

# **TRADE OF PAINTING & DECORATING**

PHASE 2

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Module 1

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**Recoating Surfaces and Sign work**

UNIT: 5

**STENCILLING**

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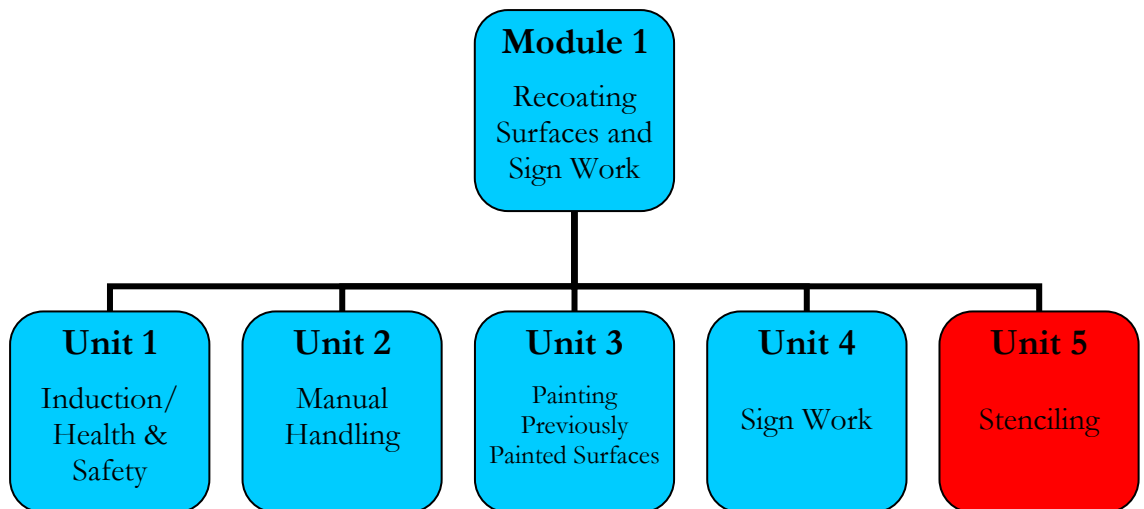
## Introduction

Stencils are templates made by cutting shapes or symbols out of stiff card, acetate or light metals, so as to form a required pattern which is applied to a surface using paints. They are designed for a variety of purposes including repetitive designs in decoration. This method of decoration continues to prove invaluable to the painter/decorator.

### A brief history of stencilling

The art of stencilling may be traced back to pre-Christian times. In its early development, Japanese craftspeople in particular were noted for applying stencil work to silks used in clothing. In Europe, from the mid 15th. Century the technique came into use in a variety of applications. Stencilling was used extensively in church work, municipal buildings, cinemas, theatres etc. In recent years, rising costs among other reasons have tended to restrict large scale stencil decoration. It has however staged a revival in the domestic scene with the availability of pre cut stencils.

Stencils can be applied to a wide variety of surfaces. They can be used for numbers, borders, all-over patterns etc. where desired. A well cut stencil can be stored and used many times to provide instant art work to the decorator.



### Learning Outcomes

- By the end of this unit each apprentice will be able to:
- Enlarge, cut and apply stencil to surface
- Clean and store stencils correctly
- State the hazards involved when using scalpels and stencil knives

## 1.0 Enlarge, Cut and Apply Stencil to Surface

### Key Learning Points

- Use of enlarging equipment
- Construction of enlargement grid
- Tools and materials
- Positive, negative and multiplate stencil
- Use and position of ties
- Methods of positioning and applying stencils
- Helping a potential client to chose type of design for stencil
- Geometrical figures, bisecting angles, lines and circles

### 1.1 Use of Enlarging Equipment

As per Enlargement Using Projectors or Epidiascopes, Unit 3 1.1

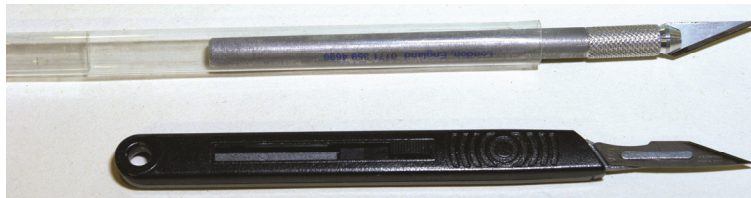
### 1.2 Construction of Enlargement Grid

As per Grid Enlargement, Unit 3.1.1

### 1.3 Tools and Materials

#### 1.3.1 Cutting Tools

#### Stencil knives



These are very sharp instruments and must be treated with care. When purchasing, a retractable type or one with a cover should be bought. Single blade replacement types or snap off types are also available.

## Hot Knife



As the name suggests it is a knife that is plugged in to a domestic electric socket and after a short period of time it gets very hot. Ideal for cutting Mylar, it can be pushed or pulled when following the design.

### 2.3.2 Papers and card

Stiff paper stencils are made from strong card such as cartridge paper and coated with knotting varnish on both sides before cutting. This is the traditional method used for stencilling but is only suitable for single plate stencils. If cared for they can last a long time.

## Acetate

A handy material for small stencils. It is lightweight, transparent and easy to cut especially with hot knife.

## Mylar

Nowadays the most popular stencils are made from a transparent material called Mylar. Most ready made stencils are manufactured from this material and cut by laser for accuracy. It is very strong and is the best material to use especially for multi plate stencilling as it is tough and transparent. Multi plate stencils are needed when complicated designs are required. Two plate up to fourteen plate stencils are available from suppliers who issue catalogues of their designs.

## Metal

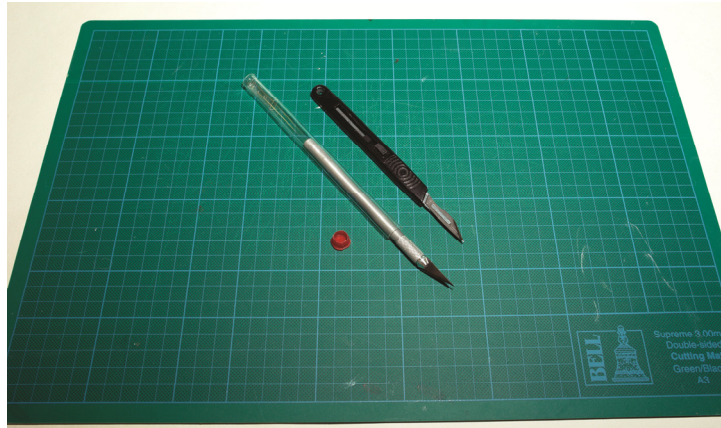
Ready made stencils manufactured from light metals generally brass. They are long lasting but very expensive.

