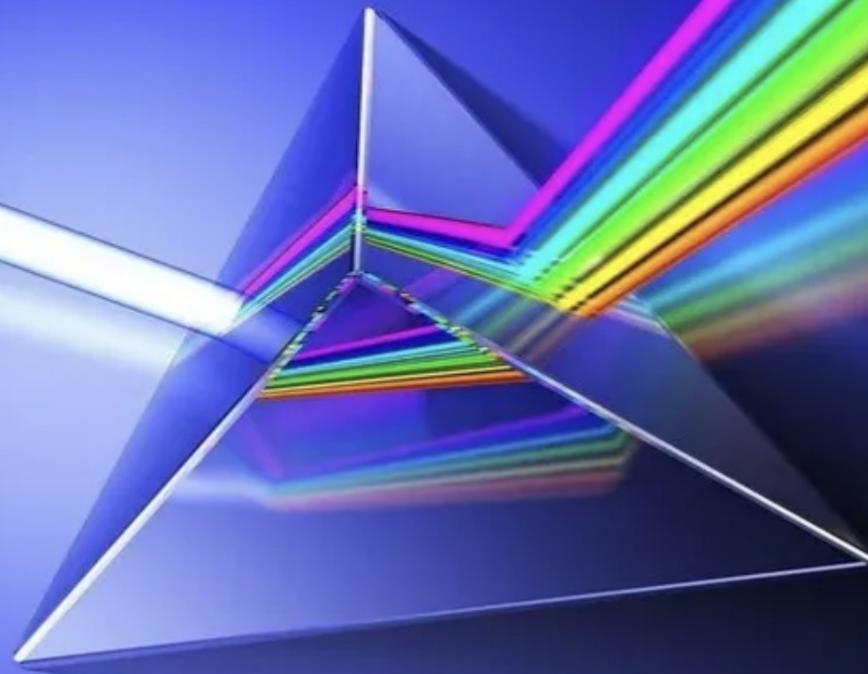


Science and magic of colour

Living symbol of the Mother



Overview

Colour perception

depends on vision, light, and individual interpretation. An understanding of colour involves physics, physiology and psychology.



1) Physics of light and colour



1) Physics of light and colour

Physics

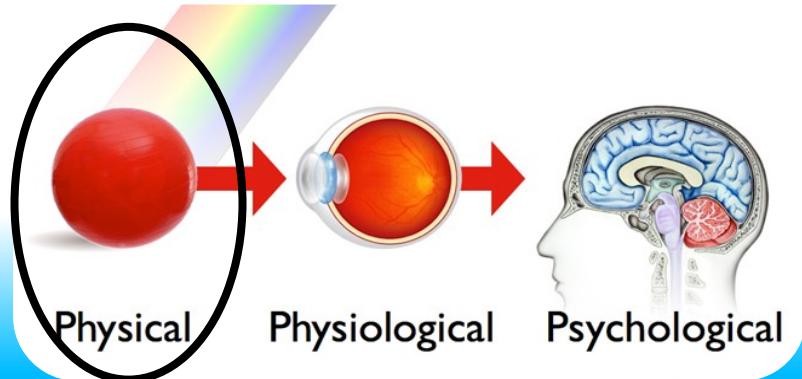
Brief history of light

Visible light, colour

Physical concepts

Physiological concepts

Psychophysics



Physics deals with energy and matter.

Physics of light analyzes an object's interaction with light and factors that determine it.

Brief history of light

- 3000 BC Middle Eastern and Asian cultures begin to study light and shadow
- Greek and Arab scholars begin to formulate theories of how light is propagated
- 400 BC – Plato proposes that light consists of rays emitted by the eyes
- 999 – Alhazen describes in the "Opticae Thesaurus" how the lens forms an image on the retina
- 1666 & 1704 – Newton's 1st colour wheel, "Opticks" analyze the fundamental nature of light by means of the refraction of light with prisms and lenses
- Early 1800's – wave theory of light, "invisible" infrared and ultraviolet light discovered, photography
- Late 1800's – Maxwell & Hertz – light is a type of electromagnetic wave
- Early 1900's – Einstein & Planck – physicists now regard light as both a wave and a particle

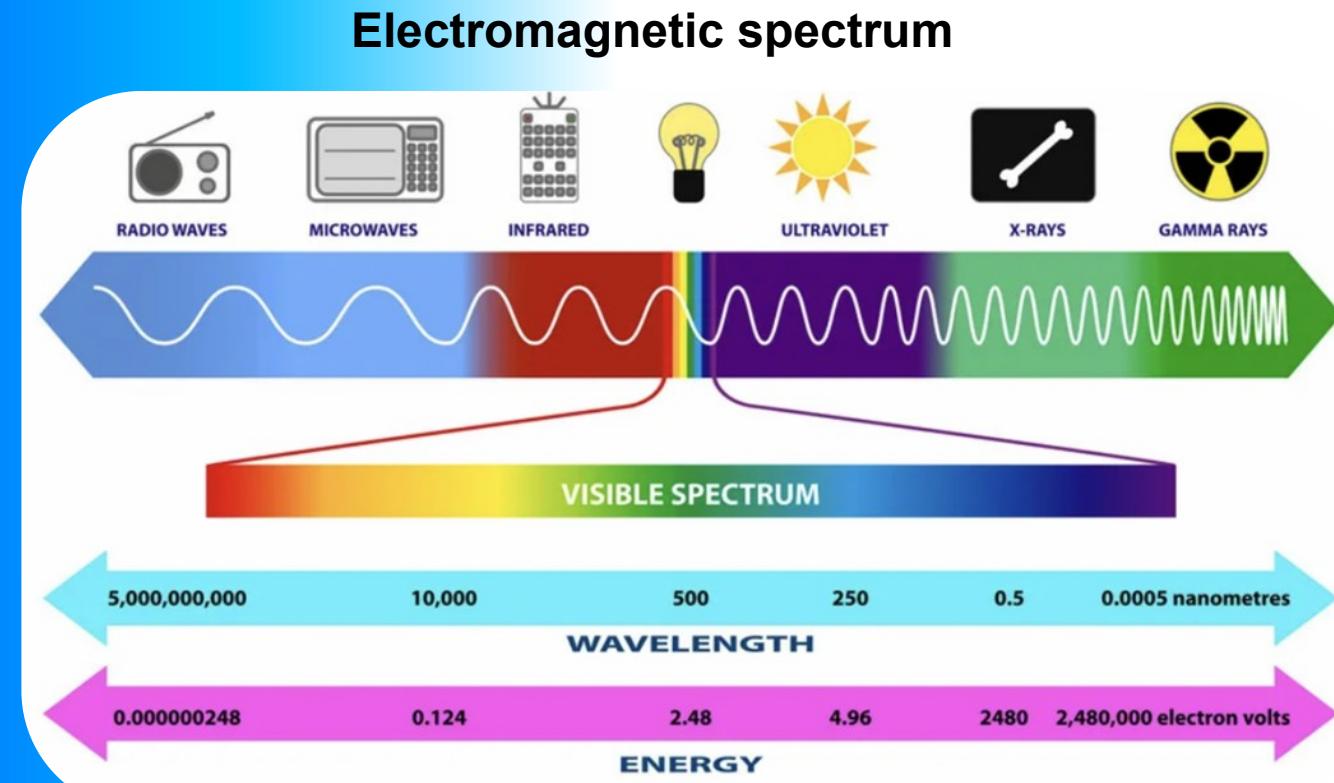
1) Physics of light and colour

Visible light is a very narrow portion of what we call the Electromagnetic (EM) Spectrum. Wavelength of visible light ranges from approximately 380 - 760 nanometers.

Colour is how we define specific wavelengths in the visible spectrum. Objects don't have a colour. Colour is a function of the human visual system and is not a native property.

Colour of an object is seen because the object merely reflects, absorbs, and transmits one or more colours that make up light. For e.g. a "green" leaf is absorbing red and blue light, so only green light reflects off it.

There are three distinct kinds of concepts relating to applied colour perception: **physical**, **psychological**, and **psychophysical**.



1) Physics of light and colour

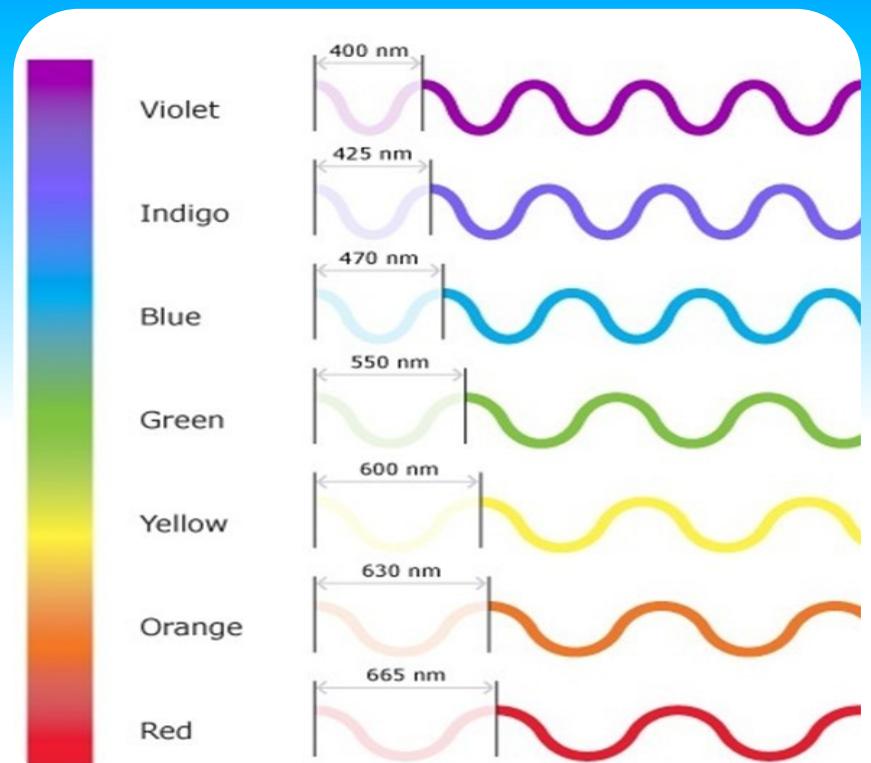
Applied color perception involves physical, psychological, and psychophysical concepts.

The **physical** properties of light provide the input, the **psychological** experience of color is the desired output, and the **psychophysical** principles bridge the gap between the two, allowing for the effective design and manipulation of color in applications.

Physical concepts

- Physical optics dimensions: wavelength, frequency, quantum energy...
- Closely connected with the effect of the light on the human visual system
- Colour is in the human visual system, not in the light

Physical concepts show up in design of colour graphics.



1) Physics of light and colour

Psychological colour concepts

- Colour is part of an individual's mental response to light entering the eyes
- Mental imagery stimulated is private to each individual → challenging to study it scientifically
- Most colour experience can be described within three dimensions:
 1. Hue – i.e. "colour" e.g. red, yellow, blue, magenta etc.
 2. Saturation - ranges from "colourless" through "pale" to "vivid". The perceived colour can be described as closer to the "colourless" or purely chromatic end
 3. Brightness - apparent amount of light, varying from "dim" to "bright"

Psychophysical colour concepts

Psychophysics quantitatively investigates the relationship between physical stimuli and the sensations and perceptions they produce. Psychophysics has been described as "the scientific study of the relation between stimulus and sensation.

- In applied colour disciplines, we focus on manipulating physical lights to produce desired perceptual responses
- Psychophysical concepts bridge the gap between a physical stimulus and psychological response
- They are approximations, standardization is achieved via a typical visual system, the standard observer

Standard observer

- Described by equations relating quantitative visual responses to measurable physical statistics of light stimuli
- Based on laboratory measurement of real human's visual responses

2) Physiology of colour vision

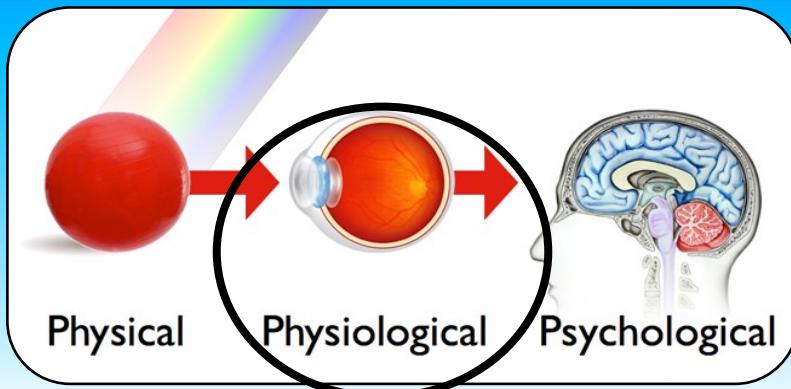


2) Physiology of colour vision

Physiology of colour

Human eye, rods & cones

Physiology of colour involves the eye and brain's responses to light and sensory data they produce.



The eye forms images based on differences in the reflectance of light on external objects.

Image formation:

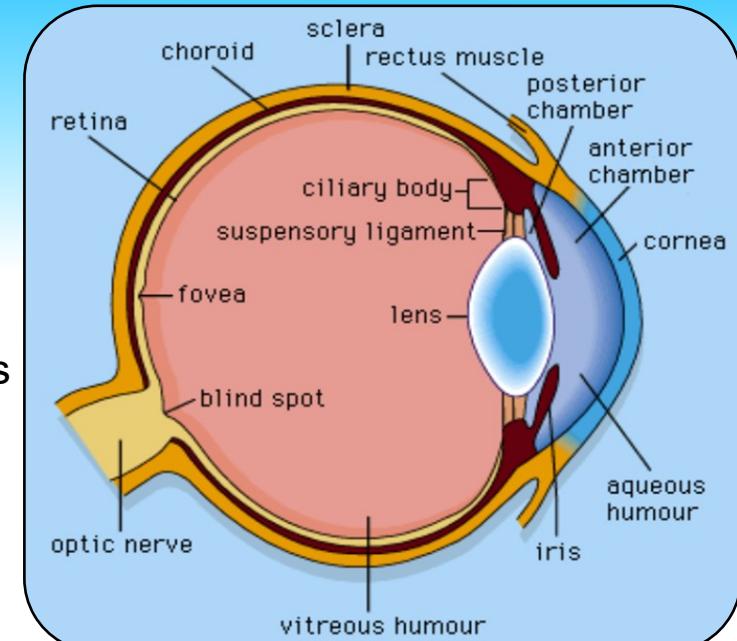
Cornea, sclera, pupil, iris, lens, retina, fovea

Transduction:

Retina, rods, cones

Processing:

