

MODULE 1: BASIC DRAWING ON SHOE LAST

1.1 The last. Observation and flowcharting

The last is a mold shaped foot that is used to mount cutting (the name given to a shoe model that has been molded into pieces, cut and trim). It serves two functions: it serves as foot model and is a tool for making shoes.

In many developing countries, factories of shoe trees are companies dedicated solely to copy models, forgetting that production models is a complex task that greatly influences the development of shoes good fit, requiring properly sized shoe trees, of finish and design; and a very detailed on the average body type foot in each country according to their race, idiosyncrasy and culture study.

The preparation of blocks of wood or plastic to manufacture the molds and requires good technology and vast knowledge, so it becomes necessary to have information on coordination, composition and proper sizing of the form, without which it is not possible to manufacture lasts to ensure a good fit to the shoe.



1.1.1 HUBS LAST

The modern system of shoemaking requires standardize lasts, in order to make optimum use of the machines involved in the production process as well as the fit of the form with respect to the foot. To this effect you can take as the axes of the form

a. DIVIDE OR PARTITION LAST:

Drawn on the top of the form that passes over the wedge and the most prominent point of the toe, if it is a form with rounded or pointed tip. In the case of "flat or square ends, said shaft passes through the midpoint of the straight portion of the toe.

b. SHAFT LAST O PLANTING:

This axis connecting the two points, located at the ends of the form:

- The midpoint of the leading edge or on the "edge" of the form
- With the most prominent of the back of the last point.

This axis varies according to the shape of the toe and forefoot angulation relative to the rearfoot (heel tab).

According to the form of construction of the form these axes may or may not coincide with the axis of the plantar surface.

1.1.2 MEASURES OF LASTS

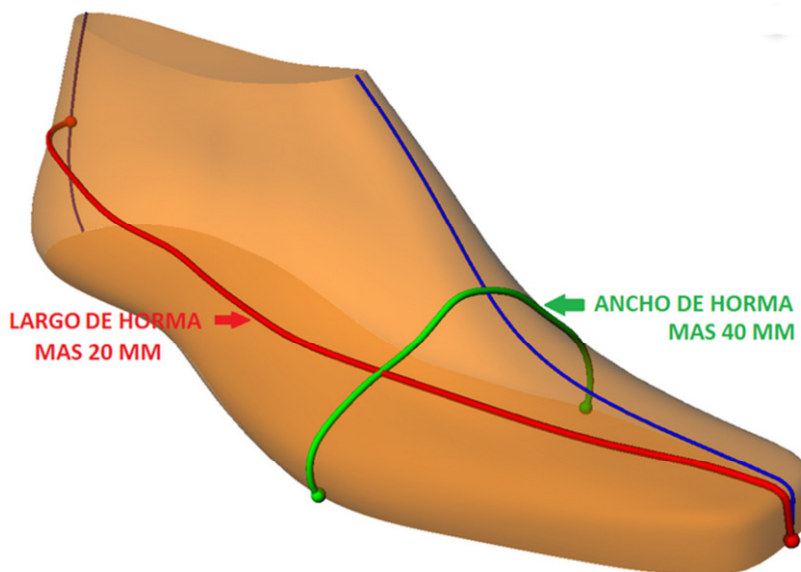
Design shoe lasts, besides taking podometric (foot) of a given population, including a number of corrections in the style of footwear intended design. It should be stressed that the criteria presented in this booklet will serve to define volumes or interior dimensions that must be respected, leaving the design itself, in the hands of hornero teacher and designer and modeler.

In general the criteria used in the design of the molds are based on experience gained over many years by trial and error. These "rules" are maintained with a certain reserve in companies that manufacture shoe trees as it can not be forgotten that it is an industrial product.

It is important to use these accumulated experiences since it is not advisable to try to develop their own measures lasts, if you do not have the necessary procedures. Therefore it is necessary control measures in order to standardize

or at least have a solid basis on which to work in proposing new designs of shoe trees.

- calzable length or full length form
- Tip height
- metatarsal Line
- input Perimeter
- Perimeter instep
- Calzada
- Heel Height
- Width of Heel
- Heel Height



1.1.3 MEASUREMENT AND ELABORATE

When a form is acquired on the market, it is important to perform quality control as to the measures that was created, in order to identify whether the mold can guarantee a good calzabilidad

and meets the requirements for the type of footwear to be manufactured.

For this it is essential to consider some recommendations when taking measurements, find and confront the action points with established standards. The recommendations are described to take some of the most important measures.