### 1.3.3 Methods of cutting

Cut away from ties, and for safety reasons especially from fingers. Keep cutting blades and knives in good order. Use metal straight-edge when cutting as timber or plastic ones are liable to be damaged by the sharp knives.

#### Cutting Surfaces

##### Cutting mat



A special mat designed for cutting stencils on. Long lasting and is not damaged by cutting.

##### Glass

An ideal surface for cutting on. It does not allow the knife to penetrate, thereby producing a clean cut while at the same time reducing the amount of wear on the knife blade, maintaining its sharp edge.

## Application Tools

### Stencil Brushes

Short stiff haired brush. A variety of sizes from 1/4" to 1 1/2". Used in a dabbing motion to apply the paint.



### Sponges

Any type of sponge can be used. Used in dabbing motion to apply the paint



### Stencil Sticks

Paint in stick form, similar to crayon. Purchased in art shops with stencils.



### Air brush

Stencils can be sprayed through. Air brushes are a very small spray gun usually fed by a mini compressor and are ideal for small delicate treatments.



## 1.4 Positive, Negative and Multiplate Stencils

### Positive

A stencil made by cutting out the design.



### Negative:

A stencil made by cutting out the background of the design.



### Edge

A stencil produced by cutting out a solid shape and applying paint around it.





## Single plate stencils

Used for simple designs, numbers, plain floral patterns etc.

## Multi plate stencils

Used for complicated designs. A variety of ready made stencils are available which when used in sequence build up a complex design e.g. a landscape. Each plate contains registration marks which are used to line up each stencil in the sequence. Some designs have two plates. More complicated can have up to fourteen plates.

## How to make a stencil from card

- 1) Get cartridge paper or equivalent.
- 2) Draw design on card.
- 3) Put in ties.
- 4) Coat both sides of card with knotting varnish or French polish to stiffen it for cutting and to make it easier to clean after use.
- 5) Cut out design with sharp knife or blade on glass surface or cutting mat.
- 6) Store knife safely.

## How to make a stencil from acetate:

- 1) Draw design on paper.
- 2) Put in ties.
- 3) Tape drawing on to bench top.
- 4) Place piece of glass over it and tape down so that it will not move.
- 5) Place acetate sheet over design and tape down to glass.
- 6) Cut out with stencil knife.
- 7) Store knife safely.

## How to make a stencil from Mylar:

- 1) Draw design on paper.
- 2) Put in ties.
- 3) Tape drawing on to bench top.
- 4) Place piece of glass over it and tape down so that it will not move.
- 5) Place acetate sheet over design and tape down to glass.
- 6) Cut out with hot knife or stencil knife.
- 7) Store hot knife/ stencil knife carefully. Leave hot knife to cool before storing

## 1.5 Ties

Ties are the parts that hold the stencil together. It is important to ensure when drawing them that their strength and shape suit the flow of the design.

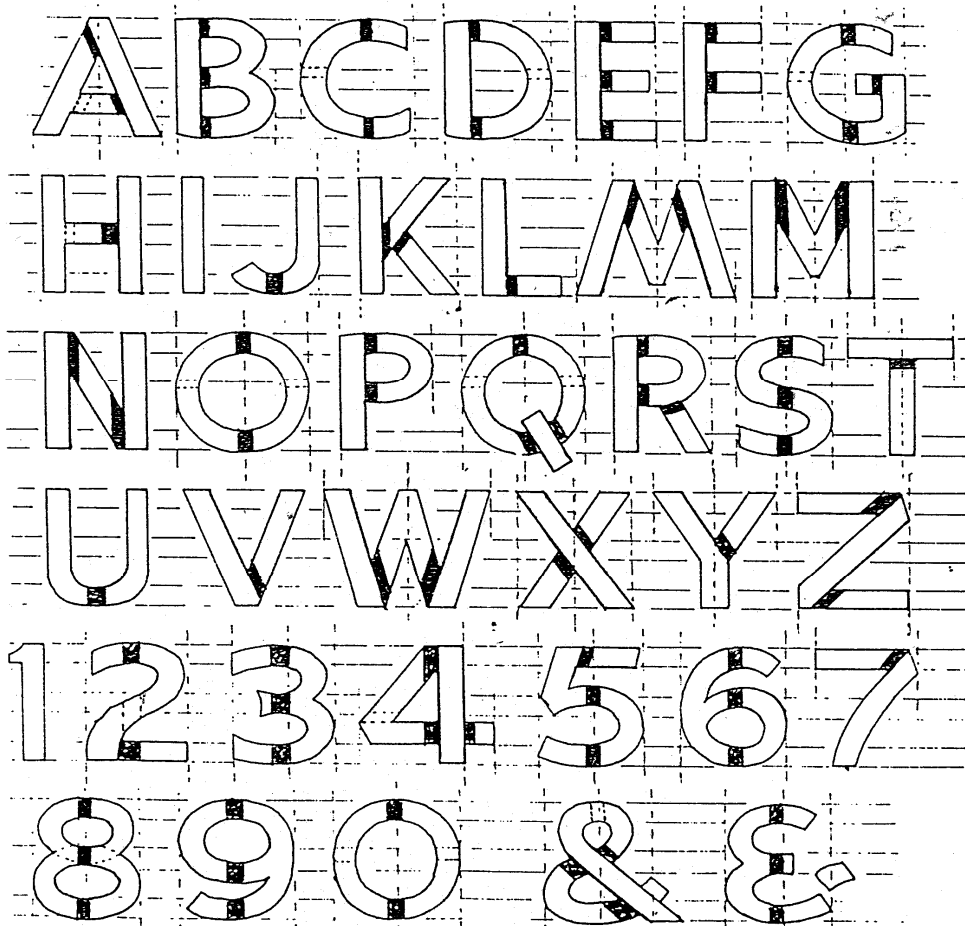
When designing ties for letters, minimise the number and maintain strength.

