

**EDUCATION AU PATRIMOINE VIA  
LES PARCOURS DE SANTÉ**

**HERITAGE EDUCATION THROUGH  
FITNESS TRAILS**



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# BASIC PHOTOGRAPHY AND VIDEO WORKSHOP

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# MANAGING EXPOSURE





# CAMERA EXPOSURE

A photograph's exposure determines how light or dark an image will appear when it's been captured by your camera. This is determined by three camera settings: **aperture**, **ISO** and **shutter speed**.





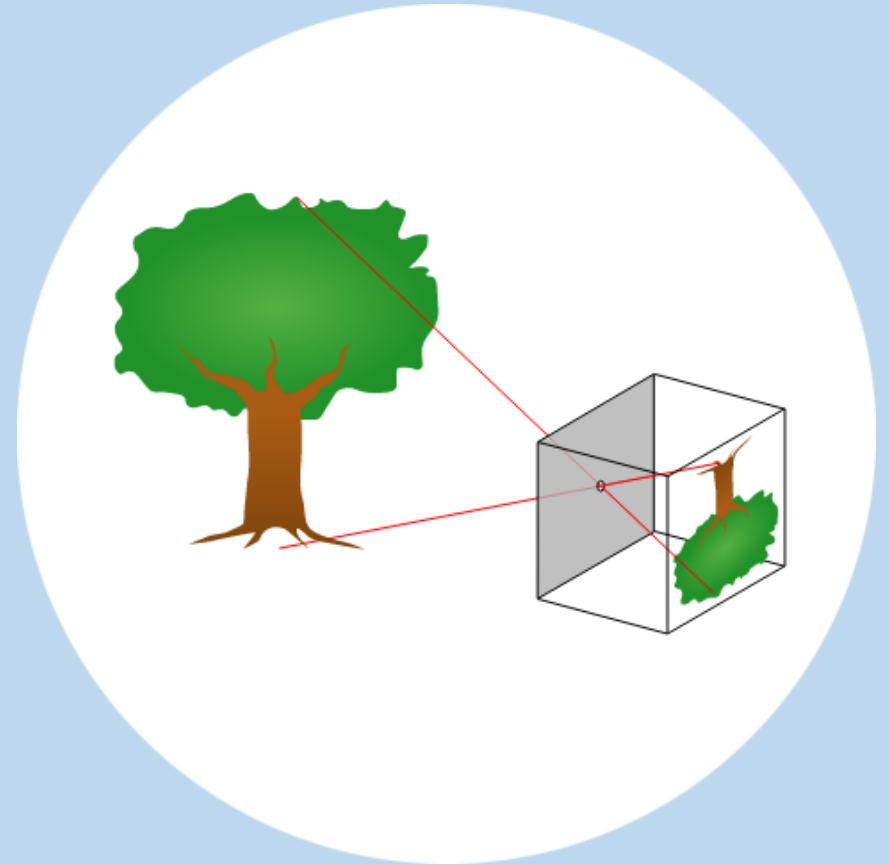


# APERTURE

In optics, an aperture is a hole or an opening through which light travels.

The aperture determines how collimated the admitted rays are, which is of great importance for the appearance at the image plane.

If an aperture is narrow, then highly collimated rays are admitted, resulting in a sharp focus at the image plane. A wide aperture admits uncollimated rays, resulting in a sharp focus only for rays coming from a certain distance.





# f-number

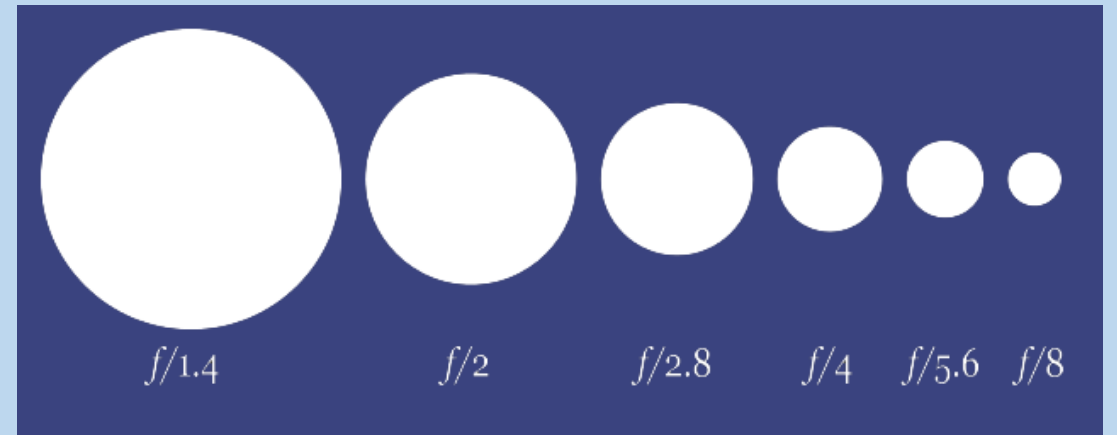
the f-number (sometimes called focal ratio, f-ratio, f-stop, or relative aperture) of an optical system is the ratio of the lens's focal length to the diameter of the entrance pupil.[2] It is a dimensionless number that is a quantitative measure of lens speed, and an important concept in photography. The number is commonly notated using a hooked f, i.e. f/N, where N is the f-number.

