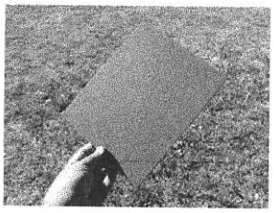
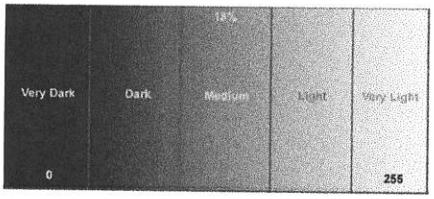
GRAY CARDS_9 -21 May 2020 (zoom)

HOW TO USE A GRAY CARD



by Clem Wehner

Every scene has a range of tones



18% GRAY

A **GRAY CARD** can be used to:

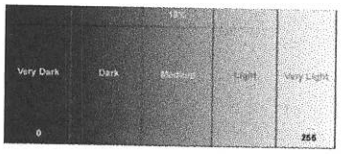
1. Determine correct shutter speed and aperture
   without using a hand-held light meter!

2. Set white balance

It just so happens....

Medium gray (18% gray) reflects ½ the light striking it.

(medium reflectance)



- Average scene in nature has medium reflectance.

It reflects ½ the light striking it.

But, the good news is....

a GRAY CARD is of medium reflectance,

So, it can be used to determine the proper shutter speed and aperture to properly expose your subject in any light.

WOW ! ! ! !

Hand-held light meters and camera light meters

are calibrated to show aperture and shutter speed to properly expose a subject that is of medium reflectance

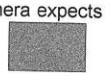
Problem: not every scene is of medium reflectance

How to....

1. Use a gray card in **MANUAL** exposure mode.
2. Use a gray card in **AUTOMATIC** exposure mode.
3. Use a gray card and histogram in either mode.

In-camera light meters

- To expose properly, camera expects a scene of medium gray tone (on average).



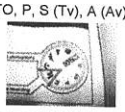
- If the scene is too light in tone, camera will underexpose.

REAL WORLD- brighter than medium gray

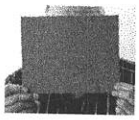
RESULTING IMAGE

Using a GRAY CARD
(when shooting in MANUAL exposure mode)

1. Put camera in any AUTO exposure mode (AUTO, P, S (Tv), A (Av)

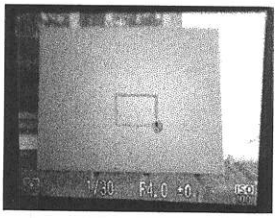


2. Put gray card right next to the subject. (in the same light)



3. Zoom in to fill the screen with the gray card.
4. Press and hold the SHUTTER button halfway down.

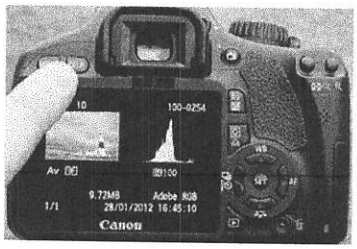
4. Read shutter speed and f/stop in viewfinder. This is the correct exposure setting.



5. Put camera in MANUAL exposure mode and dial in shutter speed and f/stop.

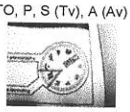
6. Take the picture.

Using a GRAY CARD and a HISTOGRAM

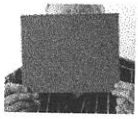


Using a GRAY CARD
(when shooting in AUTOMATIC exposure mode)

1. Put camera in any AUTO exposure mode (AUTO, P, S (Tv), A (Av)



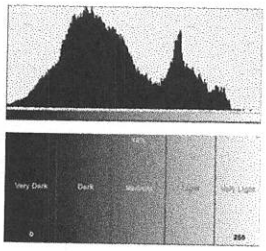
2. Put gray card right next to the subject. (in the same light)



3. Zoom in to fill the screen with the gray card.

4. Press and hold the EXPOSURE LOCK BUTTON or SHUTTER HALFWAY DOWN

A histogram graphically shows the tones in an image



5. Keep holding the exposure lock button down while removing the gray card from the scene.

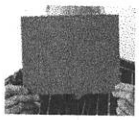
6. While holding down the exposure lock button, zoom out to compose the scene in the viewfinder.