### TIES FOR LETTERING

**TIES MUST SUIT THE SHAPE OF THE LETTERS.**

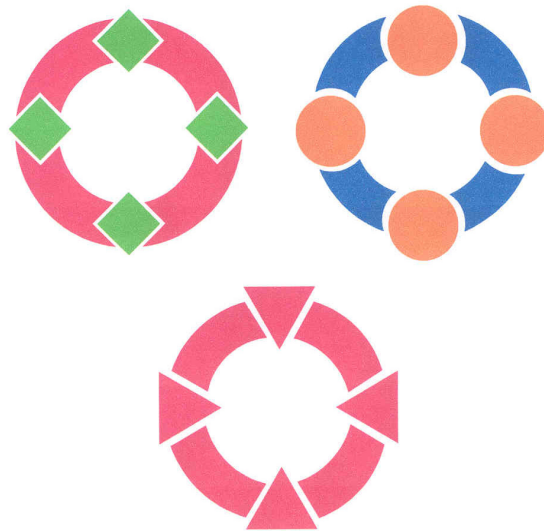
Ties must not alter the shape of letters

EXTRA TIES CAN BE ADDED FOR STRENGTH.





Examples of Ties in Stencilled Letters



Examples of Tie Design

## **1.6 Methods of Positioning and Applying Stencils**

### **Masking tape**

If taping a stencil to the surface low tack masking tape should be used to avoid damaging the painted surface.

### **Adhesive spray**

An aerosol spray adhesive applied to Mylar is ideal as it does not damage paintwork and the stencil is easily detached from the surface and repositioned several times before the adhesive needs to be renewed.

### **Types of paint suitable for stencilling**

Acrylic tube colours, Matt Emulsion. Undercoating. It is important that they dry quickly if multi plate stencils are being used. Paint must be of a thick consistency. Never thin as it will creep under the edges of the stencil ruining the work.

## Applying Stencil to work

If a stencil pattern is to be applied to the walls of a room in a border like fashion, care must be taken to measure and set out precisely where the stencil will be placed. Set out with chalk line and check with level to ensure accuracy. Avoid pencil marks on walls as they can be difficult to remove. If pencil marks are needed apply pieces of low tack masking tape to the area first and make marks on this. It can be removed when work is complete. Lay flat on the surface to be stencilled, attaching stencil using low tack tape or spray adhesive.

If applying to the centre of panels, mark out centre lines on panel and stencil plate and line up. When applying to the corners of panels, decide the distance the stencil will need to be away from the edges of the panel. Mark out this distance exactly around the stencil and cut off surplus. This helps to avoid measuring each time the stencil must be positioned in each corner. Exactly the same method can be used when stencilling corner pieces to the walls of a room.

- 1) Set out design.
- 2) Place stencil plate in position.
- 3) Put paint on palette - Do not thin paint as it will creep under stencil when applied.
- 4) Test paint through stencil before applying to work area.
- 5) Dip brush into paint on palette and dab out to remove excess paint from brush, and also to spread it evenly on head of brush. Never dip stencil brush into pot of paint as too much paint would be taken up and smudging of design and surface would result.
- 6) Dab paint through the design carefully to achieve even distribution of colour and no creeping.
- 7) Carefully remove stencil plate from surface by removing the tape from one side of the plate and use adhering tape as a hinge to facilitate the movement. Any other method can cause the stencil plate to slip and smudge the painted design.
- 8) Wipe back of stencil if necessary as paint can creep around during application.
- 9) Place in next position and repeat the process.
- 10) When stencil work is complete and dry wipe away guide lines with clean soft cloth or damp sponge.

## **1.7 Helping a Client choose the type of Stencil Design**

In helping a client decide on a suitable design, the following factors should be taken into account.

The type of building or product to be stencilled, e.g. is it a restaurant, bookshop, church, etc?

Is the architecture of the building of a traditional or contemporary nature?

What size is the area to be decorated, e.g. is it a large area of wall, a small piece of furniture?

What is the nature of the business being conducted, is it a domestic, commercial or retail premises?

Is the surface rough or smooth etc?

Is the stencil intended to be solely decorative or to impart information, e.g. on a packing case?

The decorator should also have a portfolio of finished work or catalogue of stencils which can be used to assist the client in making a decision.

## 1.8 Geometrical Figures, Bisecting Angles Lines and Circles

### The Circle

A circle is a curved line; every point on it is always the same distance from a fixed point called the centre. This line is called the circumference.

#### Chord

Is a straight line joining two points.

#### Diameter

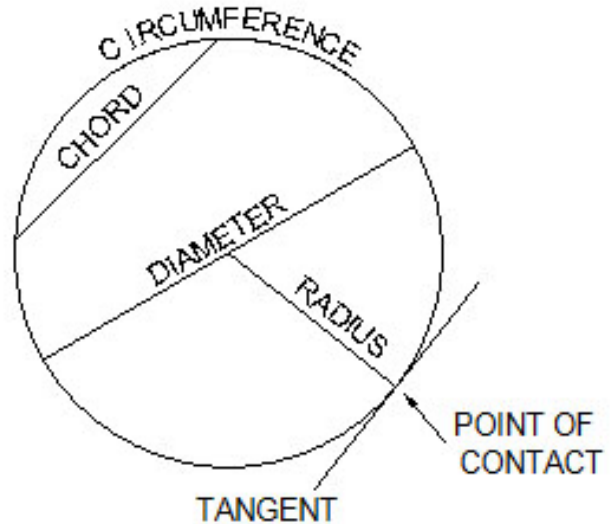
Is any chord that passes through the centre point.

#### Radius

Is any line joining the centre of the circle to the circumference.

#### Tangent

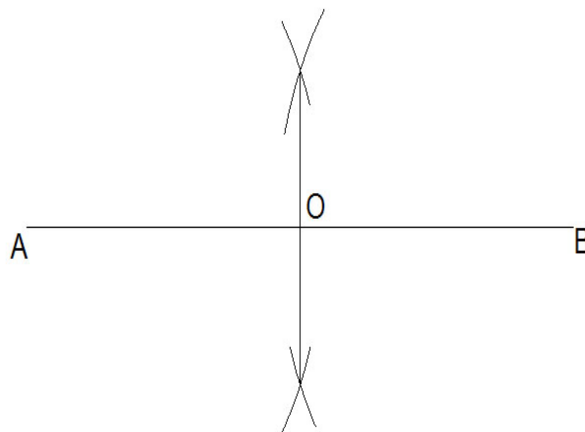
Is a line which touches the circumference in one point only. This is known as the point of contact and a radius drawn from it makes a right angle (90) with the tangent.



