



St. Mary's Academy

Algebra Challenge Exam Review Sheet

(To place into Accelerated Algebra or Geometry)

The Algebra Challenge Exam is for students hoping to enroll in Accelerated Algebra or Geometry for their freshman year at SMA. These students must have taken Algebra 1 in middle school. The following topics will be tested on the Algebra Challenge Exam. All topics can be found in any standard Algebra textbook.

ALGEBRA TOPICS:

General Topic	Specific Skills
Simplifying expressions with and without variables.	Order of operations Addition and subtraction of signed numbers Using the distributive property Combining like terms Multiplying and dividing signed numbers Multiplying a monomial and a polynomial Multiplying two binomials Multiplying a binomial and a trinomial Expressions with Absolute value
Area and Perimeter	Solving a problem given area and/or perimeter of an object.
Solving Linear Equations.	Solving equations with variables on one side Solving equations with variables on both sides Solving equations involving parentheses Solving equations involving like terms. Writing and Solving proportional equations.
Graphing on the coordinate plane	Graphing Ordered pairs Graphing Linear equations from: <ul style="list-style-type: none">• a table of values• an equation with slope and y-intercept
Working with Linear functions	Rates of change and slope Identify a graph, table, or word problem as linear or non-linear Identify slope & y-intercept from a graph or word problem Write equation of a line given: <ul style="list-style-type: none">• slope and y-intercept• 2 points on the line• slope and one point on the line• standard form of a line• a situation that follows a linear pattern• a table that follows a linear pattern
Solving Linear Inequalities	Same skills as listed under "Solving Linear Equations", but with inequalities
Solving Systems of Equations	Using substitution Using the addition/subtraction (elimination) method By graphing

	Writing a system and solving from a word problem
Graphing linear inequalities	Graphing solutions to an inequality on a number line Graphing solutions to a two-variable inequality on a graph
Patterns	Observing and representing patterns using math.
Function Notation	Understanding and using $f(x)$ notation.
Quadratic Functions	Drawing a quadratic function from a table of values Solving a quadratic by using the Quadratic Formula (will be provided). Solving a quadratic by factoring and/or the zero-product property.
Factoring methods	Factoring out a common monomial factor Factoring a trinomial expression Factoring a difference of two perfect squares
Exponential Functions	Sketching an exponential function based on an equation Using the initial value and growth factor to write an equation.
Simplifying exponential expressions.	Multiplying and dividing exponential expressions. Simplifying expressions with negative exponents Powers of exponential expressions.