LONG LAST:

To achieve this measurement must be placed the following points: the center of the heel, the center of the tip and along the plantar well:

- the heel and toe Center: Using a ruler or meter shoemaking lines are located in two different parts of the heel and in two different parts of the tip; the midpoints of these lines are drawn and the two points found heel are joined together with a line (a, b) and two points of the tip together with a line (c, d). The resulting line and reaches the edge of the plantar gives the center point and the center of the heel.

- Length of the plantar: Place on the centreline of the tread the longitudinal point is obtained by dividing in eight total length of the plant of the last (that already defined according to the size), then draw a line (e) joining the heel point encountered in the center tip of the last. The extent of the line (e) constitutes the length of the plantar of the last.

For example, when measuring a size mold 36 (French measure) is performed with a conventional meter, this should measure 240 mm, more than 10 mm, tolerance finger if the shape is square or "flat"..; but if the last is pointed the value of tolerance is increased to 12mm. Or in the case of the square shape: $240\text{mm} + 10\text{mm} = 250\text{mm}$. Este value (250mm) it is that should be divided into eight to get the longitudinal extent which is discussed in the previous paragraph.

When you do not have a meter and want to know the value in millimeters over the last, it uses the following mathematical calculation:

Multiply the number of length at the constant value of 6.66, when speaking French scale. This constant determines the difference of one size to another. For example: $\text{Size } 36 \times 6.66 = 239,76\text{mm}$ more 10 or 12 mm according to the shape of the tip of the last.

b. LINE ITEMS AND METATARSUS:

It is important to clearly identify these points and then define the metatarsal line by joining them, because this is one of the main measures of the last,

because it determines the final product (footwear) has the necessary comfort and step guaranteeing perfect stability and walking comfort.

An easy way to locate these points, is to place the side edge of the mold against a flat surface, so that they are only in contact with the salient points of the two surface side of the heel and the metatarsal. Mark these points on both sides of the mold and the inner and outer metatarsal points are obtained. Uniting these points have the metatarsal on the plantar line.

C. WALKWAY LAST:

the middle part is taken considering the tip is up, then measuring tape or around the shoe last meter is passed, based on the points of the metatarsal line.

It is important to note that the upper edge of the meter f and g match point (metatarsal line).

The data obtained with the previous measurement is compared to the table prepared for the French system

The ideal width of the shoe trees for each size appears indicated (width 5), which is the standard measure, the above does not mean that other widths are incorrect, but obey a range of flexibility given to the last depending on various factors. It is important to note that there are different tables for men's footwear and child.

Widths from 1 to 4 are used for intended lasts cold areas or people with small feet and widths from 6 to 10 are used for intended lasts warm areas or people with wide feet.

Importantly described above is a guide; therefore, it should be noted that if a last does not meet the tolerances mentioned, the kind of footwear construction and materials used, can afford certain adaptations. However the detection of very large deviations in the suggested tolerances, at least indicates the need for careful testing before accepting wedging mold for mass production.

1.1.4 DEFINITION OF VOLUME LAST

The volume of the mold depends on many variables associated with fashion, the type of consumer targeted by the product, the type of materials used, the use to which it will give to the product, the type of region which involves mainly climate and idiosyncrasies of the population, among other variables.

1.2 Basics of drawing, orthogonal projections, correction and axonometrics

1.2.1 BASICS OF DRAWING

You need to know the purpose of our drawing footwear, whether it will be an artistic drawing to mark a trend-idea to develop a collection, or otherwise a technical drawing for the development of shoe design. Drawing and design in footwear we're seeing is so important to master both technical as another.

ARTISTIC DRAWING



1. Artistic drawing. Self-Portrait at 13 years by Albrecht Durer, 1484
2. architectural drawing of the Abbey of St. Gall (c. 825), considered the world's oldest preserved architectural plan

It is the representation of an object by lines that limit their shapes and contours. It is an abstraction of our mind that allows you to set the appearance of the form, since the eye perceives only colored masses of varying intensity.

