What is EXACTLY Photography?

Let’s learn the basics

Photography

Comes from Ancient Greek

phos = light

graphos = draw

Literally: To draw with light

Cameras draw with light? How?

- The light enters the lens, bounces off a series of mirrors, and then exits through the view finder

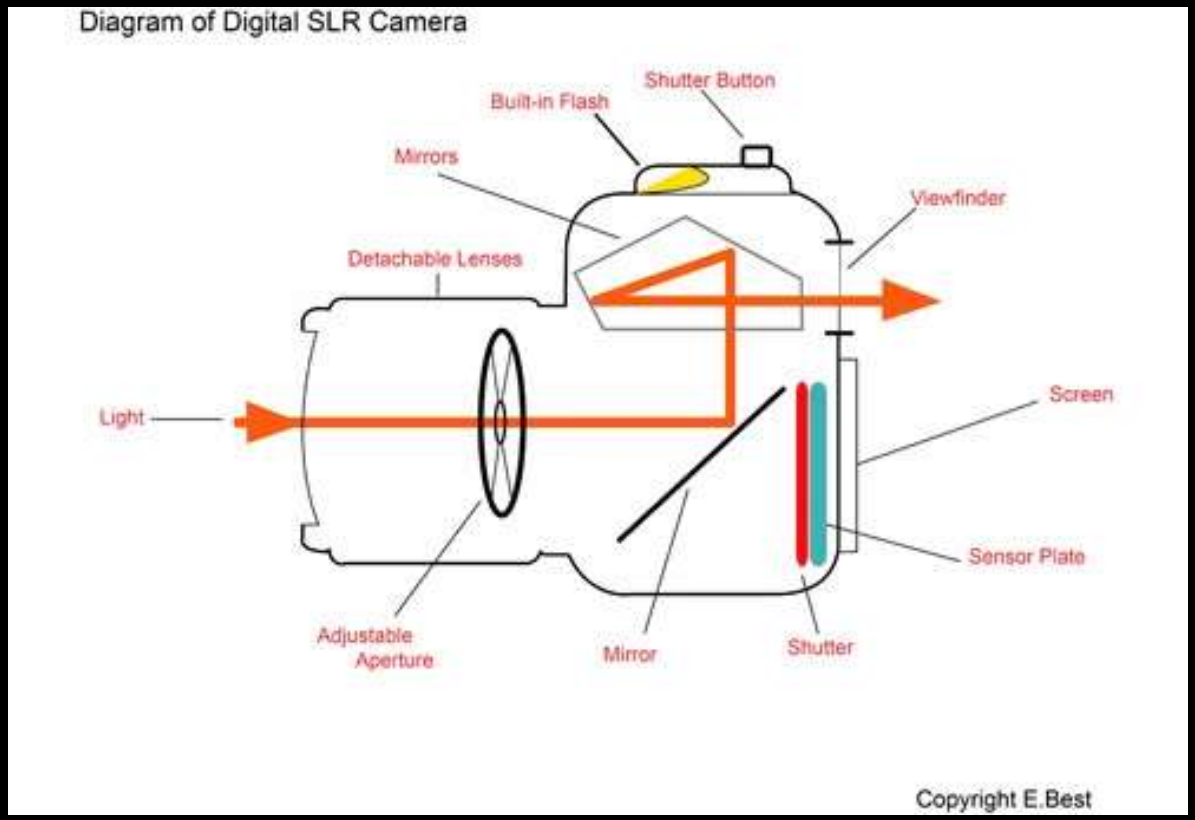
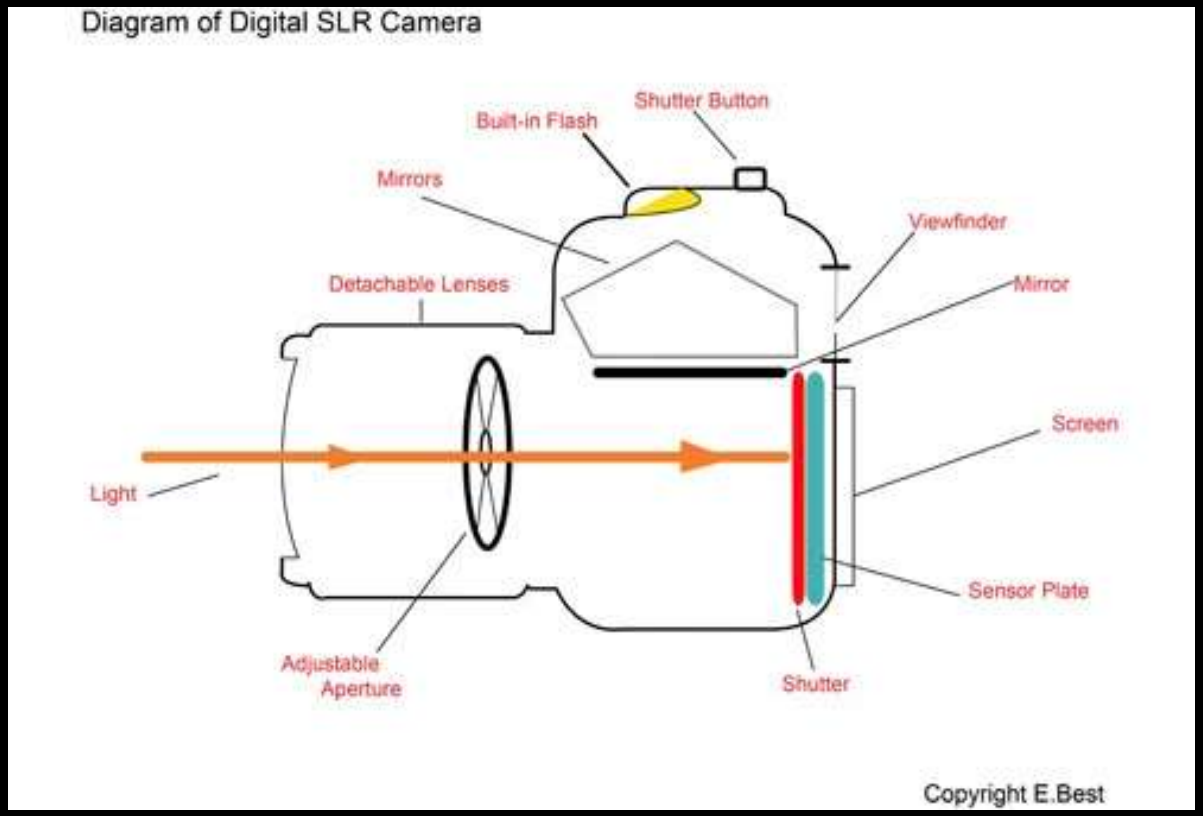