#### To bisect a Line

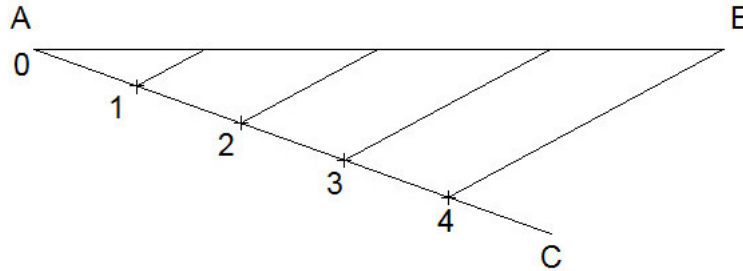
To bisect a line using a compass, take a visual radius of more than half the length of the line. Placing the point of the compass at point A, describe an arc above and below the line.

Keeping the same radius and using B as a centre, describe two more arcs, intersecting the first two as shown. Draw a straight line from the intersection of both arcs which will bisect the line AB at the point O the centre.



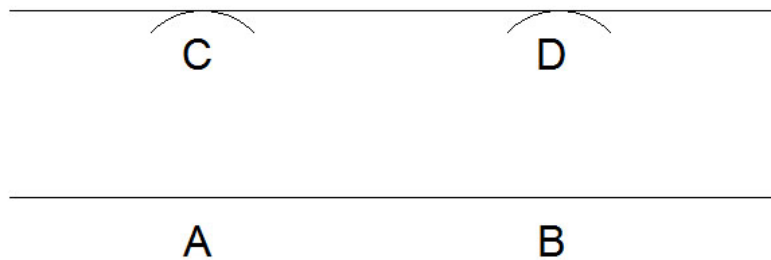
### To divide a line into equal spaces

Draw a line AB. From point A draw a line at any angle (AC). Using a compass, mark off a number of equal spaces (for example four) along AC. Join the last point to B and using set squares, draw parallel lines from the remainder of the marked points.



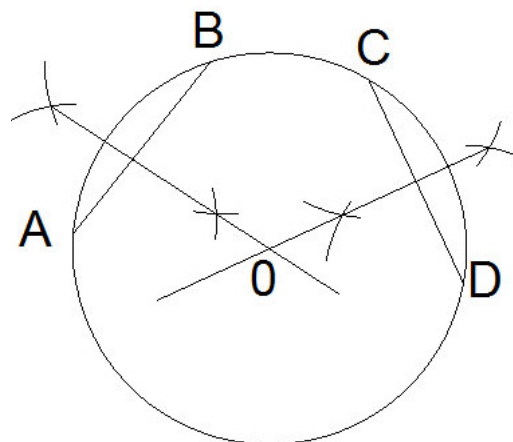
### Parallel Lines

Let AB be the given line. Take the required distance between the lines as radius and draw arcs with A and B as radius and describe two arcs. Draw a line CD through the top of the arcs. CD is parallel to AB



### To find the centre of a circle

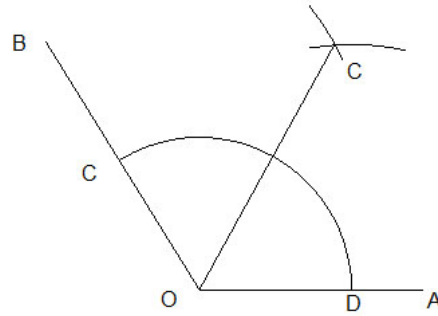
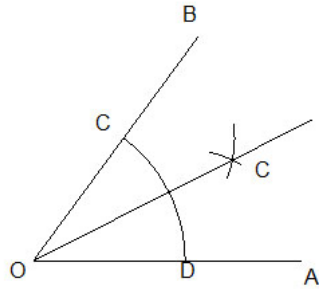
Draw two chords AB & CD anywhere on the circle. Avoid placing them directly opposite each other. Bisect both and where the bisecting lines intersect at O is the centre of the circle.





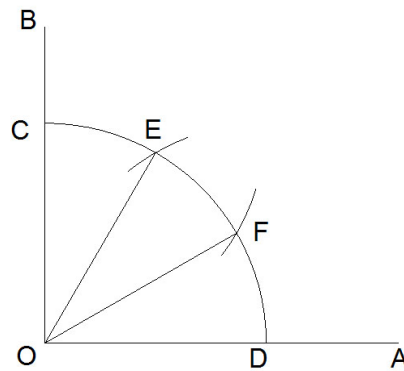
## To bisect an angle

Take an angle BOA. Using a compass and with O as centre draw an arc ( a convenient size) cutting the sides of the angle at C and D. Using C and D as centres and more than half the arc as radius draw two arcs to meet at E. Join E to O. The line OE bisects the angle BOA

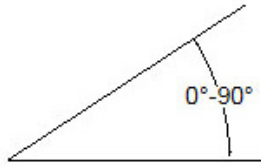


## To trisect a right angle

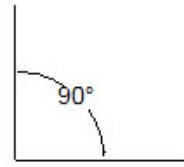
Take BOA as the right angle to be trisected. With O as centre draw a convenient sized arc cutting OA and OB at C and D. Keeping the same radius and with C and D as centres draw small arcs cutting large arc at E and F. Join E and F to O to trisect the angle.



