# Hamburg Area School District Course Guide



Name:	Algebra 1 (1025)
Grade(s):	9-12
Length:	Place an X next to the correct option
x	Full-Year (180 Sessions)
	Semester (90 Sessions)
	Quarter (45 Sessions)
	Other (Specify):
Text:	Algebra 1 by Kanold, Burger, Dixon, Larson, Leinwald (Houghton Mifflin Harcourt)
Approved on:	2015 (Reviewed 2021-2022)

Description:

Students entering ninth grade who have not taken an Algebra I course previously should start their high school sequence with this mathematics course. Students who took Algebra I in middle school and earned below a C should also start high school with this course. Students taking Algebra 1 may still qualify for future Post-Secondary courses. In Algebra 1, students learn the basic definitions, terminology, and rules necessary for the complete algebra sequence. An emphasis on reasoning and justification of algebraic processes is introduced. Radicals, polynomials, and solving and graphing one- and two-variable equations and inequalities are covered in depth. A heavy emphasis is placed on the standards outlined for the Algebra 1 Keystone Exam.

Unit:Operations with Real Numbers and ExpressionsUnit Length:<u>3 weeks</u>

ESSENTIAL QUESTION- ESSENTIAL CONTENT	PERFORMANCE OBJECTIVES	STANDARDS/ ANCHORS	ASSESSMENT/ ACTIVITY
What are the subsets of real numbers? What qualities are shared by the subsets? What makes the subsets unique?	Categorize real numbers.	A1.1.1.1.1-Compare and/or order any real numbers. Note: Rational and irrational may be mixed.	Classifying Numbers Chart IXL A1.A.5 DesmosClassifying Numbers Activity
How do rational and irrational numbers differ?	Explain the differences between rational and irrational numbers; Simplify roots (with a calculator), exponents, and absolute values. Provide examples of rational and irrational numbers.	CC.2.1.8.E.4 Estimate irrational numbers by comparing them to rational numbers. CC.2.1.8.E.1 Distinguish between rational and irrational numbers using their properties. CC.2.1.HS.F.2 Apply properties of rational and irrational numbers to solve real-world or mathematical problems.	Rational v. Irrational:Coloring sheet IXL A1.A.8 IXL A1.A.9 IXL A1.A.10 IXL A1.A.11 Quiz on Classifying Real Numbers
How do I compare and order real numbers?	Plot real numbers on a number line and understand the relationship between the real numbers and the number line.	A1.1.1.1.1-Compare and/or order any real numbers.	Number line activity Unit Test

 Algebra 1

 Unit:
 Least Common Multiple (LCM) and Greatest Common Factor (GCF)

 Unit Length:
 2 weeks

ESSENTIAL QUESTION- ESSENTIAL CONTENT	PERFORMANCE OBJECTIVES	STANDARDS/ ANCHORS	ASSESSMENT/ ACTIVITY
How is the LCM (Least Common Multiple) used in everyday life? What areas of math benefit from understanding the LCM?	Calculate the LCM for two or more numbers or monomials using a factor tree and prime factorization.	CC.2.1.6.E.3 Develop and/or apply number theory concepts to find common factors and multiples. M06.A-N.2.2.1 M06.A- N.2.2.2 A1.1.1.2.1-Find the Greatest Common Factor (GCF) and/or the Least Common Multiple (LCM) for sets of monomials.	IXL 8.A.4 (prime factorization) IXL 8.A.6 (LCM) Quiz on LCM of monomials
How is the GCF (Greatest Common Factor) used in everyday life? What areas of math benefit from understanding the GCF?	Calculate the GCF for two or more numbers or monomials using a factor tree and prime factorization.	CC.2.1.6.E.3 Develop and/or apply number theory concepts to find common factors and multiples. M06.A-N.2.2.1 M06.A- N.2.2.2 A1.1.1.2.1-Find the Greatest Common Factor (GCF) and/or the Least Common Multiple (LCM) for sets of monomials.	IXL 8.A.5 (GCF) Quiz on GCF of monomials Station activity with word problems IXL 8. A.7 (LCM/GCF word problems) Unit Test

