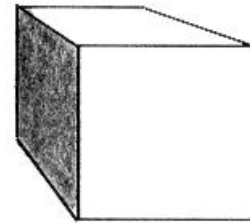


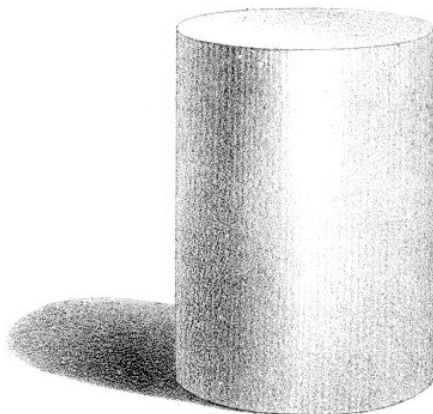
PRINCIPLES OF FORM

The illusion of form is created by the transitions of value from the darkest areas to the lightest areas. We will see a prismatic form if the light area is sharply divided from the dark area. A softer transition will create a rotund form such as a sphere, cylinder, ovoid or cone.

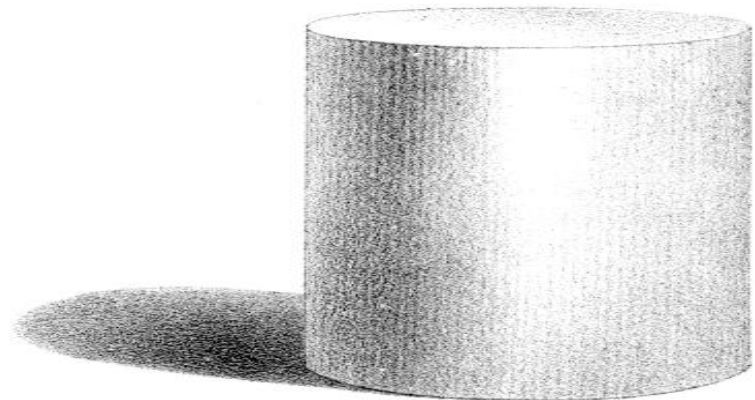
The rate of transition is determined by the diameter of the object, the larger the diameter the softer the transition. The "Banding" of the transitions is controlled by the relationship of the object to the illuminating source.