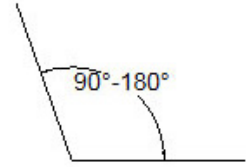
### Types of angles



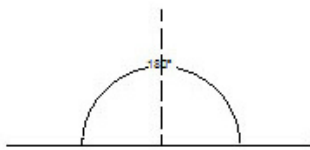
ACUTE



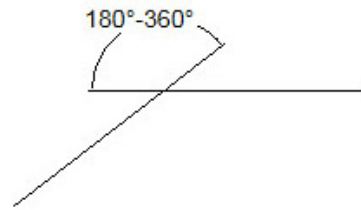
RIGHT



OBTUSE

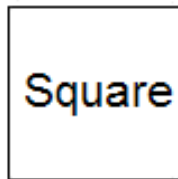


STRAIGHT

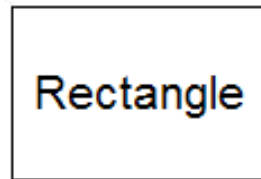


REFLEX

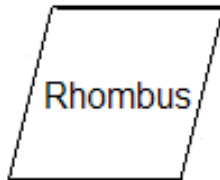
### Types of four sided shapes



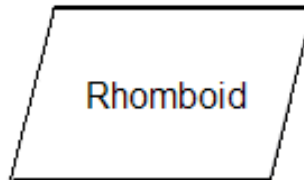
Square



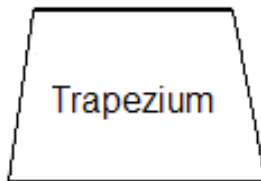
Rectangle



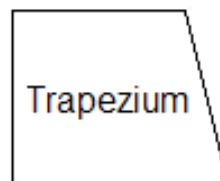
Rhombus



Rhomboid



Trapezium

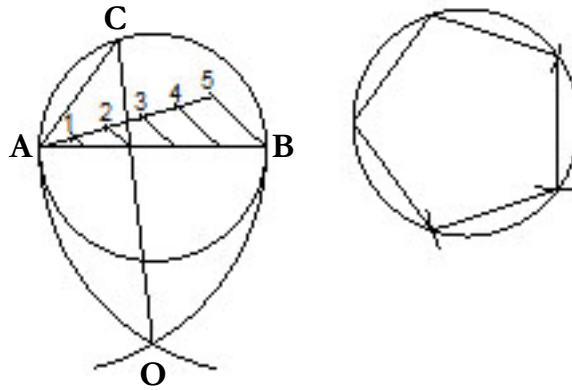


Trapezium

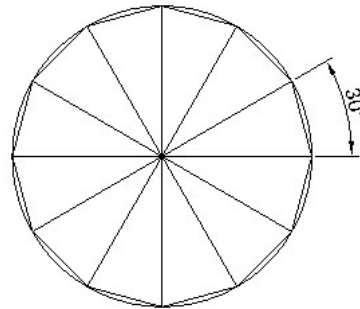
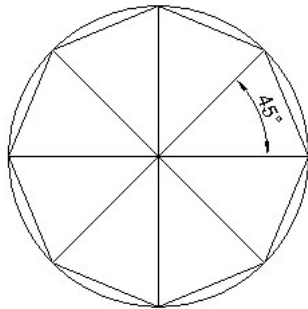
## To draw a polygon within a circle

Take a pentagon (5 sided figure) as an example.

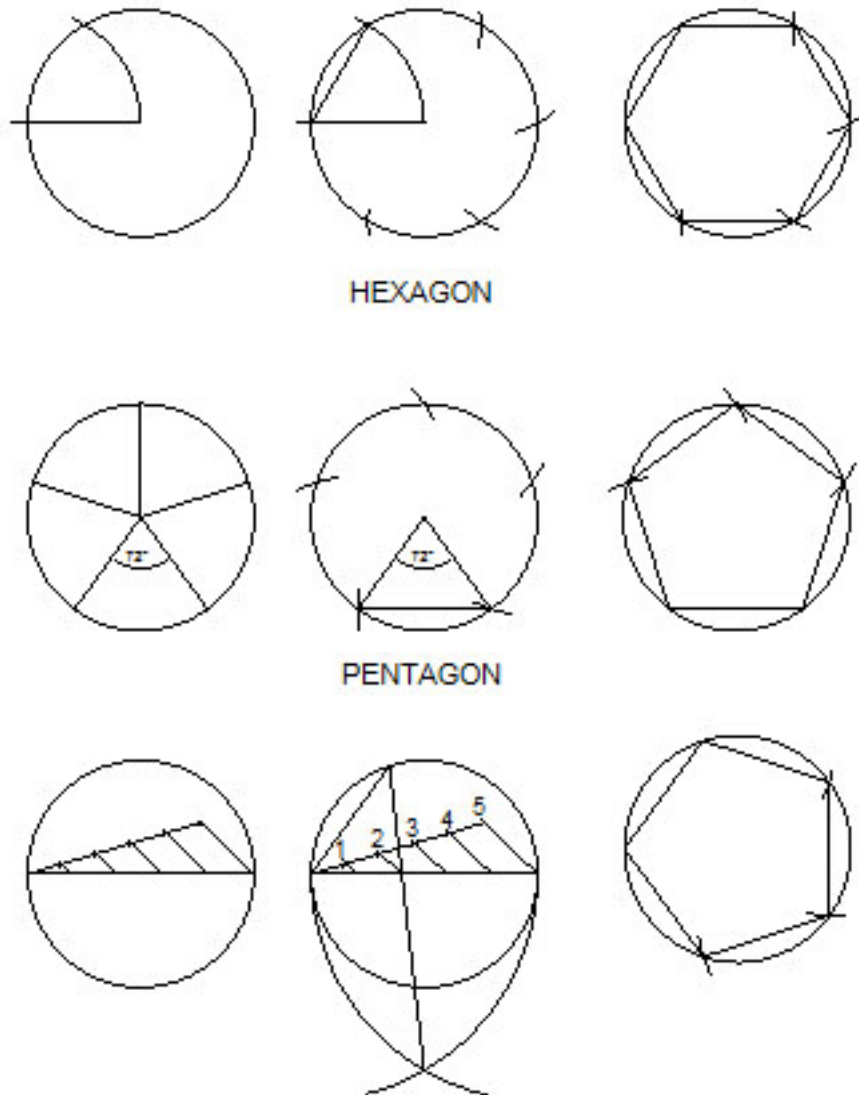
**N.B** A Hexagon (6 sided figure) can be drawn within a circle using the radius as length of side.



