

The Digital SLR Camera

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Get the Slides

<http://bit.ly/DSLRBasics>

Week 1

Why are we here?

**Is Your Camera in
“Automatic” Mode?**

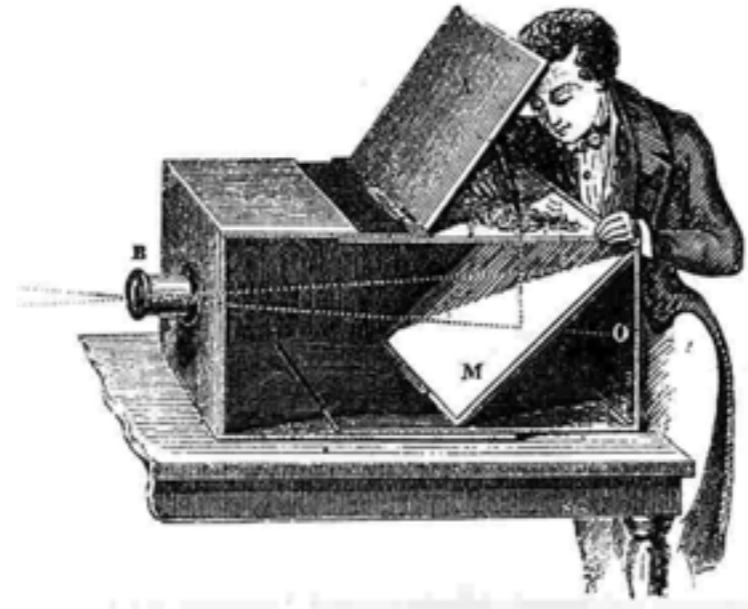
Field Trips

How Did We Get Here?