Prismatic form



Cylinder



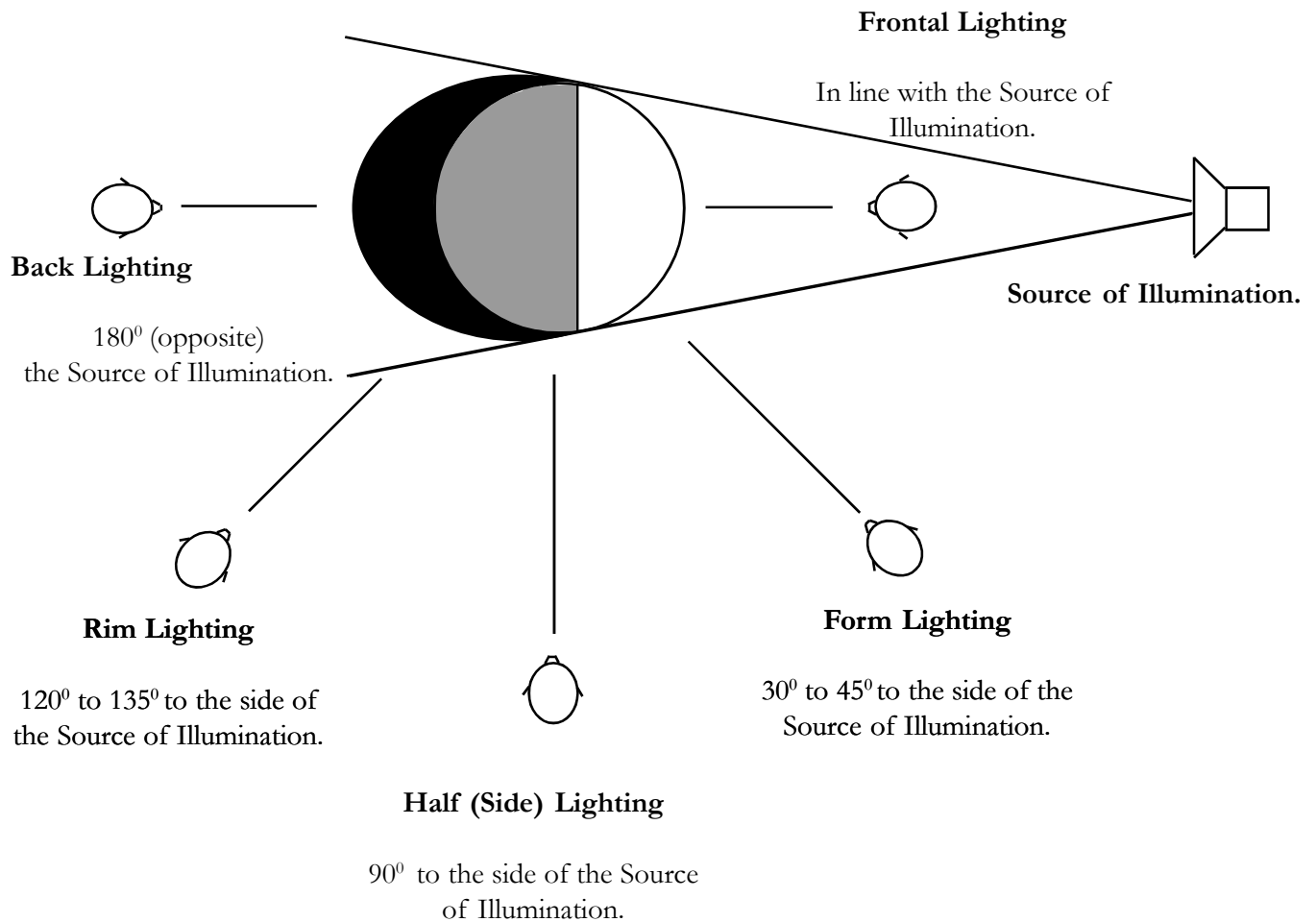
Larger diameter cylinder

For our purposes we will investigate the effects of five different angles of illumination on both a sphere and a cylinder. This will provide us with a basic understanding which we can apply to more complex situations.

THE FIVE ANGLES OF ILLUMINATION

In the next section, we will begin by looking down on either a cylinder or a sphere. For the moment we will consider them as similar from the top. The portion of the cylinder or sphere that is illuminated by the source will be light and the portion which is not illuminated will be dark. A shadow will be cast from the object, which is represented as very dark. We will need to look at shadows at a later time. Right now, we are considering only the "shade" portion of the cylinder or sphere.

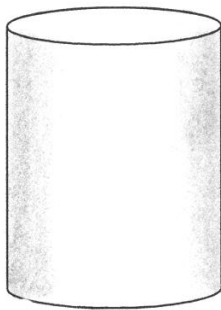
THE FIVE ANGLES OF ILLUMINATION



An object may be illuminated from any angle by a source of illumination. However, it is simpler to think of only five angles, as listed above. You will notice that this corresponds to the five phases of the moon: Full, Waning, Half, Crescent and New.

The distribution of light and shade on an object is controlled by the angle of illumination. If the angle changes or you change your position with respect to the source, the distribution seen will change. The following pages will discuss the distribution seen from each position. It is important that you fully understand the distribution from each angle.

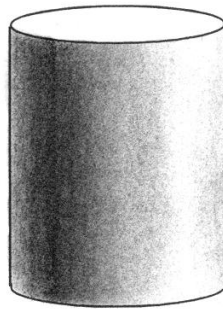
THE FIVE ANGLES OF ILLUMINATION (Cylinders)



**FRONTAL
LIGHTING**

The entire surface of the object is illuminated.

The source is in line with the artist and the shadow is cast directly behind the object, away from the artist.

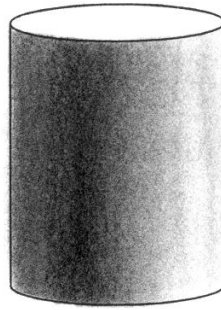


**FORM
LIGHTING**

Two thirds to three quarters of the object is illuminated. One third to one quarter of the object is in shade.

