

LIGHTING

Temperature (Color)

Intensity

Hardness (Dispersion)

Direction

LIGHTING

Temperature (Color)

**Our brains can handle mixed
color temperatures and see it all
as white.**

The camera cannot.

LIGHTING

2000K

3200K

5500K

7000K

10000K



Sunrise/Sunset
Candlelight

Incandescent
Light Bulb

Daylight /
Flash

Cloudy Day

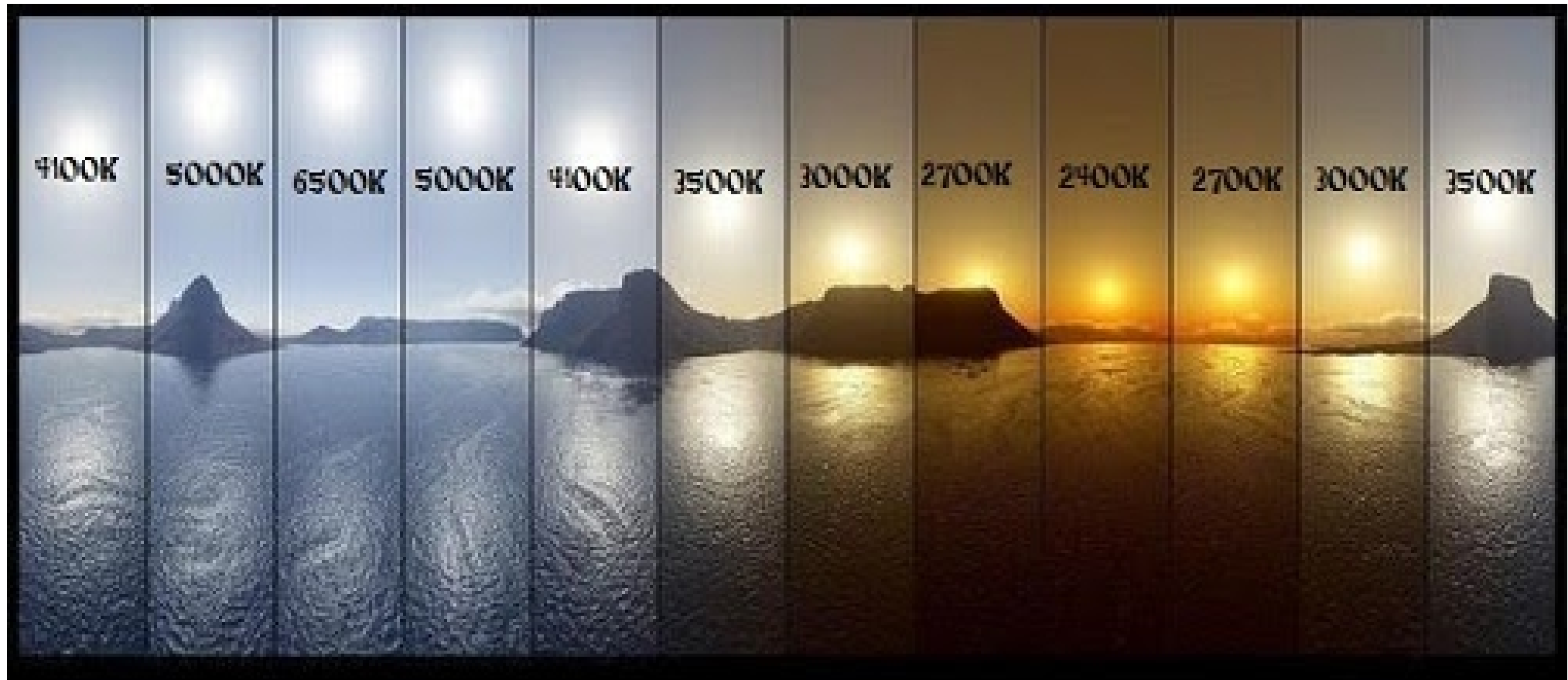
Shade Under
a Blue Sky

Relaxing,
Inviting,
Flattering.
(Dawn, dusk,
tungsten)

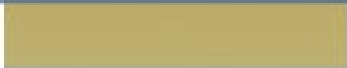
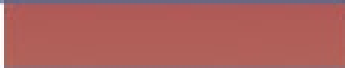
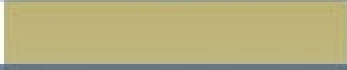
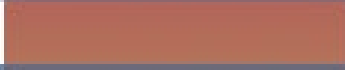
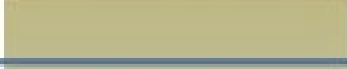
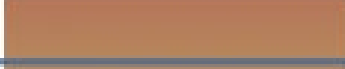
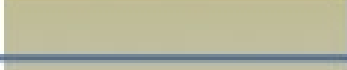
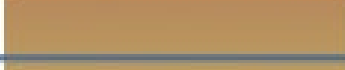

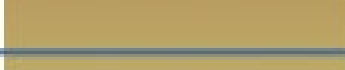
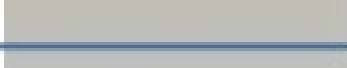
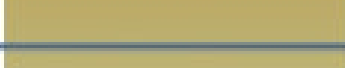

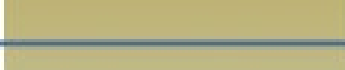
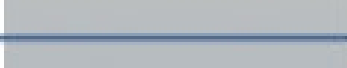
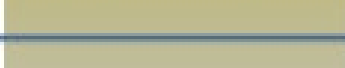

