# ELEMENTS

## AND

# PRINCIPLES

## OF
## DESIGN

*By- Bharti Goel*

Elements of design

Colour theory

Principles of design

Introduction-

Everything we see, touch and use is either man-made or natural. For eg-The Sun, The clouds, tress, flowers, mobile phones, chair, table, clothes etc.

A design is an arrangement or organization of items. A designer not only improves the outside beauty and aesthetics of the object but most importantly improves the use and functioning of the object. This brings out a clear difference between two very close but different professionals, a designer and an artist.

To create a good design, a designer has to first of all use his knowledge of the basic tools of design. The designer's tools are elements and principles of design.

# Elements of design

Elements of design are the basic components of a design that are arranged or organized in a composition. These are the building blocks that are required be arranged as components to create a good design.

The 8 elements of design are-

1) Dot:
   A dot can be considered as the beginning of the elements. It is the first and the most basic element of design. A dot can turn inactive space into a visually active space. The size of dots in a design creates an illusion of increased or decreased surface area.
   Dots in a design can be used to create a layered effect, create a pattern, as a part of motif.

| As a part of motif | create a layered effect | create a pattern |
|---|---|---|
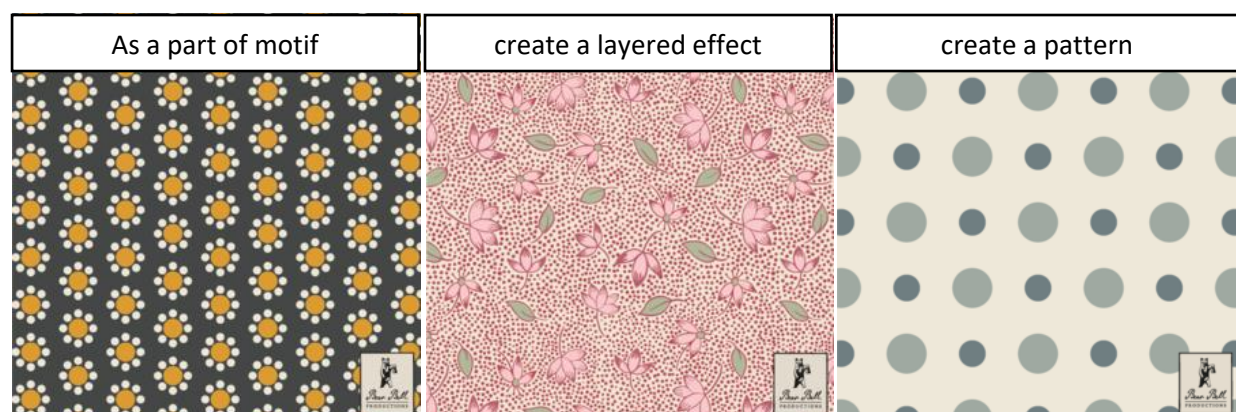
2) Line:
Connection of dots forms a line. It is characterized as a mark of length, direction, thickness or formation. Lines can be used to express meaning, evoke an emotional response, create division and to organise content. Lines can be long and short, vertical, diagonal, horizontal, curved, pointed, zig-zag, thick and thin, broken and many more.
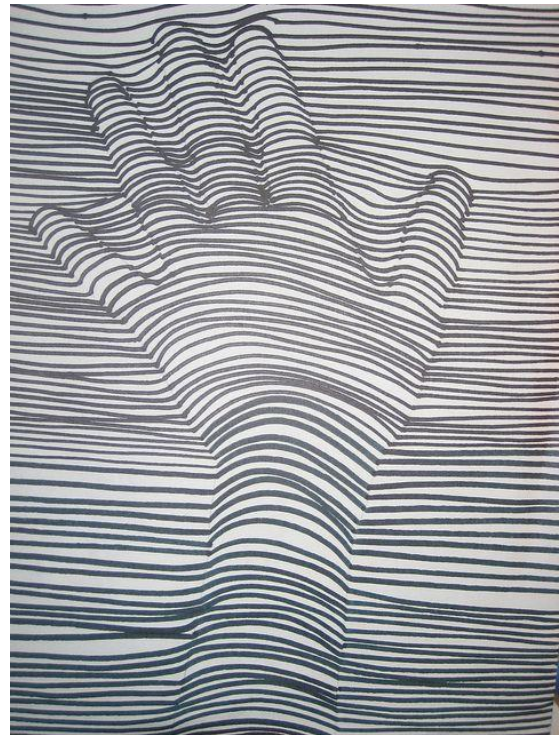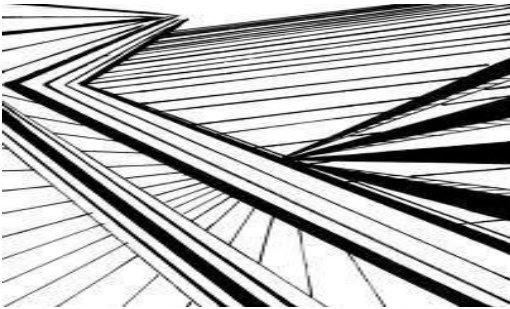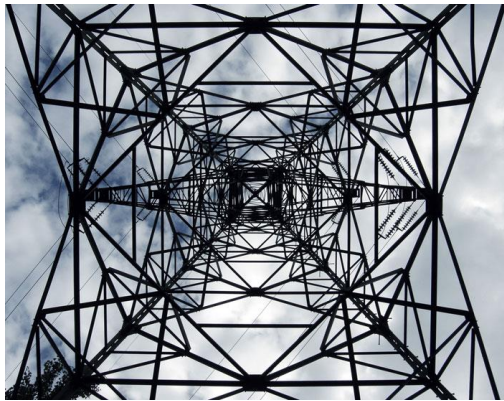


3) Shape:
Connection of lines forms a shape. A shape is defined as a two-dimensional enclosed space. Shapes can be organic, geometric and abstract. Organic shapes are free-flowing and irregular. For eg- flowers, leaves etc. while geometric shapes are rigid and regular. For eg- spiderweb, honeycomb.
Abstract shapes are simply the modified shapes i.e., whenever an original shape is modified to change its original character, the new changed shape is known as an abstract shape.

