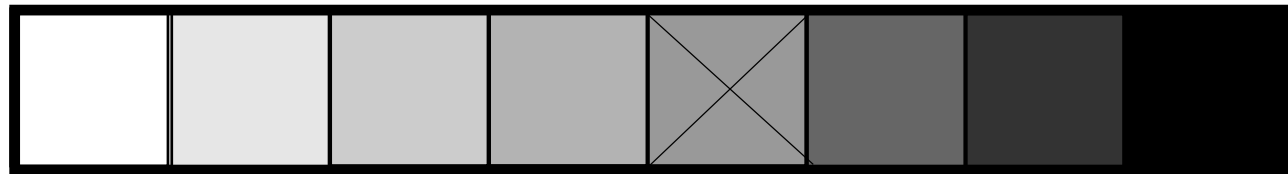


SPOT METER - ZONE SYSTEM



9 8 7 6 5 4 3 2

A 5 stop difference is considered a normal brightness range.

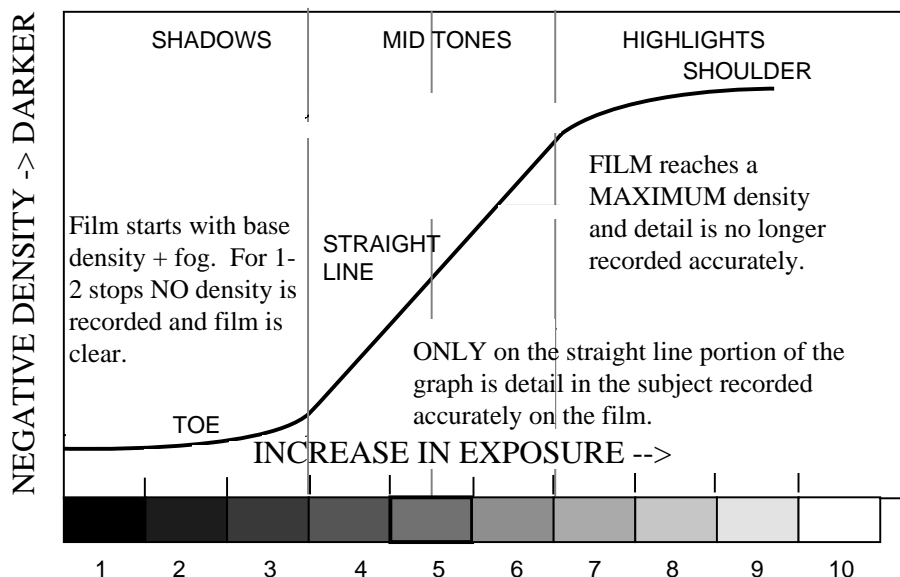
Any photo can be broken down into its basic tone values like this.

The meter on a camera averages the tones and turns them to neutral gray on the film.



THE ZONE SYSTEM was created by Ansel Adams to break the exposure process down into parts that can be examined and controlled. The first step is to divide the shades of grey from white to black up into 10 steps or zones. Here we find pure white with no texture at all is a zone 9 and pure black with no visible texture is a zone 0. Neutral grey or half way between black and white is a zone 5. Light meters are designed to work at zone 5. The meter averages all the light values and places the result as a neutral reading that will produce average shades of tone when the film is processed normally. But what if our subject is mostly white as in the snow or what if it is a night time concert with black the dominant shade -- then the meter sets exposure to get neutral grey which is under exposed for white and over exposed for black. The zone system uses a spot meter that can measure the light in a small area of our photo. The photographer "pre-visualizes" the VALUE desired for the area measured and adjusts the exposure appropriately. If the area measured needs to be almost black it is made into a zone 2 or 3 which is 2 or 3 f-stops less light than what the meter says. The zone system also records the contrast of the scene or its brightness range. If the scene has a range or 3 to 4 f stops it is normal contrast and has normal film processing. If the scene is 5 to 6 f stops the film must be slightly under developed to reduce the contrast of the bright scene. For an overcast or soft lighting scene with less than 3 stops range the film must be over developed to increase the contrast. The goal is to match the contrast of the film to the contrast of the scene. If we over expose we push detail off into the highlight area and it becomes white and invisible. If we under expose we drop out detail in the shadow and turn it black. Ideal prints have an exposure based on the shadow with the meter reading adjusted to the proper zone and film processed to match the brightness range or contrast of the scene.

H & D CURVE - Film's response to light



ZONE 1 = This is the threshold or the area where film begins to see an image. There is no visible texture here and nothing will print on paper.

ZONE 2 = First suggestion of texture in the shadow area of a subject (darkest part of black hair).

ZONE 3 = In most prints this is where the shadow detail becomes visible. In normal film this is just barely visible with normal development and exposure. Dark clothes, **black hair** are zone 3 examples. This will be **2 stops less** than the zone 5 exposure.

ZONE 4 = This is average dark leaves on trees, blue jeans, brown hair or a dark stone or a shadow on a landscape (grass). A meter reading of this shadow in a scene will be 1.5 to 2 stops more light than is needed. Exposure on the camera would be set to 1 to 1.5 f stops less exposure (example, if f4 is normal then expose at f5.6).

ZONE 5 = This is the middle gray between black and white. This would be dark tan skin, average **grass**, or the north sky on a clear day. This is the normal value to be used in exposure metering. A neutral gray test card is this value and this is **what the light meter is designed to reproduce on film**. This is the one shade that is the same tone on the film and in real life.

