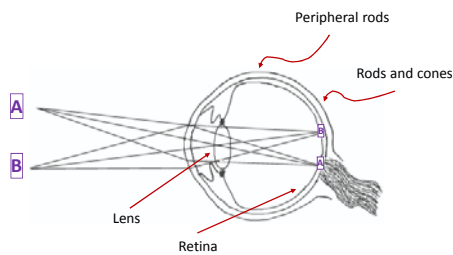
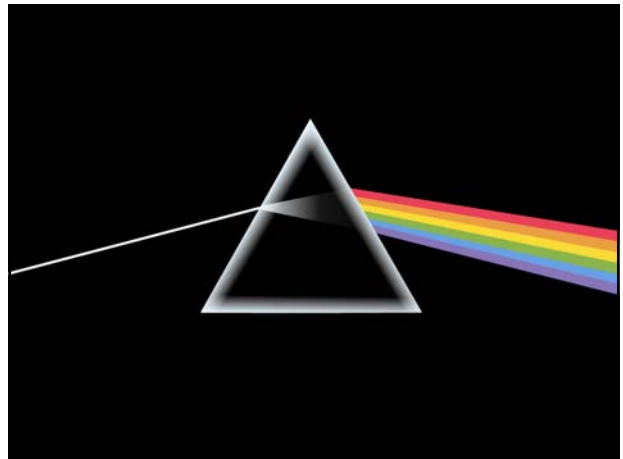


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Colour

Masood Masoodian, University of Waikato



Neutral colours

- **Black** is the darkest possible colour
 - minimum amount of light reaches the eyes
- **White** is the lightest possible colour
 - maximum amount of light reaches the eyes
- **Mixing** black and white in varying proportions produces a range of **greys**
- All the **greys** together with **black** and **white** are called **neutral colours**

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Chromatic colours

- **Chromatic colours** are all the colours other than the neutral colours
- Chromatic colours consist of **three components**
 - **hue**
 - what we call the colour (e.g. red)
 - **brightness** or value
 - the amount of light (e.g. dark red)
 - **saturation** or chroma
 - the amount of gray (e.g. dull red)

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Hue

- **Hue** is what we often refer to as the “colour”
- **Primary hues** are the basic hues from which other hues can be made
 - painting: red, blue, yellow
 - light: red, green, blue
- **Secondary hues** are created by mixing 2 primary hues
 - painting: purple (r, b), green (b, y), orange (y, r)
 - light: yellow (r, g), cyan (b, g), magenta (b, r)

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Brightness

- **Brightness** or value of a colour is changed by adding
 - white to increase brightness
 - tints
 - black to reduce brightness
 - shades
- Brightness is **changed** by adding either **white** or **black**, but **not both**
 - adding both black and white creates grey
 - changes the saturation of the colour

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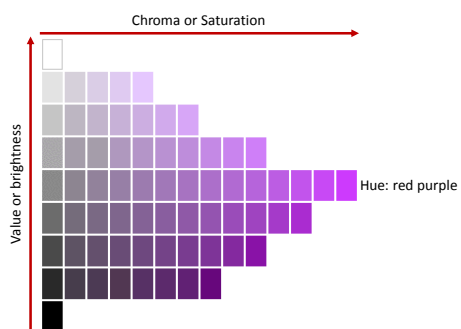


Saturation

- **Saturation** or chroma of a colour is reduced by adding grey
 - fully saturated colours (vivid)
 - have no grey
 - unsaturated colours (muddy or dull)
 - have more grey
 - desaturated colours (grey scale)
 - have no saturation
- Our vision is **less sensitive** to **saturation** than it is to brightness

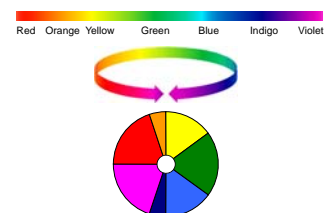
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Colour models

- **Colour models** have been developed to show the **relationships** between colours
 - Newton devised the first colour model



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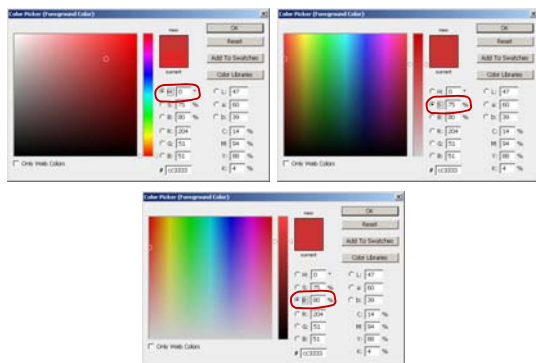
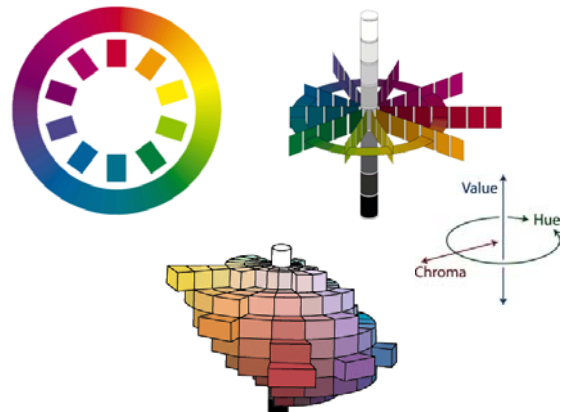
HSB model

- The Hue, Saturation, Brightness (**HSB**) model best resembles how we **describe colours**
- HSB is based on **Albert Munsell's** well known **colour tree** or colour sphere



