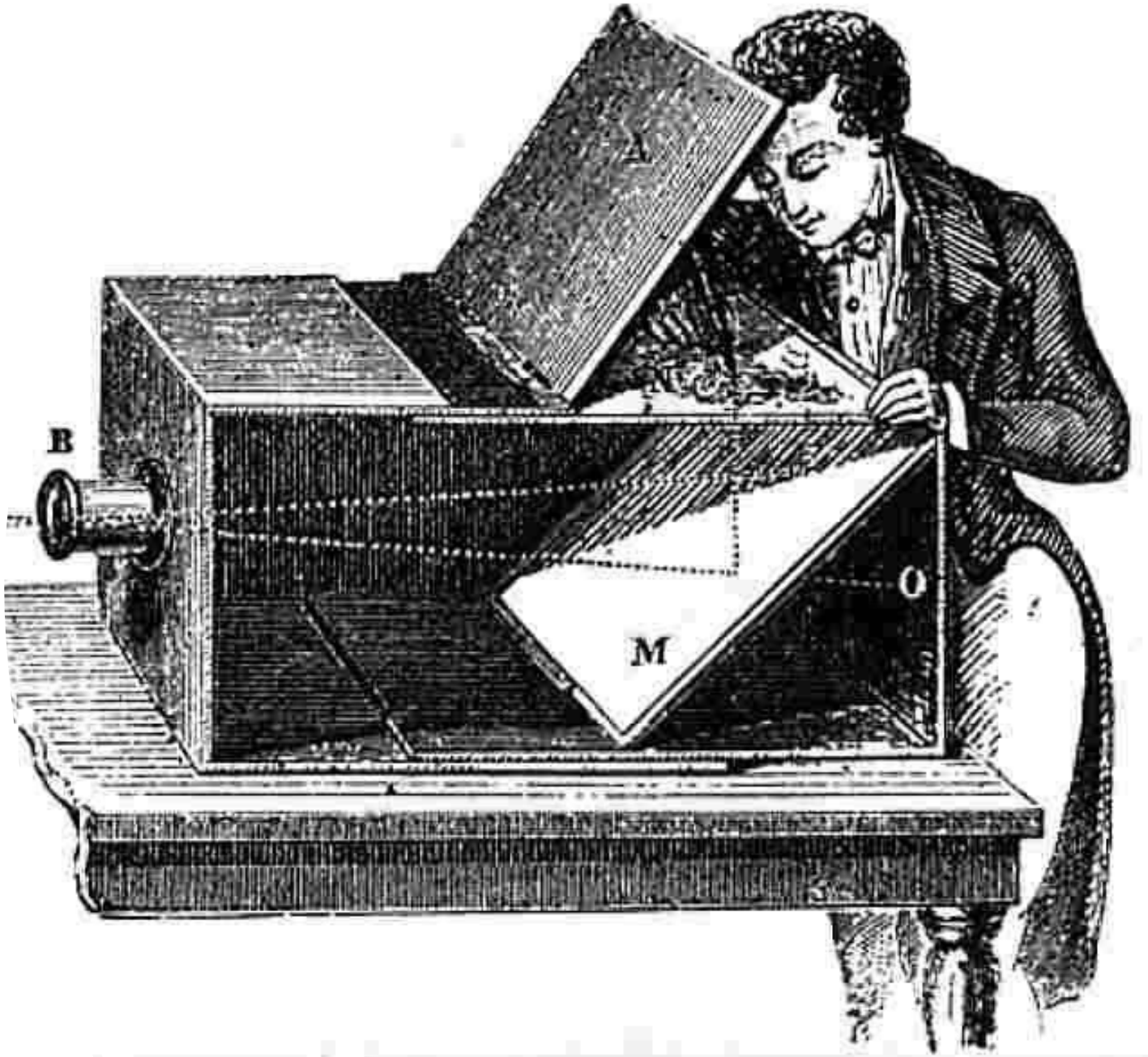
THE BASICS OF A DSLR CAMERA

Introduction to Photography

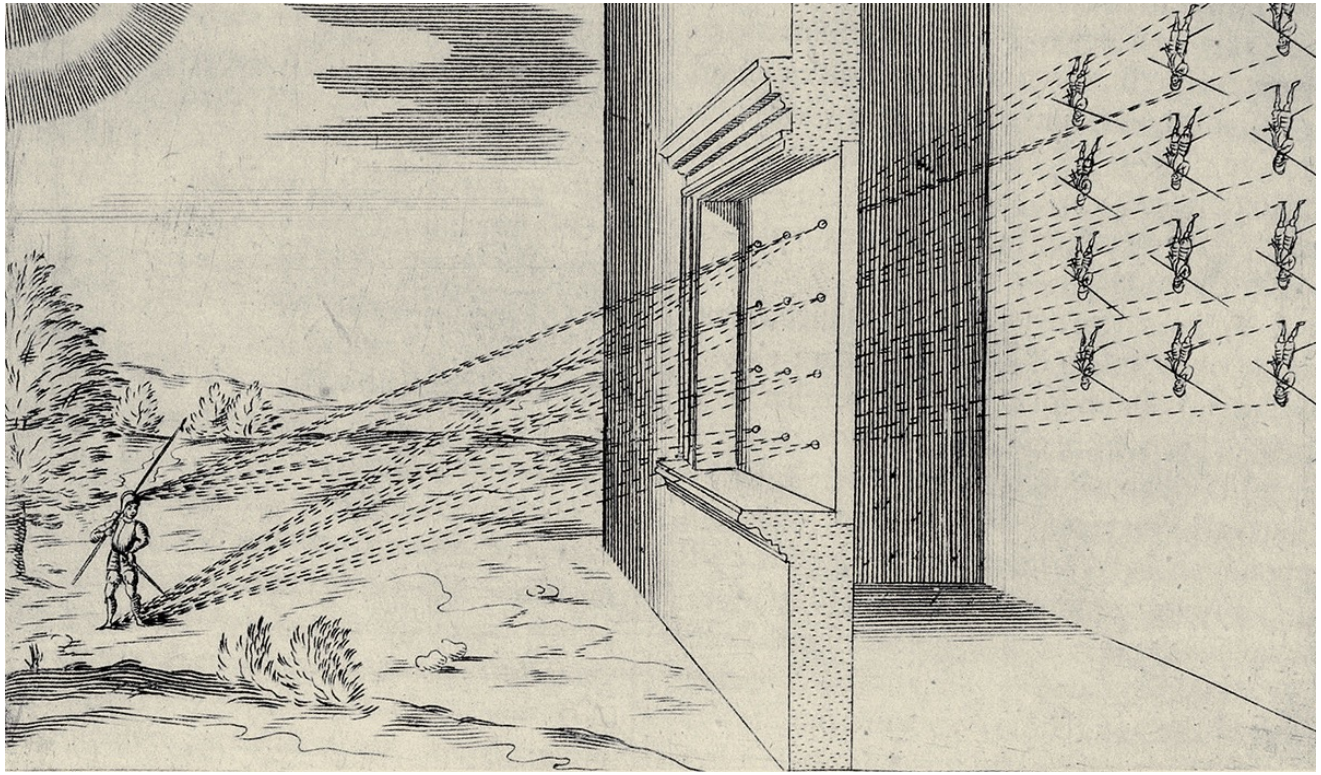
A little bit of history…

- The first “camera” didn’t capture permanent images, it was used as a tool to trace.
- The camera obscura (Latin for dark room) is a natural optical phenomenon that happens when the scene on the other side of a screen is projected through a small hole in the screen and forms a mirror image on the surface opposite the opening.
- The camera obscura can be dated back to 470-391 BC.

https://en.wikipedia.org/wiki/History_of_the_camera#/media/File:Camera_Obscura_box18thCentury.jpg