Process

- Sketch: drawing test in a separate paper. Used to help decide the framing, composition, what elements are included.
- Snapping: General lines drawn in the final paper (clog or deleted after), they serve as the basis of the drawing.
- Line: Drawing contours. It is drawn first and then as general detail.
- Valorization: for Realism and volume, shading is done. transition from one colored clearer areas darker areas is made. The light areas can be cleared by deleting or using a pencil of white or similar, while dark areas are achieved by saturating the material.
- Color: a drawing can be color, especially if it is meant to be an illustration (drawing accompanying text books, posters, etc.), applied by various techniques: watercolor, ink, colored pencil, computer. Color can be flat (homogeneous) or textured (paper technique irregular appearance can be achieved with the material, ...).
- Corrections: errors can be corrected in different ways, erasing, covering an area of drawing painting or a piece of paper and drawing over it, or performing a scan of the drawing and modifying it into a photo editing program with which you can delete add or highlight things, enhance contrast and colors.
- Proportion: Gives the object represented the harmony necessary to properly connect all the elements that comprise it. A useful and practical advice at the time of framing the drawing, it is placed before a mirror, so it is discovered if the work is well proportioned and if you save the corresponding symmetry; This is very useful especially with drawings of faces and portraits. Other ways to assess whether the drawing is correct are: place it upside down, looking at him backlit by the back of the sheet or sheet placed further down to change the perspective to look at her.

In artistic design can distort the proportions and measures of the shoe, in order to emphasize a detail want to give more relevance. Technical drawing in the most important to give you more information to add modeler measures.



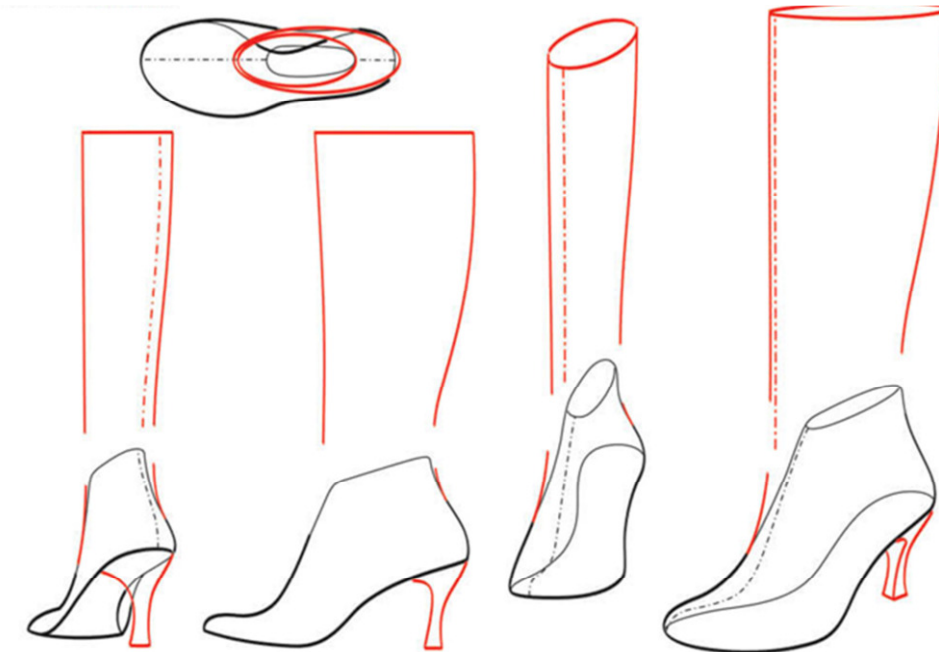
TECHNICAL DRAWING

Technical drawing is the universal technical standard graphical language. Skills for this class will learn drawing, because it must meet certain standards. It is subdivided into specialized technical drawing as needed or application most used or disseminated in technical and professional environment. Each is characterized by using a symbology own specific usually standardized legally.

Planes represent a single mechanism or machine consists of a set of parts called assembly drawings, and representing a single element, flat piece. Which represent a set of pieces with graphic indications for placement and assembly, are called planes.

PROSPECTS AND MEASURES LAST

In the drawing and footwear design, drawing shoe itself is very important that you make with prospects and correct proportions, as will later be used by the department Adjustment and pattern to develop the technique of the shoe.



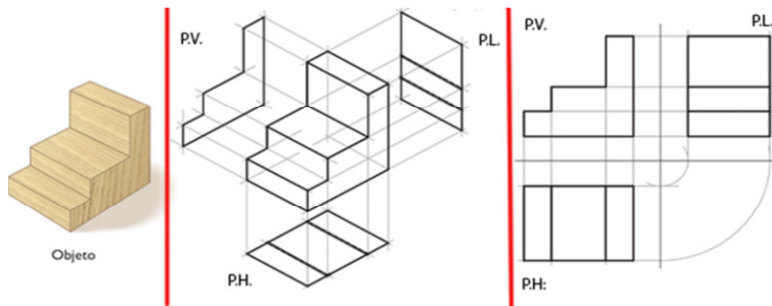
It can be a complicated whether the proportions and perspectives of a shoe tree can not dominate, thus drawing templates can help you become a real shoe designer and your work serves as a starting point for further work.

