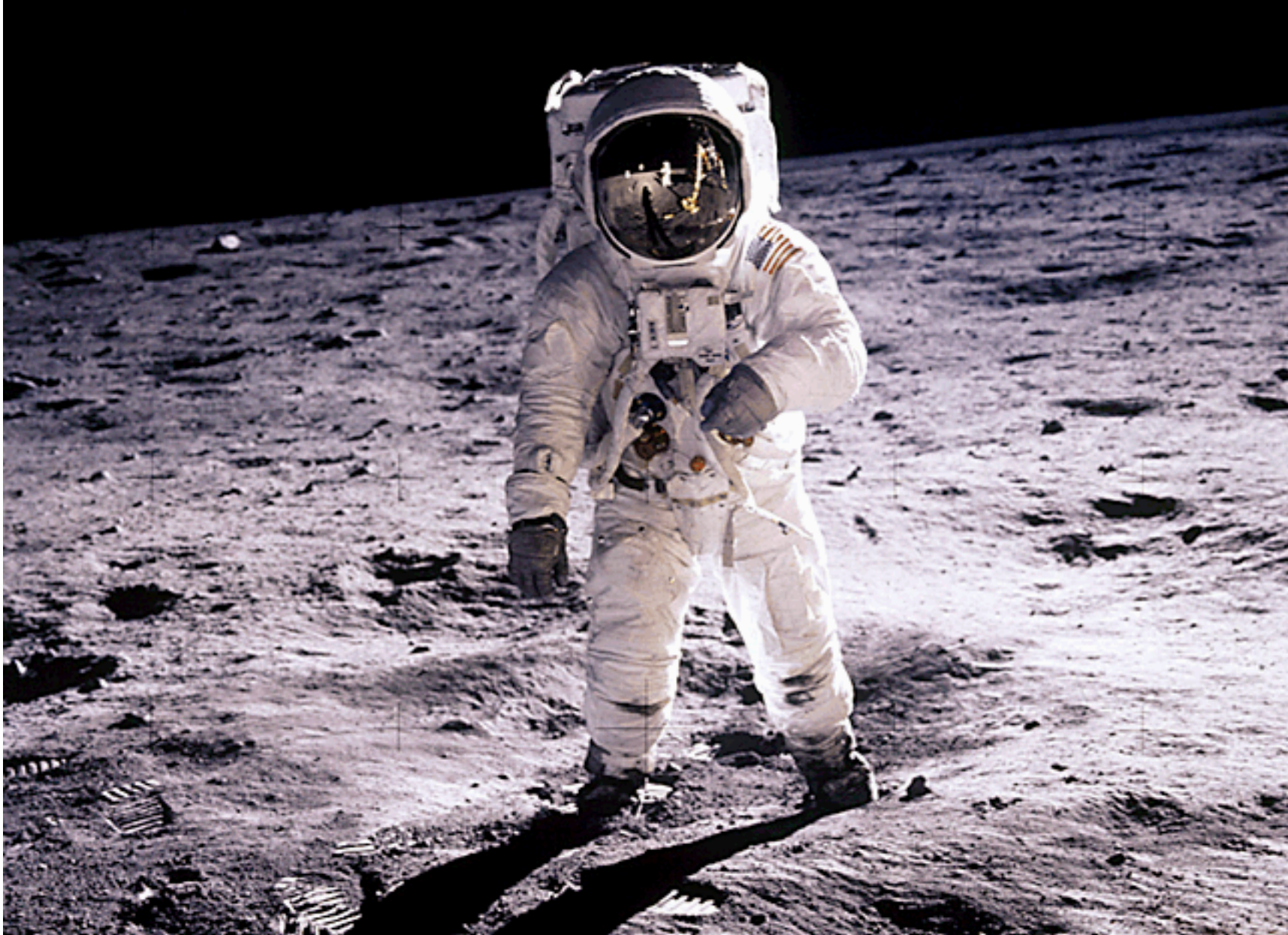


Image from http://nssdc.gsfc.nasa.gov/imgcat/html/object_page/a11_h_40_5903.html

Exposure

Moon landings



Image from http://www.jaxa.jp/press/2007/11/20071113_kaguya_e.html

Exposure

Moon landings

Exposure

Over-exposure



Photo by Dan Armendariz, 2004
1/40s, ISO 200, f/2.8



1/1000s, ISO 200, f/4.5

Photo by Dan Armendariz, 2006

Exposure

Under-exposure



1/80s, ISO 400, f/10

Photo by Dan Armendariz, 2006

Exposure

Worse: Over- & Under-exposure

Exposure

Intentional under-exposure



Photo by Dan Armendariz, 2005
8.0s, ISO 100, f/8

Exposure

Intentional over-exposure



Photo by Dan Armendariz, 2005
15.0s, ISO 100, f/16

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