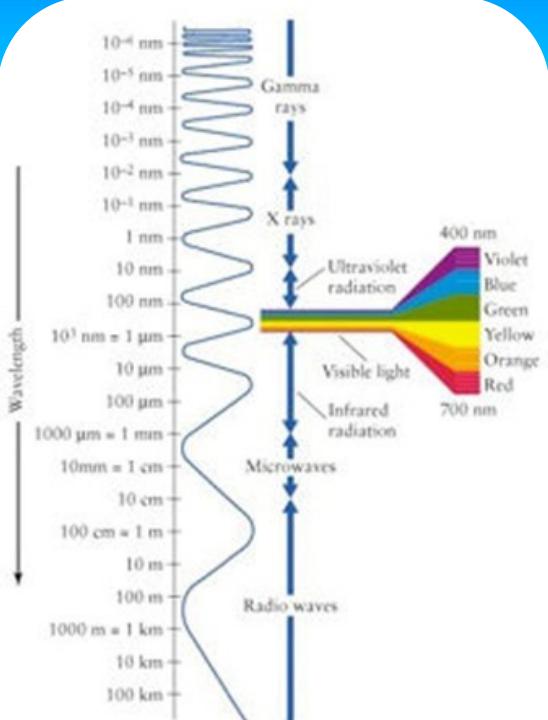
Optic nerve, brain



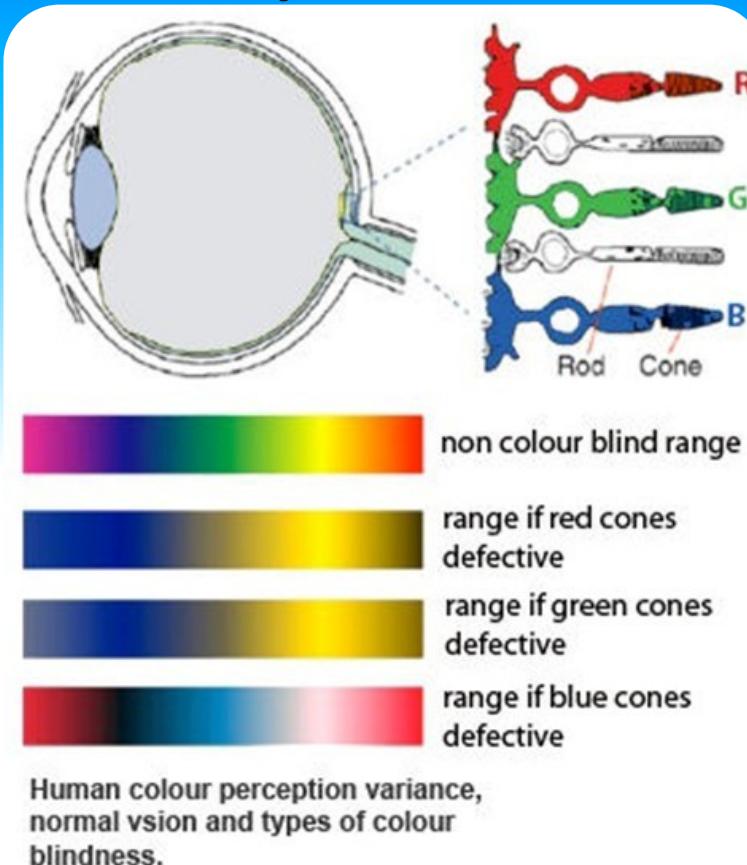
2) Physiology of colour vision

All visual processes, including colour vision, are initiated by the absorption of photons within the photoreceptor cells in the retina. The human retina contains two main types of photoreceptors, **rods** and **cones**.

Visible spectrum



Human eye, rods, cones



Rods are responsible for vision at low light levels. They do not mediate colour vision.

Cones are responsible for vision at high light levels and allow you to perceive colour. Cones process light and images as they enter the eye and send signals to the brain. Defective cones cause colour blindness.

The evolution of trichromatic colour vision is believed to have aided early primates in differentiating red, orange, and yellow fruit from leafy green foliage.

3) Colour psychology



3) Colour psychology

Colour psychology

What colours communicate

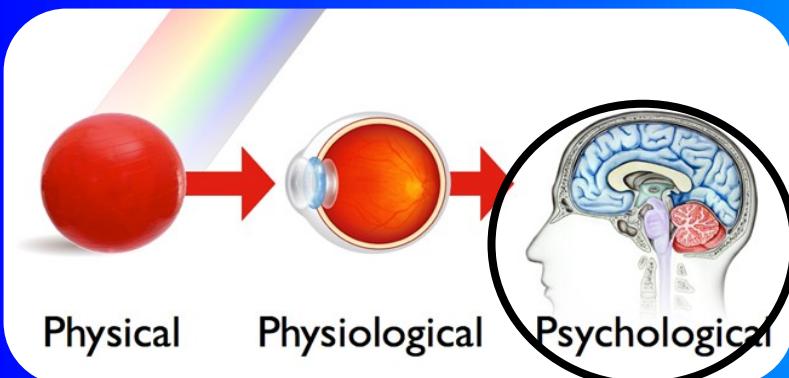
Warm & cold colours

Colour meaning & cultures

Colours preferences by gender

Colour and consumer purchases

Illusions



Colour psychology is the study of how different colours affect the human subconsciousness, mood, behavior and impression on others.

Basic principles of colour psychology

- Colour has a meaning
- Colour meaning is based on biological and environmental experiences
- Colour perception automatically triggers human evaluation
- Colour evaluation determines colour-motivated behavior
- Colour exerts an influence
- Colour meaning and its effect are determined by context

Mere colour can speak to the soul in a thousand different ways.
- Oscar Wilde

3) Colour psychology

Colours have the power to trigger certain emotions, evoke memories, stimulate parts of our brain, alter our moods and change our feelings.

WHAT COLOURS COMMUNICATE

	EMOTION	INDUSTRY	USED TO
RED	EXCITEMENT ENERGY PASSION COURAGE ATTENTION	ENTERTAINMENT FOOD SPORT FIRE PROTECTION CHILDREN PRODUCTS	STIMULATE CREATE URGENCY DRAW ATTENTION CAUTION ENCOURAGE
ORANGE	OPTIMISTIC INDEPENDENT ADVENTUROUS CREATIVITY FUN	ART ENTERTAINMENT FOOD SPORTS TRANSPORTATION	STIMULATE COMMUNICATE FUN DRAW ATTENTION EXPRESS FREEDOM FASCINATE
YELLOW	ENTHUSIASM OPPORTUNITY SPONTANITY HAPPINESS POSITIVITY	FOOD SPORTS TRANSPORTATION TRAVEL LEISURE	STIMULATE ENCOURAGE RELAXATION AWAKE AWARENESS ENERGIZE AFFECT MOOD
LIME GREEN	GROWTH HARMONY FERTILITY KINDNESS DEPENDABILITY	ENVIRONMENT LEISURE ALTERNATIVE ENERGY ENTERTAINMENT EDUCATION	RESTORE ENERGY PROMOTE GROWTH NUTURE REJUVENATE

	EMOTION	INDUSTRY	USED TO
KELLY GREEN	SAFETY HARMONY STABILITY RELIABILITY BALANCE	ENVIRONMENT BANKING REAL ESTATE FARMING NON PROFIT	RELAX BALANCE REVITALIZE ENCOURAGE POSSESS
SKY BLUE	FREEDOM SELF EXPRESSION TRUSTWORTH WISDOM JOY	ENTERTAINMENT COMMUNICATION CHILDRENS PRODUCTS TECHNOLOGY AEROSPACE	DRAW ATTENTION INSPIRE TRUST SUGGEST PRECISION COMMUNICATE CONSCIOUSNESS STIMULATE PRODUCTIVITY
ROYAL BLUE	TRUST RESPONSIBILITY HONESTY LOYALTY INNER SECURITY	SECURITY FINANCE TECHNOLOGY HEALTH CARE ACCOUNTING	REDUCE STRESS CREATE CALMNESS RELAX SECURE CREATE ORDER
VIOLET	IMAGINATION SPIRITUALITY COMPASSION SENSIVITY MYSTERY	HUMANITARIAN PSYCHIC RELIGION	ENCOURAGE CREATIVITY INSPIRE COMBINE WISDOM AND POWER CREATE IMPRESSION OF LUXURY INTUITION

3) Colour psychology

Colours have the power to trigger certain emotions, evoke memories, stimulate parts of our brain, alter our moods and change our feelings.

WHAT COLOURS COMMUNICATE

	EMOTION	INDUSTRY	USED TO
PINK	COMPASSION LOVE IMMATURE PLAYFUL ADMIRATION	CHILDRENS PRODUCTS WOMANS PRODUCTS BEAUTY FASHION	COMMUNICATE ENERGY INCREASE PULSE MOTIVATE ACTION FASCINATE ENCOURAGES CREATIVITY
BROWN	RELIABILITY STABILITY HONESTY COMFORT NATURAL	AGRICULTURE CONSTRUCTION TRANSPORTATION LEGAL FOOD	STABILIZE IMPLY COMMON SENSE SUPPRESS EMOTIONS CREATE WARMTH
GRAY	NEUTRAL PRACTICAL CONSERVATIVE FORMAL QUIET	ALL INDUSTRIES * MOSTLY USED IN COMBINATION WITH OTHER COLORS	CREATE SENSE OF COMPOSURE DEPRESS ENERGY ASSOCIATE TIMELESS COMMUNICATE MATURATION
BLACK	POWER CONTROL AUTHORITY DISCIPLINE ELEGANCE	ALL INDUSTRIES * MOSTLY USED IN COMBINATION WITH OTHER COLORS	HIDE FEELINGS INTIMIDATE RADIATE AUTHORITY CREATE FEAR ASSOCIATE WITH MYSTERY

INFLUENCE
COLOR IS THE FIRST THING PEOPLE WILL NOTICE ABOUT YOUR WORK OR PRODUCT.
STUDIES HAVE SHOWN THAT **90%** OF THE SNAP JUDGEMENTS ARE INFLUENCED BY THE COLOR ALONE.

FACTS
FIRST COLOR THAT WE DISTINGUISH AFTER BIRTH IS COLOR RED, HOWEVER, COLOR BLUE IS THE FAVORITE ONE AMONG HUMANS WORLDWIDE.
PEOPLE WHO ARE COLD PREFER WARM COLORS LIKE RED AND YELLOW WHILE PEOPLE WHO ARE HOT PREFER COOL COLORS LIKE BLUE AND GREEN.
THE LOWER THE MEAN SATURATION OF SUBJECT, THE MORE COMFORT IS FELT WHEN BEING AROUND IT.

PROPERTIES
COLOR
COLOR IS PROPERTY POSSESSED BY ANY OBJECT. EACH OBJECT REFLECTS OR EMITS LIGHT AND IS PRODUCING DIFFERENT SENSATIONS ON THE EYE. OBJECTS REFLECT LIGHT IN DIFFERENT WAVELENGTHS WHICH WE RECOGNIZE AS COLOR.

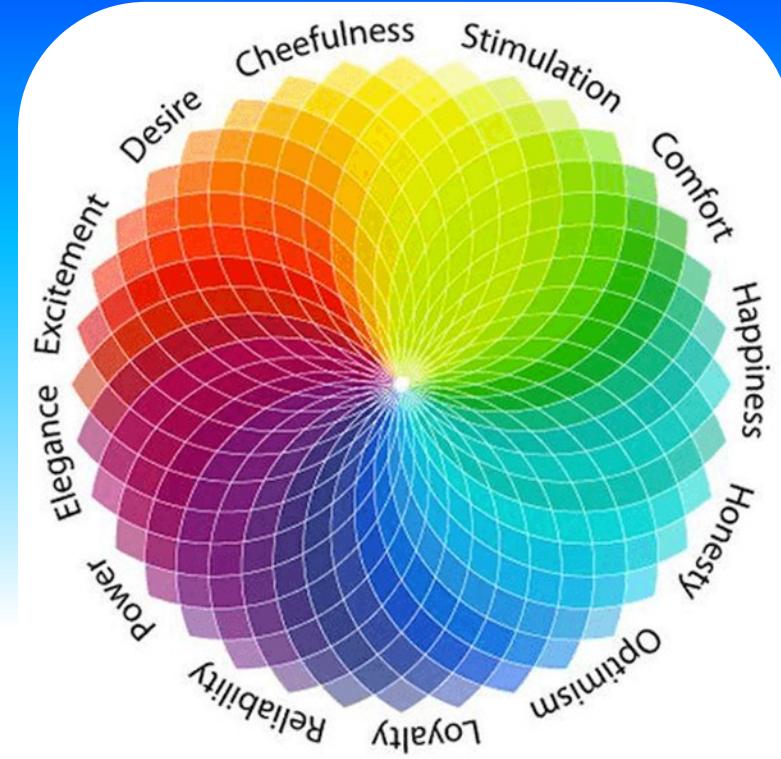
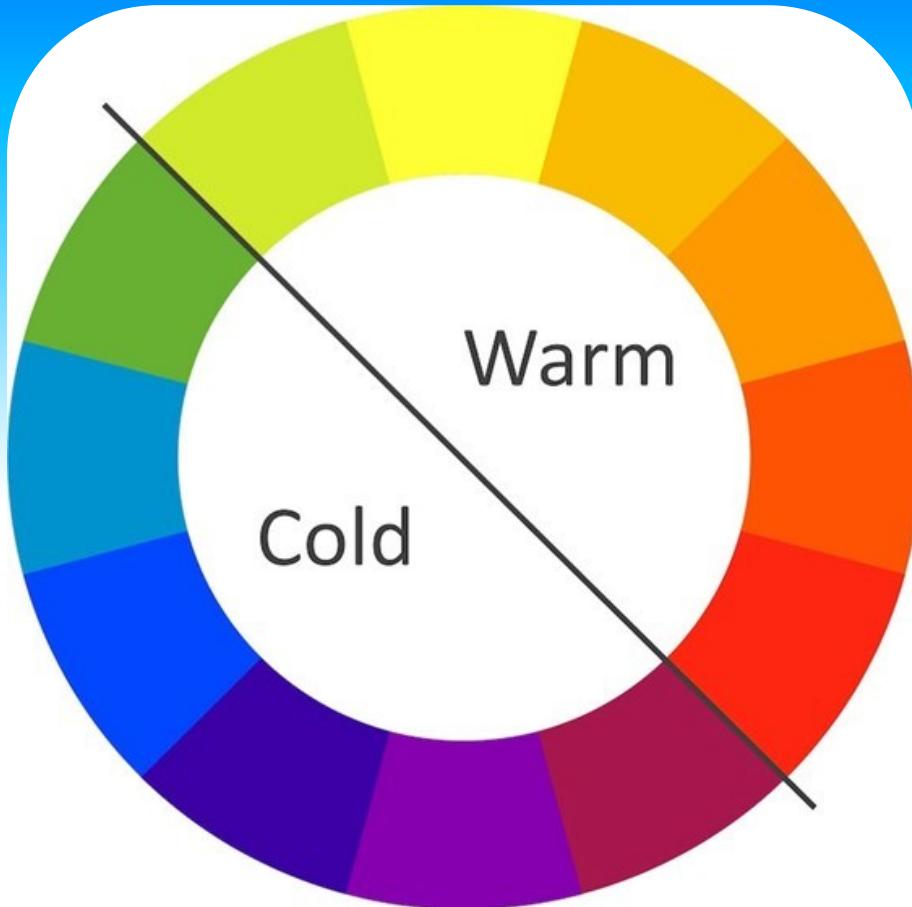
COLOR	WAVELENGTH
RED	700 - 635 nm
ORANGE	635 - 590 nm
YELLOW	590 - 560 nm
GREEN	560 - 520 nm
CYAN	520 - 490 nm
BLUE	490 - 450 nm
VIOLET	450 - 400 nm

COLOR PROPERTIES
COLOR PROPERTIES ALLOW US TO DISTINGUISH AND DEFINE COLORS.
HUE IS ACTUAL COLOR OR COMBINATION OF COLORS (RED, YELLOW, ORANGE)
VALUE IS HOW LIGHT OR DARK IS IT (TINTS AND SHADES)
CHROMA POINTS TO THE COLOR'S INTENSITY OR SATURATION.

