Geometry Terms & Definitions

Chapter 1 -

a) equidistant - to be equally distant from a given point
b) line - extends in two directions without ending; denoted by ↔
c) plane - extends without ending and has no thickness; identified by a single letter
d) space - the set of all points
e) collinear - points all in one line
f) coplanar - points all in one plane
g) intersection - the set of points common between figures; to cut or cross
h) segment - two points on a line with a defined beginning and end; identified by two letters and denoted by —
i) ray - two points on a line with a defined beginning and the endpoint extending without ending; identified by two letters with the first letter representing the starting point and denoted by —→
j) opposite ray - collinear rays that share a common beginning point
k) congruent - objects and/or their components that have the same size and shape; denoted by ≅
l) midpoint - the point that divides an element into two congruent elements
m) bisector - a line, segment, ray or plane that intersects at the midpoint
n) angle - the figure formed by two rays with a common endpoint; identified by three letters with the middle letter representing the vertex and denoted by ⎜
o) side - the rays of an angle
p) vertex - the common endpoint of an angle
q) acute - an angle measuring between 0° and 90°
r) obtuse - an angle measuring between 90° and 180°
s) right - an angle measuring 90°
t) adjacent angles - two angles that have a common endpoint and side but no common interior points
u) angle bisector - a ray that divides an angle into two congruent adjacent angles

Segment Addition Postulate - adding two or more segments to create one longer segment

Angle Addition Postulate - adding two or more angles to create one larger angle. Use this postulate to identify larger angles by name rather than by measurement (not to be confused with identifying that angles are complimentary or supplementary).

Chapter 2 -

a) If-Then statements (aka conditional) - consist of an hypothesis and conclusion (e.g. - If I live in Yorba Linda, then I live in Southern California)
b) converse - a conditional formed by switching the hypothesis and conclusion (e.g. - If I live in Southern California, then I live in Yorba Linda). Converse statements do not have to be true.
c) complimentary angles - two angles that add up to 90°
d) supplementary angles - two angles that add up to 180°
e) vertical angles - the angles formed when two lines intersect. Two angles whose sides form two pairs of opposite rays
f) perpendicular lines - two lines that intersect at a right angle (90°)
Chapter 3 -

a) parallel lines - coplanar lines that do not intersect; denoted by \( || \)
b) skew lines - lines that are not coplanar
c) transversal - a line that intersects two or more coplanar lines in different points (the transversal may or may not be perpendicular)
d) alternating interior angles - two non-adjacent angles interior angles (inside of the lines) and on opposite sides of the transversal
e) same-side interior angles - two interior angles on the same side of the transversal
f) corresponding angles - two angles in the same position relative to the lines
g) same-side supplementary angles - two interior angles on the same side of the transversal that are supplementary. These angles only apply to parallel lines
h) triangles - a figure formed by three segments joining three noncollinear points. Each of the points is called a vertex (the plural is vertices)
   Identified by their angle(s) - acute (three acute \( \angle \)'s), obtuse (one obtuse \( \angle \)), right (one right \( \angle \)), equiangular (all \( \angle \)'s \( \cong \))
   Identified by their sides - scalene (no sides \( \cong \)), isosceles (two sides \( \cong \)), equilateral (all sides \( \cong \))
i) auxiliary line - a line added to a diagram to assist in a proof
j) diagonal - a line drawn between non-consecutive vertices
k) polygon - a figure formed when coplanar segments (no curves) are joined
l) regular polygon - a polygon that is both equilateral and equiangular
m) interior angle of a polygon - the angle formed at the connection of segments inside a polygon
n) exterior angle of a polygon - the angle formed by the extension of one side of an interior angle

Alternating interior, same-side interior and corresponding angles each must have a transversal common to the angles and can exist with both parallel and non-parallel lines.

