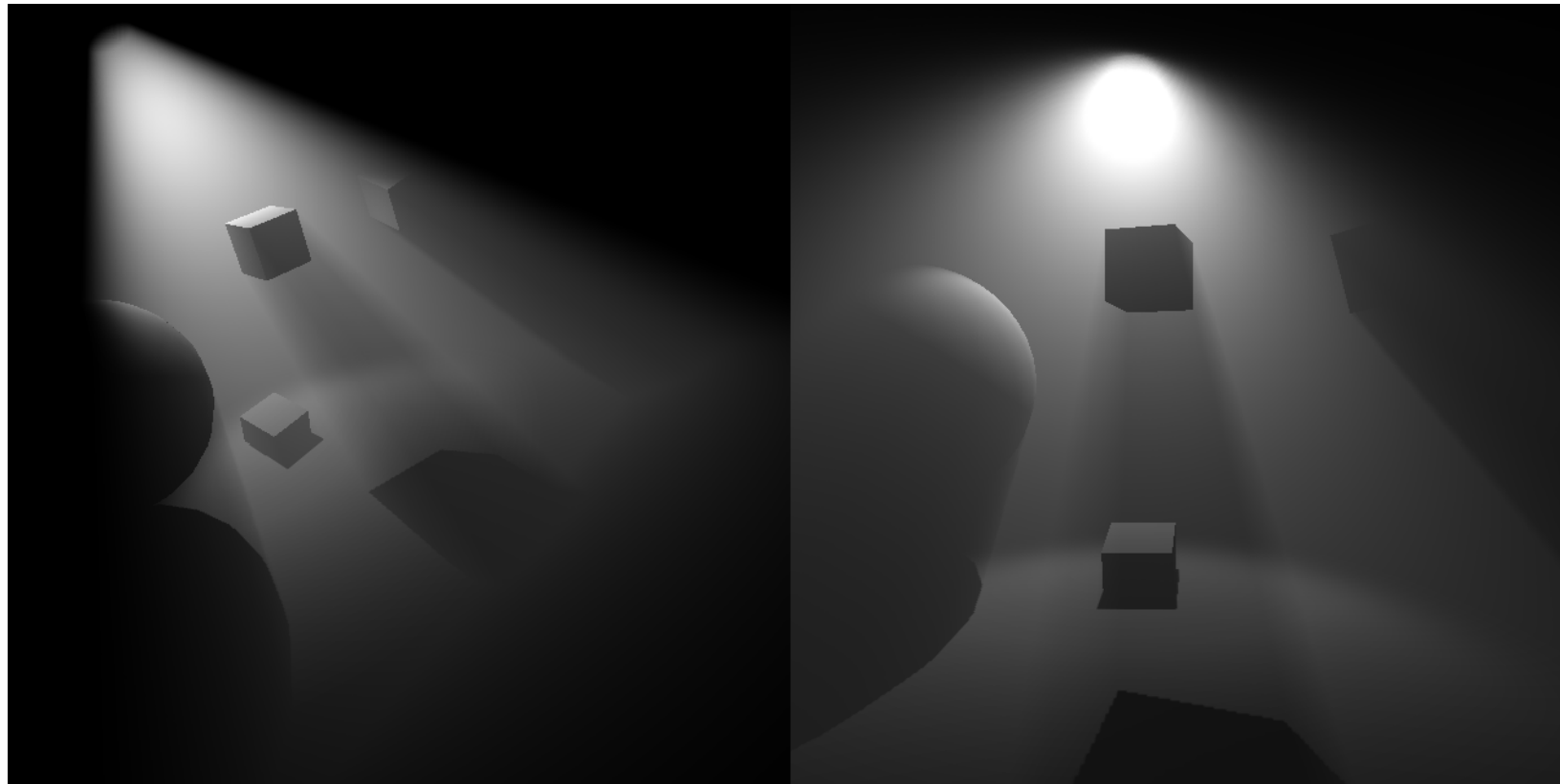# UNDERSTANDING LIGHT

Key Concepts

- Light illuminates space and brings form to objects

- Every time a room increases with light your ability to determine space and form becomes more easily identifiable. In a pitch black room there is no light, there fore you are not able to identify the forms and space around you.

