

### Key Learnings #3 – Unit 2 – Exposure

**EXPOSURE** is controlled by three camera controls:

- ➔ **ISO:** How *sensitive to light* the sensor is. For best results, shoot at the *lowest ISO* that the exposure allows. (Usually 100 or 200 ISO)
- ➔ **Aperture:** The *amount* of light coming into the camera
- ➔ **Shutter Speed:** How much *time* the sensor is exposed to the light

The amount of light that enters the camera through the lens and hits the sensor (or film) is governed by both the Aperture and Shutter Speed. ISO speed determines the overall light sensitivity. *The three work in unison.*

#### ISO

Each time you **double** or **halve** the ISO number, you either **double** or **halve** the sensitivity of the image sensor.

#### APERTURE

The opening in the lens that allows light in.



- ➔ Lens openings are referred to as **f-stops**. The numbers above represent *whole-stop* increments. Modern d-SLRs also divide these in  $\frac{1}{3}$  increments.
- ➔ The *larger* the aperture opening, the *smaller* the f-stop number
- ➔ The *smaller* the aperture opening, the *higher* the f-stop number
- ➔ Each time you move from one whole f-stop to an adjacent whole f-stop, you either **double** or **halve** the amount of light to the sensor. “Open-Up” one stop, you *double* the light. “Stop-Down” one stop, you *halve* the light.
- ➔ **Think of Pie!!** It will help you remember the *inverse relationship* between the f-stop number and the aperture size. Actually, f-stops numbers are *fractions*. You only see the denominator (eg; 2.8 instead of  $\frac{1}{2.8}$ ). Just as one quarter ( $\frac{1}{4}$ ) of a pie is more than one eighth ( $\frac{1}{8}$ ) of a pie,  $\frac{1}{4}$  is larger than  $\frac{1}{8}$ . I know I'd rather have a quarter of a pie!! (maybe I shouldn't!)

#### SHUTTER SPEED

A camera shutter stays open a certain amount of time in order to let light hit the sensor as it comes through the lens aperture.

- ➔ The *faster* the shutter speed, the *less* light is allowed to pass to the sensor. The *slower* the shutter speed, the *more* light is allowed to pass.
- ➔ Shutter speeds are represented in *whole seconds* and *fractions of seconds*. Typical shutter speeds: 2 (seconds), 1 (second),  $\frac{1}{2}$ ,  $\frac{1}{4}$ ,  $\frac{1}{8}$ ,  $\frac{1}{15}$ ,  $\frac{1}{30}$ ,  $\frac{1}{60}$ ,  $\frac{1}{125}$ ,  $\frac{1}{250}$ ,  $\frac{1}{500}$ ,  $\frac{1}{1000}$  and beyond. On your camera, these fractions are generally indicated not in fractions *but* in *whole numbers*: 2, 4, 8, 15, 30, 60, 125, 250, 500, 1000, etc.
- ➔ Each time you **double** or **halve** the exposure time, you either **double** or **halve** the amount of light reaching the sensor.

### NOTES

Aperture Exposure Triangle Shutter Speed

Exposure Triangle

ISO

Attention all scientists & engineers:

aperture diameter  $\div$  lens focal length = *f number*

eg.; 100 mm lens  $\div$  25mm aperture dia. =  $f/4$

The rest of us don't worry about this!!

#### A Great Photograph ...

- Has a central theme or idea.
- Focuses attention to a single point-of-interest
- Simplifies