4) Form
A form adds a dimension to a shape.  A circle is a flat, two-dimensional shape. When you add the shading that transforms the circle into a sphere, it takes on three-dimensional form, like a ball you could throw or bounce.
Basic forms are three-dimensional figures, including spheres, cubes, cylinders, pyramids and cones. If an object has height, width and depth, it is a form. A form can be a man-made, geometric shape that is mathematically precise in all its angles and edges, or it can be a natural, organic form. Organic forms like lizards, dragonflies and apple trees are not mathematically precise, but they are three-dimensional.
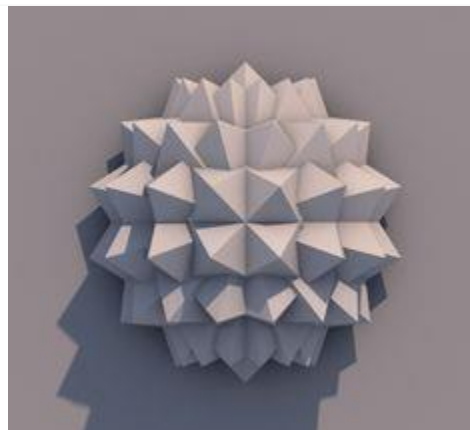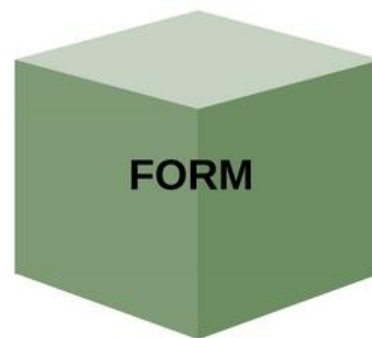




5) Texture
Texture is the way a surface feels or the way it is perceived to feel. Texture is an element of design that defines the surfaces of shapes and forms. Texture that you feel with your fingers is called tactile while texture that the artist recreates on a flat surface is called visual

texture. Tactile texture is three-dimensional because it has height, width and depth.
Examples of tactile texture is tree bark.




6) Colour
Colour plays one of the biggest role in a design. The importance of colour in design stems from the significance of colour to the human mind. Colour creates ideas, expresses messages, spark interest, and generate certain emotions and reflects certain moods.
We will learn more about colour theory and colour psychology in this chapter.

7) Value:

Value in design simply means the lightness and darkness of a colour. White is the lightest value while black is the darkest. It is measured in relationship to a graded scale from white to black. All the colours have value and sit within the range of light to dark. For example- light blue and dark blue. Value of a colour can also be measured according the relative value of other colour. For example- yellow has a relative light value and purple has a relative dark value.

## VALUE SCALE

| 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |

### Value

High Value                     Low Value
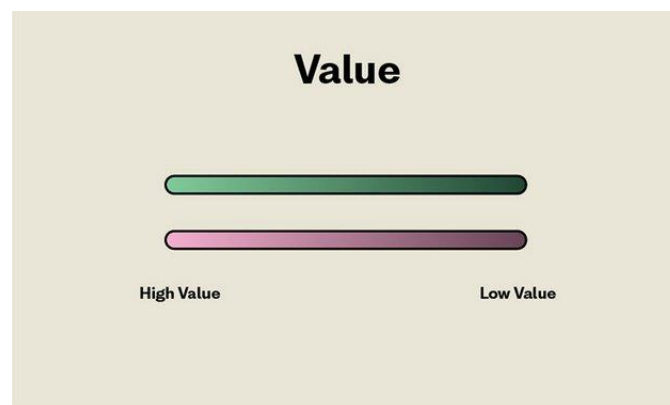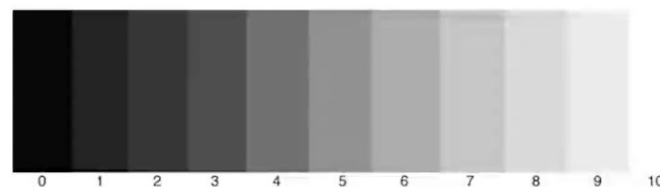
8) Space:
   Space is the area around the objects or between the objects in a
   design. Negative space is the space between or around the focal
   point of an image or the area around the filled or solid portion.
   Positive space is the space that your subject matter takes up in your
   composition or the filled or solid portion in a design. It can be used
   to define importance, lead the eye, give a rest.
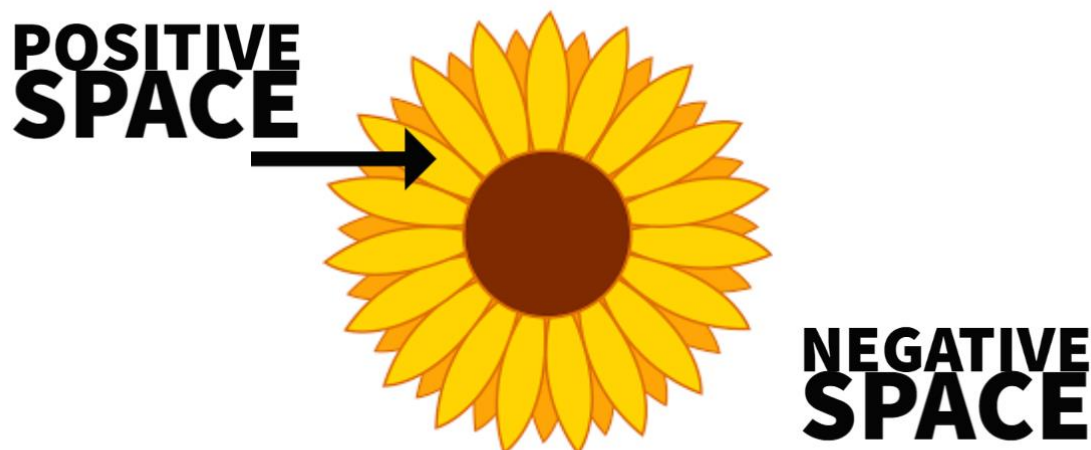


# Colour theory

Introduction-

Colour theory in design is the collection of rules and guidelines which
designers use to communicate with users through appealing colour
schemes in visual interfaces. To pick the best colors every time, designers
use a colour wheel and refer to extensive collected knowledge about
human optical ability, psychology, culture and more.