- If that light is increased too much of a degree you would be viewing white light.

- The presence, absence, and direction of light will dictate form and space.
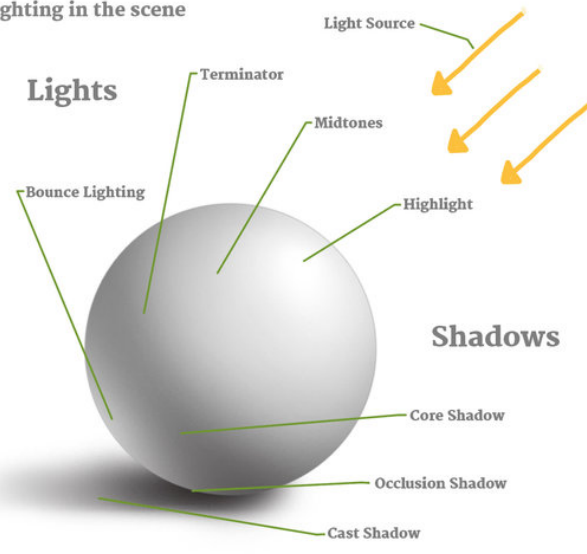
HELPFUL HINTS

LIGHTING + BUILDING VALUES
Values are directly affected by the placement of lighting in the scene

Lighting and Shadows visually define objects.

We interpret all objects based on the lighting that hits which creates forms based on the tonal contrast.

The light source will indicate where the values should take form from. Shading values comes directly from the lighting. Below are the basics to remember while you are working.

1. Direction
Create a light source in your scene and stick with it! Always keep it in mind where it is and how it will fall upon your object and how to respond in shading it accordingly. So the direction of lighting is just as important to remember.

2. Object's Surface
Will the object reflect or absorb light? Will it glisten or will it scatter the light? Make sure the object corresponds with the lighting.

3. Shadows
Lighting the object is only half the task, make sure you remember to include the shadows to indicate the light source.

Lights

Light Source
Terminator
Midtones
Bounce Lighting
Highlight

Shadows

Core Shadow
Occlusion Shadow
Cast Shadow

Light Bounces!

When light hits an object's surface, part of it is absorbed and reflected.

Let's focus on the reflected light. A light reflected on another surface is called the bounce lighting. This may also pick up some color hues as it bounces.

Setting up a Lighting Scene

A great scene setup that is done by many concept artists is called a 3 Point Lighting System. This lights the character in the most efficient manner using 3 very distinctive lights to light your subject manner.

- **Key Light**

  Main source of light.

  Usually overhead.

- **Fill Light**

  Control contrast & soften shadows.

  Similar to a global light.

- **Rim Light**

  Highlights silhouettes.

  Seperates subject from background.

Building up Values Step by Step

Values can be built up in 4 easy to remember steps and is all based around lighting.

