

# Camera Basics

# What is a camera?

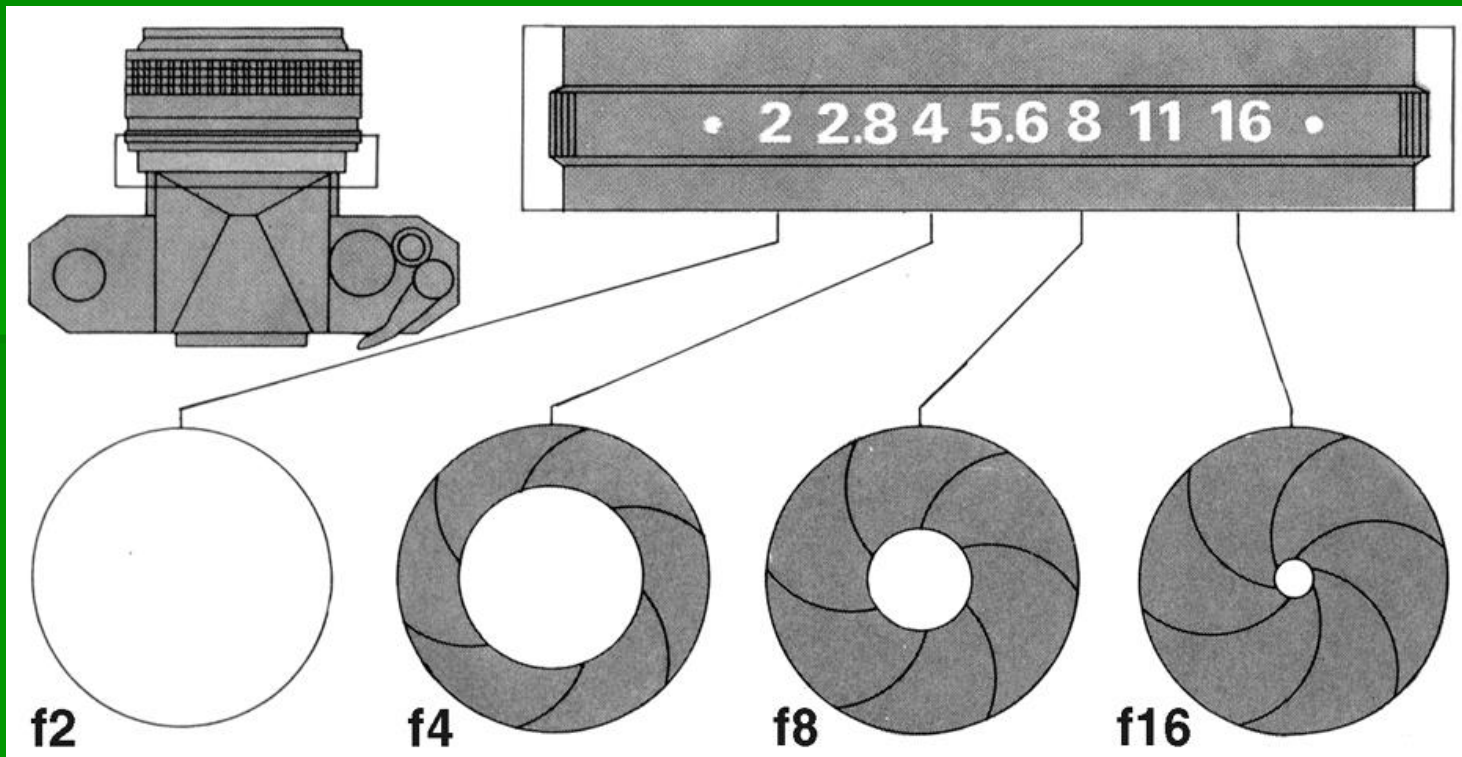
- A light-tight box with a hole in it
- What does the hole do?
  - Allows the light to come into the camera and expose the film
- What is the name of the hole that lets the light in?



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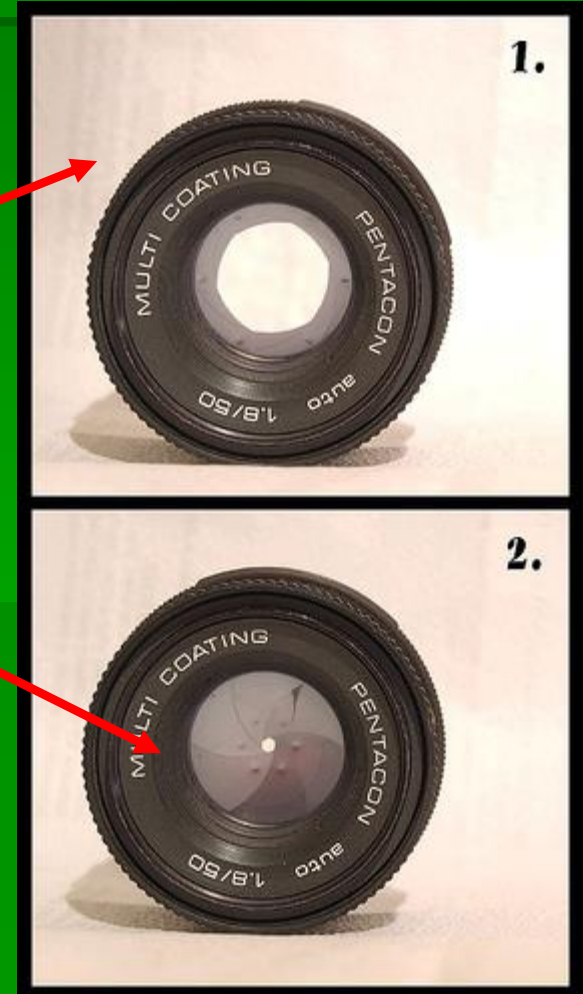
# APERTURE

