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NATA 2020
DRAWING GUIDE

PREPARED BY
**EXPERTS IN
ARCHITECTURE
EDUCATION**

ANNA UNIVERSITY
**COUNSELLING
CODE**
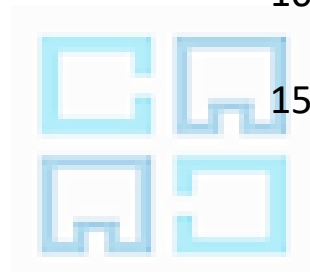**1152**

PART 1/3

B.Arch.,

A STANDALONE ARCHITECTURE COLLEGE IN CHENNAI OF INTERNATIONAL STANDARDS | www.caad.ac.in

INDEX

DRAWING TEST

Understanding of scale and proportion of objects geometric composition shape, building forms and elements, aesthetics, colour texture, harmony and contrast. Conceptualization and Visualization through structuring objects in memory. Drawing of patterns - both geometrical and abstract. Form transformations in 2D and 3D like union, subtraction, rotation, surfaces and volumes. Generating plan, elevation, 3D views of objects. Creating 2D and 3D compositions using given shape and forms. Perspective drawing Sketching of urban scape and landscape, Common day-to-day life objects like furniture, equipment etc., from memory.
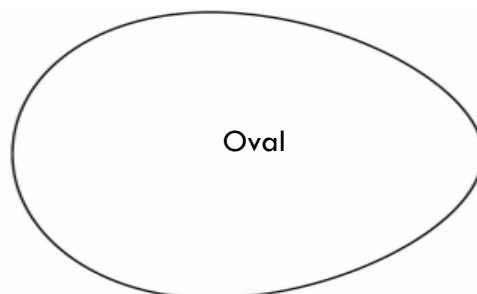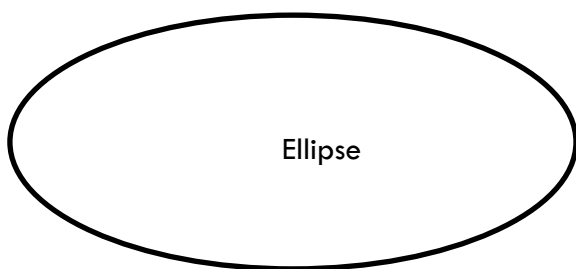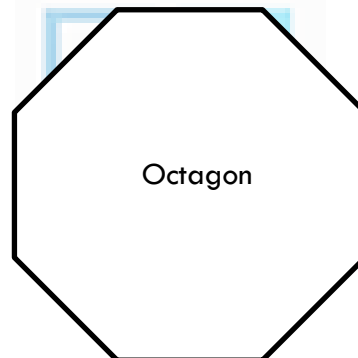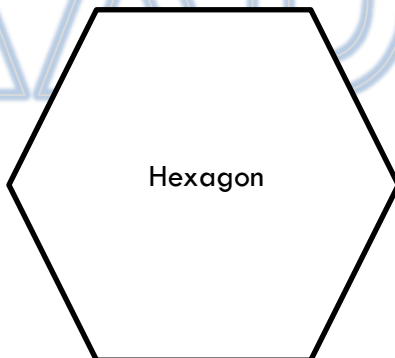
Information Brochure | NATA – 2020

APPENDIX I -   Syllabus for NATA-2020

Subject		Questions	Marks	Mode of Exam
Drawing test		03	125	Paper and Pencil
Test on Scientific ability and General Aptitude	PCM	15	22.5	MCQ (Online)
	General Aptitude & Logical Reasoning	35	52.5	MCQ (Online)

DRAWING TEST

Understanding of scale and proportion of objects, geometric composition, shape, building forms and elements, aesthetics, colour texture, harmony and contrast. Conceptualization and Visualization through structuring objects in memory. Drawing of patterns - both geometrical and abstract. Form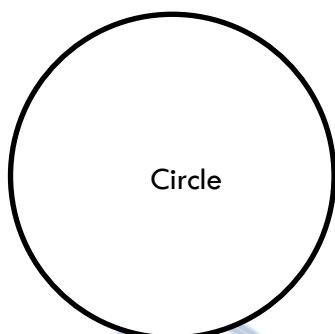 transformations in 2D and 3D like union, subtraction, rotation, surfaces and volumes. Generating plan, elevation and 3D views of objects. Creating 2D and 3D compositions using given shape and forms. Perspective drawing, Sketching of urban scape and landscape, Common day-to-day life objects like furniture, equipment etc., from memory.

