



## Algebra I checklist for JHU Center for Talented Youth

Student's name \_\_\_\_\_

Instructor's name \_\_\_\_\_

Instructor's email \_\_\_\_\_

This document should only be completed by a student's math instructor, and is intended to clarify if a student is prepared to take a CTY course that has Algebra I as a prerequisite. Please check the boxes next to all topics the student's current course is expected to cover. A student does not need to have covered 100% of the topics to be considered for individual courses. Please list major topics planned to be covered that do not appear in the checklist in the "Other" section at the bottom.

### Solving Equations:

- ☐ Linear equations with variables on both sides
- ☐ Solving linear equations for a particular variable
- ☐ Solving multi-step equations involving parentheses, fractions, and/or decimals

### Graphing Linear Equations

- ☐ Concept of slope in linear equations
- ☐ x and y-intercepts
- ☐ Slope-intercept form
- ☐ Point-Slope form
- ☐ Identify if lines are parallel or perpendicular
- ☐ Fit equations to data

### Systems of Equations

- ☐ Solving systems of equations using substitution
- ☐ Solving systems of equations using elimination
- ☐ Equivalent system of equations
- ☐ Independent, dependent, and inconsistent systems
- ☐ Translating word problems into systems of equations

### Functions

- ☐ Evaluating functions
- ☐ Graphing functions from a table of values
- ☐ Concepts of Domain and Range
- ☐ Identify intervals of increase and decrease

### Sequences

- ☐ Recursive and Explicit Arithmetic Sequences
- ☐ Exposure to geometric sequences
- ☐ Gauss's formula
- ☐ Formulas for geometric sequences

### Piece-wise function

- ☐ Absolute value function
- ☐ Evaluating piece-wise functions
- ☐ Graphing piece-wise functions

## Exponents

- ☐ Evaluate expressions using properties of exponents, including rational exponents and negative exponents
- ☐ Simplifying rational expressions involving exponents

## Radical Expressions and Equations

- ☐ Replacing radicals with fractional exponents and vice versa
- ☐ Solving equations involving square roots
- ☐ Rationalize denominators of radical expressions, including the use of conjugates
- ☐ Identify extraneous solutions

## Quadratic Expressions and Equations

- ☐ Multiplying linear terms
- ☐ Introduction to factoring
- ☐ Factoring by grouping
- ☐ Factoring by difference of squares
- ☐ Factoring perfect square trinomials
- ☐ Solve quadratic equations using square roots
- ☐ Complete the square of a quadratic expression
- ☐ Solve quadratic equations using appropriate factoring methods
- ☐ Solve quadratic equations using the quadratic equation
- ☐ Use the discriminant to identify the number of solutions to a quadratic equation

## Inequalities

- ☐ Express single variable inequalities (simple and compound) using interval notation
- ☐ Graphing two-variable inequalities
- ☐ Graphing systems of linear inequalities

## Quadratic Functions and Graphing

- ☐ Solving for intercepts of a quadratic function
- ☐ Solving for the vertex of a quadratic function
- ☐ Translate a quadratic function between standard form and vertex form
- ☐ Identify the range of a quadratic function
- ☐ Solve word problems involving quadratic functions

## Exponential Functions

- ☐ Create exponential functions from word problems
- ☐ Compare and contrast linear growth, quadratic growth, and exponential growth
- ☐ Identify type of growth from a given table of values

## Statistics

- ☐ Identify Mean, Median, and Mode of a data set
- ☐ Construct and interpret scatter plots from bivariate data, including identifying clustering and outliers
- ☐ Construct and Interpret Box and Whisker Plots

## Other

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