Colour theory dictates how colours can be combined for optimal use. There
are three basic categories of colour theory that are logical and useful : The
colour wheel, colour schemes, and the colour psychology.

**Colour wheel:**

In 1876, Louis Prang stated an advanced colour wheel theory and developed a colour wheel which is commonly known as the Artist's or Prang colour wheel.

The colour wheel consists of 12 colours in total which are classified into three categories- primary, secondary and tertiary colours.
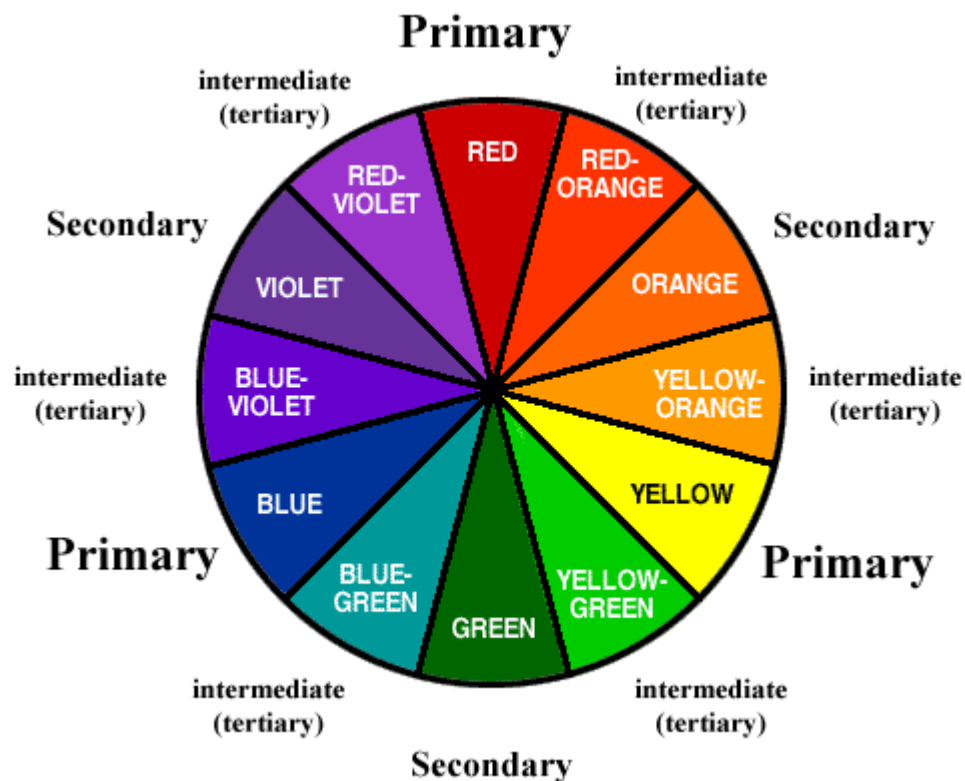


**Primary colours-** these colours cannot be formed by mixing any of the colours and are naturally available in the environment. The three primary colours are – Red, Yellow and Blue.
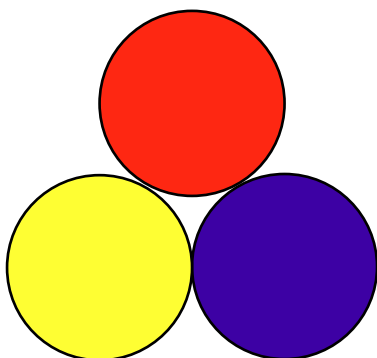
**Secondary colours-** these colours are formed by mixing two primary colours in equal proportion. The three secondary colours are- Orange, Green and Violet.
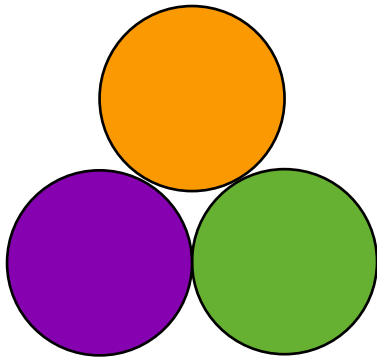
**Tertiary colours-** these colours are formed by mixing one primary colour and one secondary colour in equal proportion. The six tertiary colours are- Red-orange, Yellow-orange, Yellow-green, Blue-green, Blue-violet and Red-violet.
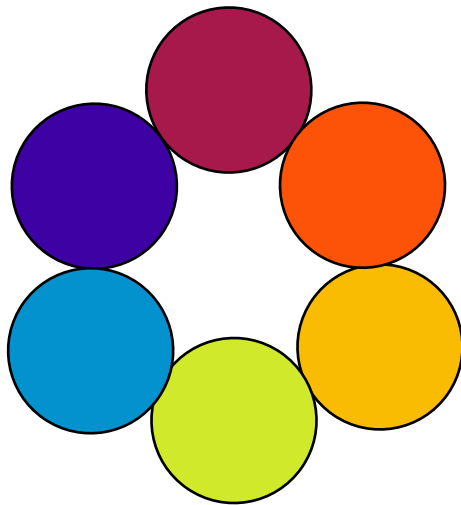
Generally, black and white are not considered as colours. They are considered as the absence and presence of light. Black is the complete absence of light while white is the complete presence of light.