image source

Cameras draw with light? How?

- When you take a picture, the first mirror flips up, the shutter opens and the sensor is exposed



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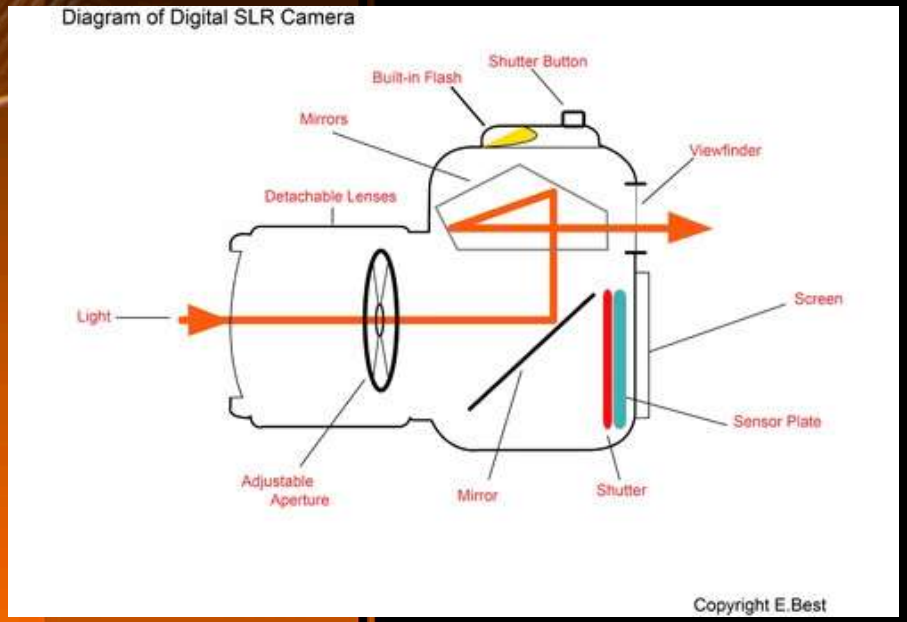
Cameras draw with light? How?