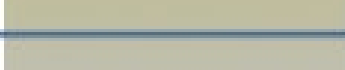
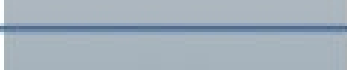
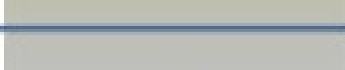

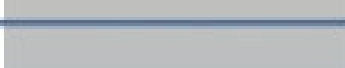
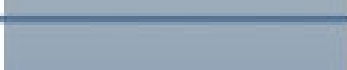
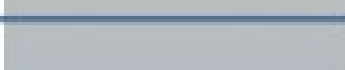

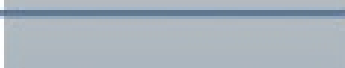

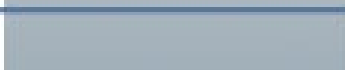
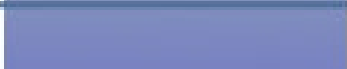



Energetic,
Lively
(Kitchens,
Hospital)

Crisp
(Computer
Screens,
“Nighttime”)

LIGHTING



LIGHTING

Degrees Kelvin	Type of Light Source	Indoor (3200k) Color Balance	Outdoor (5500k) Color Balance
1700-1800K	Match Flame		
1850-1930K	Candle Flame		
2000-3000K	Sun: At Sunrise or Sunset		
2500-2900K	Household Tungsten Bulbs		
3000K	Tungsten lamp 500W-1k		
3200-3500K	Quartz Lights		
3200-7500K	Fluorescent Lights		
3275K	Tungsten Lamp 2k		
3380K	Tungsten Lamp 5k, 10k		
5000-5400K	Sun: Direct at Noon		
5500-6500K	Daylight (Sun + Sky)		
5500-6500K	Sun: through clouds/haze		
6000-7500K	Sky: Overcast		
6500K	RGB Monitor (White Pt.)		
7000-8000K	Outdoor Shade Areas		
8000-10000K	Sky: Partly Cloudy		

Based on information from the book [\[digital\] Lighting & Rendering](#)

Chart and colors (c)2003 Jeremy Birn for www.3dRender.com

LIGHTING

To adjust color temperature:

1) use a filter on the camera

2) white balance

3) gel the lights (if possible)

LIGHTING

White Balance & Kelvin Color temp explained

https://youtu.be/48c02L_nHZc

LIGHTING

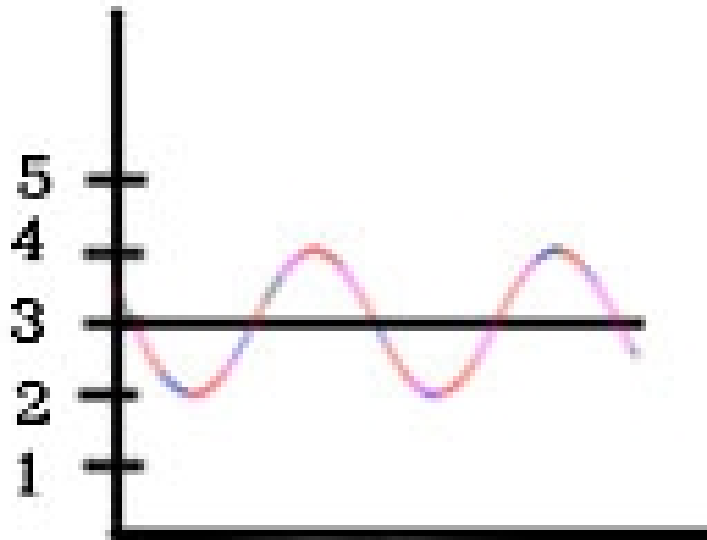
LIGHT INTENSITY

There's no “correct” intensity, just like there's no correct exposure.

Intensity is like brightness, and is measured as the rate at which light energy is delivered to a unit of surface.

The intensity is measured as the **amplitude** of the bottom or top half of the wave.

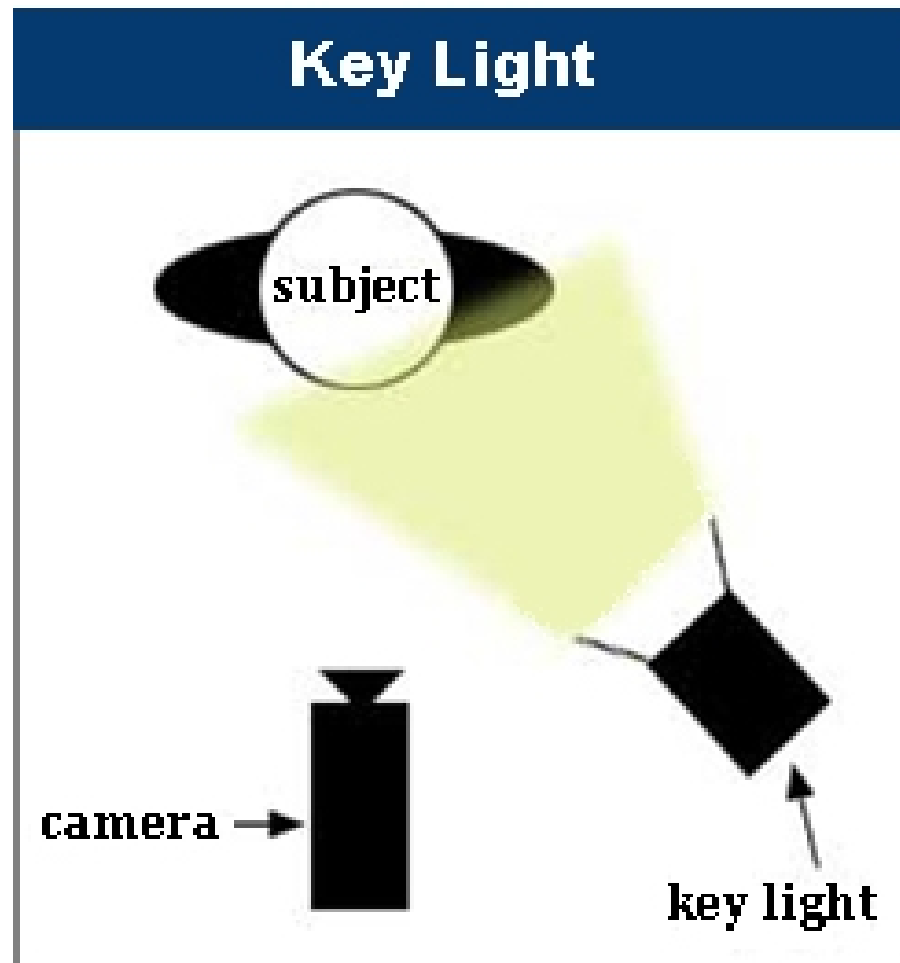
So this wave would have an intensity of.....



