

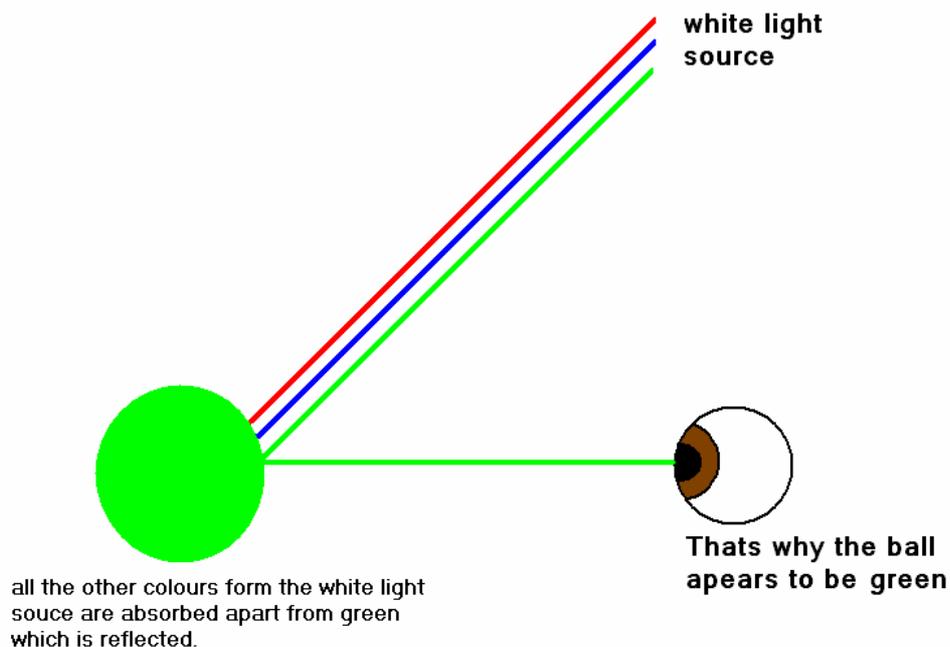
Introduction To Colour Mixing

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The way in which we see light allows us to mix two or more colours to create new ones. However coloured light does not mix to produce the same colours that you get when mixing colours from inks and dyes. This is because there are two kinds of colour mixing, additive and subtractive.

Colour Vision

Before we go onto learning about the two kinds of colour mixing lets go over why we see things in colour. As shown below. Remember that white light is a combination of all the colours on the spectrum. In all the drawings below, I have used three colours, red, green and blue to represent white, instead of all the colours of the spectrum.



Primary Colours of Light

The three primary colours of light are red, blue and green.

red + green = yellow

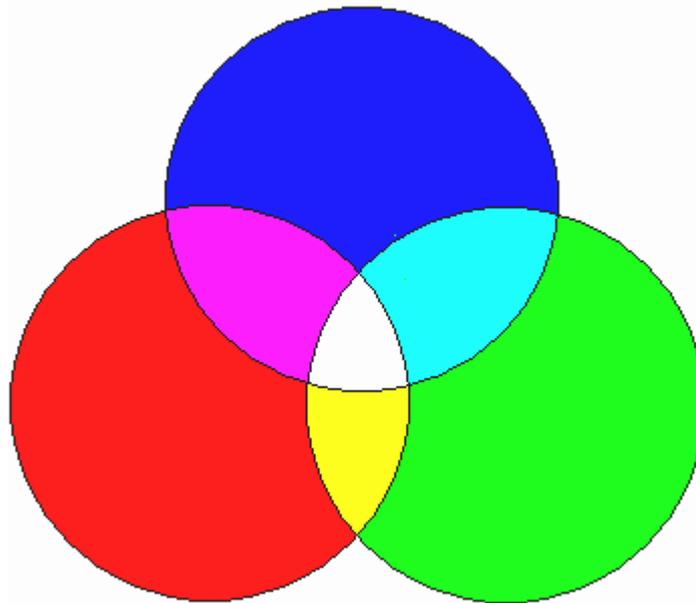
green + blue = cyan

red + blue = magenta

White light is an overlap of all the three primary light colours.