- The size of the hole or opening in the lens that allows light to enter



# EYE get it!

- Works like an eye
- What happens to your pupil when you go in the dark?
  - Your eye gets larger to let in more light
- What happens to your pupil when someone shines a flashlight at it?
  - It gets smaller, doesn't let as much light in



# Aperture= F-Stop= lens opening

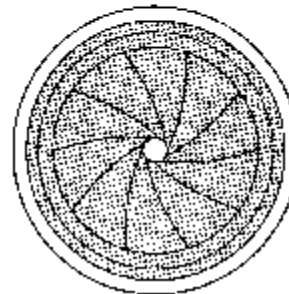
- F-stop = Focal length/Aperture diameter
- F-stop= 50mm/25mm
- F-stop= 2/1 → F/2

## APERTURE RELATIONSHIP

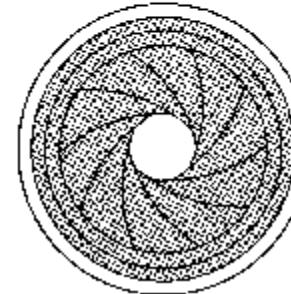
Each opening has 2x the area of the one next to it.

2.8 - 4 - 5.6 - 8 - 11 - 16

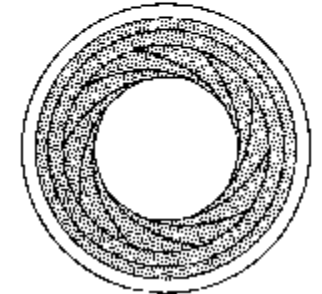
f 16



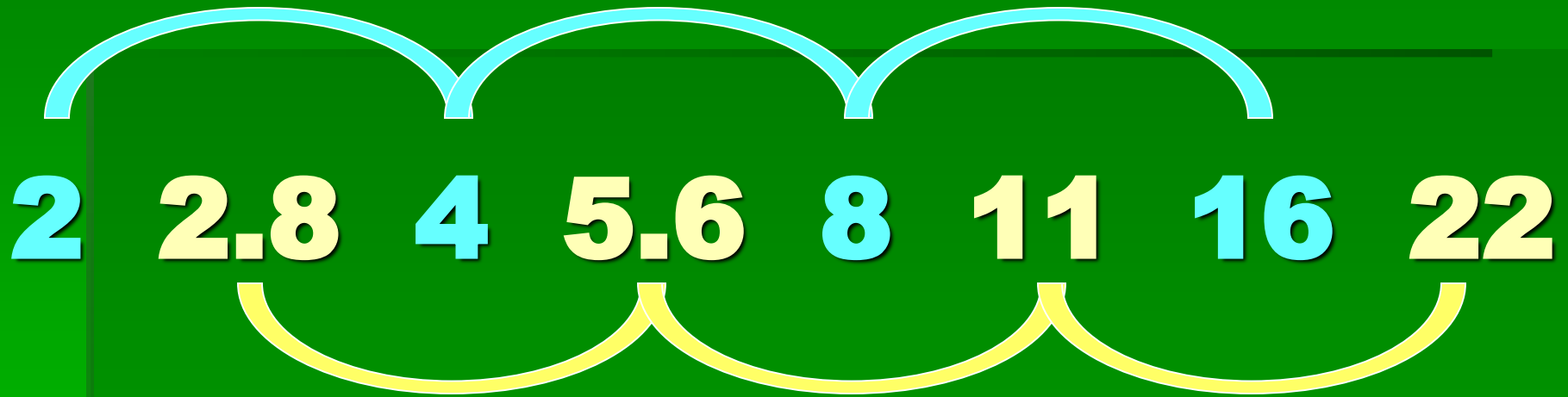
f 5.6



f 2.8



# F-Stops you have to know!

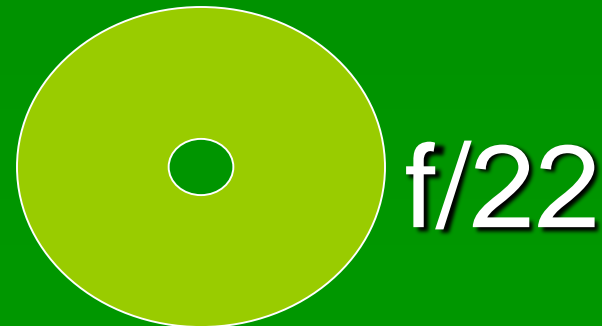


# Fractions in Art?

- The f-stop with the LARGEST fraction is going to let in the MOST amount of light