1.2.2 ORTHOGONAL PROJECTIONS

It is called the orthogonal projection display system that allows us to draw in different planes in an object space.

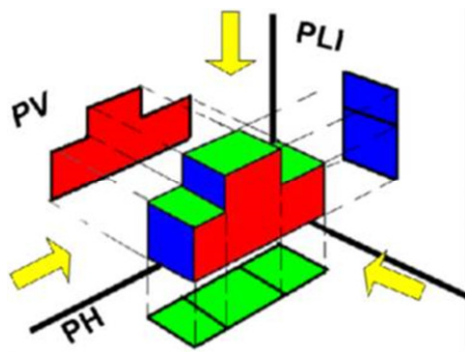
Thus, the result is the possibility of having two or more different views of the object.

It is to represent each of the sides of the object separately for detailing and dimensioning.



The orthogonal projection is a widely used in the field of technical drawing to achieve a graphical representation of an object tool.

Three major planes of horizontal, vertical and lateral. The intersection of these planes is produced at right angles, forming different quadrants.



- **Observer Viewpoint:** is an imaginary point in space is assumed that start from straight lines passing at different points on the surface of an object. It is the place from which you are observing or projecting the object.
- **Projectantes lines:** are parallel lines that starting from the observer through the object are projected on a plane to determine the object's shape.

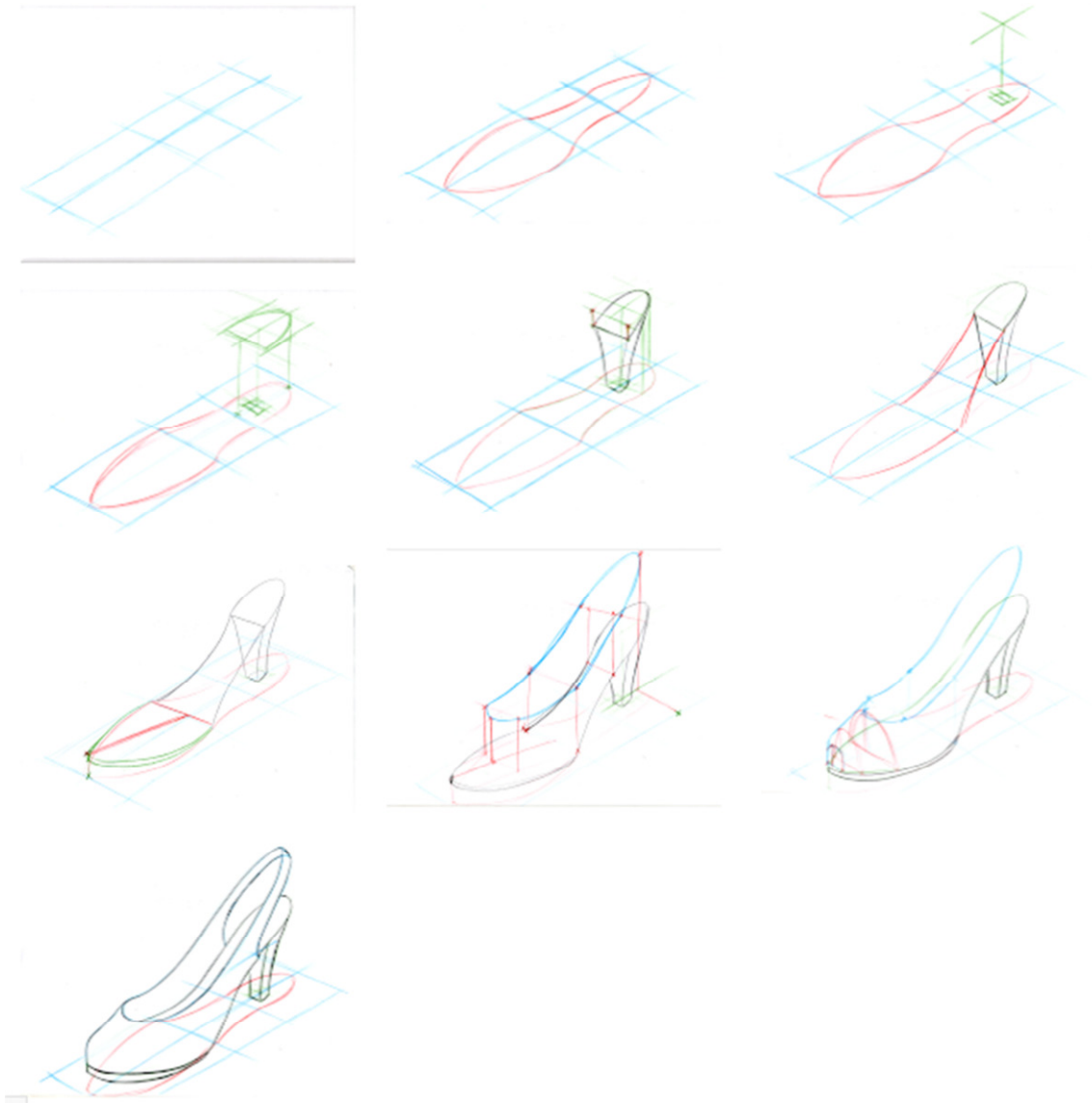
All projecting rays are perpendicular to the projection plane.