Chapter 4 -

a) congruency between triangles identifies \( \cong \) between the \( \angle \)'s, sides or a combination
b) corresponding parts of congruent triangles are congruent (CPCT) - can only be utilized to identify the remaining three relationships between triangles after the triangles have been identified as \( \cong \) (via three of the six relationships)
c) hypotenuse - the side of a right triangle opposite the right angle
d) leg - the sides of a right triangle other than the hypotenuse
e) median - a segment drawn from a vertex of a triangle to the midpoint of the side opposite the vertex
f) altitude - a \( \perp \) segment drawn from a vertex to the line containing the side opposite the vertex. Depending on the triangle, an altitude can be outside of the triangle
f) perpendicular bisector - a line, ray or segment that is \( \perp \) to a line, ray or segment at its midpoint

There are six congruencies - three \( \angle \)'s and three sides. Three MUST be used to identify that \( \triangle \)'s are \( \cong \); only then can the remaining three \( \cong \) can be identified using CPCT
Geometry Terms & Definitions

Chapter 5 -

a) quadrilateral - a four-sided polygon
b) parallelogram - a quadrilateral with both pairs of opposite sides parallel; denoted by \( \square \)
c) rectangle - a quadrilateral with four right \( \angle \)'s (also a parallelogram)
d) rhombus - a quadrilateral with four \( \cong \) sides (also a parallelogram)
e) square - a quadrilateral with four right \( \angle \)'s and four \( \cong \) sides (also a rectangle, rhombus and parallelogram)
f) trapezoid - a quadrilateral with one pair of parallel sides (called bases)

Chapter 6 -

a) If-Then statements (aka conditional) - consist of an hypothesis and conclusion (e.g. - If I live in Yorba Linda, then I live in Southern California)
b) converse - a conditional formed by switching the hypothesis and conclusion (e.g. - If I live in Southern California, then I live in Yorba Linda). Converse statements do not have to be true.
c) inverse - formed by negating the hypothesis and conclusion (e.g. - If I don’t live in Yorba Linda, then I don’t live in Southern California)
d) contrapositive - formed by combining the converse and inverse of the original hypothesis and conclusion (e.g. - If I don’t live in Southern California, then I don’t live in Yorba Linda)

Chapter 7 -

a) ratio - the quotient of two numbers expressed as a fraction in lowest terms
b) proportion - an equation stating that two fractions are equal to each other
c) extremes - the first and last terms of a proportion
d) means - the second and third terms of a proportion
e) scale factor - the ratio of corresponding elements betw/ objects
f) similar - when objects have the same \( \angle \)ular measurements but different length sides; denoted by \(~\)
g) CASPC - corresponding \( \angle \)'s of \(~\) polygons are \( \cong \)
h) CSSPP - corresponding sides of \(~\) polygons are \( \cong \)

Chapter 8 -

a) arithmetic mean - the average of terms
b) geometric mean - the square root of the product of the 2 non-similar terms of a proportion
c) sine - the ratio of the side opposite an \( \angle \) and the hypotenuse
d) cosine - the ratio of the side adjacent to an \( \angle \) and the hypotenuse
e) tangent - the ratio of the side opposite an \( \angle \) and the side adjacent to the \( \angle \)
Geometry Terms & Definitions

Chapter 9 -

a) circle - a set of pts in a plane at a given distance (radius) from a given pt (center)
b) chord - a segment whose endpts lie on a \( \bigcirc \)
c) secant - a line that contains a chord
d) diameter - a chord that goes through the center of a \( \bigcirc \)
e) tangent - a line in the plane of a \( \bigcirc \) that intersects the \( \bigcirc \) in exactly one pt (pt of tangency)
f) sphere - the set of all pts in space at distance \( r \) (a radius) from the center
g) central \( \angle \) - an \( \angle \) whose vertex lies on the center of a \( \bigcirc \)
h) inscribed \( \angle \) - an \( \angle \) whose vertex lies on a \( \bigcirc \)

Chapter 11 -

a) height - the vertical distance of the altitude of a polygon
b) radius - the distance from the center of a polygon to a vertex
c) apothem - the \( \perp \) distance from the center of a regular polygon to a side

Chapter 12 -

a) prism - a 3-dimensional geometric object
b) altitude - a \( \perp \) segment joining the 2 bases (in a prism) or the vertex w/ the base (in a pyramid/cone)
c) face - those sides of a prism that are not the base(s)
d) edge - the \( \mid \mid \) intersection of adjacent faces
e) right prism - rectangular prisms where edges are also altitudes
f) oblique prism - a skewed prism where the edge is not an altitude
g) lateral area - the \( \sum \) of the areas of the lateral faces
h) total area - the \( \sum \) of the areas of the faces and base(s)
i) vertex - the point of a pyramid or cone