

# Intro to Photography

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Session I

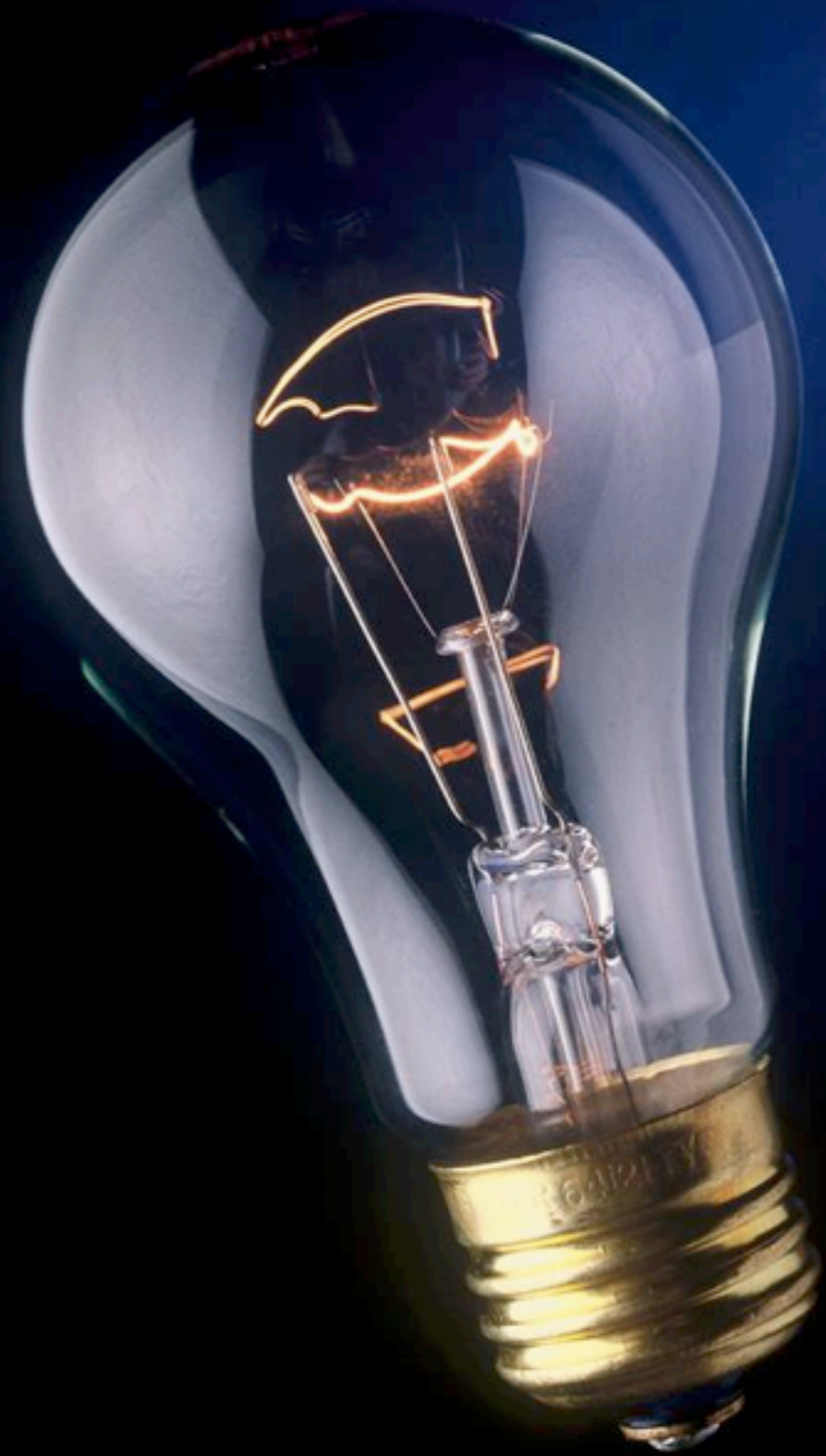




The photographic process is principally the same regardless of the media it's recorded on; film or digital sensor.