An orthogonal projection, is one that is created from the layout of all the projecting lines perpendicular to a certain plane.

It should be borne in mind that if the orthogonal projections charge high value is, among other things, because they allow to discover, in each of the views that are held, properties or characteristics of the object can not be levied in another

1.2.3 CORRECTING AND AXONOMETRICS

The axonometric is a graphic representation of system objects in 3-dimensional space onto a plane in two dimensions. Passing 2 3-dimensional information is lost and that carries with it consequences. It affects the angles and dimensions, as discussed below.



Altered angles: the axes

3 denote the dimensions of the space 3 axes in reality are perpendicular (a trihedral) in the drawing and will see flat form, represented different angles.

In axonometry, the angles can be used freely, depending on the objective to be. The only requirement is that they must add 360 obviously are the degrees of the entire circumference.

Alteration in size: reduction coefficients

As we have seen, to draw in perspective (like when shooting) angles are altered with respect to reality. Similarly true dimensions.

When viewing objects in perspective the dimensions are reduced relative to the actual dimensions of the object. To apply the drawing that use so-called reduction coefficients.

Reduction factors are factors that apply to the measurements on each axis of drawing dimensions, intended to compensate the deformations due to perspective.

These reduction factors are variable and dependent on the angle of perspective.

1.3 Introduction to pastel shades and theory. Ornaments

1.3.1 COLORS

Let's start our little introduction to the world of color explaining something fundamental: what is the color wheel and what serves us.

The color wheel is a visual representation of the colors that will help us to know how these colors relate to each other.

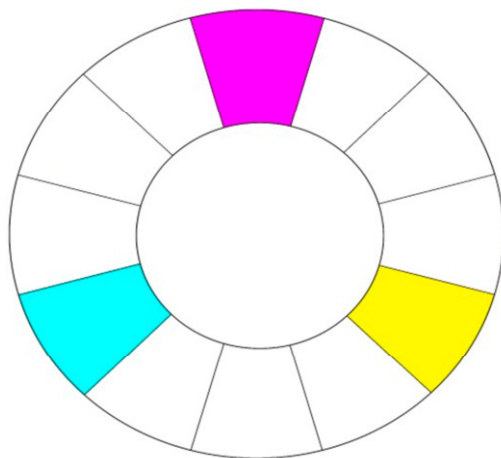
color wheel: Primary Colors

The color circle of three basic colors are known as "Primary Colors". They are so called because not arise from any other color mixture.

Regarding the primary colors, we will focus on the pigment colors are used in paint and printing are Cyan, Magenta and Yellow.



Primary colors



color wheel: primary colors

color wheel: Secondary colors

If we mix the primary colors in the same proportion and twos, so-called "secondary colors" that are orange, violet and green emerge.

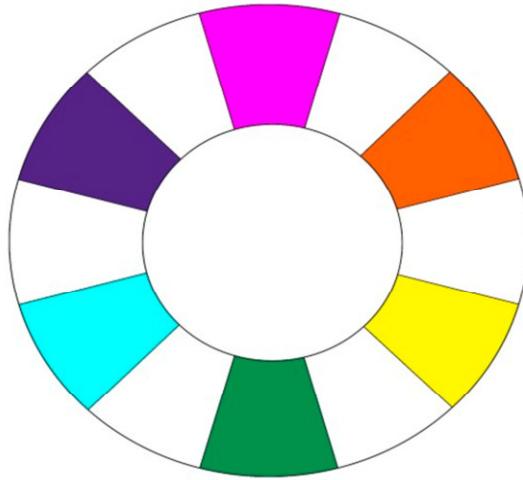
The orange comes from the mixture of the two primary, magenta and yellow.

Violet comes from mixing magenta with cyan.

