

Useful Construction Theorems

This list is probably not complete. Add more as needed.

1. **Triangle Congruences.** If any of the following angle/side combinations are the same for two triangles, then the triangles are congruent: SSS, SAA, AAS, ASA, SAS.
2. **Similar Triangles.** If the angles of two triangles are the same, then the triangles are congruent. If two triangles are congruent, then the ratio of their sides are the same.
3. The sum of the measures of the interior angles of a triangle is 180° .
4. **Isosceles Triangle Theorem.** If two sides of a triangle are congruent, then the angles opposite those sides are congruent.
5. **Converse of the Isosceles Triangle Theorem.** If two angles of a triangle are congruent, then the sides opposite those angles are congruent.
6. **Vertical Angle Theorem.** If two lines intersect at a point, then the opposite angles at the point of intersection are congruent.
7. **Alternate Interior Angle Theorem.** If two lines are intersected by a transversal, a pair of alternate interior angles formed are congruent if and only if the lines are parallel.
8. If a line is perpendicular to one of two parallel lines, then it is perpendicular to the other.
9. A point is on the perpendicular bisector of a line segment if and only if it is equidistant from the endpoints of the line segment.
10. The opposite sides of a parallelogram are congruent.
11. If a triangle is inscribed in a circle and one side is a diameter, then the opposite angle is a right angle.
12. If a line is tangent to a circle, then it is perpendicular to the radius at the point of contact.