Light is reflected by your subject, focused by a lens on a light tight box, forming an image that is recorded by either a sensor or a photo sensitive film.

Photography  
starts with  
light.

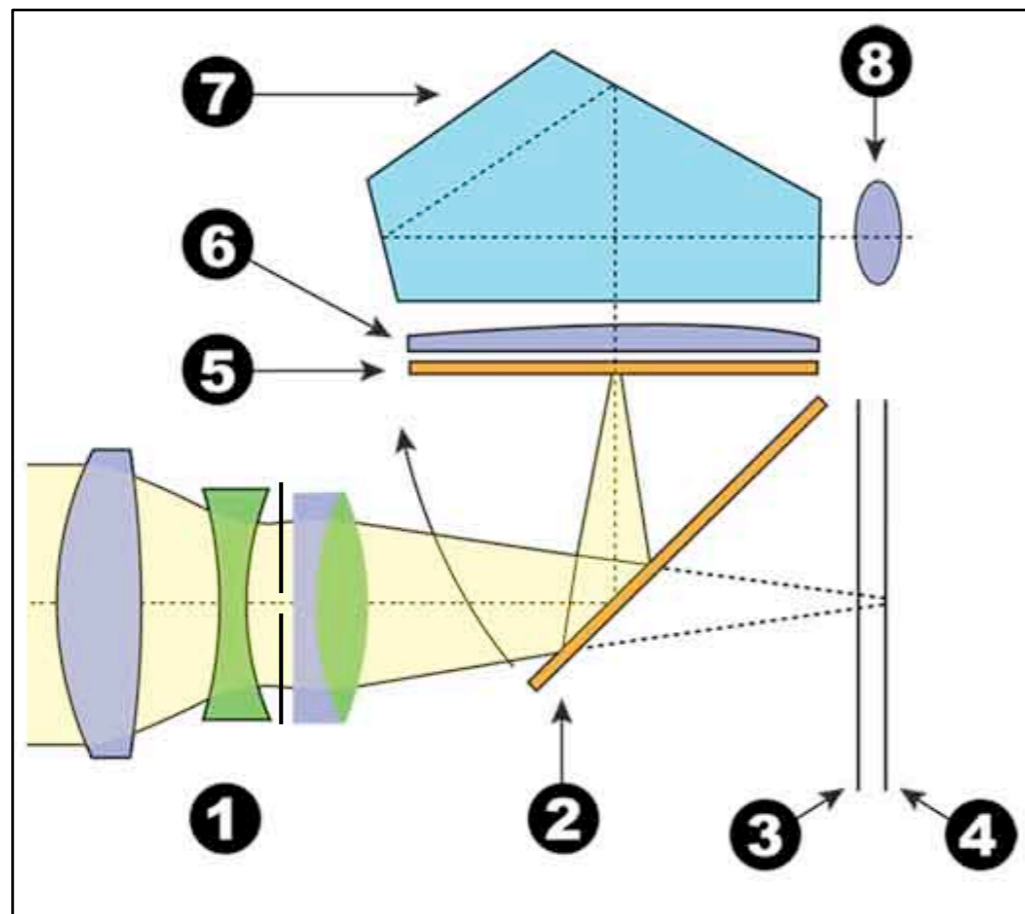