Unit: Square Roots Unit Length: <u>4-5 weeks</u>

ESSENTIAL QUESTION- ESSENTIAL CONTENT	PERFORMANCE OBJECTIVES	STANDARDS/ ANCHORS	ASSESSMENT/ ACTIVITY
How are the perfect squares useful in evaluating positive and negative square roots?	Use perfect squares (1-625) to simplify square roots of fractions, decimals, and large numbers that are multiples of the basic perfect squares.	CC.2.2.8.B.1 Apply concepts of radicals and integer exponents to generate equivalent expressions. M08.B-E.1.1.1 M08.B- E.1.1.2 M08.B-E.1.1.3 M08.B-E.1.1.4 A1.1.1.3.1	IXL 8.F.1 Edia practice on positive and negative square roots
How do I estimate square roots on the number line? How are these numbers used in real-life?	Use perfect squares (1-625) to estimate irrational square roots; graph irrational numbers.	CC.2.1.8.E.4 Estimate irrational numbers by comparing them to rational numbers. M08.A-N.1.1.3 M08.A- N.1.1.4 M08.A-N.1.1.5 A1.1.1.1.1	Graphing activity ProblemAttic–Applications of Perfect Squares Square Roots activity Quiz
How are radicals simplified?	Simplify radicals using prime factorization and perfect squares methods.	CC.2.1.6.E.3 Develop and/or apply number theory concepts to find common factors and multiples. M06.A-N.2.2.1 M06.A- N.2.2.2 CC.2.2.8.B.1 Apply concepts of radicals and integer exponents to generate equivalent expressions. M08.B-E.1.1.1 M08.B-E.1.1.2 M08.B- E.1.1.3 M08.B-E.1.1.4 A1.1.1.3.1	IXL A1.EE.1 Delta Math Quilt Activity Quiz Keystone Assessment Anchors and Eligible Content problems (page 14) Concluding exercise to compare perfect squares method and prime factorizations methods.

How are radicals simplified when the radicand is a fraction?	Use the Radical Quotient Property to simplify radicals that contain fractions. Note: the denominator is not in need of rationalization.	CC.2.2.8.B.1 Apply concepts of radicals and integer exponents to generate equivalent expressions. M08.B-E.1.1.1 M08.B- E.1.1.2 M08.B-E.1.1.3 M08.B-E.1.1.4 A1.1.1.3.1	Practice on mini whiteboards IXL A1.EE.3
How are radicals simplified when the radicand contains variables?	Use the properties of radicals to simplify radicals containing variables.	CC.2.2.8.B.1 Apply concepts of radicals and integer exponents to generate equivalent expressions. M08.B-E.1.1.1 M08.B- E.1.1.2 M08.B-E.1.1.3 M08.B-E.1.1.4 A1.1.1.3.1	Practice on mini whiteboards IXL A1.EE.2 Quiz
How can a radical that is simplified be "reversed?"	"Un-simplify" a radical and use that technique to solve problems.	CC.2.2.8.B.1 Apply concepts of radicals and integer exponents to generate equivalent expressions. M08.B-E.1.1.1 M08.B- E.1.1.2 M08.B-E.1.1.3 M08.B-E.1.1.4 A1.1.1.3.1 CC.2.2.HS.D.8 Apply inverse operations to solve CC.2.2.HS.D.2 Write expressions in equivalent forms to solve problems. equations or formulas for a given variable	Keystone released items Quiz
How are radicals added and subtracted?	Simplify radicals and combine like radicals.	CC.2.2.8.B.1 Apply concepts of radicals and integer exponents to generate equivalent expressions. M08.B-E.1.1.1	Pizzazz activity Quiz IXL A1.EE.5

		M08.B-E.1.1.2 M08.B- E.1.1.3 M08.B-E.1.1.4 A1.1.1.3.1	
How are radicals multiplied?	Multiply and simplify radicals.	CC.2.2.8.B.1 Apply concepts of radicals and integer exponents to generate equivalent expressions. M08.B-E.1.1.1 M08.B-E.1.1.2 M08.B- E.1.1.3 M08.B-E.1.1.4 A1.1.1.3.1	Pizzazz activity Quiz IXL A1.EE.4 IXL A1.EE.6 Unit Test