- The shutter is the sound that you hear when you push the button to take a picture



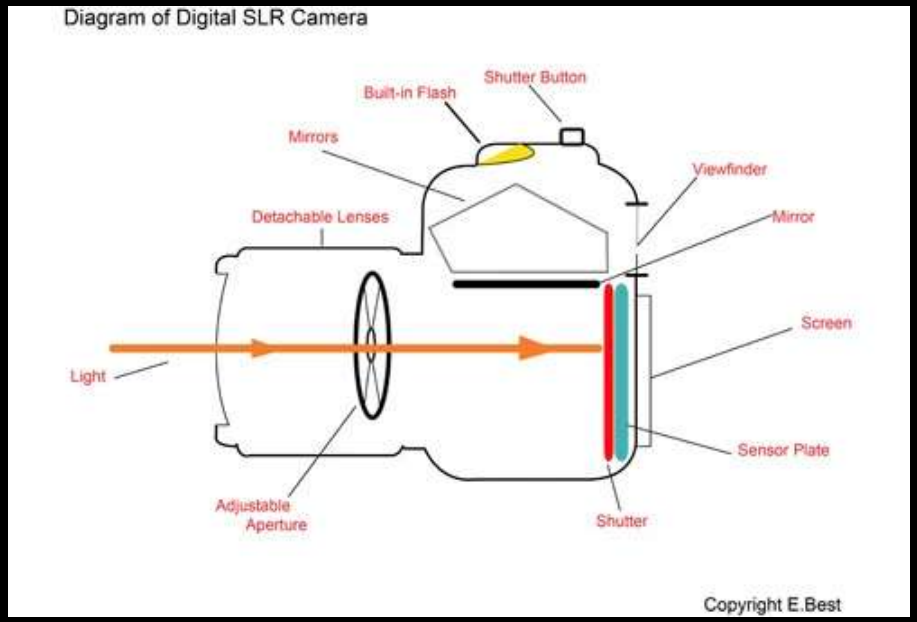


image source

Exposure

- The amount of light allowed to enter into the camera to take a picture

image source

Exposure

- The amount of light allowed to enter into the camera to take a picture
- MORE light will **overexpose** an image

Exposure

- The amount of light allowed to enter into the camera to take a picture
- LESS light will **underexpose** an image

Exposure

- This is the “correct” exposure for this image, but don’t forget that as a photographer, you have creative license.
- Different situations would change the kind of light you want in your image



How do you control Exposure?

- Shutter Speed
- Aperture
- ISO

Image source

Shutter Speed

- Determines HOW MUCH light gets to the sensor
- The slower the shutter, the more movement shown.
- Slow shutter speeds require a tripod

FAST shutter

SLOW shutter

SLOWER shutter

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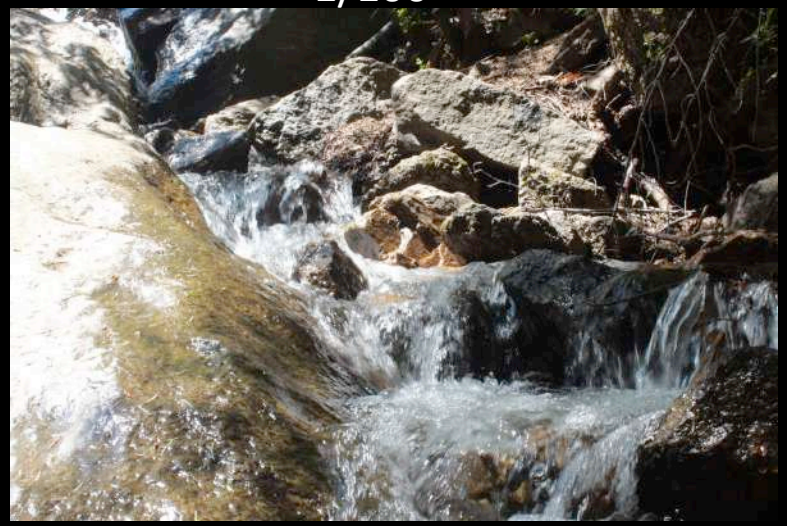
Shutter Speed Example