- 1) Draw the circle
- 2) Draw the diameter
- 3) Divide the diameter into 5 equal spaces (use the method dividing a line into equal spaces)
- 4) With A and B as centres and AB as radius draw arcs intersection at O.
- 5) Join O through 2 to the circumference (always join O through 2 for any polygon)
- 6) Join A to C. This is one side of the polygon
- 7) Measure AC on compass and step off around the circle



Polygons can also be drawn using set squares and protractors



HEXAGON

PENTAGON

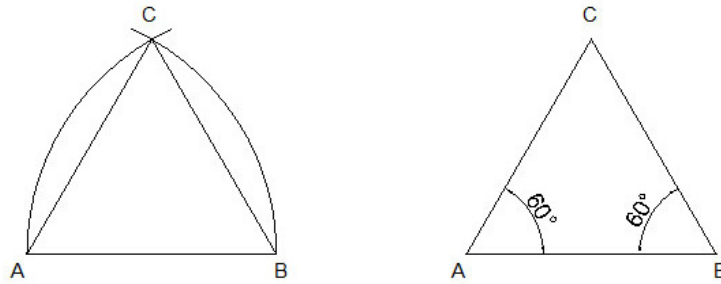
Types of polygon

## Construction of triangles

### Equilateral Triangle – (Three Sides Equal)

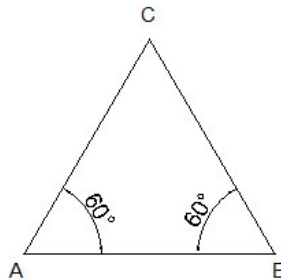
#### Method One

When given the length of one side. Let AB on one side. Take A as centre and AB as radius and draw an arc. Take B as centre and the same radius draw an arc. The two arcs will intersect at C. Join C and A and B.



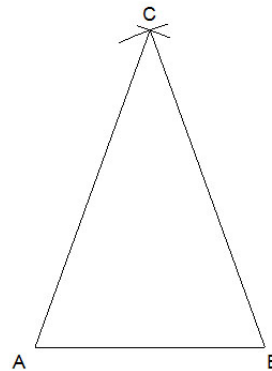
#### Method Two

Again let AB be on one side. At A and B construct angles of 60 using the set square.



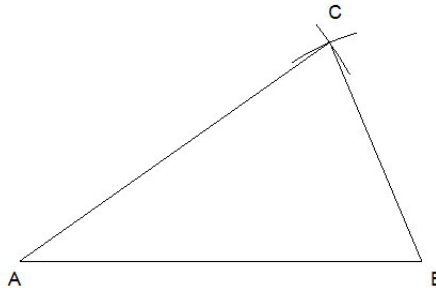
### Isosceles Triangle – (Two sides equal)

Given the base and height. Let AB be the base and OD the height. Bisect the base at AB and erect OD. Join D to A and B. Given the equal sides AB – BC and the base AC. Draw AC. With A as centre and AB as radius draw an arc. With C as centre and the same radius draw an arc to intersect with the first at B. Join B to A and C

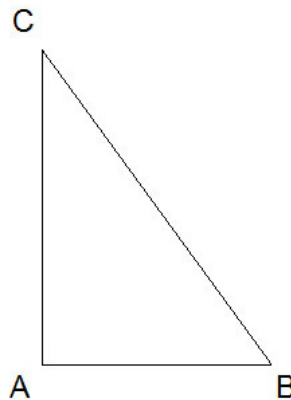


**Scalene Triangle – (No Side Equal).**

Given three sides  $AB - BC - AC$ . Draw the base  $AB$ . With  $A$  as centre and  $AC$  as radius draw an arc. With  $B$  as centre and  $BC$  as radius draw an arc to intersect the first arc at  $C$ . Join  $C$  to  $A$  and  $B$

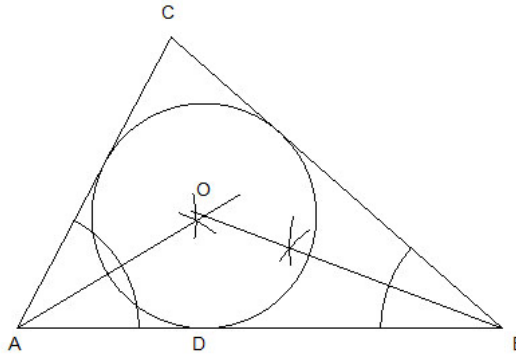
**Right Angled Triangle**

Given hypotenuse  $BC$  and one other side  $AC$ . Draw the given side  $AC$ . At  $A$  erect a perpendicular ( $90^\circ$ ). With  $C$  as centre and radius  $BC$  cut the perpendicular at  $B$ .



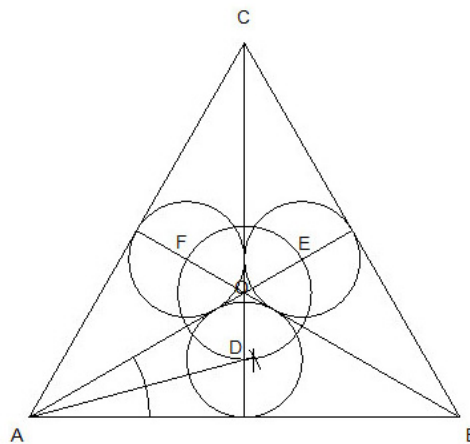
### To inscribe a circle in a triangle

Let ABC be the triangle. Bisect any two angles and where the bisecting lines meet is the centre of the circle O.

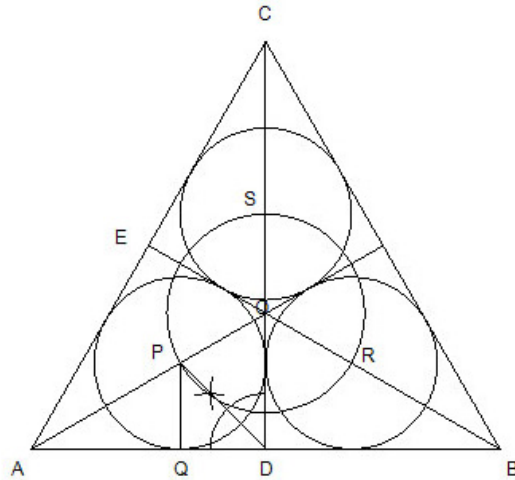


### To inscribe three circles in an equilateral triangle

Let ABC be the triangle. Bisect the angles or the sides. The dividing lines form three isosceles triangles. Find the centre of one of the triangles by dividing one of its angles and where this line meets the first bisecting line is the centre of the circle. From this centre mark off the radius OD on the compass and this will be radius for all three circles



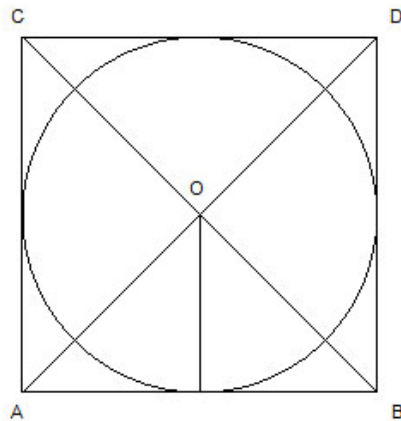
To inscribe three circles in an equilateral triangle with each circle touching two sides of the triangle and the other two circles



Let ABC be the triangle. Divide the triangle into three triangles as in the previous example. Three equal quadrilaterals are obtained by this division. DOEA is one. Draw a circle into one Quadrilateral. Bisect the angle ODA the centre P of the circle is found. Drop a perpendicular from P to base to get the radius. PQ. With O as centre and OP as radius mark off the other two centres S and R.

