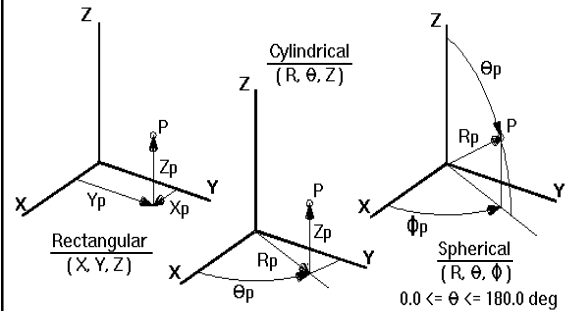


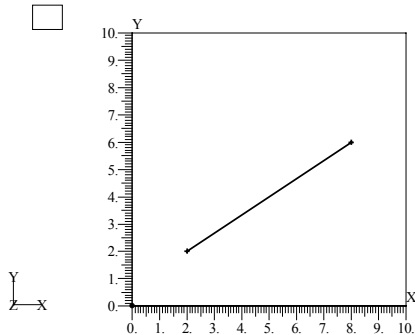
APPLIED GEOMETRY

(LINE, ANGLE, POLYGON, ARC,
CIRCLE, AND UTILITIES)

COORDINATE SYSTEM

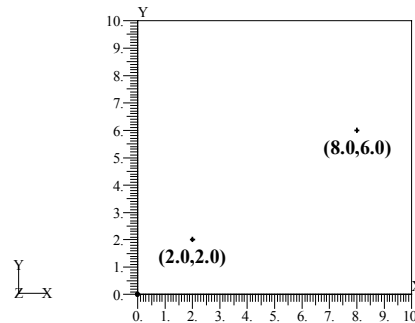


LINE CONSTRUCTION



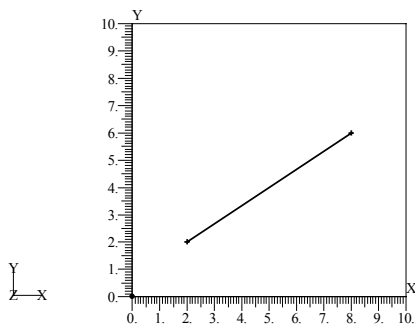
\therefore 2 steps are used to create one line.

LINE CONSTRUCTION



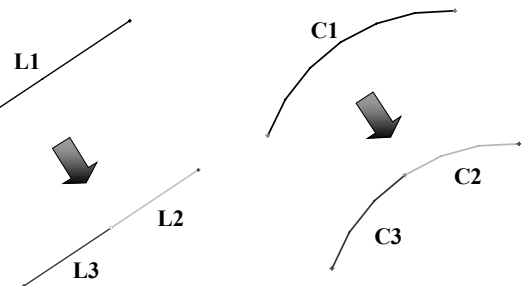
First Step : Create two points.

LINE CONSTRUCTION

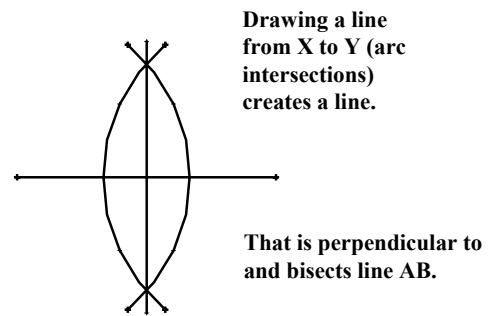
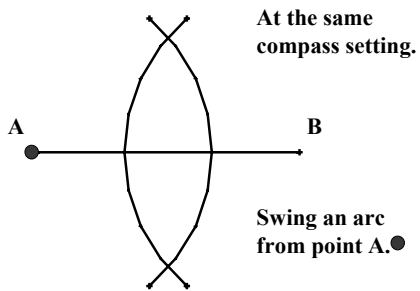
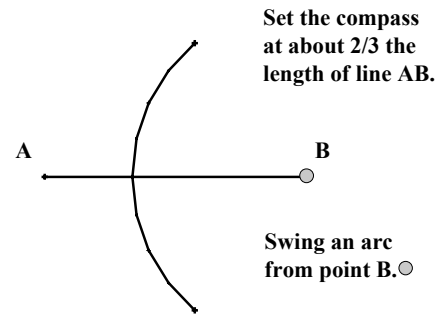
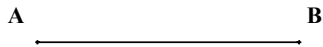


Second Step : Draw line between points.