**BLACK** is the complete absence of colors. **WHITE** is the presence of all colors simultaneously.
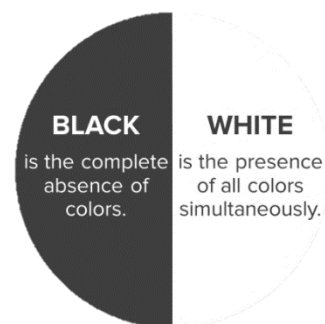
**Formation of colours on colour wheel-**

**Secondary colours:**

Red + Yellow=Orange

Yellow + Blue=Green

Blue + Red=Violet


**Tertiary colours:**

Red + Orange=Red-orange

Yellow + Orange=Yellow-orange

Yellow + Green=Yellow-green

Blue  +Green=Blue-green

Blue + Violet=Blue-violet

Red + Violet=Red-violet


# Colour schemes

Working with colour wheel as a guide there are several types of colour harmonies or schemes that can be created as follows:

1) **Complementary colour scheme-** these are any two colours which are situated directly opposite to each other on a colour wheel. This colour scheme creates maximum contrast and maximum interest. For eg- Red and Green, Blue and Orange, Yellow and violet.
2) **Split-complementary colour scheme-** This colour scheme is created by choosing any primary or secondary colour on the colour wheel and then finding out the split of its complement colour. For eg- the split complement colour of green would be Red-violet and Red-orange.
3) **Analogous colour scheme-** This colour scheme includes the colours that are situated adjacent to each other on a colour wheel in a clock-wise direction. For eg- Red, Red-orange and Orange.

4) **Achromatic colours scheme-** An achromatic colour scheme is simply colourless scheme possessing no hue, using only black, white and grey. These are all shades of black, white and grey.
5) **Triadic colour scheme-** any three colours with a balanced triangular relationship on a colour wheel collectively make a triadic colour scheme. For eg- Red, Yellow and Blue.
6) **Warm/cool colour scheme-** The range of colours which gives a feeling of warmth are known as warm colours. For eg- red to yellow-green.
The range of colours which given a cool and calm feeling are known as cool colours. For eg- green to red-violet.
7) **Monochromatic colour scheme-** This colour scheme is designed with a single colour called hue and its tints, shades and tones. This colour scheme appears very soothing, subtle and pleasing to the viewer. For eg- Red is the hue then pink would be its tint and maroon will be its shade.

Hue: hue is defined as the purest form of the colour. For eg- green, blue, red, yellow etc

Tints: tints are formed by mixing white with hue in some proportion. For eg- red+white = pink

Shades: shades are formed by mixing black with hue in some proportion. For eg- red+black = maroon

Tones: tones are formed by mixing grey with hue in some proportion. For eg- red+grey = De-saturated red
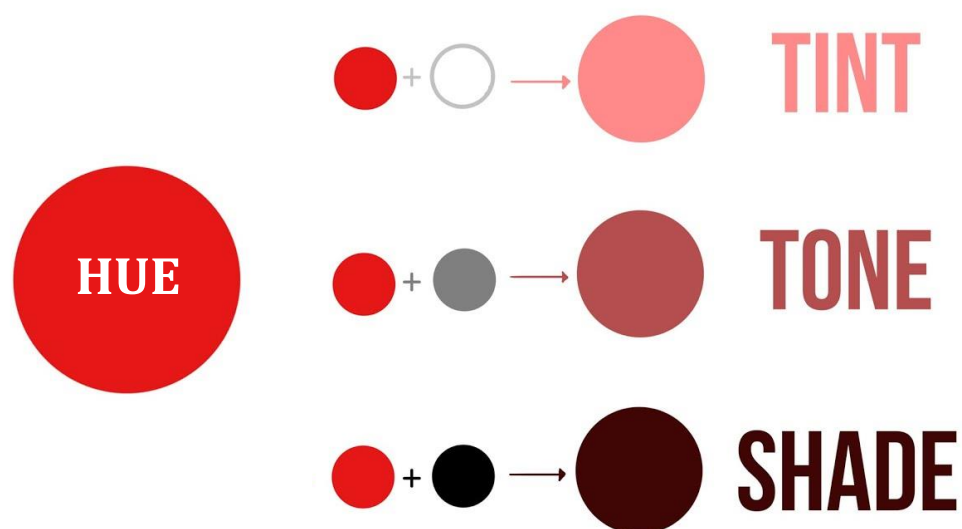
# Colour Psychology

Colours have qualities that can evoke certain emotions in humans. Colour psychology is the study of how certain colours impact human behaviour. Different colours have different meanings and evoke different kinds of emotions, let's learn them one by one:

**White:**

The color white is color at its most complete and pure, the color of perfection. The psychological meaning of white is purity, innocence, wholeness and completion.

White contains an equal balance of all the colors of the spectrum, representing both the positive and negative aspects of all colors. Its basic feature is equality, implying fairness and impartiality, neutrality and independence. White encourages clarity of thought/clear thinking.

**Green:**

Green is the color of balance, harmony and growth. Green is a color that can evoke powerful emotions. It is a dominant color in nature that makes you think of growth.  Green is universally associated with nature, linked as it is to grass, plants and trees. It also represents renewal, being the color of spring and rebirth. Green makes you feel optimistic and refreshed. Green symbolizes health, new beginnings and wealth. Green is the easiest on the eyes and should be used to relax and create balance in a design.

**Red:**

Red attracts the most attention and is associated with strong emotions, such as love, passion, and anger. It's the universal color to signify strength, power, courage, and danger. Red is vibrant, stimulating and exciting and motivates one to act. Red has a range of symbolic meanings through many different cultures, including life, health, vigor, war, courage, anger, love and religious fervor. It's warm and positive, generally associated with our most physical needs and our will to survive. It exudes a strong and powerful masculine energy. It enhances metabolism, increases respiration rate, and raises blood pressure.