**To inscribe a circle in a square**

Let ABDC be the square. Draw two diagonals intersecting at O the centre. Drop a perpendicular to the base line to obtain the radius



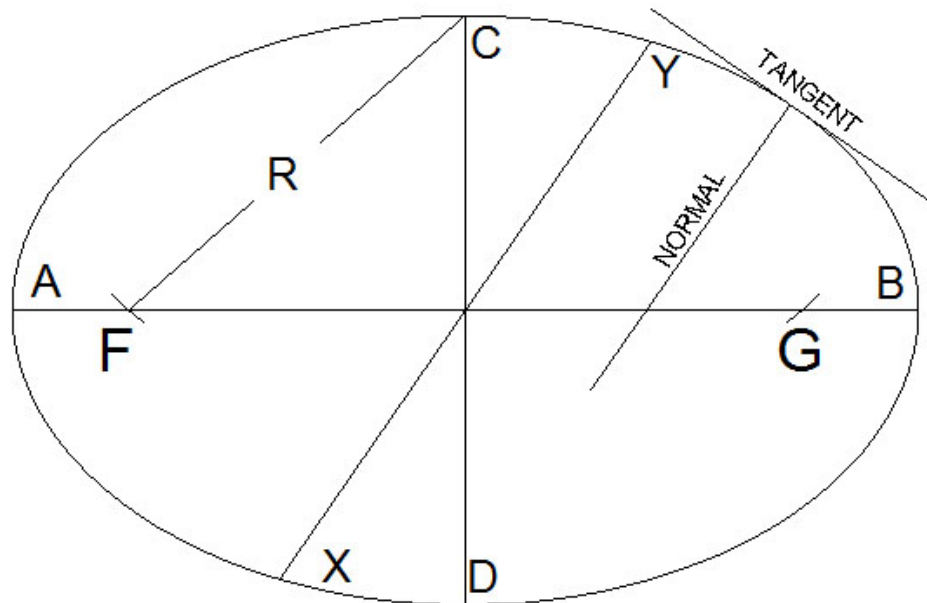


## The ellipse

Is a plane figure enclosed by a particular curved line. It is a very widely used figure in designs and layouts.. Can be drawn in a variety of ways but the following two methods are the most practical.

### The string method

Draw a major axis (Line AB) and minor axis (Line CD). The minor axis is roughly half the length of the major axis. Focal points are drawn by taking half the major axis as a radius (R) and with C as centre mark two points (F and G) on the major axis. Place drawing pins in point F, C, G and loop a string around them tying it at F and G. Remove pin from C and replace with pencil. Keeping string taut and holding pencil vertical, draw the curve by moving the pencil along the string.

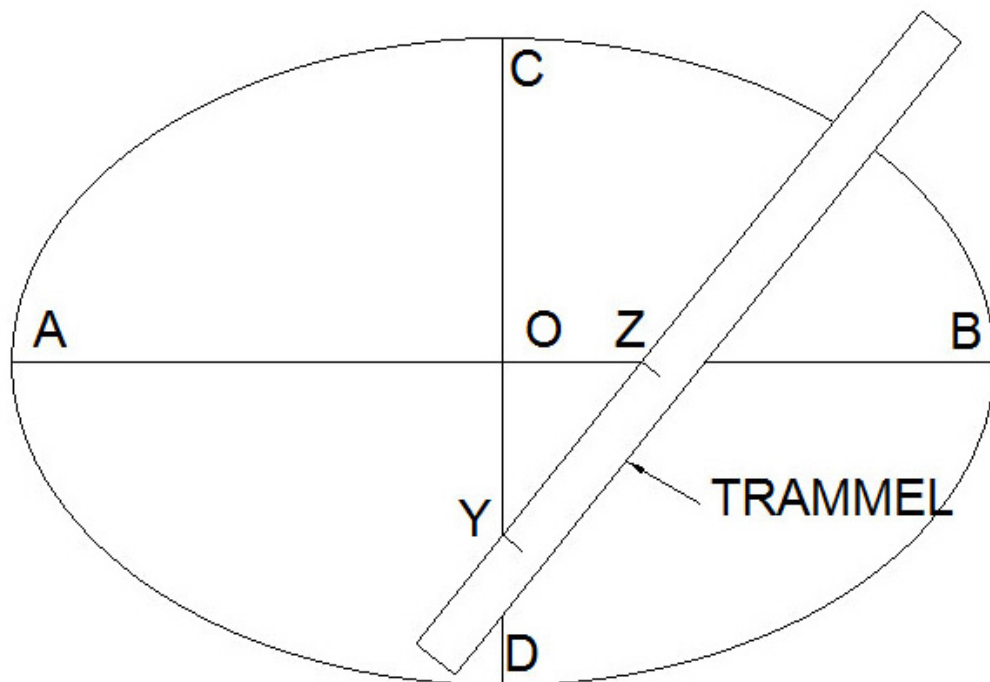


## The trammel method

Draw the major (AB) and minor (CD) axis with centre O. A trammel can be any straight edge. Mark off X, Y, Z on the trammel.

$XY = \text{half the major axis}$ ,  $XZ = \text{half the minor axis}$

Place the trammel on the axis so that Y is always in the minor axis and Z is always on the major axis, and mark the position of the curve at X. Reposition the trammel to locate other points keeping Y and Z on the axis. Join all the points to make the curve. The more points made the easier this task will be.



