Shutter Speed

Camera Parts and Functions


You're using the wrong shutter speed. Here, let me adjust that for you.
ICANHASCHEEZBURGER.COM

Objectives

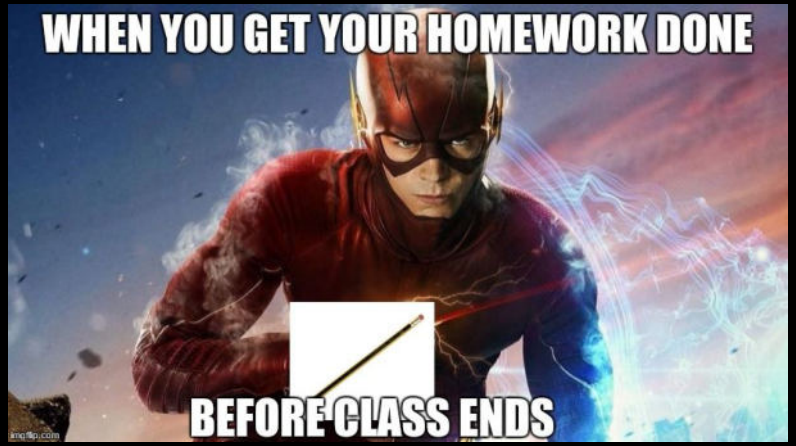
Students will be able to:

- Understand the shutter speed component of the Exposure Triangle
- Understand how Frame Rates affect your films
- Know the differences when it comes to fractions of a second
- Determine what makes a successful fast shutter speed and what situation requires what speed you shoot at

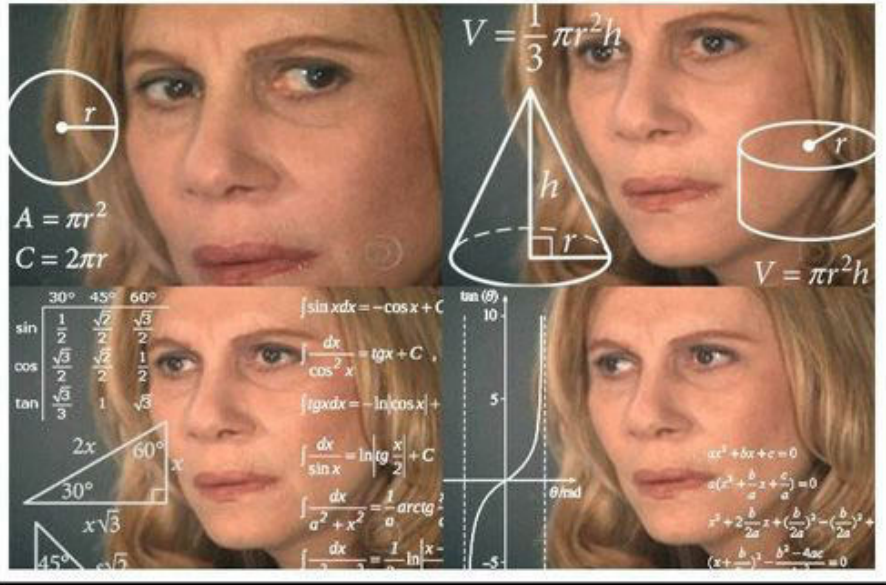
Bellwork

When you see someone going really fast, like a speeding car or the Flash, what makes them look like a blur?

Discuss with your neighbor and be prepared to share with the class.



