



This reference guide has been specially written by Karl Taylor and is a useful resource to help you understand more about...

- **The Six Requirements**
- **Creative Composition**
- **Understanding Light**
- **Apertures**
- **Shutter Speeds**
- **Optics, Lenses & Focus**
- **Depth of Field**
- **ISO & Resolution**



Karl Taylor has been a professional photographer for over 15 years and has travelled the globe on assignments for some of the world's most successful companies. Karl has a passion for travel, culture and landscape photography and in 2009 he was short-listed for a Hasselblad Masters Award. In this series of DVD's Karl's knowledge and enthusiasm for his subject is contagious as he takes us on a series of inspiring photoshoots that will help you take your photography to new levels.

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Karl Taylor Photography Masterclass

Learn Faster. Learn Better



Photography Masterclass Course **Reference Guide**

This pocket size booklet accompanies the masterclass photography course and is an invaluable addition to your camera bag so that you have the vital information with you on location. The reference guide details some of the essential knowledge acquired from Stage 1 "Introduction to Photography" of the Karl Taylor Masterclass Photography Course.

The 6 requirements of photography

Everything in or related to recording an image photographically can lead back to the following 6 subjects. Understanding these 6 processes will help eliminate confusion in other areas as you become more involved in photography.

- 1. Light** – you cannot have a picture without light in some form or another
- 2. Medium** – the material that light (or image) is recorded onto
- 3. Aperture** – the hole that light HAS to pass through
- 4. Time** – the amount of time the light is allowed to pass through the hole to be recorded
- 5. Composition** – the subject in your picture and how it is composed
- 6. Optics** – different lenses allow us to focus and magnify the light/image for greater versatility in recording the image

Note: It is possible to record an image without optics by using a small aperture (i.e. in the form of a pinhole camera) However this would not be practical in most instances.

1. Light

To make a picture you require light, that light may be natural (sunlight/ moonlight) or artificial such as a light bulb or flash. Light that our own eyes are sensitive to is called visible light but other creatures and materials are sensitive to non-visible forms of light such as ultraviolet light, infrared or x-ray. We can't see those (some animal's can) but we have certain materials or mediums that can record non-visible light as a photograph.

2. Medium

The material that is used to record the light/image, usually film, a digital sensor or special recording material. These materials or mediums are available in different sensitivities which are generally called ISO (film speed).

3. Aperture

(Av = Aperture Value) – the size of the hole that the light has to pass through to form an image, an example would be a pinhole camera. The hole focuses the rays of light to form an image on the medium, however to effectively form a high quality image we use lenses to focus the light and the aperture in the lens controls how much light gets through and how much of this light will be recorded on the medium.

4. Time / Shutter Speed

(Tv = Time Value) – the shutter speed designates the amount of time that light is recorded for. Controlling this provides the ability to freeze action of fast moving subjects by using a fast shutter speed or let objects or motion become blurred by using a slow shutter speed.

5. Composition

The content of your picture (subject) and how it is composed. This can also include angle of view, perspective, colour, contrast and any factor that will influence the layout of your picture.