f/2	f/2.8	f/4	f/5.6	f/8	f/11	f/16	f/22
1/2	1/2.8	1/4	1/5.6	1/8	1/11	1/16	1/22

**1/2 is larger than 1/22**



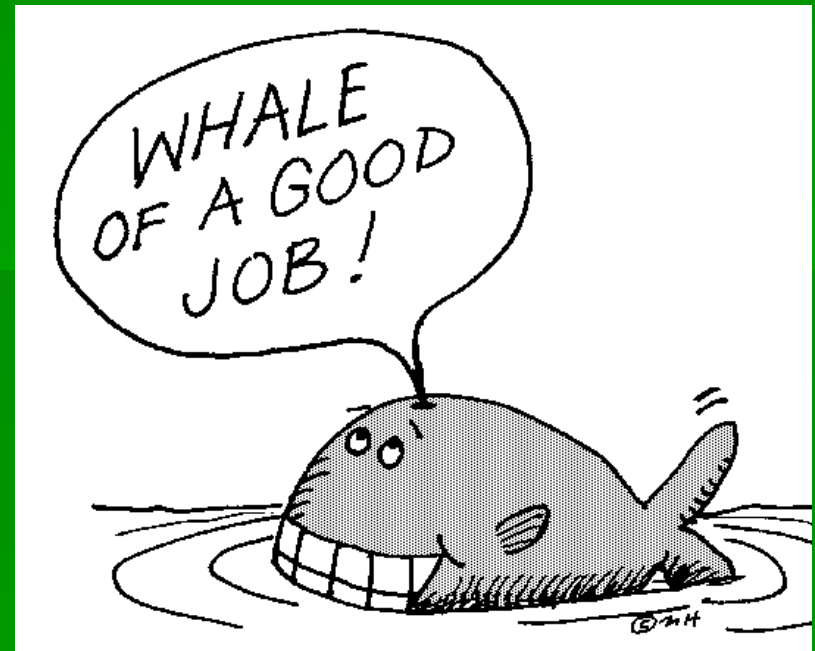
# TEST

- What lets in more light?
  - f/16 or f/2
  - f/22 or f/11
  - f/2.8 or f/8
  - f/2 or f/2.8
  - f/5.6 or f/8
  - f/11 or f/4
  - f/22 or f/5.6



# TEST- answers

- What lets in more light?
  - $f/16$  or  $f/2$
  - $f/22$  or  $f/11$
  - $f/2.8$  or  $f/8$
  - $f/2$  or  $f/2.8$
  - $f/5.6$  or  $f/8$
  - $f/11$  or  $f/4$
  - $f/22$  or  $f/5.6$



# TEST

- Which is the smaller lens opening?
  - f/11 or f/4
  - f/2 or f/8
  - f/16 or f/5.6
  - f/2 or f/2.8
  - f/11 or f/5.6
  - f/16 or f/22
  - f/2 or f/5.6

# TEST- answers

- Which is the smaller lens opening?
  - **f/11** or f/4
  - f/2 or **f/8**
  - f/5.6 or **f/16**
  - f/2 or **f/2.8**
  - f/5.6 or **f/11**
  - f/16 or **f/22**
  - f/2 or **f/5.6**



# Aperture also controls...

(note: where is the APE?)



In the field...

# Depth of Field

- Def: the area in front of and behind your main subject that is in sharp focus
- Depth of Field and Aperture are **OPPOSITES**

