

Exposure

Review

- ✦ The difference between 1/60 and 1/125 is
- ✦ Most SLR's have a ___ shutter
- ✦ ___ controls the amount of light reaching the film
- ✦ To stop action use a ___ shutter speed
- ✦ List the steps in panning
- ✦ Panning requires a shutter speed of ___

Exposure Considerations

- ✦ Lens opening
 - ◆ Larger opening, more light reaches the film
- ✦ Shutter speed
 - ◆ Faster speed, less light reaches the film

Film Manufacture

- ✦ Halogen + silver
 - ◆ Bromine, chlorine, iodine
- ✦ Silver halides
 - ◆ Silver bromide, chloride, iodide
- ✦ Halides suspended in gelatin emulsion and coated on acetate film base
- ✦ Emulsion making determines the size of crystal grains, heat increases the size

Film Speed

- ✦ ISO/ASA
 - ◆ Sensitivity of film
 - ◆ Based on grain size
- ✦ Typical film speeds (ISO)
 - ◆ 125, 400 for black and white
 - ◆ 100, 200, 400 for color prints
 - ◆ 64, 164, 200, 400 for color slides
 - ◆ Other

Grain and Sensitivity

- ✦ Large grains, greater sensitivity
- ✦ Higher ISO, greater sensitivity

Speeds or Sensitivities

- ✦ 32 ISO - slow, bright light, fine grain
- ✦ 125 ISO - medium speed, general outdoor, medium fine grain
- ✦ 400 ISO - fast, dim lighting, coarser grain
- ✦ 400 speed is almost 4x faster than 125

Light Meters

- ✦ Measures light and translates f/stop and shutter speed combinations within the law of reciprocity

Law of Reciprocity

- ✦ Exposure = intensity of light x time
- ✦ $E = I \times T$
 - ◆ As long as the product of light intensity and time remain the same, the exposure to the film remains the same
 - ◆ $1 \times 12 = 12$, $2 \times 6 = 12$, $3 \times 4 = 12$, $4 \times 3 = 12$, $6 \times 2 = 12$

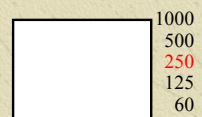
Meter Types

- ✦ Through-the-lens (ttl)
 - ◆ Reads light passing through the lens

Match needle



Electronic readouts



Camera Meters

- ✦ Manual
 - ◆ Set f/stop and shutter speed, built-in or separate
- ✦ Semi-automatic
 - ◆ Shutter priority - set shutter, camera sets f/stop
 - ◆ Aperture priority - set f/stop, camera sets shutter
 - ◆ Automatic - camera sets f/stop and shutter based on film speed
 - ◆ Combination

Handheld Meters

- ✦ Set ISO, meter indicates f/stop and shutter
- ✦ Reflected - point at the subject, reads light reflected off of the subject
- ✦ Incident - pointed at the camera from the subject, reads light falling on the subject

Weighting

- ✦ Averaging - reads light in a large arc, 30-50 degrees
- ✦ Spot - reads light in a narrower angle, 1-10 degrees
- ✦ Center-weighted - combines averaging and spot, with heavier weight on the center

Shutter Speed & f/stops - a reciprocal relationship

- ✦ Fast shutter speed (less light), large f/stop (more light)
- ✦ Slow shutter speed (more light), small f/stop (less light)

Equivalent Exposures

- ✦ F/16 at 1/30, f/11 at 1/60, f/8 at 1/125, f/5.6 at 1/125, f/4 at 1/500
- ✦ Change one f/stop or one shutter speed, and all move one stop left or right - double or half rule

Which Combination?

- ✦ Maximum depth of field
 - ◆ small lens opening
- ✦ Shallow depth of field
 - ◆ large lens opening
- ✦ Stop action
 - ◆ fast shutter speed
- ✦ Pan action
 - ◆ slow shutter speed

Reciprocity Failure

- ✦ Speed faster than 1/1000
- ✦ Speed longer than one sec.

Best Exposure?

- ✦ Take a general reading
- ✦ Look at the scene - do light to dark areas average?
 - ◆ Light subjects - open up 1 stop, or slow 1 speed
 - ◆ Dark subjects - close 1 stop, or 1 speed faster

Bracket

- ✦ Meter - f/8 at 1/60, shoot
- ✦ Bracket by shutter speeds
 - Second at f/8 at 1/30, third at f/8 at 1/125
- ✦ Bracket by f/stops
 - Second at f/11 at 1/60, third at f/5.6 at 1/60

Obey the Law

- ✦ Must obey the law of reciprocity to achieve equivalent exposures

Problems

- ✦ Backlit subjects
 - Open up 1 or 2 stops
 - Close up readings
- ✦ Low-light conditions
 - Fast film, slow shutter, wide aperture
 - Meters least accurate
- ✦ Highlight areas
 - Open lens 1 to 2 stops