Colour  
Quantity  
Quality  
Direction

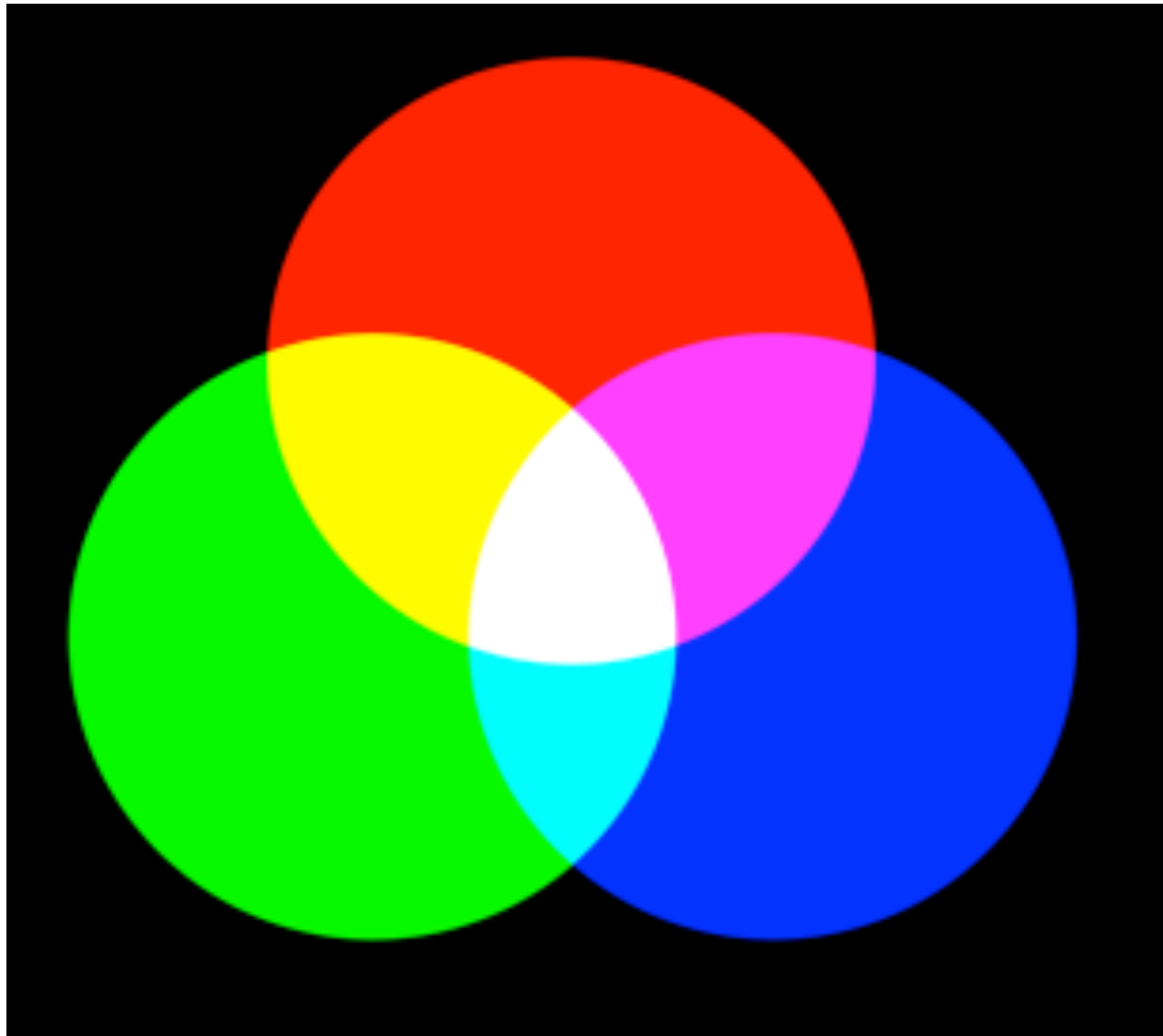


# Mechanics of taking a photo

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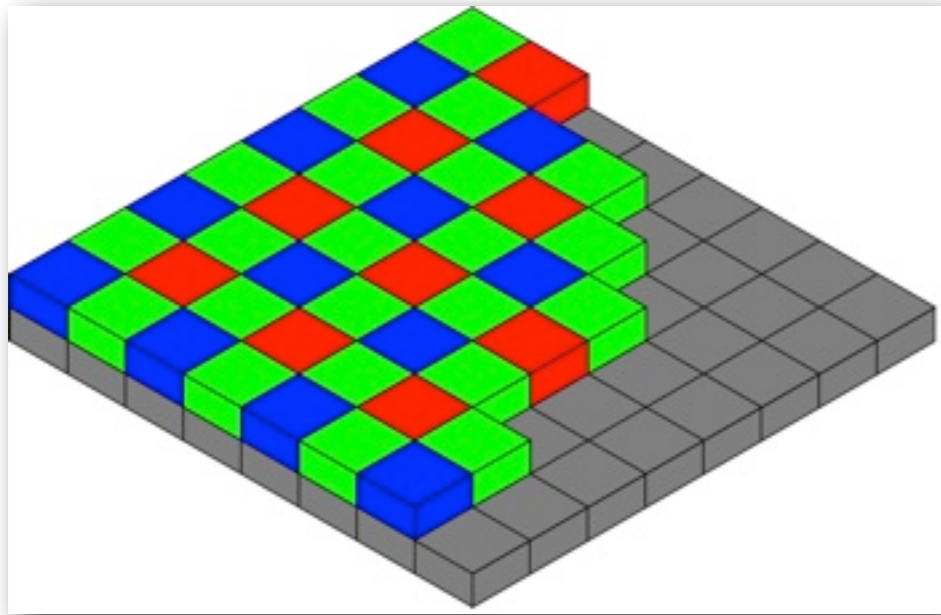
