List of Conjectures
Chapter 2

C-1:  **Linear Pair Conjecture** If two angles form a linear pair, then
______________________________.

(Lesson 2.5)

C-2:  **Vertical Angles Conjecture** If two angles are vertical angles, then
______________________________.

(Lesson 2.5)

C-3:  **Parallel Lines Conjecture** If two parallel lines are cut by a transversal,
then corresponding angles are ___________________. alternate interior angles are ___________________. and alternate exterior angles are ___________________.

(Lesson 2.6)

C-4:  **Converse of the Parallel Lines Conjecture** If two lines are cut by a transversal to form pairs of congruent corresponding angles, congruent alternate interior angles, or congruent alternate exterior angles, then the lines are ___________________.

(Lesson 2.6)
Chapter 3

C-5: **Perpendicular Bisector Conjecture** If a point is on the perpendicular bisector of a segment, then it is ______________ from the endpoints. (Lesson 3.2)

C-6: **Converse of the Perpendicular Bisector Conjecture** If a point is equidistant from the endpoints of a segment, then it is on the __________________________ of the segment. (Lesson 3.2)

C-7: **Shortest Distance Conjecture** The shortest distance from a point to a line is measured along the __________________________ from the point to the line. (Lesson 3.3)

C-8: **Angle Bisector Conjecture** If a point is on the bisector of an angle, then it is ______________ from the sides of the angle. (Lesson 3.4)

C-9: **Angle Bisector Concurrency Conjecture** The three angle bisectors of a triangle __________________________. (Lesson 3.7)

C-10: **Perpendicular Bisector Concurrency Conjecture** The three perpendicular bisectors of a triangle __________________________

(Lesson 3.7)
C-11: **Altitude Concurrency Conjecture** The three altitudes (or the lines containing the altitudes) of a triangle __________________________.  
(Lesson 3.7)

C-12: **Circumcenter Conjecture** The circumcenter of a triangle __________________________.  
(Lesson 3.7)

C-13: **Incenter Conjecture** The incenter of a triangle __________________________.  
(Lesson 3.7)

C-14: **Median Concurrency Conjecture** The three medians of a triangle __________________________.  
(Lesson 3.8)

C-15: **Centroid Conjecture** The centroid of a triangle divides each median into two parts so that the distance from the centroid to the vertex is _______ the distance from the centroid to the midpoint of the opposite side.  
(Lesson 3.8)

C-16: **Center of Gravity Conjecture** The __________________ of a triangle is the center of gravity of the triangular region.  
(Lesson 3.8)
Chapter 4

C-17: **Triangle Sum Conjecture** The sum of the measures of the angles in every triangle is ___________. (Lesson 4.1)

C-18: **Third Angle Conjecture** If two angles of one triangle are equal in measure to two angles of another triangle, then the third angle in each triangle _____________________________________________________________. (Lesson 4.1)

C-19: **Isosceles Triangle Conjecture** If a triangle is isosceles, then ____________________________________________________________. (Lesson 4.2)

C-20: **Converse of the Isosceles Triangle Conjecture** If a triangle has two congruent angles, then ________________________________ (Lesson 4.2)

C-21: **Triangle Inequality Conjecture** The sum of the lengths of any two sides of a triangle is ______________ the length of the third side. (Lesson 4.3)

C-22: **Side-Angle Inequality Conjecture** In a triangle, if one side is longer than another side, then the angle opposite the longer side______________________ ____________________________________________________________ (Lesson 4.3)

C-23: **Triangle Exterior Angle Conjecture** The measure of an exterior angle of a triangle ________________________________ (Lesson 4.3)
C-24: **SSS Congruence Conjecture** If the three sides of one triangle are congruent to the three sides of another triangle, then _________________.

(Congruent, similar, congruent, congruent, congruent)

(Lesson 4.4)

C-25: **SAS Congruence Conjecture** If two sides and the included angle of one triangle are congruent to two sides and the included angle of another triangle, then _________________.

(Congruent, similar, congruent, congruent, congruent)

(Lesson 4.4)

C-26: **ASA Congruence Conjecture** If two angles and the included side of one triangle are congruent to two angles and the included side of another triangle, then _________________.

(Congruent, similar, congruent, congruent, congruent)

(Lesson 4.5)

C-27: **SAA Congruence Conjecture** If two angles and a non-included side of one triangle are congruent to the corresponding angles and side of another triangle, then _________________.

(Congruent, similar, congruent, congruent, congruent)

(Lesson 4.5)

C-28: **Vertex Angle Bisector Conjecture** In an isosceles triangle, the bisector of the vertex angle is also ________________ and _________________.