1/1000

1/250

1/100



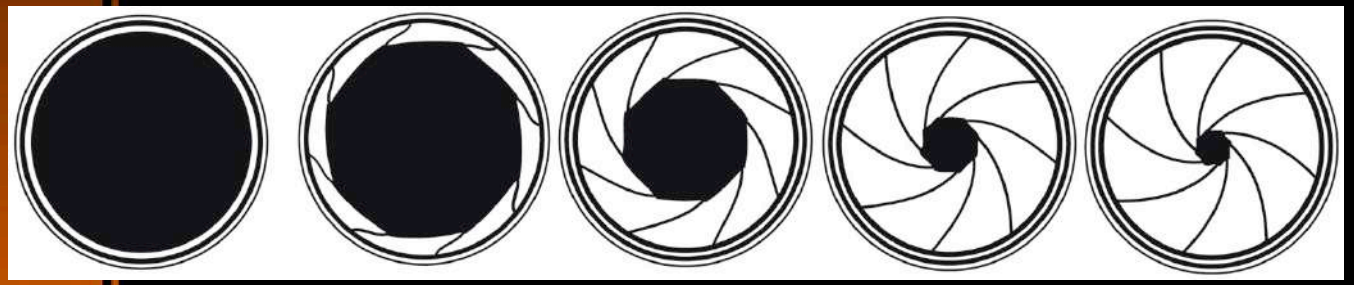
1/25

Shutter Speed Example

- Pictures of people require at least a 1/60 shutter speed if not faster
- ….especially if you are taking pictures of kids :)

Aperture

- Controls HOW WIDE the lens opens
- The WIDER the gate:
  - the MORE light allowed to the sensor
  - the SHALLOWER the depth of field
  - the LOWER the F-stop number



LOW number ~ F1.4

HIGH number ~ F22

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Aperture:

- WIDE gate = MORE light
- WIDE gate = SHALLOW DOF

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Aperture:

- THIN gate = LESS light
- THIN gate = DEEP DOF

image source

Aperture: Sunny 16 rule: states that f/16 is optimal for sunny day shots

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Aperture Example

Aperture = f/1.4. DOF=0.8 cm

Aperture = f/4.0. DOF=2.2 cm

Aperture = f/22. DOF=12.4 cm

HINT: Large F-Stop = MORE DOF

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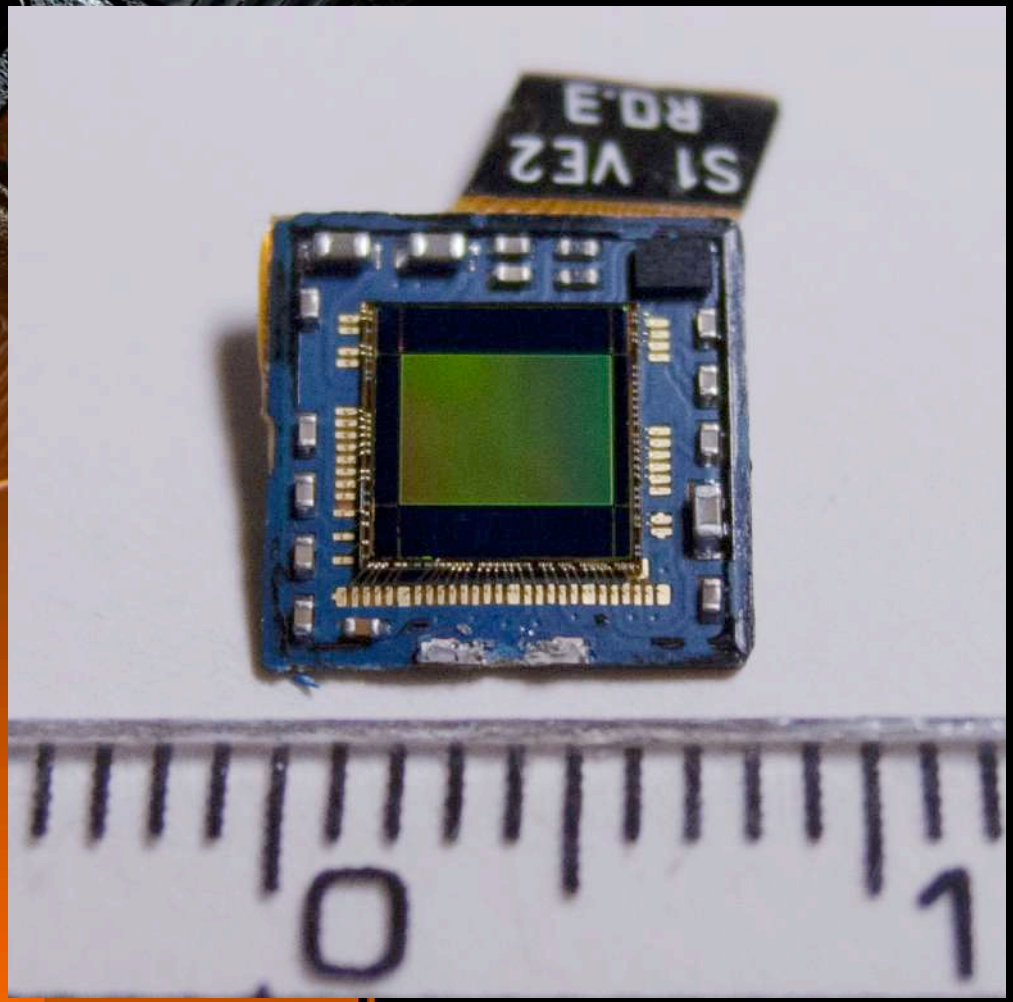
ISO Origins