1.0 Introduction to basic shapes

Square

Rectangle

Triangle

Circle

Parallelogram

Rhombus

Pentagon

Hexagon

Octagon

Ellipse

Oval
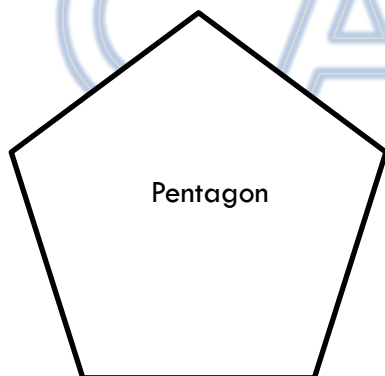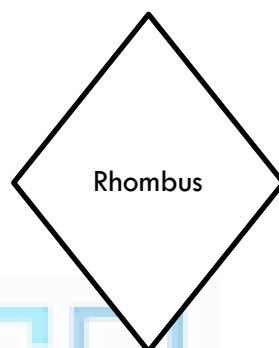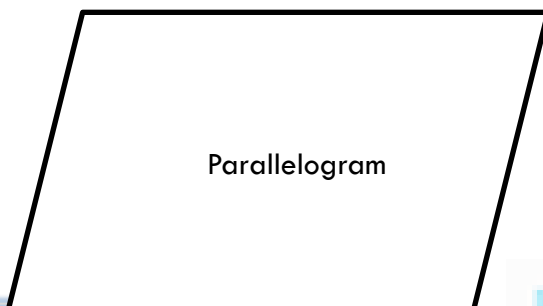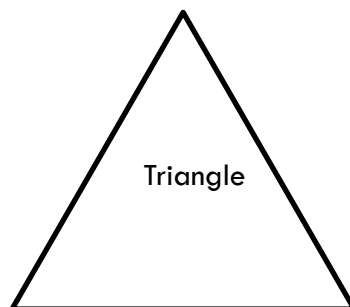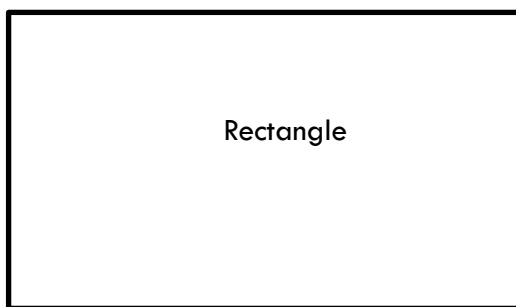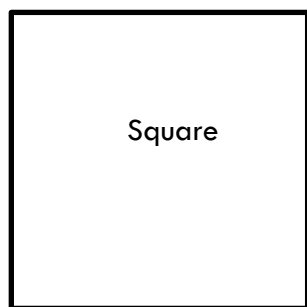
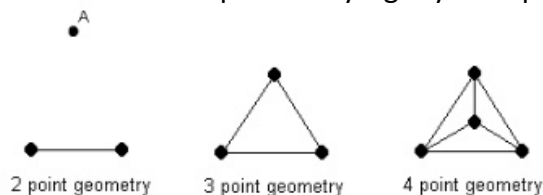# 2.0 Introduction to elements of architecture

Point

A point or mark is the smallest and most basic element. The single point represents a visual stop. Two points represent a direction. Three points makes the eyes move in a closed path. They signify a shape.


2 point geometry   3 point geometry   4 point geometry

Line

A line is a form with width and length, but no depth. A line is a series of marks, or points. The closeness of these points causes them to "lose their individual identity and form a new identity". The direction, weight, and character of line convey many different states and emotions.
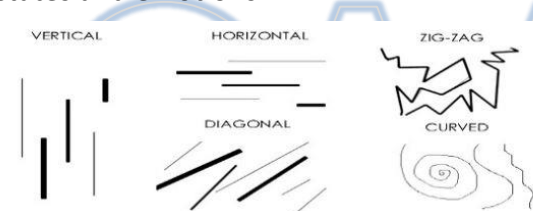
Shape

Shape is an area that is contained within implied line. Shapes have two dimensions, length and width, and can be geometric or free-form. - A shape is formed when a encloses an area. Shapes, geometric or organic, add interest to the design.
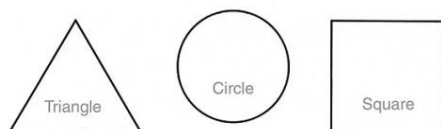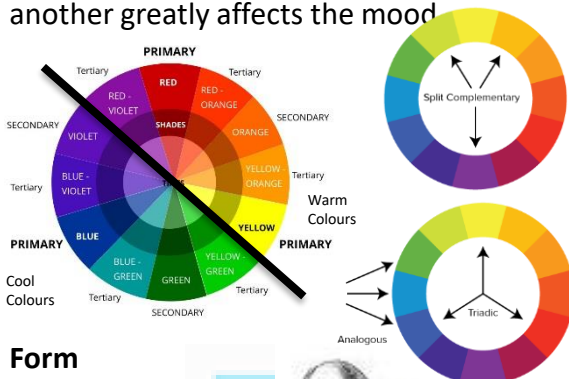

Space

Space is three-dimensional volume that can be empty or filled with objects. It has width, height, and depth. Two-dimensional design is concerned with the flat space that the design takes place on and the illusion of three-dimensional space.

Colour

Colour adds the magic element to a design. They represent a common language of communication. Each colour has a mood, an emotion and different levels of significance. Colours can reflect warm or cool, hard or soft, light or dark, passive or active, all of which when used individually or in combination of one another greatly affects the mood.

Form

Form is any three dimensional object. They can be measured in terms of height, width, breadth. Form describes volume and mass, or the three dimensional aspects of objects that take up space.
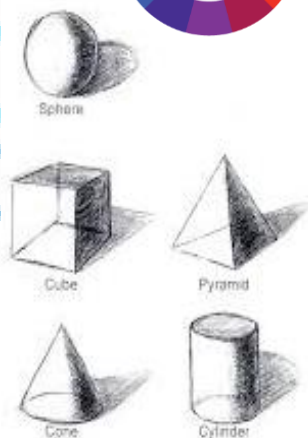
Texture

Texture refers to the surface quality, both simulated and actual, of design. Textures can create a more three-dimensional appearance on this two-dimensional surface.
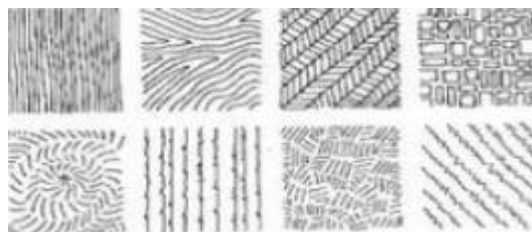
Reference: Architecture Form, Space and Order - FRANCIS D.K CHING

3.0 Introduction to principles of architecture

Axis

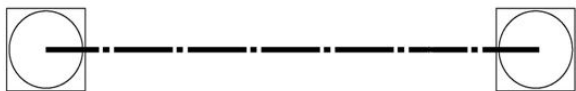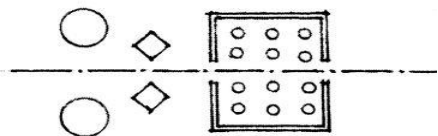A Line established by two point in space about which form and spaces can be arranged in symmetrical and balanced manner
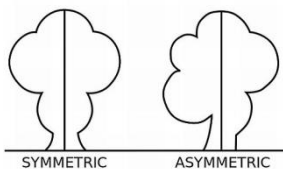
Symmetry