## 2.0 Clean and Store Stencils correctly

### Key Learning Points

- Storing and maintaining stencils
- Helping client to choose stencil

### 2.1 *Storing and maintaining stencils*

Stencils are templates that are time consuming to design and cut and ready made stencils can be expensive to purchase. It is therefore important to clean and store the stencil correctly.

#### **Cleaning**

Wash out brushes in the solvent of materials used for stencilling.

If oil paint has been used, wash out with white spirit, wipe with cloth to remove excess solvent and finally, wash with warm water and soap.

If Acrylic or emulsion paint has been used, wash with water.

Methylated spirit may be necessary to complete cleaning.

Place stencil on a flat surface.

Wipe stencil clean. Wipe carefully to avoid damaging ties.

#### **Storing**

Stencils should be stored hanging up or flat in a folder.

They should be completely dry before being stored, in order to avoid them fusing together.

Wherever possible separate each plate with clean paper or plastic to avoid the detail of the designs on separate plates becoming snagged with each other.

## **2.2 Hazards involved when using Scalpels & Stencil Knives**

### **Key Learning Points**

- Safe use of stencil knives and scalpels
- Safe working practice

## **2.3 Safe use of stencil knives and scalpels**

When cutting stencils care must be taken to avoid injury with knives or scalpels. These are very sharp instruments and must be treated with care. When purchasing, a retractable type or one with a cover should be bought. Single blade replacement types or snap off types are also available.

- 1) Always use as instructed.
- 2) Never cut on unsuitable surfaces such as wood, soft board, cork etc. as blades can snag in the surface and break causing possible injury to the user or others close by.
- 3) Never put a blade or knife in your pocket uncovered.
- 4) Put away carefully after use to avoid others coming into contact with it.

### **Safe use of hot knife**

As the name suggests it is a knife that is plugged in to a domestic electric socket and after a short period of time it gets very hot. Hold by the handle. If you touch the front stem of the knife you will be burned. Ideal for cutting Mylar, it can be pushed or pulled when following the design. When finished or taking a break unplug it and never leave it in a place where others may pick it up and be burned. Allow to cool before storing.

## 2.4 *Safe working practice*

### **Safe cutting techniques**

Cut away from ties, and for safety reasons especially from fingers. Keep cutting blades and knives in good order. Use metal straight-edge when cutting as timber or plastic ones are liable to be damaged by the sharp knives. Never cut on unapproved surfaces e.g. timber, as the blade may snag and snap, causing injury.

### **Cutting on glass**

Toughened safety glass should be used as ordinary glass can be broken easily creating a hazard. A piece of toughened glass inserted into a frame can be used. If not inserted into a frame the sharp edges should be removed to avoid injury. This can be done by the glass supplier.

### **Safe use and storage of methylated spirit and shellac / French polish.**

Methylated spirit is the solvent used for French polish and shellac. which are the materials that stencils made from card are coated with prior to cutting. It is flammable, therefore it should be kept in an exterior store or, if being kept indoors, in a fireproof metal cabinet. The same would apply to French polish and shellac as they both contain methylated spirits.

## Summary

Stencilling has had a revival over the last number of years and this is evident with the amount of ready cut stencil on sale in paint shops, art shops and internet sites. The range is very wide from simple single plate designs to multi plate designs which when used with care can produce very elaborate images.

The subject matter is also universal with stencils of floral and abstract patterns as well as pictorial types such as animal's bird's sports etc

Many new houses are very plainly designed and are an ideal subject for stencilling to relieve the monotony of large plain wall areas

Furniture, especially restored furniture is another area where selected stencils can be used in a very attractive way. Used in conjunction with other painting effects on the furniture very attractive pieces can be created.

Stencilling should be subtle and not overpowering so practice and study of the skill is a must for the beginner. There are excellent books and videos on the subject available and some web sites are also very informative.

## Training Resources

Manila paper, acetate, O/H projector, drawing equipment, stencil knife, cutting mat, shellac, brush, masking tape, 1” brush, paint, chalk and line, spirit level, stencil brush, tool kit, classroom and workshop facilities, notes/information, sheets and transparencies

## Questions.

- Q.1 Explain the difference between positive and negative stencils
- Q.2 What types of paint are best suited for stencilling
- Q.3 Why use stencils
- Q.4 State two precautions to be observed when using stencil knives.
- Q.5 What is the function of a multi plate stencil?

## Suggested Reading

- The complete book of home stencilling. Author - Katrina Hall
- The complete Stencilling handbook. Author - Sandra Buckingham
- Country Stencilling. Author - Barbara Robbins
- The stencil book Author - Lyn Le Grice & Dorling Kindersley
- Cut and use stencils. Dover Publications.
- Good Websites available for catalogues and books.

## **Suggested Exercise**

Enlarge, construct and cut given stencil to scale and apply as directed to selected surface

### **Exercise 1.**

- 1) Draw the letters A, B, G, K, R, S, T, W, X 50mm high on stiff card and put in ties.
- 2) Prepare the card with French polish.
- 3) Cut out on a piece of toughened glass or cutting mat using sharp stencil knife.
- 4) Using acrylic tube colours apply cut stencils to a board previously prepared in satinwood.
- 5) Safely store tools and equipment after use.

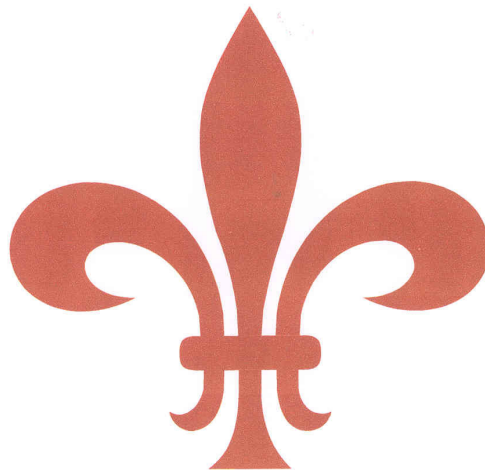
### **Exercise 2.**

Using the drawing shown put in ties in the correct position in the fleur-de-lys

Cut out the stencil on a piece of toughened glass using Mylar and hot knife.

Using acrylic tube colours apply cut stencil to the four corners of a panel previously prepared in satinwood

Clean and safely store tools and equipment after use.





S O L A S

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