7. Press the shutter all the way down to take the picture.

A photo of 18% gray subject
will show a center-spike on a histogram

Using a GRAY CARD and HISTOGRAM
(when shooting in AUTOMATIC exposure)

1. Put camera in any AUTO exposure mode (AUTO, P, S, A, Tv, Av)
2. Put gray card right next to the subject. (in the same light)



3. Zoom in to fill the screen with the gray card.
4. Take a picture of the gray card.

What if you don't have a gray card?

5. Check the histogram of the picture.
6. If spike is left of center, image is underexposed.

7. If spike is right of center, image is overexposed.

8. Adjust f/stop or shutter speed until spike is centered.
   This is the correct exposure setting.

9. Put camera in manual exposure mode and dial in shutter speed and f/stop. Take the picture.

Substitutes for a gray card

Things with medium reflectance

- Grass

- Trees

SUMMARY

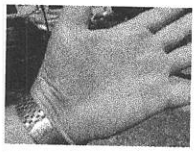
1. A gray Card can be used to determine correct exposure because it reflects 50% of the light, the amount light meters are calibrated to for proper exposure.
2. Use gray card and camera's light meter in **MANUAL** exposure mode.
3. Use gray card and camera's light meter in **AUTOMATIC** exposure mode.
4. Use gray card and histogram in either mode.

Substitutes for a gray card

Things with medium reflectance

- Cement sidewalk or road

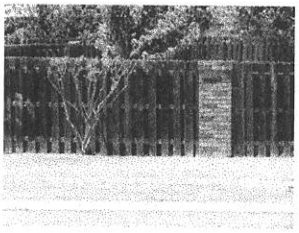
- Palm of your hand
  - skin color doesn't matter, because it's about reflectance, not color



Substitutes for a gray card

Things with medium reflectance

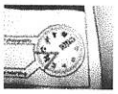
Natural wood



SUMMARY- (Exposure)

. A gray card works because it reflects 50% of the light, the amount light meters are calibrated to.

. A gray card and camera's light meter can be used:



. in **AUTOMATIC** exposure mode.

. in **MANUAL** exposure mode.

. with a **HISTOGRAM** in any camera exposure mode.

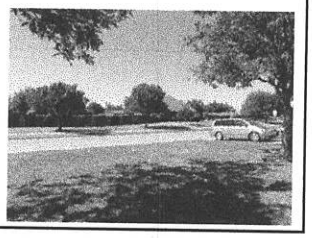
. Anything 50% reflective can substitute for a gray card.

(grass, tree, skin, natural wood, etc)

Getting exposure for a distant scene

1. Put camera in SPOT metering.

2. Put spot on a distant medium reflective object (tree).
3. Press and hold down shutter button halfway to lock exposure and focus.
4. Recompose the shot.
5. Take the picture.



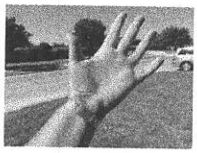
GRAY cards

and

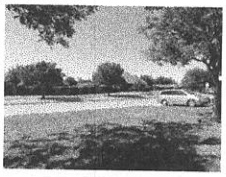
WHITE balance

Getting exposure for a distant scene

1. Point camera at the palm of your hand.
   - . hand must be in the same light as subject
   - . distance from camera to subjects doesn't matter
   - . color of skin doesn't matter



2. Press EXPOSURE LOCK BUTTON or SHUTTER HALFWAY DOWN



3. Recompose the shot.
4. Take the picture.

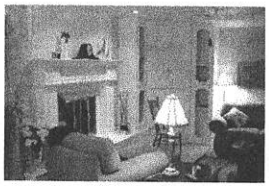
White Balance

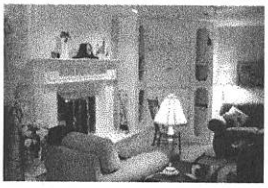
The process of
adjusting the camera
so white objects appear white in photo.

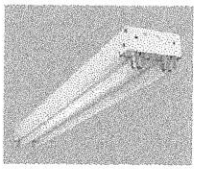
Isn't White WHITE?

