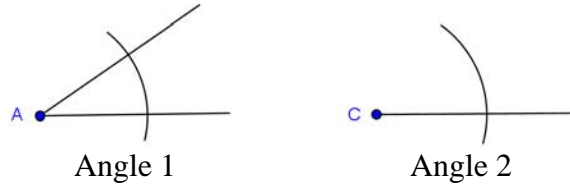


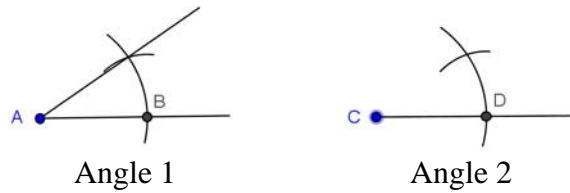
Construction Techniques

Copying an angle

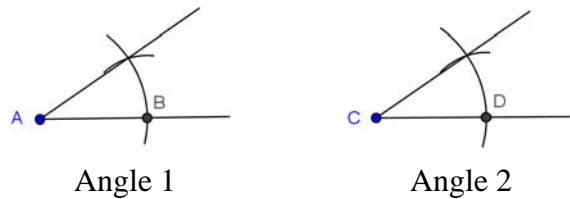
With the compass, draw an arc from the vertex of the angle and copy the arc onto the new line segment.



From the intersection of the arc and the base line, draw another arc that intersects the first arc and the upper line. Duplicate the second arc on the new construction.



Draw a line through the intersection of the two arcs – the angles are the same.



Copying a Triangle

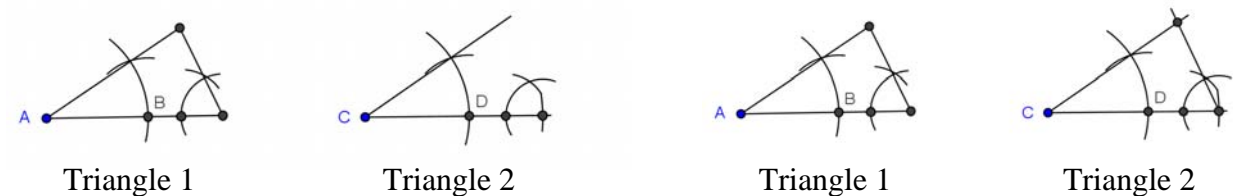
Side-Angle-Side

Copy an angle and mark off the distance of the sides on either side of the angle.



Angle-Side-Angle

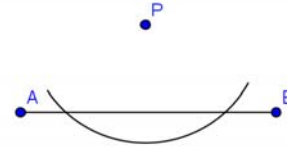
Mark off one side, then copy both angles adjoining that side. Draw a line from the endpoint through the intersection of the arcs marking the second angle.



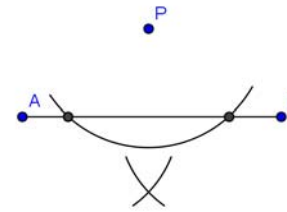
Perpendicular Lines

From a point to a line

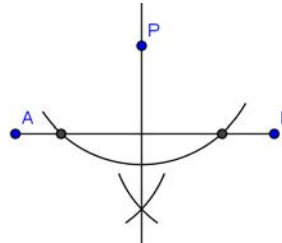
Draw any arc from Point P crossing the line.



From both intersections, draw two arcs of the same radius below the line.

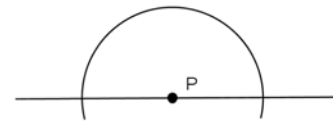


Draw a line from P through the intersection of the new arcs.

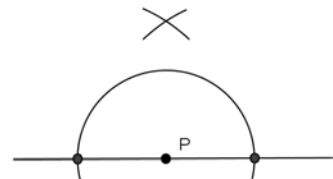


Through a point on a line

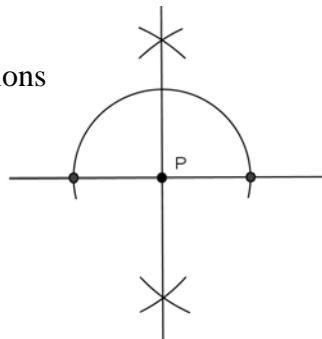
Draw any arc from the point intersecting the line.



From both intersections, draw arcs of a larger radius above and below the line.



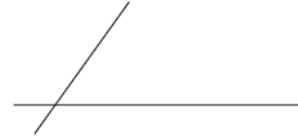
Draw a line through the intersections of the arcs and the point.



