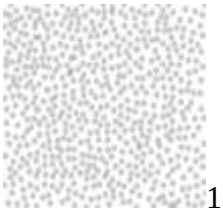
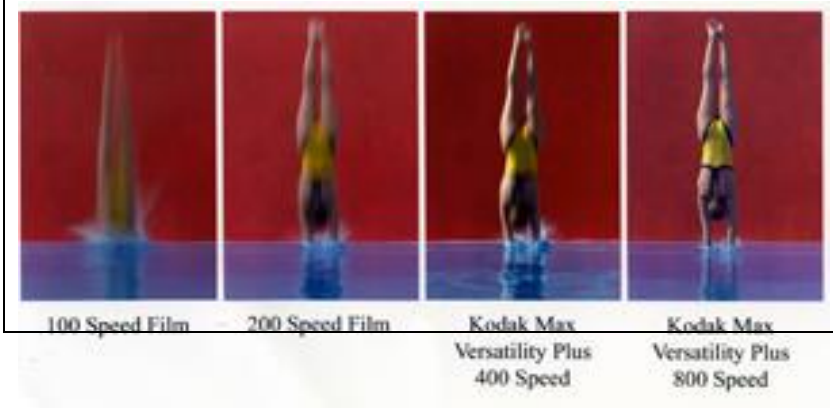
Photography One and Two

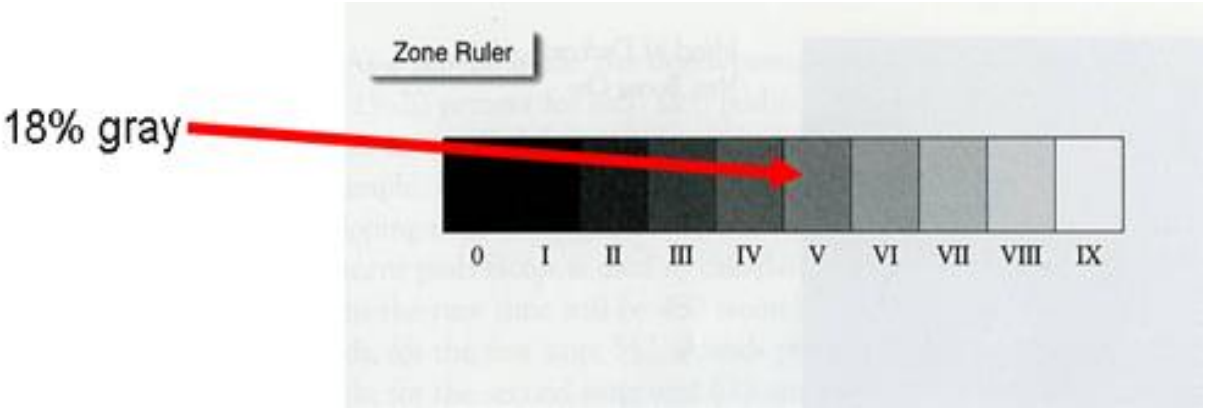
Camera Tools

Camera Obscura
Eye/Camera Comparison
How the Camera Works Inside

ISO & Light Meter
The Stop
Aperture
Exposure
Portrait and Depth of Field
Shutter Speed

Everything learned here transcends into digital cameras. You would simply substitute CCD (Charged Coupled Device) where you see the word film]

ISO	**ISO stands for International Standards Organization** **(ASA is used on older cameras – American Standards Association)** • **ISO designates the film's degree of sensitivity to light** • **Higher number ISOs means more sensitive to light – can be used in lower light settings (generally)** • **Lower number ISOs means it is less sensitive to light and is used for brighter settings (generally)** **The sensitivity of film to light has to do with the density of the silver halides on the film**
Effects of ISO on image	 800 ISO  100 ISO  High ISO  Low ISO **The higher the ISO the more grainy the final image will appear (or more noise appears in digital images with higher ISOs)** 

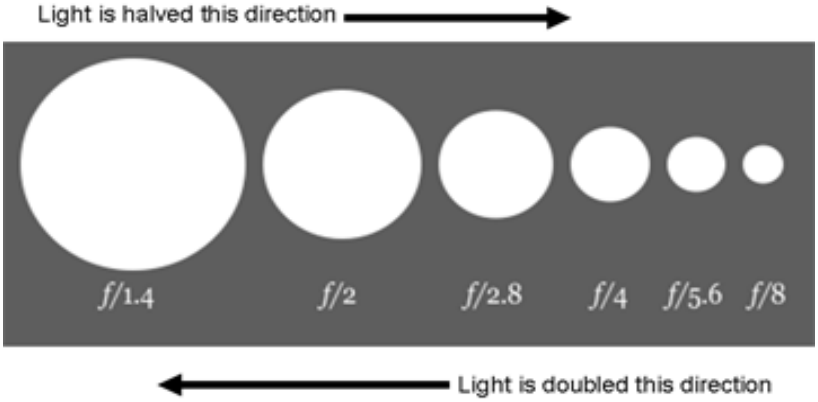
Light Meter	• **Purpose = tells you how much light is being allowed into the camera based on the current APERTURE, SHUTTER SPEED, and ISO settings** • **Averages all light in scene to 18% gray which is ZONE V on Zone system scale** • **Is correct most of the time**
18% Gray	**The tone to which all light meters average the light given off by the scene which is being photographed** 