**Orange:**

This is the hue of encouragement, optimism, and self-confidence, marking the extrovert. Orange radiates warmth and happiness, combining the physical energy and stimulation of red with the cheerfulness of yellow. Orange can inspire courage, enthusiasm, rejuvenation, and vitality. It can also have a stimulating effect, particularly on the appetite.

Orange calls to mind feelings of excitement, enthusiasm, and warmth. Orange makes you feel energized and enthusiastic. Orange enhances a feeling of vitality and happiness. Like red, it draws attention and shows movement but is not as overpowering. It is aggressive but balanced — it portrays energy yet can be inviting and friendly.

**Violet:**

Purple combines the calm stability of blue and the fierce energy of red. The color purple is often associated with royalty, nobility, luxury, power, and ambition. Purple also represents meanings of wealth, extravagance, creativity, wisdom, dignity, grandeur, devotion, peace, pride, mystery, independence, and magic. This color is a mixture of red and blue, so it relates to performance shine and dignity, but has a calming influence. The psychological effects of the violet are creativity, thinking, artistic inspiration, intuitiveness, protectionism, mystery, spirituality.

**Blue:**

Blue calls to mind feelings of calmness or serenity. It is often described as peaceful, tranquil, secure, and orderly. Blue is often seen as a sign of stability and reliability. The color blue represents both the sky and the sea and is associated with open spaces, freedom, intuition, imagination, inspiration, and sensitivity. Blue also represents meanings of depth, trust, loyalty, sincerity, wisdom, confidence, stability, faith, and intelligence. Colors on the blue side of the spectrum are known as cool colors and include blue, purple, and green. These colors are often described as calm, but can also call to mind feelings of sadness or indifference.

### Yellow:

The radiant color of yellow promotes happiness and optimism in the observer. Yellow is said to promote happiness more than any of the other major colors. Yellow is a color associated with sun. It symbolizes optimism, energy, joy, happiness and friendship. Yellow is a strange colour: it is often associated with happiness, but also activates the anxiety centre of the brain. Like red and orange, it's able to stimulate and revitalise – it's the colour of warning signs and taxis.

### Black:

In color psychology, black's color meaning is symbolic of mystery, power, elegance, and sophistication. In contrast, the color meaning can also evoke emotions such as sadness and anger. Black has a wide range of associations. It can be linked with death, mourning, evil magic, and darkness, but it can also symbolize elegance, wealth, restraint, and power.

# Principles of design

The principles of design describe the ways and rules to use the elements of design for creating attractive and appealing design compositions. There are twelve basic principles of design: contrast, balance, emphasis, proportion, hierarchy, repetition, rhythm, pattern, white space, movement, variety, and unity.

**Balance-**

Balance relates to the visual weight of elements in a composition. It is defined as harmonious relationship between the positive and negative spaces of a design. Balance is categorized in two forms: symmetrical and asymmetrical.

Balance, one of the key principles of design, refers to the way visual elements are arranged so that their visual weight harmonizes with the other elements in the design, and the composition gives an appearance of properly distributed elements.

**Symmetrical balance-** This balance occurs when the visual weight of a composition is evenly distributed on both sides of vertical axis or horizontal axis or diagonal axis in a design. This implies the formation of identical mirror images on both sides of the axis.

**Asymmetrical balance-** In this case the axis of symmetry is not present in the design but the weight of a composition appears to be evenly distributed. It involves the arrangement of elements having different sizes and nature in a fashion that they balance one another with their respective 'visual weights'. For an example several smaller forms in a design counterbalance a dominant form.

Balance

Balance: Symmetrical          Balance Asymmetrical
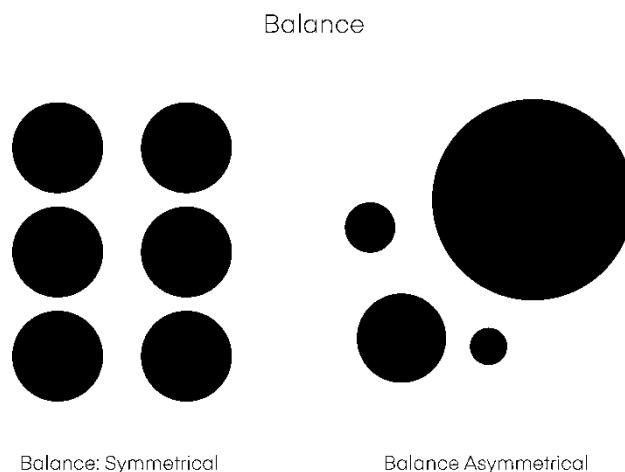
**Contrast-**

The difference between two or more objects in a **design** is referred to as **contrast**. Contrast is defined as juxtaposition of opposing elements in a design. Presence of contrast brings more clarity in communication of intended design concept. The principle of contrast is associated with comparison of elements within a design. Contrast can be achieved by following means:

**Size Contrast:** The elements of same shape are used in differing sizes.

**Shape Contrast:** The elements of approximately same size are used in differing shapes.

**Texture Contrast:** The elements of same shape and same size are used with different textures.

**Position Contrast:** The elements of same shape are used in different positions or angles.

**Colour Contrast:** The elements of same shape are used in different colours. An example of

colour contrast is placed at Figure 3.4.13 in which same forms are present in two different

colours.