The f-number given by

$$N = \frac{f}{D}$$

Where  $f$  is the focal length, and  $D$  is the diameter of the entrance pupil (effective aperture).

So bigger diameters produce smaller f-numbers.





# Depth of field

Depth of field (DOF), also called focus range or effective focus range, is the distance between the nearest and farthest objects in a scene that appear acceptably sharp in an image.

For a given subject framing and camera position, the DOF is controlled by the lens aperture diameter, which is usually specified as the f-number. Reducing the aperture diameter (increasing the f-number) increases the DOF. However, it also reduces the amount of light transmitted, and increases diffraction, placing a practical limit on the extent to which DOF can be increased by reducing the aperture diameter.



f/1.4. DOF=0.8 cm



f/4.0. DOF=2.2 cm



f/22. DOF=12.4 cm



# Shutter speed

Shutter speed or exposure time is the length of time when the film or digital sensor inside the camera is exposed to light, also when a camera's shutter is open when taking a photograph. The amount of light that reaches the film or image sensor is proportional to the exposure time. 1/500th of a second will let half as much light in as 1/250th.







# Exposure value

Exposure value (EV) is a number that represents a combination of a camera's shutter speed and f-number, such that all combinations that yield the same exposure have the same EV (for any fixed scene luminance)

Two images with the same EV and different combinations F-number/shutter speed.





# Exposure value

Looking through the viewfinder, while smoothly pressing the shooting button, you can assess the exposure value (EV), and correct it using shutter speed and f-number controls of your camera.





# ISO

ISO is the level of sensitivity of your camera to available light. The lower the ISO number, the less sensitive it is to the light, while a higher ISO number increases the sensitivity of your camera.

The component within your camera that can change sensitivity is called “image sensor” or simply “sensor”.

It is the most important (and most expensive) part of a camera and it is responsible for gathering light and transforming it into an image.

With increased sensitivity, your camera sensor can capture images in low-light environments.

But higher sensitivity usually comes at an expense – it adds grain or “noise” to the pictures.



Low ISO Speed  
(low image noise)