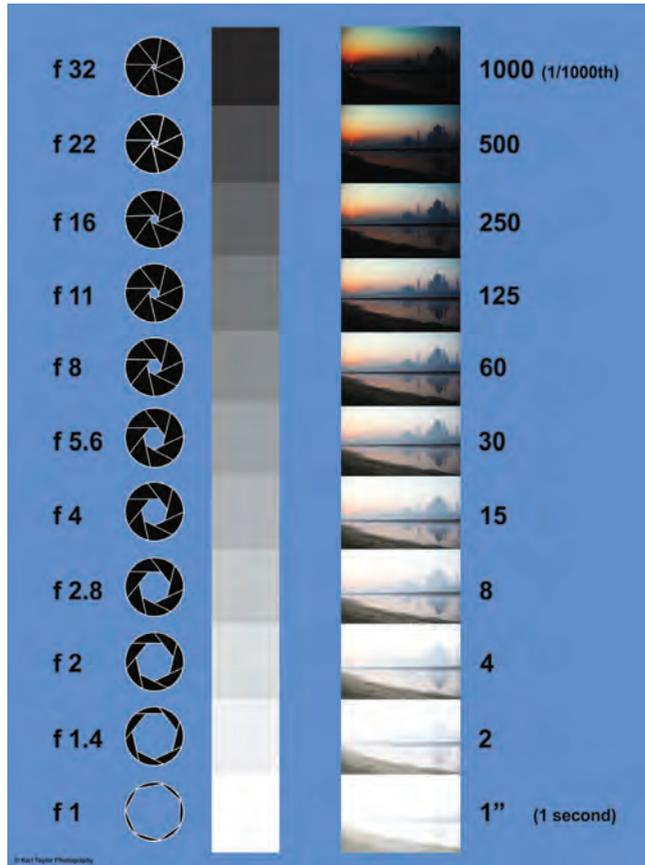
6. Optics

A lens which focuses the light to a given point on the medium. Different shaped lenses, in different configurations within the lens barrel will determine if the image is more magnified or will give a wider view than your eye.

If you can understand these fundamental principles then everything else in photography, no matter what, will relate back to one of or a combination of these 6 subjects.

Exposure Settings

Exposure is the brightness level of the recorded image and is controlled by the aperture and the shutter speed.



f1 is the widest aperture (lets the most light through). f45 is the smallest aperture and would let the least light through. Each jump shown on the scales above is either double or half the amount of light (1 stop). Most modern cameras have the ability to alter the stop range in smaller increments on either the shutter speeds or the aperture setting (f-stop).

Most modern digital SLR cameras allow you to adjust the shutter speed faster than 1000th of a second and also set exposures as long as 30 seconds in manual mode.

Note: the wider the aperture - the less depth of field (see below).

Depth of Field

Depth of field is the range of sharpness either side of the focus point.

It is very important to remember the following:

Depth of field is shallower (less sharp either side of the focus point) in the following circumstances:

- When you have a large aperture
- When you are focused very close
- When you are using telephoto lenses (more powerfully magnified lenses)

Depth of field is greater (more sharp either side of the focus point):

- When you have a small aperture or a smaller format camera
- When you are focusing far away
- When you are using wide angle lenses

An explanation about f-stops and how they are calculated

The f-stop stands for the lens focal length divided by the maximum diameter of the lens opening (hole/aperture)

e.g. measure the hole, divide the focal length of the lens by the width of the hole and then you have the f-stop value

Remember the f-stop value on one lens (e.g. f5.6) should let through the same amount of light on a different lens also set to f5.6

Optics & Lenses

Lenses come in different qualities. The things that can determine the quality of a lens are as follows:

- Its maximum light gathering ability (f-stop number written on the lens e.g. 1:2.8)
- Its resolving power (how sharp can it make the picture)
- The colours it can focus (quality of the glass)
- The contrast it achieves (quality of the glass)
- The type of material that the lens is made from

Lens Power

Lens power is identified by a number called its focal length (written on the lens) and that focal length is determined by the distance from the centre of the simple convex lens (or the principal point) to the focal point. Because most photographic lenses are made from a series of convex or concave lenses and therefore have an internal principal point – it is the distance from that point to the focus plane that is its focal length.

To avoid confusion you need to think of lenses in terms of magnifications and angle of view – each lens specification should tell you its angle of view for the format you are using and that is the information that will be useful to you.

Lenses for the full digital sensor 35mm format are generally grouped into categories as follows:

Category	Focal Length	Angle of View
Fish eye	7.5mm – 15mm	180deg view
Super wide angle	16mm-20mm	100deg +
Wide angle	24mm-35mm	84-63deg
Standard	50mm	46deg (approx same power as eye)
Short telephoto	85mm – 100mm	28-24deg
Telephoto	135mm – 300mm	18-8deg
Super telephoto	400mm – 1200mm	6-1deg
Macro	Special lenses for very close focus and a highly magnified image	

Zoom lens or fixed focal length – Pros & Cons

Zoom lenses can offer more versatility.

Fixed focal lenses can usually gather more light (i.e. available with larger apertures).

Zoom lenses have more glass and moving components. These require more engineering problems to overcome and usually result in higher prices for lenses with large apertures!

Fixed focal length lenses force you to move your feet to find the best composition which can often make you less lazy with your photography.

Fixed focal length lenses (or prime lenses as they are also known) require you to carry more equipment to cover a range of focal lengths.

Light

Light can come from a variety of sources but it also comes in many forms that affect the way a picture looks – these forms I will describe as:

1. Hard Light 2. Soft Light 3. Transmitted Light 4. Reflected Light

1. Sources of Hard Light are: Light that comes from a source which has an apparent small surface area.

e.g. Direct sunlight, flash, bare light bulb or a spot light.