The balanced distribution and arrangement of equivalent forms and spaces on opposite sides of dividing plane or about a centre axis
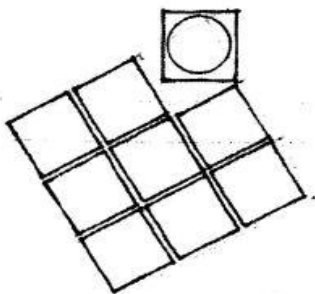
Asymmetry

Asymmetrical or Informal Balance Parts of the design are not identical but are equal in visual weight on opposite sides of dividing plane or about a centre axis

SYMMETRIC   ASYMMETRIC

Hierarchy

The articulation of importance and significance of form or space by its size shape and placement relative to other forms and spaces of organization

Rhythm

Unifying movement characterized by patterned repetition or alteration of formal elements or motifs in same or modified forms

Datum

A line plane or volume that , by its continuity and regularity , serves together , measure and organize a pattern of form and spaces
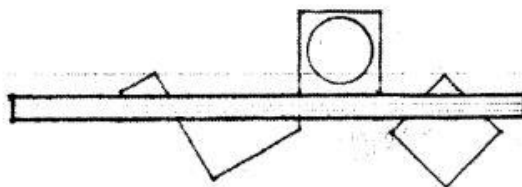
Transformation

The principle that an architectural concept or organization can be retained, strengthened and built upon through a series of discrete manipulation and transformations.
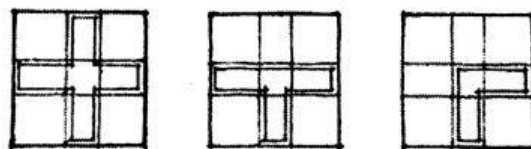
Repetition

Repetition refers to one object or shape repeated; pattern is a combination of elements or shapes repeated in a recurring and regular arrangement; rhythm--is a combination of elements repeated, but with variations
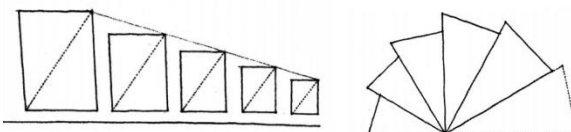
Reference: Architecture Form, Space and Order - FRANCIS D.K CHING

Methods To Create Composition / Logos / Patterns

Rule of Thirds

Golden Section

Golden Triangles
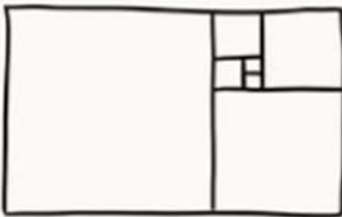
Spiral Section
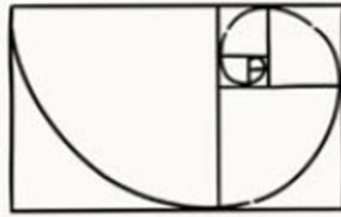
Golden Spiral
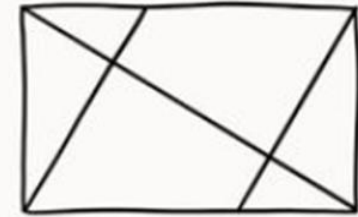
Harmonious Triangles

Cross

Focal Mass
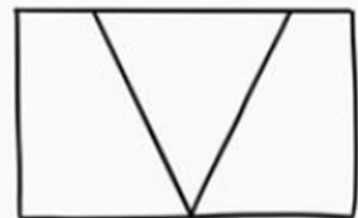
V-Arrangement
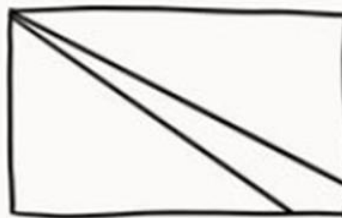
Diagonal
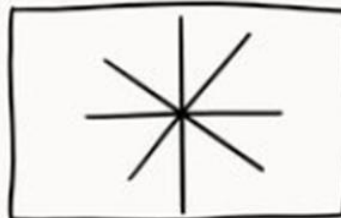
Radial

L-Arrangement

Compound Curve
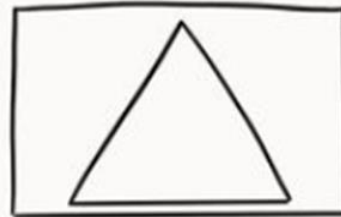
Pyramid
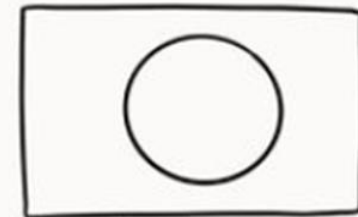
Circular

4.0 Introduction to Colour Theory

A colour circle, based on red, yellow and blue, is traditional in the field of art. Sir Isaac Newton developed the first circular diagram of colours in 1666. Since then scientists and artists have studied and designed numerous variations of this concept. Colour **theory** is a body of practical guidance to **colour** mixing and the visual effects of a specific **colour** combination. There are also definitions (or categories) of **colours** based on the **colour wheel**: primary **colour**, secondary **colour**, and tertiary **colour**.

Colour Wheel

Neutral Colours – Gray, Brown. These aren't on most colour wheels, but they're considered neutral because they don't contrast with much of anything.

