Theorem Number	Theorem	Notes
1	When two straight lines intersect, the vertical angles thus formed are equal.	
2	Supplements of equal angles are equal	Corollary – Supplements of the same angle are equal.
3	Complements of equal angles are equal	Corollary – Complements of the same angle are equal.
4	Two points each equally distant from the end points of a line segment determine the perpendicular bisector of the segment.	
5	An exterior angle of a triangle is greater than either non-adjacent interior angles	
6	If two lines are cut by a transversal and a pair of **alternate-interior angles** thus formed are equal, the two lines are parallel.	Corollary - if two straight lines are cut by a transversal and a pair of **corresponding angles** thus formed are equal, the two lines are parallel. Corollary – if two straight lines are cut by a transversal and a pair of interior angles on the same side of the transversal are supplementary, the two lines are parallel. Corollary – Two straight lines perpendicular to the same straight line are parallel.

7	If two parallel lines are cut by a transversal, the alternate interior angles are equal.	Corollary – if two parallel lines are cut by a transversal, the corresponding angles are equal Corollary – if two parallel lines are cut by a transversal, the interior angles on the same side of the transversal are supplementary. Corollary – A straight line perpendicular to one of two parallel lines is perpendicular to the other also. Corollary – Lines perpendicular to intersecting lines will intersect. Corollary – If the sides of one angle are parallel to the sides of another angle, right side to right side and left side to left side, the angles are equal.
8	The sum of the interior angles of a triangle is one straight angle	Corollary – If two angles of one triangle are equal to two angles of another triangle, the third angles are equal. Corollary – If two triangles have a side and any two angles of one equal to the corresponding parts of the other, the triangles are congruent.

		Corollary – The acute angles of a right triangle are complementary Corollary – If two right triangles have a side and either acute angle of one equal to the corresponding parts of the other, the triangles are congruent. Corollary – A triangle cannot have more than one right angle nor more than one obtuse angle. Corollary – An exterior angle of a triangle is equal to the sum of the two nonadjacent interior angles.
9	The sum of the interior angles of a polygon of n sides is (n-2) straight angles	Corollary – In a regular polygon of n sides each each interior angle is [(n-2)*180]/n Corollary – The sum of the exterior angles of a polygon formed by extending each of its sides is equal to two straight angles. Corollary – Each exterior angle of a regular polygon of n sides is 360/n.

10	If two sides of a triangle are equal, the angles opposite these sides are equal.	Corollary – If the legs of a right triangle are equal, each acute angle of the triangle is 45 degrees. Corollary – An equilateral triangle is equiangular and each angle is 60 degrees. Corollary – If the hypotenuse of a right triangle is twice the shorter leg, the angle opposite the shorter leg is 30 degrees.
11	If two angles of a triangle are equal, the sides opposite these angles are equal.	Corollary – An equiangular triangle is equilateral. Corollary – If one angle of a right triangle is 30 degrees, the side opposite this angle is one-half the hypotenuse.
12	If two sides of a triangle are unequal, the angles opposite these sides are unequal and the greater angle lies opposite the greater side.	
13	If two angles of a triangle are unequal, the sides opposite these angles are unequal and the greater side lies opposite the greater angle.	

14	The perpendicular is the shortest line segment that can be drawn from a given point to a given line; and conversely, the shortest line segment from a given point to a given line is the perpendicular from the point to the line.	
15	Two right triangles are congruent if the hypotenuse and a leg of one are equal respectively to the hypotenuse and a leg of the other.	
16	The opposite sides and the opposite angles of a parallelogram are equal.	Corollary – All the sides of a rhombus are equal. Corollary – All the angles of a rectangle are equal. Corollary – Segments of parallel lines included between parallel lines are equal.
17	The diagonals of a rectangle are equal and conversely, if the diagonals of a parallelogram are equal, the parallelogram is a rectangle.	

18	The diagonals of a parallelogram bisect each other.	Corollary – The diagonals of a rhombus are perpendicular to each other and bisect the angles through which they pass.
19	If the opposite sides of a quadrilateral are equal, the quadrilateral is a parellelogram.	
20	If two sides of a quadrilateral are equal and parallel, the quadrilateral is a parallelogram.	
21	If the diagonals of a quadrilateral bisect each other, the quadrilateral is a parallelogram.	Corollary – The median upon the hypotenuse of a right triangle is equal to one-half the hypotenuse. Corollary – If the median upon a side of a triangle is equal to one-half that side, the triangle is a right triangle.
22	If three or more parallel lines cut off equal segments on one transversal, they cut off equal segments on any transversal.	Corollary – If a line is parallel to one side of a triangle and bisects a second side, it bisects the third side.
23	The line segment that joins the midpoints of two sides of a triangle is parallel to the third side and equal to one-half the third side.	
24	The median of a trapezoid is parallel to the bases and equal to one-half their sum.	

25	If in the same or equal circles two arcs are equal, their chords are equal. Conversely, If in the same or equal circles two chords are equal, their arcs are equal.	
26	The diameter that is perpendicular to a chord bisects the chord and the arcs determined by the chord. Conversely, The diameter that bisects a chord that is not another diameter is perpendicular to the chord.	
27	The perpendicular bisector of a chord of a circle passes through the center of the circle.	
28	If in the same circle or in equal circles two chords are equal, they are equidistant from the center. Conversely, if in the same circle or in equal circles two chords are equidistant from the center, they are equal.	
29	A straight line perpendicular to a radius at its extremity on the circle is a tangent to the circle.	

30	A tangent to a circle is perpendicular to the radius drawn to the point of contact.	Corollary – A line perpendicular to a tangent at the point of contact passes through the center of the circle. Corollary – A line drawn from the center of a circle perpendicular to a tangent passes through the point of contact.
31	Tagents from an external point to a circle are equal and make equal angles with the line joining that point to the center of the circle.	
32	Two parallel lines intercept equal arcs on a circle.	
33	An inscribed angle is measured by one-half its intercepted arc.	Corollary – An angle inscribed in a semicircle is a right angle. Corollary – Angles inscribed in the same arc or equal arcs of a circle are equal. Corollary – The opposite angles of a quadrilateral inscribed in a circle are supplementary.
34	An angle formed by a tangent and a chord drawn from the point of contact is measured by one-half the intercepted arc.	

35	An angle formed by two chords intersecting within a circle is measured by one-half the sum of the intercepted arcs.	
36	An angle formed by two secants, by a tangent and a secant, or by two tangents, intersecting outside a circle, is measured by one-half the difference of the intercepted arcs.	