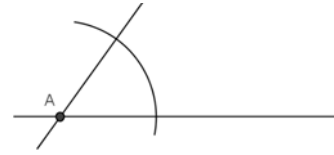
Parallel Lines

Method 1

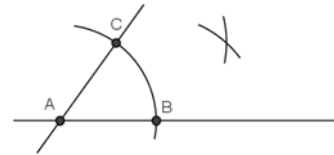
From a base line, draw any line slanting up.



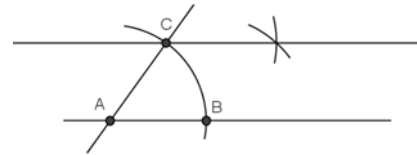
Draw any arc from Point A intersecting the two lines.



From Points B and C, draw intersecting arcs of equal radius.

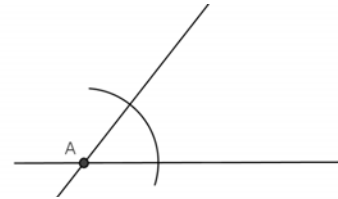


Draw a line from point C through the intersection of the arcs.

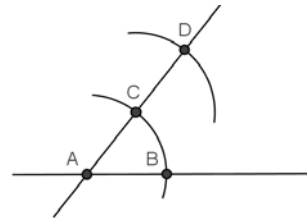


Method 2

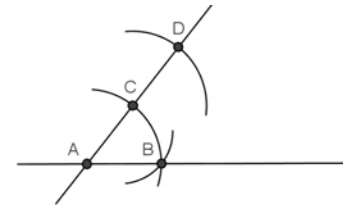
From a base line, draw any line slanting up, then draw any arc from Point A.



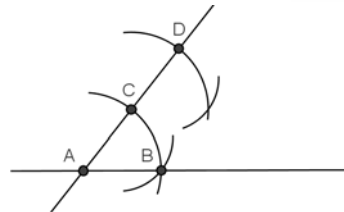
Duplicate the arc from Point C.



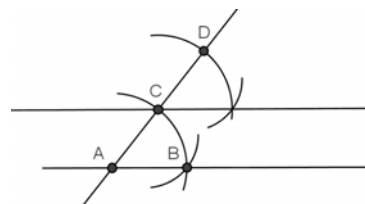
From Point C, draw an arc intersecting the base line and the first arc (Point B).



Duplicate that arc starting from Point D.



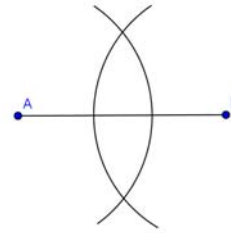
Draw a line from Point C through the intersection of the arcs.



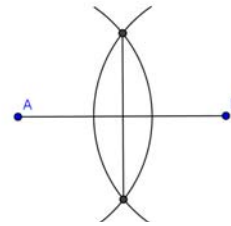
Perpendicular Bisector

Method 1

Draw two arcs with the same radius, one from Point A and one from Point B.

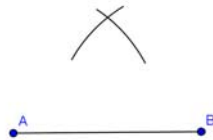


Draw a line between the points of intersection of the two arcs.

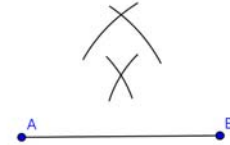


Method 2

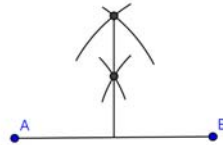
Draw two arcs with the same radius, one from Point A and one from Point B.



Draw two different arcs, same radius, from A and B.

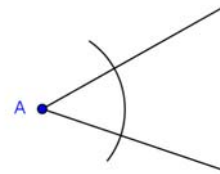


Draw a line through the intersections of the two sets of arcs.

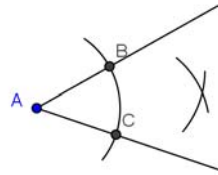


Angle Bisector

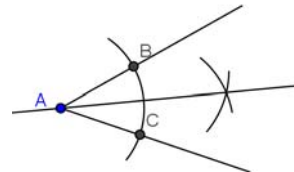
Draw any arc from Point A crossing the angle.



From Points B and C, draw two arcs of equal radius beyond the original arc.



Draw a line from Point A through the intersection of the arcs.

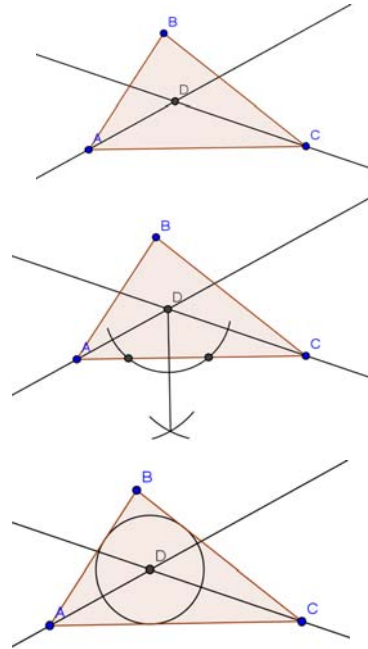


Incenter of a Triangle (to inscribe a circle)

Construct the angle bisectors of two angles. The intersection of the bisectors is the center of a circle which can be inscribed within the triangle, touching each side at one point.

