# RGB *And* CMY COLOR MODEL
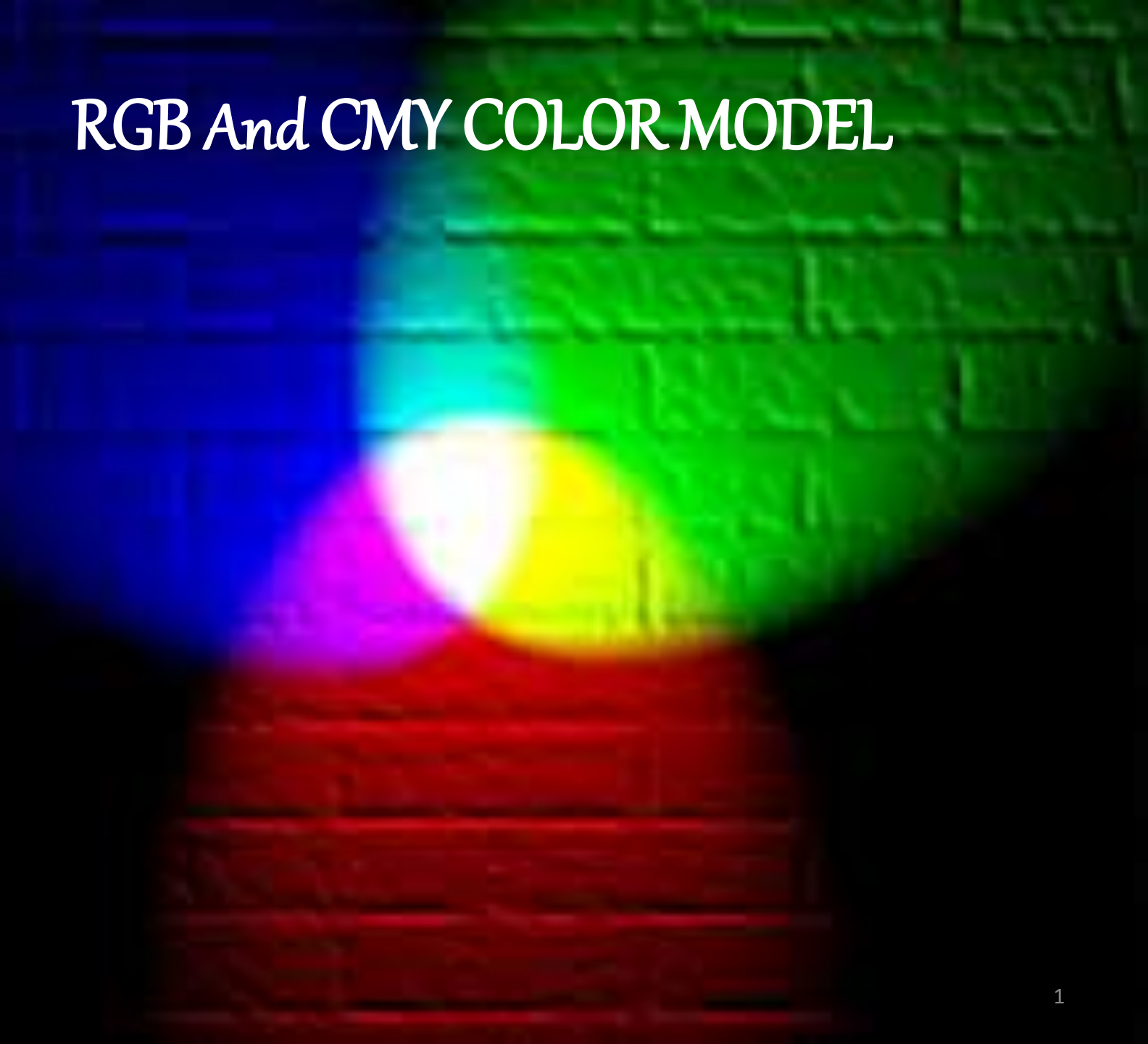
# Color Model

"Color model is an orderly system for creating a whole ranges of color from a small set of primary color".

A color model is a way to turn colors into numbers with a mathematical formula.

