Topics assessed on the Challenge Test for placement into Geometry

Students will be asked to demonstrate that they are able to:
- Write algebraic expressions.
- Simplify expressions involving exponents.
- Use the order of operations to evaluate expressions.
- Classify, graph, and compare real numbers.
- Find and estimate square roots.
- Operate on integers.
- Use the Distributive Property to simplify expressions.
- Solve equations in one variable.
- Solve equations and inequalities involving absolute values.
- Rewrite and use literal equations and formulas.
- Solve and apply proportions.
- Solve percent problems using proportions.
- Solve percent problems using percent equation.
- Write, graph, and identify solutions of inequalities.
- Solve inequalities.
- Determine whether a relationship is a function.
- Find domain and range and use function notation.
- Find slope.
- Write linear equations.
- Graph linear equations in two variables.
- Use linear inequalities when modeling real-world situations.
- Determine whether lines are parallel, perpendicular, or neither.
- Write equations of parallel lines and perpendicular lines.
- Solve systems of equations by graphing.
- Solve systems of equations.
- Solve systems of linear inequalities by graphing.
- Simplify expressions involving zero and negative exponents.
- Multiply powers with the same base.
- Raise a power to a power.
- Raise a product to a power.
- Divide powers with the same base.
- Raise a quotient to a power.

- Rewrite expressions involving radicals and rational expressions.
- Classify, add, and subtract polynomials.
- Multiply a monomial by a polynomial.
- Factor a monomial from a polynomial.
- Multiply two binomials or a binomial by a trinomial.
- Find the square of a binomial and find the product of a sum and difference.
- Factor trinomials of the form $x^2 + bx + c$.
- Factor trinomials of the form $ax^2 + bx + c$.
- Factor perfect-square trinomials and the differences of two squares.
- Factor higher-degree polynomials by grouping.

The following topics should also be mastered prior to beginning Geometry but are not assessed on this test:

Students will be expected to be able to:
- Graph quadratic functions of the form $y = ax^2$ and $y = ax^2 + c$.
- Graph quadratic functions of the form $y = ax^2 + bx + c$.
- Solve quadratic equations by graphing and using square roots.
- Solve quadratic equations by factoring.
- Solve quadratic equations using the quadratic formula.
- Find the number of solutions of a quadratic equation.
- Choose a linear, quadratic, or exponential model for data.
- Simplify radicals involving products and quotients.
- Simplify sums and differences of radical expressions.
- Simplify products and quotients or radical expressions.
- Solve equations containing radicals.
- Identify extraneous solutions.
- Simplify rational expressions.
- Multiply and divide rational expressions.
- Simplify complex fractions.
- Add and subtract rational expressions.
- Solve rational equations and proportions.
- Make and interpret frequency tables and histograms.
- Find mean, median, mode, and range.
- Find permutations and combinations.
- Find theoretical and experimental probabilities.