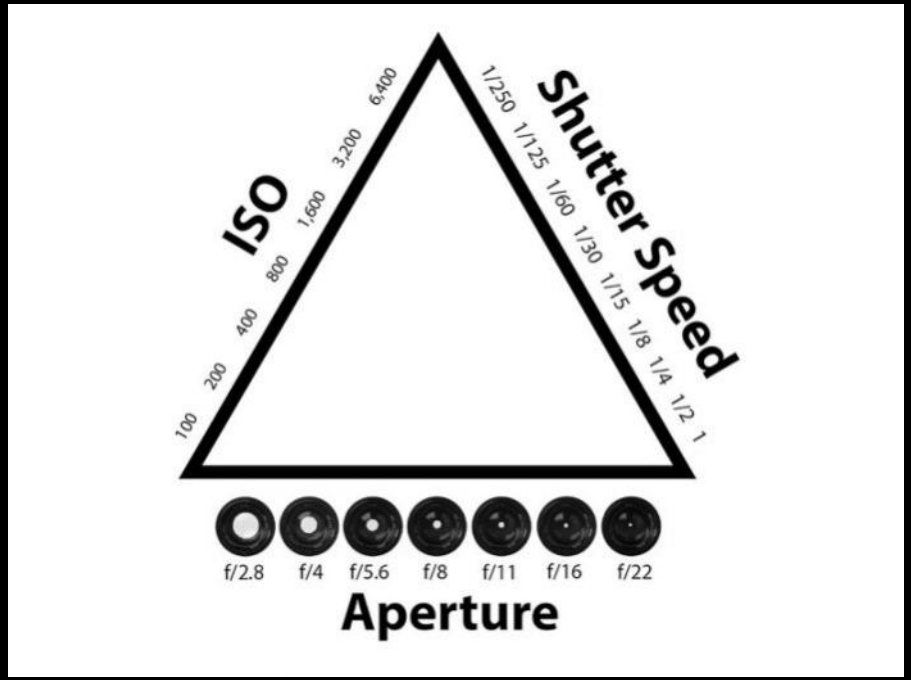
when you explain the exposure triangle to amateurs



The Exposure Triangle

In this lesson, we will be talking about Shutter Speed, one of the three sides of the Exposure Triangle.

Remember that with all three sides, when you adjust one, you typically have to adjust the other two.