**Value contrast:** The elements of same shape are used in different values of same colour.



Contrast in shape

Contrast in color
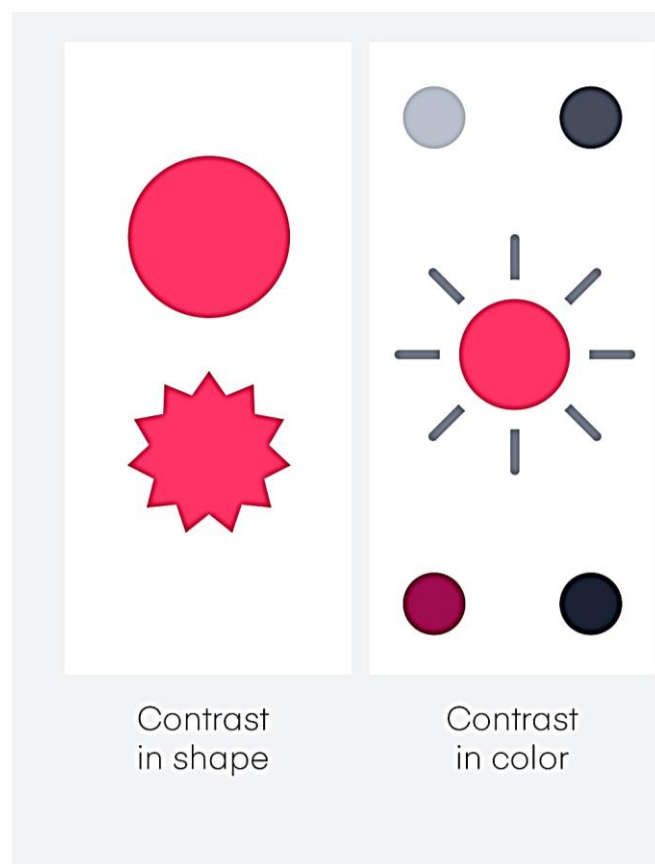
**Emphasis-**

Visual weight of the design is unevenly distributed in a manner that a particular portion of the design grabs more attention than the rest and helps to create a focal point in a design.

This principle is the tool that highlights and underlines that which is to be communicated. It is used to attract attention of the observer in one area of a presented design.
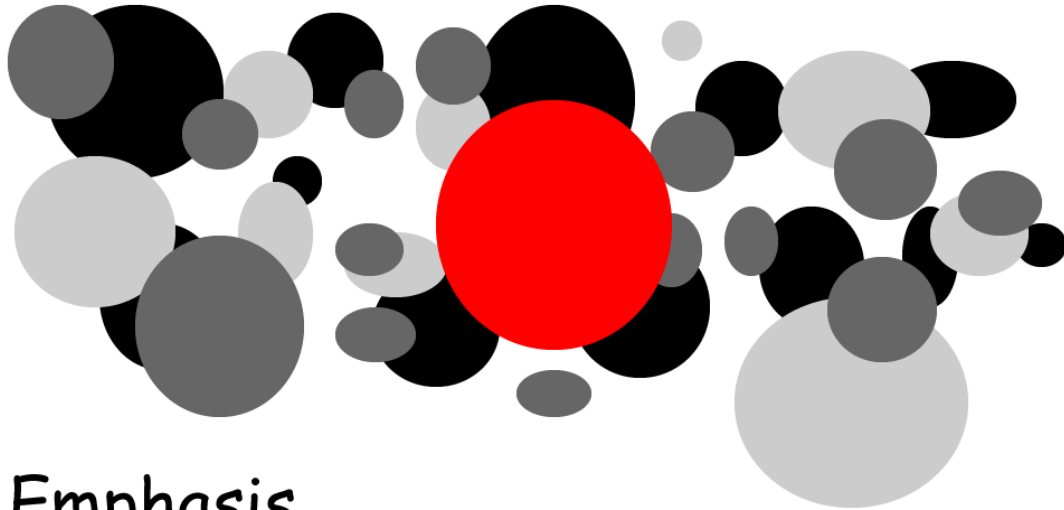


## Emphasis

Special stress given to an element to make it stand out.

**Rhythm-**

Rhythm is the recurrence or alternation of design elements, often with defined intervals between them. It creates a sense of movement to the observer. Rhythm is usually achieved through repetition of lines, shapes, colors, and more. There are three types of rhythm such as regular rhythm, flowing rhythm and progressive rhythm.

**Proportion-**

Proportion refers to the relative size and scale of various elements in a design. In a composition, proportion refers to the relationship between objects with reference to their size and visual weight. For example, if you're painting a portrait of a dog and a person, the dog should be at the correct scale in relation to the person. The person's body (and the dog's as well) should be in a proportion to what we can recognize as a human being.
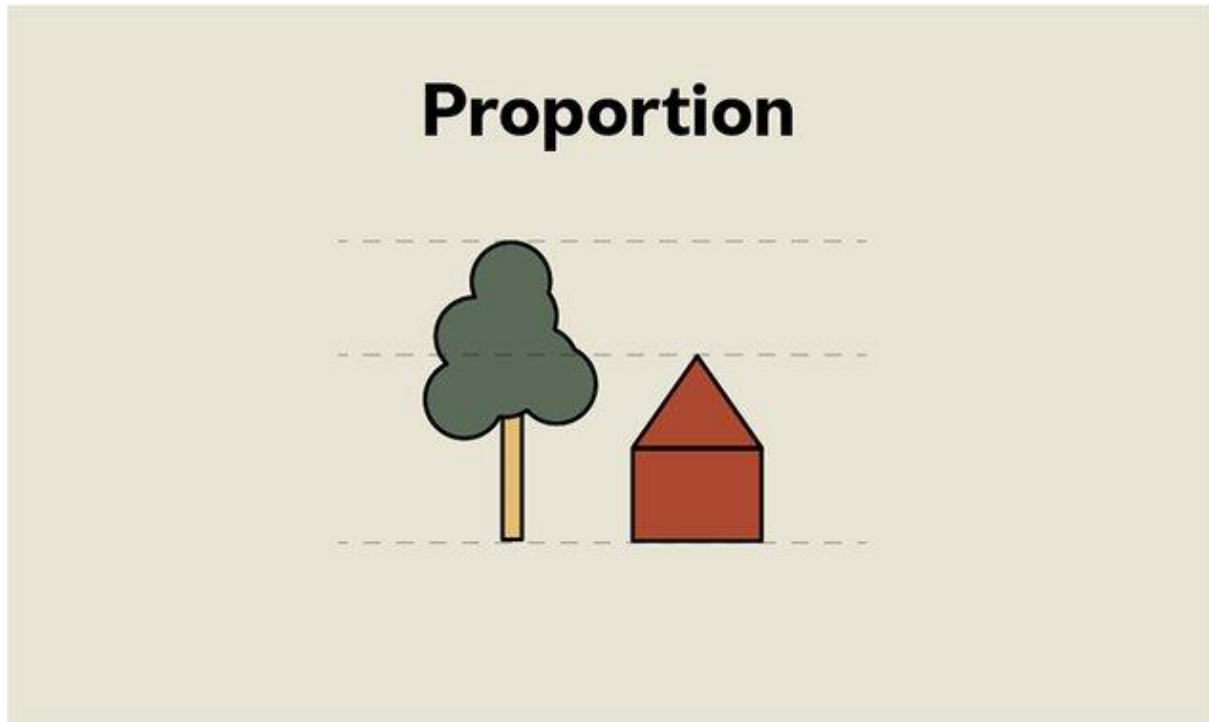