A little bit of history…



- Forms of camera obscuras were developed and used for years.
- Lenses, shutters, and portable versions were developed to help assist artists in capturing images through projection and tracing.

https://en.wikipedia.org/wiki/Camera_obscura#/media/File:1642_Mario_Bettini_-_Apiaria_universae_philosophiae_mathematica.jpg

A little bit of history…

- The first partially captured photographic image was made around 1816 by Nicephore Niepce, using a camera he constructed and paper coated with silver chloride, a forerunner to film and photo paper.
- Because Niepce didn't know how to remove the unused silver chloride, the image eventually turned completely black.

https://en.wikipedia.org/wiki/Nic%C3%A9phore_Ni%C3%A9pce#/media/File:Joseph_Nic%C3%A9phore_Ni%C3%A9pce.jpg

A little bit of history…

- Niepce continued to experiment with creating photographs and eventually was successful in capturing a permanent image, which is still around today.

https://en.wikipedia.org/wiki/Nic%C3%A9phore_Ni%C3%A9pce#/media/File:Nic%C3%A9phore_Ni%C3%A9pce_Oldest_Photograph_1825.jpg

A little bit of history…

- Cameras continued to develop over the years. The birth of film photography came in 1885 thanks to George Eastman. His first camera was called “Kodak.”
- The original Kodak camera (with some modifications) continued to be manufactured and sold into the 1960’s.

https://en.wikipedia.org/wiki/History_of_the_camera#/media/File:Susse_Fr%C3%A9re_Daguerreotype_camera_1839.jpg

A little bit of history…

- The creation of 35mm film was the next big jump in the development of photography. This allowed cameras to be smaller and more portable.
- The **single-lens reflex (SLR)** camera was developed next, and uses a semi-automatic moving mirror system which permits the photographer to sometimes see exactly what will be captured by the film or digital imaging system, as opposed to pre-SLR cameras where the view through the viewfinder could be significantly different from what was captured on film.35mm
- Most popular and versatile cameras ever. Equipment and films available unrivaled.

