Primary Uses

- Commercial

- Advertising/e-Commerce

- Macro

- Educational

- Restoration

- Artistic

Personal Characteristics Challenged

- Command of craft

- Resourcefullness

- Enthusiasm

- Artistic abilities

- Troubleshooting skills

- Imagination

- Vision

- Enlightenment or evolutionism

Skills Needed

- Sound understanding of camera features

- General knowledge of lighting

- Ability to create inviting compositions

- Excellent problem solving abilities

- Broad imagination/vision

- PATIENCE – lots of it!

Understanding Camera Features

- Good use of depth of field and focus

Depth of Field Table

| Focal Length: 50 mm | Film Format, Digital Camera, or Circle of Confusion: Canon 7D | Units: feet, inches |

Calculate

Canon 7D Focal Length: 50 mm

Distance (feet)	f/1.4 Near	f/1.4 Far	f/2 Near	f/2 Far	f/2.8 Near	f/2.8 Far	f/4 Near	f/4 Far	f/5.6 Near	f/5.6 Far	f/8 Near	f/8 Far	f/11 Near	f/11 Far	f/16 Near	f/16 Far	f/22 Near	f/22 Far	f/32 Near	f/32 Far
1	1' 0"	1' 0"	1' 0"	1' 0"	0' 11.9"	1' 0.1"	0' 11.9"	1' 0.1"	0' 11.9"	1' 0.1"	0' 11.8"	1' 0.2"	0' 11.7"	1' 0.3"	0' 11.6"	1' 0.4"	0' 11.5"	1' 0.5"	0' 11.3"	1' 0.8"
2	1' 11.9"	2' 0.1"	1' 11.8"	2' 0.2"	1' 11.7"	2' 0.3"	1' 11.6"	2' 0.4"	1' 11.4"	2' 0.6"	1' 11.2"	2' 0.8"	1' 10.9"	2' 1.2"	1' 10.5"	2' 1.8"	1' 9.9"	2' 2.6"	1' 9.1"	2' 3.8"
3	2' 11.7"	3' 0.3"	2' 11.5"	3' 0.5"	2' 11.3"	3' 0.7"	2' 11.1"	3' 1"	2' 10.7"	3' 1.4"	2' 10.2"	3' 2"	2' 9.5"	3' 2.9"	2' 8.6"	3' 4.2"	2' 7.3"	3' 6.3"	2' 5.7"	3' 9.6"
4	3' 11.4"	4' 0.6"	3' 11.2"	4' 0.9"	3' 10.8"	4' 1.2"	3' 10.4"	4' 1.8"	3' 9.7"	4' 2.5"	3' 8.8"	4' 3.7"	3' 7.6"	4' 5.4"	3' 6"	4' 8"	3' 4"	5' 0.1"	3' 1.4"	5' 7.1"
5	4' 11.1"	5' 1"	4' 10.7"	5' 1.4"	4' 10.2"	5' 2"	4' 9.4"	5' 2.8"	4' 8.4"	5' 4.1"	4' 7.1"	5' 5.9"	4' 5.3"	5' 8.7"	4' 2.9"	6' 1.1"	3' 11.9"	6' 8.4"	3' 8.2"	7' 9.5"
6	5' 10.6"	6' 1.4"	5' 10.1"	6' 2"	5' 9.3"	6' 2.9"	5' 8.3"	6' 4.1"	5' 6.9"	6' 6"	5' 5"	6' 8.7"	5' 2.4"	7' 1"	4' 11.2"	7' 7.9"	4' 7.1"	8' 7.7"	4' 2.3"	10' 7"
7	6' 10.2"	7' 1.9"	6' 9.4"	7' 2.7"	6' 8.4"	7' 3.9"	6' 7"	7' 5.7"	6' 5.1"	7' 8.3"	6' 2.6"	8' 0.2"	5' 11.2"	8' 6.3"	5' 7"	9' 4.5"	5' 1.8"	10' 11"	4' 7.7"	14' 2"
