Properties of Color

by Sophia

WHAT'S COVERED

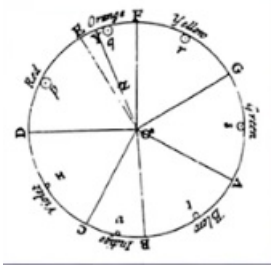
In this lesson, you will learn about the properties of color. Specifically, this lesson will cover:

1. Sir Isaac Newton

Sir Isaac Newton was an English physicist, mathematician, and color theorist who decomposed light into the colors of the spectrum, devised the Particle Theory of Light, and created the first color circle.

Newton discovered the **color spectrum**, which is made up of the seven hues of visible light: red, orange, yellow, green, blue, indigo, and violet, arranged on the spectrum by wavelength. He shone light through a prism, and that beam of light split into the color spectrum.

Out of this, Newton created the first color circle. The circle had the letters R-O-Y-G-B-I-V around it, which correspond to the colors red, orange, yellow, green, blue, indigo, and violet.



Each one of the colors in the color circle is a **hue**, which is quite simply the name of a color. So red is a hue, red-orange is a hue, orange is a hue, etc.

TERMS TO KNOW

Sir Isaac Newton

English physicist, mathematician, and color theorist who decomposed light into the colors of the spectrum; devised the Particle Theory of Light and created the first color circle.

Color Spectrum

The seven hues of visible light: red, orange, yellow, green, blue, indigo, and violet. These hues are arranged on the spectrum by wavelength.

Hue

The name of a color.

2. Johann Wolfgang von Goethe

Johann Wolfgang von Goethe was a German writer and artist who studied the physiological effects of color.

Goethe opposed Newton's analytical data and created another color circle, or color wheel, based on his own observations.

TERM TO KNOW

Johann Wolfgang von Goethe

German writer and artist who studied the physiological effects of color; opposed Newton's analytical data, and also created a color circle.

3. Characteristics of Color

We will now look at a few characteristics of color:

- Value
- Saturation
- Color temperature

3a. Value

Value is another term for lightness or darkness.

In the image below, you can see the various hues changing as values go from light to dark.

TERM TO KNOW

Value

Another term for lightness or darkness.

3b. Saturation

Saturation is another term for the intensity of color, and it usually refers to the purity or vividness of a color. In the blocks below, the middle hue is the base color.

As you move to your left, the color is less saturated; it starts to get really dull. If you move to the right of the base color, you get the opposite effect; you have a higher saturation, and the color appears more vivid and lively.

Saturation is important for commercial design and photography. If you lower the saturation of a photo, it starts to lose some of its color. If you go the opposite way and increase saturation, it will start to get more vibrant. However, too much saturation creates an unnaturally vivid look and can oftentimes result in noise and artifacting.

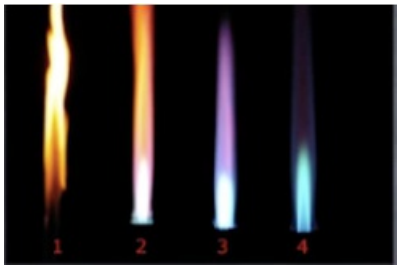
TERM TO KNOW

Saturation

Another term for the intensity of a color; usually refers to the purity or vividness of a color.

3c. Color Temperature

Color temperature is a measure in Kelvin used to describe lighting conditions when viewing color.



If you look at the flame in the image above, it gets bluer as it gets hotter.

Now look at the color temperature chart below.

The color temperature chart gives you a breakdown of color temperature in relation to other things in the real world.

For instance, 1,700 Kelvins, which is that top orange on the chart, is similar to a match flame. If you jump somewhere in the middle to 4,100 Kelvins, you get moonlight. If you go all the way to the bottom, you get clear blue sky.

Typically, we talk about color temperature as being either warm or cool.

> ↱ EXAMPLE If you've ever bought bulbs at a store, they're usually rated in wattage and oftentimes color temperature. While differences in the ratings seem minor, you'll see a pretty big difference when you put the bulbs in your home.

Color temperature can also affect the color perception in a design, such as a graphic design, web design, or photograph.

TERM TO KNOW

Color Temperature

A measurement in Kelvin used to describe lighting conditions when viewing color.

SUMMARY

In this lesson, you learned about color, beginning with the history of color and the contributions of **Sir Isaac Newton** and **Johann Wolfgang von Goethe**. You then learned about the major **characteristics of color**: **value**, **saturation**, and **color temperature**.

Keep up the learning and have a great day!

Source: SOURCE: THIS WORK IS ADAPTED FROM SOPHIA AUTHOR MARIO E. HERNANDEZ

TERMS TO KNOW

Color Spectrum
The seven hues of visible light: red, orange, yellow, green, blue, indigo, and violet. These hues are arranged on the spectrum by wavelength.

Color Temperature
A measurement in Kelvin used to describe lighting conditions when viewing color.

Hue
The name of a color.

Johann Wolfgang von Goethe
German writer and artist who studied the physiological effects of color; opposed Newton's analytical data, and also created a color circle.

Saturation
Another term for the intensity of a color; usually refers to the purity or vividness of a color.

Sir Isaac Newton
English physicist, mathematician, and color theorist who decomposed light into the colors of the spectrum; devised the Particle Theory of Light and created the first color circle.

Value
Another term for lightness or darkness.