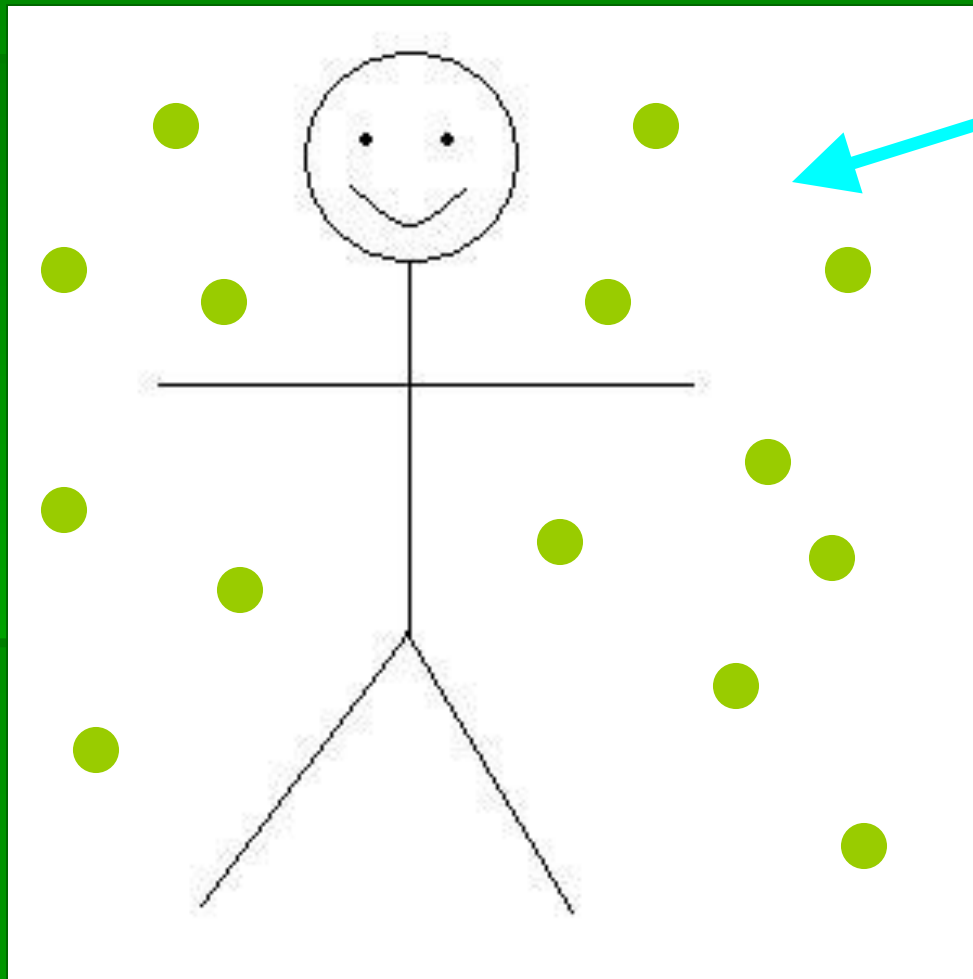


# Large (Great) Depth of Field

- The subject and the background will be in focus
- Small Aperture
  - f/16, f/22



# Large (Great) Depth of Field



Background in Focus

**LARGE**  
depth of  
field

**SMALL**  
aperture

# Small (Shallow) Depth of Field

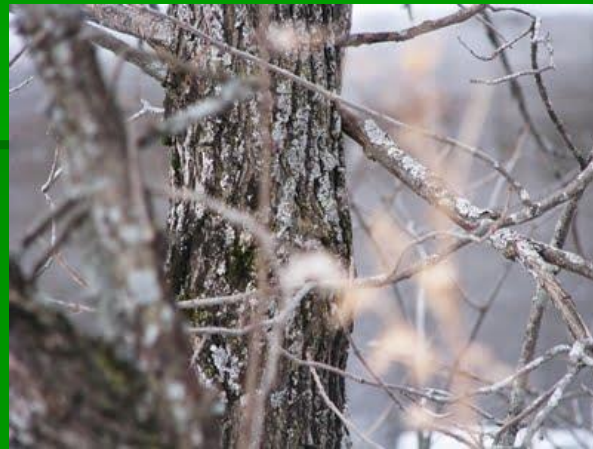
- **GENERAL DEFINITION:** *Something is in focus and something isn't*



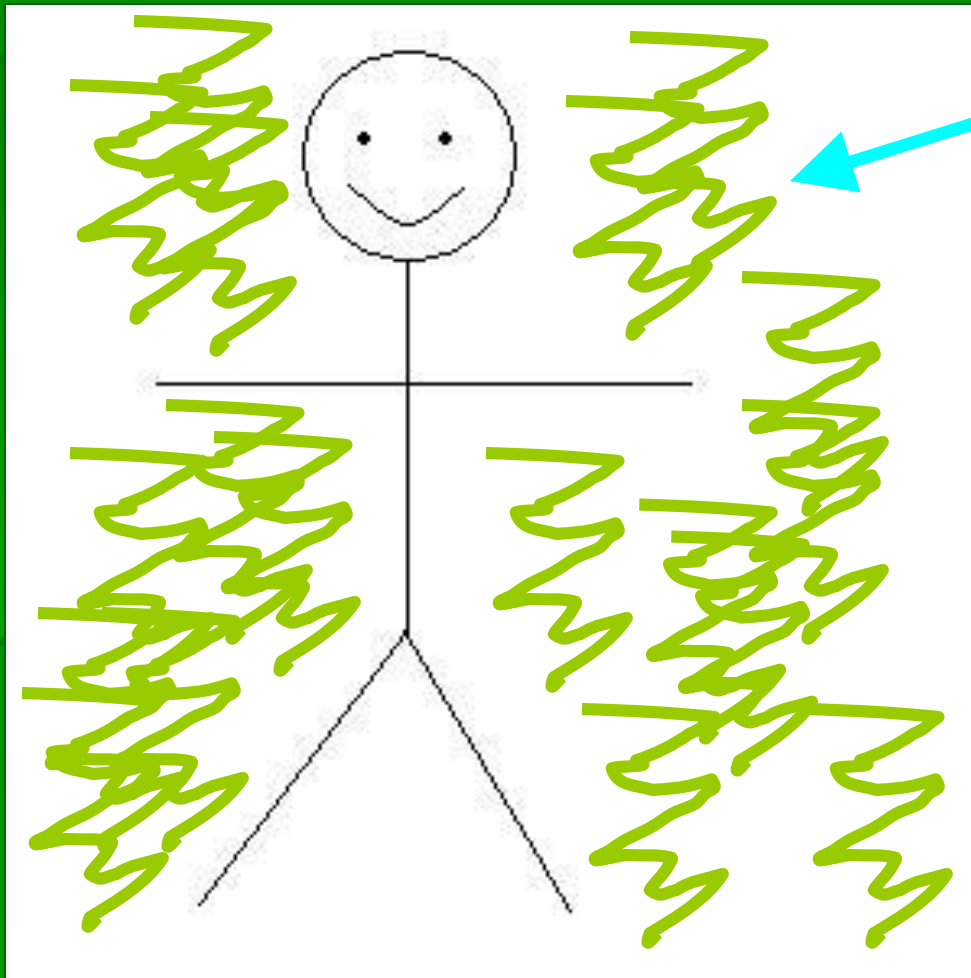


# Small (Shallow) Depth of Field

- The subject **is in focus** and the background will **NOT** be in focus
- The background **is in focus** and the subject will **NOT** be in focus
- The subject and the background **ARE NOT in focus** but the middle ground will be
- Large Aperture
  - f/2