Stop

- **A change in an exposure setting, either aperture or shutter speed, that either doubles or halves exposure**

Why does a larger f-stop number actually represent a smaller aperture opening?

- **F-stop numbers represent fractions**
- **The number represents the denominator**
- **For example f-22 = 1/22, f-5.6 = 1/5.6**



- **Shutter speed numbers represent fractions as well**
- **The shutter speed number on your camera is the denominator**
- **For example, 125 = 1/125 of a second, 1000 = 1/1000 of a second**

Why does a larger shutter speed number represent a faster shutter speed?

Doubling Comparison for Shutter Speeds

Doubling Sequence	Camera Shutter Speeds
1	1
2	2
4	4
8	8
16	15
32	30
64	60
128	125
256	250
512	500
1024	1000

Exposure

- **Combined effect of volume of light hitting the film or sensor and its duration.**
- **Volume is controlled by the aperture (f-stop)**
- **Duration (time) is controlled by the shutter speed**

Equivalent Exposure

- **denotes all combinations of shutter speed and relative aperture settings that give the same amount of light striking the light sensitive surface**
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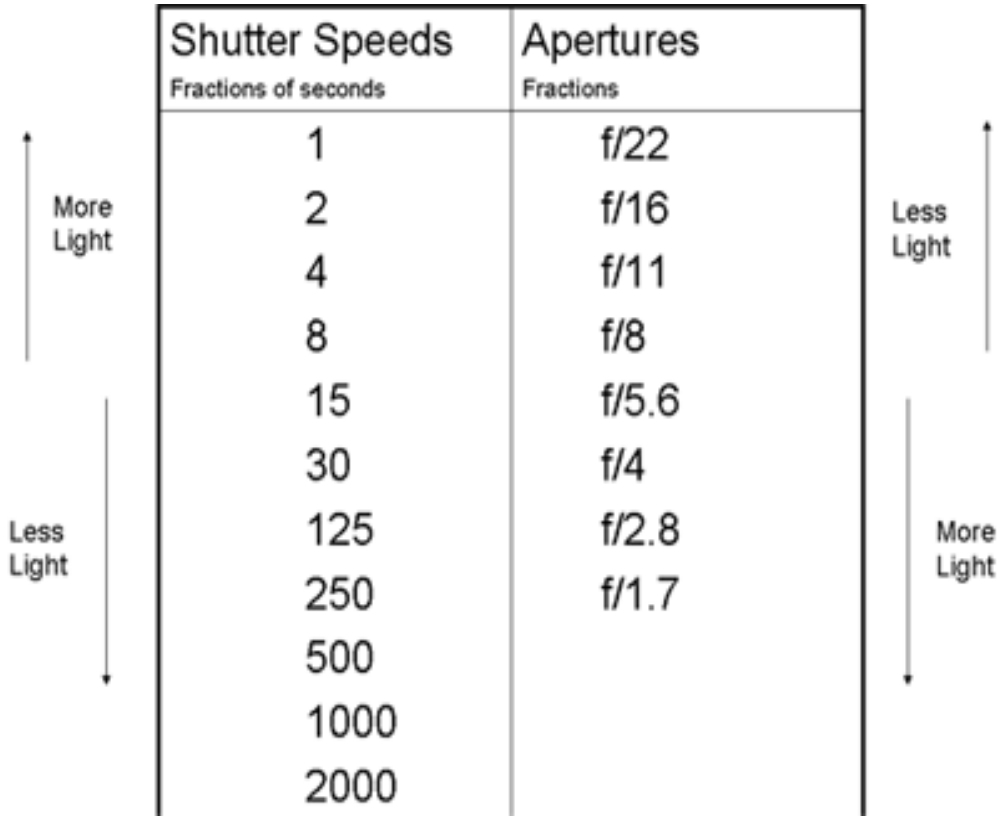
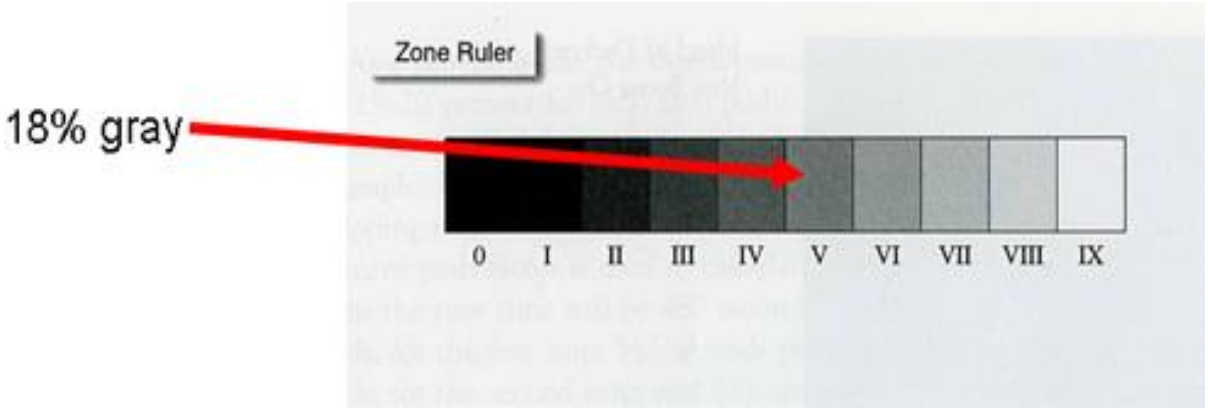
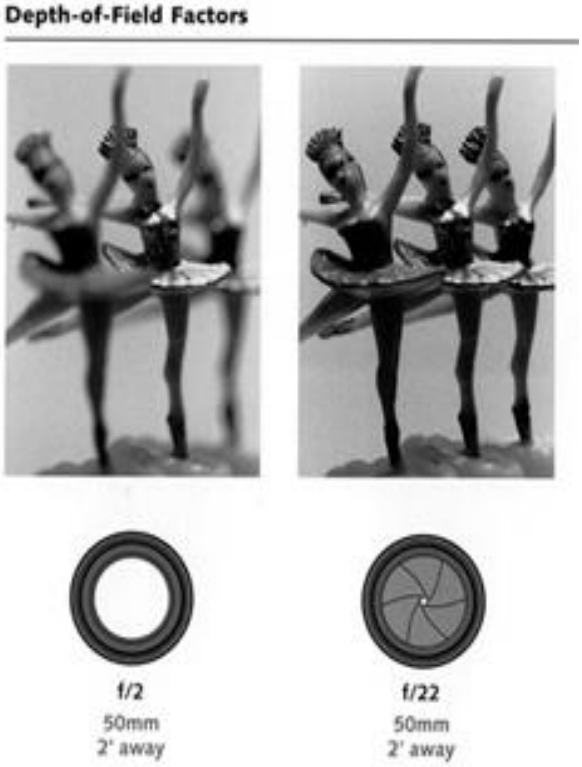