1. Base value
Build up the base value of a color, usually this is the color identity of the object.

2. Build up values
Build your lighting out from where it would be hitting the surface the strongest.

3. Finer Details
Add in the highlights and bounce lighting if applicable.

4. Shadows
If the object in next to/standing on a surface be sure to include the cast shadow.
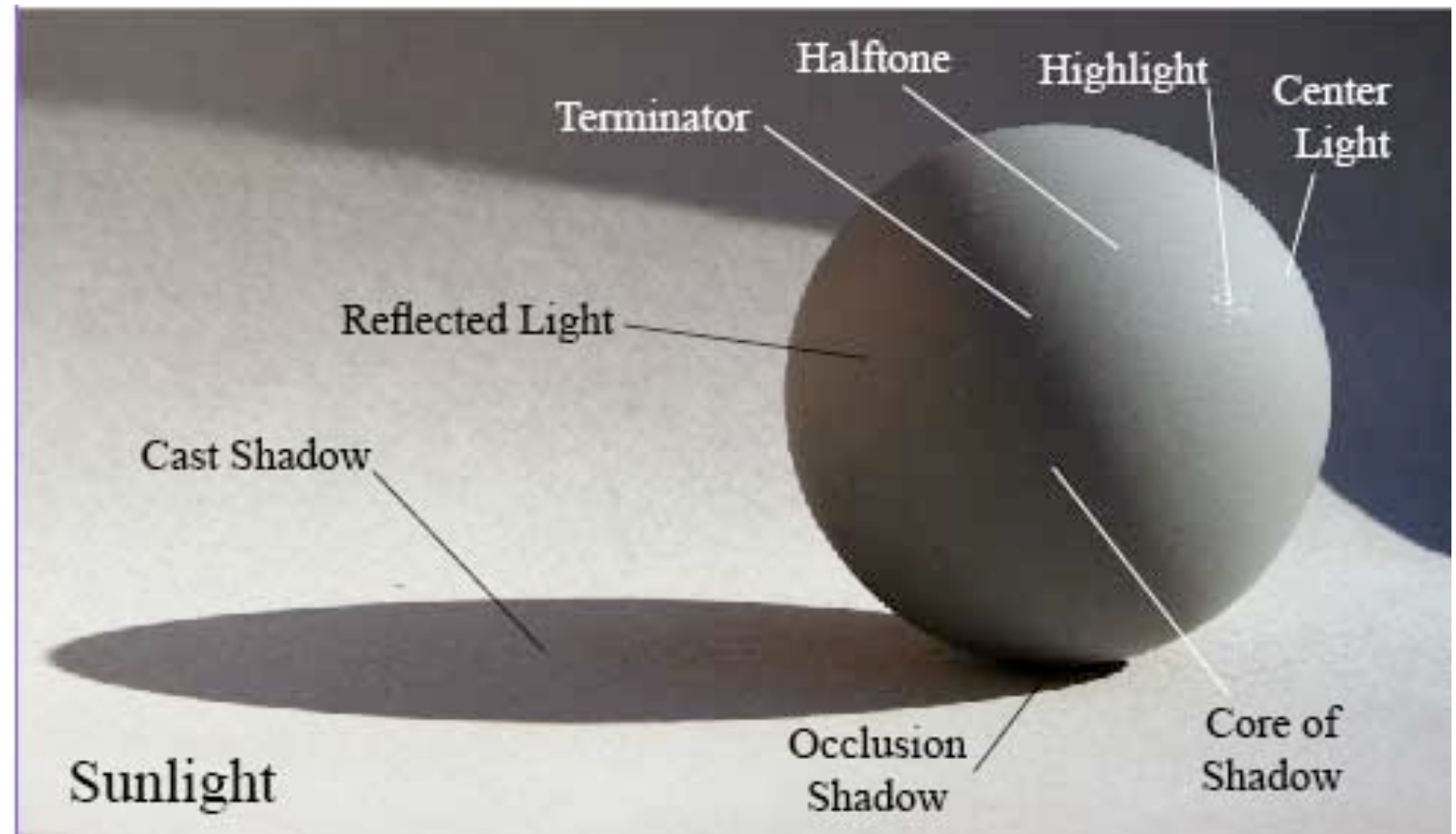
Properties of Light

- **Modeling Factors**
  The photograph shows a sphere in direct sunlight. It has a distinct set of tonal steps from light to shadow, known as modeling factors.