LIGHTING

THE KEY LIGHT

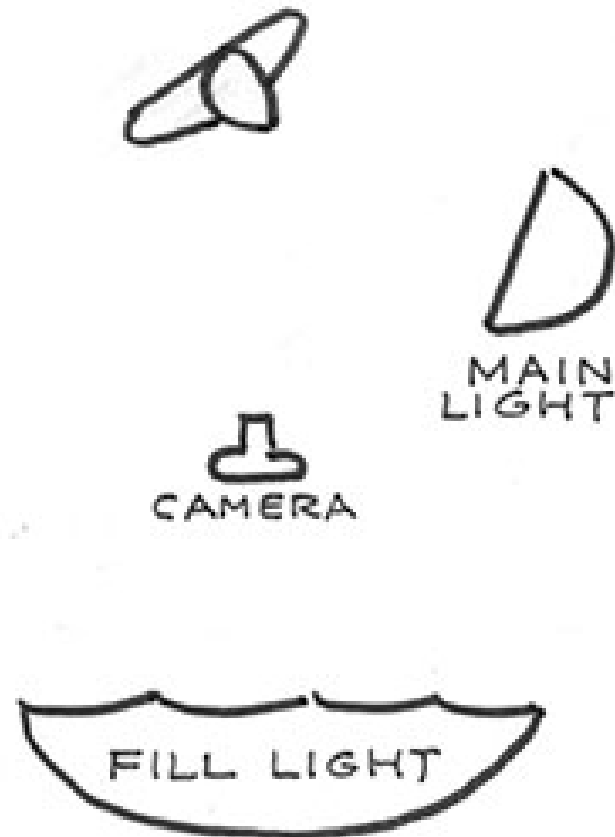
The first and (usually) most important light set up. It is the single light (or bank of lights) that will be the main source of light.



LIGHTING

THE FILL LIGHT

a supplementary light that doesn't change the character of the main light and is used mostly to lighten shadows.



LIGHTING

LIGHTING RATIOS

Key Light : Fill Light

The ratio of the key light's intensity to the fill light's intensity.
The higher the ratio, the more contrast in the scene.

LIGHTING

HIGH KEY LIGHTING

Usually **free from dark shadows** so the **boom mic above the actors doesn't cast a shadow**. Also, they don't have to re-light for each camera's viewpoint.

The advantage of high-key lighting is that it **doesn't require re-lighting for each scene**, which allows the production to complete the shooting in hours instead of days. The primary drawback is that high-key lighting fails to add meaning or drama to the shot.

SITCOMS COMEDIES

LIGHTING

HIGH KEY LIGHTING



Example of high-key lighting. Notice how the scene is evenly lit throughout; there are no dark spots in the frame. *Hero* (2002)

UM.... NOT A SITCOM OR COMEDY.

LIGHTING

LOW KEY LIGHTING

any scene with a high lighting ratio, especially if there is a predominance of shadowy areas. It tends to heighten the sense of alienation felt by the viewer.

**FILM NOIR
HORROR**

LIGHTING

LOW KEY LIGHTING



LIGHTING

THE BACK LIGHT / “RIM” LIGHT

Is placed behind the main subject and illuminates shoulders/hair. It separates the subject from the background, and highlights contours. Emphasizes 3 dimensionality.