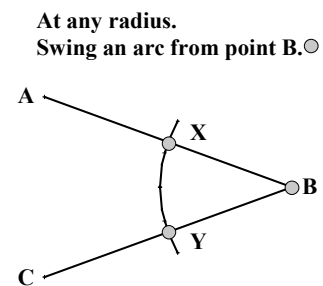
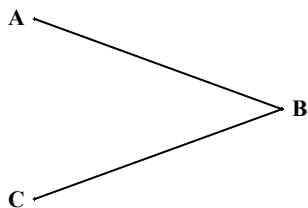
BISECTING LINE OR ARC



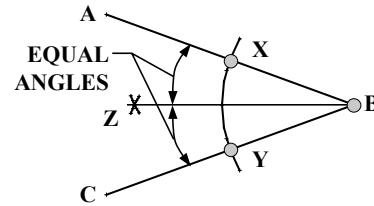
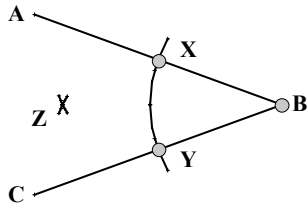
HOW TO DIVIDE A LINE INTO EQUAL PARTS (BISECT)



HOW TO BISECT AN ANGLE

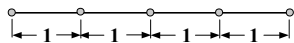


From points X & Y. Swing two identical arcs of any radius.

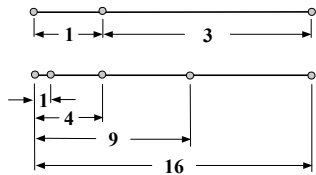


HOW TO DIVIDE A LINE

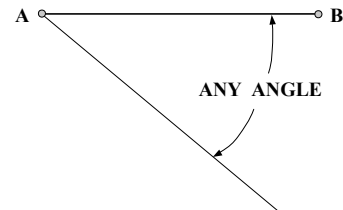
● EQUAL LENGTH



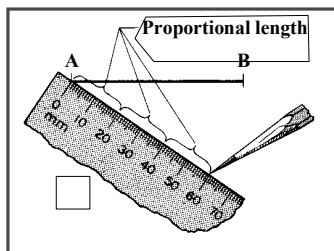
● PROPORTIONAL LENGTH



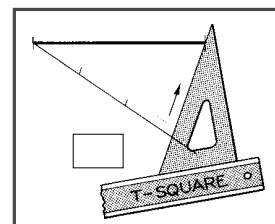
- Draw a light construction line at any convenient angle from point A.



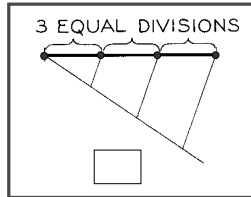
- With pencil and scale, set off from intersection of lines as many proportional divisions as need.



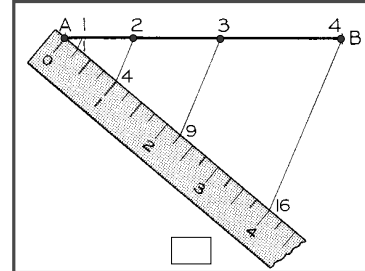
- Connect last division point to other end of line, using triangle and T-square, as shown.



● Example of Equal Parts



● Example of Proportional Parts

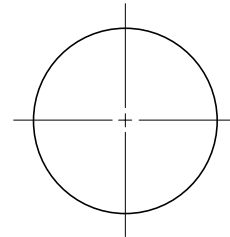


HOW TO DRAW A POLYGON

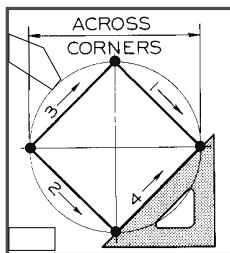
- SQUARE
- REGULAR PENTAGON
- HEXAGON
- OCTAGON

HOW TO DRAW A SQUARE

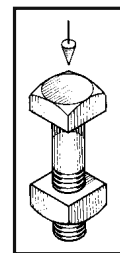
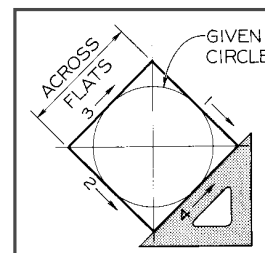
● Given the circle.



- Draw two diameters at right angles to each other. The intersections, ●, are vertices of an inscribed square.

