Geometry B

SCOPE
Students study and analyze circles and arcs. Tangents, secants, and chords and the angles they form are examined. Concurrent lines are found in triangles while studying altitudes, angle bisectors, and medians. Regular inscribed and circumscribed polygons and similarities and proportions are some of the other concepts addressed. Connections are drawn between geometry, art, and algebra.

Logic is developed using Venn diagrams and truth tables. Motion geometry is studied using grid paper, a compass, and an image reflector.

Students are taught to think logically and to justify their conjectures using a variety of types of proofs. The focus and goals of the geometry sequence are concept based and designed to help students think logically and analytically. Making sense of the world through geometry is a priority.

SEQUENCE

UNIT 1 – Circles
1. Circles – Related Definitions and Postulates
2. Three Point Circles
3. Constructing a Circle with Three Points
4. Chords and Arcs
5. Diameters and Other Chords
6. Intersecting Circles
7. Chords Equidistant from the Center
8. Unequal Minor Arcs
9. Unequal Chords
10. Tangents and Radii
11. Tangents from the Same Outside Point
12. Tangent Circles
13. Constructing Tangents to a Circle
14. Parallel Lines and Circles

UNIT 2 – Angles, Arcs, Concurrent Lines, Similarities and Proportions
1. Inscribed Angles
2. Angles Formed by a Tangent and a Chord
3. Angles Formed by Two Intersecting Chords
4. Angles Formed by Secants and Tangents
5. Concurrent Lines
6. Regular Inscribed Polygons
7. Regular Circumscribed Polygons
8. Ratio and Proportion and Parallel Line Proportionality
9. Proportionality and Parallelism
10. Similar Triangles
11. Bisectors of Interior and Exterior Angles of Triangles and Proportionality
12. Right Triangles and Similarity
13. Circles and Proportionality

SEQUENCE

UNIT 3 – Logic
1. Statements and Their Opposites
2. Conjunctions
3. Disjunctions
4. Truth Tables – Conditional Statements
5. The Converse of a Statement
6. Biconditionals
7. The Inverse of a Statement
8. Contrapositives and Logically Equivalent Statements
9. Identities
10. Tautologies, Contradictions, and Contingencies
11. Quantifiers
12. Valid Arguments
13. Logic Puzzles – Single Matching
14. Logic Puzzles – Complex Matching

UNIT 4 – Coordinate Geometry
1. Analytic Geometry
2. Using Coordinate in Proofs
3. Coordinate Geometry – Three Dimensions
4. Three-Dimensional Distances, Prisms, and Pyramids
5. The Locus Problem
6. Locus of Points in a Plane
7. Intersection of Loci
8. Coordinate Geometry and the Locus of First-Degree Equations
9. Coordinate Geometry and the Locus of Circles
10. Locus and an Ellipse
11. Locus and a Parabola
12. Locus and a Hyperbola
13. Conic Sections Identified and Shifted
14. Vectors

UNIT 5 – Motion Geometry
1. Transformations
2. Translations
3. Reflections
4. Rotations
5. Combinations of Transformations
6. Identifying Transformations
7. Size Transformations
8. Symmetry
9. Tessellations with Polygons
10. Escher-like Tessellations
11. Fractals and Chaos