Form G Placement Exam Topics

<table>
<thead>
<tr>
<th>Form A</th>
<th>Students who have completed one full year of Algebra 1</th>
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<tbody>
<tr>
<td>Form G</td>
<td>Students who have completed <strong>at least:</strong> One full year of Algebra 1 and one full year of Geometry</td>
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To prepare, you may review the topics you were taught using the following list:

**BASIC ALGEBRA SKILLS:**

**All Topics listed for Form A**

**LOGIC**
- Statements and Negations
- Truth Tables, Tautology, Logical Equivalence, Evaluating a Compound Statement
- The Parts of a Conditional: Converse, Inverse, and Contrapositive
- Laws of Reasoning and Presenting Arguments
- Using the Laws of Reasoning

**EUCLIDEAN GEOMETRY**

The Foundations of Geometry, Structure of an Axiomatic System, Equivalence Relation

- Angles and Triangles: Names of Angles with Respect to Degree Measure, Perpendicularity, Angle Pairs, Classifying Triangles, Line Segments Associated with Triangles
- Congruence: Definition of Congruent Polygons, Methods of Proving Triangles Congruent Using Congruent Triangles to Prove Congruent Parts, Using Congruent Triangles to prove Perpendicularity, Using Overlapping Triangles, Using Two Pairs of Congruent Triangles
- Isosceles Triangles
- Parallel Lines: Angles Formed by Two Lines and a Transversal, Knowing when Two Lines are Parallel, Properties of Parallel Lines
- Triangles and Angle Measure: The Interior Angles of a Triangle, the Exterior Angles of Triangles
- Geometric Inequalities: Properties of Inequality, Relationship Between the Sides and Angles of a Triangle, Operations With Inequalities, Relationship Among the Three Sides of a Triangle
- Quadrilaterals: Definitions, Properties, Knowing When a Quadrilateral Is a Special Figure
- Relationship of Three or More Parallel Lines

**EUCLIDEAN GEOMETRY (Cont’d)**

- Similarity, Ratio and Proportion, Definition of Similar Polygons, Triangle Proportionality, Methods of Proving Triangles Similar, Similarity and Dilation
- Using Similar Triangles: To Find an Unknown Length, To Prove a Proportion, To Prove a Product
- The Right Triangle: Proportions in the Right Triangle, The Pythagorean Theorem, Special Right Triangles
- Perimeter and Area: Applying Right Triangles to Perimeter Problems, Applying Right Triangles to Area Problems, Perimeters and Areas of Similar Polygons
- Indirect Proof
- Trigonometry of the Right Triangle: Definitions of Trigonometric Ratios, Using a Calculator to Work with Trigonometric Ratios, Using the Trigonometric Ratios to Find Unknown Measures, Working With More Complicated Diagrams, Using Trigonometry to Solve Problems
- Constructions
- Summary Exercises

**CIRCLES**

- Sectors, arc length, chords
- Chords, secants, tangents
- Arcs determined by angles
- Inscribed quadrilaterals
- Segments Intercepted by arcs
- Equations of circles/graphs
## MEASURING IN THE PLANE AND SPACE
- Perimeter/Area of polygons
- Circumference/area of circles
- Rotations of two-dimensional object
- Cross-sections of three-dimensional objects
- Volume, surface area, lateral area
- Compositions of polygons and circles
- Density
- Similarity

## ANALYTIC GEOMETRY
- Points and Distances, the Rectangular Coordinate System,
  Distances, Midpoint of a Line Segment
- Partitioning a directed segment into a ratio
- Slope of a Line: Meaning of a Slope, Possible Values for
  Slope, Slopes of Parallel and Perpendicular Lines
- Summary of Methods of Coordinate Geometry Proofs
- Equations of Lines: General Form, Slope-intercept Form,
  When a Point is on a Line, Point-Slope Form, Summary
  of Equations of a line
- Areas in the Coordinate Plane: Simple Areas, Drawing
  Horizontals and Verticals to Find Areas
- Analytic Proof: Using General Coordinates in Formulas,
  Positioning Points That Have General Coordinates,
  Proving Geometric Theorems Analytically
- Transformations: Types of Transformations, Reflection in
  a Line, Reflection in a Point, Translation, Rotation,
  Dilation
- Mapping a polygon onto itself
- Compositions of Transformations
- Properties of Transformations
- Identifying Transformations

## EQUATIONS; SYSTEMS OF EQUATIONS
- Linear Equations, Graphing a Linear Equation, Graphic
  Solution of a System of Linear Equations, Algebraic
  Solution of a System of Linear Equations, Using a
  System of Linear Equations to Solve Problems
- Solving Quadratic Equations, Standard Form, Solution by
  Factoring, Using a Quadratic Equation to Solve
  Problems, Solution by Completing the Square, Solution
  by the Quadratic Formula
- The Roots of a Quadratic Equation, The General Roots,
  When One or Both Roots Are Known
- The Parabola, Nature of the Parabola $y = ax^2 + bx + c$,
  Graphing a Parabola
- Using a Parabola to Solve $ax^2 + bx + c = 0$
- Transformations of Parabolas
- More Quadratic Curves, the Circle
- Linear-Quadratic Systems/Graphic Solution/Algebraic
  Solution