Unit:Operations on Monomials and PolynomialsUnit Length:<u>3 Weeks</u>

ESSENTIAL QUESTION- ESSENTIAL CONTENT	PERFORMANCE OBJECTIVES	STANDARDS/ ANCHORS	ASSESSMENT/ ACTIVITY
How are polynomials added and subtracted? How can we solve real-world problems using addition and subtraction of polynomials?	Add and subtract polynomials.	CC.2.2.HS.D.3 Extend the knowledge of arithmetic operations and apply to polynomials. A1.1.1.5.1, A1.1.1.5.2, A1.1.1.5.3, A2.1.2.2.1, A2.1.2.2.2	IXL A1.Z.3–using algebra tiles IXL A1.Z.4 Algebra with Pizzazz practice Delta Math Practice Word problem practice Quiz
How are polynomials classified?	Classify polynomials according to the number of terms and degree.	CC.2.2.HS.D.1 Interpret the structure of expressions to represent a quantity in terms of its context	IXL A1.Z.1 BINGO–vocabulary practice
How are the Laws of Exponents applied to monomials?	Multiply monomials. Raise monomials to a power. Divide monomials. Distribute a monomial to a polynomial.	CC.2.2.HS.D.2 Write expressions in equivalent forms to solve problems. A1.1.1.5.1, A1.1.1.5.2, A1.1.1.5.3, A2.1.2.1.1, A2.1.2.1.2, A2.1.2.1.3, A2.1.2.1.4, A2.1.2.2.1, A2.1.2.2.2	Delta Math practice IXL A1.Y.1 IXL A1.Y.3 IXL A1.Y.3 IXL A1.Y.4 IXL A1.Y.5 IXL A1.Z.6 Mini white board practice Section quizzes Cumulative test on Units 1-4

Unit:Multiplying Polynomials and FactoringUnit Length:<u>3 weeks</u>

ESSENTIAL QUESTION- ESSENTIAL CONTENT	PERFORMANCE OBJECTIVES	STANDARDS/ ANCHORS	ASSESSMENT/ ACTIVITY
How is the GCF factored out of a polynomial?	Find the GCF of a polynomial and factor it out.	A1.1.1.2.1-Find the Greatest Common Factor (GCF) and/or the Least Common Multiple (LCM) for sets of monomials. A1.1.1.5.2-Factor algebraic expressions, including difference of squares and trinomials. Note: Trinomials are limited to the form ax2+bx+c where a is equal to 1 after factoring out all monomial factors.	IXL A1.AA.2 Kahoot
How are binomials (and trinomials) multiplied?	Use the area model and the F.O.I.L. method to multiply binomials including the special cases (conjugates and perfect square trinomials). Multiply binomials by trinomials.	A1.1.1.5.1-Add, subtract, and/or multiply polynomial expressions (express answers in simplest form). Note: Nothing larger than a binomial multiplied by a trinomial.	Binomial Multiplication Kahoot Project/Puzzle
How are binomials used to solve real-life problems involving the area model?	Solve word problems that require binomial multiplication.	A1.1.1.5.1-Add, subtract, and/or multiply polynomial expressions (express answers in simplest form). Note: Nothing larger than a binomial multiplied by a trinomial.	Various practice sheets Textbook problems Assessment Anchor sample question A1.1.1 Quiz
How are trinomials of the form $x^2 + bx + c$ factored?	Factor trinomials of degree 2 with a=1.	A1.1.1.5.2-Factor algebraic expressions, including	Written practice Pizzazz practice

	Factor algebraic expressions, including difference of squares and perfect square trinomials. Note: Trinomials are limited to the form $ax^2 + bx + c$ where a is equal to 1 after factoring out all monomial factors.	difference of squares and trinomials. Note: Trinomials are limited to the form $ax^2 + bx + c$ where a is equal to 1 after factoring out all monomial factors.	"Make-Your_Own- Problem" activity Personalized activity with varying levels of difficulty IXL A1.AA.4 IXL A1.AA.6 IXL A1.AA.9 Delta Math Practice Desmos activity Kahoot Quiz Test Note: this topic is divided into 4 sections with practice necessary for each section.
How are rational expressions involving polynomials simplified?	Simplify rational expressions by factoring and explain/justify the steps taken in the process.	A1.1.1.5.3 Simplify/reduce a rational algebraic expression. CC.2.2.HS.D.1 CC.2.2.HS.D.2 CC.2.2.HS.D.3 CC.2.2.HS.D.5 CC.2.2.HS.D.6 A1.1.2.1.2-Use and/or identify an algebraic property to justify any step in an equation or solving process.	Keystone Eligible Content examples A1.1.1.5 Culminating activity/Quiz