3) Colour psychology

Warm colours

Evoke emotions ranging from feelings of warmth and comfort to feelings of anger and hostility - red, orange & yellow



Cold colours

Evoke calm, but can also call to mind feelings of sadness or indifference - blue, purple & green

3) Colour psychology

ORANGE	BROWN	YELLOW	GREEN	BLUE	PURPLE	RED	BLACK
 WESTERN Culture							
							
Harvest Warmth Affordable	Practicality Comfort Stability	Happiness Joy Caution	Luck Jealousy Greed	Depression Trust Calm	Royalty Spirituality Wealth	Love Danger Action	Intimidation Death Mourning
 FAR EASTERN Culture							
							
Happiness Spirituality Adaptability	Earth Industrious Mourning	Masculinity Sacred Royalty	Fertility Hope Life	Feminine Healing Relaxation	Wealth Privilege Spirituality	Prosperity Good Fortune Vitality	Health Prosperity Stability
 INDIAN Culture							
							
Sacred Courage Love	Mourning	Sacred Auspicious	Hope Harvest Virtue	Sports Strength	Sorrow Comfort Nobility	Beauty Wealth Power	Evil Darkness Negativity
 MIDDLE EASTERN Culture							
							
Mourning Loss	Harmony Earth Comfort	Happiness Prosperity Mourning	Strength Fertility Hope	Mourning Heaven Spirituality	Wealth Virtue Royalty	Danger Caution Evil	Mystery Mourning Rebirth

Colour meaning differs across cultures

Reactions to colours are somewhat learned

Red triggers hunger, appetite, stimulation, and attracts attraction.

RED

Yellow color triggers the feelings of amiability and happiness.

YELLOW

Orange makes a brand appear vibrant, happy, playful, artistic and energetic.

ORANGE

Blue creates a sense of trust and dependability, making the brand appear trustworthy.

BLUE

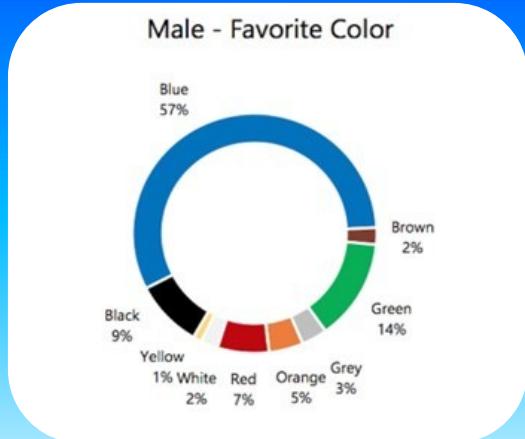
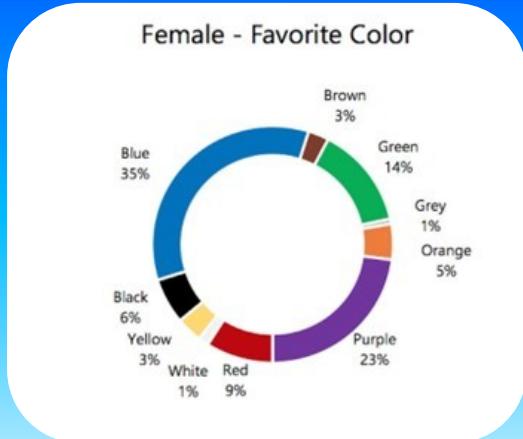
Snacking brands with chocolate leverage the color brown in their logo marks.

BROWN

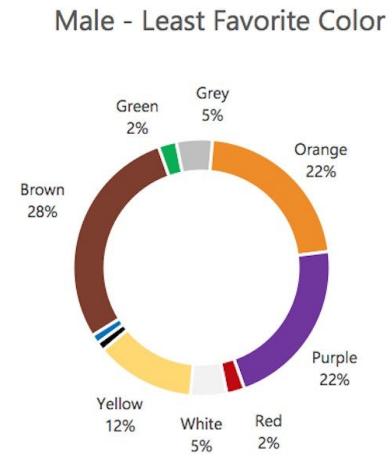
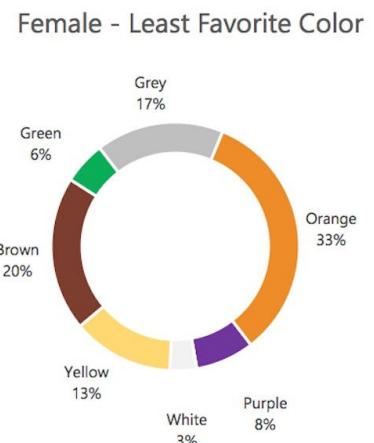
3) Colour psychology

Colour preferences by gender

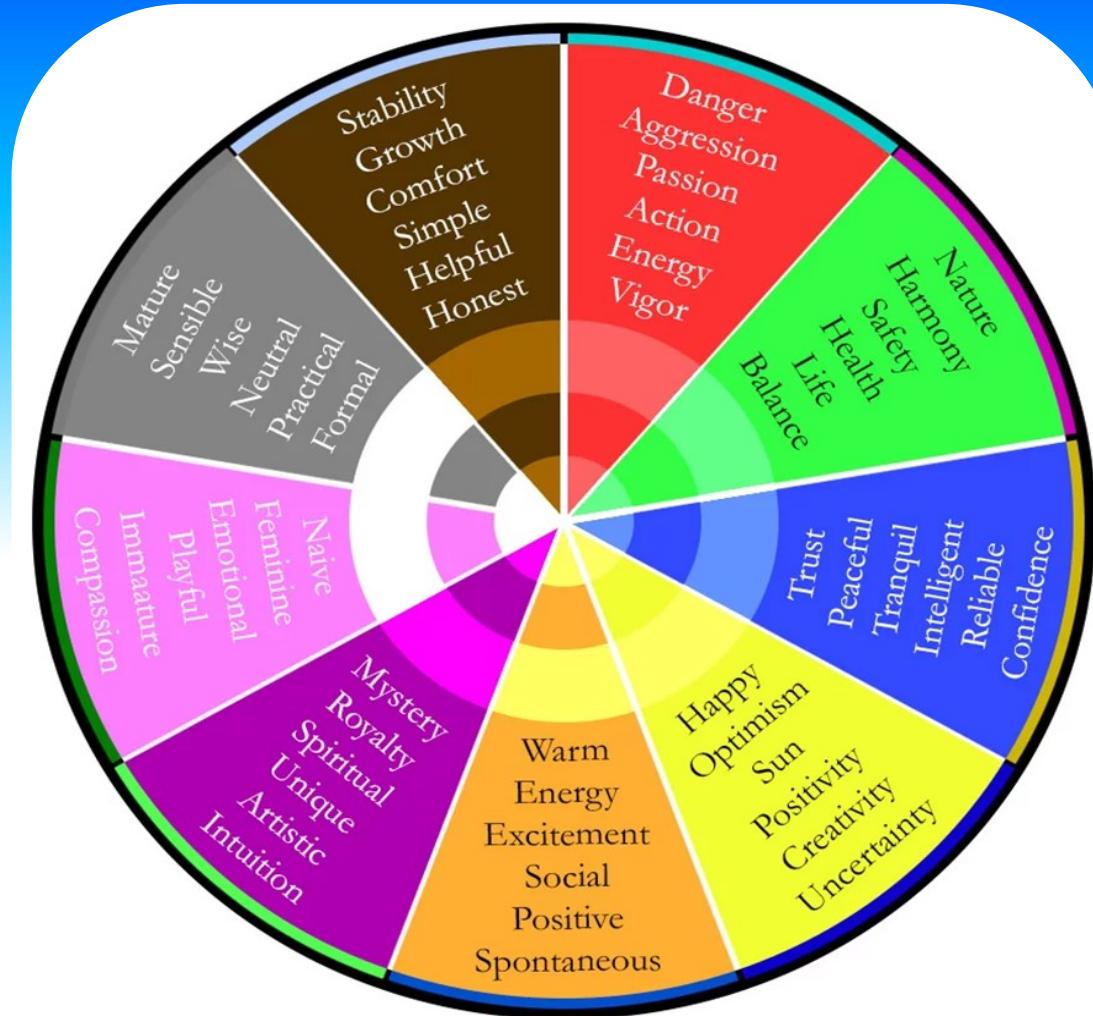
Most liked by both genders - blue & green



Least liked by both genders – brown and orange



Meaning often associated with colour



3) Colour psychology



Colours have varying effects, from boosting our moods to causing anxiety.

Colour and consumer purchases

- Consumers' interpretation of colour (left)
- Consumers try projecting an image associating with product colour

3) Colour psychology

Red

- Associated with energy, power, war, danger, determination, passion, desire, and love
- Enhances metabolism, increases respiration rate, and raises blood pressure
- Attracts attention more than any other colour, stimulates and sells products associated with love

Blue

- Associated with calm, serenity, dependability, spirituality
- Slows metabolism and heart rate
- Inspires inner reflection, wisdom higher ideals, it is sincere, reserved, and quiet
- Helps building customer loyalty through association with trust, honesty, and dependability e.g. airline uniforms

Yellow



- Associated with mental capacity and creativity, “he is so bright”
- Enhances mental activity, heightens awareness and energy levels
- Yellow post-it notes, yellow also attracts attention - yellow taxis

Green

- Associated with tranquility, growth, harmony, freshness, and fertility
- Slows metabolism, has a calming effect
- Colour of nature, associated with brands that encourage growth, vitality, and productivity

3) Colour psychology



Black

- Versatile - elegant, mysterious, or downright depressing
- Negative connotation e.g. blacklist, black humor
- Projects power and elegance, used for luxury products e.g. cars

White

- Associated with purity, wholeness, innocence, elegance, serenity
- Fresh and clean, evokes a sense of youth and modernity
- “Pure” bridal dress, “clean” doctor’s uniform...

3) Colour psychology

Illusion 1

Focus on black cross in the center:

- a. Gap running around the circle appears
 - b. Green disc running around appears
 - c. Lilac discs disappear in sequence
-

- a. Phi phenomenon – perception of motion between separate objects viewed rapidly in succession
- b. Green afterimage - Response to one colour of an opponent channel antagonistic to those of the other colour. lilac image (a combination of red and blue) will produce a green afterimage from adaptation of the red and the blue channels, so they produce weaker signals
- c. Troxler fading - A blurry stimulus in a region of the visual field. Keeping our eyes still, that stimulus will disappear even though it is still physically present

3) Colour psychology

Illusion 2

Which horse is darker?



The right and the left horse are of the same colour.

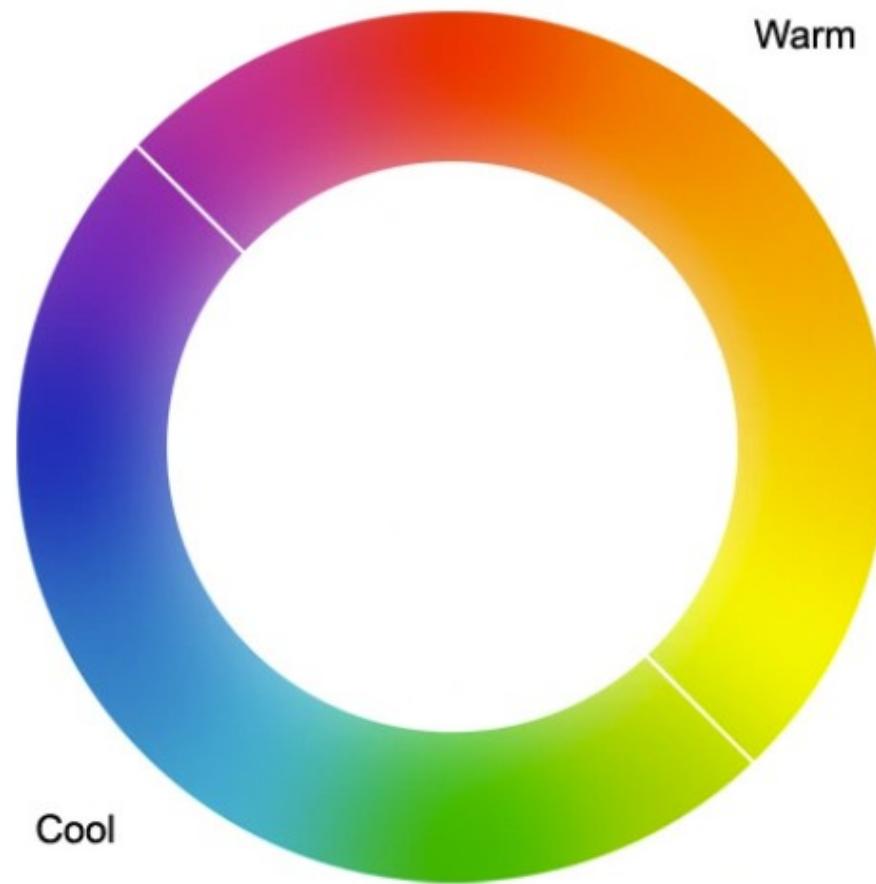
Illusion 3

What colour are the strawberries?



Based on past experience, the brain refuses to admit there is no red colour here. These strawberries are grey.

4) Colour theory in art and design



4) Colour theory in art and design

Colour theory

The colour wheel

Mixing colours

Hue, shade, tint, tone

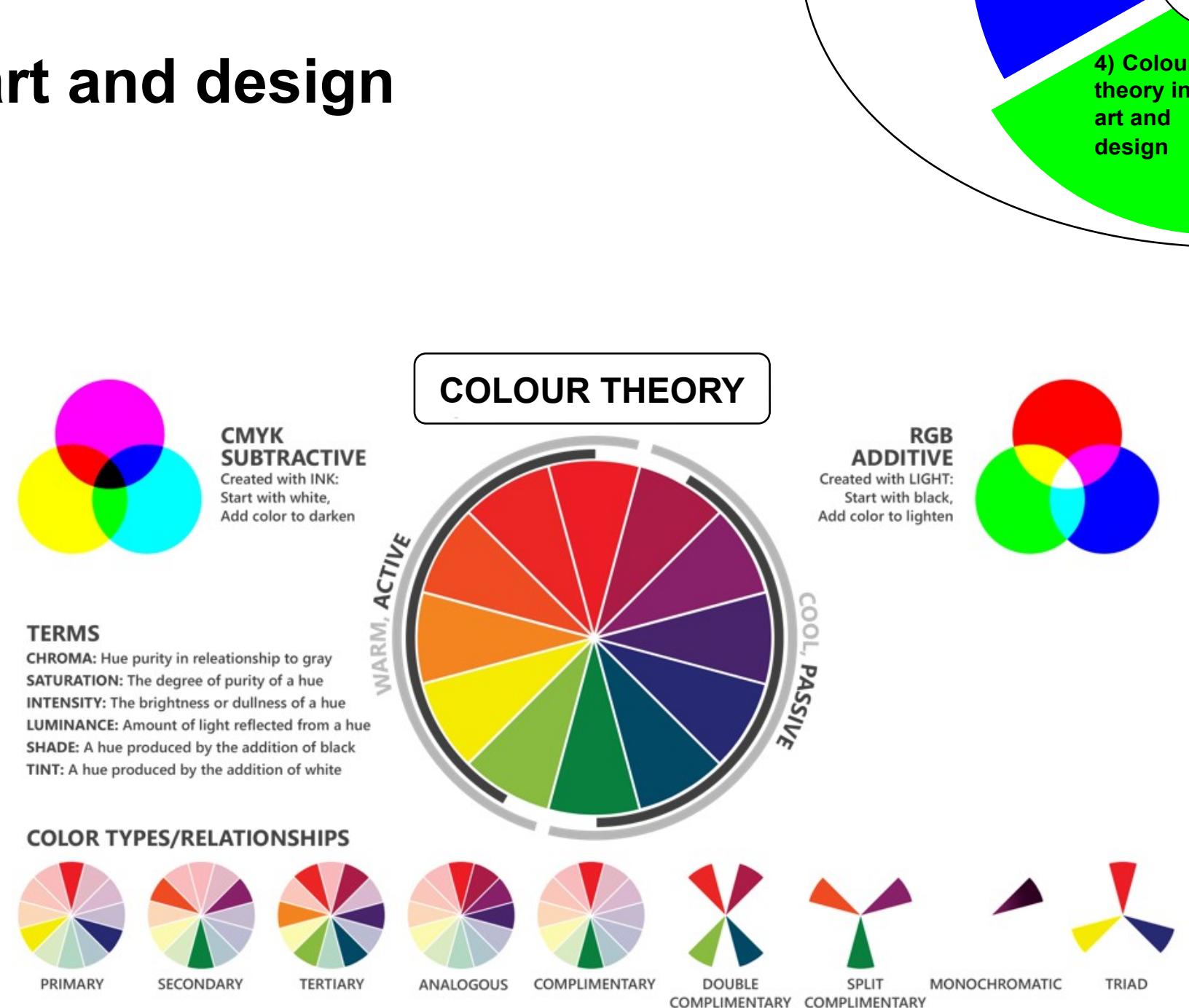
Colour harmony

Creative colour wheel

Colour schemes

Colour theory

- The art & science of using colour
- Explains how humans perceive colour, how colours mix, match, and contrast, and what messages colours communicate



4) Colour theory in art and design

The colour wheel

- Visual representation of colours found in a prism arranged in a circle
- Primary colours spaced evenly around
- Created by Isaac Newton in 1666
- Shows how colours relate
- Visually demonstrates the relationship between:
 - Primary (red, yellow, blue)
 - Secondary (green, orange, purple) by mixing primary
 - Tertiary colours by mixing secondary



Colour model	Colour wheel representation
RYB	
RGB	
CMYK	

4) Colour theory in art and design

Mixing colours

Additive colour mixing

- Adds light by mixing coloured light
- More colour → white light



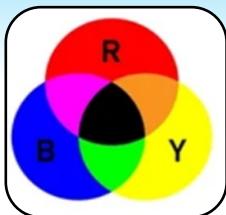
RGB – Red, Green, Blue

Mixing all three colours equally results in white light

RGB is used in traditional painting, TVs, screens, projectors...