8	7' 9.6"	8' 2.5"	7' 8.6"	8' 3.6"	7' 7.3"	8' 5.2"	7' 5.5"	8' 7.5"	7' 3.1"	8' 11"	6' 11.8"	9' 4.3"	6' 7.6"	10' 1"	6' 2.4"	11' 3"	5' 8"	13' 7"	5' 0.7"	19' 1"
9	8' 9"	9' 3.2"	8' 7.8"	9' 4.6"	8' 6.1"	9' 6.6"	8' 3.8"	9' 9.6"	8' 0.8"	10' 2"	7' 8.8"	10' 9"	7' 3.7"	11' 9"	6' 9.4"	13' 5"	6' 1.8"	16' 9"	5' 5.3"	26' 1"
10	9' 8.3"	10' 4"	9' 6.8"	10' 6"	9' 4.7"	10' 8"	9' 2"	11' 0"	8' 10.3"	11' 6"	8' 5.5"	12' 3"	7' 11.4"	13' 6"	7' 3.9"	15' 9"	6' 7.2"	20' 8"	5' 9.4"	36' 11"
12	11' 7"	12' 6"	11' 5"	12' 8"	11' 2"	13' 0"	10' 10"	13' 6"	10' 5"	14' 2"	9' 10.1"	15' 5"	9' 1.9"	17' 5"	8' 4.1"	21' 5"	7' 4.9"	31' 7"	6' 4.7"	98'
14	13' 5"	14' 8"	13' 2"	15' 0"	12' 10"	15' 5"	12' 5"	16' 1"	11' 10"	17' 1"	11' 2"	18' 10"	10' 3"	22' 0"	9' 3.1"	28' 9"	8' 1.4"	51'	6' 10.9"	∞
16	15' 3"	16' 11"	14' 11"	17' 3"	14' 6"	17' 10"	13' 11"	18' 9"	13' 3"	20' 2"	12' 4"	22' 8"	11' 4"	27' 4"	10' 1"	38' 9"	8' 8.9"	94'	7' 4.3"	∞
18	17' 0"	19' 1"	16' 8"	19' 8"	16' 1"	20' 5"	15' 5"	21' 7"	14' 7"	23' 6"	13' 6"	26' 11"	12' 3"	33' 10"	10' 10"	53'	9' 3.6"	276'	7' 9"	∞
20	18' 9"	21' 5"	18' 4"	22' 0"	17' 8"	23' 0"	16' 11"	24' 6"	15' 11"	27' 0"	14' 8"	31' 8"	13' 2"	41' 8"	11' 6"	76'	9' 9.7"	∞	8' 1.2"	∞
30	27' 4"	33' 3"	26' 4"	34' 10"	25' 1"	37' 4"	23' 6"	41' 6"	21' 7"	49' 3"	19' 4"	67'	16' 10"	138'	14' 3"	∞	11' 8"	∞	9' 4.1"	∞
40	35' 5"	46' 0"	33' 9"	49' 1"	31' 9"	54'	29' 3"	63'	26' 3"	84'	23' 0"	153'	19' 7"	∞	16' 2"	∞	12' 11"	∞	10' 1"	∞
50	43' 0"	60'	40' 8"	65'	37' 8"	74'	34' 3"	93'	30' 3"	144'	26' 0"	654'	21' 8"	∞	17' 7"	∞	13' 10"	∞	10' 8"	∞
75	60'	99'	56'	115'	50'	147'	44' 4"	245'	37' 10"	3876'	31' 5"	∞	25' 4"	∞	19' 11"	∞	15' 3"	∞	11' 6"	∞
100	75'	149'	68'	186'	60'	289'	52'	1335'	43' 4"	∞	35' 1"	∞	27' 8"	∞	21' 3"	∞	16' 1"	∞	11' 11"	∞
∞	305'	∞	216'	∞	153'	∞	108'	∞	76'	∞	54'	∞	38' 4"	∞	27' 2"	∞	19' 3"	∞	13' 8"	∞
Hyperfocal Distance	305'		216'		153'		108'		76'		54'		38' 4"		27' 2"		19' 3"		13' 8"	

Circle of confusion: 0.019 mm

To print the background color with the chart, enable background color printing in your browser.