Some History



17th Century



1850

http://en.wikipedia.org/wiki/History_of_the_camera



1900



1910

http://en.wikipedia.org/wiki/History_of_the_camera



1933



1959



1991

http://en.wikipedia.org/wiki/File:Early_digital!.jpg

http://en.wikipedia.org/wiki/History_of_the_camera



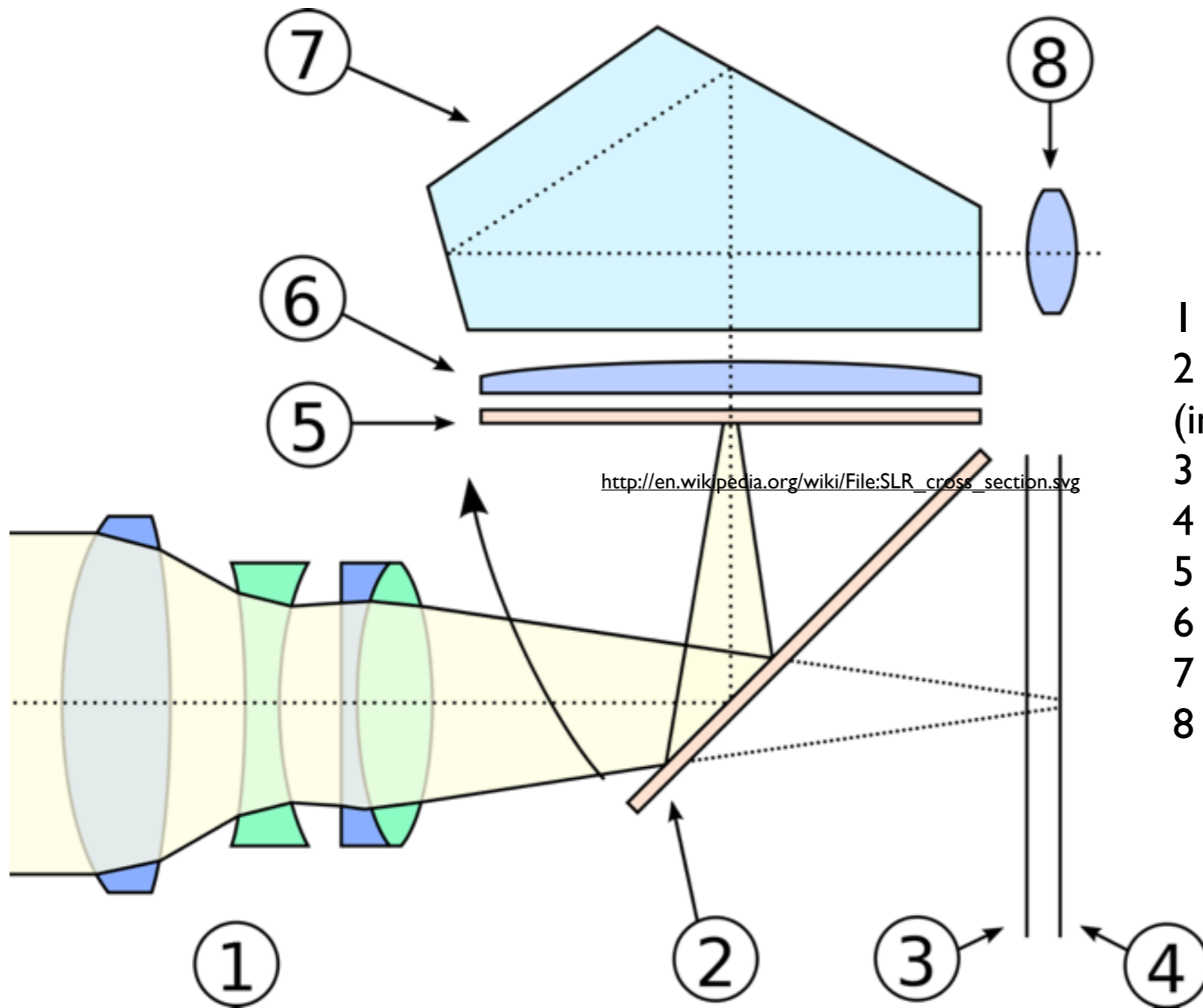
1999

DSLR

Digital
Single
Lense
Reflex

The Camera

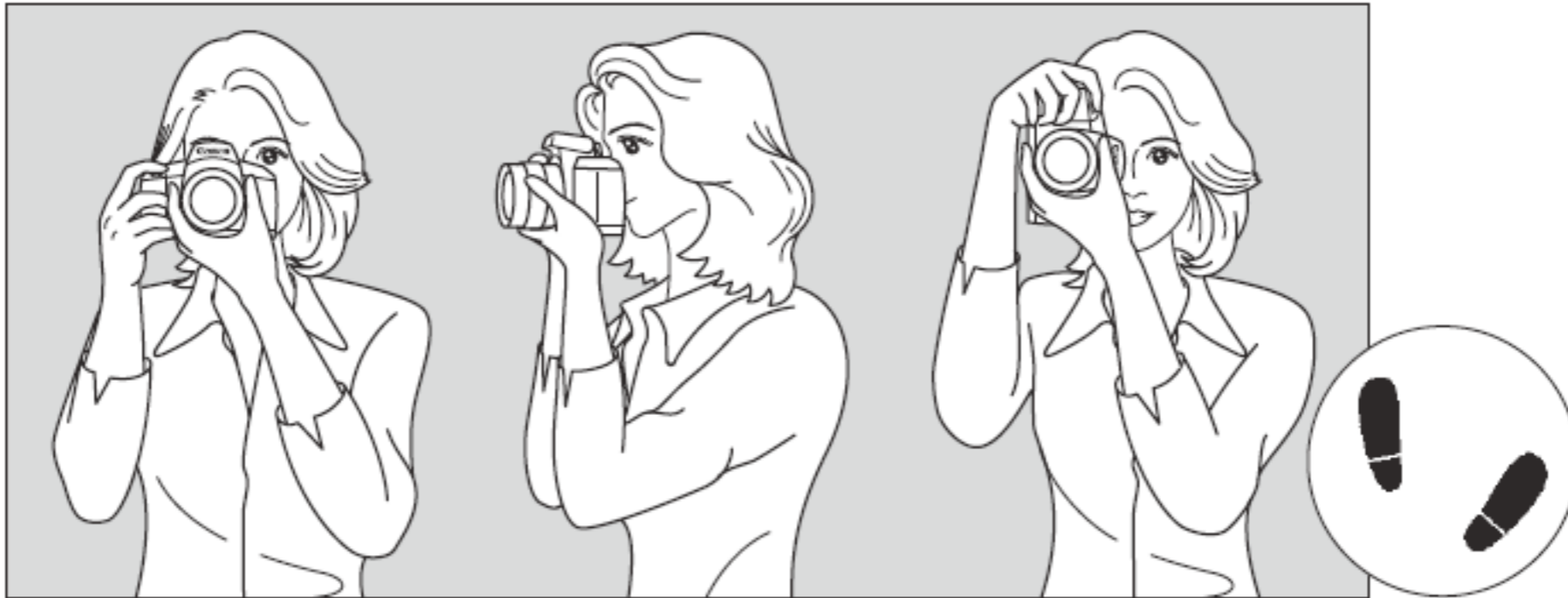
- Body
- Lens
- Battery
- Displays
- Controls



