

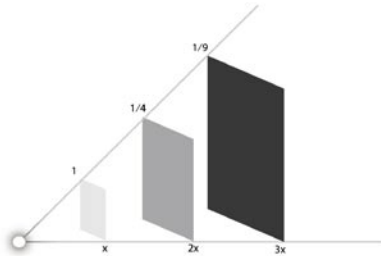
Light

Light obeys the laws of physics. Physics has a lot of laws, but there are three in particular that are important to photographers. Know this about light in your head and you will be able to make sense of any lighting situation. Know it in your gut and you will have the technical sense to be a great photographer. Practically everything you need to know about lighting comes from an understanding of these three principles, so it's worth spending some time to get to know them

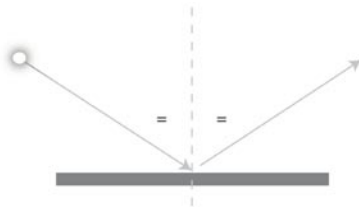
1. Left on its own, light travels in a straight line.



2. The brightness of a point light source diminishes with the square of its distance. This is called the inverse square law.



3. The angle of incidence equals the angle of reflection.

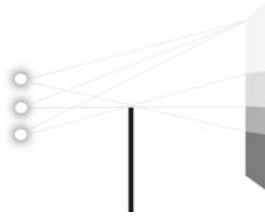


Think of these as the building blocks which you'll use to construct every lighting solution you'll ever create. By using them, alone or in combination with each other, and applying some creativity with the materials you use to apply them, you'll tailor light to your own intentions rather than having your intentions pushed around by the equipment you happen to use.

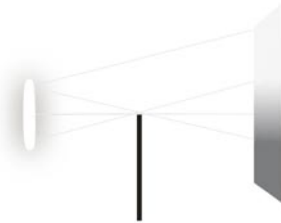
Light Travels In a Straight Line

Working with a Light's Size and Direction

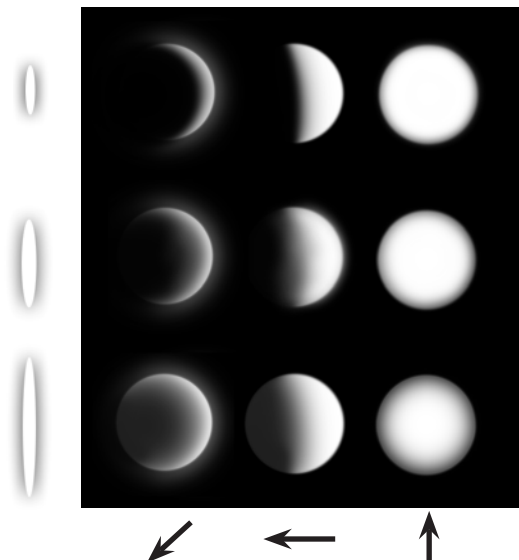
One of the most important steps in controlling light is to control light's absence. It is often easiest to learn about a light by looking at the shadows it casts. Since light travels in a straight line, a small light source that is shaded from part of a subject creates a sharp shadow. To build on this understanding, think about three small light sources:



They each create a sharp shadow, and the effect of their combination is a progressive series of steps. To eliminate the steps, create a light source that has the same diameter as the three lights combined.

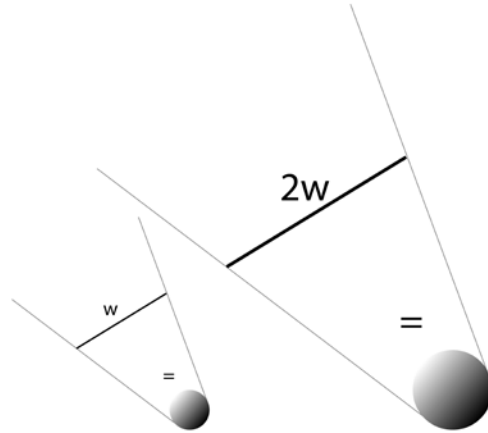


The relative size of the light source, combined with its direction, determine the way light works to show shape and texture. Here are some examples of the effects of using a small, medium, and large light source on a sphere, (the size being relative to the subject) from behind, (New Moon) the side, (Half Moon) and from the direction of the camera. (Full Moon)

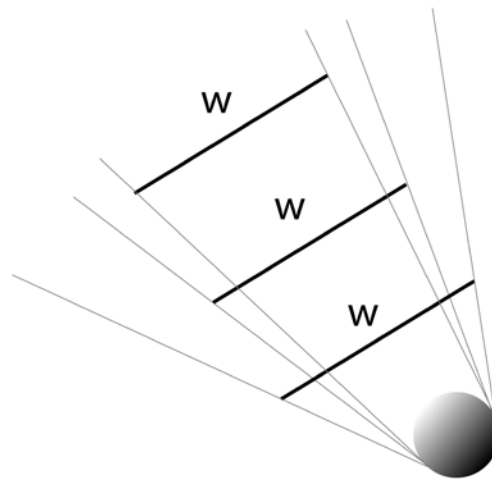


Size is a Relative Dimension

The effect that light source size has on a subject is relative to the size of the subject that is being lit by that source, as well as the distance from the subject. Because of this, it is useful to think of size as an angle rather than a linear dimension.