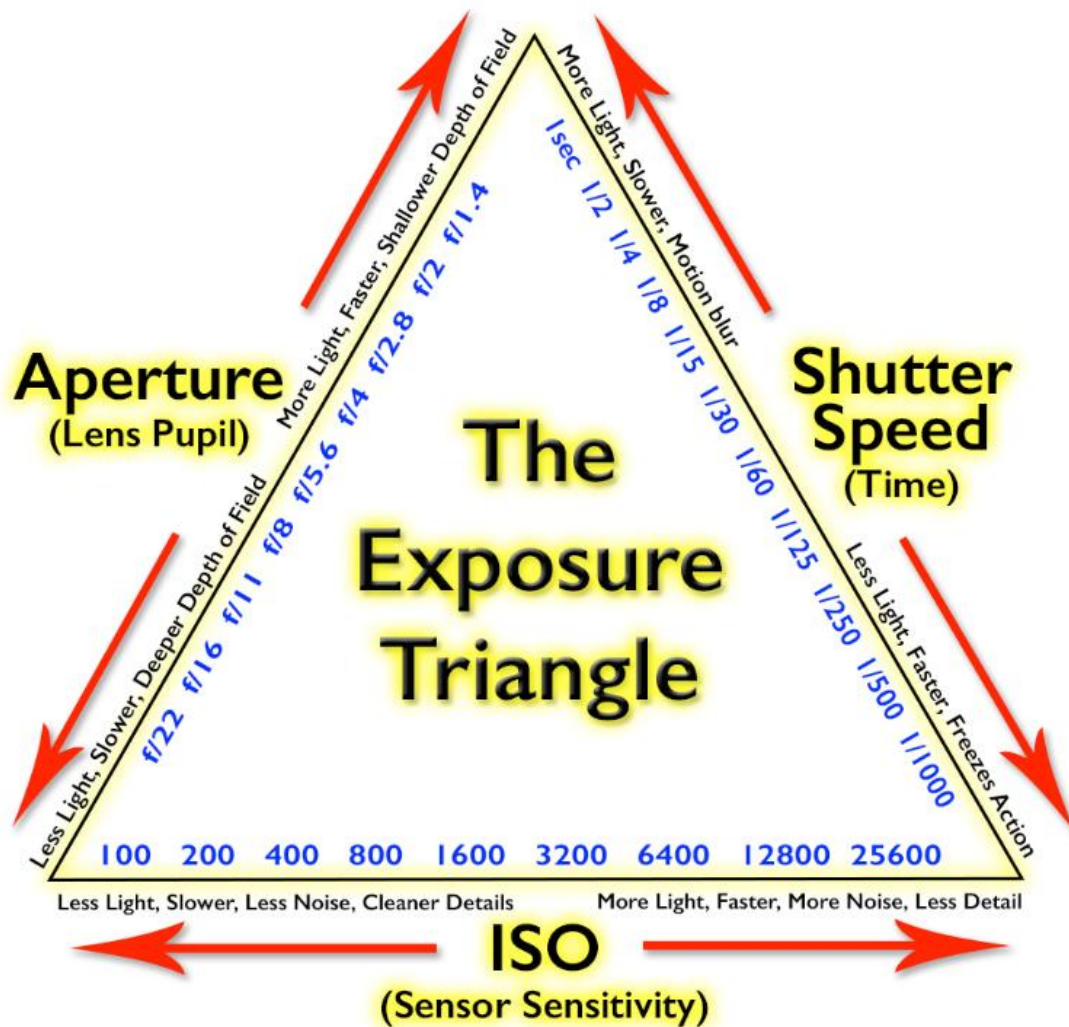Hyperfocal, near, and far distances are calculated using these **equations.**

Circles of confusion for digital cameras are listed **here.**

These charts are available at: DOFMaster.com

Understanding Camera Features (cont'd)

- Experience with f/stop and shutter speed relationships

EXPOSURE TRIANGLE:

Aperture
(Lens Pupil)

Shutter Speed
(Time)

The Exposure Triangle

More Light, Faster, Shallower Depth of Field

f/1.4 f/2 f/2.8 f/4 f/5.6 f/8 f/11 f/16 f/22

Less Light, Slower, Deeper Depth of Field

More Light, Slower, Motion blur

1sec 1/2 1/4 1/8 1/15 1/30 1/60 1/125 1/250 1/500 1/1000

Less Light, Faster, Freezes Action

100   200   400   800   1600   3200   6400   12800   25600

Less Light, Slower, Less Noise, Cleaner Details   More Light, Faster, More Noise, Less Detail