- 1 - Lens assembly
- 2 - Mirror in down position (image visible in viewfinder)
- 3 - Focal-plane shutter
- 4 - Sensor/Film
- 5 - Focusing screen
- 6 - Condensing lens
- 7 - Pentaprism or Pentamirror
- 8 - Eyepiece

Turn it on!

Holding the Camera



Horizontal shooting

Vertical shooting

Landscape / Portrait

- There are two ways to hold the camera:



Other Stuff

- Battery Charger
- Spare Battery
- Memory Card Reader
- Filters
- Cleaning Supplies

Memory Card Types

- Secure Digital (SD & SDHC)
- SDXC
- Mini and Micro SD
- Compact Flash (CF & UDMA)
- XD (Olympus and Fuji)
- Memory Stick (Sony)

Number of Pictures

Megapixels	File size (MB)	1GB	2GB	4GB	8GB	16GB	32GB	64GB	128GB
4MP	1.2	715	1430	2861	5722	11444	22888	45776	91552
5MP	1.5	572	1144	2288	4577	9155	18310	36620	73240
6MP	1.8	476	953	1907	3814	7629	15258	30516	61032
7MP	2.1	408	817	1634	3269	6539	13078	26156	52312
8MP	2.4	357	715	1430	2861	5722	11444	22888	45776
10MP	3.0	286	572	1144	2288	4577	9155	18310	36620
12MP	3.6	238	476	953	1907	3814	7629	15258	30516
14MP	4.2	204	408	817	1634	3269	6539	13078	26156
16MP	4.8	178	357	715	1430	2861	5722	11444	22888
22MP	6.6	130	260	520	1040	2080	4161	8322	16644

**Your Most Important
Tool!**

Introduction

Getting to Know the Camera

Take a few moments to familiarize yourself with camera controls and displays. You may find it helpful to bookmark this section and refer to it as you read through the rest of the manual.

The Camera Body

1 Mode dial.....3	12 Built-in flash.....47	25 Accessory shoe (for optional flash units).....172
2 Eyelet for camera strap	13 Fn button	26 Connector for external microphone.....91, 177
3 i (information) button.... 6, 85	Flash mode.....47	27 USB and A/V connector
4 AE-L/AF-ON button	Flash compensation.....66	Connecting to a computer.....112
Exposure compensation...64	14 Speaker.....92	Connecting to a printer.....114
Adjusting aperture.....57	15 Focal plane mark (-).....43	Connecting to a TV.....122
Flash compensation.....66	16 Eyelet for camera strap	28 HDMI mini-pin connector.....123
5 Shutter-release button.....24	17 Microphone.....88	29 Accessory terminal.....177
6 Power switch.....2	18 Connector cover	
7 Movie-record button.....88	19 Fn button	
8 AF-assist illuminator.....37	Using the Fn button....8, 143	
Self-timer lamp.....33	20 Mounting mark.....14	
Red-eye reduction lamp....49	21 Lens release button.....15	
9 Infrared receiver (front).....33	22 Mirror.....182	
10 Body cap	23 Lens mount.....43	
11 CPU contacts	24 Accessory shoe cover.....172	

Nomenclature

For detailed information, reference page numbers are provided in parentheses (p.**).