Subtractive colour mixing

- Subtracts light by mixing colours i.e. physical materials e.g. pigments, ink etc.
- More colour → black



RYB – Red, Yellow, Blue

Subtracts light from the paper by adding more colour i.e. Red, Yellow and Blue. “Old” model used in paintings.



CMYK – Cyan, Magenta, Yellow Key black

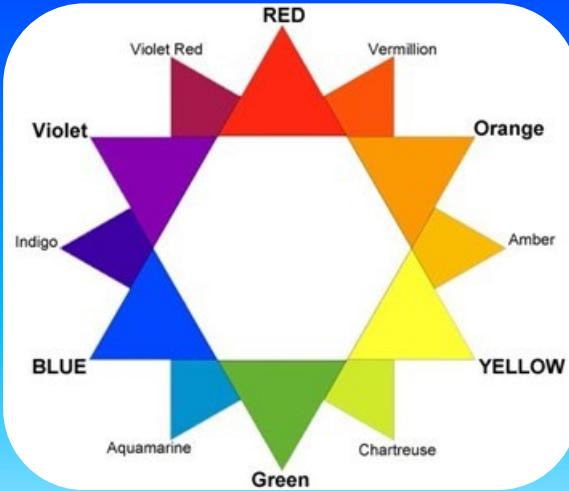
Subtracts light from the paper by adding more colour i.e. Cyan, Magenta, Yellow, and Key (black). Used by printers. Any colour you see on a physical surface e.g. paper, signage, packaging...

Cyan, Magenta and Yellow are secondary colours from the RGB scheme

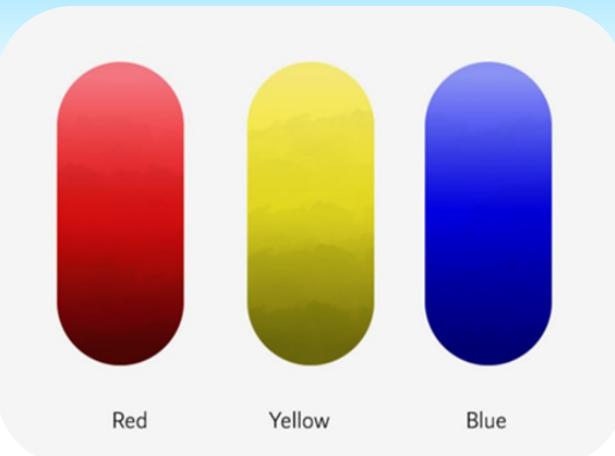
[Explore mixing colours here](#)

4) Colour theory in art and design

RYB colour mixing model

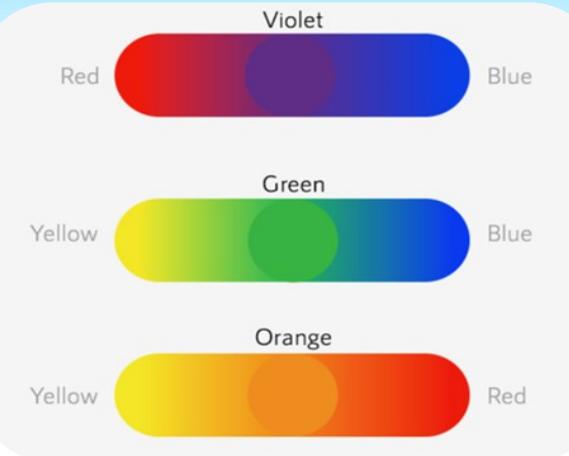


Primary colours



Mix
primary

Secondary colours



Mix
secondary

Tertiary colours



4) Colour theory in art and design

Hue, shade, tint, tone

Shades, tints and tones are variations of hues, or colours on the colour wheel.



Hue (pure color)



Shade (add black)



Tint (add white)



Tone (add grey)

Hue

Dominant wavelength of colour out of the twelve colours on the colour wheel (primary, secondary and tertiary)

Shade

Colour mixed with black to darken it

Tint

Colour mixed with white to lighten it

Tone

Colour mixed with grey making the colour appear more subtle and less intense

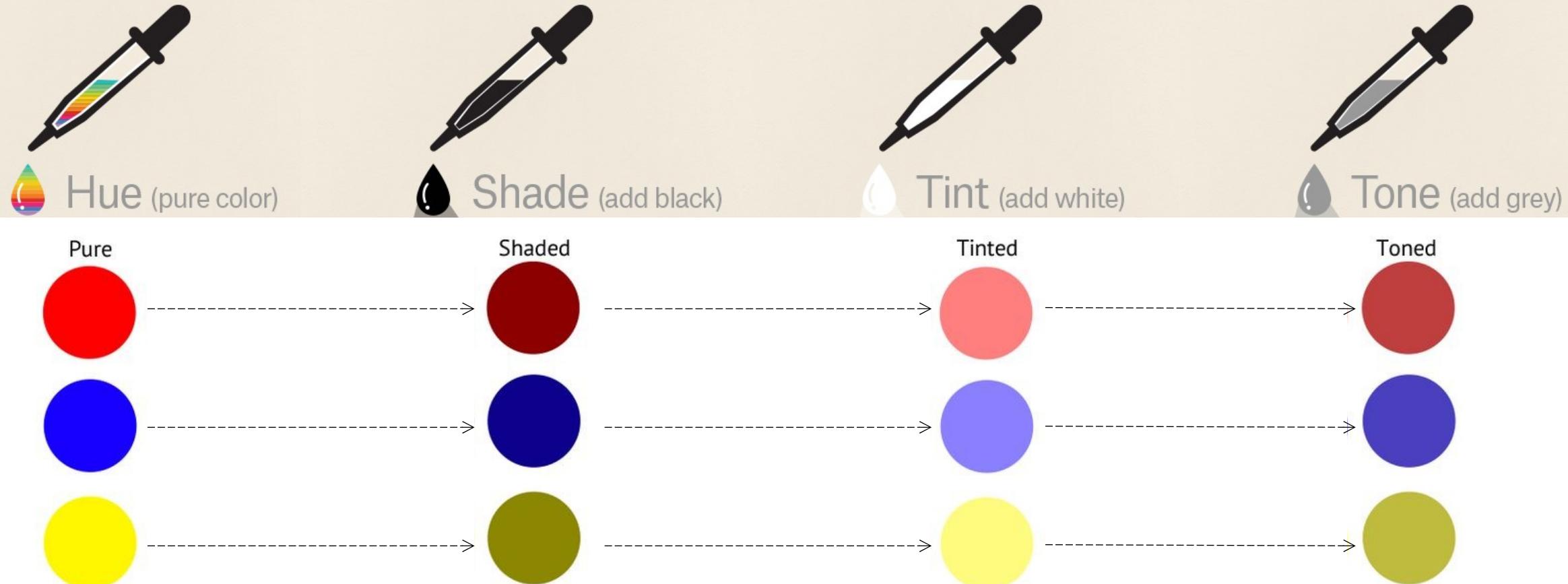
Hue of navy is blue.

Hue of burgundy is red.

4) Colour theory in art and design

Hue, shade, tint, tone

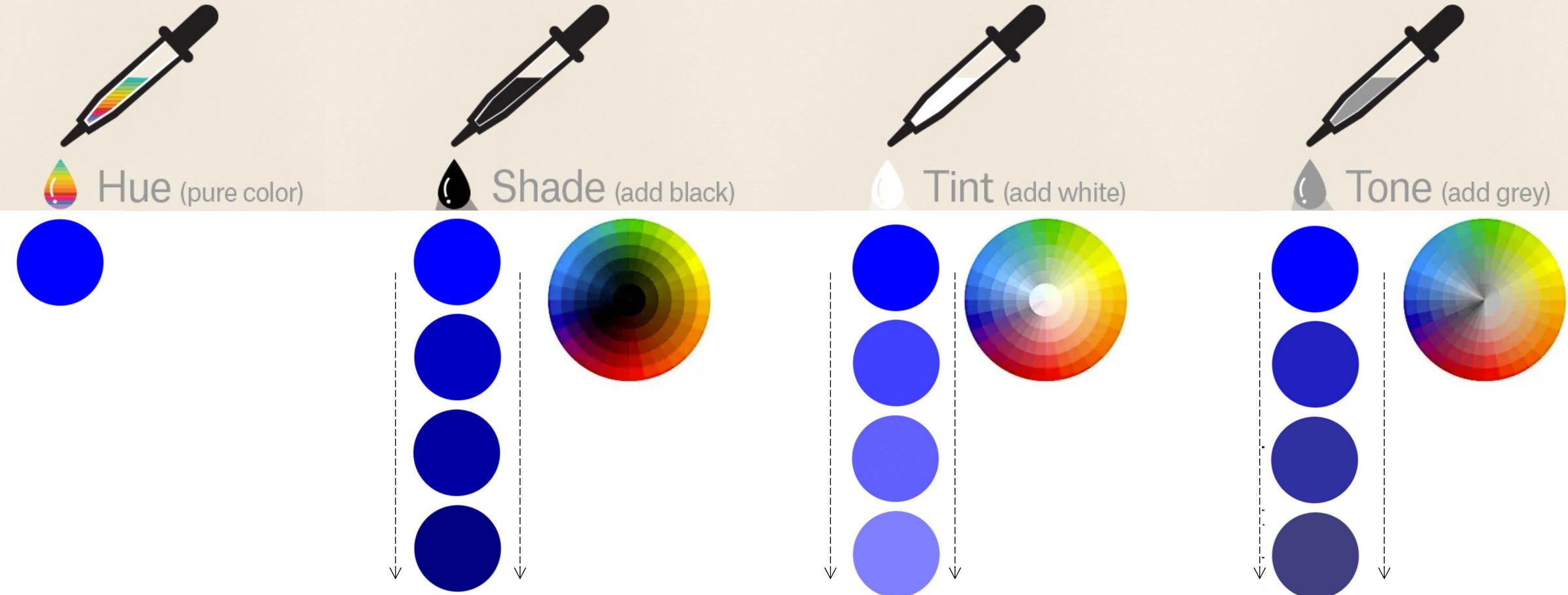
Shades, tints and tones are variations of hues, or colours on the colour wheel.



4) Colour theory in art and design

Hue, shade, tint, tone

Shades, tints and tones are variations of hues, or colours on the colour wheel.



4) Colour theory in art and design

Hue

Hue

Dominant wavelength of colour out of the twelve colours on the colour wheel (primary, secondary and tertiary).

Saturation / chroma

Intensity of the colour relative to its brightness or “purity” of the colour. Adding grey or the complementary colour tones down the saturation.

Value

Tonal value

How light or dark a colour is. Value scale i.e. greyscale ranges from white to black with various strengths of grey in between.

Colour wheel



De-saturated / toned-down



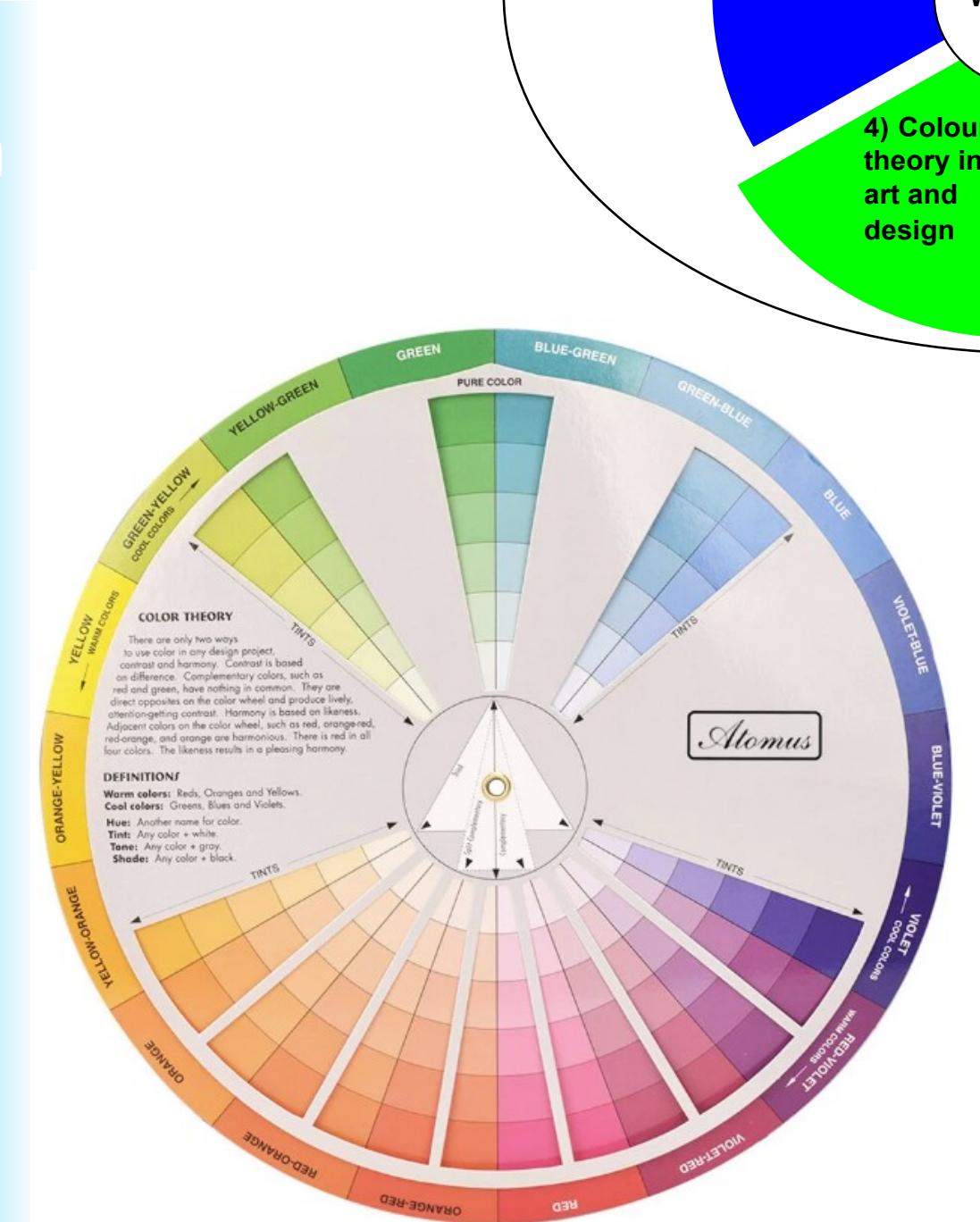
4) Colour theory in art and design

Colour harmony

- Arrangement of colours within a design using form, order, structure etc. to create an overall balance
- Finding the median of extremes i.e. boring & bland vs chaotic & overwhelming visual experience
- Technique for aesthetically pleasing harmonious colour combinations based on geometric relationships on the creative colour wheel