And if we mix the primary cyan and yellow get the green side.



Secondary colours



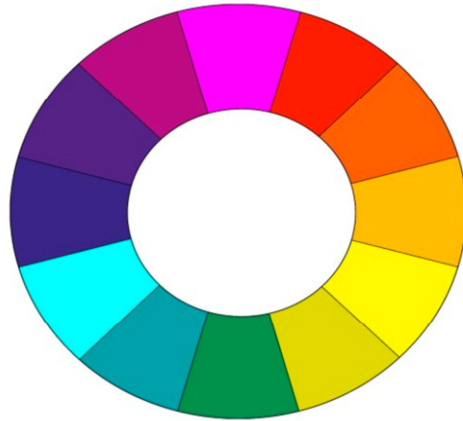
secondary and primary colors: chromatic circle

color wheel: Tertiary colors

: Mixing the primary colors with secondary, the "tertiary colors" which are intermediate shades appear



Tertiary colors



12-color color wheel

So we get our color wheel or color wheel 12 colors.

1.3.2 TECHNICAL CAKE

The dry pastel painting is a painting technique of excellent quality. It is composed bars pigment and some gum tragacanth as binder. The cake has a velvety look on paper, active, attractive, but also is very grateful ideal for the color technique, since being a dry technique does not need solvents or brushes.

Advantages

1. It's a quick, closely related to the drawing technique, by allowing agility and spontaneity.
2. Allows representation or copy of reality. With cakes you can create very realistic works.
3. It brings a vibrant and lively color. The last layer, not fixed with fixative consisting of loose powder on the paper, which makes the color pigment has not been off the binders.
4. It can be combined with watercolor, acrylic, oil, collage, and other wet and dry techniques.
5. It allows the additive method: gradually add color layers on one another.



disadvantages

1. The color may become dirty when loose powder, so you need to know to fix it with fixative or be very careful not to alter it and not beat him, nor winds, nor have moisture while working. After work, you should always protect the work.
2. If too much paint, ie, too many layers are added, the work may be damaged by excess, being too heavy and opaque.
3. You can not completely erase and other techniques, so that errors are hard to fix.

Step by step technique to paint with pastels

This is a quick guide to start painting immediately.

1. Acquiring a card, Canson, cardboard or similar. (Paper with some texture, never thin sheets).
2. Having pastel bars. The more colors, the easier the work. Color blends can be made in three ways: 1) Blurring different colors on the paper itself. The mixtures are then directamente.2) generating optical mixtures by gathering strokes colores.3) Putting on paper directly the color match is desired (color bar and have the exact color desired).
3. Having a stump or toilet paper to blur and make the color layers below (what should be seen in the image below).
4. Fix the background color layers with lacquer or spray fixative.

5. Gradually add more color layers as required by setting the picture and go if that layer will have more paint on top. If dust would join no It is fixed and the color and tone made would be lost.
6. Add to the loose end touches of color should be bright and vibrant. This should not be set or very little, so you do not lose the freshness and beauty of the pie.

Tips technique cake

Pastel rods must be stored in a box designed for bars or in a box with rice, which will not mix with each other and dirty bars.

If darker colors are needed and not have it, you can paint such a black top and then apply a coat of green, blue or other shade that will give color.

The sandpaper and brackets (cardboard or wood) primed with pumice powder, are an excellent coating material with pastel as cakes adheres very well for its large porosity.

1.3.3 THEORY OF SHADOWS

A shadow is a region of darkness where light hinders or hides leaving a blackish tone as a grove. It occupies the entire space behind an object, indeed, is the very opaque object with or without a light source in front of him. The cross section of a two-dimensional silhouette shadow is or inverted projection object sucking light.

There intermediate degrees of light and shade between the fully illuminated surfaces and complete darkness: the penumbra.

The shadow is used to give the sense of volume in drawing and painting.



The greater the angle between the direction of light and an object will be more distortions.

If there are multiple light sources, there will be multiple shadows, with overlapping parts darker, or a combination of colors. When a person or object is in contact with the surface, the shadows converge to the contact point.

Is simple to achieve a realistic drawing, everywhere we see things are formed by geometric figures, which have a rebound of light different, depending on where it comes from the light and the type of figure that is, for all have a particular volume to achieve this we must follow a series of steps:

1. It should first coloring layer with a uniform color either gray or color desired.
2. It is very important to take into account the general rule, which says that "Nearer, greater light. Further, lesser light".