Unit: Solving Linear Equations in One Variable Unit Length: <u>3 weeks</u>

ESSENTIAL QUESTION- ESSENTIAL CONTENT	PERFORMANCE OBJECTIVES	STANDARDS/ ANCHORS	ASSESSMENT/ ACTIVITY
How are 1-step, 2-step, and multi-step equations solved?	Identify and apply the inverse operations needed to solve 1- step, two-step, and multistep equations in one variable. Note: variable on one side of the equation	A1.1.2.1-Write, solve, and/or graph linear equations using various methods. A1.1.2.1.2 Use and/or identify an algebraic property to justify any	Written practice Kahoot Delta Math IXL A1.J.3 IXL A1.J.4 IXL A1.J.5 Sample Keystone Questions Pizzazz practice Scavenger Hunt Quiz
How are single-variable equations solved when there is a variable on both sides of the equation?	Solve single-variable equations when the variable appears on both sides of the equation.	A1.1.2.1-Write, solve, and/or graph linear equations using various methods. A1.1.2.1.2 Use and/or identify an algebraic property to justify any	Written practice Delta Math IXL A1.J.6 Scavenger Hunt Quiz
What are the special solutions that can arise when solving single-variable equations? What do those types of solutions indicate?	Interpret, graph, and explain the causes for "special solutions," i.e. "no solution" or "all real numbers."	A1.1.2.1-Write, solve, and/or graph linear equations using various methods. A1.1.2.1.3 Interpret solutions to problems in the context of the problem situation.	Written practice Test

Unit:Solving and Graphing Linear Inequalities in One VariableUnit Length:<u>3 weeks</u>

ESSENTIAL QUESTION-	PERFORMANCE	STANDARDS/	ASSESSMENT/
ESSENTIAL CONTENT	OBJECTIVES	ANCHORS	ACTIVITY
How are one-, two-, and multi-step linear inequalities in one variable solved and graphed?	Solve and graph one-, two-, and multi-step linear inequalities in one variable	A1.1.3.1 Write, solve, and/or graph linear inequalities using various methods. A1.1.3.1.2 Identify or graph the solution set to a linear inequality on a number line. CC.2.1.HS.F.5 CC.2.2.HS.D.7 CC.2.2.HS.D.9 CC.2.2.HS.D.10	Written Practice IXL A1.K.1 IXL A1.K.2 IXL A1.K.3 IXL A1.K.4 IXL A1.K.5 IXL A1.K.6 IXL A1.K.6 IXL A1.K.7 IXL A1.K.8 IXL A1.K.9 IXL A1.K.10 Delta Math practice Quiz
How are inequalities in one variable used to solve real-life problems?	Interpret various words and phrases as mathematical inequality symbols. Write and solve inequalities in one variable to represent real- life situations.	A1.1.3.1 Write, solve, and/or graph linear inequalities using various methods. A1.1.3.1.2 Identify or graph the solution set to a linear inequality on a number line. A1.1.3.1.3 Interpret solutions to problems in the context of the problem situation. CC.2.1.HS.F.5 CC.2.2.HS.D.7 CC.2.2.HS.D.9 CC.2.2.HS.D.10	"Words and Phrases" Activity Station Activity Desmos Activity Delta Math practice– several options with contextual problems Sample Keystone problems Quiz
How are compound inequalities in one variable solved?	Interpret, solve, graph, and	A1.1.3.1 Write, solve, and/or	IXL A1.K.12
	explain linear inequalities in	graph linear inequalities	IXL A1.K.13
	one variable (conjunctions and	using various methods.	IXL A1.K.14