Tints, Shades and Tones
Tint – adding white to pure colour

Shade – adding black to pure colour

Tone – adding gray to pure colour
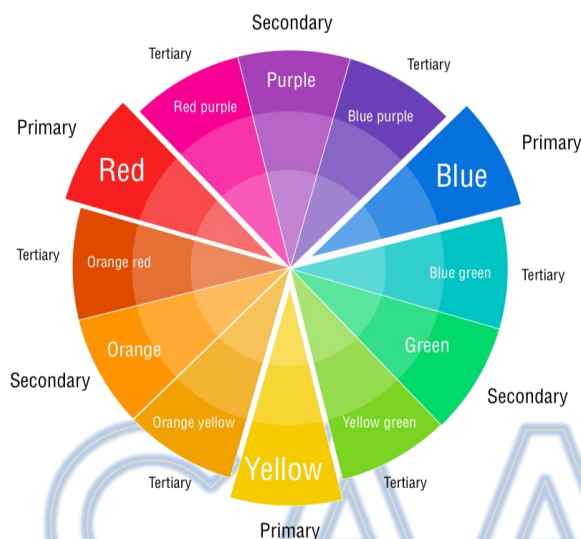
Primary colours - are the 3 pigment colours that can not be mixed or formed by any combination of other colours. All other colours are derived from these 3 hues.

Secondary Colours – These are the colours formed by mixing the primary colours.

Tertiary Colours – These are the colours formed by mixing a primary and a secondary colour. That's why the hue is a two word name, such as blue-green, red-violet, and yellow-orange.

Warm & Cool Colours
Warm colours , such as red, yellow, and orange; evoke warmth because they remind us of things like the sun or fire.
Cool colours ,such as blue, green, and purple (violet); evoke a cool feeling because they remind us of things like water or grass.

Colour Scheme/Harmony
Complimentary colours
Red and Green, Blue and Orange, Purple and Yellow - located directly across from each other on the colour wheel.

Analogous
Red and Orange, Blue and Green, etc. – located right next to each other on the colour wheel.
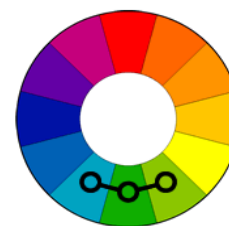
Triad
Uses colours that are evenly spaced around the colour wheel.
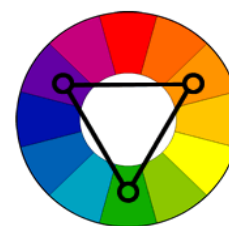
4.1Make an interesting compositions using 3 basic shapes and colour the same using primary colours.

4.2 Using the shapes from the given object make an interesting composition and colour using Secondary colours.

4.3 Composition using different shapes repeating minimum twice of varying proportions and colour the same using any colour scheme.

4.4Imagine you are given a circular paper and that you can cut this circle by using cutter with only four strokes. With every stroke one piece is to be kept aside and the remaining paper is to be used for next stroke. Not whatever shapes have been cut, compose them in interesting arrangement and colour the same using any colour scheme.

4.5 Create a pattern for a bedspread in kids bed room using 3 basic shapes following an interesting colour scheme

4.6 Create pattern using given shapes of varying sizes and can be overlapped. Colour using secondary colours.

4.7 Use the given shapes, make an interesting composition following complementary colour scheme any four colours. Shapes can be repeated multiple times and free to use proportions.(Ellipse, Square, Circle, triangle)

4.8 Create pattern using shapes of varying sizes from given shapes. Shapes can be overlapped. Use secondary colours.

4.9 Using rectangle and square make a composition following complimentary colours scheme with any four colours.

4.10 Make an interesting composition using four drawing instruments and colour the same using primary colours.

4.11 Draw a large square and divide the same using 6 straight lines at any angle and one curved line colour the composition using secondary colours.

4.12 Using some drawing material make interesting arrangements use it as a motif or block in a repeated manner to print on a gift wrapping paper to a give a theme for stationary item. Repeat the motifs min 4 times. Colour using a colour scheme.

4.13 Use any type of triangle with varying sizes and proportions repeating any number of times to make a composition using any two warm colours.

4.14 Using the given shapes repeating many times. Totally 20 number of shapes. Use any four complementary colours.

4.15 Cut rectangular paper in four different pieces of your choice. Use the cut piece and compose a 2D interesting arrangement. Use secondary colours

4.16 Design a cover page for Std 9 geometry text book. Length to width proportion 3:2 using Square, triangle and circle. using any four complimentary colours.(Geometry forms can overlap)

4.17 In a given rectangle draw a overlapping outlines of hand gloves of various sizes and colour the same using any colour scheme.

4.18 Use two to three repetitive rangoli patterns and colour using primary colour scheme.

4.19 Compose any four items in a valet and make an interesting composition with any two complimentary colours.

4.20 Using geometric shapes in a truck repeating at least twice make a composition using primary colours.

4.21 Compose hexagon, circle of any size. Both shapes can be used in equal numbers and can overlap. Colour using secondary colours.

4.22 Make an interesting composition of 2D planes of basic forms and colour using secondary colours.

4.23 Using basic shape of icons found in smart phone of different proportions repeating any number of times. colour the same using primary colours.

4.24 Using Basic shapes of sugar cane juice machine draw an interesting 2D composition and colour the same. The shapes can be in multiple numbers of varying sizes.

4.25 Design a book cover of size 3:2 ratio that suits the emotional content of a story using 4 geometric shapes. Colour the same using secondary colours.

4.26 Cut a circular paper use only four strokes with every stroke one piece is to be kept aside and remaining paper is to be used for new strokes. What ever shapes have been cut compose them and colour using any colour scheme.

4.27 Using 5 sizes of circles 4 sizes of squares make an interesting 2D composition & colour by complimentary colours.

4.28 Make an interesting 2D composition using 6-12 right angled triangles of varied sizes. Use warm colours to colour it.

4.29 Using the given shapes repeating many times. Totally 10 number of shapes. Use any four complementary colours. Shapes can be overlapped.

4.30 Use 12-15 bands of any ,thickness, length and shape(straight, curved, swirling) to draw an interesting 2D composition using any colour scheme.

4.31 Create an interesting 2D composition using circle, oval, ellipse, and segment of a circle using complimentary colours. The shapes can be in multiple numbers of varying sizes.

4.32 Design a bed sheet for newlywed couples room which will be embroider to suit the theme. Using Suitable colour scheme.

4.33 Design a coverage for children A4 size art book. Use 3 geometric shapes and colours appealing to primary school age. The shapes can be in multiple numbers of varying sizes.

