# Algebra I Trimester Curriculum – Revised 9/4/15

# Algebra IA

**60 days**
**(36 intructional : 7 review : 7 assessment)**
**(3 days missed)**
**(2 days final assessment)**
**(5 days: Aleks : CDT)**

## Unit 1 - Operations with Real Numbers – Total Days: 8 days

**(6 instructional : 1 review : 1 assessment)**

**No calculator section – whole numbers; Calculator section – decimals and fractions**

**Objectives:**

- Objective 1 – Identify or define natural numbers, whole numbers, integers, rational numbers, irrational numbers, real numbers, absolute value, identity property of addition, additive property of addition, definition of subtraction(add the opposite), identity property of multiplication, multiplicative inverse property-
- Objective 2 – Add and subtract numbers with like and unlike signs (No calc))
- Objective 3 - Multiply and divide positive and negative numbers (No calc)
- Objective 4 - Simplify expressions involving opposites and absolute values (No calc)
- Objective 5 – Compare and order real numbers (comparing two numbers, ordering multiple numbers using different forms; with calc
- Objective 6 – Evaluate expressions using order of operations (with calc)

**Note: Square Roots: include perfect squares and non-perfect squares in comparing objective and perfect square in order of operations.**

## Unit 2 - From Patterns to Algebra - Total Days: 6 days

**(4 instructional : 1 review : 1 assessment)**

**Objectives:**

- Objective 1- Define constant difference, term, variable, expression, and equation-
- Objective 2 - Use variables to represent unknown quantities including real world situations-
- Objective 3 - Translate words into expressions
- Objective 4 - Evaluate expressions using the algebraic order of operations- Make more difficult, more involved
- Objective 5 - Substitute values into algebraic expressions-
- Objective 6 – Analyze a set of data for the existence of a pattern by completing a table or a sequence (10 Points) **A1.2.1.1.1**

## Unit 3 - Properties for Simplifying Algebraic Expressions: Total Days: 8 days

**(6 instructional : 1 review : 1 assessment)**

**Objectives:**

- Objective 1 – *Identify/Apply* (not define)commutative property of addition, commutative property of multiplication, associative property of addition, associative property of multiplication, distributive property, coefficient, constant, exponent, like terms, and base-
- Objective 2 – Solve two-step equations-
- Objective 4 – Solve multistep equations-
- solve multistep where you need to combine like terms first
- Solve multistep equations with variables on both sides
- Objective 5 – Use distributive property to solve equations-

## Unit 4 – Functions and Relations: Total Days: 6 days

**(4 instructional : 1 review : 1 assessment)**

Keystone Standards: **A1.2.1.1.1; A1.2.1.1.2; A1.2.1.1.3; A1.2.1.2.2**

**Objectives:**

1 – Define relation, function, domain, range, linear equation, independent variable, dependent variable coordinate plane, x-axis, and y-axis- Might need to change

2 – Be able to determine if a relation is a function given ordered pairs or a table **A1.2.1.1.2**

3 – Be able to determine if a relation is a function given a graph (including piecewise) **A1.2.1.1.2**

4 – Be able to identify the domain and range of a relation given ordered pairs or a table **A1.2.1.1.3**

5 – Be able to identify the domain and range of a relation given a graph (including piecewise graphs) **A1.2.1.1.3**

## Unit 5 – Linear Functions: Total Days: 8 days

**(6 instructional : 1 review : 1 assessment)**

Keystone Standards: **A1.2.1.2.1; A1.2.1.2.2; A1.2.2.1.1; A1.2.2.1.4**

**Objectives: (75 Total Points)**

1 – Define linear equation, slope, $x$-intercept, $y$-intercept, slope-intercept form, and standard form

2 – Identify the $x$-intercept and $y$-intercept given a graph **A1.2.2.1.4**

3 – Identify the $x$-intercept and $y$-intercept given an equation **A1.2.2.1.4**

4 – Determine the slope of a line given a graph **A1.2.2.1.4**

5 – Determine the slope of a line given two points **A1.2.2.1.1**

6 – Determine the slope of a line given an equation **A1.2.2.1.1**

7 – Convert a linear equation to slope-intercept form **A1.2.1.2.1; A1.2.1.2.2**

8 – Convert a linear equation to standard form **A1.2.1.2.1; A1.2.1.2.2**

## Unit 6 – Graphing Linear Equations: Total Days: 6 days

**(4 instructional : 1 review : 1 assessment)**

Keystone Standards: **A1.1.2.1; A1.2.2.1.1**

**Objectives:**

1 – Identify and describe constant rates of change (no predictions) **A1.2.2.1.1**
2 – Graph an equation in slope-intercept form **A1.1.2.1**
3 – Graph an equation in standard form **A1.1.2.1**
4 – Graph horizontal and vertical lines **A1.1.2.1**