	disjunctions).	A1.1.3.1.1 Write or solve compound inequalities and/or graph their solution sets on a number line (may include absolute value inequalities). CC.2.1.HS.F.5 CC.2.2.HS.D.7 CC.2.2.HS.D.9 CC.2.2.HS.D.10	IXL A1.K.15 Sample Keystone problems Delta Math practice Desmos Activity Quiz Test
How are absolute value equations solved and graphed? How are they used in real-life?	Interpret, solve and graph absolute value equations. Write and solve real-world problems involving absolute value equations.	A1.1.2.1 Write, solve, and/or graph linear equations using various methods. A1.1.2.1.1 Write, solve, and/or apply a linear equation (including problem situations).	Written practice IXL A1.L.1 IXL.A1.L.2
How are absolute value inequalities solved and graphed?	Interpret, solve and graph absolute value inequalities. Write and solve real-world problems involving absolute value inequalities.	A1.1.3.1 Write, solve, and/or graph linear inequalities using various methods. A1.1.3.1.1 Write or solve compound inequalities and/or graph their solution sets on a number line (may include absolute value inequalities). CC.2.1.HS.F.5 CC.2.2.HS.D.7 CC.2.2.HS.D.9 CC.2.2.HS.D.10	Written practice Comparison activity IXL A1.L.3 IXL A1.L.4 Delta Math practice Quiz Test

Unit:Slope and Linear EquationsUnit Length:<u>3 weeks</u>

ESSENTIAL QUESTION- ESSENTIAL CONTENT	PERFORMANCE OBJECTIVES	STANDARDS/ ANCHORS	ASSESSMENT/ ACTIVITY
What is the Cartesian Coordinate Plane?	Identify the parts of the Cartesian Coordinate Plane and graph points.	CC.2.3.5.A.1 Graph points in the *ALL* quadrants on the coordinate plane and interpret these points when solving real world and mathematical problems.	Foldable activity
What is slope? What is the slope of horizontal and vertical lines?	Graph horizontal and vertical lines; identify the slope of horizontal and vertical lines; write equations of horizontal and vertical lines; discuss the differences with horizontal and vertical lines.	A1.2.1.1.1 Analyze a set of data for the existence of a pattern and represent the pattern algebraically and/or graphically. A1.1.2.1.1 Write, solve, and/or apply a linear equation (including problem situations).	Desmos Activity IXL A1.S.20 IXL A1.S.21 Sample Keystone Questions Quiz
How is slope calculated for lines in two variables?	Calculate slope and graph lines given a table of values in two variables (using delta y/delta x); confirm slope using rise/run (given a graph) identify linear functions from tables.	A1.1.2.1 Write, solve, and/or graph linear equations using various methods.	Delta Math Activity Written Practice IXL A1.S.2 IXL A1.S.3 IXL A1.S.15 Quiz
How is an ordered pair proved to be a solution to a linear equation in two variables?	Substitute values into an equation to determine whether the point satisfies the equation.	A1.1.2.1.1 Write, solve, and/or apply a linear equation (including problem situations). A1.1.2.1.2 Use and/or identify an algebraic property to justify any step in an equation-solving	Written Practice Word problem activity

		process. Note: Linear equations only. A1.1.2.1.3 Interpret solutions to problems in the context of the problem situation. Note: Linear equations only.	
What is an intercept? How are slope-intercept equations represented graphically? How are equations of lines written in slope-intercept form?	Graph lines given a slope and a y-intercept; graph lines given an equation in slope-intercept form; solve for y to transform an equation to slope-intercept form.	A1.1.2.1.1 Write, solve, and/or apply a linear equation (including problem situations). A1.1.2.1.2 Use and/or identify an algebraic property to justify any step in an equation-solving process. Note: Linear equations only.	Written practice Delta Math practice IXL A1.S.8 IXL A1.S.9 IXL A1.S.12
How are intercepts used to write equations of lines in slope-intercept form?	Given the x-intercept and y- intercept, write the equation of a line in slope-intercept form.	A1.1.2.1.1 Write, solve, and/or apply a linear equation (including problem situations).	Written practice Quiz Test
How are the methods of finding slope different? Why are there so many methods?	Given two points, find the slope of the line containing the points using the variation of the point-slope formula; compare and contrast the methods of finding slope.	A1.2.1.1.1 Analyze a set of data for the existence of a pattern and represent the pattern algebraically and/or graphically.	Foldable comparison activity IXL A1.S.4 Quiz