Once these activities must take into account factors and apply them in the drawing. All objects of nature are visible thanks to the light that shines upon them. With it we see the different textures and colors of nature. Therewith we deduce the properties concerning shadow, hence we shape and color to which it belongs. To perfect little light tones merge with the shadow. And so to achieve the desired shape and texture.

If there is only one light source, the shadows cast by it will always be gray, whatever the color of the font. However, if there are two light sources of different colors, say red and blue, the shadows cast by each color will be another source and only the intersection of both shadows will be gray. That is, the shadow of the red light will be blue because it is illuminated by the blue font and vice versa. In case there are more light sources, each color will shadow resulting from the addition of light sources that area still, remaining gray areas where the shadows of all light sources intersect.

1.4 Application to the shoe man: Oxford, camping, moccasin

1.4.1 TYPE OXFORD SHOE

The model is a classic Oxford shoe with original source in Scotland and Ireland.

This shoe design is a shoe with laces, toe, shovel, cheeks and heels, definitely a classic style shoe. A fashion model welcomes all seasons with the possibility of combining elegance with different colors and materials, with a simple design that exudes sophistication.

As for manufacturing construction it has opted for a leather floor enhancing the quality and elegance. Comfort is key, so we have to find a design that offers a unique feeling in every step.

Most important in the sketches of shoes with laces is correctly define the center line of the instep of the last. In the picture that we present below the center of the instep it is marked with a dashed red line, which will help us to properly design the cords and other parts such as toe, blade, tongue and cheeks, providing greatly perspective and depth of our drawing.



For stitching, dashed lines are drawn with a thickness and spacing according to the size of the yarn and stitch you wish to use in their manufacture, you can be made on the toe shovel and heel line of the cheek hollow.

1.4.2 SHOE TYPE CAMPING

This shoe design is a camping knighthood. A model consists of a sole and two parts for cutting (the blade and the heel). Sometimes these models can carry loops, heel, toe or some other type of adornment.

It is important to make sketches of shoes with some perspective and depth, as it will help more realistically see our drawing.



First the mold is designed, as is the silhouette of our drawing, marking the center of the instep for a reference.

Continuing to build the shoe bottom is formed by the jute sole and subsequently cutting.

If you prefer, you can also mark the stitching each of the components of the shoe upper and make a more important point buttonhole sewing is done in the sole to the shoe marked.

1.4.3 TYPE SHOE MOCCASIN

This shoe design is a moccasin gentleman. A model characterized by the part that is at the instep and called COPETE, which the design can go over the galosh, below or stitched edge with edge with open as is the case of our sketch seam.

As for manufacturing construction it has opted for a rubber sports floor.

It is important to make sketches of shoes with some perspective and depth, as it will help more realistically see our drawing.



It is desirable that the mold is designed first as it is the silhouette of our drawing, marking the center of the instep for a reference.

Continuing to build the shoe bottom is formed by the rubber sole sports.

The cut design begins by drawing lines Pompadour, to continue drawing lines hollow collar with a decorative stitching. It is vital for the remaining lines in the drawing to provide perspective and depth to the drawing.

1.5 Application to the woman's shoe: Valencia, lounge, dancer, boot

1.5.1 VALENCIAN SHOE TYPE

The alpargata or esparteña is a type of footwear spinning natural fibers such as cotton, animal hair or canvas soled or hemp, or a mixture of jute and caranday (in Argentina), esparto (in Spain and other countries) which is ensured by simple adjustment, a piece of elastic fabric sewn or tapes

We must begin first by designing the mold, as it is the silhouette of our drawing, marking the center of the instep for a reference.

Continue drawing the rounded tip and continue to cut one-piece composite strips and to tie the back of the leg.

Subsequently we draw the sole stressing fibers hemp or jute thereof.

1.5.2 TYPE SHOE SALON

Lounge-type shoes are a type of footwear characterized by raising the heel height on your toes. The effect of this type of footwear is to look taller. Salon-type shoes high heels have resulted in a variety of shapes and styles among them are stiletto heels (stilettos), the pumps, blocks, tapered, blade and wedge.



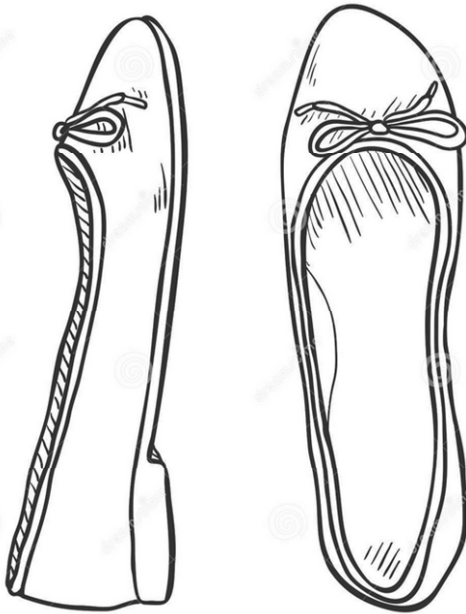
Initially we start by designing the mold, as it is the silhouette of our drawing, marking the center of the instep for a reference.