# TYPES OF COLOR MODEL

RGB Color Model

CMY(K) Color Model

# RGB COLOR SYSTEM

* **Additive color model.**

* **For computer displays.**

* **Uses light to display color.**

* **Colors result from transmitted light.**

* **Red + Green + Blue = White.**

# Additive color

If we are working on a **computer**, **the** colors we see on the screen are created with light using the additive color method. Additive color mixing begins with black and ends with white; as more color is added, the result is lighter and tends to white.
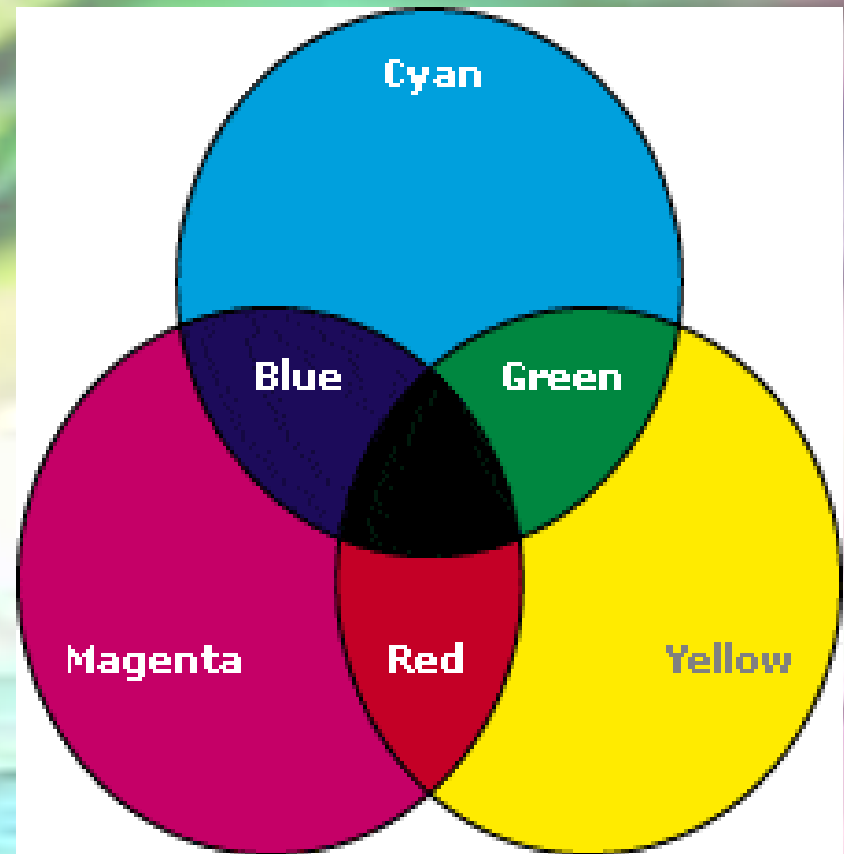
The **RGB** colors are light primaries and colors are created with light.

Percentages of red, green, & blue are used to generate color on a computer screen.

# Cmyk COLOR model SYSTEM

* **Subtractive color model.**

* **For printed material.**

* **Uses ink to display color.**

* **Colors result from reflected light.**

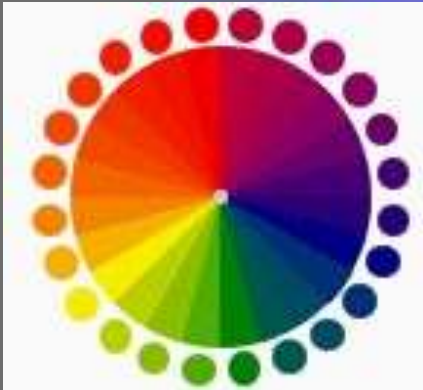* **Cyan + Magenta + Yellow = Black.**

# subtractive color

When we mix colors using paint, or through the printing process, we are using the subtractive color method. Subtractive color mixing means that one begins with white and ends with black; as one adds color, the result gets darker and tends to black.
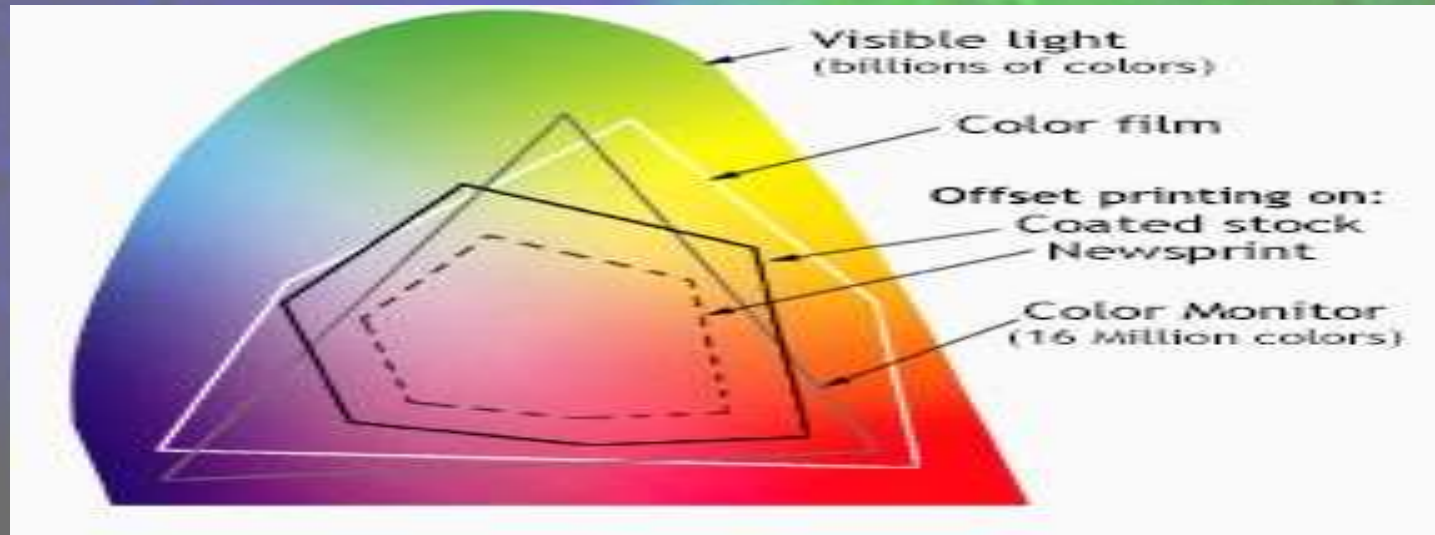
**The CMYK color system is the color system used for printing**