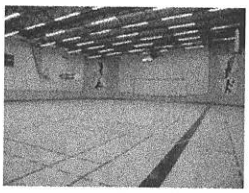
The color of an object depends on the color of the light on it.

White balance set to **INCANDESCENT**









Camera Settings for white balance

AUTO- Camera makes an educated guess about what white is.

INCANDESCENT- To compensate for the yellow in regular light bulbs.

FLUORESCENT- To compensate for the green in fluorescent bulbs.

MANUAL - To show the camera what white is by letting it "see" something white even in very colored light.

Camera Settings for white balance

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USING

MANUAL (CUSTOM) WHITE BALANCE

(When AUTO WHITE BALANCE is not good enough

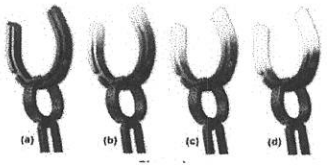
To take accurate color photos

the camera must determine the color of the light *

falling on the subject

* actually, the "color temperature"

The color of heated metal changes with temperature



hotter ======→

What does temperature have to do with color?

Color Temperature expressed in (degrees) Kelvin

Lord Kelvin- 1800s

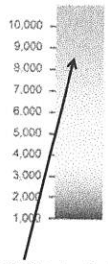
1 degree Kelvin = about 2 degrees Fahrenheit

Color temperature is a way of precisely defining a specific color

The problem:

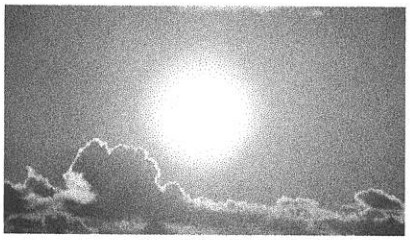
X X X X X

Every color has an exact corresponding temperature



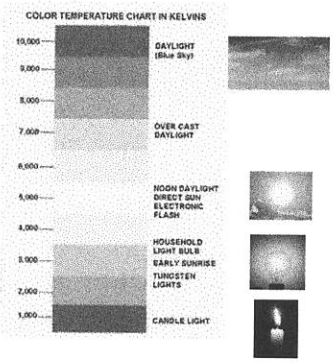
Example: We can say, "it's 8500k blue, instead of "it's light blue-ish".

Light of the Sun is about 5000k



How Automatic White Balance works

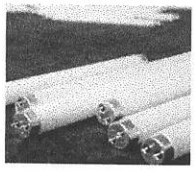
- Camera knows that white light is 5500k
- Averages all the light in the scene
- Calculates how far off 5500k the scene light is
- Adjusts camera to compensate for difference



How Manual (custom) White Balance works

- Camera knows that white light is 5500k.
- You show the camera something that is white, but under colored light.
- Camera determines the difference of the colored light and 5500.
- Camera shifts the image colors by this amount to compensate.

Color Temperature Uses



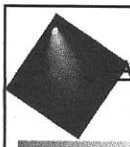
WHEN to use Custom (manual) White Balance

When Auto White Balance (AWB) is not correctly compensating for the color of the light.

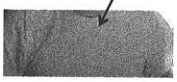
AND

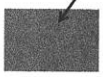
You've tried the various AWB modes like incandescent, fluorescent, cloudy, etc.

How to set
ANUAL (CUSTOM) WHITE BALANCE



1. Take photo of a white object (or gray card) in the colored light (fill screen)





2. Follow the steps in your instruction manual

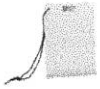
Don't forget to change back to AUTO when done!

SUMMARY- (white balance)

- AUTO WHITE BALANCE works well in average light color situations.
- Use other WB settings when needed, especially if accurate color is important.
- In very unusually colored light, you can show the camera what white is. (Manual/custom WB).
- After shooting with a WB that you set, remember to reset it.
- Use a gray card with Manual WB to get perfect color.

Targets for white balance

White card or white paper



Something white

18% gray card

Gray card for **White** balance?

- Gray card has no color – it's "neutral".

- Does not change the color of the light reflecting off it.
- So, camera can average the light correctly