- 1 4-element lens (aperture)
- 2 Reflex mirror
- 3 Focal-plane shutter
- 4 Sensor
- 5 Mirror position during exposure
- 6 Condenser lens
- 7 Pentaprism
- 8 Eyepiece



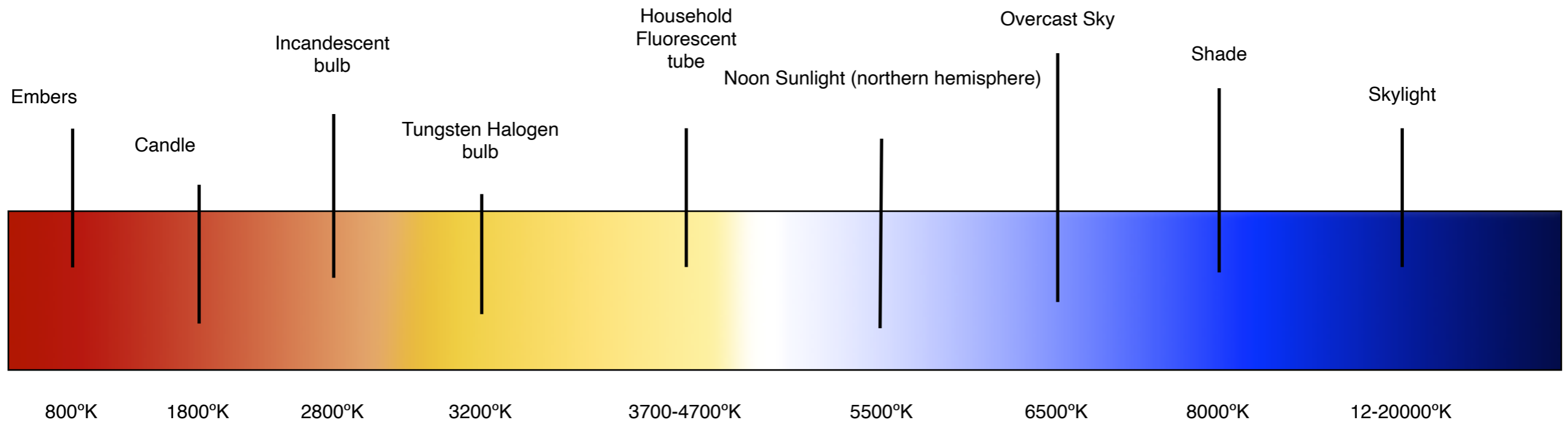
How a camera records colour.