Unit:Linear InequalitiesUnit Length:<u>1.5 weeks</u>

ESSENTIAL QUESTION- ESSENTIAL CONTENT	PERFORMANCE OBJECTIVES	STANDARDS/ ANCHORS	ASSESSMENT/ ACTIVITY
What is a linear inequality? How does it relate to real-life? How are linear inequalities graphed when the boundary lines are vertical or horizontal?	Graph linear inequalities whose boundaries are vertical or horizontal lines.	A1.1.3.2 Write, solve, and/or graph systems of linear inequalities using various methods.	Written practice Desmos activity Delta Math activity
How are single linear inequalities in two variables solved and graphed?	Solve and graph linear inequalities in two variables.	A1.1.3.2 Write, solve, and/or graph systems of linear inequalities using various methods. A1.1.3.2.1 Write and/or solve a system of linear inequalities using graphing. Note: Limit systems to two linear inequalities.	Written practice Desmos activity Delta Math activity IXL A1.T.1 IXL A1.T.2 IXL A1.T.3 IXL A1.T.4 IXL A1.T.5
What is a system of linear inequalities? What types of real-life situations are modeled with systems of linear inequalities?	Solve, graph, and interpret solutions of systems of inequalities, including application problems.	A1.1.3.2.1 Write and/or solve a system of linear inequalities using graphing. Note: Limit systems to two linear inequalities. A1.1.3.2.2 Interpret solutions to problems in the context of the problem situation. Note: Limit systems to two linear inequalities.	Written practice IXL A1.T.6 IXL A1.T.7 Delta Math activity Desmos activity Test

Unit:Writing Equations in 2 VariablesUnit Length:<u>2 weeks</u>

ESSENTIAL QUESTION- ESSENTIAL CONTENT	PERFORMANCE OBJECTIVES	STANDARDS/ ANCHORS	ASSESSMENT/ ACTIVITY
Given real-life information, how is that information translated to a slope-intercept form equation?	Write equations in slope- intercept form given a rate of change and y-intercept (from a word problem).	A1.2.2.1.1-Identify, describe, and/or use constant rates of change. 2.2.81, 2.2.82, 2.2.HS.C.1, 2.2.HS.C.3, 2.2.HS.C.5 A1.2.2.1-Describe, compute, and/or use the rate of change (slope) of a line.	Word problem practice Keystone Eligible Content sample questions for Standard A1.1.2 IXL A1.S.8 IXL A1.S.9 IXL A1.S.10 IXL A1.S.11 IXL A1.S.13 Practice with verbal/equation/table of values/graphing
Given real-life information, how is that information translated to a standard form equation?	Write equations in standard form given 2 rates and a fixed amount (from a word problem).	A1.2.1.2-Interpret and/or use linear functions and their equations, graphs, or tables. 2.8.C.1, 2.2.8.C.2, 2.2.HS.C.1, 2.2.HS.C.3, 2.2.HS.C.5 A1.2.1.2.2-Translate from one representation of a linear function to another (i.e., graph, table, and equation). A1.2.2.1.3-Write or identify a linear equation when given: the graph of the line, two points on the line, or the slope and a point on the line.	Written practice Desmos Activity Pizzazz Practice IXL A1.S.17 Practice with verbal/equation/table of values/graphing Quiz
Given real-life information, how is that	Write equations in point-slope	A1.2.2.1.3-Write or identify	Written practice

information translated to a point-slope form equation?	form given a point and a slope or 2 points.	a linear equation when given: the graph of the line, two points on the line, or the slope and a point on the line. Note: Linear equation may be in point?slope, standard, and/or slope-intercept form. 2.22.8.C.1, 2.2.8.C.2, 2.2.HS.C.1, 2.2.HS.C.3, 2.2.HS.C.5	IXL A1.S.22 IXL A1.S.23 IXL A1.S.24 MATHO vocab review game Project
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Unit:Systems of Linear EquationsUnit Length:<u>3 weeks</u>