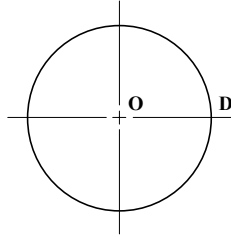


- With the T-square and 45° triangle, draw the four sides tangent to the circle.

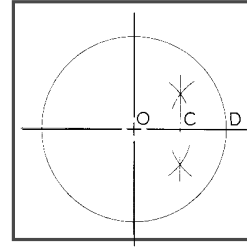


HOW TO DRAW A PENTAGON

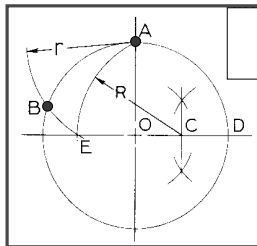
- Given the circle.



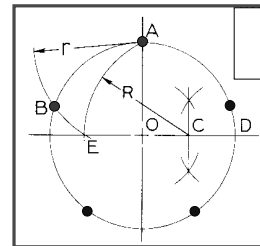
- Bisect radius OD at C



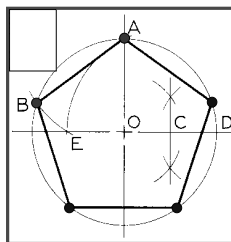
- With C as center, and CA as radius (R), strike arc AE. With A as center, and AE as radius (r), strike arc EB.



- Set off distances AB around the circumference of the circle. ●

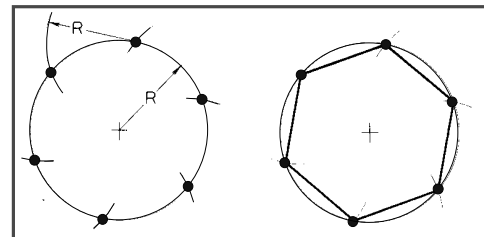


- Draw line AB and other sides.

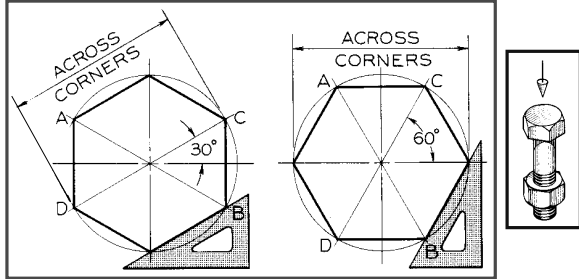


HOW TO DRAW A HEXAGON

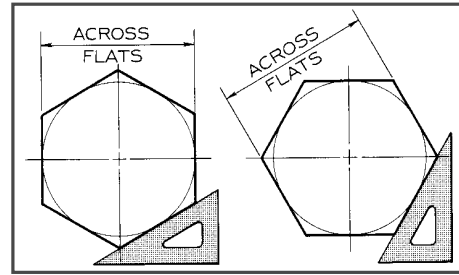
- Using the compass and the radius of the circle (R), set off the six sides and connect the points with straight lines.



- Draw vertical and horizontal center lines.
Diagonals AB and CD at 30° or 60° with horizontal.
With 30° X 60° triangle and T-square, draw the six sides.

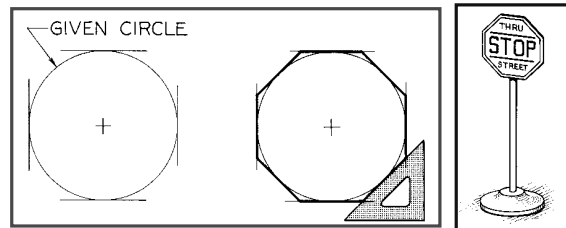


- Draw vertical and horizontal center lines.
With 30° X 60° triangle and T-square, draw the six sides tangent to the circle.



HOW TO DRAW A OCTAGON

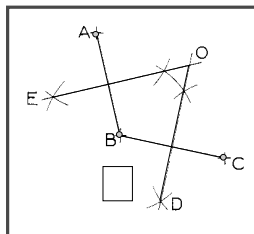
- Using T-square and 45° triangle, draw the eight sides tangent to the circle.



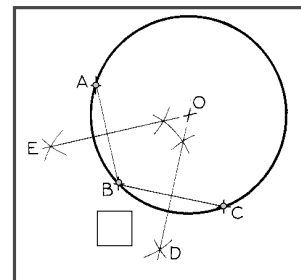
HOW TO DRAW A CIRCLE THROUGH THREE POINTS

A °
B ° ° C

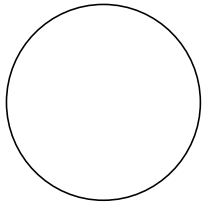
- Draw lines AB and BC.
Draw perpendicular bisectors EO and DO, intersecting at O.