Creative colour wheel

- Visual representation of the colours found in a prism
- Arranged in a circle; primary colours spaced evenly around
- Used for planning colour schemes and colour mixes



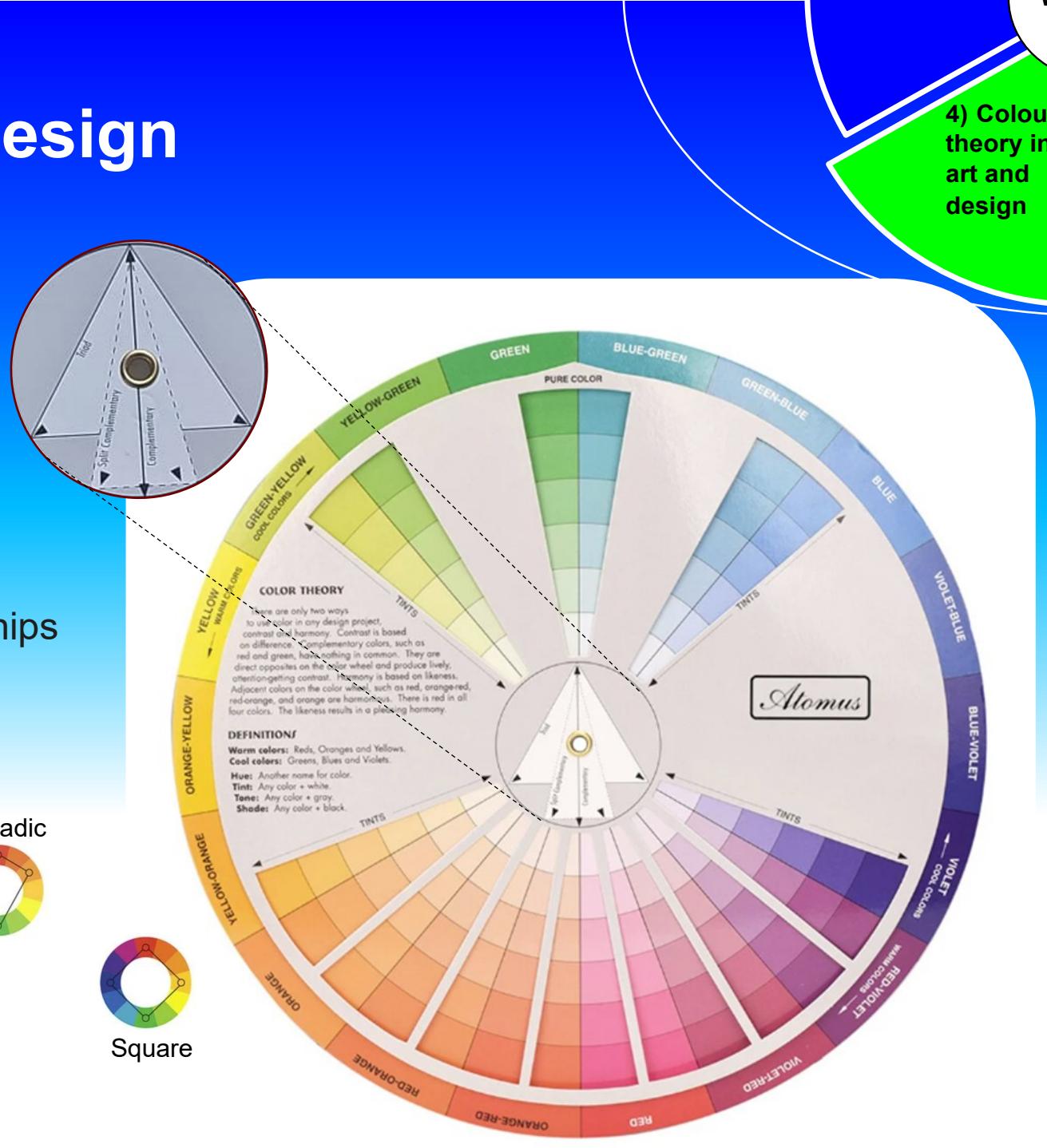
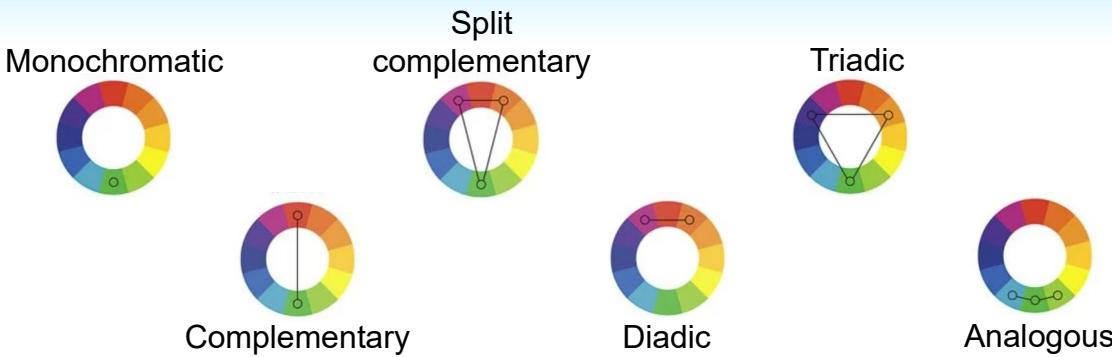
4) Colour theory in art and design

Creative colour wheel & colour harmony

- The central diagram shows colour schemes
- By turning the dial, you see combinations of colours that would work together for each colour scheme

Colour schemes

- Colour combinations based on geometric relationships on the colour wheel
- These simplify the processes of creating harmony



4) Colour theory in art and design

Colour schemes & harmony



Monochromatic
Single colour shaded (add black) or tinted (add white) to various values



Complementary
High contrast using colours located opposite each other on the colour wheel, warm + cold



Split complementary
Less contrast by using colours located adjacent to opposite colour



Diadic
Two colors that are separated by one color on the color wheel



Triadic
Three colours evenly spaced around the colour wheel



Analogous
Low-contrast, calm combination of colours next to each other



Tetradic
Four colours arranged in two complimentary pairs



Square
Base colour and three colours 90 degrees apart from the base colour

[Click for more in appendix](#)

5) Colour in traditional yoga

THE SEVEN CHAKRAS AND THEIR MEANINGS



5) Colour in traditional yoga

Chakras

Muladhara chakra

Svadhisthana chakra

Manipura chakra

Anahata chakra

Vishuddha chakra

Ajna chakra

Sahasrara chakra

Yogis use intuition to know, science focuses on experiments and observation to conclude

Chakras

- Yoga believes in energy centers within our body called chakras - Sanskrit for wheels
- Chakras are responsible for our physical, mental and emotional well-being
- Out of 114 such chakras, 7 are major



CROWN
Sahasrara



THIRD EYE
Ajna



THROAT
Vissudha



HEART
Anahata



SOLAR PLEXUS
Manipura



SACRAL
Svadhisthana



ROOT
Muladhara

5) Colour in traditional yoga

Chakras

- Chakras represent different organs such as the heart or throat
- Chakras represent levels within each specific emotion / emotional state
- Each chakra is associated with colour and energy
- Meditate on the colours to heighten your awareness. You can tap into their energy to guide you to achieve greater well-being, self-awareness and spiritual liberation



CROWN
Sahasrara



THIRD EYE
Ajna



THROAT
Vissudha



HEART
Anahata



SOLAR PLEXUS
Manipura



SACRAL
Swadhisthana



ROOT
Muladhara



5) Colour in traditional yoga



Muladhara chakra

Sanskrit meaning: “Root support”

Colour: Red. The root chakra signals warnings and dangers. It is life force, courage, and vitality.



Key themes: Physical body, survival. Fight or flight, instinct, stability, material safety, trust, and security. Impacts our passion, physical strength, and sexuality.



Balanced Muladhara chakra:

You feel a vital prana, strong will power, persistence, and endurance. Connection with earth and nature, sense of self-preservation. Things are in order, and you feel economic, mental, physical, and spiritual stability.

Imbalance of Muladhara chakra: Laziness, narcissism, anxiousness and existential dread. Negative energy, over-worrying, rage and resentment build. Attachment to those who project a sense of safety. Physical issues might include colon pain, constipation, sciatica, lower back pain, hemorrhoids, prostate issues, or menstrual cramps.



Associated Crystals:

Agate, Black Tourmaline, Bloodstone, Tiger's Eye, Hematite, Smoky Quartz



Aspects of Nature:

Dawn, dusk, red earth, fire.



5) Colour in traditional yoga



Svadhisthana chakra

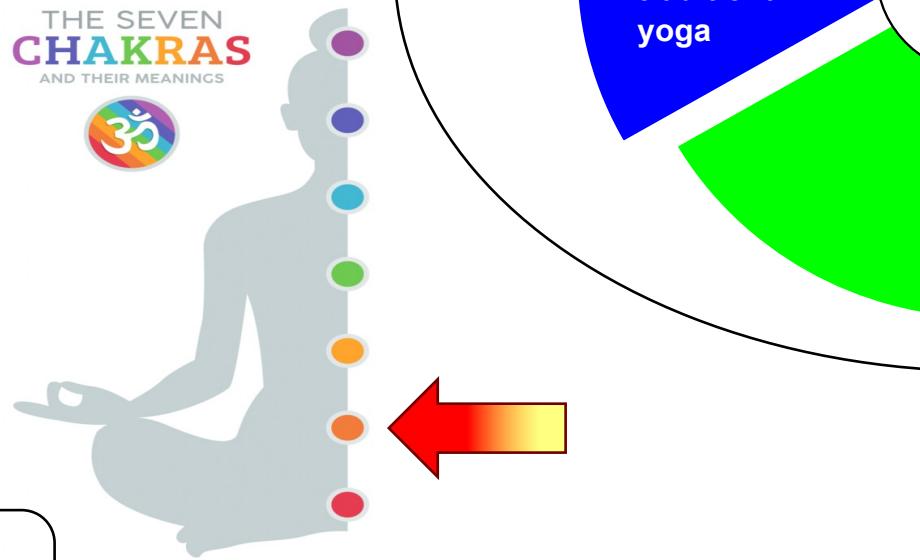
Sanskrit meaning: “Your own seat,” or “One’s own place.”

Colour: Orange. Emotions and sexuality. Associated with Tantra, the practice of moving kundalini energy, vitality and strength.



Key themes:

Water, procreation, sensuality, creative expression, compassion, pleasure, gut feelings, and wisdom. The sacral chakra is healing and compassionate.



Balanced Svadhisthana chakra:

Creativity at full force. Healthy attitude about sexuality and body. Accepting of others, compassionate to their flaws. Curiosity, desire and independence. Vibrant, optimistic, playful.

Imbalance of Svadhisthana chakra:

Lack of control around sexual urges or extremely repressed about sex and body. Jealousy, fear, obsessive, attachments and strong emotions, detached from one’s soul or self.



Associated Crystals:

Carnelian, Citrine, Coral, Moonstone.

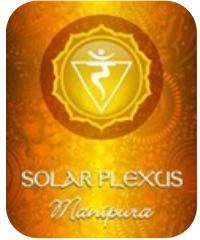


Aspects of Nature:

Fish, sea creatures, running water, moonlight, the sun’s warmth, procreation.



5) Colour in traditional yoga



Manipura chakra

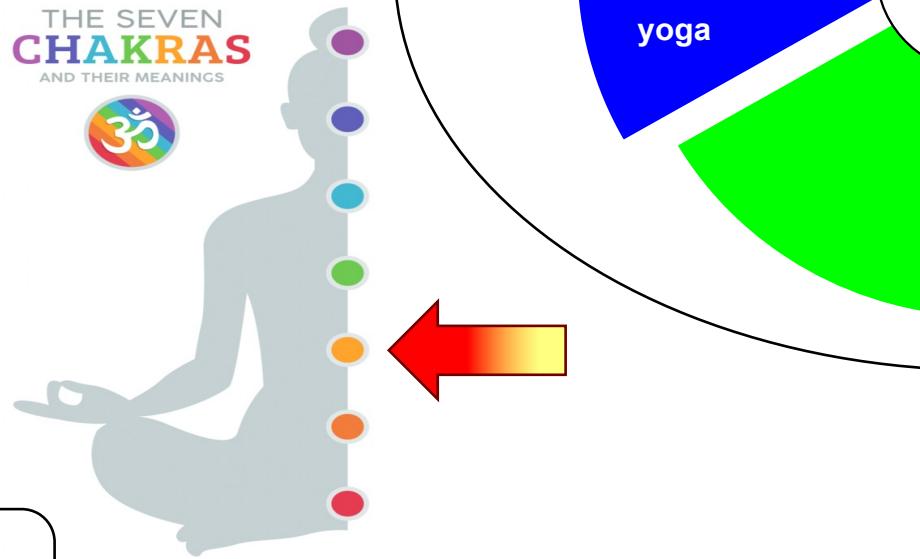
Sanskrit meaning: “Jewel city”

Colour: Yellow. The strength of yellow shines bright like the uncovered sun and illuminates the “I” — your sense of self.



Key themes:

Self-esteem, willpower, driving force. Leaving your mark on the world. Optimism, youth, intellect, and compassionate warmth.



Balanced Manipura chakra:

Developing your talents and asserting yourself with balance and mercy. You know yourself well, trust yourself, are confident and hold inner worth. You keep a good diet and exercise often, and feel strong, autonomous, and free.

Imbalance of Manipura chakra:

Fear, easily transformed into aggression. E.g. criticism causes spiral into obsessive worry and anger. Uneasy sleeping, nightmares, feeling stressed. Blaming others for own failures or bad luck. Stubbornness, dominance, manipulation.



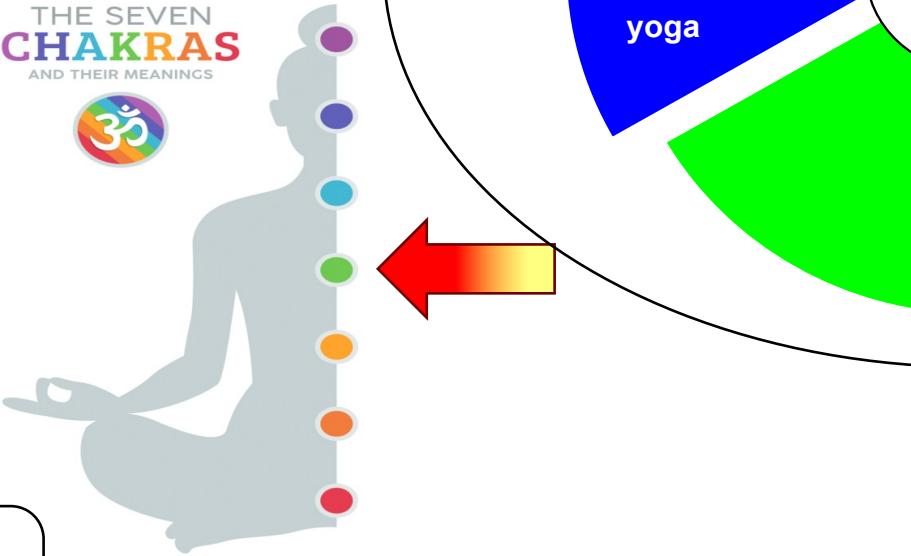
Associated Crystals:

Orange Calcite, Citrine, Malachite, Topaz.