https://en.wikipedia.org/wiki/History_of_the_camera#/media/File:Leica-I-1.jpg

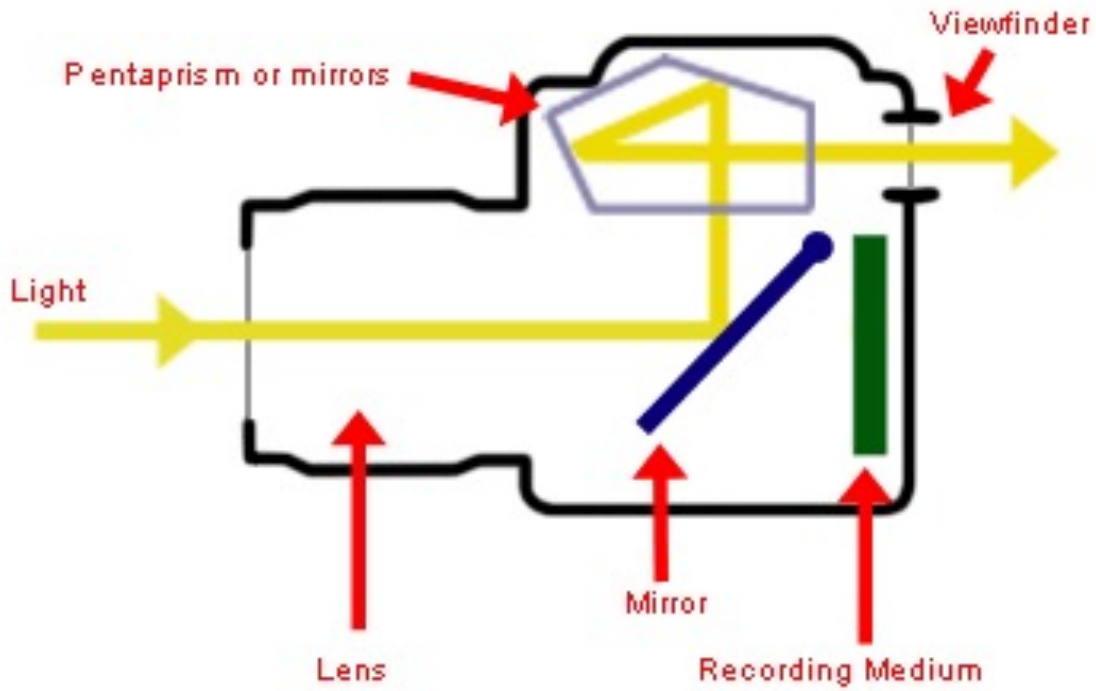


Image courtesy of www.mediacollege.com

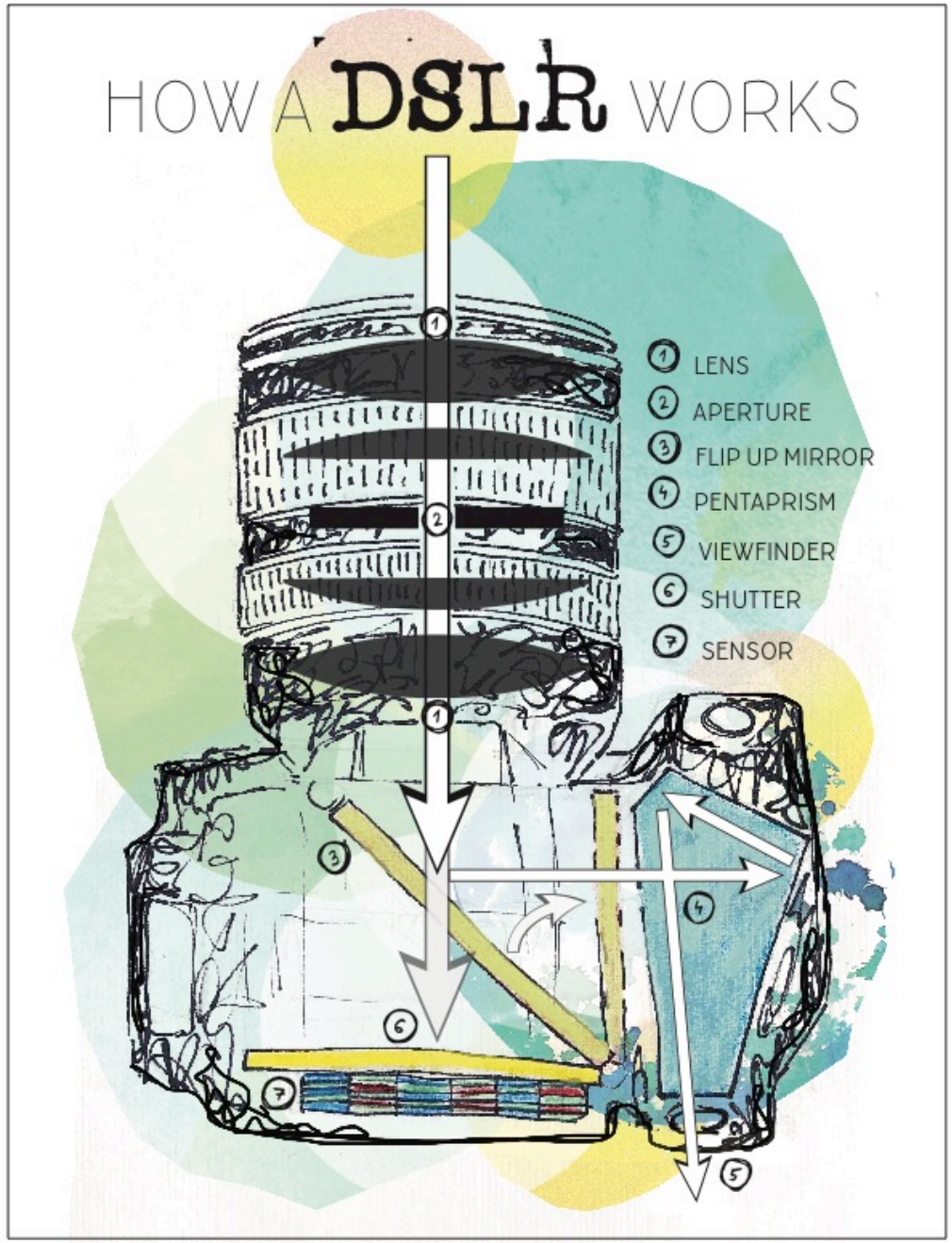
How an SLR Works:

- SLR cameras have a mirror and pentaprism to let you use the lens for composing and focusing.
- The reflection in the mirror allows you to see what the camera is going to capture through the viewfinder, even though the viewfinder is placed higher than the lens.
- SLR cameras are easy to focus.
- The meter inside camera is designed to measure light passing through the lens.
- SLR cameras are heavier and more complex than simple point and shoot cameras.
- They also give more control over the photograph to change focus, depth of field, shutter speed, and more.

https://petapixel.com/2010/08/05/the-worlds-first-digital-camera-by-kodak-and-steve-sasson/

A little bit of history…

- The first digital camera was invented in 1975 by Kodak engineer, Steve Sasson.
- Although digital cameras were around in the 70's, they weren't widely available to the public until the mid 90's as they became smaller and more affordable.
- By the early 2000's digital cameras started outselling film cameras and have continued to do so since.
- By 2010 every smart phone had a digital camera in it.



How a DSLR Works:

- A digital single-lens reflex camera (DSLR) is a digital camera that uses a mechanical mirror system and pentaprism to direct light from the lens to an optical viewfinder on the back of the camera. *Same as an SLR camera.*
- BUT digital technology is used to capture the image rather than film.
- A light-sensitive chip is used instead of chemical impact of light on film.
- Images are made up of Pixels.

Learning to Use a DSLR:

- Before you can jump into using a fully manual camera, you must learn how to use each piece.
- We will start with the APERTURE.
- The aperture has two functions:
  - It controls the amount of light that enters the camera.
  - It controls the depth of field.

Aperture and F Stop

- The lens aperture is specified as an f-number, which is the ratio of focal length to the aperture diameter.
- Most lenses have a set of marked f-stops, that the f number and aperture, can be set to.
- A lower f number means a larger aperture opening, which allows more light to enter the camera.
- The photography term, one f-stop, refers to an approximately 1.41 change in f-number.