**Pattern-**

**Patterns** are simply a repetition of more than one **design** element working in concert with each other. Pattern is the repetition of specific visual elements such as a single unit or multitude of forms. Patterns can be used to create balance, organize surfaces in a consistent manner, or create contrast. While repetition focuses on a single element being repeated, pattern refers to multiple elements repeated throughout a design (e.g. wallpapers and backgrounds). Patterns can be radial, vertical, horizontal, zig-zag, diagonal, spiral, crisscross and circular.

**Hierarchy-**

It refers to the importance of elements within a design. The most important element should appear to be the most important in a composition.

Hierarchy is a visual design principle which designers use to show the importance of each page/screen's contents by manipulating these characteristics:

Size – Users notice larger elements more easily.
Color – Bright colors typically attract more attention from a distance than the muted ones.
Contrast – Dramatically contrasted colors are more eye-catching.
Alignment – Out-of-alignment elements stand out over aligned ones.



no hierarchy          hierarchy
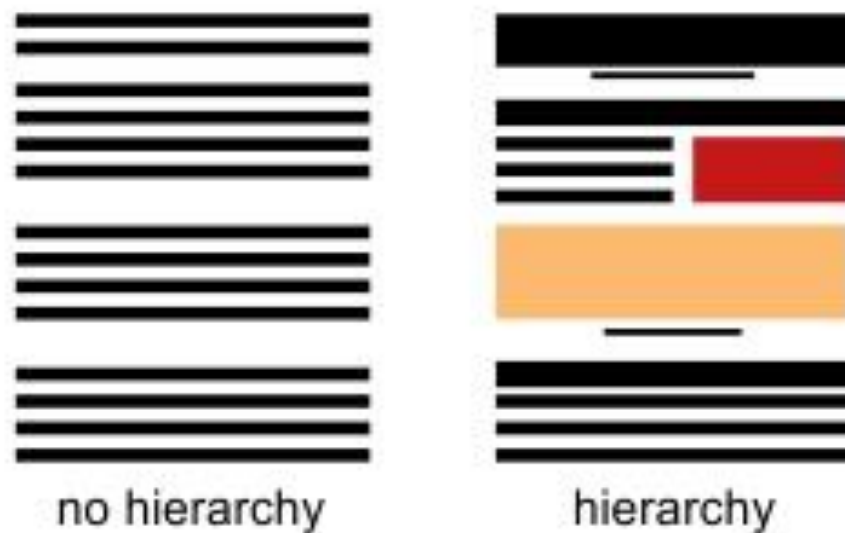
**Repitition-**

It refers to the reinforcement of an idea or perception. It can be done via things like using the same colours, images or similar choices.

Repetition focuses on the same object being repeated; patterns are made up from different components which are then repeated in the same way

Repetition is the simplest element you can use. Pattern is a combination of elements that are repeated.
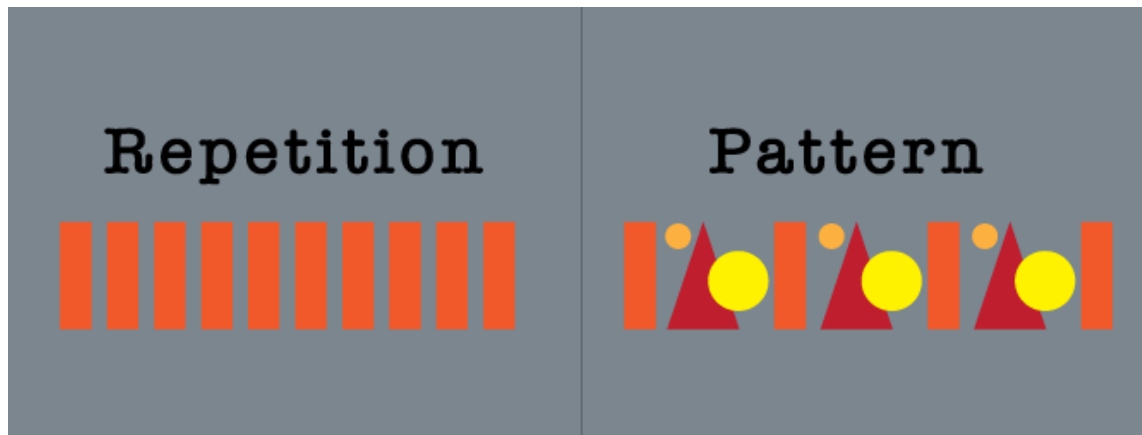
**White space-**