- <WB> Metering mode selection/White balance selection button (p.92/67)
- <AF-DRIVE> AF mode selection/Drive mode selection button (p.76/81)
- <ISO> ISO speed set/Flash exposure compensation button (p.59/101)
- Main Dial (p.33)
- Shutter button (p.32)
- Flash button (p.99)
- LCD panel illumination button (p.96)
- LCD panel (p.18)
- EF Lens mount index (p.30)
- Built-in flash/AF-assist beam (p.99/79)
- EF-S Lens mount index (p.30)
- Flash-sync contacts
- Hot shoe (p.105)
- Mode Dial (p.20)
- Strap mount (p.23)
- Strap mount (p.23)
- Terminal cover
- Depth-of-field preview button (p.89)
- Lens release button (p.30)
- DC coupler cord hole (p.170)
- Mirror (p.98, 131)
- Contacts (p.13)
- Lens lock pin
- Lens mount
- Video OUT terminal (p.122)
- PC terminal (p.106)
- Remote control terminal (N3 type) (p.97)
- Digital terminal (p.134, 148)
- Body cap (p.30)
- Red-eye reduction/Self-timer lamp (p.100/82)
- Grip (Battery compartment)

Exposure

Shutter Speed

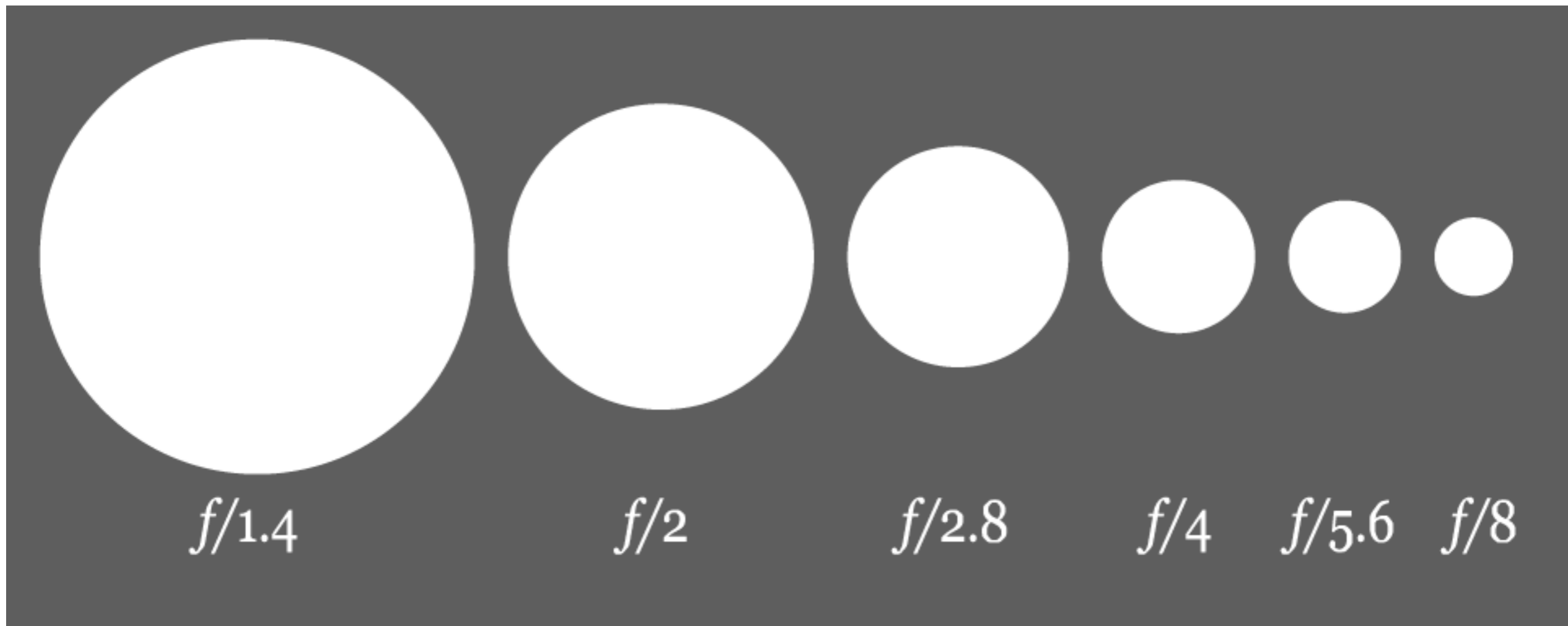
Exposure Time in Seconds

1	1/2	1/4	1/8	1/15	1/30	1/60
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1/125	1/250	1/500	1/1000	1/2000	1/4000	1/8000
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Think “Half”

Aperture

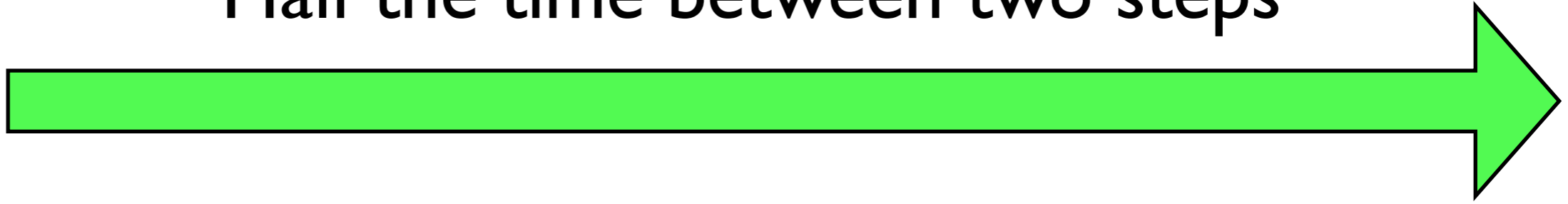


1	1.4	2	2.8	4	5.6	8
---	-----	---	-----	---	-----	---

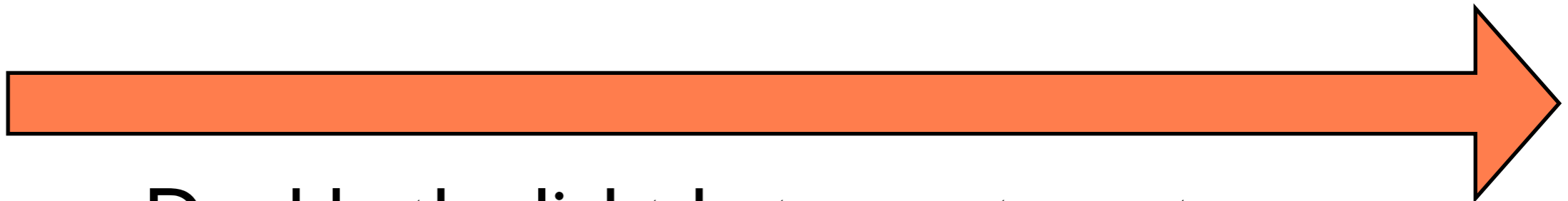
11	16	22	32	45	64
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Think “Half”