(Bisector, perpendicular, congruent, congruent)

(Lesson 4.8)

C-29: **Equilateral/Equiangular Triangle Conjecture** Every equilateral triangle is _________________. Conversely, every equiangular triangle is _________________.

(Regular, regular)

(Lesson 4.8)
Chapter 5

C-30: **Quadrilateral Sum Conjecture** The sum of the measures of the four angles of any quadrilateral is _____________. (Lesson 5.1)

C-31: **Pentagon Sum Conjecture** The sum of the measures of the five angles of any pentagon s _____________. (Lesson 5.1)

C-32: **Polygon Sum Conjecture** The sum of the measures of the $n$ interior angles of an $n$-gon s _________________. (Lesson 5.1)

C-33: **Exterior Angle Sum Conjecture** For any polygon, the sum of the measures of a set of xterior angles is ________________. (Lesson 5.2)

C-34: **Equiangular Polygon Conjecture** You can find the measure of each interior angle of an equiangular $n$-gon by using either of these formulas:

____________________________ or ________________________. (Lesson 5.2)

C-35: **Kite Angles Conjecture** The _________________ angles of a kite are _________________. (Lesson 5.3)

C-36: **Kite Diagonals Conjecture** The diagonals of a kite are _________________. (Lesson 5.3)
C-37: **Kite Diagonal Bisector Conjecture** The diagonal connecting the vertex angles of a kite is the ____________________________ of the other diagonal. (Lesson 5.3)

C-38: **Kite Angle Bisector Conjecture** The ________ angles of a kite are _________________ by a _________________. (Lesson 5.3)

C-39: **Trapezoid Consecutive Angles Conjecture** The consecutive angles between the bases of a trapezoid are ___________________________. (Lesson 5.3)

C-40: **Isosceles Trapezoid Conjecture** The base angles of an isosceles trapezoid are ___________________________. (Lesson 5.3)

C-41: **Isosceles Trapezoid Diagonals Conjecture** The diagonals of an isosceles trapezoid are ___________________________. (Lesson 5.3)

C-42: **Three Midsegments Conjecture** The three midsegments of a triangle divide it into _____________________________. (Lesson 5.4)

C-43: **Triangle Midsegment Conjecture** A midsegment of a triangle is ________________ to the third side and ______________ the length of ___________________________. (Lesson 5.4)
C-44: **Trapezoid Midsegment Conjecture** The midsegment of a trapezoid is ____________ to the bases and is equal in length to _________________.

(Lesson 5.4)

C-45: **Parallelogram Opposite Angles Conjecture** The opposite angles of a parallelogram are _________________.

(Lesson 5.5)

C-46: **Parallelogram Consecutive Angles Conjecture** The consecutive angles of a parallelogram are _________________.

(Lesson 5.5)

C-47: **Parallelogram Opposite Sides Conjecture** The opposite sides of a parallelogram are _________________.

(Lesson 5.5)

C-48: **Parallelogram Diagonals Conjecture** The diagonals of a parallelogram _________________.

(Lesson 5.5)

C-49: **Double-Edged Straightedge Conjecture** If two parallel lines are intersected by a second pair of parallel lines that are the same distance apart as the first pair, then the parallelogram formed is a ___________.

(Lesson 5.6)

C-50: **Rhombus Diagonals Conjecture** The diagonals of a rhombus are ________________, and they _________________.

(Lesson 5.6)
C-51: **Rhombus Angles Conjecture** The ________________ of a rhombus

______________ the angles of the rhombus.

(Lesson 5.6)

C-52: **Rectangle Diagonals Conjecture** The diagonals of a rectangle are

______________ and ________________________________.

(Lesson 5.6)

C-53: **Square Diagonals Conjecture** The diagonals of a square are ____________,

______________, and __________________________.

(Lesson 5.6)
Chapter 6

C-54: **Chord Central Angles Conjecture** If two chords in a circle are congruent, then they determine two central angles that are ___________.  (Lesson 6.1)

C-55: **Chord Arcs Conjecture** If two chords in a circle are congruent, then their __________________________ are congruent.  (Lesson 6.1)

C-56: **Perpendicular to a Chord Conjecture** The perpendicular from the center of a circle to a chord is the ______________ of the chord.  (Lesson 6.1)

C-57: **Chord Distance to Center Conjecture** Two congruent chords in a circle are ______________________ from the center of the circle.  (Lesson 6.1)

C-58: **Perpendicular Bisector of a Chord Conjecture** The perpendicular bisector of a chord ___________________________.  (Lesson 6.1)

C-59: **Tangent Conjecture** A tangent to a circle __________________________

the radius drawn to the point of tangency.  (Lesson 6.2)

