## Basic Camera Operations

Exposure is a balance of the **Amount** of light, **Volume** of light, and the **Sensitivity** to light.

Doubling and Halving the amount, volume, or sensitivity of light is called a **Stop**.

If an image is too dark it is considered **Underexposed**.

If an image is too bright it is considered **Overexposed**.

Shallow **Depth of Field** occurs with the use of a large **Aperture** opening. The larger opening produces the perception little or no **Sharpness through Space**.

- Fast shutter speeds will freeze action. Fast is considered shorter than 1/125th of a second.

- Slow shutter speeds will blur motion. Slow is considered longer than 1/60th of a second. You will need a tripod if using longer than 1/60th of a second.
Basic Camera Operations

Exposure is a balance of the **Amount** of light, **Volume** of light, and the **Sensitivity** to light.

Example:  \( f/5.6 \) @ 1/125th sec @ ISO 200

<table>
<thead>
<tr>
<th>Volume</th>
<th>Amount</th>
<th>Sensitivity</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>f/ 2</em></td>
<td>1 sec*</td>
<td>12800</td>
</tr>
<tr>
<td><em>f/2.8</em></td>
<td>1/2 sec*</td>
<td>6400</td>
</tr>
<tr>
<td><em>f/4</em></td>
<td>1/4 sec*</td>
<td>3200</td>
</tr>
<tr>
<td><em>f/5.6</em></td>
<td>1/8 sec*</td>
<td>1600</td>
</tr>
<tr>
<td><em>f/8</em></td>
<td>1/15 sec*</td>
<td>800</td>
</tr>
<tr>
<td><em>f/11</em></td>
<td>1/30 sec*</td>
<td>400</td>
</tr>
<tr>
<td><em>f/16</em></td>
<td>1/60 sec</td>
<td>200</td>
</tr>
<tr>
<td><em>f/22</em></td>
<td>1/125 sec</td>
<td>100</td>
</tr>
</tbody>
</table>

*Requires the use of a tripod.*
Basic Camera Operations

The **Doubling or Halving** the amount of light, volume of light, or sensitivity to light is called a **Stop**.

- **Example Normal Exposure**: $f/5.6 @ 1/125$ sec @ ISO 200
- **Example One Stop Under Exposure**: $f/8 @ 1/125$ sec @ ISO 200
- **Example One Stop Over Exposure**: $f/4 @ 1/125$ sec @ ISO 200

If an image is too dark it is considered **Underexposed**.

If an image is too bright it is considered **Overexposed**.
Basic Camera Operations

Long **Depth of Field** occurs with the use of a small Aperture opening. The smaller opening produces the perception of **Sharpness through Space**.
Basic Camera Operations

Shallow **Depth of Field** occurs with the use of a large Aperture opening. The larger opening produces the perception little or no **Sharpness through Space**.
Basic Camera Operations

Fast shutter speeds will freeze action. Fast is considered shorter than 1/125th of a second.
Basic Camera Operations

Slow shutter speeds will blur motion. Slow is considered longer than 1/60th of a second. You will need a tripod if using below 1/60th of a second.
Balance is the concept of visual equilibrium, and relates to our physical sense of balance. It is a reconciliation of opposing forces in a composition that results in visual stability. Most successful compositions achieve balance in one of two ways: symmetrically or asymmetrically. Balance in a three dimensional object is easy to understand; if balance isn't achieved, the object tips over. To understand balance in a two dimensional composition, we must use our imaginations to carry this three dimensional analogy forward to the flat surface.
Proportion refers to the relative size and scale of the various elements in a design. The issue is the relationship between objects, or parts, of a whole. This means that it is necessary to discuss proportion in terms of the context or standard used to determine proportions.
Principles of Design

Balance
Proportion
Rhythm
Emphasis
Unity

Rhythm can be described as timed movement through space; an easy, connected path along which the eye follows a regular arrangement of motifs. The presence of rhythm creates predictability and order in a composition. Visual rhythm may be best understood by relating it to rhythm in sound.
Principles of Design

Balance  Proportion  Rhythm  Emphasis  Unity

Point of Focus/ Interruption  Repetition  Contrast  Color/ Texture/ Shape

Emphasis is also referred to as **point of focus**, or **interruption**. It marks the locations in a composition which most strongly draw the viewers attention. Usually there is a primary, or main, point of emphasis, with perhaps secondary emphases in other parts of the composition. The emphasis is usually an interruption in the fundamental *pattern* or *movement* of the viewers eye through the composition, or a break in the *rhythm*. 
Unity is the underlying principle that summarizes all of the principles and elements of design. It refers to the coherence of the whole, the sense that all of the parts are working together to achieve a common result; a harmony of all the parts.
Principles of Design
Principles of Design
Principles of Design

Elliott Erwitt
Principles of Design

Bob Thall
Principles of Design

Paul D’Amato