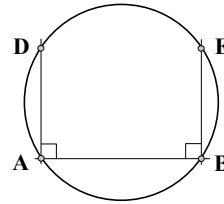
- With center at O, draw required circle through the points.



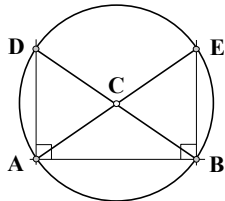
HOW TO FIND THE CENTER OF A CIRCLE



- Draw any horizontal chord AB. Draw perpendiculars from A and B, cutting circle at D and E

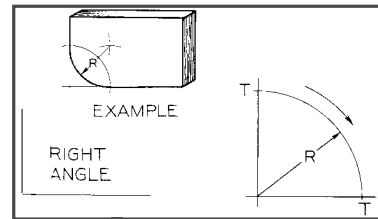


- Draw diagonals DB and EA whose intersection C will be the center of the circle.

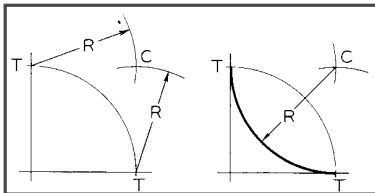


DRAWING A TANGENT ARC IN A RIGHT ANGLE

- With given radius R, strike arc intersecting given lines at tangent points T.

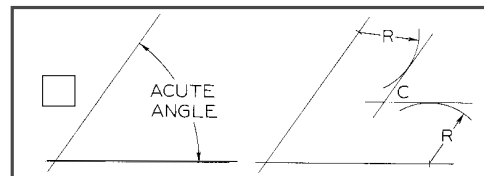


- With radius R and points T as centers, strike arcs intersecting at C. With C as center and radius R, draw required tangent arc.

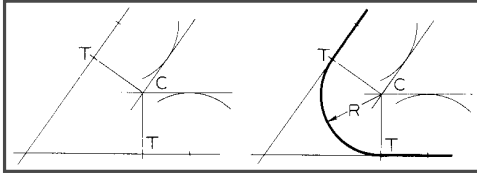
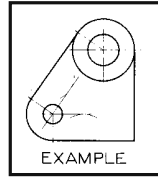


DRAWING A TANGENT ARC IN AN ACUTE ANGLE

- Draw lines parallel to given lines, at distance R, to intersect at C, the required center.

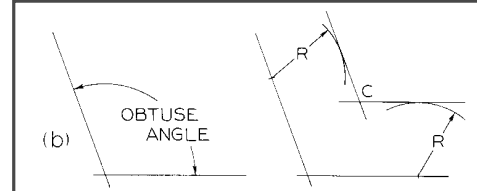


- From C drop perpendiculars to a given lines respectively, points T. With C as center and radius R, draw required tangent arc.

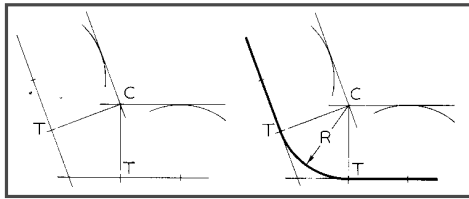
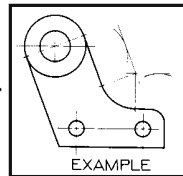


DRAWING A TANGENT ARC IN AN OBTUSE ANGLE

- Draw lines parallel to given lines, at distance R, to intersect at C, the required center.

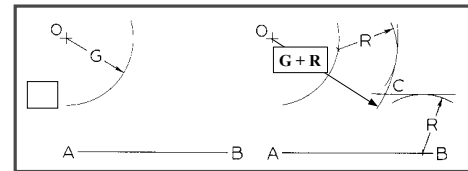


- From C drop perpendiculars to a given lines respectively, points T. With C as center and radius R, draw required tangent arc.

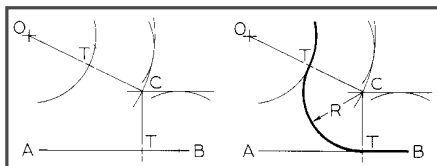
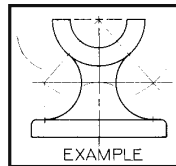


DRAWING ARC TANGENT TO AN ARC AND A STRAIGHT LINE

- Draw lines and arc parallel, respectively, to the given lines and arc at the required radius distance R, to intersect at C, the required center.