To find the radius of the circle, construct a perpendicular line from the incenter to any side. The distance from the incenter to the side is the radius.

Draw a circle using the radius and the intersection of the bisectors as the center.

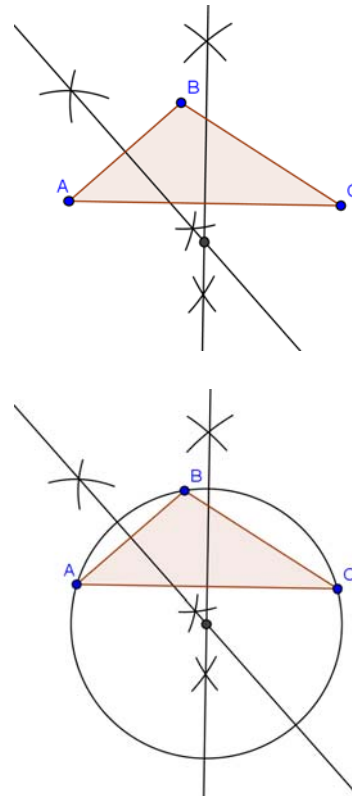


Circumcircle around a Triangle

Construct the perpendicular bisectors of two sides of the triangle. The intersection of the bisectors is the center of the circle that can be drawn around the triangle.

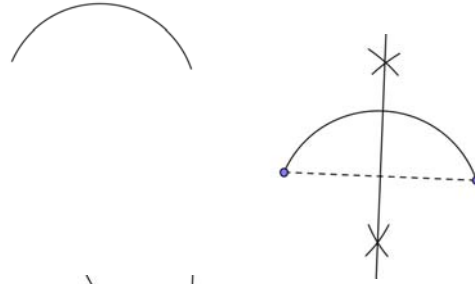
Draw a circle using the center. The radius is the distance from the center to any vertex of the triangle.

Note: the bisector intersection can be either inside or outside the triangle.

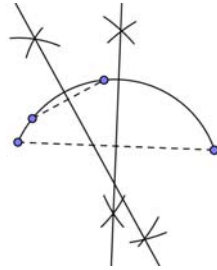


Construct a Circle from a Partial Circle

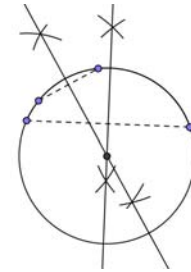
Connect the endpoints with a line (chord) and construct the perpendicular bisector of the chord.



Draw any other chord between two points on the circle and construct its perpendicular bisector.

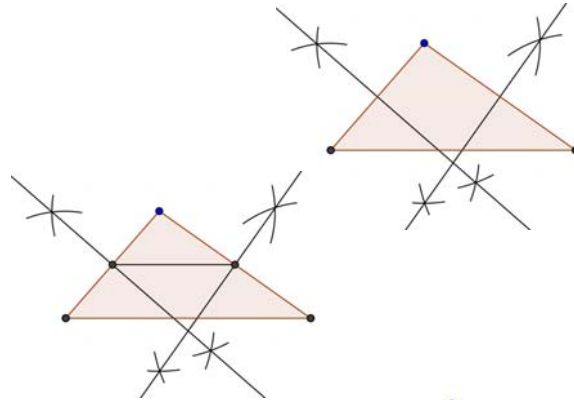


The center of the circle is the intersection of the two bisectors. The radius is from the center to any point on the partial circle.



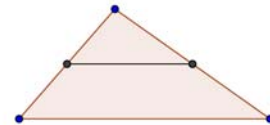
Midsegment of a Triangle

Construct perpendicular bisectors to two sides of the triangle.



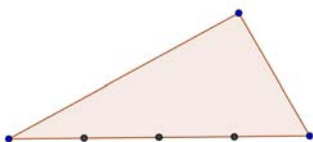
Connect the intersections of each bisector with its side.

This line is called the midsegment of the triangle. Its length is half the length of the base.

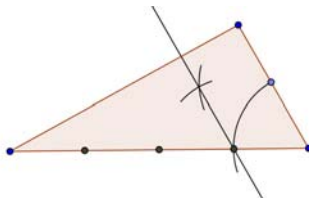


Congruent segments across a triangle

Mark off equal segments on the base of the triangle.



Construct a line parallel to the side of the triangle.



Continue constructing parallel lines or mark equal segments on the top side and connect .