ISO
(Sensor Sensitivity)

Understanding Camera Features (cont'd)

- Differences between JPEG and RAW and when to use one or the other

- Image quality: To shoot RAW or JPG

    - *JPG images are compressed – therefore, the camera software has discarded approximately 40-60% of the data captured*

    - *RAW images, while creating extremely large files, are complete data files with all the info on the data captured.*

- *Primary differences are obvious – with less data available, there is less post processing available as well – a real problem if you have to adjust white balance or colors in your JPG images.*

- ***Best to use RAW images in tabletop photography***

Understanding Camera Features (cont'd)

- Knowledge of white balance adjustments

- When & how to use double exposures versus multi exposures

- Study and understand your camera's bracketing feature

- Integrating camera with lighting systems

- Ability to recognize best lens choices to use

- Understanding of camera histograms – what they are indicating about the image just taken

- Full knowledge of what ISO can do for you

Perhaps the best tip I can give you!!!

"READ & UNDERSTAND YOUR CAMERA OWNER'S MANUAL"

Equipment

- **Camera - any will do but preferably a DSLR**

- **Cable release for hands-off camera operation**

- **Tripod - very sturdy unit**

- **Table or a makeshift with some flat surface**

- Reflective materials for bouncing light into needed areas of the subject (foam core or reflectors designed for that purpose)

- 1, 2 or more flash units (no need for high cost)

- Household tungsten lights or flashlights

- Window light will suffice nicely (flowers)

- Background material(s) – roll paper, cloth materials (preferably without patterns; satin or silk work extremely well and, again, foam core)

- Some miscelaneous clamps for holding reflective cards and materials

- 1, 2 or more inexpensive light stands (or more expensive if you so choose)

- 2 stands to hold the background material

- Light tents are very useful but not a must

- Both black and white foam core – white to be used to reflect light in and black to be used to "gobo" (go between) the subject for lighting control

Equipment (C0NT'D)

- Misc. other items you may make, purchase or borrow that might be helpful to achieve your ultimate image goals (I have made and purchased many misc. items over the years for the purpose of helping complete various images

- Lenses – any will do but I have found 85mm and macro to be the best (but close-up lenses and extension tubes are less expensive & will also work)

- MacBeth color checker (not necessary but helpful)

A Few Words About Lighting

- Lighting is the ABSOLUTE KEY in table top shots

- If strobes are used, do not mix with other light types (i.e. don't add tungsten to flash, etc.)

- Always try to maintain the same type of light and the same output values of the lights used

- Do not worry about lighting ratios; test your light set-up by taking shots until you are happy with what you are getting

- While maintaining light values, control the need for more/less light by moving them closer/further to/from the subject versus changing a value of one light and not the other

- If using window light or sunlight, try to insure the light is diffused nicely – soft lighting is best unless a specific highlight is needed; then, use reflectors to create those needed specular highlights

Table Top Photography Highlights

- **Observe and be aware of light effects and shadows**

- **Create inviting compositions**

- **Try to maintain f8.0 – f11.0 for maximum sharpness**

- **Use lowest ISO possible for maximum resolution (ISO 100 – 400)**

- **Capture with RAW images formats whenever possible**

- **If shooting RAW formats, set white balance to "A" (auto); else, set white balance to the appropriate light in use (tungsten, daylight etc.)**

- **Use soft light whenever possible – generally provides more pleasing appearances**

- **Use as few lights as necessary and add light with reflectors/mirrors**

- **Always use a steady tripod and camera release to minimize/eliminate camera shake**

- **Maintain a distance from backgrounds to allow for creating blurred backgrounds**

- **Control unwanted light/shadows with GOBOs and reflectors/mirrors**

- **When photographing stem ware light the stems as well as the rest of the objects by possibly using underlighting**

- **Try creating single image captures instead of blending images in post process for cleaner and crisper looking finished images**

Feel free to contact me via email at: pauldeegan@charter.net with any questions