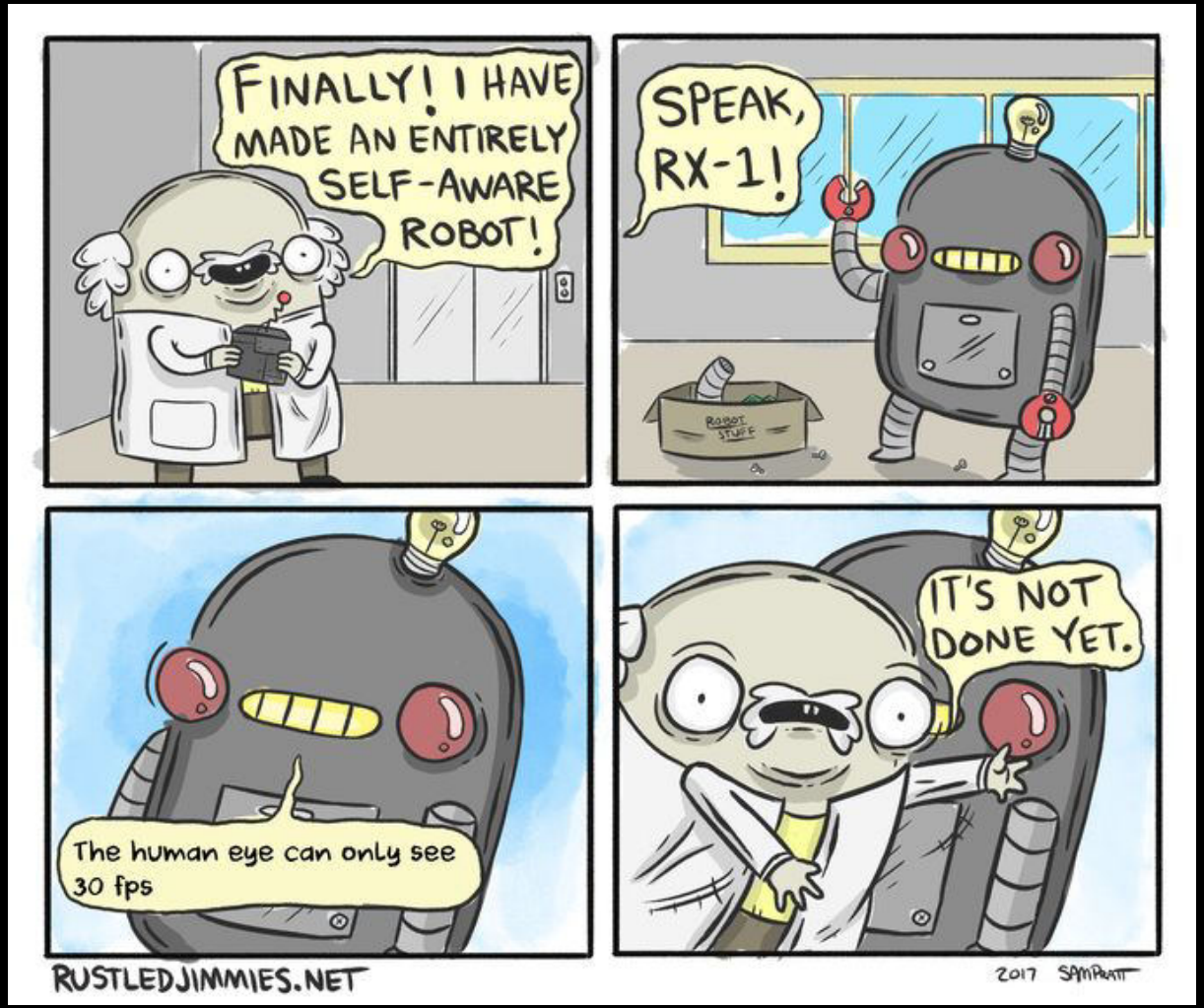
Exposure

There are three factors that influence the exposure of your shot:

- *Aperture*
- *Shutter Speed & Frame Rate*
- *ISO*

A “correct” or “good” exposure occurs when you maintain as much detail as possible in both the very bright parts (highlights) as well as the very dark parts (shadows) of your shot.

How much of a range in which you can capture detail from light to dark is referred to as the *Dynamic Range*. As you are about to see over the next few days, there can be many “correct” or “good” exposures.


FINALLY! I HAVE MADE AN ENTIRELY SELF-AWARE ROBOT!
SPEAK, RX-1!
ROBOT STUFF
The human eye can only see 30 fps
IT'S NOT DONE YET.
RUSTLEDJIMMIES.NET
2017 SAM PRATT

Frame Rates

Frame rate is the number of individual frames that comprise each second of video. Also known as FPS (frames per second), the most common frame rates are 24, 25, and 30 frames per second.

The Most Common Frame Rates