ZONE 6 = Average caucasian skin, light hair, normal concrete, shadows on snow or sand. This is the high end of the mid tones. A spot reading increased 1 stop for this zone.

ZONE 7 = Bright - Very light skin or snow in full sun, white concrete. This spot meter exposure is increased by 2 stops for this zone.

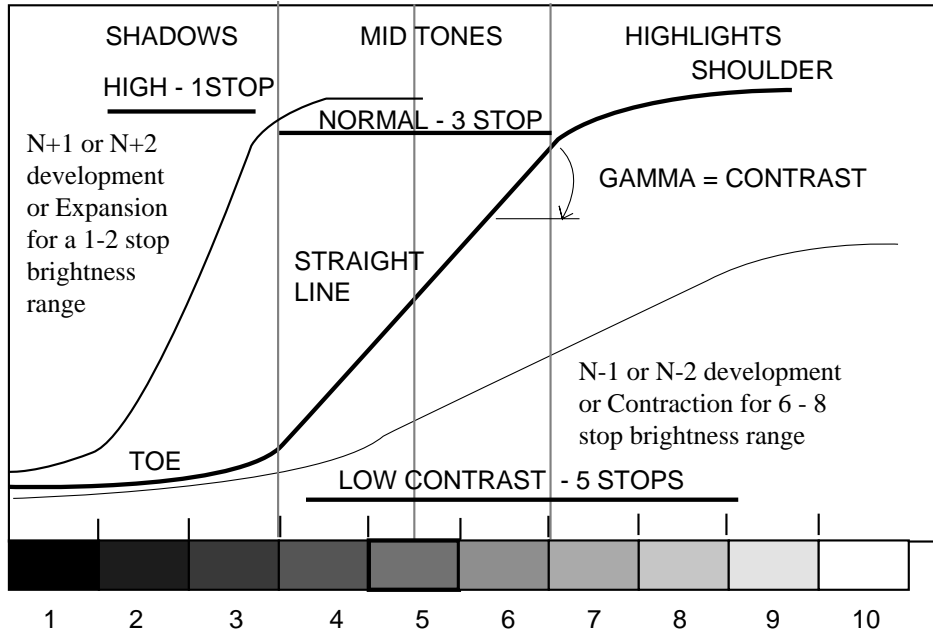
ZONE 8 = Very white - Whites with faint texture - this is direct noon sun on a clear day on a white reflective surface, something that hurts the eyes to look at as snow or sand or white clothes. Exposure is increased by 3 stops.

ZONE 9 = Glaring white surfaces that will show up without a texture on print. This is a reflection on metal of bright light....called a highlight. This should only be a small area on a print...a reflection. All other values above this are light sources such as the sun or a flood light. This represents the highlights on a print and have no texture. Exposure should not be set for this area on a subject.

Zone system exposure is made after previsualizing the tonal values of the final print. Select the area of the subject you want to show the minimum amount of detail in the shadows (such as black hair) and meter that. Set the camera to two stops less than what the meter says. Example: Meter says 125 at f11 set the camera to f22 or to 250 at 16 or 500 at 11. USE ASA 100 FILM FOR BEST RESULTS.

BASIC SETTINGS: SHUTTER 15 - 30 - 60 - 125 - 250 - 500 - 1000
 APPERTURE 22 - 16 - 11 - 8 - 5.6 - 4 - 2.8 - 2

H & D CURVE- FILM & DEVELOPMENT



NORMAL DEVELOPMENT produces film with contrast that will handle 4 full stops of exposure difference or a lighting ratio of (2-4-8- 16) 16 to 1. Some developers that have a LOT of water in their mixture will produce tones on the negative over a wider range than 16 to 1 and thus it is important for a photographer to make a test of their film and developer before making conclusions about processing and exposure. The type of enlarger you use also makes a difference on the print values and how many print on the paper.

PROPER DEVELOPMENT is that which will create a Zone 5 value in the Zone 5 print value. The goal is to place the **INFORMATION** desired to be visible on the straight line portion of the print. If a print is over developed the contrast increases and information in the highlights is lost. If a print is under developed the shadows will be lost and the highlights will look like gray tones.

The density of the shadow values is almost entirely effected by increases in exposure while development has little effect. Values above zone 5 are greatly effected by development. Longer time in the developer will gradually turn more and more exposed silver-salt into visible silver on any roll of film. Thus the rule is **EXPOSE FOR THE SHADOWS AND DEVELOP FOR THE HIGHLIGHTS (CONTRAST)**.

CONTRACTION is where the photographer under develops the roll of film, thus lowering its contrast and expanding the number of zones that can be seen on a roll of film.. Contraction is done when the subject is very bright. For extreme expansion as in a 7 or 8 stop brightness use reduce development time by 40%. For a slight contraction of 5 or 6 stop range reduce time by 20%. This is called N-1 or N-2 in zone notation. Contraction runs a risk of loosing details in the shadows and as such you might need to increase exposure by one half f stop.

EXPANSION is where the photographer over develops the film, thus increasing the contrast and reducing the number of zones that can be seen on the film. This is done when the subject is very low in contrast such as on a cloudy, overcast day. On a day such as this there is little difference between shadows and full light areas. Low contrast lighting eliminates shadows and looks dull on a print unless the film is developed properly. For a slight expansion for a 2 or 3 stop range increase time 50% in developer. For a small brightness range of 1 stop or less increase development by 100%. This is labeled N+1 and N+2 in zone notation.