C-60: **Tangent Segments Conjecture** Tangent segments to a circle from a point outside the circle are _______________.  (Lesson 6.2)
C-61: **Inscribed Angle Conjecture** The measure of an angle inscribed in a circle is _________________________________. (Lesson 6.3)

C-62: **Inscribed Angles Intercepting Arcs Conjecture** Inscribed angles that intercept the same arc _____________________. (Lesson 6.3)

C-63: **Angles Inscribed in a Semicircle Conjecture** Angles inscribed in a semicircle __________________________. (Lesson 6.3)

C-64: **Cyclic Quadrilateral Conjecture** The ___________________________ angles of a cyclic quadrilateral are ___________________________. (Lesson 6.3)

C-65: **Parallel Lines Intercepted Arcs Conjecture** Parallel lines intercept ____________________ arcs on a circle. (Lesson 6.3)

C-66: **Circumference Conjecture** If $C$ is the circumference and $d$ is the diameter of a circle, then there is a number _ such that $C = ______________$. If $d = 2r$ where $r$ is the radius, then $C = ______________$. (Lesson 6.5)

C-67: **Arc Length Conjecture** The length of an arc equals the ____________________
_______________________________. (Lesson 6.7)
Chapter 7

C-68: **Reflection Line Conjecture** The line of reflection is the _______________
______________________ of every segment joining a point in the original figure
with its image. (Lesson 7.1)

C-69: **Coordinate Transformations Conjecture**

The ordered pair rule \((x, y) \rightarrow (-x, y)\) is a ___________ over the ________.

The ordered pair rule \((x, y) \rightarrow (x, -y)\) is a ___________ over the ________.

The ordered pair rule \((x, y) \rightarrow (-x, -y)\) is a ___________ about _________.

The ordered pair rule \((x, y) \rightarrow (y, x)\) is a ___________ over _______________.

(Lesson 7.2)

C-70: **Minimal Path Conjecture** If points \(A\) and \(B\) are on one side of line \(ℓ\), then

the minimal path from point \(A\) to line \(ℓ\) to point \(B\) is found by ______________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________.

(Lesson 7.2)

C-71: **Reflections over Parallel Lines Conjecture** A composition of two

reflections over two parallel lines is equivalent to a single ________________.

In addition, the distance from any point to its second image under the two

reflections is _________ the distance between the parallel lines. (Lesson 7.3)
C-72: **Reflections over Intersecting Lines Conjecture** A composition of two reflections over a pair of intersecting lines is equivalent to a single __________________. The angle of _______________ is _________ the acute angle between the pair of intersecting reflection lines. (Lesson 7.3)

C-73: **Tessellating Triangles Conjecture** __________ triangle will create a monohedral tessellation. (Lesson 7.5)

C-74: **Tessellating Quadrilaterals Conjecture** ________________ quadrilateral will create a monohedral tessellation. (Lesson 7.5)
Chapter 8

C-75: **Rectangle Area Conjecture**  The area of a rectangle is given by the formula _______________, where $A$ is the area, $b$ is the length of the base, and $h$ is the height of the rectangle.  

(Lesson 8.1)

C-76: **Parallelogram Area Conjecture**  The area of a parallelogram is given by the formula _______________, where $A$ is the area, $b$ is the length of the base, and $h$ is the height of the parallelogram.  

(Lesson 8.1)

C-77: **Triangle Area Conjecture**  The area of a triangle is given by the formula _______________, where $A$ is the area, $b$ is the length of the base, and $h$ is the height of the triangle.  

(Lesson 8.2)

C-78: **Trapezoid Area Conjecture**  The area of a trapezoid is given by the formula ________________, where $A$ is the area, $b_1$ and $b_2$ are the lengths of the two bases, and $h$ is the height of the trapezoid.  

(Lesson 8.2)

C-79: **Kite Area Conjecture**  The area of a kite is given by the formula ________________, where $d_1$ and $d_2$ are the lengths of the diagonals.  

(Lesson 8.2)
C-80: **Regular Polygon Area Conjecture** The area of a regular polygon is given by the formula ______________, where \( A \) is the area, \( a \) is the apothem, \( s \) is the length of each side, and \( n \) is the number of sides. The length of each side times the number of sides is the perimeter \( P \), so \( sn = P \). Thus you can also write the formula for area as ______________.  

(Lesson 8.4)

C-81: **Circle Area Conjecture** The area of a circle is given by the formula ______________, where \( A \) is the area and \( r \) is the radius of the circle. 