4.34 Compose hexagon, circle of any size. Both shapes can be used in equal numbers &can overlap. Colour secondary colours.

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A STANDALONE ARCHITECTURE COLLEGE IN CHENNAI OF INTERNATIONAL STANDARDS

5.0 Introduction to Gestalt principles

1.Law of Proximity

The law of proximity states that when an individual perceives an assortment of objects, they perceive objects that are close to each other as forming a group.

Example: Given figure 5.1 illustrates the Law of proximity, there are 72 circles, but we perceive the collection of circles in groups. Specifically, we perceive that there is a group of 36 circles on the left side of the image, and three groups of 12 circles on the right side of the image. This law is often used in advertising logos to emphasize which aspects of events are associated
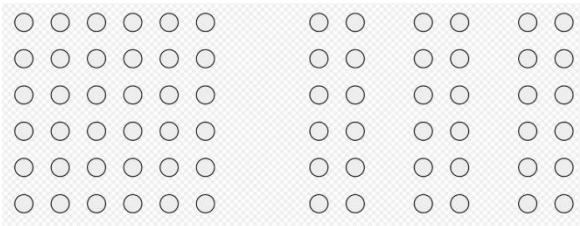

Fig 5.1

2.Law of Similarity

The law of similarity states that elements within an assortment of objects are perceptually grouped together if they are similar to each other. This similarity can occur in the form of shape, colour, shading or other qualities.

Example: Given figure 5.2 illustrating the law of similarity portrays 36 circles all equal distance apart from one another forming a square. In this depiction, 18 of the circles are shaded dark, and 18 of the circles are shaded light. We perceive the dark circles as grouped together and the light circles as grouped together, forming six horizontal lines within the square of circles. This perception of lines is due to the law of similarity
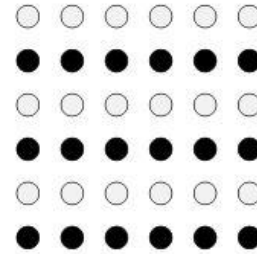

Fig 5.2

3.Law of Closure

The law of closure states that individuals perceive objects such as shapes, letters, pictures, etc., as being whole when they are not complete. Specifically, when parts of a whole picture are missing, our perception fills in the visual gap. Research shows that the reason the mind completes a regular figure that is not perceived through sensation is to increase the regularity of surrounding stimuli.

Example: Given figure 5.3 that depicts the law of closure portrays what we perceive as a circle on the left side of the image and a rectangle on the right side of the image. However, gaps are present in the shapes. If the law of closure did not exist, the image would depict an assortment of different lines with different lengths, rotations, and curvatures—but with the law of closure, we perceptually combine the lines into whole shapes.
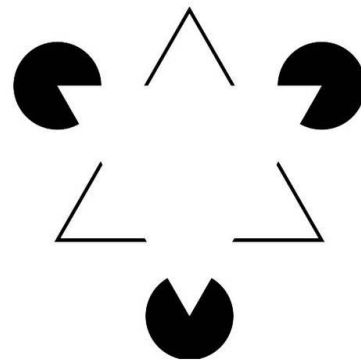

Fig 5.3

4.Law of Symmetry

The law of symmetry states that the mind perceives objects as being symmetrical and forming around a centre point. It is perceptually pleasing to divide objects into an even number of symmetrical parts. Therefore, when two symmetrical elements are unconnected the mind perceptually connects them to form a coherent shape. Similarities between symmetrical objects increase the likelihood that objects are grouped to form a combined symmetrical object.

Example: Given figure 5.4 depicting the law of symmetry shows a configuration of square and curled brackets. When the image is perceived, we tend to observe three pairs of symmetrical brackets rather than six individual brackets.

Fig 5.4

5.Law of Common Fate

The law of common fate states that objects are perceived as lines that move along the smoothest path. Experiments using the visual sensory modality found that movement of elements of an object produce paths that individuals perceive that the objects are on. We perceive elements of objects to have trends of motion, which indicate the path that the object is on. The law of continuity implies the grouping together of objects that have the same trend of motion and are therefore on the same path.

Example: if there are an array of dots and half the dots are moving upward while the other half are moving downward, we would perceive the upward moving dots and the downward moving dots as two distinct units.

Fig 5.5

6.Law of Continuity

The law of continuity states that elements of objects tend to be grouped together, and therefore integrated into perceptual wholes if they are aligned within an object. In cases where there is an intersection between objects, individuals tend to perceive the two objects as two single uninterrupted entities. Stimuli remain distinct even with overlap. We are less likely to group elements with sharp abrupt directional changes as being one object.
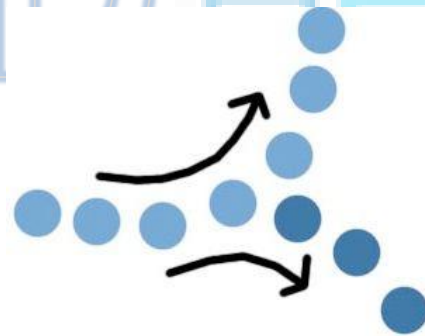

Fig 5.6

7.Law of Good Gestalt—The law of good gestalt explains that elements of objects tend to be perceptually grouped together if they form a pattern that is regular, simple, and orderly. This law implies that as individuals perceive the world, they eliminate complexity and unfamiliarity so they can observe a reality in its most simplistic form.

Reference: www.interaction-design.org

Eliminating extraneous stimuli helps the mind create meaning. This meaning created by perception implies a global regularity, which is often mentally prioritized over spatial relations.The law of good gestalt focuses on the idea of conciseness, which is what all of gestalt theory is based on. This law has also been called the **law of Prägnanz**. Prägnanz is a German word that directly translates to mean "pithiness" and implies the ideas of salience, conciseness and orderliness.
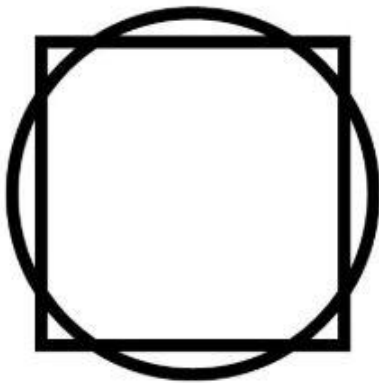
9.Figure-Ground relationship

"Elements are perceived as either figure (the element in focus) or ground (the background on which the figure rests).
"Figure/ground refers to the relationship between positive elements and negative space. The idea is that the eye will separate whole figures from their background in order to understand what's being seen. It's one of the first things people will do when looking at any composition.