Aspects of Nature:

Planet Mars, blazing fire, sunlight.



Anahata chakra

Sanskrit meaning: Unstruck, immaculate, unspoiled.

Colour: Green. The colour of life; naturally calming, healing, and supportive.

Key themes:

Heart and love. Openness, self-acceptance, and the acceptance of others. Empathy and selfless love for all beings reside in this chakra.



Balanced Anahata chakra:

Balance between self-love and love for others. Others are welcome and accepted for who they are. Empathy, wisdom, feelings of interconnectedness, friendliness, and emotional balance.

Imbalance of Anahata chakra:

Loneliness and isolation, dysfunctional relationships (jealousy, criticizing, cruelty, fear of rejection), and/or co-dependence and clinging. Lung problems, heart problems, and upper back problems point to this chakra being blocked.



Associated Crystals:

Jade, Rose Quartz, Green Calcite, Tourmaline.



Aspects of Nature:

Forest, clean air, unspoiled nature, meadows, antelope, birds.



5) Colour in traditional yoga



Vishuddha chakra

Sanskrit meaning: “Especially pure”

Colour: Blue. Blissful, clear, calm and true.



Key themes:

Communication, listening, ability to express oneself, how we understand and are understood. Independence, truth.



Balanced Vishuddha chakra:

Ease in communicating. Your voice is strong, decisions and consequences are understood, balance between listening and expressing yourself. Creative expression in the arts and in life.

Imbalance of Vishuddha chakra:

Fear of speaking out, shyness, feeling embarrassed or confused are one aspect of this chakra. Alternatively, lying, verbally abusing, and gossiping are signs of an overstimulated chakra. This can cause thyroid problems, TMJ, laryngitis, teeth and gum problems and neck stiffness.



Associated Crystals:

Blue lace agate, Lapis Lazuli, Aquamarine, Turquoise.



Aspects of Nature:

Ether, white elephant, seawater, clear sky, twilight.



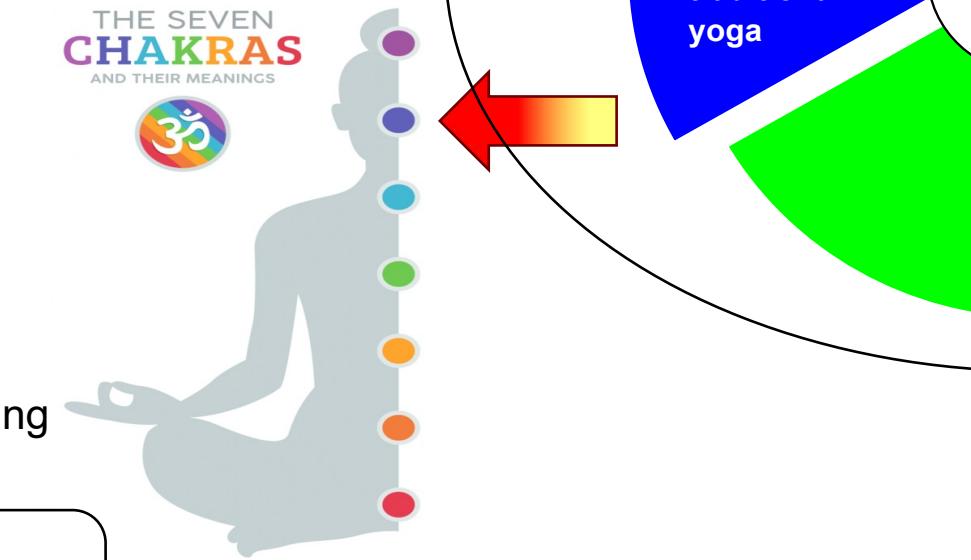
5) Colour in traditional yoga



Ajna chakra

Sanskrit meaning: "Knowledge"

Colour: Indigo / royal blue, is the colour of night, depth of awakening and change in this colour that connects us to space and time.



Key themes:

Intuition, insight, "sixth sense," imagination.



Balanced Ajna chakra:

Wisdom, inner peace, spiritual awakening and awareness. Feeling closer to Spirit and your Self. Easily distinguishing the significant from the insignificant, creating intuitive knowledge and understanding.

Imbalance of Ajna chakra:

Out of balance, feeling lost or disconnected from your spiritual path. Lack of perspective and imagination. Difficulty concentrating or retaining information, dualistic thinking or being stuck in one "truth." At its worst, a blocked Ajna chakra can lead to sociopathy and delusions.



Associated Crystals:

Lapis Lazuli, Amethyst, Black Obsidian, Purple Fluorite.



Aspects of Nature:

Night sky, stars, deep ocean.



5) Colour in traditional yoga



Sahasrara chakra

Sanskrit meaning: “Thousand-Petaled”

Colour: Violet, the highest vibrating colour, is one of magic, purification, and mystery that brings together the polarities of the world. This chakra is also associated with white and gold.



Key themes: Cosmic awareness, higher consciousness, faith, spiritual power, connectedness to the Divine and all beings.



Balanced Sahasrara chakra:

Transcending all dualism, spiritual freedom. In connection with all beings and the universe; there is no separation. All chakras are spinning freely and prana is flowing through your body. Deep wisdom and connection with the Divine.

Imbalance of Sahasrara chakra:

Disconnect from higher purpose. Detachment from reality, mental disorders, greed. When the other chakras have not been developed, bringing energy to this chakra can cause extreme problems: spiritual crisis, disinterest in living, fragmentation, addiction and / or cognitive delusions.



Associated Crystals:

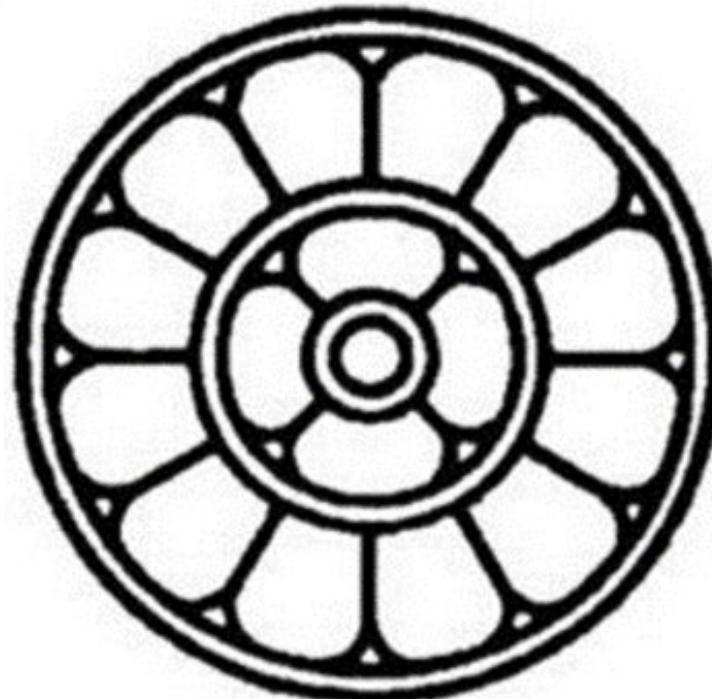
Blue Lace Agate, Amethyst, Clear Quartz, Selenite.



Aspects of Nature:

Blooming lotus flower, snake, top of the mountain, cerebral cortex.

6) Living symbol of the Mother



6) Living symbol of the Mother



The central circle represents the Divine Consciousness.

The four petals represent the four powers of the Mother.

The twelve petals represent the twelve powers of the Mother manifested for Her work.

J. I.

6) Living symbol of the Mother

The Mother & Sri Aurobindo on the symbol



The twelve attributes:

Sincerity – Humility – Gratitude – Perseverance
Aspiration – Receptivity – Progress – Courage
Goodness – Generosity – Equality – Peace

The first eight concern attitude towards the Divine, and the last four towards humanity.

- The Mother

Centre and four powers, white. The twelve, all of different colour in three groups:

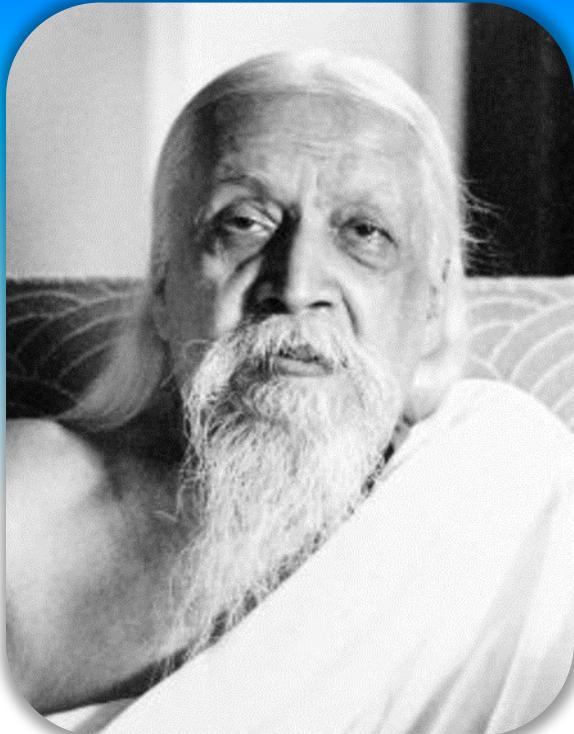
Top group red, passing to orange towards yellow.
Next group, yellow passing through green towards blue.
And third group, blue passing through violet towards red.

If white is not convenient, the center may be gold (powder).

- Sri Aurobindo

6) Living symbol of the Mother

Sri Aurobindo on colour



“There is an order of significances in which they indicate various psychological dynamisms, e.g., faith, love, protection, etc. There is another order of significances in which they indicate the aura or the activity of divine beings, Krishna, Mahakali, Radha or else of other superhuman beings.

Colour and light are always close to each other - colour being more indicative, light more dynamic. Colour incandescent becomes light.”

6) Living symbol of the Mother

The Mother on the symbol



Mother, in your symbol the twelve petals signify the twelve inner planes, don't they?

It signifies anything one wants, you see. Twelve: that's the number of Aditi, of Mahashakti. So it applies to everything; all Her action has twelve Aspects. There are also Her twelve Virtues, Her twelve Powers, Her twelve Aspects, and then Her twelve Planes of manifestation and many other things that are twelve; and the symbol, the number twelve is in itself a symbol. It is the symbol of manifestation, double perfection, in essence and in manifestation, in the creation.

What are the twelve aspects, Sweet Mother?

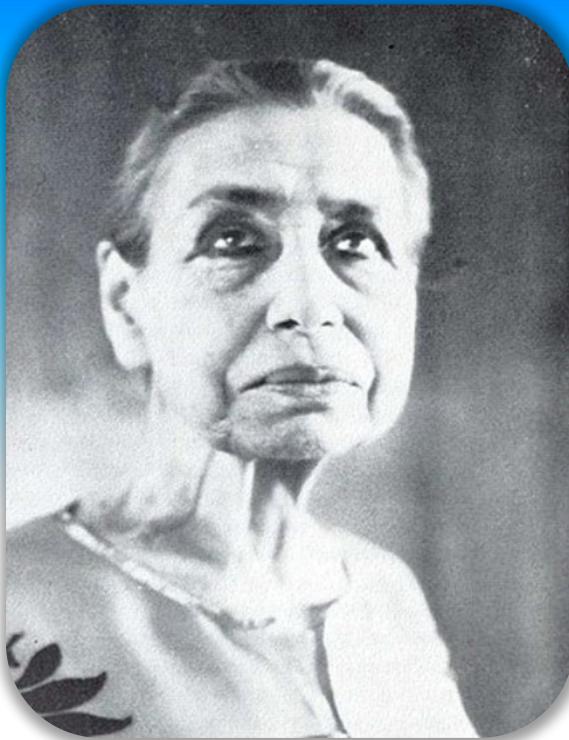
Ah, my child, I have described this somewhere, but I don't remember now. For it is always a choice, you see; according to what one wants to say, one can choose these twelve Aspects or twelve others, or give them different names. The same Aspect can be named in different ways. This does not have the fixity of a mental theory. (*Silence*)

According to the angle from which one sees the creation, one day I may describe twelve Aspects to you; and then another day, because I have shifted my centre of observation, I may describe twelve others, and they will be equally true.

6) Living symbol of the Mother

The Mother on flowers

"Flowers speak to us when we know how to listen to them," *the Mother* said. "It is a subtle and fragrant language." *The Mother identified significances of almost nine hundred flowers.*



Mother, each flower has its own significance, doesn't it?

"Not as we understand it mentally. There is a mental projection when one gives a precise significance to a flower. ...

A flower does not have the equivalent of a mental consciousness.

... It is rather like the movement of a little baby, neither a sensation nor a feeling, but something of both; it is a spontaneous movement, a very special vibration. Well, if one is in contact with this vibration, if one feels it, one receives an impression which may be translated by a thought. This is how I give a significance to flowers and plants. There is a kind of identification with the vibration, a perception of the quality it represents, and gradually through a kind of approximation (sometimes it comes suddenly, occasionally it takes time) there is a convergence of these vibrations, which are of a vital-emotional order, and the vibration of mental thought, and if there is sufficient accord one has a direct perception of what the plant may signify."

6) Living symbol of the Mother

Courage - red

Red is the colour of the physical and of the material world. Darker shades of red, however, may also indicate some part of the vital.

An indomitable courage, a perfect sincerity and a sincere self-giving, so that one does not calculate or bargain, does not give with the idea of receiving, does not trust with the idea of being protected, does not have faith which asks for proofs – it is this that is indispensable in order to walk on the path, and it is this alone which can truly shelter you from all danger.

Courage is to be able to face everything in life without the slightest emotion in any part of the being and with a constant awareness of the Divine Presence.

Whosoever is courageous can give courage to others, just as the flame of one candle can light another.

When we trust in the Divine Grace, we get an unfailing courage.

Courage is a sign of the soul's nobility.

But courage must be calm and master of itself, generous and benevolent.

In true courage there is no impatience and no rashness.

Never mistake rashness for courage, nor indifference for patience.

A noblest courage is to recognise one's faults.

There is no greater courage than to be always truthful.

Have the courage to be completely frank with the Divine.

Flower
Calotropis gigantea



- The Mother

6) Living symbol of the Mother

Progress

Above all, it is the will for progress and self-purification which lights the fire. The will for progress. Those who have a strong will, when they turn it towards spiritual progress and purification, automatically light the fire within themselves.

The very first condition of inner progress is to recognize whatever is or has been a wrong movement in any part of our nature – wrong idea, wrong feeling, wrong speech, wrong action – and by wrong is meant what departs from the truth, from the higher Consciousness and the higher Self, from the way of the Divine. Once recognized, it is offered to the Divine for the Light and Grace to descend and substitute for it the right movement of the true Consciousness.

Do not think of what you have been, think only of what you want to be and you are sure to progress.

Try to enjoy doing everything you do. When you are interested in what you do, you enjoy doing it. To be interested in what you do, you must try to do it better and better.

The will for progress by the urge towards perfection.
The purpose of earthly life is progress.
In progress lies true joy.

- The Mother



Flower
Catharanthus roseus

6) Living symbol of the Mother

Receptivity - orange

Orange or red-gold or golden red is the light of the Supramental in the physical, the light of Divine Truth. Orange is also the colour of occult knowledge or experience.

This means... to receive the Divine Force... and allow it to work, guiding one's sight, will and action. There must be a complete and never-failing assent, a willingness to let the Divine Power do with us whatever is needed for the work that has to be done. Receptivity is the capacity of admitting and retaining the Divine Workings.

Surely you are trying more or less consciously to draw the forces and the divine love towards you. The method is bad. Give yourself without calculating and without expecting anything in return, and then you will become capable of receiving.