Additive primary colours making subtractive primary colours and white light.

# Recording Colour



Typical Bayer sensor array



A range of colour temperatures



Memory Cards



Lens Hood

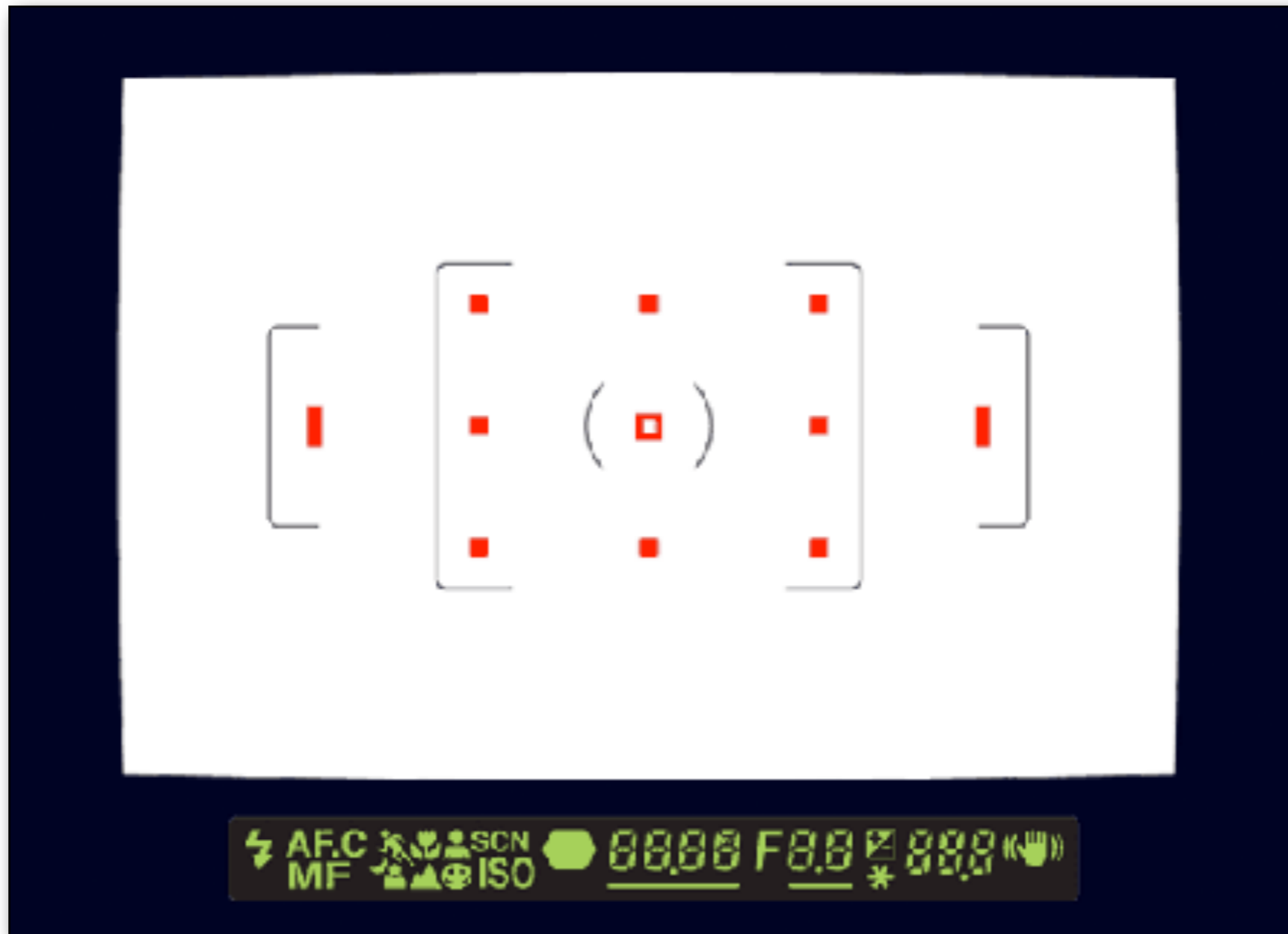


Batteries

Digital essential pieces



Holding and focusing the camera.