(Lesson 8.5)
Chapter 9

C-82: **The Pythagorean Theorem** In a right triangle, the sum of the squares of the lengths of the legs equals the square of the length of the hypotenuse. If $a$ and $b$ are the lengths of the legs, and $c$ is the length of the hypotenuse, then _________________. (Lesson 9.1)

C-83: **Converse of the Pythagorean Theorem** If the lengths of the three sides of a triangle satisfy the Pythagorean equation, then the triangle _________________. (Lesson 9.2)

C-84: **Isosceles Right Triangle Conjecture** In an isosceles right triangle, if the legs have length $l$, then the hypotenuse has length _________. (Lesson 9.3)

C-85: **30°-60°-90° Triangle Conjecture** In a 30°-60°-90° triangle, if the shorter leg has length $a$, then the longer leg has length _________, and the hypotenuse has length _____________. (Lesson 9.3)

C-86: **Distance Formula** The distance between points $A(x_1, y_1)$ and $B(x_2, y_2)$ is given by $(AB)^2 = \left( \begin{array}{c} x_2 - x_1 \\ y_2 - y_1 \end{array} \right)^2$. (Lesson 9.5)

C-87: **Equation of a Circle** The equation of a circle with radius $r$ and center $(h, k)$ is _________________. (Lesson 9.5)
Chapter 10

C-88: **Prism-Cylinder Volume Conjecture** The volume of a prism or a cylinder is the __________________ multiplied by the ___________.  
(Lesson 10.2)

C-89: **Pyramid-Cone Volume Conjecture** If $B$ is the area of the base of a pyramid or a cone and $H$ is the height of the solid, then the formula for the volume is $V = \ldots$.  
(Lesson 10.3)

C-90: **Sphere Volume Conjecture** The volume of a sphere with radius $r$ is given by the formula _______________.  
(Lesson 10.6)

C-91: **Sphere Surface Area Conjecture** The surface area, $S$, of a sphere with radius $r$ is given by the formula _______________.  
(Lesson 10.7)
Chapter 11

C-92: **Dilation Similarity Conjecture** If one polygon is the image of another polygon under a dilation, then ______________________________.

(Lesson 11.1)

C-93: **AA Similarity Conjecture** If ______ angles of one triangle are congruent to ______ angles of another triangle, then ______________________________

___________.

(Lesson 11.2)

C-94: **SSS Similarity Conjecture** If the three sides of one triangle are proportional to the three sides of another triangle, then the two triangles are ____________.

(Lesson 11.2)

C-95: **SAS Similarity Conjecture** If two sides of one triangle are proportional to two sides of another triangle and the included angles are congruent, then the triangles are similar. (Lesson 11.2)

C-96: **Proportional Parts Conjecture** If two triangles are similar, then the corresponding ____________, ____________, and ________________ are ________________ to the corresponding sides.

(Lesson 11.4)
C-97: **Angle Bisector/Opposite Side Conjecture** A bisector of an angle in a triangle divides the opposite side into two segments whose lengths are in the same ratio as ______________________________________________________
_____________________________________. (Lesson 11.4)

C-98: **Proportional Areas Conjecture** If corresponding sides of two similar polygons or the radii of two circles compare in the ratio \( \frac{m}{n} \), then their areas compare in the ratio ________________. (Lesson 11.5)

C-99: **Proportional Volumes Conjecture** If corresponding edges (or radii, or heights) of two similar solids compare in the ratio \( \frac{m}{n} \), then their volumes compare in the ratio ________________. (Lesson 11.5)

C-100: **Parallel/Proportionality Conjecture** If a line parallel to one side of a triangle passes through the other two sides, then it divides the other two sides ______________________. Conversely, if a line cuts two sides of a triangle proportionally, then it is _________ to the third side. (Lesson 11.6)

C-101: **Extended Parallel/Proportionality Conjecture** If two or more lines pass through two sides of a triangle parallel to the third side, then they divide the two sides __________________________. (Lesson 11.6)
Chapter 12

C-102: **SAS Triangle Area Conjecture** The area of a triangle is given by the formula ____________________, where \(a\) and \(b\) are the lengths of two sides and \(C\) is the angle between them.  
(Lesson 12.3)

C-103: **Law of Sines** For a triangle with angles \(A\), \(B\), and \(C\) and sides of lengths \(a\), \(b\), and \(c\) (\(a\) opposite \(A\), \(b\) opposite \(B\), and \(c\) opposite \(C\)),

______________________________.
(Lesson 12.3)

C-104: **Pythagorean Identity** For any angle \(A\)______________________________.
(Lesson 12.4)

C-105: **Law of Cosines** For any triangle with sides of lengths \(a\), \(b\), and \(c\), and with \(C\) the angle opposite the side with length \(c\)

______________________________.
(Lesson 12.4)