24 = Cinematic look, motion blur

30 = More realistic look, going to give you a “video” look, newscast, TV standard

60 = used for slow motion, hyper realistic look, used in video games today

In this class, we will shoot typically at 30 FPS, sometimes at 24, and rarely at 60. This is because when you shoot at 60 FPS, you’re recording almost 2.5 times more data than the other frame rates, and you’ll have a lot more storage to deal with.


PS4
60 FPS
STARECAT.COM


24FPS
30FPS
60FPS
Frame rates in video
and their use

What is Shutter Speed?

The amount of time the shutter is open for that each individual frame is exposed for.

While the shutter is open, the image sensor is exposed to light. Think of it as how long the camera “sees” the image.

Shutter Speed is measured in fractions of **Seconds**, and for video, it’s almost always in fractions of a second.

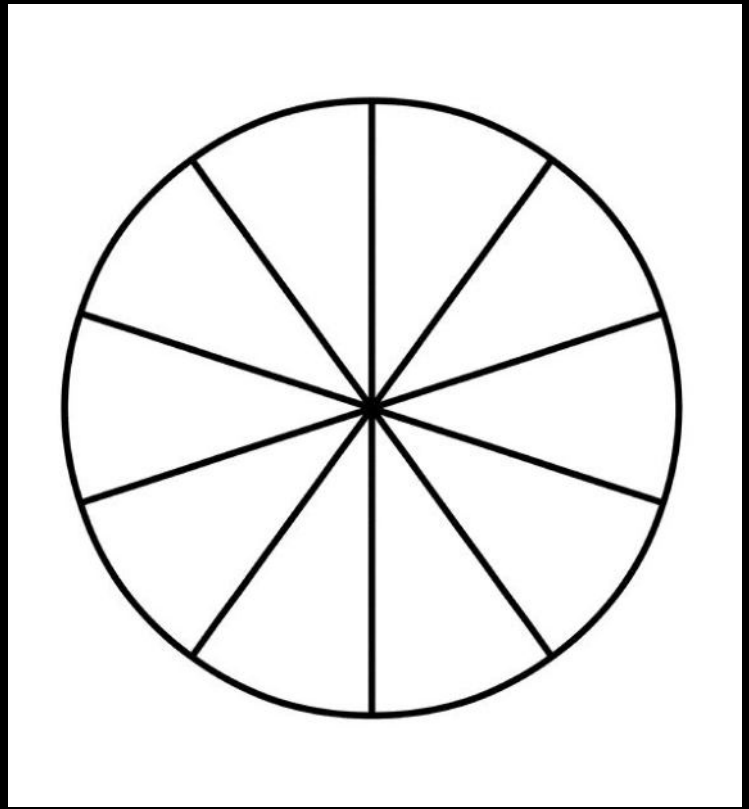
Common shutter speeds: **(DO NOT GO BELOW 1/30!)**