  In direct sunlight, there's a strong division of light and shade. The light side includes the light and dark halftones, the center light, and the highlight. The center light is the point at which the light rays strike the form most vertically. The highlight is the point where, in a shiny surface, we see a reflection of the light source.
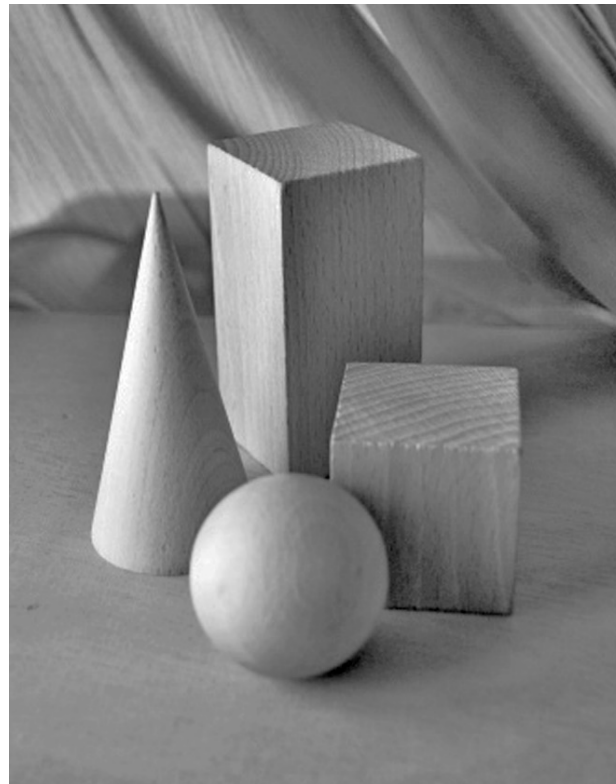
  Note that the center light and highlight are not at the same location. The Terminator The terminator is the area where the form transitions from light into shadow. It occurs where the light rays from the source are tangent to the edge of the form. If the source is soft and indirect, the transition from light to shadow at the terminator will be more gradual. The form shadow begins just beyond the terminator.

  To test which areas are in light and which are in shadow, you can cast a shadow with a pencil on the object. The cast shadow will show up only on the lighted side, not on the shadow side.