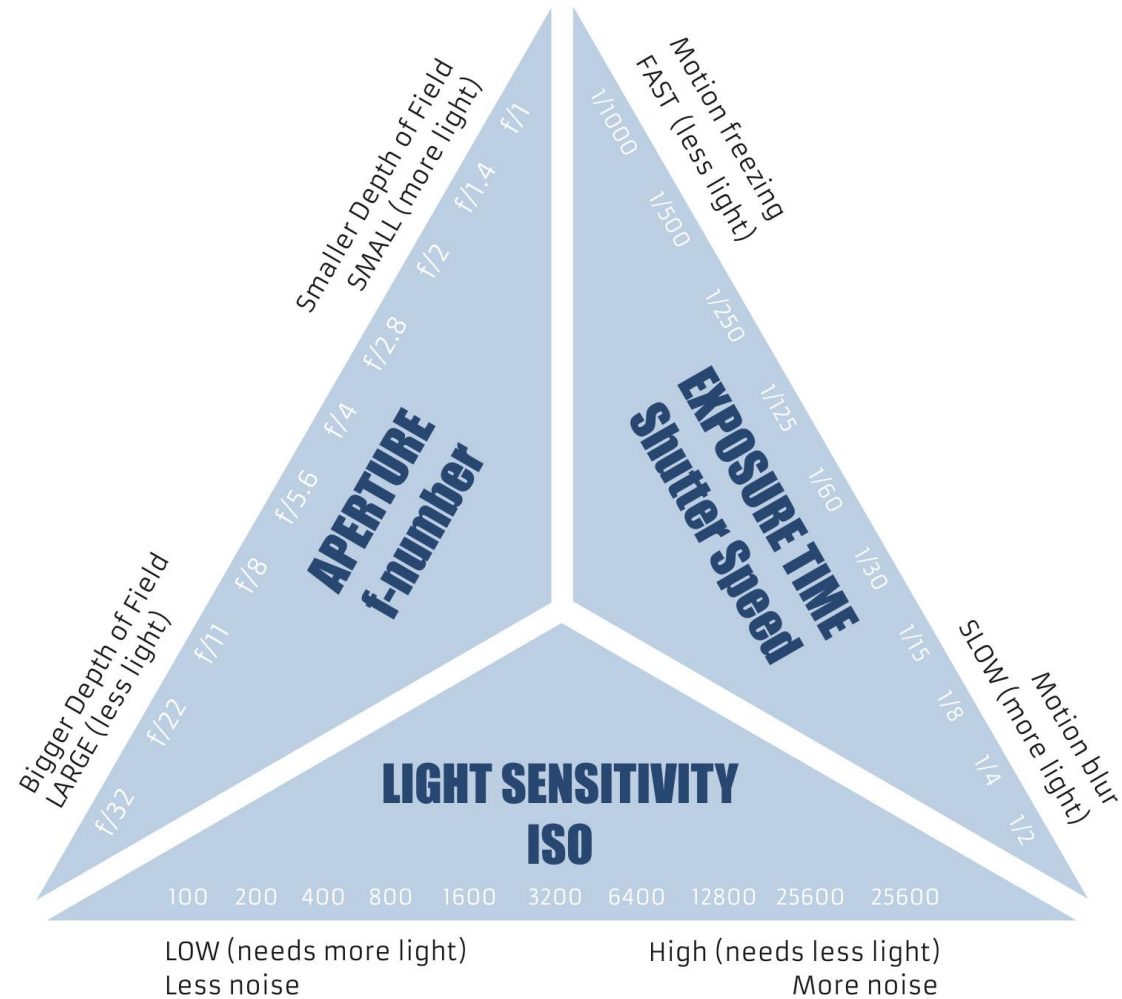


High ISO Speed  
(High image noise)





# THE EXPOSURE TRIANGLE



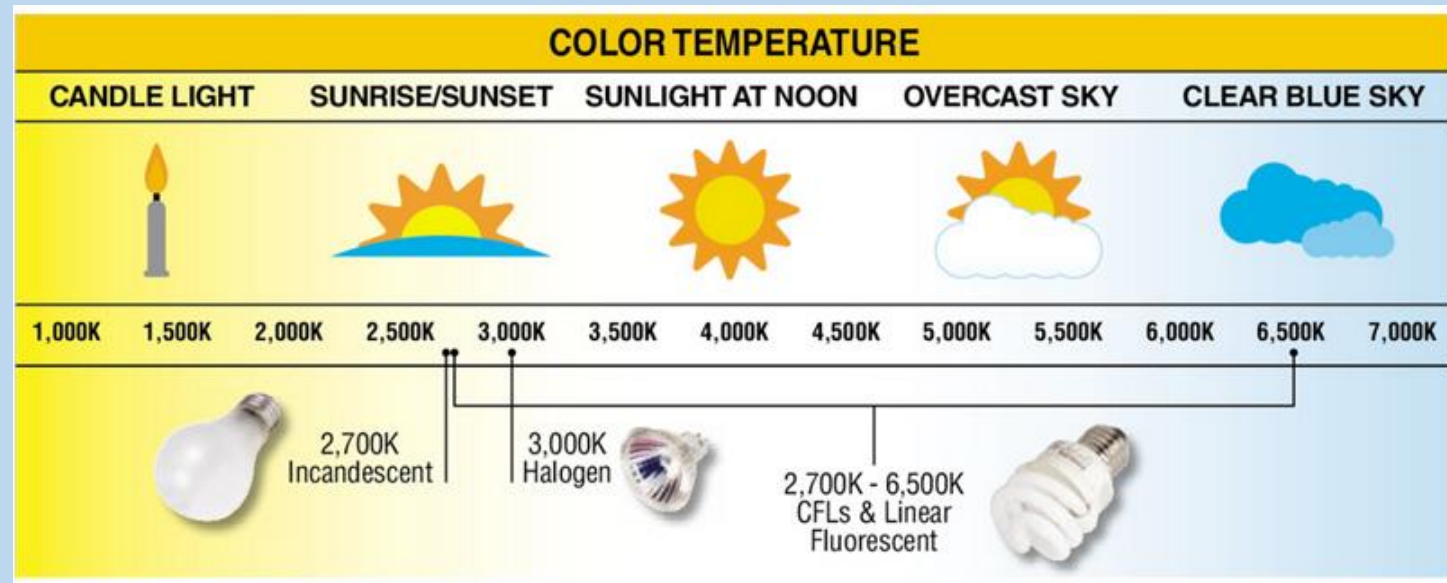




# COLOR TEMPERATURE

Color temperature is a characteristic of visible light and is measured in Kelvin units (K).

Different light sources provide different color temperatures and that will change the colors in the photographic image.





# COLOR BALANCE

color balance is the global adjustment of the intensities of the colors (typically red, green, and blue primary colors). An important goal of this adjustment is to render specific colors – particularly neutral colors – correctly. Hence, the general method is sometimes called gray balance, neutral balance, or **white balance**.