**Those colors used in painting- an example of the subtractive color method**

# Working with systems



Visible spectrum consists of billions of colors, a monitor can display millions, a high quality printer is only capable of producing thousands, and older computer systems may be limited to 216 cross-platform colors.

1. Reproducing color can be problematic with regard to print digital media.

2. A computer monitor able to display 'true color' (16,000,000 colors).
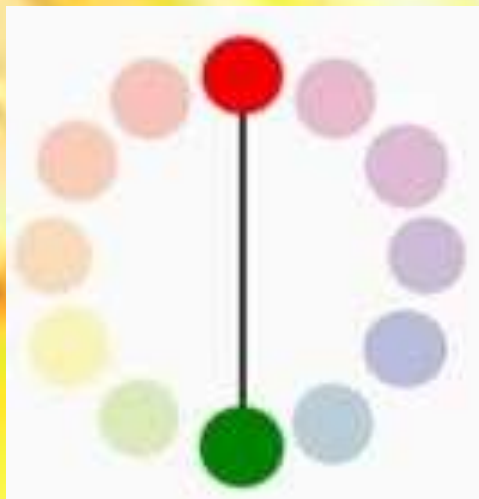
# Color terminology
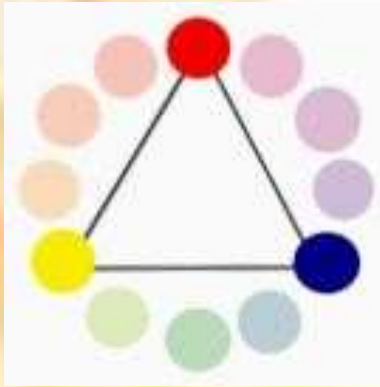


**\* Primary Colors: colors at their basic essence; those that cannot be created by mixing others**



**\* Secondary Colors: Those colors achieved by a mixture of two primaries**

**\* Tertiary Colors: Those colors achieved by a mixture of primary and secondary hues**

**\* Complementary Colors : Those colors located opposite each other on a color wheel.**

# Importance of *rgb* color model

➢ The color model RGB is used in hardware applications like PC monitors, cameras and scanners,

➢ It is used for Web graphics, but it cannot be used for print production.