IDENTIFYING LIGHT FROM PHOTOGRAPHS

- You can see values easily through photographs, try taking a picture of a simple object, now convert it to black and white, can you see all of the values? Now take the same object and photograph it in a different light and convert it to black and white, do you notice how the values have changed?
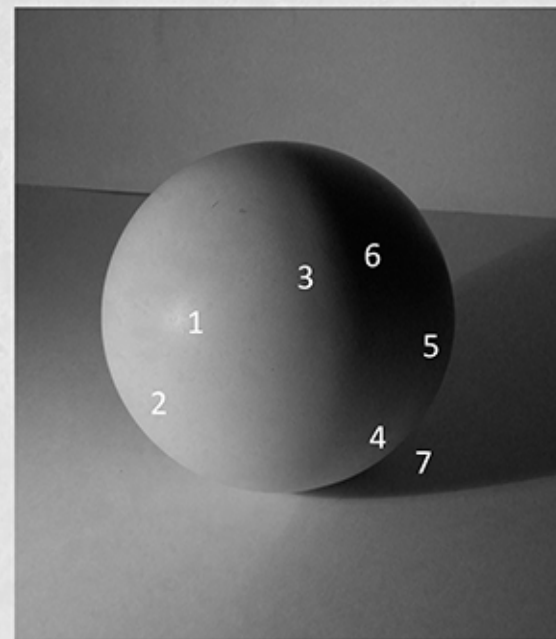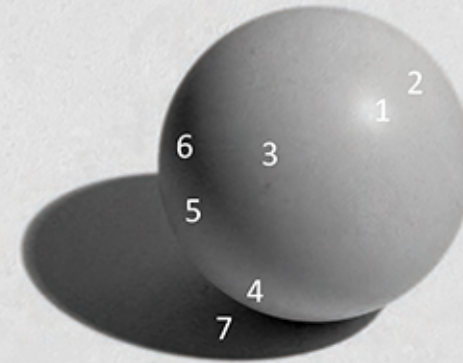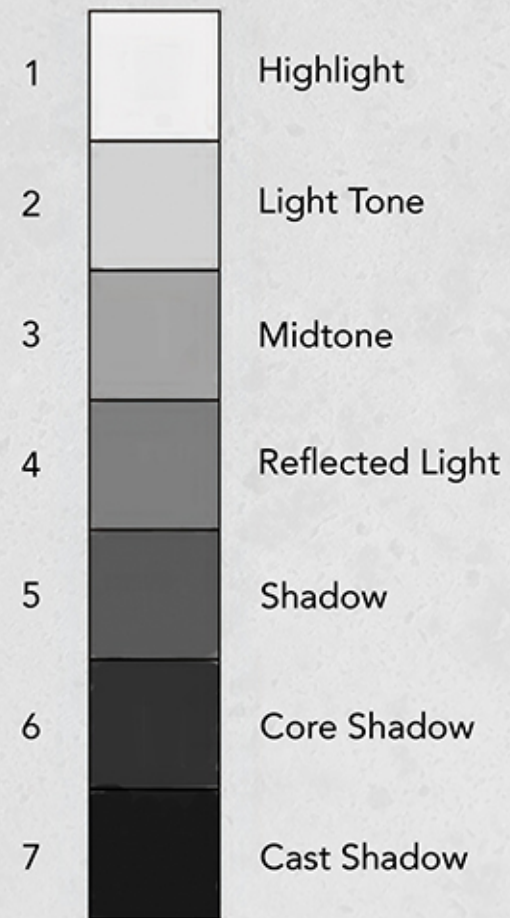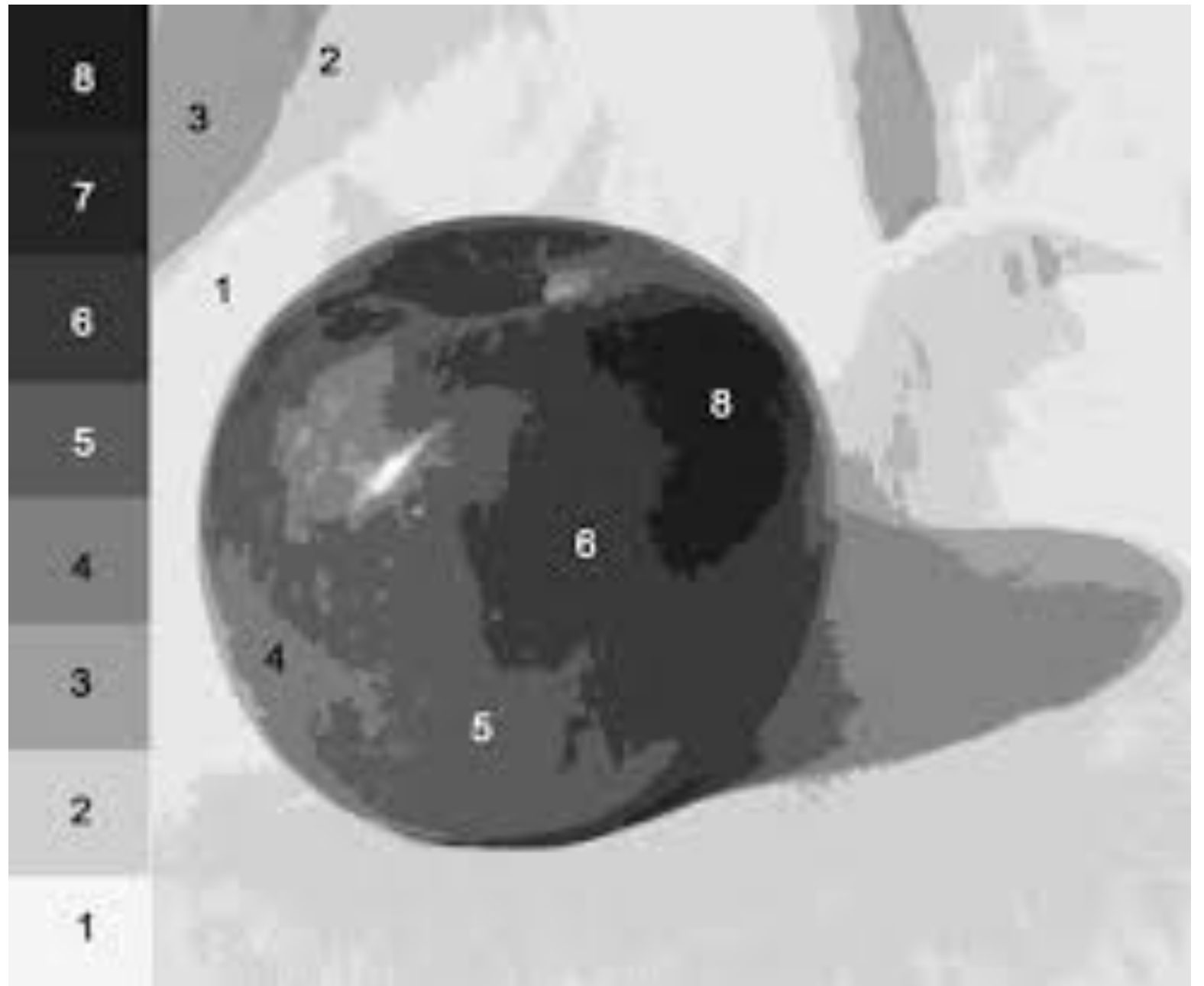
Seeing Values in Life