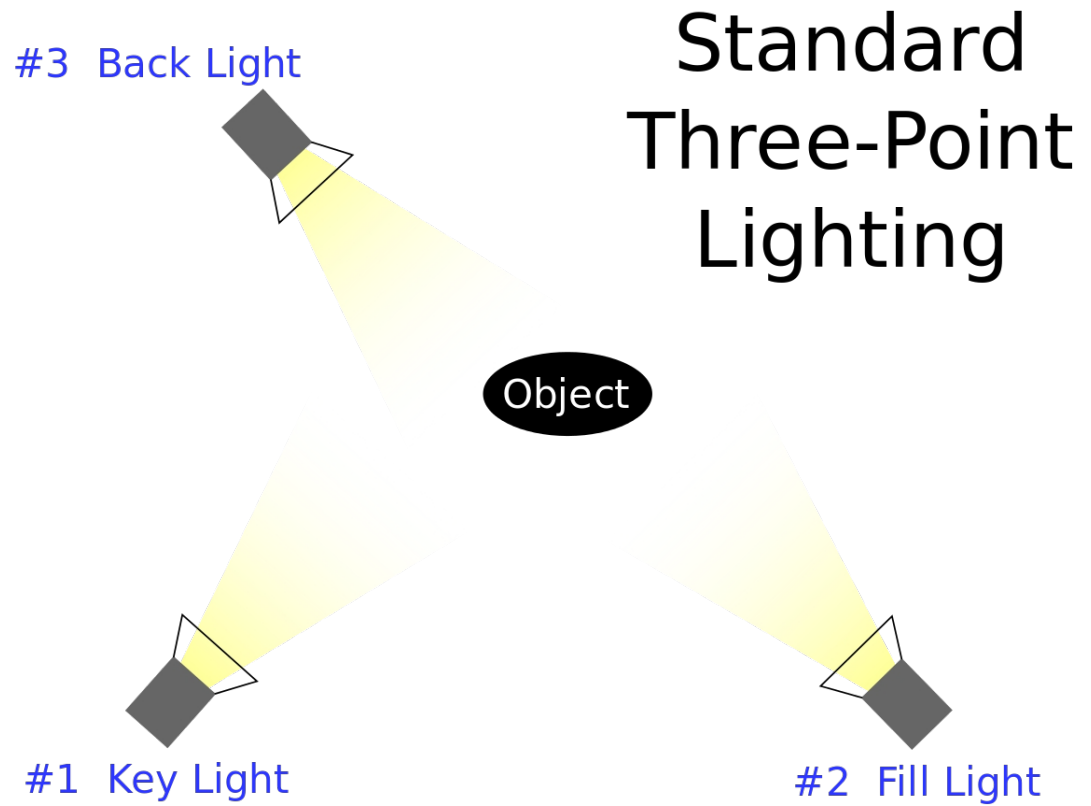


LIGHTING

THREE POINT LIGHTING

Very traditional, used all the time for portraiture. Uses

KEY, FILL & RIM.



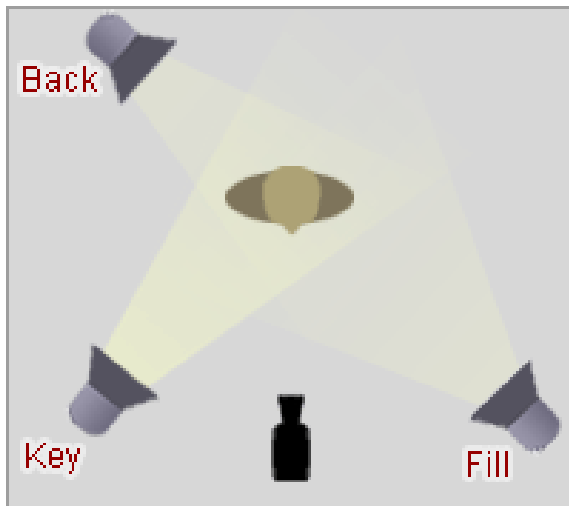
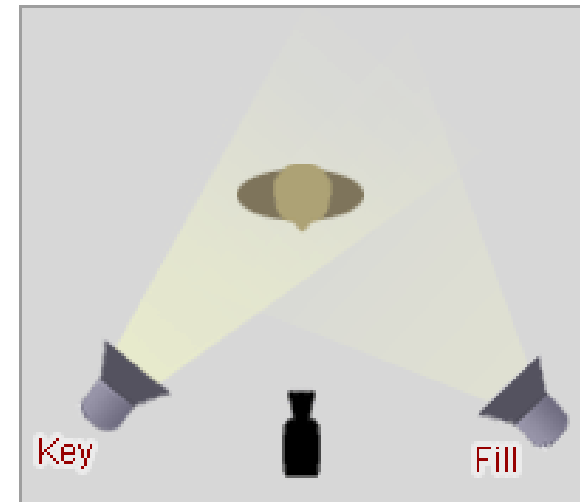
LIGHTING

THREE POINT LIGHTING



KEY LIGHT: Usually the strongest and has the most influence on the look of the scene. It is placed to one side of the camera/subject so that this side is well lit and the other side has some shadow.

FILL LIGHT: placed somewhere near the opposite side of the key light. Fill the shadows created by the key. The fill will usually be softer and less bright than the key.



BACK / HAIR / RIM LIGHT: Placed behind the subject and lights it from the rear. Rather than providing direct lighting (like the key and fill), its purpose is to provide definition and subtle highlights around the subject's outlines. This helps separate the subject from the background and provide a three-dimensional look.

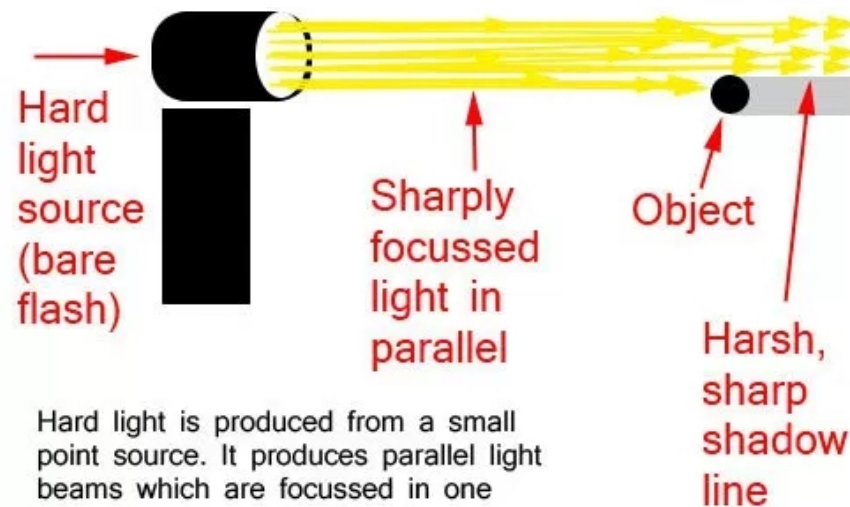
LIGHT DISPERSION

HARD LIGHT

Hard Light:

Hard light is produced by a small, light source. The parallel, direct light is harsh. It creates sharp lines between shadow and dark, with little or no transition.

Simulation of a bare, off-camera flash - 45 degrees left and 45 degrees up.



Hard light is produced from a small point source. It produces parallel light beams which are focussed in one direction with little scatter. Shadow lines are harsh and have little transition from light to dark.

LIGHT DISPERSION

Hard light vs soft light

Soft light creates shadows with a gradual transition from light to dark. There are no hard shadow lines.

It is created from a scattered or diffused light source. Soft light is found where the lighting is indirect or where it passes through a diffuser, clouds or some other medium which scatters the light.

Diffused light can be light that has bounced off one or more surfaces before it hits a photographic target.

Soft light may be created by many light sources which prevents the harsh shadows created by a single hard light source.

A soft light source is large (relative to the subject being lit) and/or close to the subject

LIGHT DISPERSION

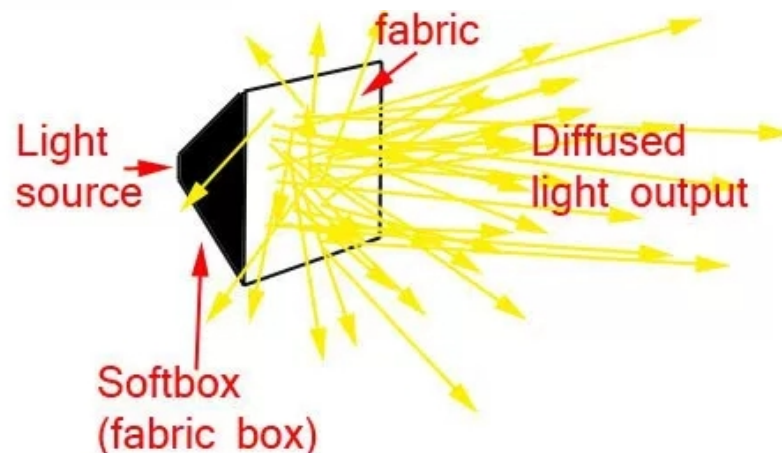
SOFT LIGHT



Soft Light:

There is a gradual transition from light to dark. The light is scattered and diffused. There are no sharp edges on the shadows.

Simulation of a 60x90cm softbox at 45 degrees left and 45 degrees up.



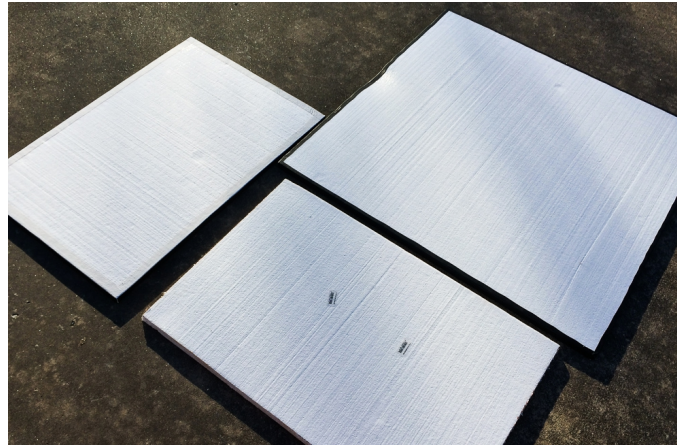
Diffusion is caused by light bouncing around inside the softbox and deflecting as it passes through the translucent outer fabric. Light coming from many directions makes shadows soft with graduated edges.

LIGHT DISPERSION

WAYS TO MAKE SOFT LIGHT

1.) BOUNCE IT

UMBRELLAS, BOUNCE BOARD, FLEX FILLS.



LIGHT DISPERSION

WAYS TO MAKE SOFT LIGHT

2.) USE DIFFUSION

SILKS, SOFTBOXES, DIFFUSION GELS, T-SHIRTS



LIGHT DISPERSION

WAYS TO MAKE SOFT LIGHT

3.) CHINA BALLS, BALLOON LIGHTS, MATTRESS LIGHTS



LIGHT DISPERSION

WAYS TO MAKE SOFT LIGHT

4.) CLOUDS

LIGHT DISPERSION

WAYS TO MAKE SOFT LIGHT

5.) SILKS, GRID CLOTH



LIGHT DISPERSION

**Lighting Tutorial: Soft Light vs Hard Light,
Diffusers, and Reflectors for Photography**

<https://youtu.be/wwv7WuJOckU>

TYPES OF LIGHTS

TERMS:

OPEN FACED

TUNGSTEN

FRESNELS

HMI

KINOS

FLOROS

PRACTICALS

LED

FLAGS

BARNDOORS

SCRIMS

C-STANDS

FLOOD / SPOT

TYPES OF LIGHTS

OPEN FACED

An open faced lighting fixture is used to create hard light that casts hard shadows. It is not much more than a housing and reflector for the bulb, and provides nothing in between the bulb and the subject. The commonly known 800W "Redhead" and 2000W "Blonde" are examples of open faced video lights.



TYPES OF LIGHTS

FRESNELS

A Fresnel lens is a special type of lens that is divided into concentric circles, resulting in a much thinner lens than a conventional lens of the same power. This lens evens out the light and allows for the beam to be varied from flood to spot by changing the distance between the lamp/reflector unit and the lens.



TYPES OF LIGHTS

KINOS (KINO FLO)

These lights provide a relatively compact and efficient way of providing soft lighting. Compared to the original workhorse of motion picture lighting, incandescent lights (and, more recently, HMI lights), Kino Flo tubes produce less heat and fit into smaller spaces, two significant advantages that have made them popular with professionals.



TYPES OF LIGHTS

TUNGSTEN

Tungsten light sources are basically related to the same type of incandescent filament bulbs which until recently were common in homes and offices everywhere.

Can also be halogen. Dimmable!



TYPES OF LIGHTS

TUNGSTEN

PROS:

- Near perfect color rendition
- Low cost
- Does not use mercury like CFLs (fluorescent) or mercury vapor lights
- Better color temperature than standard tungsten
- Longer life than a conventional incandescent
- Instant on to full brightness, no warm up time, and it is dimmable

CONS:

- Extremely hot
- High power requirement
- The lamp is sensitive to oils and cannot be touched
- The bulb is capable of blowing and sending hot glass shards outward.
A screen or layer of glass on the outside of the lamp can protect users

TYPES OF LIGHTS

HMI

HMIs need electrical ballasts, which are separated from the head via a header cable, to limit current and supply the proper voltage. The lamp operates by creating an electrical arc between two electrodes within the bulb that excites the pressurized mercury vapour and metal halides, and provides very high light output with greater efficiency than incandescent lighting units.

closely matches the color of sunlight. Also Dimmable!

SAFETY WARNING: Each HMI light has a UV safety glass cover that should be used to protect persons who may be in front of the light. Exposure to an unprotected lamp can cause retinal damage and severe skin burns. HMI lamps should not be used past half their rated lifetime, and care should be taken with larger lamps when striking (turning on the lamp), as they can explode within the first five minutes of use. Each HMI lamp will usually carry with it a safety manual that has been



TYPES OF LIGHTS

HMI

SAFETY WARNING:

- Each HMI light has a UV safety glass cover that should be used to protect persons who may be in front of the light. Exposure to an unprotected lamp can cause retinal damage and severe skin burns.
- HMI lamps should not be used past half their rated lifetime, and care should be taken with larger lamps when striking (turning on the lamp), as a lamp is most likely to explode within the first five minutes of striking. For this reason, each HMI lamp will usually carry with it a detailed log of the number of strikes and number of hours it has been used.
- Dropping the lamp could result in an explosion, sending hot quartz glass flying.
- Care should be taken not to touch the glass directly as skin oils left behind on the glass can actually heat up past the working temperature of the glass and cause bubbling and/or a weak point on the bulb. For this reason, anytime a bulb is handled it should be cleaned with an isopropyl alcohol wipe.
- ALWAYS ANNOUNCE WHEN STRIKING

TYPES OF LIGHTS

HMI

PROS:

- Very high light output
- Higher efficiency than incandescent lamps
- High color temperature

CONS:

- Relatively high cost, but this is balanced out by increased output
- High power requirement
- Requires an external ballast for arc ignition (up to 70,000 volts)
- Dimming is possible only to about 50% and the color temperature increases in conjunction with dimming, thus creating a bluer light
- If dropped while lit an HMI bulb can explode releasing super hot quartz glass and mercury vapor

TYPES OF LIGHTS

PRACTICALS

A practical light is considered any light source that will appear in the scene such as a table lamp, any visible interior light sources, even a hand held flashlight. Often existing bulbs are swapped out for those of different wattage or color temperature depending on the needed effect and desired contrast ratios within the scene. used.



TYPES OF LIGHTS

LED

LED stands for light emitting diode and is a solid-state semiconductor device. Only recently, LED's of sufficient power have become available to make practical LED film lighting possible. LED's are extremely efficient but are still limited in overall light output when compared to any of the other light sources.

So the challenge of LED lighting has been in creating a full spectrum white light.

can be daylight or tungsten balanced, sometimes switchable



TYPES OF LIGHTS

LED

PROS:

- Soft, even lighting
- Pure light without UV-artifacts
- High efficiency
- Low power consumption, can be battery powered
- Excellent dimming by means of pulse width modulation control
- Long lifespan
- Environmentally friendly
- Insensitive to shock
- No risk of explosion

CONS:

- \$

TYPES OF LIGHTS

FLOROS (FLOURESCENT)

A fluorescent lamp uses the excitement of low pressure mercury vapor to produce ultra-violet light, in turn causing a phosphor coating on the inside of the glass tube to glow giving off light in the visible spectrum.

The color temperature of a fluorescent can vary also from 2700K to 6500K depending on the phosphor mix..



TYPES OF LIGHTS

FLOROS (FLOURESCENT)

PROS:

- High efficiency
- Low power requirement
- Low cost
- Long lamp life
- Cool
- Capable of soft even lighting over a large area
- Lightweight

CONS:

- FLICKER! can be a problem with domestic fluorescent installations not intended for photographic use. Those designed for film use have electronic ballasts and produce flicker free light.
- Fluorescent lights for film use have a high CRI, however the use of domestic tubes may have a far lower CRI and poor color rendition.

LIGHTING TERMS

BARNDOORS

HOT STUFF!

Attach to light to shape or control the beam of a light by keeping it off the places you don't want it.

Barn doors are typically used on smaller hard light sources. Barn doors on large soft sources are a rarity, as they would need to be proportionally larger than the light to have any useful effect.



LIGHTING TERMS

FLAGS & C-STANDS



LIGHTING TERMS

HOW TO SET UP ONE OF THESE BASTARDS

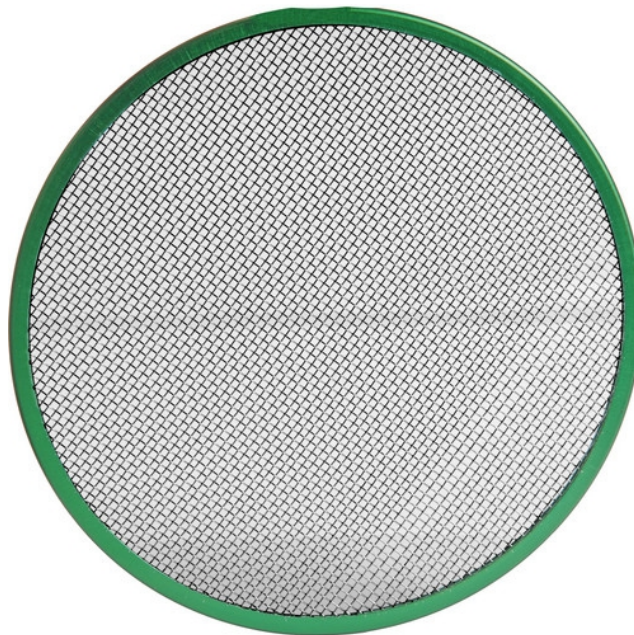
<https://youtu.be/aGeQ3cadzbY>

LIGHTING TERMS

SCRIM

Dimming a tungsten light changes the color temp.

A scrim cuts down the output of a light. They sort of resemble window screens at first glance, being simple steel screens that are attached at the front of a light. They can come in different strengths, based on the tightness of the screen weave, and may be labeled as "singles" or "doubles" etc., according to the amount of output cut.



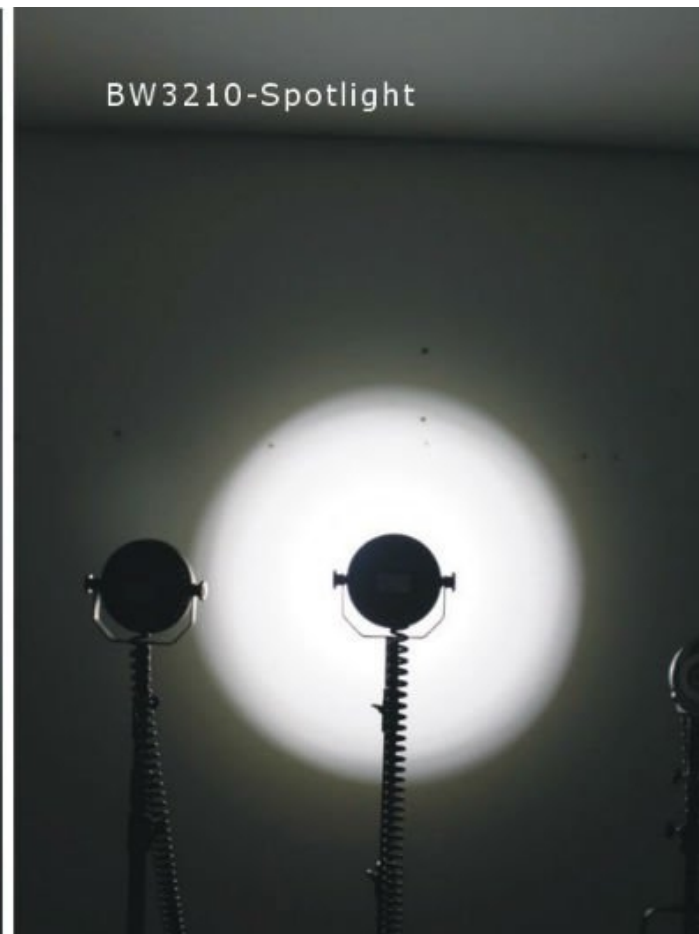
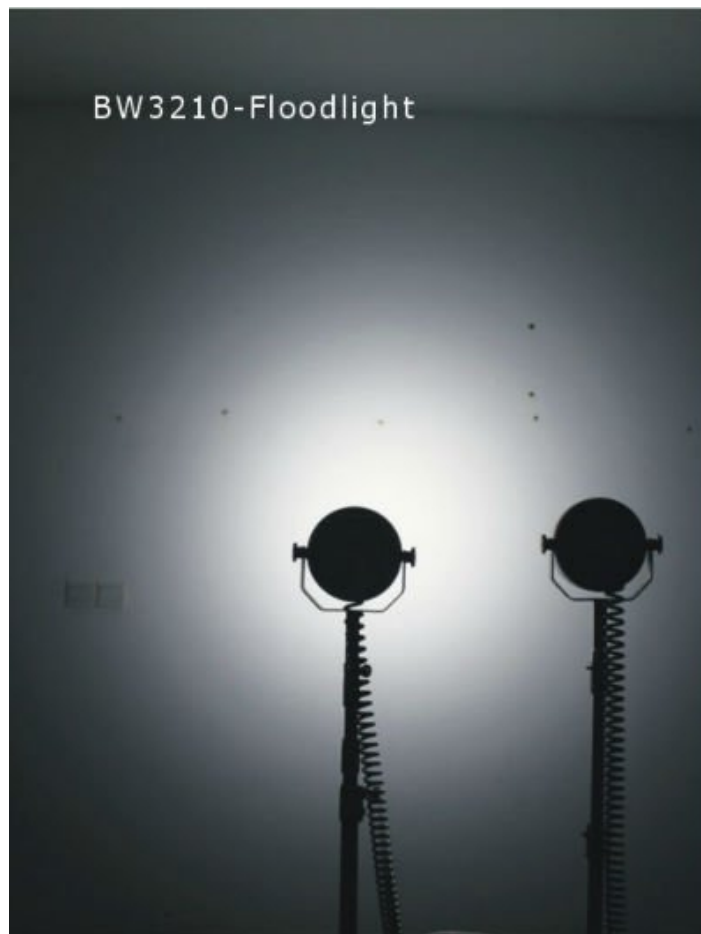
LIGHTING TERMS

FLOOD / SPOT

Quite simply, the beam width.

WIDE: "flooded"

NARROW: "spotted"



BASIC LIGHTING TECHNIQUES

LIGHTING

THREE POINT LIGHTING

A NIFTY SIMULATOR:

<http://www.mediacollege.com/lighting/three-point/simulator.html>

LIGHTING

THREE POINT LIGHTING

“STANDARD” RATIO

FOR WHEN YOU'RE NOT FEELING VERY CREATIVE.

Key-to-Fill 2:1

LIGHTING

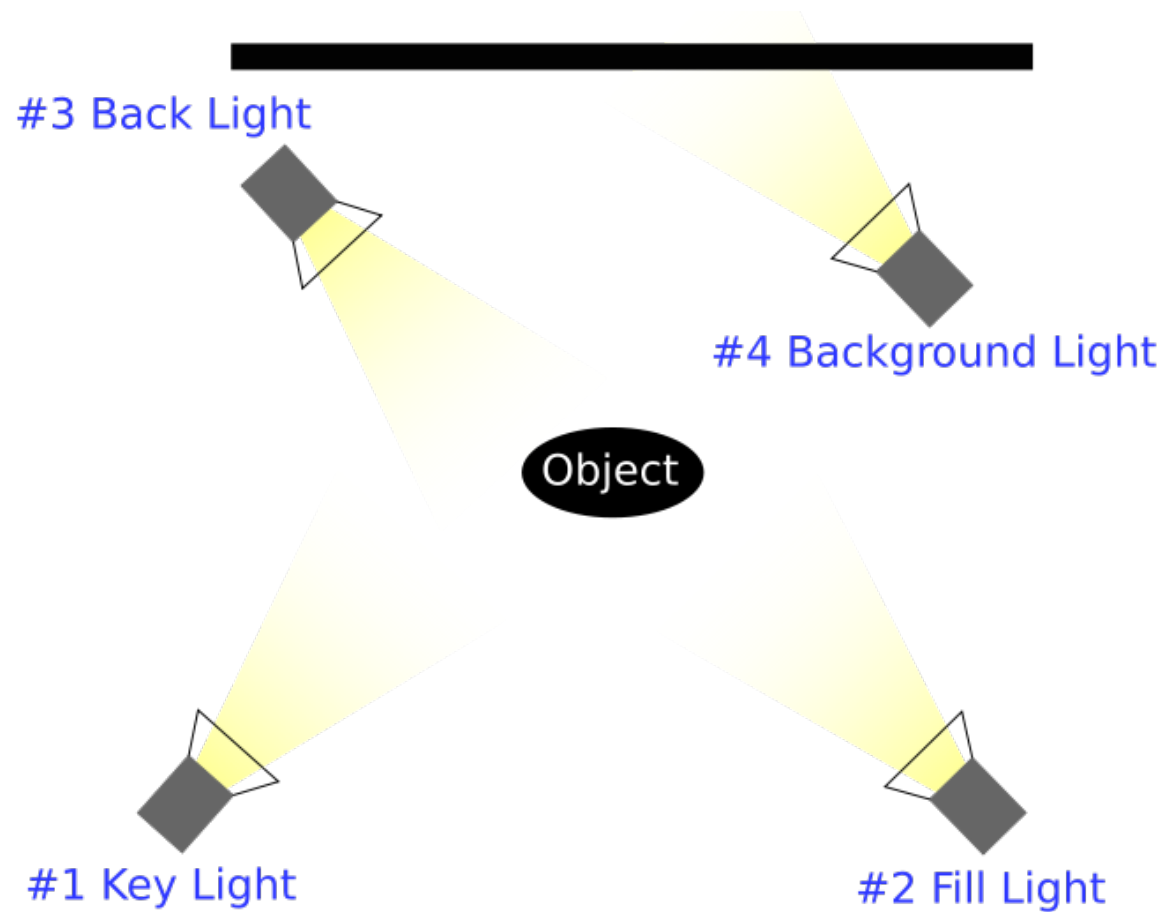
THREE POINT LIGHTING

https://youtu.be/j_Sov3xmgwg

LIGHTING

FOUR POINT LIGHTING

ADD A BACKGROUND (NOT BACK) LIGHT



BASIC LIGHTING SYSTEMS

<https://youtu.be/2Y6bB86HmdA>

WRAPPIN' THOSE CABLES!

<https://youtu.be/ypvmoCOzVxM>