Autofocus and  
the viewfinder

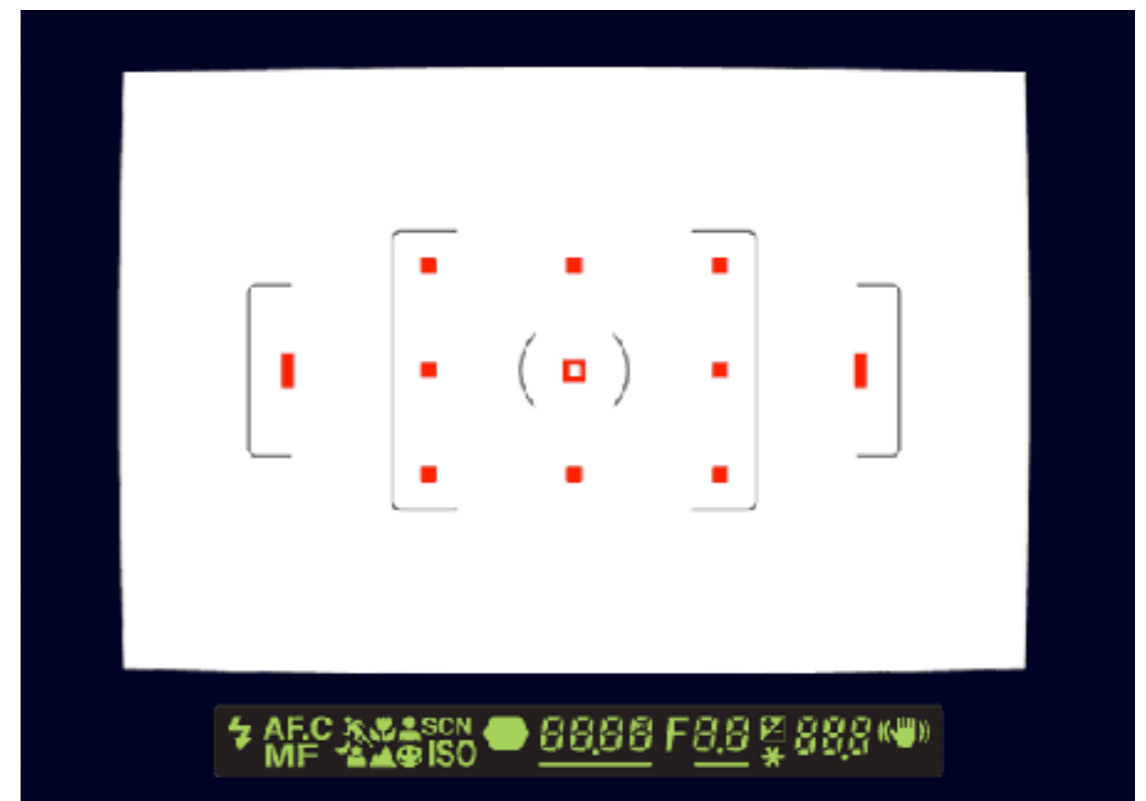
# AUTO FOCUS FAILURES

In Auto Focus mode, your camera must be focused on “something” in order for you to be able to press the shutter release button

Focus is indicated by an illuminated AF Point and an indicator in your view finder (sometimes a beep will sound)

## Difficult Focusing Situations

- Low contrast - clear blue sky, solid colour walls, no edges
- Low light levels - can't “see” well enough to focus
- Overlapping near and far subjects - animal in a cage
- Repetitive patterns - skyscraper windows, keyboard
- Extremely reflective subjects - mirrors, windows, shiny car



# AUTO FOCUS MODES

Auto & Manual FOCUS are separate from auto & manual image capture modes

Usually selected by a switch on the outside of the camera near the lens barrel

Auto Focus is controlled two ways:

WHERE are you focusing?