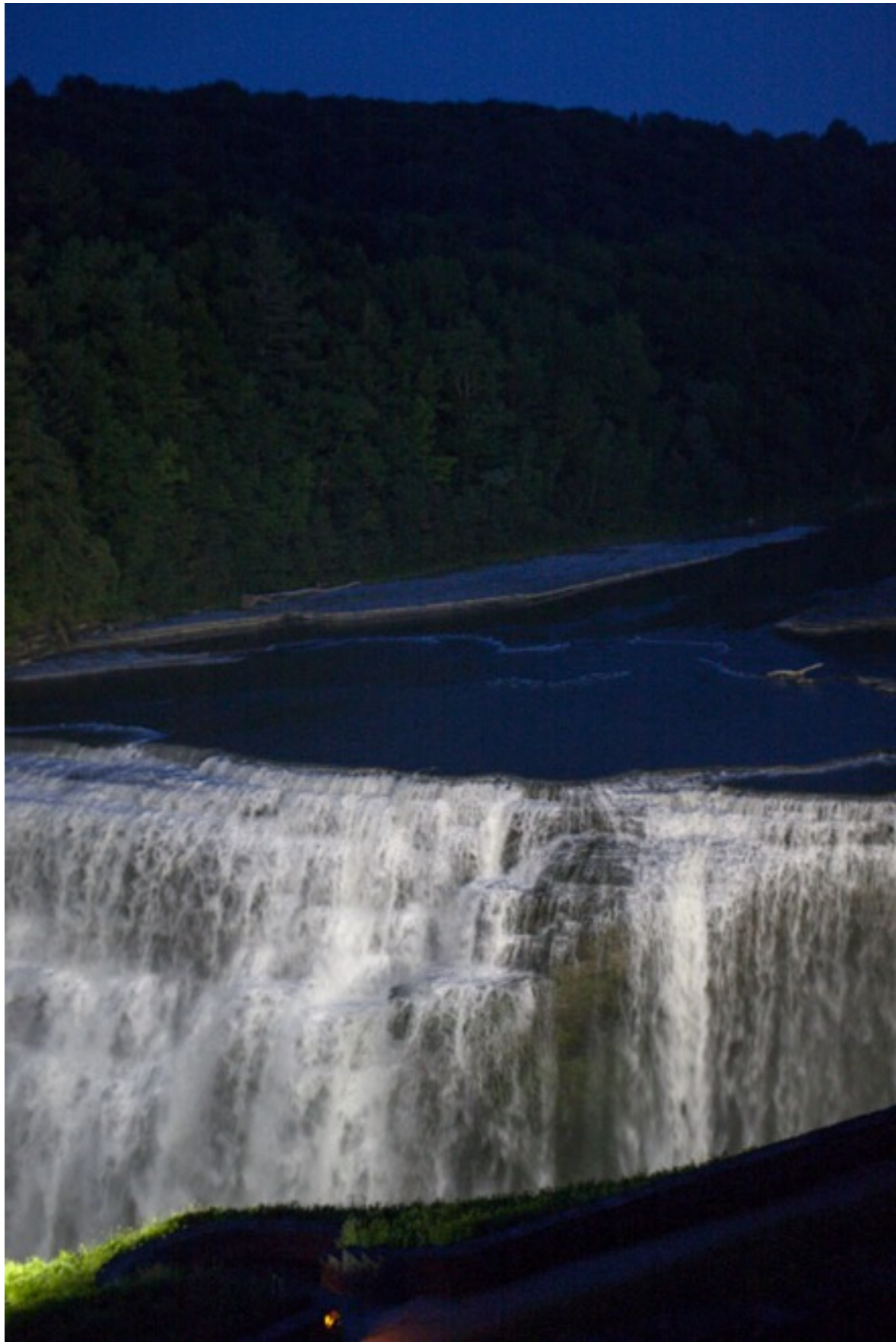
Half the time between two steps



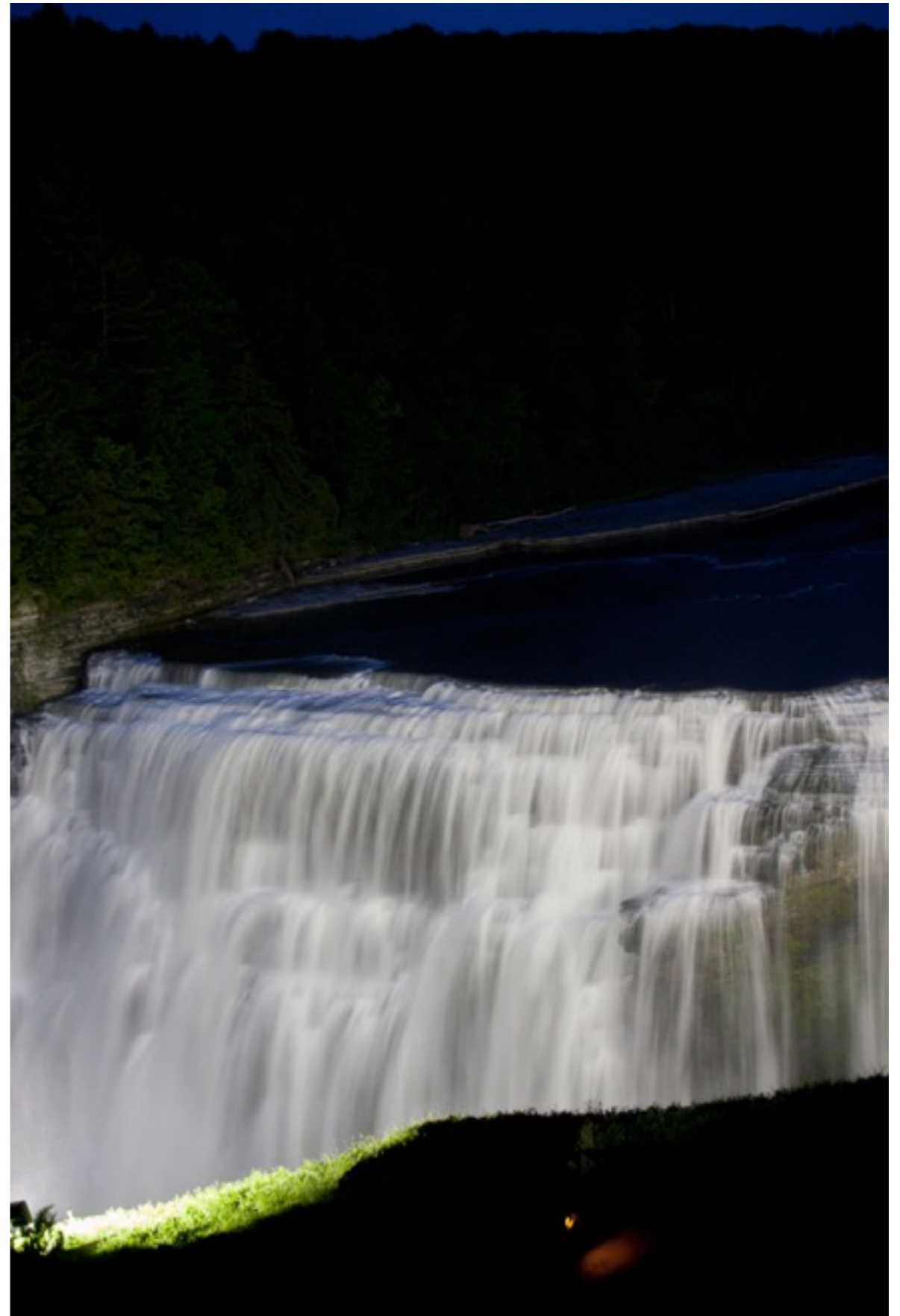
Shutter Speed	1/15	1/30	1/60	1/125	1/250	1/500	1/1000
Aperture	22	16	11	8	5.6	4	2.8



Double the light between two steps



1/30s f/1.4



0.3s f/4.0

Exposure Modes

- Fully Automatic