## Unit 7 – Writing Linear Equations: Total Days: 8 days

**(6 instructional : 1 review : 1 assessment)**

Keystone Standards: **A1.1.2.1.1; A1.1.2.1.3; A1.2.1.2.1; A1.2.2.1.2; A1.2.2.1.3**

**Objectives:**

1 – Write or identify a linear equation given a graph (includes horizontal and vertical) **A1.2.2.1.3**
2 – Write or identify a linear equation given the slope and point on the line **A1.2.2.1.3**
3 – Write or identify a linear equation given two points on the line or a table **A1.2.2.1.3, A1.2.1.2.2**
4 – Model a situation with a linear equation **A1.1.2.1.3; A1.1.2.1.1; A1.2.1.2.1; A1.2.2.1.2**
5 – Be able to represent a sequence as an expression and make predictions for the sequence. **A1.2.1.2.2; A1.2.1.1.1**

# Algebra IB

**60 days**
**(37 intructional : 7 review : 7 assessment)**
**(3 days missed)**
**(2 days final assessment)**
**(4 days: Aleks : CDT)**

## Unit 8 – Inequalities – Total Days: 8 days

**(6 instructional : 1 review : 1 assessment)**

**Keystone Standards: A1.1.3.1; A1.1.3.1.1; A1.1.3.1.2; A1.1.3.1.3**

**Objectives:**

Objective 1 – Identify inequality symbols **A1.1.3.1**
Objective 2 – Graph an inequality on a number line – **A1.1.3.1.2**
Objective 3 – Given a graph, determine if a value is a solution.
Objective 4 – Graph a compound inequality on a number line**A1.1.3.1.1**
Objective 5 – Solve linear inequalities **A1.1.3.1.1**
Objective 6 – Solve compound linear inequalities **A1.1.3.1.1**
Objective 7 – Model situations using linear inequalities **A1.1.3.1.3**

## Unit 9 – Systems of Equations – Total Days: 8 days

**(6 instructional : 1 review : 1 assessment)**

**Keystone Standards: A1.1.2.2.1**

**Objectives:**

Objective 1 – Determine whether a point is a solution to a system of equations **A1.1.2.2.1**
Objective 2 – Solve a system of equations by graphing (including infinite solutions, no solutions, and one solution) – **A1.1.2.2.1**
Objective 3 – Solve a system of equations using the substitution method **A1.1.2.2.1**
Objective 4 – Solve a system of equations using the elimination method **A1.1.2.2.1**
Objective 5 – Write, solve, and interpret systems of equations in the context of problem situations **A1.1.2.2.1**

## Unit 10 – Systems of Inequalities – Total Days: 8 days

**(6 instructional : 1 review : 1 assessment)**

**Keystone Standards: A1.3.2.1.2; A1.1.3.2.1; A1.1.3.2.2**

**Objectives:**

Objective 1 – Graph the solution to a linear inequality **A1.1.3.1.2**
Objective 2 – Solve a system of inequalities by graphing **A1.1.3.2.1**
Objective 3 – Determine whether a point is a solution to a system of inequalities **A1.1.3.2.1**
Objective 4 – Write a linear inequality or system of linear inequalities given a graph – **A1.1.3.2.1**
Objective 5 - Write, solve, and interpret systems of inequalities in the context of problem situations **A1.1.3.2.2**

## Unit 11 - Absolute Value Unit – Total 5 days:

**(3 instructional : 1 review : 1 assessment)**

**Keystone Standards: A1.1.1.3.1**

**Objectives**:

Objective 1 – Simplify and/or evaluate expressions with absolute value **A1.1.1.3.1**

Objective 2 – Solve absolute value equations **A1.1.1.3.1**

Objective 3 – Solve and graph absolute value inequalities **A1.1.1.3.1**

## Unit 12 – Exponents - Total Days: 8 days

**(6 instructional : 1 review : 1 assessment)**

**Keystone Standards: A1.1.1.3.1**

**Instruction:** 5 Days

**Objectives: A1.1.1.3.1 → All under this anchor**

Objective 1 – Simplify exponents using the Product-of-Powers Property

Objective 2 – Simplify exponents using the Power-of-a-Power Property

Objective 3 – Simplify exponents using the Power-of-a-Product Property

Objective 4 - Simplify exponents using the Quotient-of-Powers Property

Objective 5 - Simplify exponents using the Power-of-a-Quotient Property

Objective 6 – Simplify exponents using the Zero Exponent Property

Objective 7 – Simplify exponents using the Negative Exponent Property

Objective 8 – Simplify exponents using multiple properties

Objective 9- Express large and small numbers in scientific notation-

Objective 10- Express numbers from scientific notation to standard notation

## Unit 13 – Radical Expressions – Total Days: 6 days

**(4 instructional : 1 review : 1 assessment)**

Keystone Standards: **A1.1.1.1.2; A1.1.1.3.1**

**Objectives:**

Objective 1 – Estimate the square root of a number

Objective 1 – Simplify a radical expression (without variables) **A1.1.1.1.2**

Objective 2 – Add and/or Subtract radicals (without having to simplify first) **A1.1.1.3.1**