- Selecting your AF Point manually with your “joystick”
- Allow the camera to select where to focus

HOW are you focusing?

- ONE SHOT (AFS) - best for still subjects, focus is ‘locked’ when shutter button is pressed half-way down and held
- AI Servo (AFC) - best for moving subjects, focus will adjust even when the shutter button is pressed half-way down and held
- AI Focus (AFA) - automatically switches to Servo if your still subject starts to move

# Image Optimizing and File Types

# Image size and Quality

Image size refers to the physical number of pixels in your image

- RAW file format images are, by default, the largest possible size
- JPG file format images can be different sizes (Large, Medium, Small) & different quality

Quality refers to jpeg file format only

- Jpeg file format is a “lossy” file format with different levels of quality (compression)

Nikon – Fine, Normal, Basic

Canon – smooth triangle, rough triangle

Pentax - \*\*\*, \*\*, \*

# Image size and Quality

## RAW

Image is recorded directly off the sensor before any processing

Only aperture, shutter speed and ISO are permanently set

Overall exposure, white balance, and image parameters can be adjusted

Files are much larger than jpeg

No loss in data through compression

More information available in shadow and highlight areas

Format is different between every camera manufacturer

Usually need special software to open and process files

Development of DNG as a universal file format

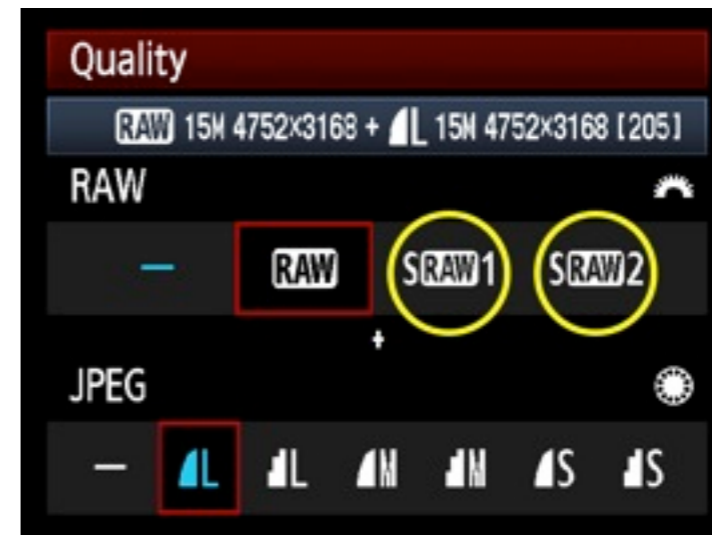
File **MUST BE PROCESSED** in order to have an actual image file