We continue drawing the tip and continue to cut one-piece composite.

Subsequently draw the sole and heel usually characterizes this type of footwear.

1.5.3 BALLERINA SHOE TYPE

The dancer is a flat female footwear, single line and with rounded neckline. The origin is in the footwear worn by ballet dancers.



We must begin first by designing the mold, as it is the silhouette of our drawing, marking the center of the instep for a reference.

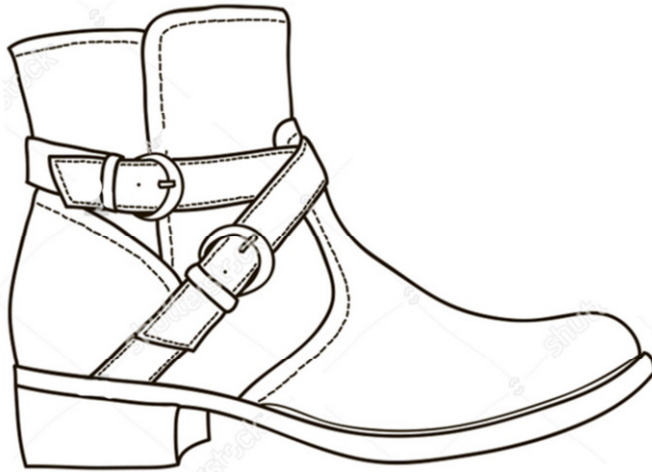
Continue drawing the rounded tip and continue to cut one-piece composite.

Then we draw the sole, which is usually very small thickness and does not just heel.

1.5.4 BOOT TYPE SHOE

This shoe design is a low cane boot with Cuban heel and a thin sole. Predominant design detail has been chosen to add two crossed trebilla subject with a heel and another on the instep straps. In the drawing an entire blade seen, but technically it should be noted that manufacturing must be starting with a seam, but as advice is always better than the seam is hidden advantage crossing straps. Although not shown in the drawing it is advisable to include a zipper on the inside of the shank.

As in this drawing boots are not areas exposed such as the tip, shank or heel not to make reference lines to draw the plant, which often helps us to get a proper perspective and depth of our drawing.



First we'll start the design of the form, since it is the silhouette of our drawing, marking the center of the instep for a reference. Continuing to build the boot, consisting of the bottom formed by the thin leather sole and a square Cuban heel. This time has not designed a wedge or platform, but we offer you to make different versions of this boot, combining such elements.

The cut design starts ticking with a very soft pencil lines belts, as several lines of the drawing is subsequently deleted. To maintain the same structure in the boot design the most suitable buckle is rectangularly shaped. Once you already have drawn baselines straps and buckles pencil proceeds to go over with the same black pen all valid lines, omitting that must be hidden and will be deleted. Finally only remains to draw the hollow rod and the line of the blade, starting from said hole to the ground line. A detail which could also draw but is hidden is the carriage zipper observed inside the hollow rod.

1.6 Application child shoe

This shoe design is a shoe perfect for use in everyday child. This time is designed with a series of biomechanical characteristics that help the growth of children's foot such as a heel and side padded favoring the natural movement of the ankle, easy to apply and remove thanks to the velcros (foot the child will be subject and adjusted) and although it is not seen in the design we want to emphasize that the footwear child is important to have properties of hyperventilation, anti bacteria, maximum breathability, ergonomic insoles and natural materials first free quality Chrome & Nickel.

As for manufacturing construction it has chosen a rubber floor covering part of the toe to be a sole to protect the tip of the shoe cut, while also providing a good grip and flexibility.



We suggest that the form is designed, as is the silhouette of our drawing, marking the center of the instep for a reference. You have to keep in mind that the proportions and measurements of a child mold are very different from those blocks for both men and women.

Continuing to build the shoe bottom is formed by a rubber sports floor.

The cut design begins by drawing the lines of the two Velcro straps. As a model blucher the chinstrap is drawn from the line of the sole to the hollow, continuing the heel and hollow interior. Internal parts is the latest in design and this design to be for child decided to add a few pieces of rigid reinforcement in the heel for added stability.