2. Sources of Soft Light are: Light that comes from a source with an apparent large surface area in relation to the subject that you are taking a picture of.

e.g. Light through clouds on an overcast day, a big window with net curtains, a large studio soft box.

Soft light can also be produced from a hard light source that has then been reflected off of a large plain surface back onto the subject.

Note: *There are also many levels of light mixtures and combinations in between these two extremes!*

3. Transmitted Light: Is light that is visible in your image from its source.

4. Reflected Light: Exactly that – light that is reflected off an object or reflected light onto our subject (most of the light that we view around us).

Generally speaking our photos usually only include reflected light, but they can often look more exciting when we include transmitted light as part of the picture, for example featuring the sun or street lights within our picture.

Characteristics of Hard Light are as follows:

High contrast

Hard sharp edged dark shadows

Burnt out highlights

Strongly reveals texture

A certain sparkle and sharpness (due to the high contrast)

Characteristics of Soft Light are as follows:

Low contrast

Very soft shadows or no shadows

Does not reveal texture well

If used incorrectly can look very flat and dull (due to low contrast)

Low Sunlight (late or early) – known as the magic hour, why?

- 1) Has lower contrast than hard light.
- 2) It has greater warmth to the colour/mood.
- 3) It still has an element of sparkle because it is coming from a small light source, but the extra diffusion from the thicker atmosphere creates a softer version.
- 4) You can often include the light source in the picture along with your subject.
- 5) You can often get more reflection off surfaces such as water and glass.
- 6) Side lighting subject matter – because of the angle the light is coming from it is often more flattering.

Learn to see light! Observe it and pay attention to its characteristics.

When you walk around day to day, learn to examine light, learn to observe it changing under different conditions and try to understand why. This is the key to making better pictures.

The Medium

Resolution

Image sharpness is defined by the resolution that it achieves, and that is related to how much data and detail has been recorded. Generally speaking the greater the amount of recording pixels the greater the detail. However there are many other factors that can affect the final result such as the quality of the lens and the quality of the output device used to make the final image.

1 million pixels = 1 Megapixel

On most computer screens the images are displayed at 72 dots/pixels per inch (28 per cm)

On most printed material the images are produced using 300 dots/pixels per inch (118 per cm)

ISO – film speed or digital sensor recording sensitivity

50	higher quality image but lowest sensitivity to light
100	usually the default setting for ISO
200	
400	
800	
1600	
3200	
6400	lower quality image but higher sensitivity to light

Each change in ISO speed above is a one stop jump (either half or double the amount of light). On modern digital SLR cameras you may be able to adjust the ISO in smaller increments.

Composition

Composition is a combination of subject matter and how you decide that subject matter should be arranged within the area of your picture. Simply put it is choice – You are deciding what the subject will be and how it will be arranged in your picture.

The success of your choices visually in the final image can be a measure of your creativity. However composition is not the only “creative” process, many other factors such as your exposure, shutter speed and depth of field all have a bearing on the visual success of your final image.

Subject Matter

Choice of subject
Colours of subject
Lighting on subject
Contrast on subject
The story of your subject – What is the picture about?

Composition

Position of subject
Position of camera
Choice of lens – (affects the position of your camera)
Choice of focus point
Choice of depth of field (affecting the range of sharpness)
Choice of shutter speed (affecting the effect of motion)

Other composition Guidelines

Use of texture & shape
Lines – shadows and edges as leading lines
Balance & symmetry
Isolating the main subject
Simplicity – keep it simple & avoid confusing backgrounds
Framing your subject with other objects

Other tips for composition

What is my point of interest?
What is the story?
When composing the picture – think! Is this actually any good?
Take the picture and then if it's not good try to identify why not

Look through your viewfinder or at your LCD screen carefully not quickly. Look at the corners for distractions and try to avoid them. Would it be better Landscape or Portrait?

Rule of thirds

The rule of thirds teaches you to split your picture area into thirds vertically and horizontally – where those imaginary lines cross or lay is often the best place to place your subject. You can also place the secondary subject at the opposite third for balance.

Using the rule of thirds will generally give you the most pleasing layouts, but these rules can be broken. Your composition ability and creativity will generally improve with practise and study, although it does appear that certain people have a greater natural ability.



Third Lines



Intersection Areas