# Image size and Quality



Nikon and some others – Image size and Image Format/Quality are set separately



Canon – Image size and Image Format and Quality are set in the same menu

# Image size and Quality

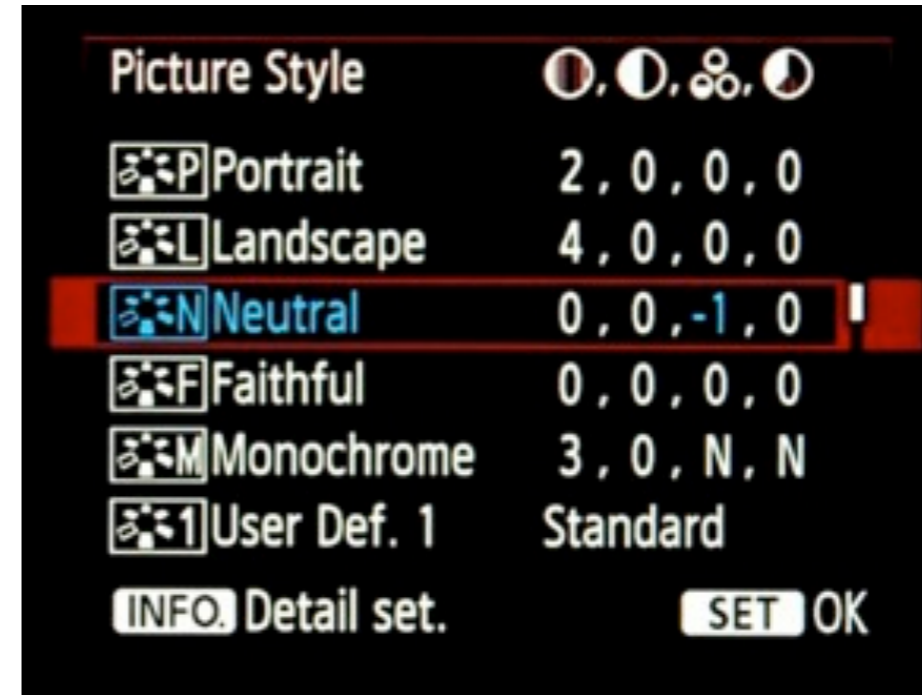


less compressed has smoother image appearance



more compressed file has banding and artifacts

# PARAMETERS & PICTURE STYLES



- Only permanent on a jpg file format
- Can set camera to record in black & white (monochrome)
- Can create custom or user defined settings by adjusting Saturation | Sharpness | Contrast | Hue

Exposure



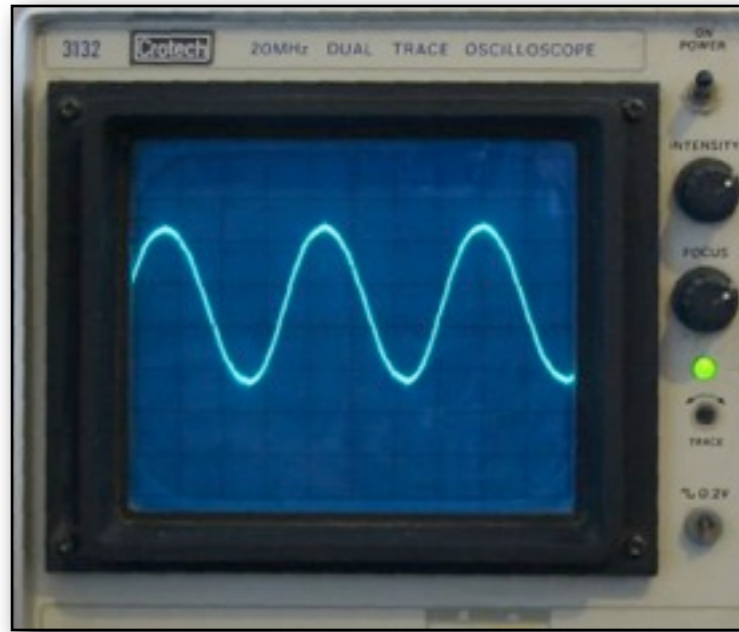
Exposure is a little bit like filling a bucket of water, if you have a large hose it takes less time to fill the bucket.

Exposure is controlled by two variables:

1. The duration of the exposure; controlled by the shutter speed of the camera.
2. The quantity of light; controlled by the aperture on the lens.



Making an exposure



**ISO = sensitivity**  
determines amount of signal to noise

**Shutter speed = duration of time the sensor is exposed**  
you use it to freeze motion or blur motion of your subjects



**Aperture = volume of light for the duration of the exposure**  
this varies the quantity of light passing through the lens  
and the depth of field of in the photograph