Fig 5.8

Fig 5.7

8.Law of Past Experience

The law of past experience implies that under some circumstances visual stimuli are categorized according to past experience. If two objects tend to be observed within close proximity, or small temporal intervals, the objects are more likely to be perceived together.

Example: English language contains 26 letters that are grouped to form words using a set of rules. If an individual reads an English word they have never seen, they use the law of past experience to interpret the letters "L" and "I" as two letters beside each other, rather than using the law of closure to combine the letters and interpret the object as an uppercase U.

Reference: www.interaction-design.org

Gestalt Principles

UX CHEAT.com

Good Figure
Objects groupped together tend to be perceived as a single figure. Tendency to simplify.

Proximity
Objects tend to be grouped together if they are close to each other.

Similarity
Objects tend to be grouped together if they are similar.

Continuation
When there is an intersection between two or more objects, people tend to perceive each object as a single uninterrupted object.

Closure
Visual connection or continuity between sets of elements which do not actually touch each other in a composition.

Symmetry
The object tend to be perceived as symmetrical shapes that form around their center.

(A) Gestalt: The graphic symbol for Judaism is seen as a total configuration of a star, not as six separate triangles surrounding a hexagon. The whole is different from the sum of its parts.

(C) Proximity: The closeness of the small bars allows easy grouping into a clockwise movement.

(E) Symmetry: (A) Water sports area; (B) Shooting. The wavy lines are similar and therefore are grouped together.
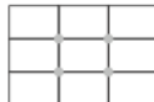
PRINCIPLES OF FORM AND DESIGN

GRID

MODULAR GRID

GOLDEN RATIO
1.61803399
GOLDEN RECTANGLE

RULE OF THIRDS
align focal point to one of the four circles

HIERARCHY
WEIGHT AND SCALE

sugar
milk
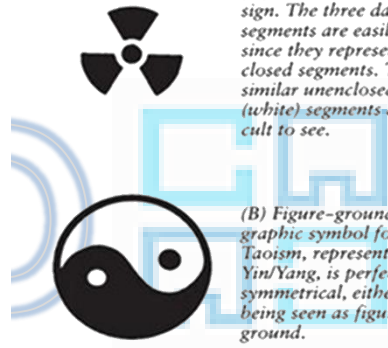**CHEESE**
water
butter
salt

HIERARCHY
WEIGHT AND SCALE

HIERARCHY
COLOR CONTRAST

HIERARCHY
SHAPE CONTRAST

(G) Closure: Radioactive sign. The three dark segments are easily seen since they represent closed segments. The similar unenclosed (white) segments are difficult to see.

(B) Figure–ground: The graphic symbol for Taoism, representing Yin/Yang, is perfectly symmetrical, either half being seen as figure or ground.

(D) Similarity: (1) Bright or hazy sun; sand; snow; (2) Cloudy bright, no shadows.
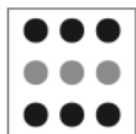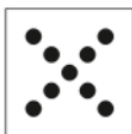
GESTALT PRINCIPLES OF GROUPING
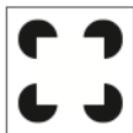
PROXIMITY

PROXIMITY

SIMILARITY

CONTINUITY

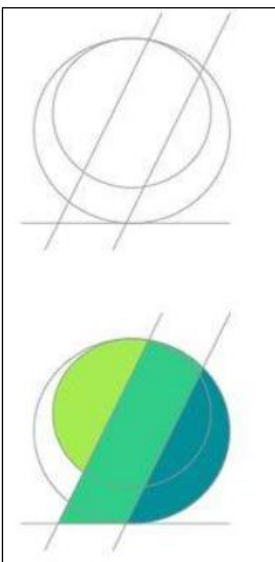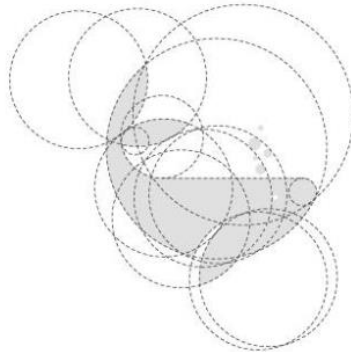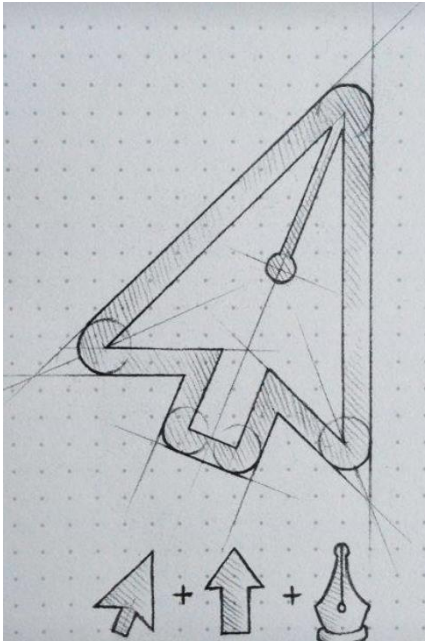*(F) Continuation: The wavy line is easier seen as one continuous line than not.*
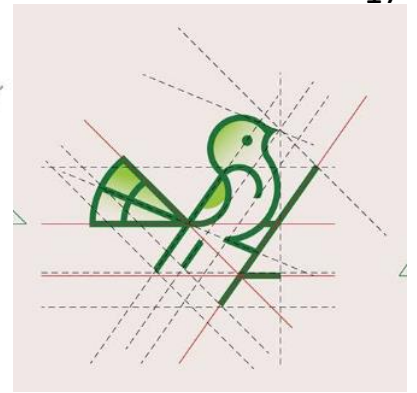
CLOSURE

AREA

SYMMETRY

(H) Similarity, proximity, continuation, and closure: Ice hockey (1) and cross-country skiing (2).

