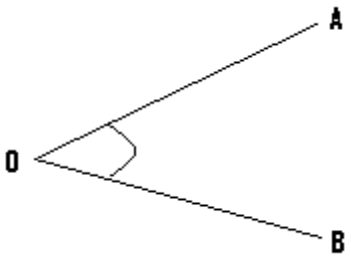
CHAPTER FOURTEEN
BASIC CONSTRUCTION

Angle:

An angle is formed when two straight lines meet at a point.

Example:



- In the diagram given, the lines OA and OB meet at the point O.

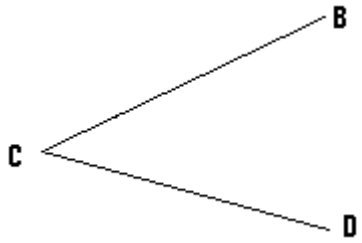
- The angle formed is angle AOB or angle BOA.

- Angle AOB can be written as < AOB, while angle BOA can be written as < BOA

BISECTION OF ANGLES:

- To bisect a given angle means to divide it into two equal parts.

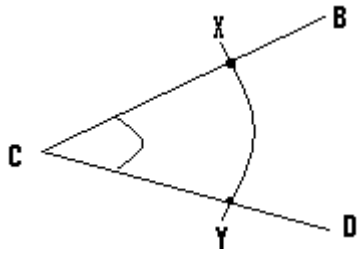
Example 1



In the given figure, bisect angle BCD.

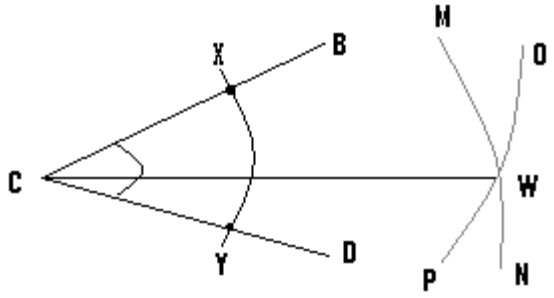
STEPS:

(I)



- Open your compass to a suitable length, and with its pin positioned at point c, draw an arc to cut line CB at point X and line CD at point Y.

II)



- Open your compass to a greater length and with its pin now positioned at point X, draw arc OP.

- With the same length and the pin now positioned at the Y, draw arc MN and let the meeting point or the point of intersection of these two arcs be W.

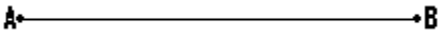
- Finally draw a line to pass through the point C and W.

- By so doing we have bisected < BCD.

Location of a point from two different fixed points:

- Two fixed points may be given and one asked to determine the position of a point, which may be at different distances away from these points.

Examples:



Given the points A and B, determine the position or the location of the point Y, which is 5cm away from A and 7cm away from B.

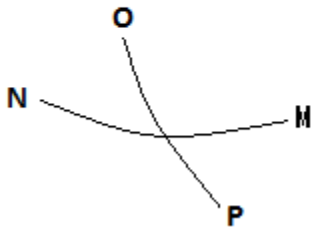
Steps:

(I)

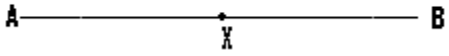
- Open your compass to a length of 5cm, and with the pin positioned at A draw arc MN.

- The compass is then opened to a length of 7cm, and with its pin positioned at B draw arc OP.

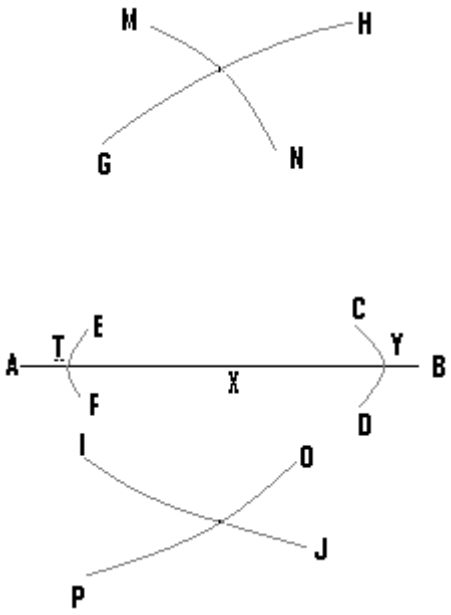
- The meeting point of these arcs is the location of the point Y.



