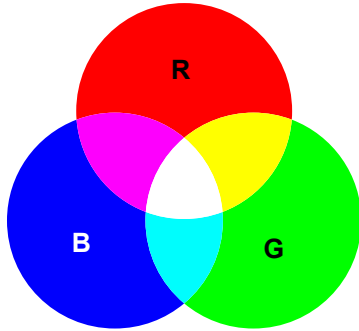


# Color Models

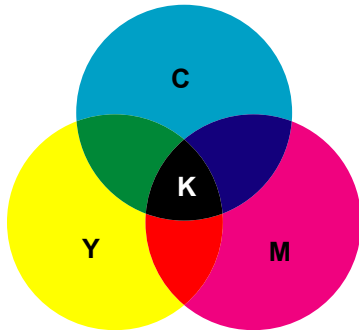
## RGB Color Model

(additive colored lights combine to make white)

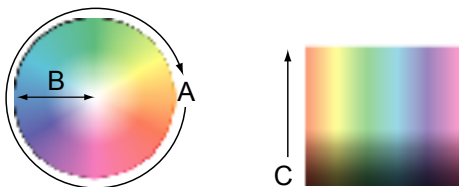


## CMYK Color Model

(subtractive colors get darker when mixed)

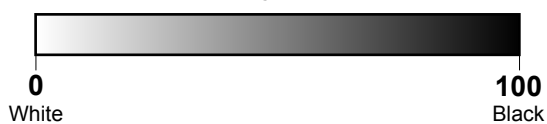


## HSB Color Model



A. Hue B. Saturation C. Brightness

## Grayscale



A color mode in Illustrator and Photoshop determines the color model used to display and print files. Illustrator and Photoshop bases its color modes on established models for describing and reproducing color.

Common models include:

- RGB (Red, Green, Blue)
- CMYK (Cyan, Magenta, Yellow, Black)
- HSB (Hue, Saturation, Brightness)
- Grayscale (Black, White)

### RGB:

A large percentage of the visible spectrum can be represented by mixing red, green, and blue (RGB) colored light in various proportions and intensities. Where the colors overlap, they create cyan, magenta, and yellow.

Because the RGB colors combine to create white, they are also called **additive colors**. Adding all colors together creates white—that is, all light is reflected back to the eye. Additive colors are used for lighting, video, and monitors. Your monitor, for example, creates color by emitting light through red, green, and blue phosphors. RGB color model is most commonly used in web graphics.

### CMYK:

Whereas the RGB model depends on a light source to create color, the CMYK model is based on the light-absorbing quality of ink printed on paper. As white light strikes translucent inks, a portion of the spectrum is absorbed. Color that is not absorbed is reflected back to your eye.

In theory, pure cyan (C), magenta (M), and yellow (Y) pigments should combine to absorb all color and produce black; for this reason they are also called **subtractive colors**. Because all printing inks contain some impurities, these three inks actually produce a muddy brown and must be combined with black (K) ink to produce a true black. (The letter K is used to avoid confusion, because B also stands for blue.) Combining these inks to reproduce color is called four-color process printing. CMYK color model is most commonly used in printed graphics.

### HSB:

Based on the human perception of color, the HSB model describes three fundamental characteristics of color:

- Hue is the color reflected from or transmitted through an object. It is measured as a location on the standard color wheel, expressed as a degree between 0° and 360°. In common use, hue is identified by the name of the color such as red, orange, or green.
- Saturation, sometimes called chroma, is the strength or purity of the color. Saturation represents the amount of gray in proportion to the hue, measured as a percentage from 0% (gray) to 100% (fully saturated). On the standard color wheel, saturation increases from the center to the edge.
- Brightness is the relative lightness or darkness of the color, usually measured as a percentage from 0% (black) to 100% (white).

### Grayscale:

Grayscale uses shades of gray to represent an object. Every grayscale object has a brightness value ranging from 0% (white) to 100% (black).