- 1 whole second,1/2,1/4,1/8,1/15, 1/30,1/60,1/125,1/250,1/500,1/1000
- B = Bulb – shutter is held open for a specified amount of time.

Which is faster?

Remember that shutter speeds are measured in fractions of a second. Think of it like you would a pie in Math. The more you cut it up, the smaller the shutter speed, which makes it quicker.

Just as a reminder, video is shot in fractions of a second, because anything longer would affect the frame rate of your films.



In this video, the shutter speed is in fractions

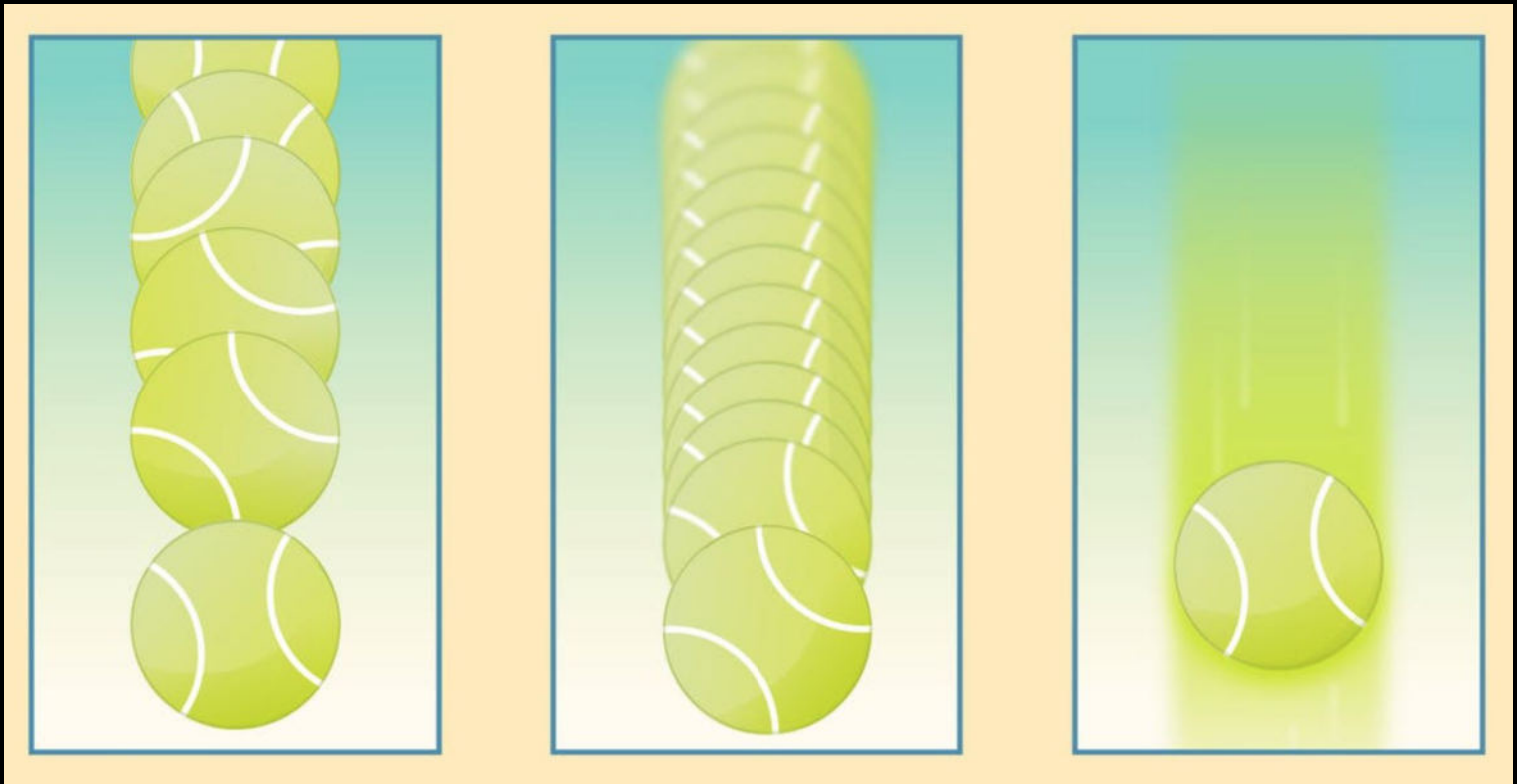
Shutter Speed

Shutter speed will have a noticeable effect on the look of your video, especially when it comes to motion.

A fast shutter speed such as 1/400th of a second will produce crisp frames that have a choppy look when played back.

On the other hand, a slow shutter speed (such as 1/30th of a second), produces a series of blurred frames looks smoother when played back.

https://vimeo.com/348671806



A faster shutter speed renders a high-energy, crisp tennis ball, while a slower frame rate gives you a blurry bouncing ball — and a more relaxed mood.

Banding

Remember, when you're shooting inside, if you are shooting with a faster shutter speed of 1/30, you will typically see horizontal banding lines(Black bars across the screen). To avoid this, make sure to be shooting at 1/30, and adjust your aperture and ISO to make this possible.

This is why you see movies and television sets use really bright lights even though it looks natural on TV.


CAUTION
OUT OF
ORDER


the BIG BANG THEORY
OUT OF ORDER
CAUTION


LIVE . LOCAL . IN-DEPTH
THE 30
WCAX
LIVE . LOCAL . IN-DEPTH
THE 30
CHANNEL 3 NEWS


Bruce

What’s the Difference?

Frame rate is sometimes mistaken with shutter speed.

Some people think if they are shooting with a shutter speed of 1/100th of a second, they are shooting 100 frames per second. This is **WRONG!**

Remember, the typical frame rate we shoot at is around 24 or 30 frames per second.

Shutter speed means you’re exposing each individual frame for 1/100th of a second.

What to do

Typically, you want your shutter speed to be approximately double the number of frames per second that you are recording.

If you are recording at 30 frames per second, you want your shutter speed to be at least 1/60th of a second.

Fast Shutter Speed

Fast Shutter Speeds (1/125 and higher) are used to stop motion and will “freeze” the subject in action when it comes to photography.

The faster the speed, the more clear and defined your action becomes in film.

Slow Shutter Speed

Slow Shutter Speeds (1/60 or slower) can be used to portray movement or speed.

In film, shooting around 1/30 or 1/60 you will begin to see blur to any fast shutter speed.

So Fast!

Remember when we were talking about blur in Bellwork? What do you think now?

Shutter Speed Scale

1/1,000 | 1/500 | 1/250 | 1/125 | 1/60 | 1/30 | 1/15 | 1/8 | 1/4 | 1/2 | 1 Second | Bulb

Shorter times

Fast Shutter Speed

Freeze Motion

Very little light

Longer Times

Slow Shutter Speed

Blur Motion

A lot of light

Beware the Shutter Speed/FPS Sync!

How to Set Shutter Speed on a Camera

When using a Canon Rebel T3i, you need to hold down the AV button on the back and then use the main dial at the top to set your Aperture.

Where do we find our Shutter Speed Value on the LCD screen?

Where do we find our Shutter Speed Value on the LCD screen?


60 fps
30 fps
23.98 fps
I agree to disagree

Closure

Think back to what you've learned today and how it might connect to what you've learned so far in class.

What are three things that you think are important from this lesson?

Discuss this with your neighbors and be prepared to share with the class.