CONSTRUCTION OF ANGLE 90^{o}



With reference to line AB, construct angle 90^{o} at point X.



(1)

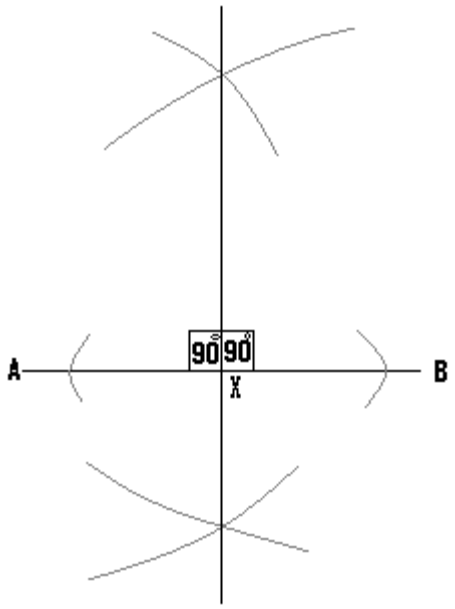
- Open your compass to a small length, and with the pin positioned at point X, draw arcs CD and EF.

- Open your compass to a greater length, and with the pin positioned at Y, construct arcs GH and IJ.

- Open your compass to a greater length, and with the pin now at point T, draw the arcs MN and OP.

(2)

Draw a line to pass through the point X, and the points of intersection of the various arcs.



(Q1) Using a ruler and a pair of compasses only, draw line AB such that AB = 9cm, and locate the point X which is 4cm away from A. Construct angle 90° at the point X.

(Q2)a) Using a ruler and a pair of compasses only, draw line XY such that XY = 70mm, and locate the point A which is 30mm away from Y. Construct angle 90° at the point A.

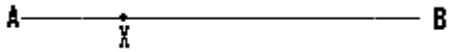
b) Locate the point W which is 50mm away from X and 60mm away from Y.

CONSTRUCTION OF ANGLE 45°:

- To construct angle 45° at a given point, we first construct 90°at that point.

- The angle 90° is then bisected to get angle 45°.

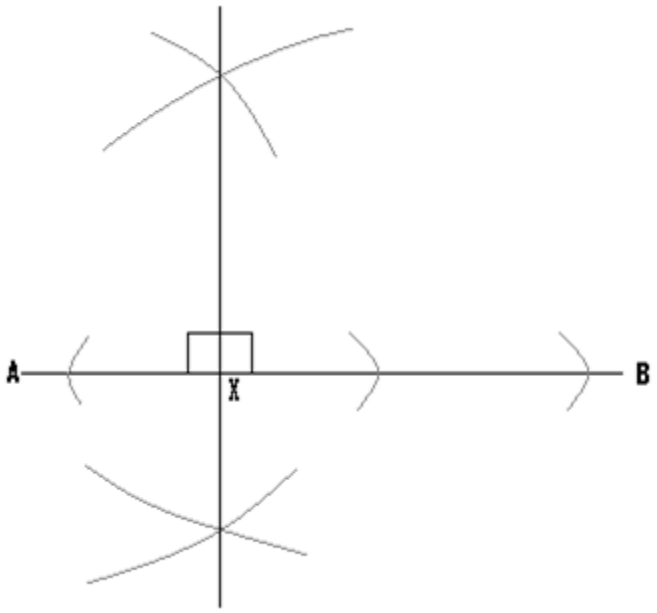
Example:



Construct angle 45° at X.

Step 1:

- This involves the construction of angle 90° at the point X.



Step 2:

- Bisect the 90° to get 45°.

- Since there are two angles of value 90°, the one bisected depends on where we want the angle 45° to lie.