The source is 30° - 45° to the artist .

The shadow is cast behind the object, and 60° - 45° away from the artist.

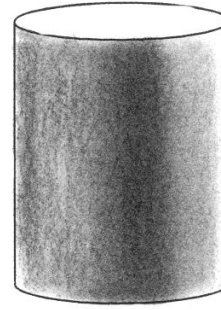


**HALF
LIGHTING**

One half of the object is illuminated and one half is in shade.

The source is 90° to the artist.

The shadow is cast 90° to the side of the object and perpendicular to the artist.

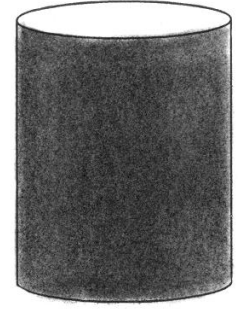


**RIM
LIGHTING**

One third to one quarter of the object is illuminated. Two thirds to three quarters of the object is in shade.

The source is 120° - 135° from the artist and behind the object.

The shadow is cast in front of the object, and 60° - 45° toward the artist.



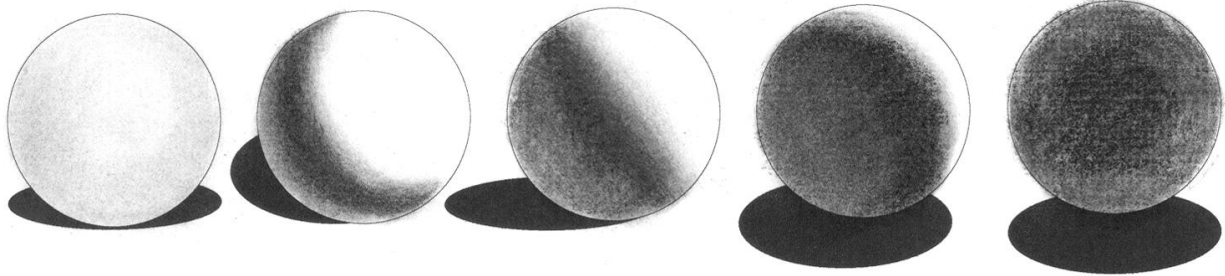
**BACK
LIGHTING**

The entire surface of the object is in shade.

The source is in line with the artist behind the object.

The shadow is cast directly toward the artist.

THE FIVE ANGLES OF ILLUMINATION (Spheres)



**FRONTAL
LIGHTING**

The entire surface of the object is illuminated.

The source is in line with the artist and the shadow is cast directly behind the object, away from the artist.

**FORM
LIGHTING**

Two thirds to three quarters of the object is illuminated. One third to one quarter of the object is in shade.

The source is 30° - 45° to the artist.

The shadow is cast behind the object, and 60° - 45° away from the artist.

**HALF
LIGHTING**

One half of the object is illuminated and one half is in shade.

The source is 90° to the artist.

The shadow is cast 90° to the side of the object and perpendicular to the artist.

**RIM
LIGHTING**

One third to one quarter of the object is illuminated.

Two thirds to three quarters of the object is in shade.

The source is 120° - 135° from the artist and behind the object.

The shadow is cast in front of the object, and 60° - 45° toward the artist.