- Portrait
- Landscape
- Sport
- Close-up
- Night
- ...

Exposure Modes

- Program
- Aperture Priority
- Shutter Priority
- Manual

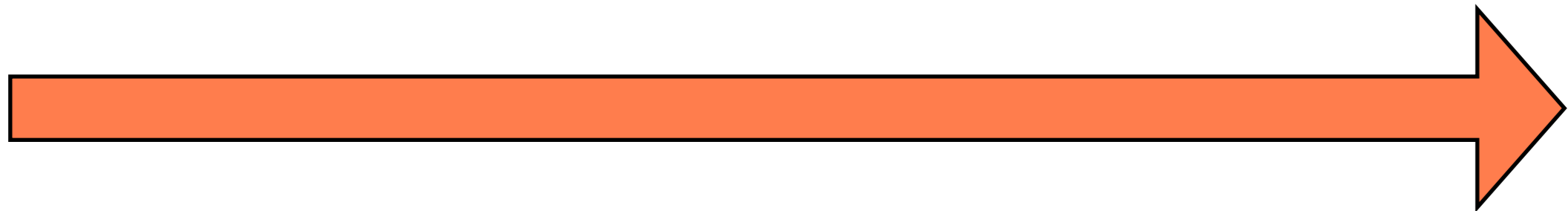
ISO

- Historically the sensitivity of film
- Now just another part in the problem to determine the right exposure...
- Sensor sensitivity