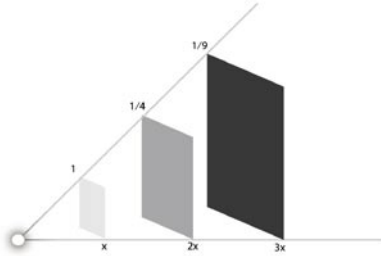


Given a light source of a width w , its angle is dependent on its distance to the subject. Changing the distance to the subject changes the angle, as well as its effect on a subject.

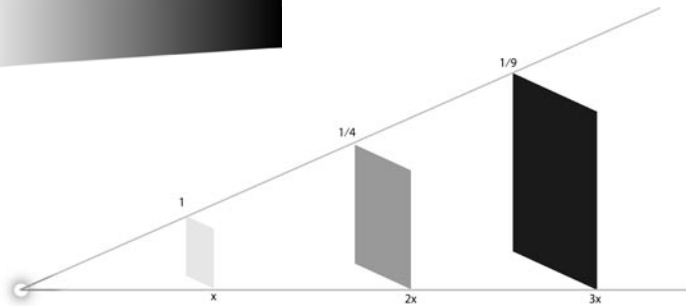
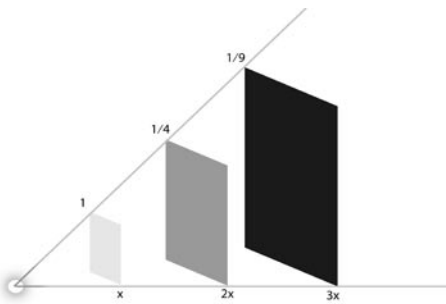


Light Diminishes Proportionally to the Square of its Distance

This handy fact allows you to create light that fades from light to dark. Unless you have an interest in having a perfectly even background, this is a good thing.



It even allows you to control the rate at which the light falls off. A light that is relatively close will diminish relatively quickly. One that is far away will fall off more gradually.



Use this fact when considering the placement of lights for a large subject, multiple subjects, backgrounds that must fade, or managing highlights reflected in shiny objects.

Squash: Direction and Fill



No Fill



Light Fill



Strong Fill

New
Moon

Half
Moon

Full
Moon

Broccoli: Light Source Size



Small Source

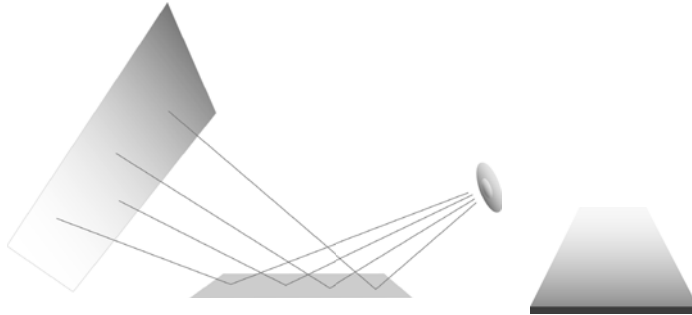


Large Source

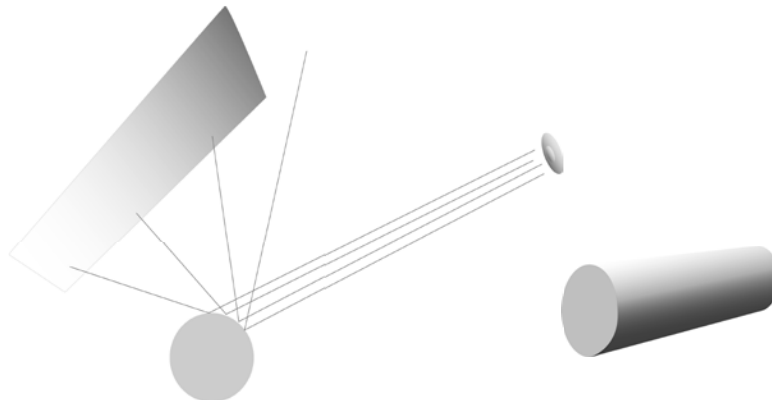
The Angle of Incidence Equals the Angle of Reflection (and why it matters to you.)

Reflections are a fact of life in studio lighting. What you do about them will separate the competent from the inept. So here are the three things you need to know when it comes to lighting shiny objects.

1. Like a mirror, shiny objects reflect what is at an angle equal to the angle you're viewing them from. If you can see yourself in a shiny object, so will the camera.



2. You can't prevent reflections on shiny objects. You can, though, control the reflections that are seen in them.



3. Controlling unwanted reflections is simply a matter of tracing a reflection back to its source and replacing it with one that is more to your liking. You can do this by changing the camera angle, by changing the angle of the subject, or by building a suitable reflection.