Reference: www.interaction-design.org
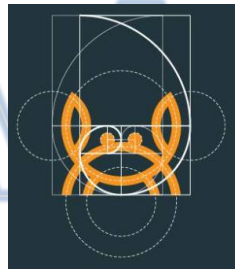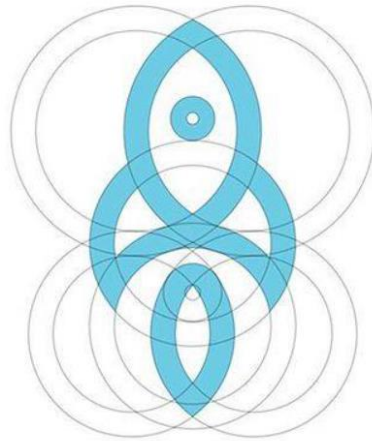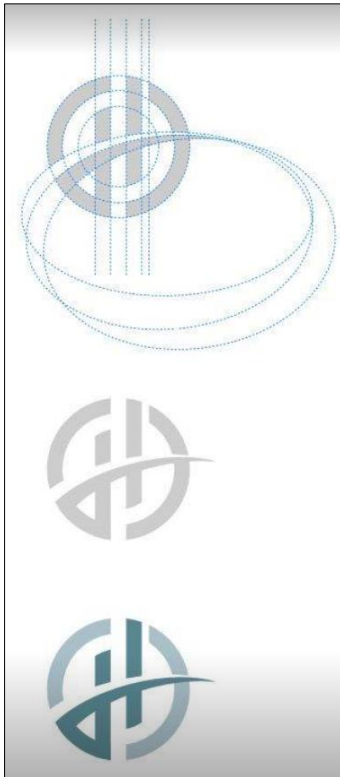
Reference: Graphics Arts

Cooperation

Growth

2012
Staff Meeting
GIZ Viet Nam

2012
Staff Meeting
GIZ Viet Nam

healthy food

$$\frac{a}{b} = 0.618$$

♥ + ∞ + ⊂⊃

Reference: Graphics Arts

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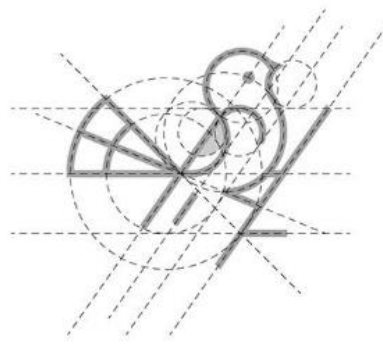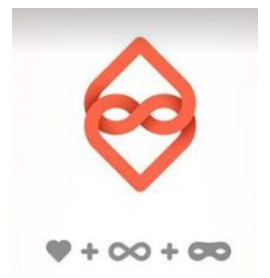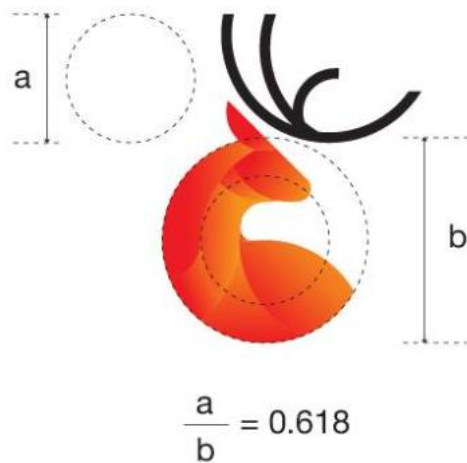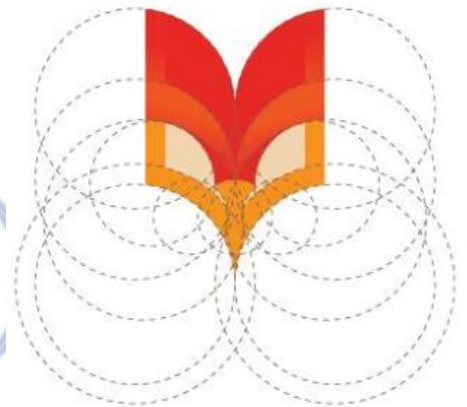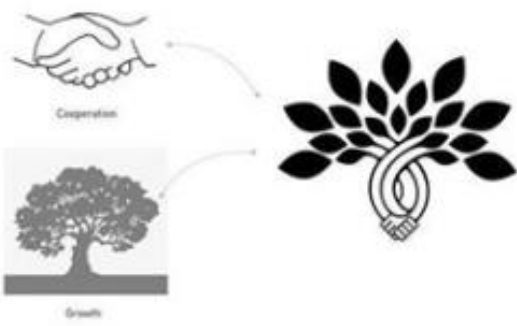
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Reference: Graphics Arts

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Logo based on the Color schemes
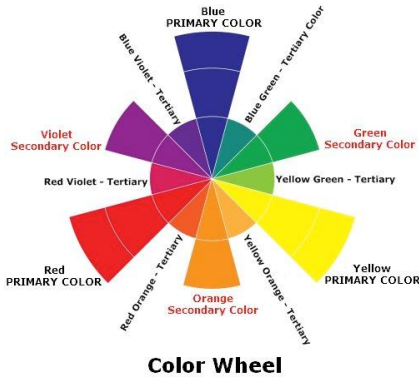
Color Wheel

Complementary color scheme
Colors that are opposite each other on the color wheel are considered to be complementary colors (example: red and green).

The high contrast of complementary colors creates a vibrant look especially when used at full saturation. This color scheme must be managed well so it is not jarring.