It refers to the areas of a design that have no design elements but creates a visual effect of illusion. This space is important for making various elements stand out in a design composition. For eg- in the image below the illusion of triangle is created through space.
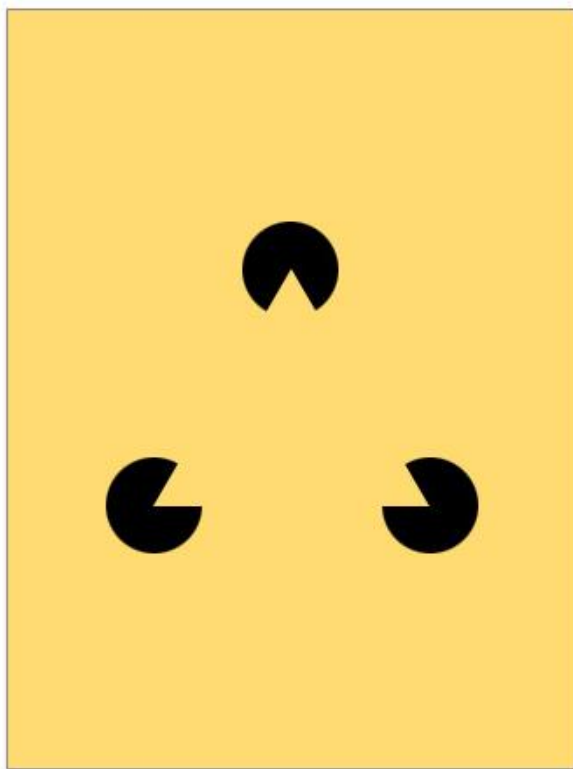


**Movement-**

It is the way a person's eyes travel over a design. The most important element should lead to the next important element and so on. This could be done via positioning.

MOVEMENT is the path the viewer's eye takes through a work of art. Movement can be directed along lines, edges, shapes and colour.

RHYTHM is created when one or more elements are used repeatedly to create a feeling of movement. Rhythm creates a mood like music or dancing.
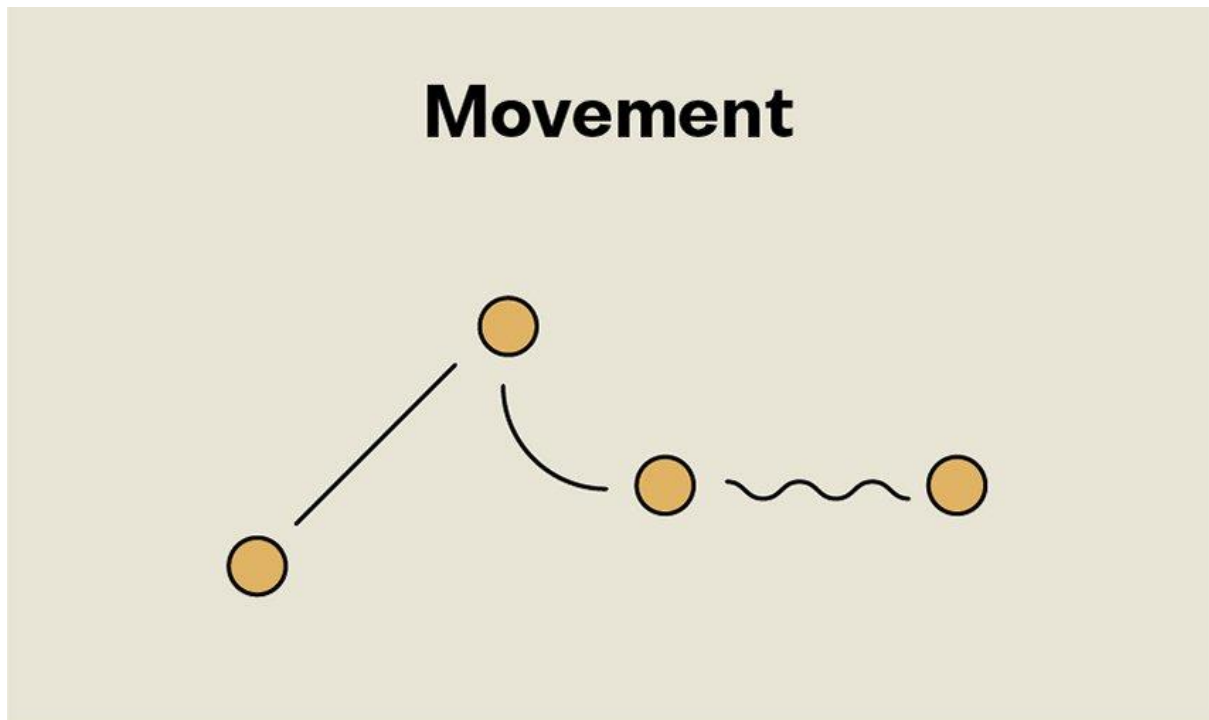


**Variety-**

It can be created via colours, images, textures and virtually any other design element. It prevents designs from becoming monotonous and boring.
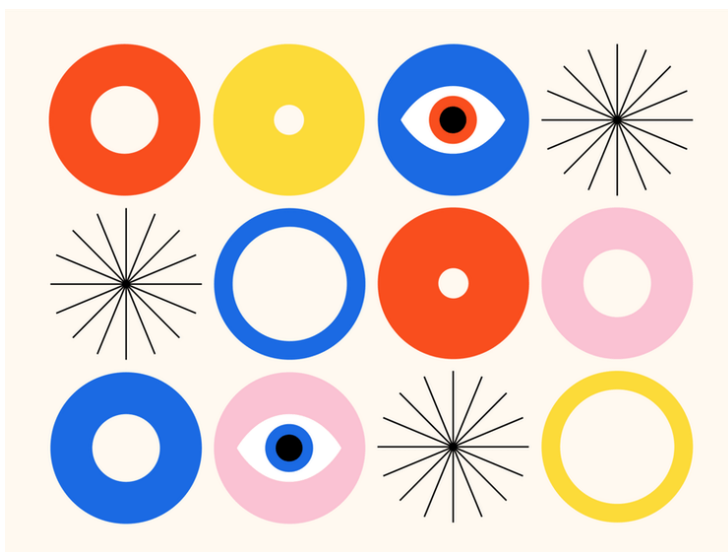
**Unity -**

It is how well the elements of a design work together. Each element should have a clear visual relationship with each other element to help communicate a clear, concise message.