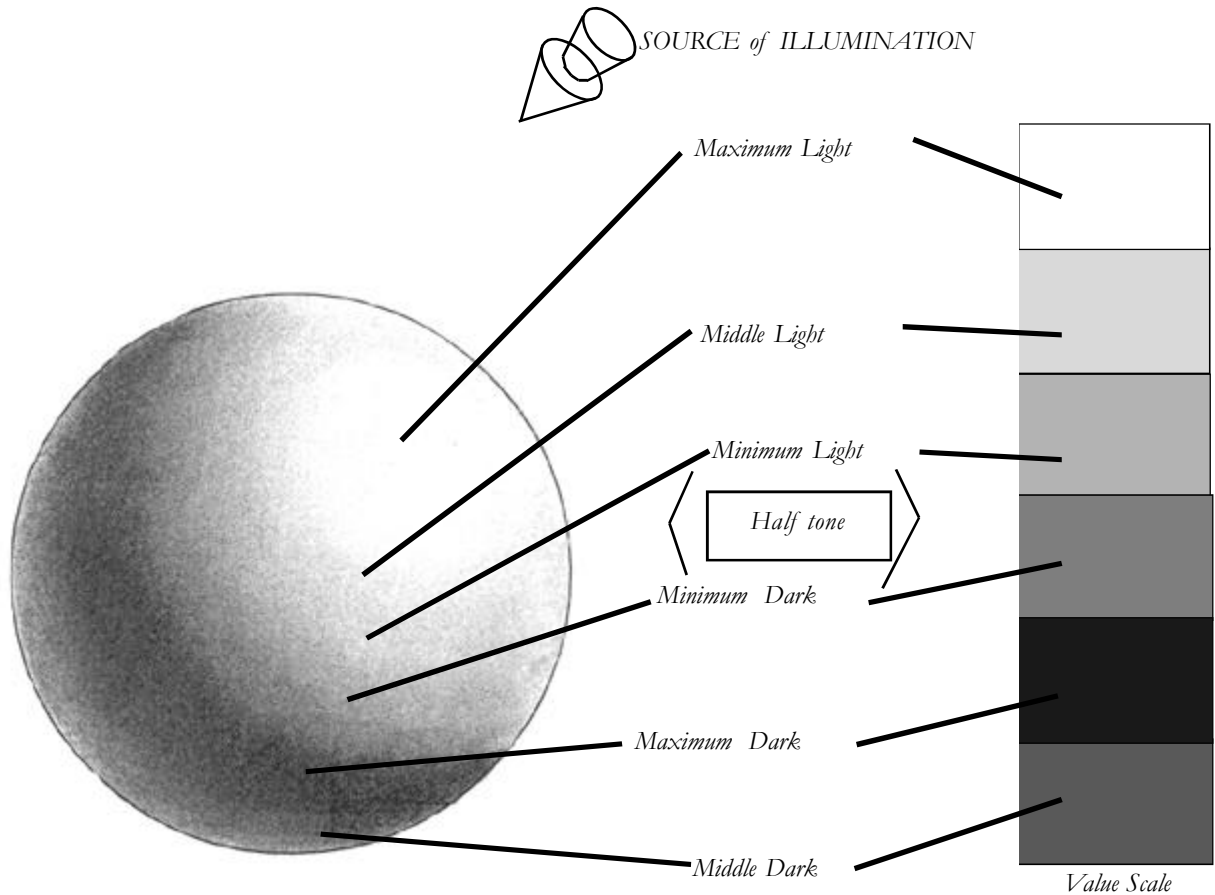
**BACK
LIGHTING**

The entire surface of the object is in shade.

The source is in line with the artist behind the object.

The shadow is cast directly toward the artist.

ZONES OF ILLUMINATION & SHADE



The transition of the values from light to dark creates the illusion of form. In nature the values, which are clearly separated in this diagram, flow smoothly from one into the other. Each zone darkens as the object turns out of the illumination. The Maximum Light zone is the area that is perpendicular to the source so it receives the maximum illumination. As the object turns away from the illumination the light drops off a little and creates the Middle Light zone. As the object continues to turn the light drops off more to create the Minimum Light zone.

We now come to the non-illuminated area, called the "Shade" area. Minimum Dark is the first zone of the shade area. For simplicity sake we sometimes combine the Minimum Light and Minimum Dark zones into a single area which we call the "Half Tone."

We have been following, to this point, the steps on the value scale - Maximum Light, Middle Light, Minimum Light and Minimum Dark, so we would expect the next step to be the Middle Dark. However, the next zone is the Maximum Dark, which is often called the "Core of the Shade." It is the darkest zone because neither the Source of Illumination nor the reflected light can reach into it. The next zone is the Middle Dark. It is often called the "Reflected Light" area because reflected light from nearby objects reaches into it and brightens it a little.