- It used to be that you would BUY film at a certain ISO
- Then you would have to shoot the WHOLE 24+ pictures with that ISO setting

image source

ISO Origins



- NOW, the sensor of the digital camera takes that function over
- Most cameras can switch the ISO in between every shot you take

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ISO Example

400

800

1600

3200

6400

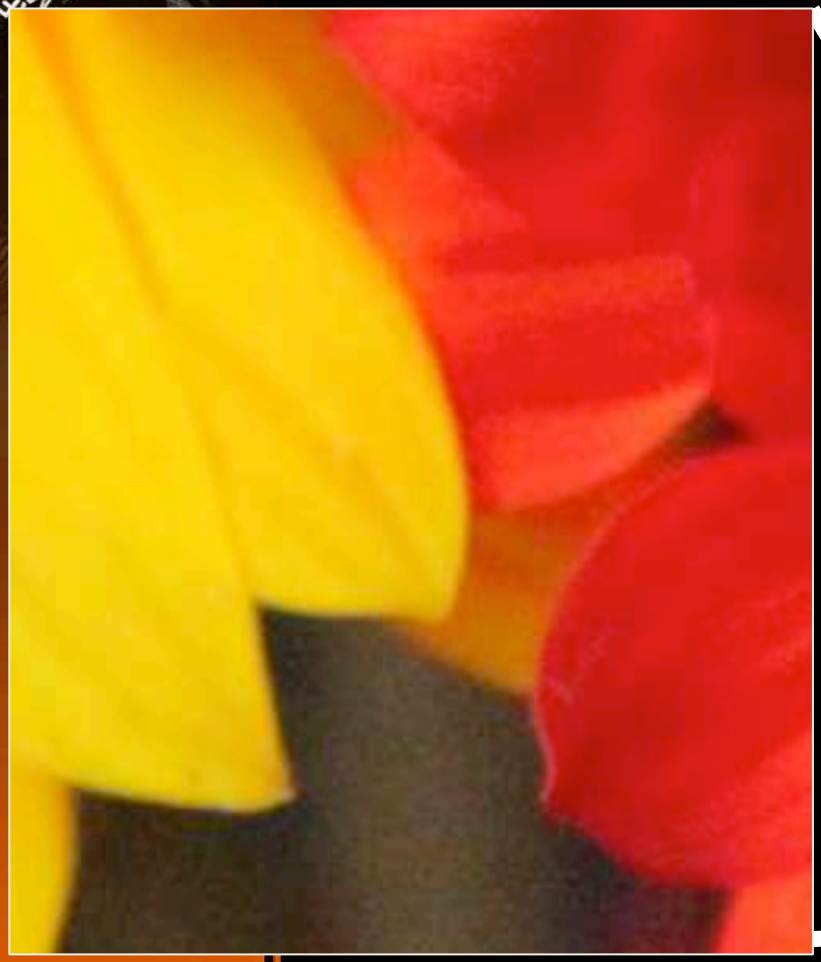
ISO

- ISO is BY FAR the easiest adjustment to make
- BUT, not without consequence, you get more light with a high ISO, but you also get MORE NOISE

ISO

= more light AND MORE NOISE

(it's the grainy looking stuff)



Now look to your camera

Find these manual settings on your own (or borrowed) DSLR

- **Auto (green box)** = the camera chooses all the settings
- **P** = ISO is the only thing you can change
- **Tv** = You control ISO and Shutter
- **Av** = You control ISO and Aperture
- **M** = You control it ***all***

APERTURE

◀1.4 - 2 - 2.8 - 4 - 5.6 - 8 - 11 - 16 - 22 - 32 ▶

more light ... less light

shallow DOF | portraits | indoors | cityscapes | landscapes | star bursts | wide DOF

SHUTTER SPEED

◀1” - 1/4 - 1/8 - 1/30 - 1/60 - 1/125 - 1/500 - 1/1000 ▶

more light ... less light

blurs action | fire works | rain | portraits | ocean waves | sports | freezes action

ISO

◀ 6400 - 3200 - 1600 - 800 - 400 - 200 - 100 - 50 ▶

more light sensitive ... less light sensative

lots of noise | low light | sports | portraits | ideal ISO