APERTURE

smallest

largest

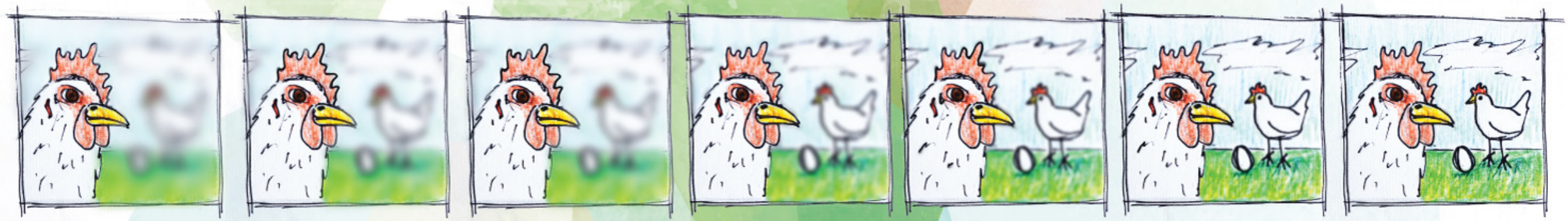
f22 f16 f11 f8 f5.6 f4 f2.8

deepest depth of field

shallowest depth of field

DEPTH OF FIELD

shallowest → *deepest*

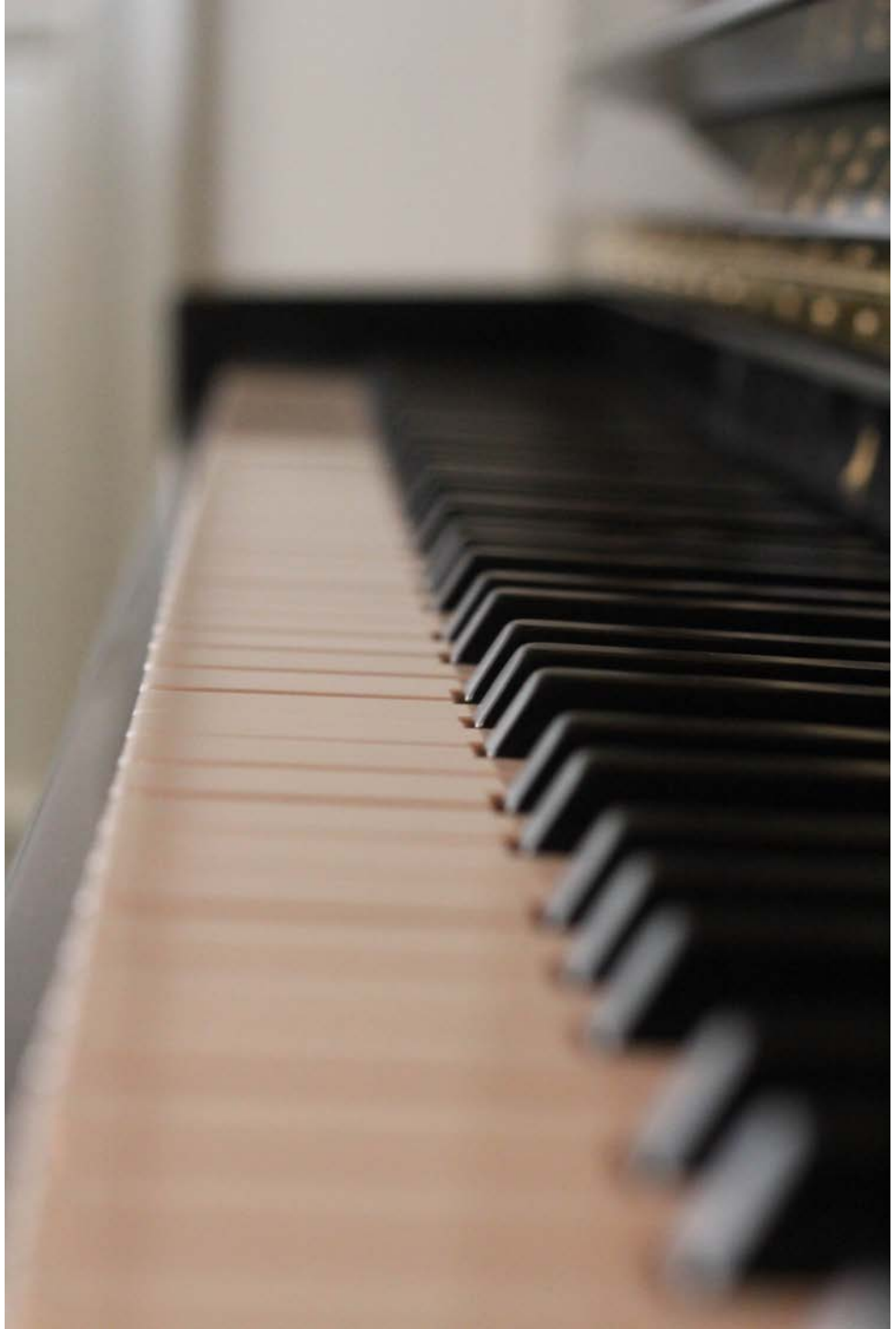


larger aperture opening ← *smaller aperture opening*


f/4


f/4.5

f/5




f/5.6


f/8


f/11


VOLLEYBALL STATE CHAMPIONS
GIRLS BASKETBALL STATE CHAMPIONS
BOYS CROSS COUNTRY STATE CHAMPIONS
FOOTBALL STATE CHAMPIONS
WESLEYAN WOLVES
BOYS TENNIS STATE CHAMPIONS
f/16


f/20

Aperture Fun Facts:

- The focal length of a human eye is about 17.22 mm
- The maximum aperture of a human eye is about f/2.1
- The minimum aperture of a human eye is between f/11 and f/8.6
- The maximum aperture of a cat's eye is about f/0.9

Choose your aperture based on your intention. What do you think the emphasis of each of these photos is?


f/2.8

f/2.8

Your proximity to your subject makes a huge difference in your depth of field.

f/2.8

Exercise

- The optics of your eyes works very similarly to the optics of your lens.
- The closer you physically are (or the more zoomed in) to your subject, the more shallow your depth of field will be.
- Hold one finger up to your eyes. Focus on it as you push your finger toward the wall of the room. What is happening in the background?
- The background will become more clear as your finger (the subject!) is pushed away. This is what happens with lenses!

Practicing using the aperture:

01

Turn your camera to Av (A) on the mode dial.

02

In Av mode, you change the aperture and the camera wlll change the shutter speed.

03

Use the dial to change the aperture.

Your assignment:

- You will experiment with your aperture.
- Select one object to photograph.
- You must take at least 5 different photographs (of the same object) using 5 different apertures.
- Upload and edit your photographs.
- Label your photos with the aperture you used to take it.

Comparing Apertures

How to Download

01

1. Place SD card into the SD card slot.

OR

02

2. Airdrop/Bluetooth

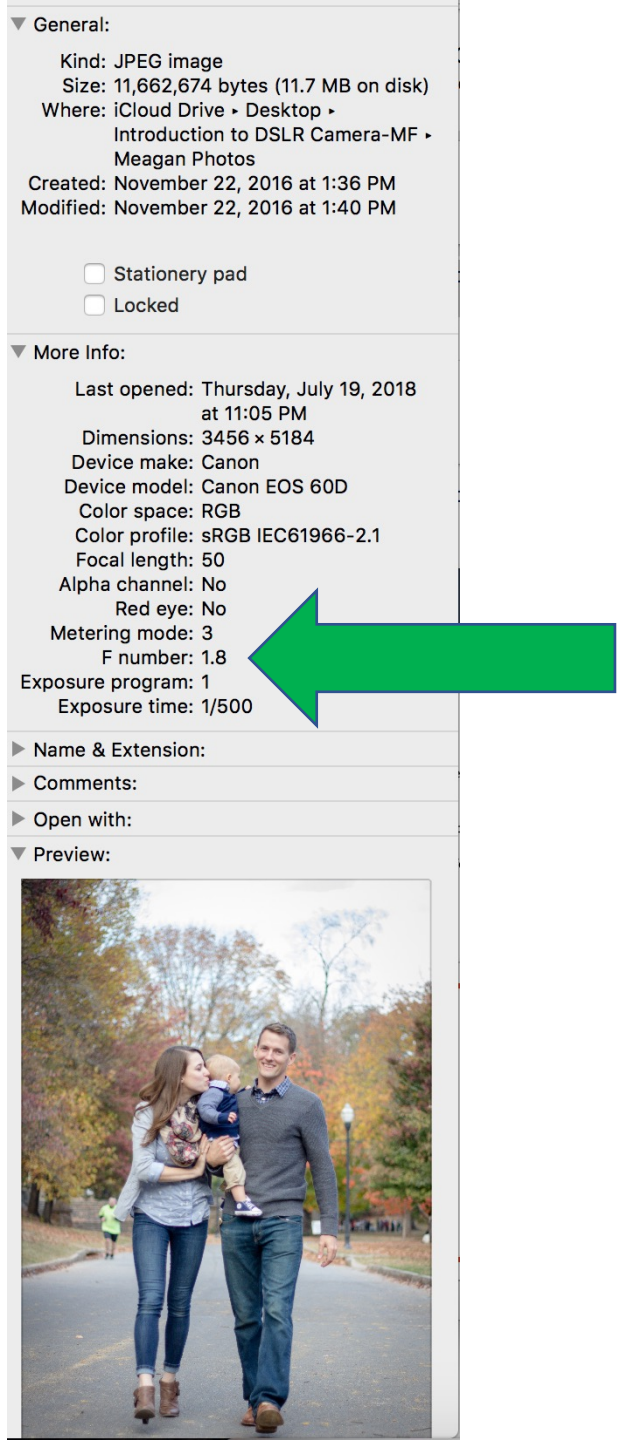
OR

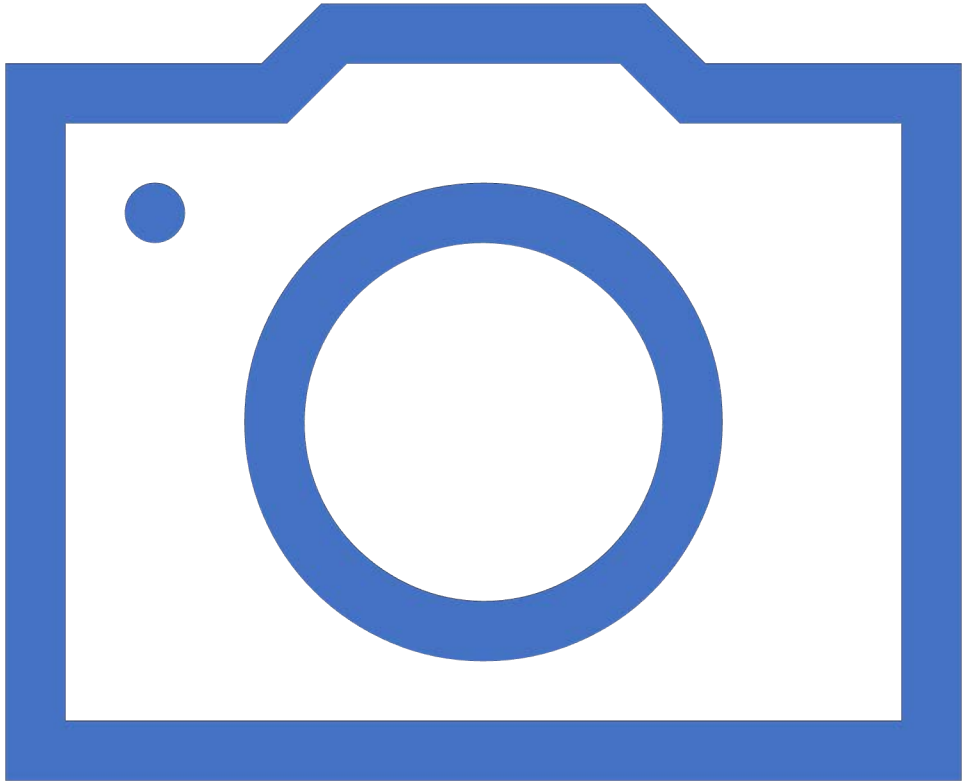
03

3. Use the camera's cord to plug into USB slot on computer.

What was my f-stop?

- Technology generally makes life easier, and it's no different in digital photography.
- Rather than relying on note taking as you capture your pictures, check your metadata after uploading your picture to determine the f-stop.
- All you have to do is:
  - Download your picture to your computer.
  - Right click on your picture and select "Get Info," click the arrow for "more info."
  - The f-stop number is listed here.
  - *Finding metadata may vary slightly based on the computer you are using.*





Reminders:

- Set your camera to Av/A mode, this gives you control over the aperture settings and the camera takes care of the rest.
- Allow enough time to return to class to upload your photos.
- Check your metadata to find out your f-stop.
- Label your photograph as soon as you upload it so you don’t forget which aperture setting was used for which photo.

THE END