

Color addition and subtraction

See: <http://www.glenbrook.k12.il.us/gbssci/Phys/Class/light/u1212d.html>

and: <http://www.glenbrook.k12.il.us/gbssci/Phys/Class/light/u1212e.html>

Wikipedia:

See: http://en.wikipedia.org/wiki/Additive_color

and http://en.wikipedia.org/wiki/Subtractive_color

Simplified colors:

B Blue, G Green, R Red (primary colors)

C Cyan, Y Yellow, M Magenta (secondary colors)

W White, 0 Black

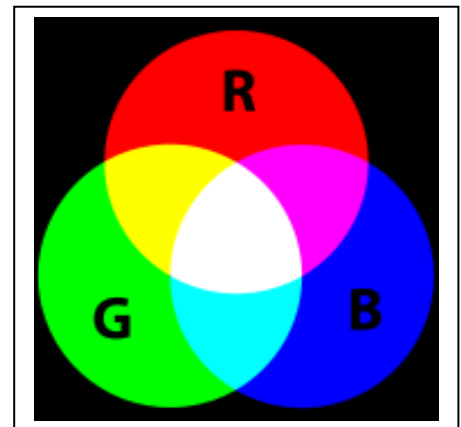
Addition:

$$B + G + R = W$$

$$G + R = Y$$

$$R + B = M$$

$$B + G = C$$



Subtraction:

$$W - C - Y - M = 0$$

Complementary colors:

$$Y = G + R = W - B$$

$$M = B + R = W - G$$

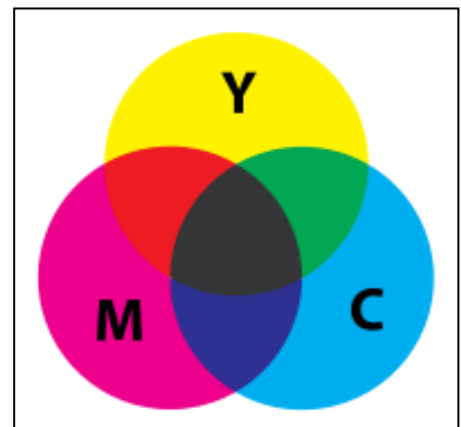
$$C = B + G = W - R$$

Mixing C and Y on white paper in white light:

C is reflected because the C-pigment on the paper absorbs R

Y is reflected because the Y-pigment on the paper absorbs B

The ray arriving into your eye will be G:



Mixing C and Y: $W - R - B = G$

Mixing Y and M: $W - B - G = R$

Mixing M and C: $W - G - R = B$

This is very simplified, assuming equal intensities.

See also mixing examples in <http://www.glenbrook.k12.il.us/gbssci/Phys/Class/light/u1212e.html>

Be aware of that this “color-algebra” is restricted in the sense that you cannot subtract something which is not there, as in example 2 of the former reference.