Shutter Speeds Fractions of seconds	Apertures Fractions
1	f/22
2	f/16
4	f/11
8	f/8
15	f/5.6
30	f/4
125	f/2.8
250	f/1.7
500	
1000	
2000	

Why is Equivalent Exposure Important?

- **To expose your image properly (not to light or too dark)**
- **As you shoot in different light conditions or shoot for different effects you must change your apertures and shutter speeds accordingly**

Light Meter	• **Purpose = tells you how much light is being allowed into the camera based on the current APERTURE, SHUTTER SPEED, and ISO settings** • **Averages all light in scene to 18% gray which is ZONE V on Zone system scale** • **Is correct most of the time**
18% Gray	**The tone to which all light meters average the light given off by the scene which is being photographed** 

Aperture Function	**Controls opening's size during exposure** **Another term for aperture: f-stop** **Controls Depth of Field** 
Depth of Field	**The zone of sharpness variable by aperture, focal length, or subject distance** 

How does one create a shallow depth of field in a photograph?	**Use a large aperture like f/2.8, f/4** 
How does one create a large depth of field in a photograph?	**Use a small aperture like f/16, f/22**  **To help you remember the f-stop numbers in regards to depth of field:** **Higher f-stop numbers present more information visible (larger depth of field) (f/22)** **Lower f-stop numbers present less information visible (shallower depth of field) (f/2.8)**
What is often some of the best light to shoot in for portrait?	**Soft, diffused light:** - **open shade (in the shade of a building or tree but there is open sky above you)** - **overcast day** - **studio lighting** - **window light**

What is the most important compositional element to be aware of for motion shots?	**Space - see that your negative space creates contrast with your subject (positive space)**
Why do higher numbered shutter speeds represent faster shutter speeds?	**Shutter speed numbers represent fractions as well** **The shutter speed number on your camera is the denominator** **For example, 125 = 1/125 of a second, 1000 = 1/1000 of a second**
What is the slowest shutter speed at which one could freeze many forms of motion?	**1/250, but usually you should try to use faster shutter speeds like 1/500 or faster**
What is the optimal shutter speed to create pan or blur motion (when the camera is hand-held as opposed to on a tripod)?	**1/60**