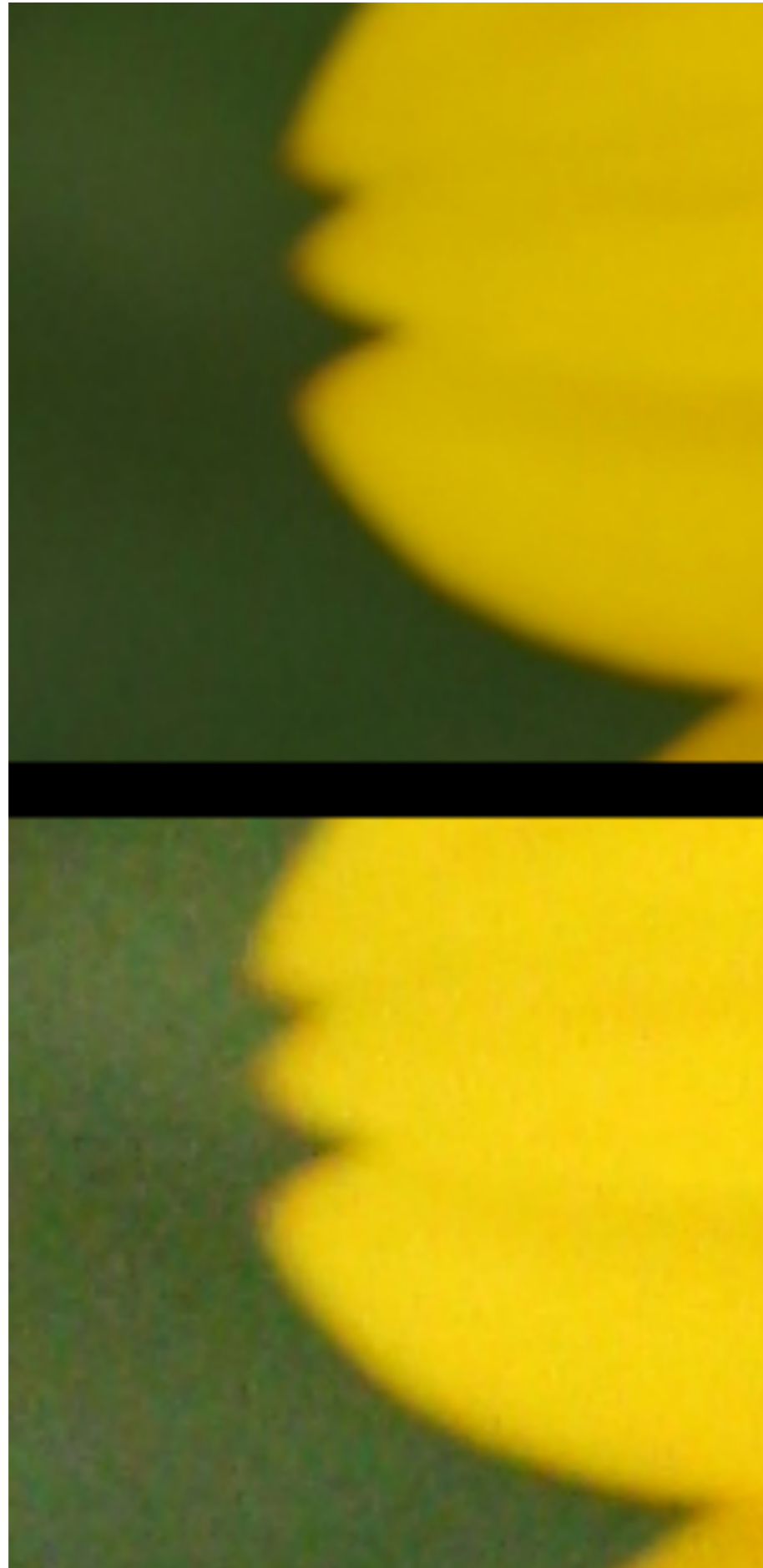
ISO Settings

100	200	400	800	1600	3200
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Think “Half”



Each step doubles the sensitivity to light



ISO 100, $f/5.6$, $1/350$ s

ISO 1600, $f/5.6$, $1/4000$ s

Assignment 1

- Pick as many different lighting conditions as possible (full sunshine, overcast, sunset, night, artificial lighting, ...) and take a picture of the same scene with four different non-manual exposure modes (Automatic, program, shutter priority, aperture priority)

Assignment 2

- Pick a low-light condition (night time, inside with the blinds closed, ...) and take pictures of the same scene with different ISO settings (lowest ISO, medium and highest ISO setting available).