# Less (Shallow) Depth of Field



Background is  
**NOT** in focus

**SMALL**  
depth of  
field

**LARGE**  
aperture

# TEST – Use only f/2 or f/22

- To get a **SHALLOW** depth of field
- To get a **LARGE** depth of field
- To get a **GREAT** depth of field
- To get a **SMALL** depth of field
- To have **LESS** depth of field
- To have **MORE** depth of field

# TEST – Use only f/2 or f/22

- To get a SHALLOW depth of field **f/2**
- To get a LARGE depth of field **f/22**
- To get a GREAT depth of field **f/22**
- To get a SMALL depth of field **f/2**
- To have LESS depth of field **f/2**
- To have MORE depth of field **f/22**

# TEST – Use only f/2 or f/22



And...

Is this a  
large or  
small depth  
of field?

# TEST – Use only f/2 or f/22

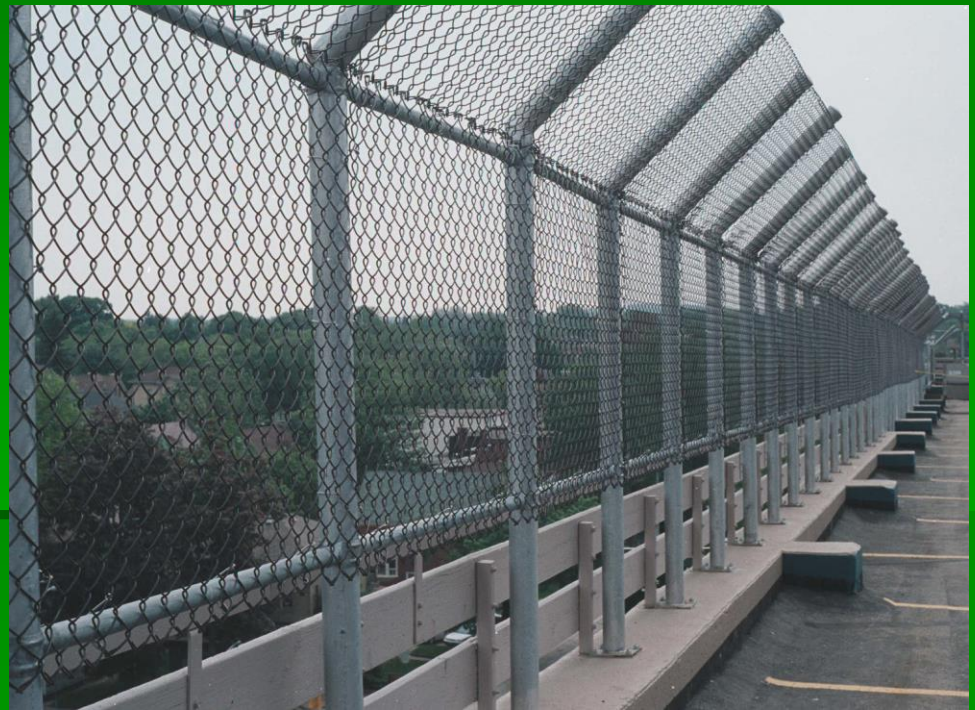


And...

Is this a  
large or  
small depth  
of field?

# Please note...

- It is much better to use aperture settings in the middle such as **f/11 or f/8** because the lens quality is sharpest at these settings

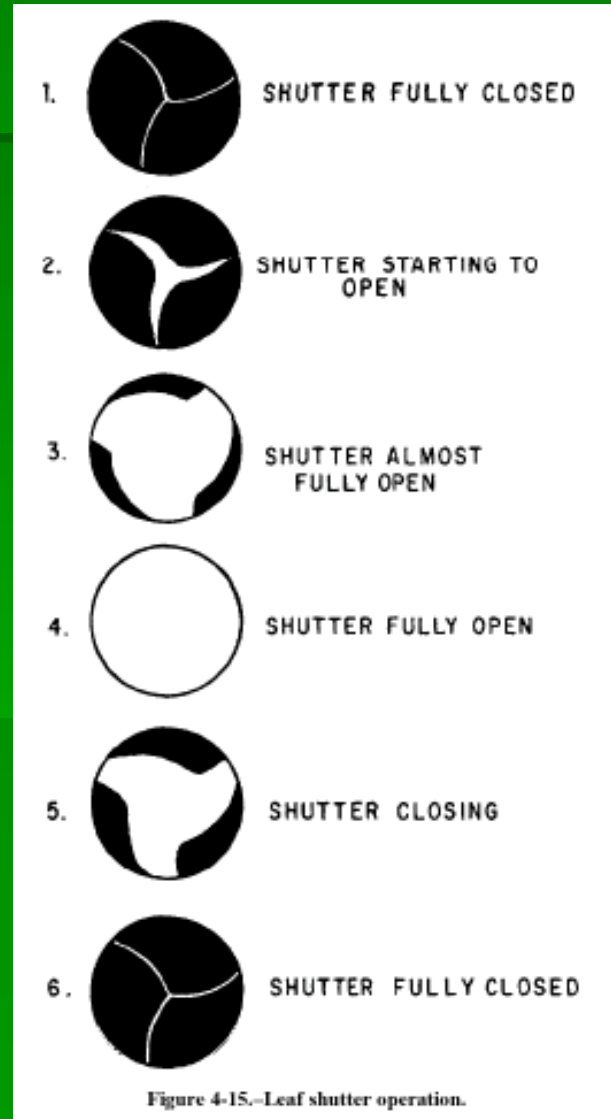






# Shutter

- Controls the amount of light by the **amount of time the shutter is left open**