Objective 3 – Multiply radicals (without variables) **A1.1.1.3.1**

Objective 4 – Simplify radical expression by rationalizing the denominator **A1.1.1.3.1**

## Unit 14 – Adding/Subtracting/Multiplying Polynomials – Total Days: 8 days

**(6 instructional : 1 review : 1 assessment)**

**Keystone Standards: A1.1.1.2.1; A1.1.1.5.1**

**Objectives:**

Objective 1 – Classify a polynomial by degree and/or number of terms

Objective 2 – Add polynomial expressions and express answer in simplest form **A1.1.1.5.1**

Objective 3 – Subtract polynomial expressions and express answer in simplest form **A1.1.1.5.1**

Objective 4 – Multiply polynomial expression by a monomial and express answer in simplest form **A1.1.1.5.1**

Objective 5 – Multiply two binomials and express answer in simplest form **A1.1.1.5.1**

Objective 6 – Multiply binomial by a trinomial and express answer in simplest form **A1.1.1.5.1**

Objective 7 – Use multiple operations to simplify a polynomial –**A1.1.1.5.1**

Objective 8 – Find the GCF of monomials –**A1.1.1.2.1**

Objective 9 – Find the LCM of monomials –**A1.1.1.2.1**

# Algebra IC

**60 days**
**(37 intructional : 5 review : 6 assessment)**
**(3 days missed)**
**(3 days final assessment)**
**(6 days: Aleks : CDT)**

## Unit 15 – Factoring Polynomials – Total Days: 10 days

**(8 instructional : 1 review : 1 assessment)**

Keystone Standards: **A1.1.1.5.2; A1.1.1.5.3**

**Objectives:**

Objective 1 – Factor a polynomial using the GCF **A1.1.1.5.2**
Objective 2 – Factor a difference of squares **A1.1.1.5.2**
Objective 3 – Factor a polynomial in the form $x^2 + bx + c$ **A1.1.1.5.2**
Objective 4 – Factor a polynomial in one step using the different factoring methods from objectives 1-3 **A1.1.1.5.2**
Objective 5 – Factor a polynomial in two steps where the first step is factoring out the GCF and the second step is factoring a difference of squares or $x^2 + bx + c$ **A1.1.1.5.2**
Objective 6 – Simplify a rational algebraic expression by factoring **A1.1.1.5.3**

## Unit 16 Probability: Total Days: 7 days

**(5 instructional : 1 review : 1 assessment)**

**Objectives:**

- Objective 1 – Define theoretical probability, favorable outcome, experimental probability, compound events, sample space, Venn diagram, intersection, addition of probabilities principle, and independent events-
- Objective 2 – Find the experimental probability that an event will occur-
- Objective 3 – Find the theoretical probability that an event will occur-
- Objective 4 – Find the sample space of an experiment-
- Objective 5 – Find the union and intersection of events-
- Objective 6 – Apply the addition of probabilities principle-
- Objective 7 – Find the probability of independent events-
- Objective 8 – Find the probability for compound events-

## Unit 17 – Measures of Central Tendencies: Total Days: 7 days

**(5 instructional : 1 review : 1 assessment)**

**Objectives:**

- Objective 1 – Define mean, median, mode, range, stem-and-leaf plot, histogram, and box-and-whisker plot
- Objective 2 – Find the mean of a set of data
- Objective 3 – Find the median of a set of data
- Objective 4 – Find the mode of a set of data
- Objective 5 – Interpret line graphs
- Objective 6 – Interpret bar graphs
- Objective 7 – Interpret circle graphs
- Objective 8 – Interpret histograms
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**Unit 10 B – Stem and Leaf and Box-and-Whisker Plots**

- Objective 1 – Interpret Stem-and-leaf plots-
- Objective 2 – Represent data with stem-and-leaf plots-
- Objective 3 – Interpret box-and-whisker plots-
- Objective 4 – Represent data with box-and-whisker plots-

** Find mean, median, mode, range from stem and leaf; have interpretation questions with quartiles (both box and whisker and stem and leaf).

**Unit 18 Keystone Review Total Days: 12 days**

**(9 instructional : 1 review : 2 assessment)**

## After Keystone: Total Days: 12 days

**(10 days instructional : 1 days review : 1 assessments)**

**Objectives:**

- Objective 1 – Define literal equation, formula, consecutive, and integer-Objective 2 – Solve literal equation for a specific variable-
- Objective 3 – Use formulas to solve problems-
- Objective 5 – Use formulas to answer word problems (give them formulas)