It is with the widening of the consciousness and the one-pointedness of the aspiration that the receptivity increases.

Flowers are very receptive and they are happy when they are loved.

The whole being is aware of the Divine Will and obeys it.

Receptivity is the capacity of admitting and retaining the Divine Workings.

Conscious of the Divine Will and surrendered to it.

- The Mother

Receptivity - the power to receive the Divine Force and to feel its presence and the presence of the Mother in it and allow it to work, guiding one's sight and will and action.

There must be a complete and never failing assent, a courageous willingness to let the Divine Power do with us whatever is needed for the work that has to be done.

- Sri Aurobindo

Flower
Gladiolus xhortulanus



6) Living symbol of the Mother

Aspiration

This taste for supreme adventure is aspiration – an aspiration which takes hold of you completely and flings you, without calculation and without reserve and without a possibility of withdrawal, into the great adventure of the divine discovery, the great adventure of the divine meeting, the yet greater adventure of the divine Realisation.

One must have a fixed and unfailing aspiration, vigilant and constant – an aspiration of the entire being – an aspiration that takes hold of you completely, an aspiration to unite with the Divine... to give oneself totally to the Divine, not to live outside the Divine Consciousness, so that the Divine may be all in all.

Beyond words, above thoughts the flame of an intense aspiration must always burn, steady and bright.

Innumerable, obstinate, repeating itself tirelessly.

True aspiration is not a movement of the mind but of the psychic.

Aspiration is one of the marvelous gifts of grace given to human nature.

We must aspire with all our being for the manifestation to come soon and complete.

It is to the sincerity of your aspiration that the Love answers spontaneously.

Let your aspiration leap forward, pure and straight, towards the supreme consciousness which is all joy and all beatitude.

- The Mother

Flower
Nyctanthes arbor-tristis



6) Living symbol of the Mother

Perseverance - yellow

Yellow is the characteristic colour of mind, especially the thinking mind, the intellect. Its shades indicate different intensities of mental light. Yellow is the light of mind growing brighter as one goes higher till it meets the golden light of the Divine Truth.

One must have an unfaltering perseverance, be ready to begin again a hundred times the same thing with the same intensity with which one did it the first time and as though one had never done it before.

The road of yoga is long. Whatever method is used, persistence and perseverance are essential. A yoga like this needs patience, because it means a change, both of the radical means and of each part and detail of our nature.

If one persists, there comes a time when one is victorious.

Victory is to the most persistent.

Perseverance is patience in action. The decision to go to the very end.

It is by persevering that one conquers difficulties, not by running away from them. One who perseveres is sure to triumph. Victory goes to the most enduring. Always do your best and the Lord will take care of the results.

Perseverance breaks down all obstacles.

- The Mother



6) Living symbol of the Mother

Gratitude

It is certainly, of all the movements within the reach of human consciousness, the one that draws you the most out of your ego.

A loving recognition of the Grace received from the Divine. A humble recognition of all that the Divine has done and is doing for you. The spontaneous feeling of obligation to the Divine, which makes you do your best to become less unworthy of what the Divine is doing for you.

There is nothing that gives you a joy equal to that of gratitude. You hear a bird sing, you see a lovely flower, you look at a little child, observe an act of generosity, read a beautiful sentence, look at the setting sun, anything whatever: suddenly this comes upon you, this kind of emotion, so deep, so intense, that the world manifests the Divine that there is something behind the world which is the Divine.

The ego thinks of what it wants and has not. This is its constant preoccupation. The soul is aware of what it is given and lives in endless gratitude.

The whole being offers itself to the Lord in absolute trust.

Physically, materially, upon earth, it is in gratitude that one finds the source of the purest delight.

Gratitude opens all the closed doors and allows the saving Grace to enter.

Flower
Ipomoea carnea



- The Mother

6) Living symbol of the Mother

Humility - green

Green is the colour of the emotional vital and of the emotions. A vital energy of work and action, green is usually associated with Life and a generous emanation or action of forces / the emotional life-force.

True humility is humility before the Divine. It is a precise, exact, living sense that one is nothing, one can do nothing, understand nothing without the Divine... Even if one is exceptionally intelligent and capable, this is nothing in comparison with the Divine Consciousness.

Humility is that state of consciousness in which, whatever the realization, you know the infinite is still in front of you.

Humility is the recognition that one does not know, that one knows nothing, and that there may be something beyond what presently appears to us as the truest, the most noble or disinterested.

Humility: adorable in its simplicity.

To be humble means for the mind, the vital and the body never to forget that without the Divine they know nothing, are nothing and can do nothing; without the Divine they are nothing but ignorance, chaos and impotence. The Divine alone is Truth, Life, Power, Love, Felicity.

True humility consists in knowing that the Supreme Consciousness, the Supreme Will alone exists and that the I is not.

- The Mother



Flower
Agrostis nebulosa

6) Living symbol of the Mother

Sincerity

To be sincere is to be pure. As Sri Aurobindo tells us, 'Desire nothing but the purity, force, light, wideness, calm, Ananda of the Divine Consciousness, and its insistence to transform and perfect your mind, life and body.'

Every act of sincerity carries in itself its own reward: the feeling of purification, of soaring upwards, of the liberation one gets when one has rejected even one tiny particle of falsehood.

Sincerity is the safeguard, the protection, the guide, and finally the transforming power.

Oh! It is very difficult. Just try for one hour and you will see how very difficult it is. Only one hour, to be totally, absolutely sincere. To let nothing pass. That is, all one does, all one feels, all one thinks, all one wants, is exclusively the Divine.

Do you know what perfect sincerity is?...

Never to try to deceive oneself, never let any part of the being try to find out a way of convincing the others, never to explain favourably what one does in order to have an excuse for what one wants to do, never to close one's eyes when something is unpleasant, never to let anything pass, telling oneself, "That is not important, next time it will be better."

Be wholly sincere, never try to deceive others. And try never to deceive yourself.

To be constantly the true flame that burns like an offering.

- The Mother

Flower
Aster amellus



6) Living symbol of the Mother

Peace - blue

The physical mind; mental power in the physical.

In the liberation of the soul from the ignorance, the very first foundation is peace, calm, the silence and quietude of the Eternal and Infinite...A consummate power and greater formation of the spiritual ascension takes up this peace of liberation into the bliss of a perfect experience and realisation of the eternal beatitude, the bliss of the Eternal and the Infinite.

The peace must be immense, the quietness deep and still, the calm unshakable, and the trust in the Divine ever-increasing.

Peace and stillness are the great remedy for disease. When we can bring peace in our cells, we are cured.

No matter what one wants to realise, one must begin by establishing this perfect and immutable peace; it is the basis from which one must work.

It is only in tranquility and peace that one can know what is the best thing to do.
If you ask from within for peace, it will come.
There is no greater peace than that of a pure mind.

The Divine is Supreme Peace. Be with the Divine and you will be in peace.
Nowhere will you be able to find peace unless you have peace in your heart.

In peace and inner silence you will more and more become conscious of the constant Presence.
It is in peace that knowledge and power are truly effective.

- The Mother



Flower

Curcuma zedoaria

6) Living symbol of the Mother

Equality

The very first necessity for spiritual perfection is a perfect equality.... The perfect equality of our Spirit and nature is a means by which we can move back from the troubled and ignorant outer consciousness into the inner kingdom of heaven and possess the Spirit's eternal kingdoms of greatness, joy and peace...

Equality: Immutable peace and calm.

- Sri Aurobindo

The Supreme Divine Nature is founded on equality.

The more a person is quiet in front of all occurrences, equal in all circumstances, and keeps a perfect mastery of himself and remains peaceful in the presence of whatever happens, the more he has progressed towards the goal.

Equal in all circumstances, keeps a perfect mastery of himself and remains peaceful in the presence of whatever happens.

Someone who knows how to smile in all circumstances is very close to true equality of soul.

- The Mother

Flower
Iberis sempervirens



6) Living symbol of the Mother

Generosity - violet

Violet is a colour of the vital plane, dark violet indicates vital power. Violet is also the colour of protection, Divine Grace and Compassion.

There is a power, a divine movement that spreads, diffuses, throws out freely forces and things and whatever else it possesses on all the levels of nature from the most material to the most spiritual plane.

...what truth is found behind generosity: it is the movement of the spreading forces. But in order that these forces may spread, they must first become concentrated. So there is a sort of movement of pulsation: the forces are concentrated, then they spread, and then they are again concentrated and again spread....

Generosity gives and gives itself without bargaining. Gives for the joy of giving.
Generosity is to find one's own satisfaction in the satisfaction of others.

It is to give unstintingly, selflessly, without bargaining or any expectation. It is to give for the joy of giving. It is an opportunity that the Divine gives us for the liberation of the ego and the servitude to self-indulgence, replacing it by the joy of participation in the divine work upon earth, for a true and beautiful and harmonious equipment and ordering of a new, divinised mental, vital and physical existence in whatever way the Divine Mother herself decides in her creative vision.

- The Mother

Nobleness and generosity are the soul's ethereal firmament; without them, one looks at an insect in a dungeon.

- Sri Aurobindo

Flower
Impatiens balsamina



6) Living symbol of the Mother

Goodness

One should not be good with an interested motive.... One should not be good so that others may be good to you. It is always the same lesson: One must do as well as one can, the best one can, but without expecting a result. One must be good for the love of goodness.

Just this attitude, to expect a reward for a good action - to become good because one thinks that this will make life easier - takes away all value from the good action.

You must be good for the love of goodness...then you are sure to advance on the way.
Good will for all and good will from all is the basis of peace and harmony.
Your heart is the home of a luminous goodness; let it govern your whole being.

One should keep goodwill and love constantly in his heart and let them pour out upon all with tranquility and with equanimity.

Indeed, the good will hidden in all things reveals itself everywhere to the one who carries good will in his consciousness. - The Mother

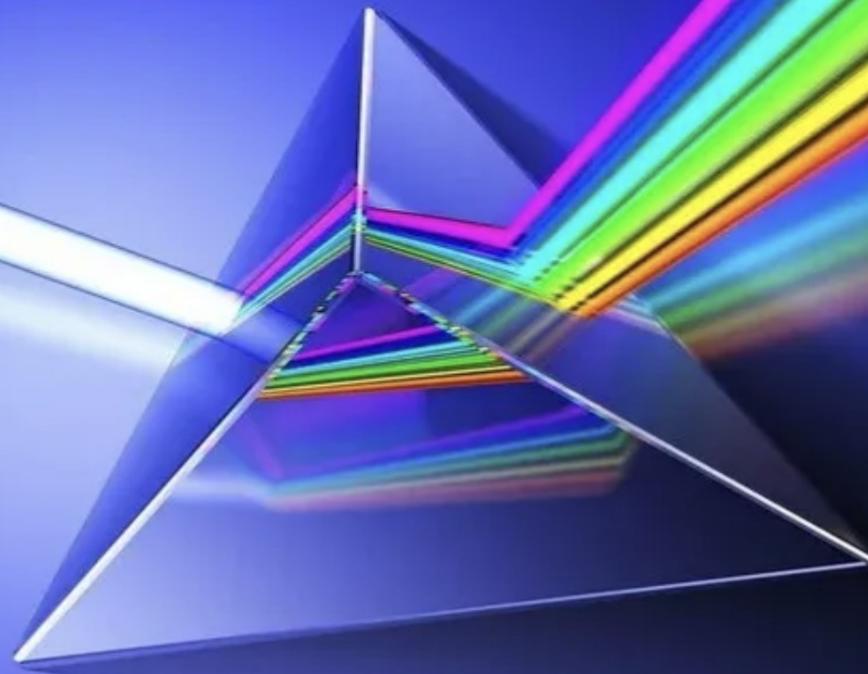
Good is all that helps the individual and the world towards their individual fullness.

- Sri Aurobindo

Flower
Roseda odorata



Appendix



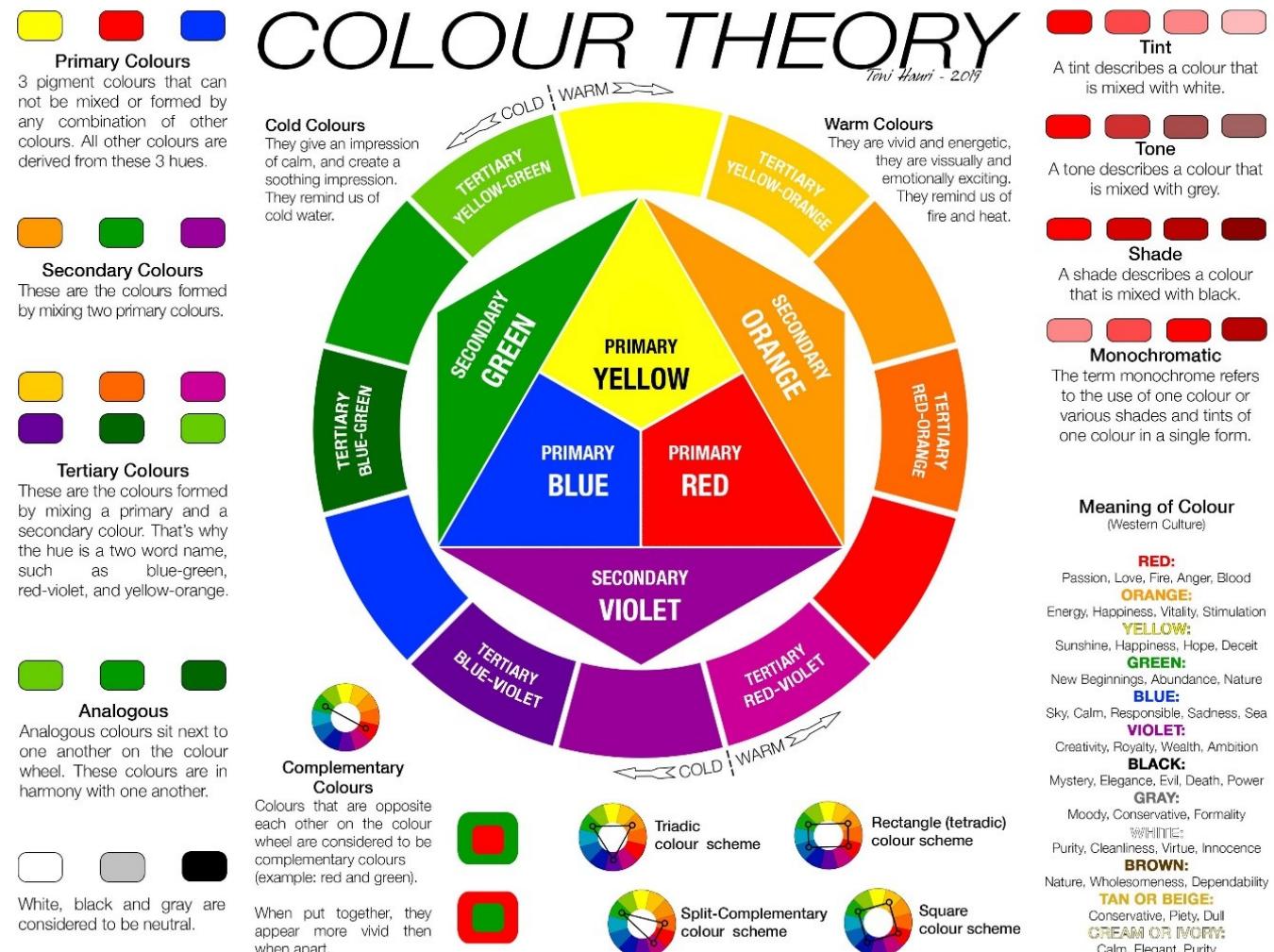
1) Physics of light and colour

Useful sources:

[Light & Color Theory of the Magnetic Spectrum](#)

