

# Controlling Exposure

In order for an image to be captured on film, it must be exposed to light. The camera has two settings that control light, and they work very similar to the human eye.

## The Shutter:



The shutter blocks all light from exposing the film UNTIL you press the button. Then it quickly opens and closes, giving the film a brief flash of light.

You can control the length of time the shutter remains open by setting the SHUTTER SPEED.

**Longer shutter speeds = more light**  
**shorter shutter speeds = less light**

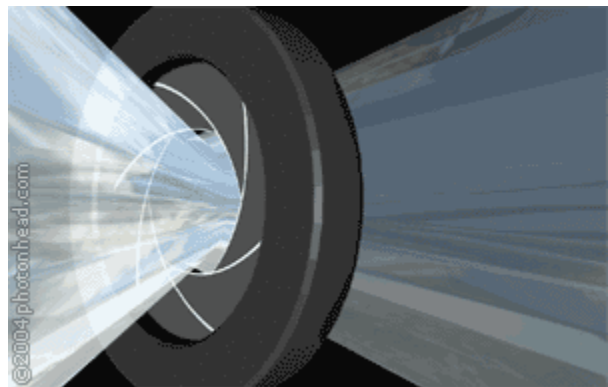
«« Canon Rebel 35mm shutter in closed position.

## The Aperture:

Before light reaches film, it must pass through an opening called an "Aperture". The aperture is like a pupil. You can control the aperture by setting the "Aperture Opening", also known as an F-Stop.

**Smaller F-stops numbers = larger openings**

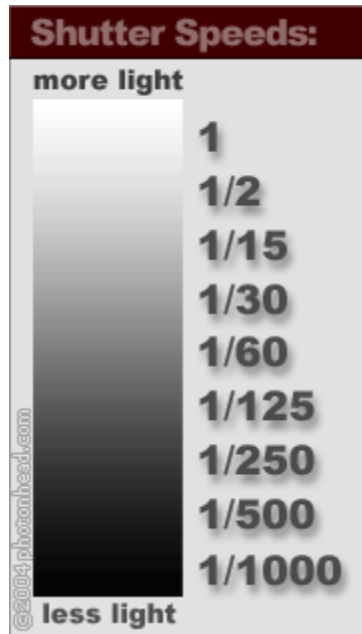
**larger openings = more light**



brightness is reduced as light passes through an aperture.

## Shutter Speed:

Determines HOW LONG the shutter stays open.



The longer exposures ( like 1 second ) give much more light to the film than a 1/1000 of a second exposure. So even though the number may look bigger, don't be deceived!

#### Examples:

A half second exposure is ONE STOP darker than a one second exposure.

A 1/125 exposure is TWO STOPS brighter than a 1/500 exposure.

A 1/1000 exposure is THREE STOPS darker than a 1/125 exposure.

« Every step in this table represents a ONE STOP change in light.

## Aperture Settings (F-Stops):

Like the pupil in a human eye, the aperture on a camera controls light.

It does so by closing up to restrict light, and opening up to let it through.

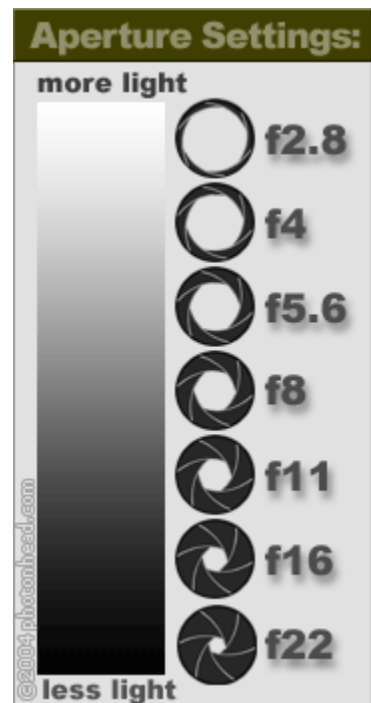
#### Examples:

moving from f16 to f8 is:  
TWO STOPS brighter.

moving from f5.6 to f8 is:  
ONE STOP darker

moving from f4 to f2.8 is:  
ONE STOP brighter

Every step in this table »  
represents a ONE STOP change in light.



## Balancing Shutter and Aperture:

Exposure is about different combinations of shutter and f-stop settings. These combinations can

drastically affect the finished picture. For example, the following three pictures have been given an equal amount of light, but the f-stop and shutter combinations make each one unique.

$$f22 : 1/4 = f8 : 1/30 = f2.8 : 1/250$$



*Why is the background all blurred in the right picture, and sharpest in the left ? Because if the exposure is made with a wide aperture ( like f2.8 ), then objects farther away from the subject are thrown farther out of focus. This effect is referred to as "depth of field"*

*So.. if the aperture is small (like f22) then objects in the background (and foreground ) will appear sharper. However, since more light was required to make the exposure on the left ( 1/4 Second ) the subjects became blurred from MOTION. At 1/250th of a second, the shutter is fast enough to freeze motion.*

## Take a stop, Give a stop..

Since f-stop and shutter are both measured in stops, keeping balance is easy. If you take away 2 stops from the aperture, you can give 2 stops back with the shutter and end up with the same exposure level.