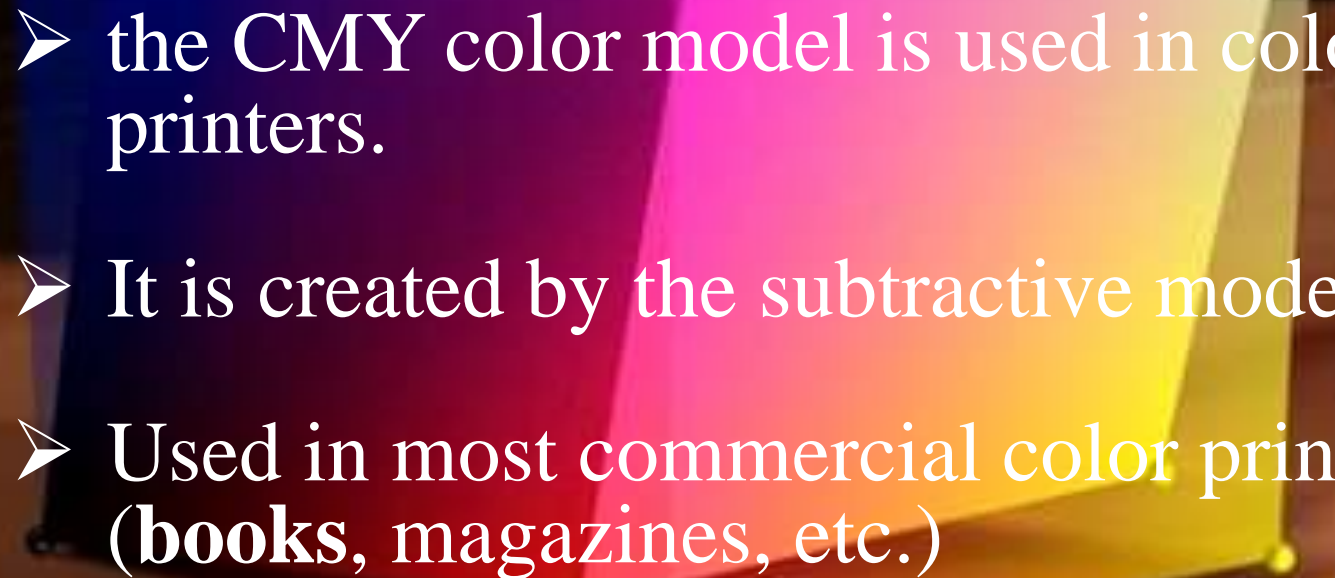➢ It directly reflects the physical properties of **"True-color"** displays

# Importance of rgb color model

It is used—
- ➢ For sensory representation
- ➢ Display of text  images in electronic system,

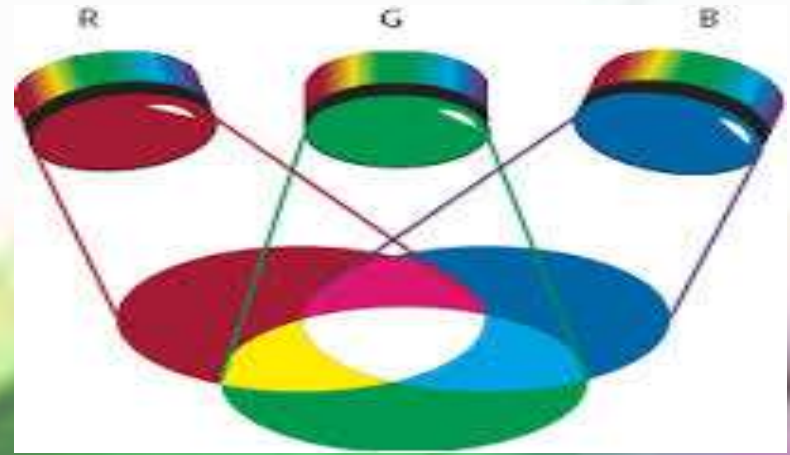For example-Computer, T.V., Camera

# Importance of cmy color model

➢ the CMY color model is used in color printers.

➢ It is created by the subtractive mode

➢ Used in most commercial color printing (**books**, magazines, etc.)

Primary colors are:

**Red – Green - Blue**

Secondary colors are:

❖ **Red + Blue =Magenta**

❖ **Green +Blue = Cyan**

❖ **Red + Green = Yellow**



**Other Possible Combinations:**

**White = Blue (Primary) + Yellow (Secondary)**

**White = Green (Primary) + Magenta (Secondary)**

**White = Red (Primary) + Cyan (Secondary)**

# Numeric representations

➤ Atypical RGB color selector in graphic software. Each slider ranges from 0 to 255.

➤ Hexadecimal 8-bit RGB representations of the main 125 colors

➤ A color in the RGB color model is described by indicating how much of each of the red, green, and blue is included.

# Numeric representations

➢ The color is expressed as an RGB triplet $(r,g,b)$, each component of which can vary from zero to a defined maximum value. If all the components are at zero the result is black; if all are at maximum, the result is the brightest representable white.

# Numeric representations

| Notation | RGB triplet |
|---|---|
| Arithmetic | (1.0, 0.0, 0.0) |
| Percentage | (100%, 0%, 0%) |
| Integer number | (255, 0, 0) |

# Some examples of 24-bit repesentation of colors:

❖ (255, 255, 255) represents white

❖ (0, 0, 0) represents black

❖ (255, 0, 0) represents red

❖ (0, 0, 255) represents blue

❖ (0, 255, 0) represents green

❖ (255, 255, 0) represents yellow

❖ (255, 0, 255) represents magenta

❖ (0, 255, 255) represents cyan

**Full range RGB can represent up to 255 shades of a given hue. But, pure reds, blues, or greens have this full range of shades.**

# *Thank you*