- To see values in life you must train your eyes to see like an artist. You are trying to identify and classify large areas of light together. You can do this by un-focusing or squinting your eyes to eliminate details and see large areas of light. Put these areas of light in your drawing and continue to add and build on them this is called modeling.

The match up of values to the properties of light

Lesson 1: Understanding the Value Scale

1		Highlight
2		Light Tone
3		Midtone
4		Reflected Light
5		Shadow
6		Core Shadow
7		Cast Shadow

- Match the values you see to the values you create with your pencil. To create dark areas with a pencil press harder or draw over it in multiple layers, to create light areas apply less pressure and deposit less graphite, you can also use your fingers or a tissue to move areas of graphite you have already laid down.

Practice: Complete this exercise.
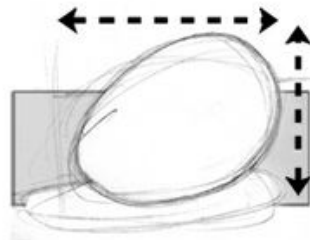
egg drawing

Egg Still Life:

To practice your rendering, set up an egg with a single light source. Use a directional desk lamp and minimize the amount of ambient light from the room you are working in to get a clear sense of light and dark. Choose a decent quality paper that is not too rough or you will have difficulty achieving soft transitions.

1. Gesture: Place simple lines and shapes to get started, dont be too fussy. A HB or 2B is a good pencil to work with.
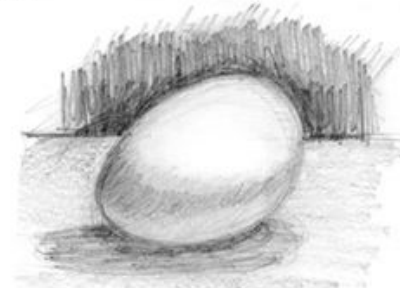
2. Adjust: Use sight lines to measure proportion, compare height to width, etc. Look at Negative shapes and Positive shapes, refine drawing until its correct.

3. Pattern: Block in the basic light and dark patterns, don't go too dark yet or you will exhaust your values.

4. Value: Start to model the values by building up the darks slowly in layered passes. Smudge with a tissue to soften transitions but reserve highlight areas.

5. Continue: Keep building values, you can switch to a 4B or 6B pencil to push the darks and a H or 2H to slowly build light value ranges. Make sure you have soft transitions and a good value range.

6. Finish: Work values until you have achieved a form that looks 3 dimensional. Push in your darkest darks and pull out lightest lights. Make sure you have all five properites of light.

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