USING THE LIGHT METER: issues to consider

Remember that your light meter is a sensitive instrument. Dropping a light meter can result in irreparable damage. If you have concerns regarding your light meter's operation, consult with the instructor. If you are having problems with the camera's built-in light meter, you can use a handheld light meter instead.

1-Set the ASA or ISO at the prescribed setting. When the ISO is set higher than normal (i.e. 400 film is set at 800) or lower than normal (i.e. 100 film is set at 80), the entire roll will be underexposed or overexposed, respectively. Such a variation from the prescribed setting is selected when working under a particular lighting situation, resulting in a consistent increased or decreased film density across several rolls of film. The corresponding need to select a different development time for the film (pushing or pulling film) may also be considered when altering the ISO. Another need to change the ISO would occur when using a filter--while also depending upon a handheld light meter.

2-Bracket toward overexposure when using negative film. When you find an exposure reading that appears to be accurate, you may want to expose the negative for a longer time or at a larger aperture. For example:

Your camera meter provided a number of F-stop / shutter speed combinations like this:

F 11 / 1/8 sec or
F 16 / 1/4 sec or
F 22 / 1/2 sec

When you overexpose one stop, try these alternatives:

A. change the aperture

F 8 / 1/8 sec or
F 11 / 1/4 sec or
F 16 / 1/2 sec

Here the aperture has a larger opening, producing a doubling of exposure known as PLUS ONE or +1. More modest exposure variations would be PLUS ONE-HALF or +1/2 stop, created by setting the aperture in between F8 and F11 for the 1/8 sec exposure noted above.

B. change the shutter speed

The same result could be acquired by altering the duration of the exposure.

F 11 / 1/4 sec or
F 16 / 1/2 sec or
F 22 / 1 full second

Here the film is overexposed one stop through an increase in time, specifically a doubling of the exposure time.

The six shutter speed / F stop combinations listed under (A) and (B) are all equivalent. They will all produce a negative with a specific density that is one stop greater than normal. When working with negative film, we generally bracket toward overexposure by adjusting either aperture or shutter speed to increase the exposure. You can also bracket incrementally with 1/2 stops.
3-Reciprocity Failure: Very long exposures can result in reciprocity failure. The reciprocal relationship between shutter speed and aperture at a specific exposure value (EV) begins to break down at exposure times of one or more seconds. When your exposure time is about a minute, you will need to extend your exposure another full stop! If you choose to work with very long exposures, several helpful charts can assist with computing exposure in conjunction with reciprocity failure. These charts are also available from manufacturers via the web. The utilization of bellows extension in close-up photography also results in underexposure unless a longer exposure is selected. In color photography, reciprocity failure produces noticeable color shifts.

4-Use of Filters: Often when photographing a landscape with ample blue sky, the use of a yellow filter is recommended. Black and white film is oversensitive to blue light. Hence, highlight blocking is common in the sky area of outdoor photographs. The yellow filter will block the excessive blue light and produce an image of even density--i.e. a better negative that is easier to print. When the standard clear UV HAZE filter is replaced by the yellow filter, you will need to extend your exposure another stop. A built-in camera light meter usually adjusts to this variable.

5-Metering on a medium value/special problems in metering: Your light meter is calibrated to expose for medium gray--18% gray. The metering area inside the camera viewfinder should be filled by the card. The light reflecting from the card should be of the same brightness as the light illuminating the subject you are photographing. Stand at the side of your camera pointing the meter in the same direction as the lens. Watch for shadows cast by your own body! This procedure is helpful when you cannot meter directly off your subject. Use of a gray card or substitute hand reading parallels the use of an incident light meter.

metering light with a hand reading: If you have a dark complexion, you can use your hand for a reflected light meter reading. If your skin is lighter, you will have to adjust the reading, overexposing by opening the aperture one stop.

6-Metering on a light or dark value/special problems in metering: One can use a dark textured cloth as a subject for reading low or dark values. A textured white wall makes a good point of comparison for light values. Another surface, perhaps in shadow, presents a grey value. These three values fall into place in a value scale. The grey area was rated at normal (example: F8). The white area falls in the overexposure range (i.e. two stops difference with a meter reading of F16). The textured black area falls in the underexposure range (i.e two stops difference with a meter reading of F4). In each of these cases the camera viewfinder was filled with the value (white, grey or black). The meter measures the amount of light reflecting from a surface. White surfaces reflect light, and black surfaces absorb light. The light or dark values of surfaces, when metering with a reflected light meter, produce different light readings.
When metering specific light or dark values photographers alter the light reading produced by a reflected light meter—such as a hand held meter, a spot meter, or the built-in light meter in the camera—to produce that particular value in the final image.

**light values**
The camera does not distinguish between a white wall, a light bulb and the sun. Consequently, closing the aperture as indicated by the meter to F16 will render these three bright subjects equivalent to 18% gray on the film. Obviously, your image of a white wall should stay white; this can only occur by overexposing the negative, increasing negative density, and blocking the enlarger light to produce a brighter print image. You would choose F8 in this situation to maintain a white wall, overriding the camera meter's suggestion for underexposure. Remember the camera doesn't know if your subject is light in value like white cloth, or if you've just pointed your camera at the sun.

**dark values**
Conversely, the dark textured cloth, or a black cat, is the same as a darkened room from your camera’s perspective. Opening the aperture—a normal response for the human eye and the camera eye in a darkened room—increases exposure to the film, increases the negative density and blocks light reaching the paper. The darkened room would appear correct in this situation but the cat would appear gray. To make a black cat appear dark in value, one must close the aperture and override the meter reading. We want the shadows to remain open in order to produce a darker value for the black hair of the cat. So rather than using F4 as indicated by the meter reading, you would use F8, stopping down two stops.

From these examples you should consider the difference between subject brightness (the black cat, the white wall) and the quantity of light available in a given situation (in the darkened room or under a sunny sky).

The f stop range between the textured blacks and whites can vary. However, the grey value generally falls in the center. The distance in stops between the darks and lights represents the degree of contrast produced by a particular light source. On a bright sunny day this contrast range can extend over six stops from black to white. Under subdued light
the contrast range may be limited to only three or four stops. Darkroom printing permits modest variations in contrast. Film development can be altered to limit problems with contrasty/flat light and resulting contrasty or flat negatives. Alterations in initial exposure and subsequent development are used generally--"expose for the shadows, develop for the highlights"--and more specifically, as in Ansel Adams' zone system, which maps tones as shown below:

0: five stops less exposure (-5) maximum black of paper
I: four stops less exposure (-4) near black tonality/step above maximum black
II: three stops less exposure (-3) black with suggestion of texture
III: two stops less exposure (-2) dark gray, deep textured shadows******
IV: one stop less exposure (-1) medium dark gray, average shadows
V: 18% gray, exposure given by meter indication, middle gray, neutral gray test card, dark skin.*******
VI: one stop more exposure (+1) medium light gray with rich texture, average white skin
VII: two stops more exposure (+2) light gray, pale skin, textured highlight******
VIII: three stops more exposure (+3) very light gray, slight texture
IX: four stops more exposure (+4) slight tone without texture
X: five stops more exposure (+5) maximum white of paper base, specular highlights.

color and value
When working with colored subjects, consider the VALUE of color. Red can be highly saturated but may correspond with a medium to a dark value color. Yellow is a light value color, similar to white. Purple and blue are dark value colors similar to black. Green can be a medium value color, as in green grass. Try squinting to determine the relative value of a color. This procedure can be helpful if you are trying to locate a substitute for 18% gray in the metering process. Similarly, you can locate a textured light value color or textured dark value color.
USING THE LIGHT METER: