**Terms and Hotkeys for Lighting**   
  
Hot Keys  
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**Ctrl + G -**Group objects in outliner. **Panels > Look Through Camera:** Be able to control the direction of your light by looking though your light.  
 **Window > Relationship Editor > Light Linking > Light-Centric & Object-Centric:** A way to unlink lights from objects or characters in a scene.  **t –** When a maya light is selected, pressing t will give you an extra manipulator tool to move the light. Only works with Maya lights  
  
**[ -** Undo camera move or undo light position in “Look through selected tool”   
  
**] –** Redo camera move or redo light position in “Look through selected tool”   
  
**f-** While using “Look through selected tool”, select the object and f to focus light on selected object. Careful, it will move the position of your light.

**CTRL + H-** Hide  
  
**Shift + H-** Unhide

**f-** Find selected object

Terms   
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**Key light**: Is the subject’s main source of illumination and defines the most visible shadow.  
  
**Fill Light:** Used to fill in shadows, is a lower intensity than the key light. Doesn’t create shadows. Can lower light intensity in the real world by moving light back, using reflectors or light diffusers.   
  
**Rim Light:** The rim light provides definition to the silhouette if your subject and helps separate it from the background.   
   
  
**Intensity:** The bright or dull the color is. On Maya lights you can only use intensity OR exposure but not both

**Exposure:** Used in Arnold settings or Arnold lights. For Maya lights this controls the same as intensi.ty. In Arnold lights it acts as a multiplier for whatever intensity is  
  
**Hue**: A color or shade.  
  
**Saturation**: A range from pure color (100%) to grey (0%) at a constant lightness level. A pure color is fully saturated. De-saturated images are said to be dull or washed out.   
   
**Value:** Lightness or darkness of a color. Can be compared to the gray scale.   
-Rendering  
  
**Arnold & Maya Software-**   
 **Maya software** -it’s very basic rendering software and doesn’t calculate shadows and details as well as Arnold does.   
-**Arnold**: Has more functions while rendering to calculate motion blur, supports cast shadows, creates caustics and creates physically correct simulation of global illumination (diffuse, glossy, specular reflection)   
  
  
**Resolution:** The amount of information an image holds. The more pixels an image has, the more detailed the image will be.   
  
**-Arnold Render view –** If you make changes to your scene, Arnold Render View will automatically render out a new image, so you can see your adjustments with lights, textures and motion blur.   
  
**-Choosing which camera to render from:** IPR Render > Select Camera   
  
**Cone Angle:** The size of the light cone angle. The higher the number, larger the cone angle size.   
  
**Penumbra Angle:** The softness and hardness of the light fall. It is part of the shadow where light makes it past whatever is casting the shadow. Higher the Penumbra angle, the softer the edge will be for the spotlight.  
  
**Dropoff:** The rate of which light degrades as it moves through space.   
  
  
**Cast Shadows**: Creates shadows by taking into account the distance from the light and the size of the light.   
  
**Radius** : The radius affects the softness of the shadow. Higher the number for the light radius, the softer the shadow will be. Will be grainy if you don’t increase samples.  
  
**Samples**: Increasing the quality of shadow, but will slow down render time.  
 **Shadow Density** : changes the shadow’s opacity.  
  
  
**Specular:** Creates highlights on objects. Great for metallic materials.   
  
**Area Light:** In Maya, area lights are two-dimensional rectangular light sources. Use area lights to simulate the rectangular reflections of windows on surfaces.

Compared to other light sources, area lights can take longer to render, but they can produce higher quality light and shadows. Area lights are particularly good for high-quality still images, but less advantageous for longer animations where rendering speed is crucial.

Area lights are physically based—there is no need for a decay option. The angles formed with the area light and the point that is shaded determine the illumination. As the point moves further away from the area light, the angle decreases and illumination decreases, much like decay.   
  
Can achieve a very pretty look without much tweaking, but tends to add significantly to render time.

**Arnold Area Lights:** Behave similarly to Maya lights but can change shape depending on its use(cylinder, disk, quad). Arnold area lights are often less glitch than maya area lights since they are specifically tailored to maya. Recommend using these in most cases, just for consistency’s sake

**Direction Light:** Use a directional light to simulate a very distant point light source (for example, the sun as viewed from the surface of the Earth).

A directional light shines evenly in one direction only. Its light rays are parallel to each other, as if emitted perpendicular from an infinitely large plane. It’s simple, straightforward, and low cost for rendering. It only points one direction, unlike the area light. **Point Light:** A point light shines evenly in all directions from an infinitely small point in space. Use a point light to simulate an incandescent light bulb or a star.   
  
**Spotlight**- A spot light shines a beam of light evenly within a narrow range of directions that are defined by a cone. The rotation of the spot light determines where the beam is aimed. The width of the cone determines how narrow or broad the beam of light is. You can adjust the softness of the light to create or eliminate the harsh circle of projected light. You can also project image maps from spot lights.   
  
Use a spot light to create a beam of light that gradually becomes wider (for example, a flashlight or car headlight)

**Mesh Light:** A light that you can create by adding light to mesh, good for creating a unique shape of light.

**Skydome Light:** creates a circular dome of light. Evenly lights object from all sides. Can be used with a light portal to help direct the light to a more precise position.

**Physical Sky:** Simulates an outdoor blue sky

**Photometric Light:** Require IES file, but simulate real lights(flashlight, fluorescent light, etc) based on whatever IES file you have attached to it.

**Light Portal:** Used in tangent with Skydome light to direct it’s light through an opening going into an interior. Used primarily for light coming in through windows or gaps into an interior space.

**Diffuse:** How an object receives light either through color, or texture

**Specular/Specular Highlight:** A bright spot/point of light on an object, good for metallic materials since it gives a highlight spot to an object

**Transmission:** rate for light that goes through transparent objects like glass or water.

**SSS:** (Sub-surface-scattering) for light that goes through objects that are semi transparent, like wax, thin marble, your fingers

**Volume Indirect:** Used for indirect lighting, when light bounces off other objects on to another object