Complementary color schemes are tricky to use in large doses, but work well when you want something to stand out.

Complementary colors are really bad for text.

Analogous color scheme
Analogous color schemes use colors that are next to each other on the color wheel. They usually match well and create serene and comfortable designs.

Analogous color schemes are often found in nature and are harmonious and pleasing to the eye.

Make sure you have enough contrast when choosing an analogous color scheme.

Choose one color to dominate, a second to support. The third color is used (along with black, white or gray) as an accent.

Triadic color scheme
A triadic color scheme uses colors that are evenly spaced around the color wheel.

Triadic color schemes tend to be quite vibrant, even if you use pale or unsaturated versions of your hues.

To use a triadic harmony successfully, the colors should be carefully balanced - let one color dominate and use the two others for accent.

Composition of shapes

Types of Composition
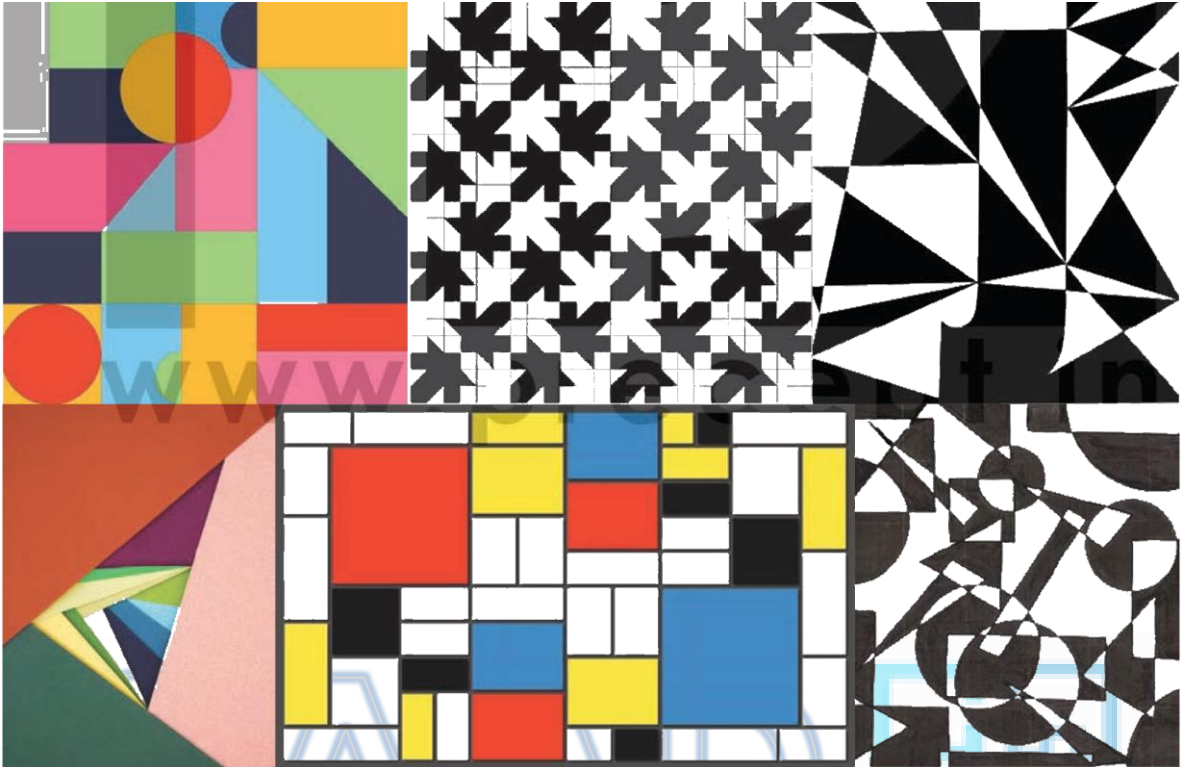
Example: Bed sheet designs using basic shapes

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5.1 Draw a 2D LOGO for "College of Architecture". This will be used to advertise in local newspapers. The LOGO shall highlight the activities in a simplified form without using any text and using only complimentary colours.

5.2 A motor sport company needs a logo for their ad-Campaign. Design logo for suitable size , use complimentary color scheme.

5.3 Create a LOGO for a person who gives solar energy solutions. Using warm colours suitable to suit the theme.

5.4 Create a 2D graphical LOGO for a "Mountaineering Club" which will be used to advertise in local news paper ,brochures etc. The emblem shall highlight the activity of the club without using any text. Use cool colours.

5.5 Create a logo for a television and electronic goods company using complimentary colours. This LOGO will appear on the product as well as to be used in advertising.

5.6 Design a LOGO for an event marking the centenary celebrations of the oldest school in your city. Use secondary colours. The LOGO has to be contained within a circular shape.

5.7 Draw a LOGO for a cement brand using a minimum of three neutral colours. The LOGO will appear on the company's cement products as well as in advertising.

5.8 Design a logo using neutral colours for a dance & music academy using basic geometrical shapes like square circle triangles etc.

5.9 Design a LOGO for a leading film production company, that includes its name in the graphic. Assume any suitable name. Use any four primary colours of your choice.

5.10 Create a LOGO with basic shapes and suitable combinations for the *go green campaign* use a leaf in the composition and colour the same using cool colours.

5.11 Design a logo for *"Save Girl Child"* Campaign. Use suitable colours scheme for the LOGO.

5.12 Design a graphical emblem for Ministry of AYUSH (Ayurvedha, Yoga, Unani, Siddha, Homeopathy)which works for providing health care to the public. The LOGO should consist of elements from ancient health care traditions and practices. Use any four complimentary colours of your choice.

5.13 Design a logo for a coffee shop. Colour the same with suitable colour scheme.

5.14 Create a LOGO for an adventurous organization named 'MY ADVENTURE' Which take trek to Himalayas and other mountains. Choose suitable colour scheme to suit the theme.

5.15 Create a logo for a mobile app company. You may assume a suitable name and include the same in/along with the logo. The logo is to be in black and white only.