# Shutter Speeds you have to know!

**1**

---

**2**

**4**

**8**

---

**15**

**30**

**60**

---

**125**

**250**

**500**

**1000**

# These actually represent fractions of a second

2" = 2 Seconds

**1**

---

**1/2**

**1/4**

**1/8**

---

**1/15**

**1/30**

**1/60**

---

**1/125**

**1/250**

**1/500**

**1/1000**

# Fast Shutter Speed

- 1/125, 1/250, 1/500, 1/1000
- **Fast shutter** speed “freezes” movement



# Slow Shutter Speed

- $1/2$ ,  $1/4$ ,  $1/8$ ,  $1/16$
- **Slow shutter** speed  
“blurs” movement



# Safest Shutter Speeds

- **1/60** is ideal  
*(it is fast enough to avoid camera shake)*



# Become a Human Tripod...

- If you must take a picture using a shutter speed of **1/30** or below than you need to become a human tripod or just use one







# Panning



- Stopping action with blurring the background



# Don't Worry

Daniel Craig was scared too.



**DBS**

# How to Pan

- Set the shutter at 1/30
- Following the action while you are taking the picture (*“Click and Follow”*)



# B

- The “B” on your shutter stands for **BULB**, this allows the shutter to stay open as long as your finger is on the shutter release button
- Used mostly for night photography
- Use a tripod if you are using the B



# TEST

- What has a FASTER shutter speed?
  - $1/250$  or  $1/500$
  - $1/2$  or  $1/4$
  - $1/500$  or  $1$
- What has a SLOWER shutter speed?
  - $1/125$  or  $1/8$
  - $1/15$  or  $1/30$
  - $1/500$  or  $1/2$

# TEST- answers

- What has a FASTER shutter speed?
  - $1/250$  or  **$1/500$**
  - $1/2$  or  **$1/4$**
  - **$1/500$**  or  $1$
- What has a SLOWER shutter speed?
  - $1/125$  or  **$1/8$**
  - **$1/15$**  or  $1/30$
  - $1/500$  or  **$1/2$**

# TEST

- What will happen when you pan a picture?
- When should you use the B?
- What is the ideal shutter speed?

# TEST- answers

- What will happen when you pan a picture?
  - **The subject will be in focus and the background will be blurry**
- When should you use the B?
  - **Night photography**
- What is the ideal shutter speed?
  - **1/60**



# TEST

- Say if it FAST shutter speed, SLOW shutter speed, B, or Panning



A blurry photograph of children in a gymnasium. The children are wearing yellow and pink clothing. The background is a yellow wall. The word "SLOW" is overlaid in green text at the bottom.

SLOW



B







Panning





A polar bear is shown underwater, its mouth open as if breathing or exhaling. The water is filled with a dense field of small, bright blue bubbles, which are captured in sharp focus, indicating a very fast shutter speed. The bear's white fur is visible against the blue water. The overall scene is dynamic and captures a moment of intense action.