Additive Colour Mixing

If coloured light is mixed together, the brightness of the coloured lights are added together. This can be seen where the colour illumination overlaps. The yellow mixed from red plus green will be brighter than either the red light or green light alone.



By varying the amount of the individual light sources, all colours can be obtained. Television screens and PC monitors use the additive colour process.

Primary Colours of dyes and inks

The primary colours of dyes and inks are also the subtractive primary colours, which are cyan, yellow and magenta. When these colours are added they produce the three additive primary colours, red, green and blue.

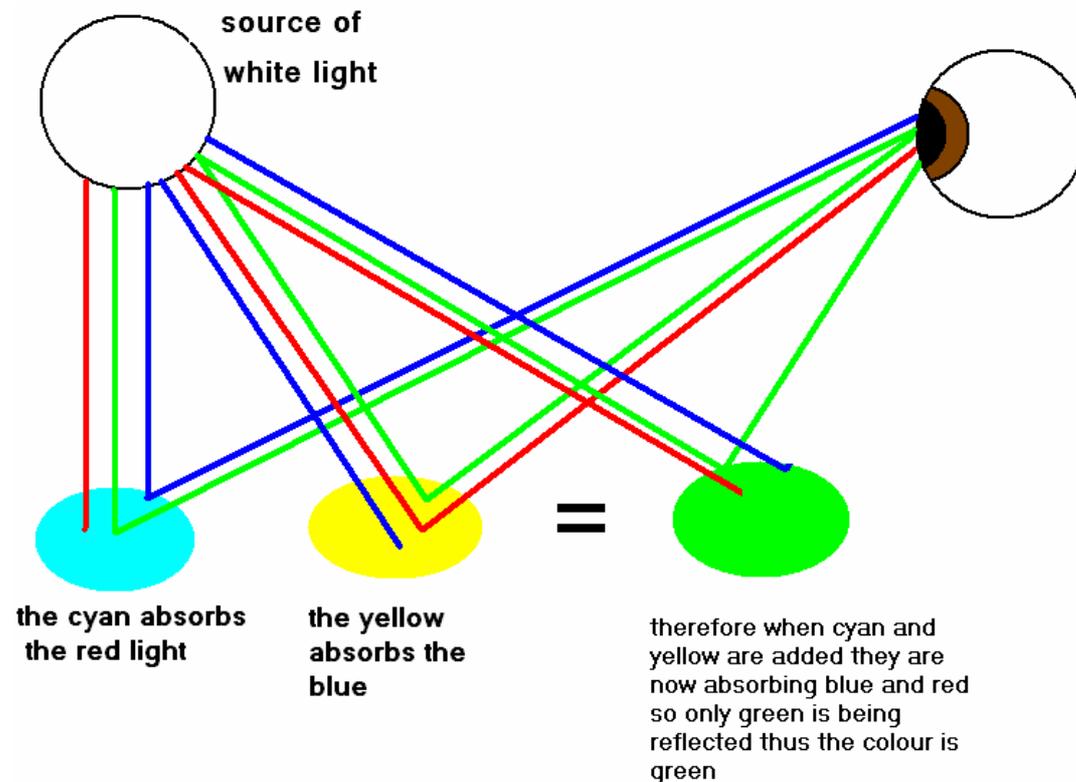
cyan + yellow = green

magenta + yellow = red

cyan + magenta = blue

It is easy to see there is a direct connection between the primary subtractive ink colours and the primary additive light colours. This has led to the inventions of natural colour printing, movies and printing.

Subtractive Colour Mixing



Here the cyan paint subtracts out red and reflects **blue** and **green** (we know from additive mixing that this makes **cyan**). The **yellow** paint subtracts out **blue** (and reflects **green** and **red**). When you combine **cyan** paint with **yellow** paint, the mixture subtracts out both **red** and **blue**. Only the **green** of the white sun light remains to reach our eye. So we see the mixture as green paint.

So you can see why this is called subtractive colour mixing even though colours are added to one another. The colour media absorbs or subtracts certain colours. When combined, the subtraction effect for both starting colours then works for the newly mixed colour.