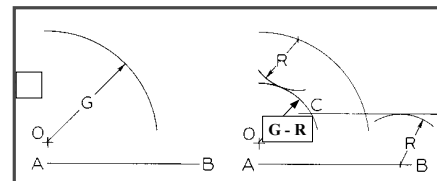


- From C drop perpendiculars to a given line to obtain one point T. Draw CO to locate the other point T. With center C and radius R, draw required tangent arc.

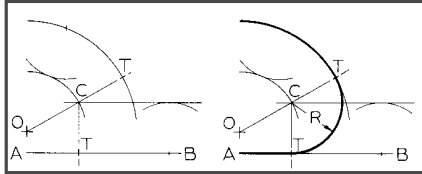
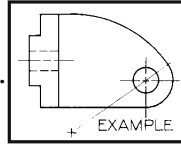


DRAWING ARC TANGENT TO AN ARC AND A STRAIGHT LINE

- Draw lines and arc parallel, respectively, to the given lines and arc at the required radius distance R, to intersect at C, the required center.

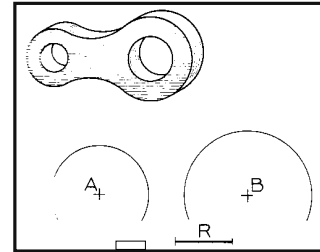


- From C drop perpendiculars to a given line to obtain one point T. Draw CO to locate the other point T. With center C and radius R, draw required tangent arc.

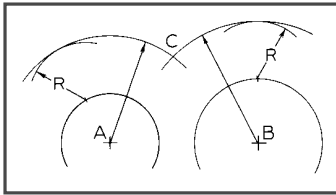


DRAWING ARC TANGENT TO TWO ARCS

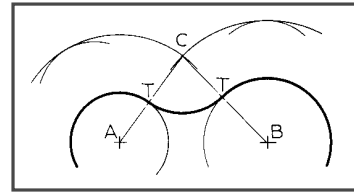
- Given arcs with centers A and B, and required radius R.



- With A and B as centers, draw arcs parallel to given arcs and at a distance R from them; Their intersection C is the center of the required tangent arc.

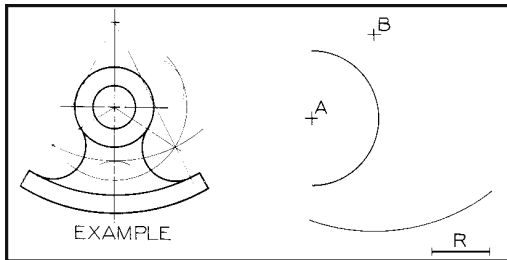


- Draw lines of centers AC and BC to locate points of tangency T, and draw required tangent arc.

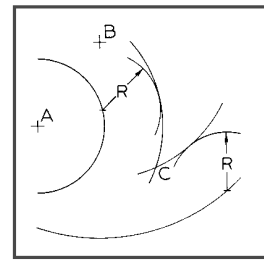


DRAWING ARC TANGENT TO TWO ARCS

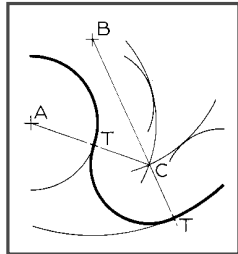
- Given arcs with centers A and B, and required radius R.



- With A and B as centers, draw arcs parallel to given arcs and at a distance R from them; Their intersection C is the center of the required tangent arc.

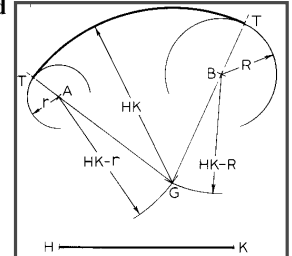
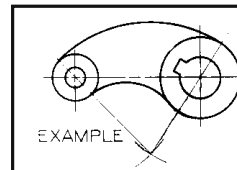


- Draw lines of centers AC and BC to locate points of tangency T, and draw required tangent arc.



DRAWING ARC TANGENT TO TWO ARCS AND ENCLOSING ONE

- With A and B as centers, strike arcs $HK - r$ and $HK - R$ intersecting at G, the center of required tangent arc. Extended lines of GA and GB determine points T.



DRAWING ARC TANGENT TO TWO ARCS AND ENCLOSING ONE

- With C and D as centers, strike arcs $HK+r$ and $HK-R$ intersecting at G, the center of required tangent arc. Extended lines of GC and GD determine points T.