**Fast Shutter**

# Aperture and Shutter

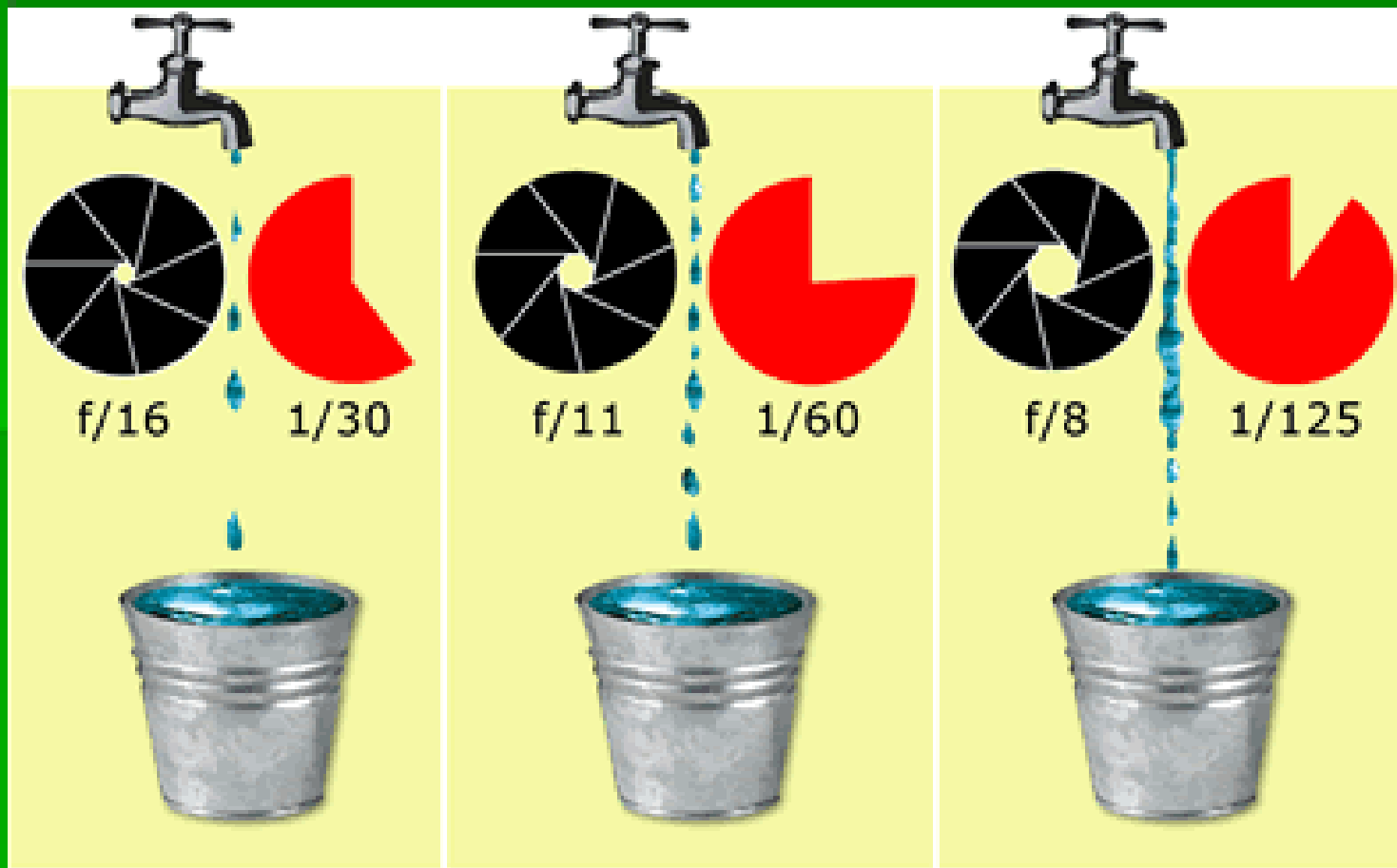


- Are the two MAIN things that control the amount of light that reaches the film
- You need a correct combination of both in order to let in the right amount of light
  - Look at your light meter!

Aperture	Shutter Speed
$f2.8$	1/500 sec.
$f4.0$	1/250 sec.
$f5.6$	1/125 sec.
$f8$	1/60 sec.
$f11$	1/30 sec.
$f16$	1/15 sec.

# Faucet Example

- Just think of reciprocals like a faucet



# RECIPROCALLS

What has the bigger “stream of water”, ie. what lets in the most light?

- a. F/2
  - b. F/16
- 

Does this require a lot of time or a little time to fill the “pail of water” ie. to let light into the camera?

- a. More
- b. Less



# RECIPROCALLS

What has the bigger “stream of water”, ie. what lets in the most light?

- a. F/2
- b. F/16

Does this require a lot of time or a little time to fill the “pail of water” ie. to let light into the camera?

- a. More
- b. Less



# PROBLEMS TO SOLVE

Thinking of the water situation...

What would you do if at  $f/4$  at  $1/500$  of a second you have to change your shutter to  $1/2$  because you are trying to blur movement?

Things to think about...

-at  $f/4$  at  $1/500$  you have the perfect exposure

Going from  $1/500$  to  $1/2$  will let \_\_\_\_\_ light into the camera.

Therefore, you need to let \_\_\_\_\_ light into the camera with aperture.

Do this by making your aperture \_\_\_\_\_.

Move your aperture towards \_\_\_\_\_.

# PROBLEMS TO SOLVE

Thinking of the water situation...

What would you do if at  $f/2$  at  $1/500$  of a second you have to change your shutter to  $1/2$  because you are trying to blur movement?

Things to think about...

-at  $f/2$  at  $1/500$  you have the perfect exposure

Going from  $1/500$  to  $1/2$  will let \_\_\_\_\_ **MORE** \_\_\_\_\_ light into the camera.

Therefore, you need to let \_\_\_\_\_ **LESS** \_\_\_\_\_ light into the camera with aperture.

Do this by making your aperture \_\_\_\_\_ **SMALLER** \_\_\_\_\_.

Move your aperture towards \_\_\_\_\_ **f/22** \_\_\_\_\_.

# PROBLEMS TO SOLVE

Thinking of the water situation...

What would you do if at  $f/8$  at  $1/125$  of a second you have to change your aperture to  $f/2$  because you are trying to get a small depth of field?

Things to think about...

-at  $f/8$  at  $1/125$  you have the perfect exposure

Going from  $f/8$  to  $f/2$  will let \_\_\_\_\_ light into the camera.

Therefore, you need to let \_\_\_\_\_ light into the camera with shutter.

Do this by making your shutter \_\_\_\_\_.

Move your shutter towards \_\_\_\_\_.



# PROBLEMS TO SOLVE

Thinking of the water situation...

What would you do if at  $f/8$  at  $1/125$  of a second you have to change your aperture to  $f/2$  because you are trying to get a small depth of field?