4) Colour theory in art and design

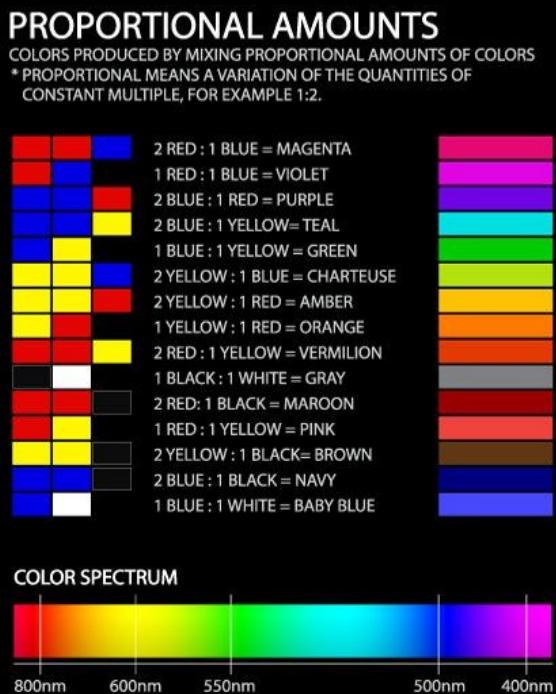
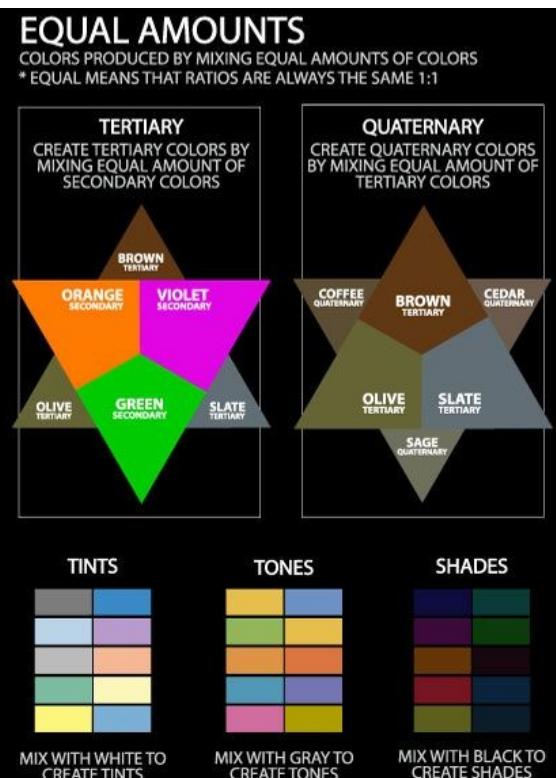
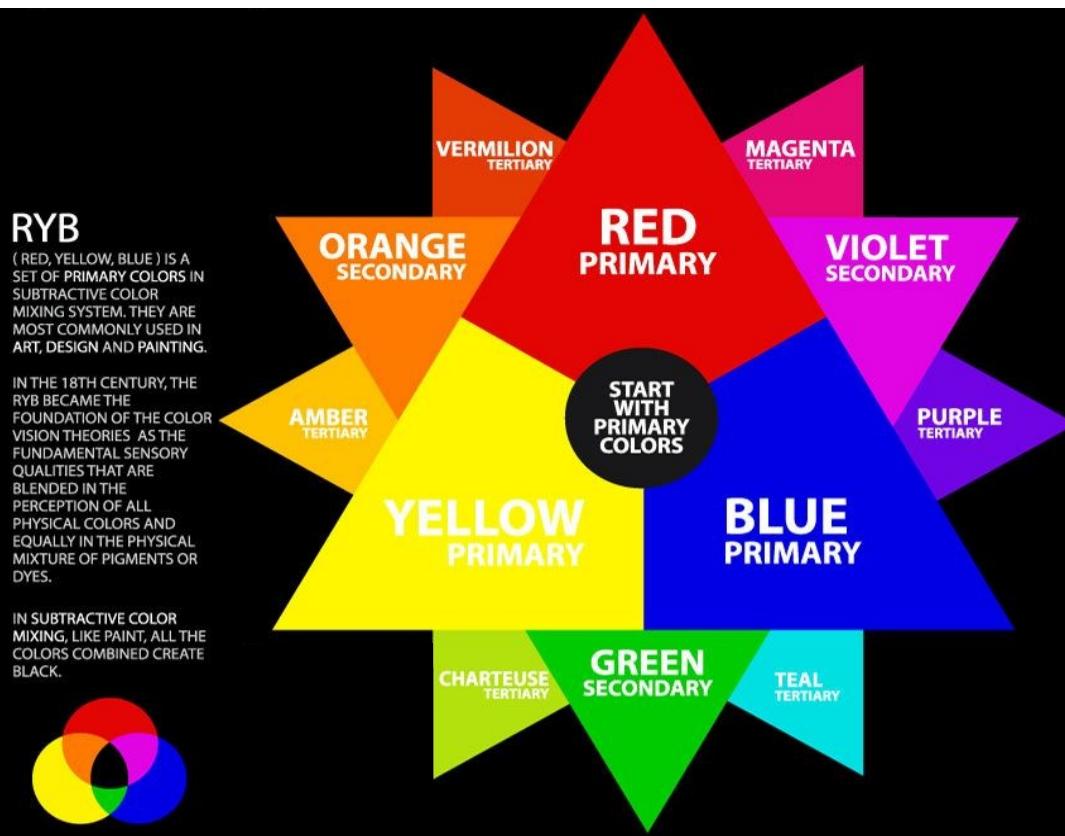
Colour theory



4) Colour theory in art and design

Colour mixing guide

- Primary (red, yellow, blue)
- Secondary (green, orange, purple) by mixing primary
- Tertiary colours by mixing secondary



4) Colour theory in art and design

Colour schemes & harmony

- Are colour combinations based on geometric relationships on the colour wheel
- These simplify the processes of creating harmony

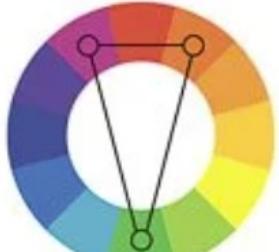
[Colour scheme reading 1](#)

[Colour scheme reading 2](#)

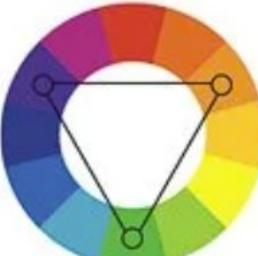
Monochromatic



Split complementary



Triadic



Tetradic



Complementary



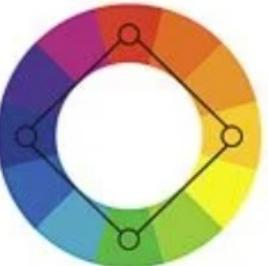
Diadic



Analogous

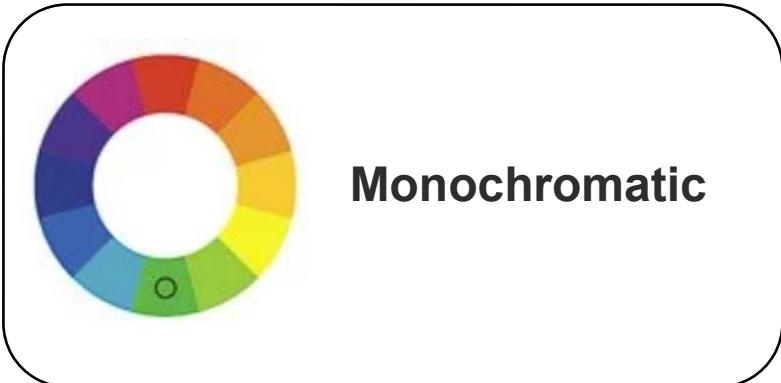


Square



4) Colour theory in art and design

Colour schemes & harmony



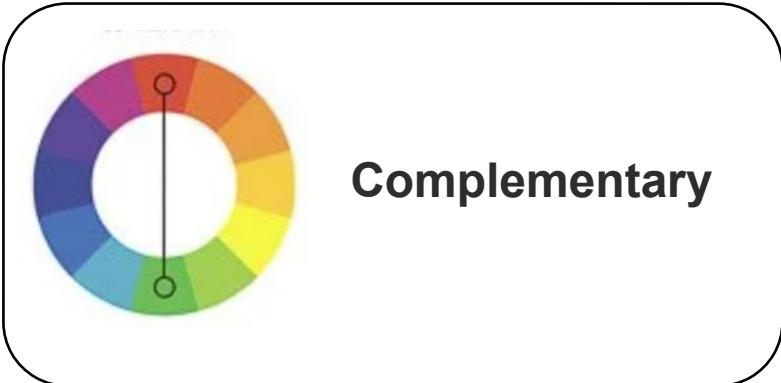
Monochromatic

Color scheme solely based on one color hue

- Can be one color, or an applied range of values based on one colour
- Add black to darken i.e. for shades of the same colour
- Add white to lighten i.e. for tints of the same colour

4) Colour theory in art and design

Colour schemes & harmony



Complementary

Finds harmony by using colours located opposite each other on the colour wheel

Combines a warm and a cold colour

Results in a high-contrast bright colour combination

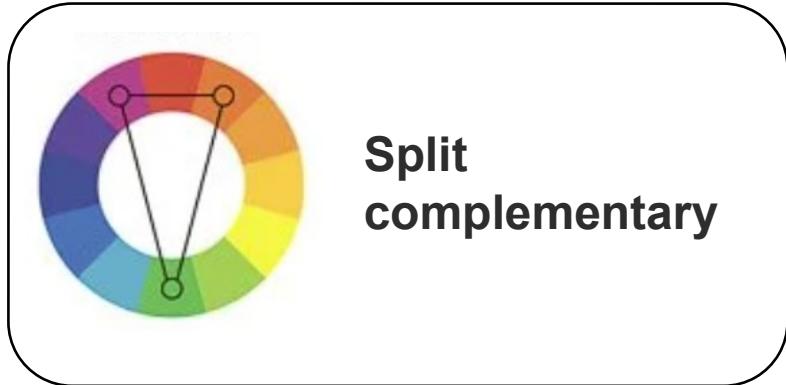
RYB color wheel complementary color combinations:

- Red & green
- Yellow & purple
- Blue & orange
- Red-orange & blue-green
- Yellow-orange & blue-violet
- Yellow-green & red-violet

4) Colour theory in art and design

4) Colour
theory in
art and
design

Colour schemes & harmony



A color scheme using three colors in a fixed configuration
Less contrast by using colours located adjacent to opposite colour

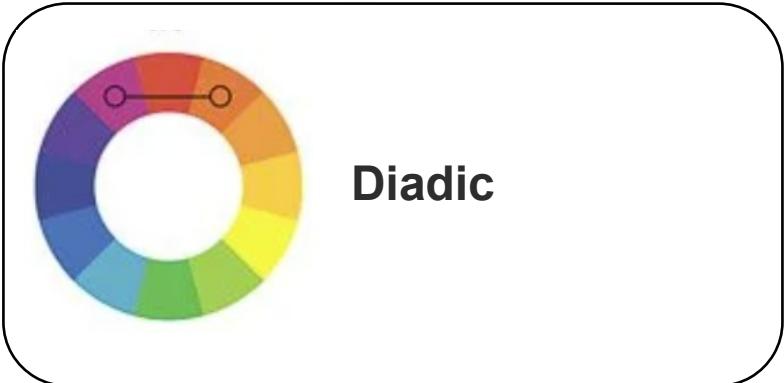
Examples:

- Yellow, blue-violet & red-violet
- Red-violet, green, & yellow

4) Colour theory in art and design

4) Colour
theory in
art and
design

Colour schemes & harmony



Diadic

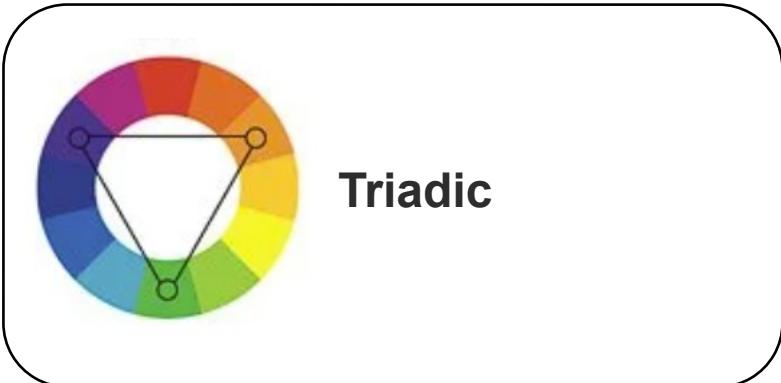
Two colors that are separated by one color on the color wheel

Examples of a diad or diadic color scheme:

- Red & orange
- Blue-violet & blue-green
- Red-violet & red-orange...

4) Colour theory in art and design

Colour schemes & harmony



Triadic

A triadic color scheme uses three colours evenly spaced around the colour wheel

Examples:

- Primary colours
- Secondary colours
- Red-orange, red & red violet
- yellow-green, blue-violet, and red-orange...

4) Colour theory in art and design

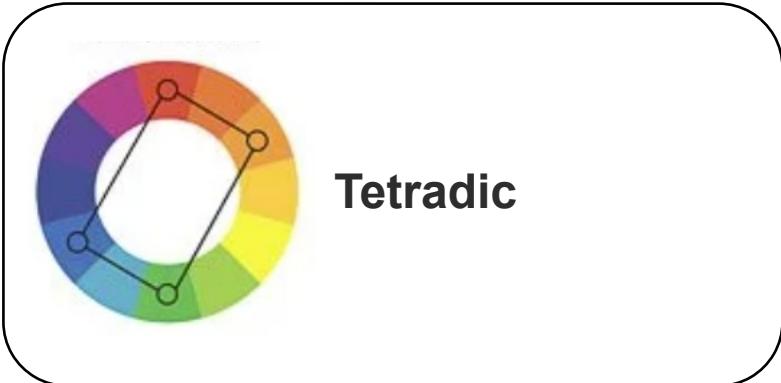
Colour schemes & harmony



A subset of a triadic color scheme, an analogous color scheme is any three adjacent primary, secondary, or tertiary colors on the color wheel. Because each color in an analogous scheme shares a mix color with its closest neighbor the scheme is also referred to as a harmonious color scheme.

4) Colour theory in art and design

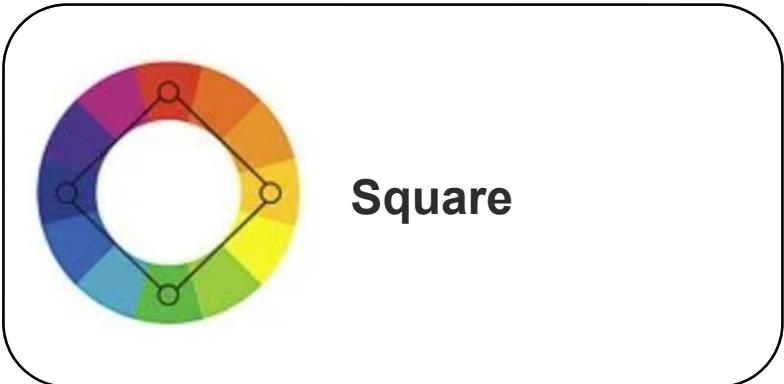
Colour schemes & harmony



The tetradic or tetrad color scheme uses two sets of complimentary colors. It is also called the quadratic, and the double complementary color scheme. The tetradic configuration results in a number of possible color combinations.

4) Colour theory in art and design

Colour schemes & harmony



Base colour and three colours 90 degrees apart from the base colour

5) Colour in traditional yoga

Traditional Yoga & science

THE SEVEN CHAKRAS AND THEIR MEANINGS



Violet

Indigo

Blue

Green

Yellow

Orange

Red

