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The human eye is a very complex structure that allows us to see. To explain it simply, our eyes act like cameras. Light comes in through an opening, lenses allow us to focus and light sensitive areas in our eyes let us see. Something that plays a big part in our sense of sight is color. Humans see three main wavelengths of light; red, green, and blue. These three colors combined create the millions of colors we see everyday. Colors can make us feel different emotions even though they are not physical, such as happiness, melancholiness, and even hunger. Naturally occurring colors in the real world are incredibly easy to achieve, due to various materials and lighting conditions. Digital and printed colors are much more complex, however.

The RGB color model is used on digital screens to display the colors we see in real life. The model is based on a theory that when red, green, and blue are added together, they create many different colors, also known as an additive color system. This means that when all colors are combined equally they create white. Colors in real life do not consist of just red, green, and blue, however.

RGB has existed since the mid 1800's and was theorized by physicists James Maxwell, Hermann Helmholtz, and Thomas Young. One of the earliest uses of this model was in a photograph in the year 1861. Modern technology that use the RGB color model include televisions, smart phones, computer screens, and more. Many applications utilize the RGB color model, including the Microsoft programs and Adobe programs. Digital media use ppi, which stands for pixels per inch. This higher the ppi, the higher resolution the image will be. The RGB color model is mainly used for creating digital media, such as graphic designing and videos. This is because RGB does not convert well to printing because printing uses the CMYK model. It can cause colors to distort and not appear as vivid as they did on screens as previewed.

Two of the most used working spaces in the RGB color model are sRGB and Adobe RGB. Programs like Adobe Photoshop and Illustrator allow you to use these working spaces to their full potential. sRGB is used mostly for designing for the internet and screens. Adobe RGB allows for a much greater variety of colors for printing.

The HSI color model is commonly used along with other color models. It stands for hue, saturation, and intensity. A hue is simply a color. Saturation

is how much of that color you're seeing, whether it be vivid or washed out. Intensity refers to the brightness of the color.

The CMYK color model is used for printing on materials like paper. It is a subtractive color system, meaning that when cyan, magenta, yellow, and key are combined they create black. The "K" in CMYK stands for key, but no one is entirely sure why since it actually represents black.

Like the RGB color model, the CMYK model began in the 1800's after the discovery that cyan, magenta, and yellow produced the biggest variety of colors for prints. Black ink was added in the get darker and richer colors, because without it, the original three colors combined would just make a dark brown. This model is used because of wavelengths of light being absorbed and reflected. For example, white surfaces reflect all wavelengths, and black surfaces absorb all wavelengths. CMYK colors are not as intense as RGB colors, due to the different mediums they are on, prints and screens respectively.

Half-toning is a printing technique that allows printers to produce specific colors. Multiple colors of ink are printed onto a surface in dots and then layered to get the right color. This technique conserves the printer's ink while having the same effect as if it was printed normally. Printers print in dpi, which stands for dots per inch. The more dots per inch, the higher quality and clarity the print will be.

There are many more color modes out there, but RGB and CMYK are the two modes that are used the most, whether it be for graphic design, digital media, and just content creation in general. Without these color modes, who knows where digital media would be today?

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