Things to think about...

-at  $f/8$  at  $1/125$  you have the perfect exposure

Going from  $f/8$  to  $f/2$  will let \_\_\_\_\_ **MORE** \_\_\_\_\_ light into the camera.

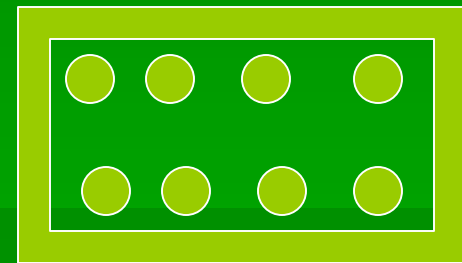
Therefore, you need to let \_\_\_\_\_ **LESS** \_\_\_\_\_ light into the camera with shutter.

Do this by making your shutter \_\_\_\_\_ **FASTER** \_\_\_\_\_.

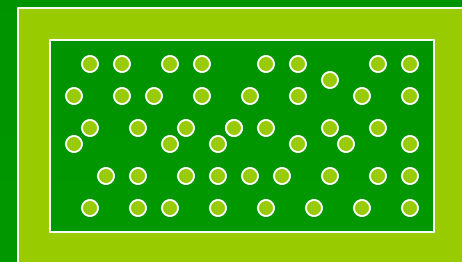
Move your shutter towards \_\_\_\_\_ **1/1000** \_\_\_\_\_.

# Film Speed

- ISO (always set BEFORE you take your photos)
  - Measures a film's sensitivity to light
  - I SO SENSITIVE!!!!
- The **HIGHER** the number the **FASTER** the film
- Use fast film when there is **LITTLE** light (**800**)
  - SIDE EFFECT: it will be grainy

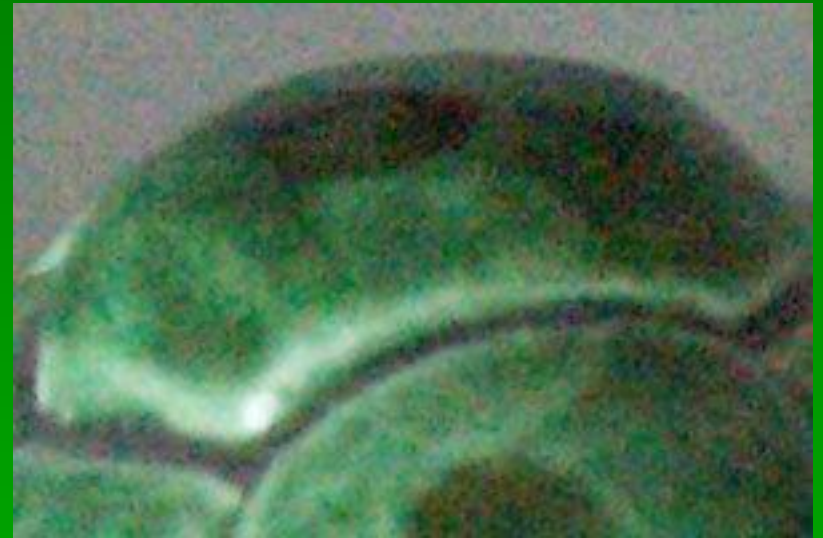


- IDEAL film is **200/400** (less grainy)
  - SIDE EFFECT: you need good light





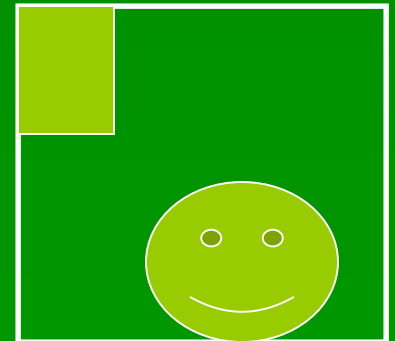
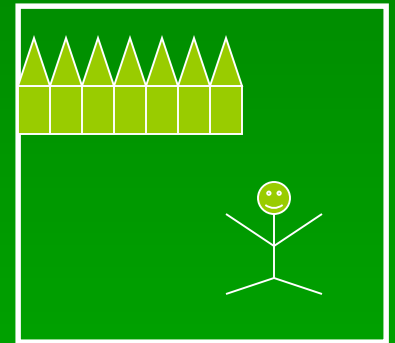
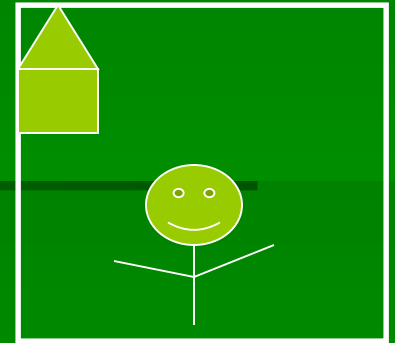
100 ISO



800 ISO

# Lenses

- Standard (50-55mm)
  - Known as standard because the image they produce corresponds to the way the eye would have seen it in reality
- Wide-angle (35-21mm)
  - Landscapes, broad panoramas, crowd scenes
- Telephoto (75-1200mm)
  - Wildlife/nature
  - Gets you closer to the subject without having to get close to the subject



# WIDE ANGLE



# TELEPHOTO