Photo One Lindroth
Motion Photography Guidelines C-24

Freeze Motion

Camera settings:

ISO = 125 (unless otherwise instructed – light conditions could change this)
Shutter speed = **1/500** second or faster
Aperture (f-stop) = use light meter if available to set up an equivalent exposure

If no light meter is available, use the BDE chart and your green and yellow aperture and shutter speed strips to set up an equivalent exposure. If you are shooting at 125 ISO, you can shoot in the bright sun at 1/500 @ f/8, 1/1000 @ 5.6, 1/2000 @ f/4.

Holding the camera:

Having subjects move downward and holding your camera in portrait position often makes it easier to capture freeze motion. However, you can hold your camera in the landscape position and have your subject moving horizontally.

Hold your camera steady while shooting freeze. You want your background and subject to be steady and frozen in space.

Photographic subject information:

Subject's position in relation to photographer:
Photographer should be close enough to the subject to clearly see the subject, yet not so close as to lose the spatial context in which the subject is shot. We must be able to tell the subject is in motion and if the photographer is too close then motion will not be evident.

Subject's type of motion:
Subject must be making somewhat dramatic and obvious motion. A photo of three people walking down the sidewalk is not freeze motion. The subject should be running or jumping, etc.

Shooting cars is not allowed on this shoot. A car sits on four wheels, so when a car is frozen in a photograph, we often cannot tell whether the subject is moving or parked.

Compositional Reminder

Be aware of the space surrounding your subject. Avoid mergers and avoid letting your subject get lost in the background (a dark-clothed person in front of a dark background will not show up very well, for example).

Blur Motion

Camera settings:

ISO = 125 (unless otherwise instructed – light conditions could change this)
Shutter speed = **1/60** second or faster
Aperture (f-stop) = use light meter if available to set up an equivalent exposure

If no light meter is available, use the BDE chart and your green and yellow aperture and shutter speed strips to set up an equivalent exposure.

Holding the camera:

Having subjects move horizontally while you hold your camera in a landscape position usually works best. However, you can have your subject move vertically while you shoot in portrait position.

Hold your camera steady while shooting blur. You want your background steady and clear while your subject will blur.

Photographic subject information:

Subject's position in relation to photographer:
Photographer should be close enough to the subject to clearly see the subject, yet not so close as to lose the spatial context in which the subject is shot. We must be able to tell the subject is in motion and have a background that is steady to make more dramatic the blur effect. If the subject is far away, the subject will likely not blur at all.

Subject's type of motion:
Subject must be moving fairly fast, but does not need to be moving incredibly fast.

Shooting moving cars is allowed on this shoot.

Compositional Reminder

Be aware of the space surrounding your subject. Avoid mergers and avoid letting your subject get lost in the background (a dark-clothed person in front of a dark background will not show up very well, for example). However, a dark-clothed subject against a light background (or light-clothed subject against a dark background) can be very effective and dramatic in blur motion.

Pan Motion

Camera settings:

ISO = 125 (unless otherwise instructed – light conditions could change this)
Shutter speed = **1/60** second or faster
Aperture (f-stop) = use light meter if available to set up an equivalent exposure

If no light meter is available, use the BDE chart and your green and yellow aperture and shutter speed strips to set up an equivalent exposure.

Holding the camera:

Having subjects move horizontally while you hold your camera in a landscape position usually works best. Portrait camera position and vertical movement rarely ever work with pan motion.

Follow your subject while shooting pan. Press the shutter release button when the subject is in a good position in front of you. Keep the camera moving in the same direction after you fire the shutter release button. The background will streak and your subject will still be in focus. Try to keep your camera motion centered on the head and torso of a moving body.

Photographic subject information:

Subject's position in relation to photographer:
Photographer should be close enough to the subject to clearly see the subject, yet not so close as to lose the spatial context in which the subject is shot. We must be able to tell the subject is in motion and have a background that is streaked to make a more dramatic the pan effect. If the subject is far away, it will likely not be seen at all. Also

Subject's type of motion:
Subject must be moving fairly fast.

Shooting moving cars is allowed on this shoot.

Compositional Reminder

Be aware of the space surrounding your subject. Avoid mergers and avoid letting your subject get lost in the background (a dark-clothed person in front of a dark background will not show up very well, for example). However, a dark-clothed subject against a light background (or light-clothed subject against a dark background) can be very effective and dramatic pan motion.

However, A completely dark or light background with no detail will likely be ineffective because there will not background to streak.