

Math 8B

SCOPE OF COURSE

This course is divided into two semesters of study (A & B) comprised of five units each. The second-semester (B) is a study of angles and polygons; coordinate geometry, circles, and graph theory; transformational geometry; measurement; and logic.

SEQUENCE OF SKILLS

UNIT 1 – Angles and Polygons

- Points, lines, and planes
- Line segments, rays, and angles
- Plane geometry
- Complementary and supplementary angles
- Vertical angles
- Transversals and parallel lines
- Triangles
- Isosceles and equilateral triangles
- The Pythagorean Theorem
- The triangle inequality
- Quadrilaterals
- Parallelograms
- Polygons
- Regular polygons

UNIT 2 – Coordinate Geometry, Circles, and Graph Theory

- The coordinate plane
- Slope
- Rates of change
- Midpoint
- Distance
- Applications of coordinate geometry
- Circles
- Circles, tangents, and secants
- Circles and inscribed angles
- Locus of points
- Introduction to graph theory
- Euler paths and circuits
- Hamilton paths and circuits
- Cartography

UNIT 3 – Transformational Geometry

- Transformations
- Translations
- Reflections
- Rotations
- Dilations
- Congruent figures
- Similar figures
- Applications of similar figures
- Tessellations with polygons
- Combinations of transformations
- Isometries
- Symmetry
- Introduction to constructions
- Triangle constructions

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SEQUENCE OF SKILLS

UNIT 4 – Measurement

- Perimeter
- Area
- Connection between perimeter and area
- Area of a parallelogram
- Area of a triangle
- Area of a trapezoid
- Classification of solids
- Nets, and three-dimensional figures
- Volume of rectangular prisms
- Volume of cylinders and cones
- Surface area
- Effects of changing dimensions
- Measurement – conversions
- Measurement – estimation and accuracy

UNIT 5 – Logic

- Statements and their negations
- Conjunctions
- Disjunctions
- Conditional statements
- More on logic statements
- The converse of a statement
- The inverse of a statement
- Contrapositives and logically equivalent statements
- Review of conditionals
- Biconditional statements
- Deduction
- Induction
- Logic puzzles
- Advanced logic puzzles