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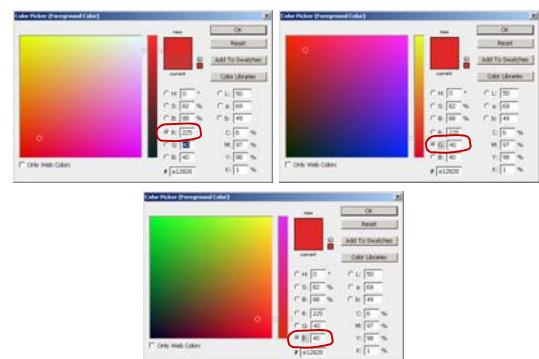
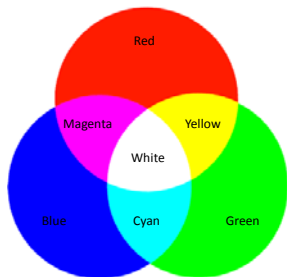


RGB model

- **RGB model** describes colours using a mixture of the **light primaries**
 - red, green, and blue
 - each can have a value between 0 and 255
- Mixing **255** of all the primaries creates **white**
- Mixing **0** of all the primaries creates **black**
- RGB is an additive colour model

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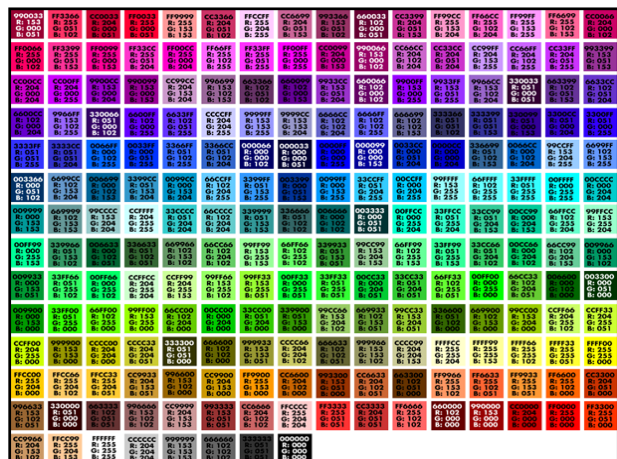
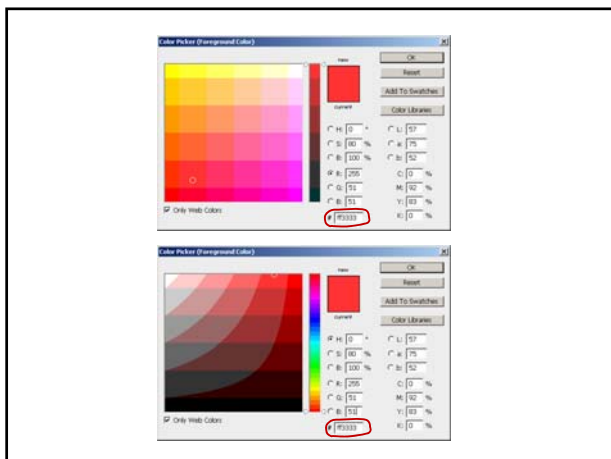
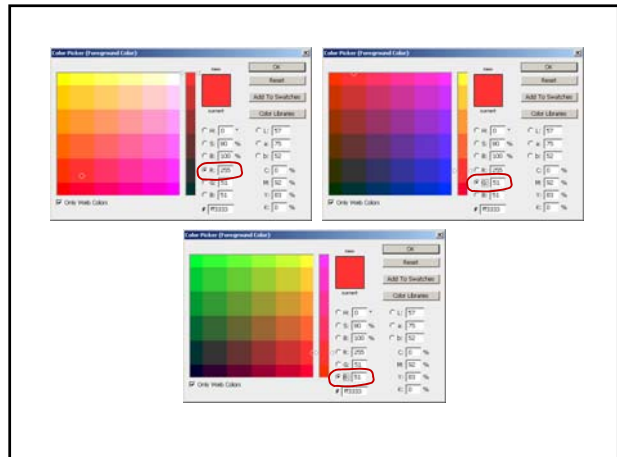


RGB model

- RGB model is used by all the **digital technology**
 - computer screens, digital cameras, scanners, etc.
 - nearly 17 million colours can be represented
- RGB model is **device dependent**
 - each display screen will show the same RGB colour slightly differently
- Older systems and web browsers support only a **limited set** of colours
 - only 216 colours are considered **browser-safe**

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The psychology of colour

- All colours produce **emotional** and **behavioural** effects
- There is **no single** unified psychological **response** to specific colours
 - most are based on individual experiences
 - many cultures differ in their association of meaning with different colours
- Despite this, it is important to understand the **emotional attributes** of the main colour groups

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	Exciting, dramatic, rich, passionate, indulgent
	Active, energetic, happiness, enthusiasm, informal
	Visible, happiness, brightness, overpowering
	Soothing, growth, freshness, hope, nature, wealth, stability, education
	Openness, intelligence, faith, calming, sky, sea, bad luck, depression
	Royalty, power, prestige, wealth, extravagance
	Clean, perfection, purity, light
	Death, evil, power, elegance, strength

Colour harmony

- **Colour harmony** can be defined as selecting successful colour combinations
 - analogy vs. contrast
- Colour harmony can be achieved by
 - **achromatic** harmony
 - selecting different neutral colours (greyscale plus black and white)
 - **monochromatic** harmony
 - selecting different brightness and saturations of the same hue
 - **analogous** harmony
 - selecting different hues, close to one another on the colour wheel
 - **complementary** harmony
 - selecting different hues, opposite to one another on the colour wheel

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