ESSENTIAL QUESTION- ESSENTIAL CONTENT	PERFORMANCE OBJECTIVES	STANDARDS/ ANCHORS	ASSESSMENT/ ACTIVITY
What is a system of equations? How is it solved graphically?What are the classifications of systems and what do they indicate?	Solve a system of linear equations graphically, determine whether an ordered pair is a solution to a system, determine the number of solutions to a system, solve real-world problems by interpreting a graph.	A1.1.2.2-Write, solve, and/or graph systems of linear equations using various methods.	Written practice IXL A1. U.1 IXL A1. U.2 IXL A1. U.3 IXL A1. U.4 IXL A1. U.5 IXL A1. U.6 IXL A1. U.7 Delta Math activity Desmos activity
How is the elimination technique used to solve linear systems of equations?	Solve systems using elimination (categorized by no multiplication, multiplication with one equation, and multiplication with both equations); solve real-world problems in two equations in two variables using elimination.	A1.1.2.2-Write, solve, and/or graph systems of linear equations using various methods.	Written practice IXL A1. U.10 IXL A1. U.11 Delta Math activity Desmos activity Quiz
How is the elimination technique used to solve linear systems of equations?	Solve systems using the substitution method, solve real-world problems in two equations in two variables using substitution.	A1.1.2.2-Write, solve, and/or graph systems of linear equations using various methods.	Written practice IXL A1. U.8 IXL A1. U.9 Keystone Eligible Content sample questions for Standard A1.1.2 Test

Unit: Functions and Relations Unit Length: <u>1.5 weeks</u>

ESSENTIAL QUESTION- ESSENTIAL CONTENT	PERFORMANCE OBJECTIVES	STANDARDS/ ANCHORS	ASSESSMENT/ ACTIVITY
What is the difference between a function and a relation? How are they represented?	Differentiate between a function and a relation; represent functions and relations in various ways; identify the domain and range of a function or relation; use the vertical line test.	A1.2.1.1.2 Determine whether a relation is a function, given a set of points or a graph. A1.2.1.1.1 Analyze a set of data for the existence of a pattern and represent the pattern algebraically and/or graphically. A1.2.1.1.3-Identify the domain or range of a relation (may be presented as ordered pairs, a graph, or a table). A1.2.1.2.1-Create, interpret, and/or use the equation, graph, or table of a linear function. A1.2.1.2.2-Translate from one representation of a linear function to another (i.e., graph, table, and equation).	Sample Keystone Exam Question for A1.2.1.1.2 IXL A1.Q.1 IXL A1.Q.2 IXL A1.Q.4 IXL A1.Q.5 Quiz
How are functions evaluated?	Evaluate functions with given domain or range values; find values using function graphs;	A1.2.1.1.1 Analyze a set of data for the existence of a pattern and represent the pattern algebraically and/or graphically. A1.2.1.2.1-Create, interpret, and/or use the equation, graph, or table	PA Keystone Online Tools Training IXL A1.Q.6 IXL A1.Q.7 IXL A1.Q.12 IXL A1.Q.13 Test

	of a linear function.	

Unit: Data Analysis Unit Length: <u>2.5 Cycles</u>

ESSENTIAL QUESTION- ESSENTIAL CONTENT	PERFORMANCE OBJECTIVES	STANDARDS/ ANCHORS	ASSESSMENT/ ACTIVITY
How are scatter plots drawn? Why are they useful in representing real-world data? How can an equation be written to represent the data in a useful way?	Draw a scatter plot; analyze the graph of a scatter plot.	A1.2.3.2.1 Estimate or calculate to make predictions based on a circle, line, bar graph, measure of central tendency, or other representation. A1.2.3.2.2 Analyze data, make predictions, and/or answer questions based on displayed data (box-and- whisker plots, stem-and-leaf plots, scatter plots, measures of central tendency, or other representations).	Written practice Desmos activity IXL A1.LL.7 IXL A1.LL.8 IXL A1.LL.9 Delta Math practice Delta Math Quiz
What does it mean to find the equation of the line of best fit?	Write the equation of the line of best fit.	A1.2.3.2.3 Make predictions using the equations or graphs of best-fit lines of scatter plots.	IXL A1.LL.12
How is a box-and-whisker plot used to organize or analyze real-world data?	Construct a box-and-whisker plot, interpret the data, make predictions; use measures of dispersion to describe a set of data.	A1.2.3.2.2 Analyze data, make predictions, and/or answer questions based on displayed data (box-and- whisker plots, stem-and-leaf plots, scatter plots, measures of central tendency, or other representations). A1.2.3.1.1 Calculate and/or	Written practice Delta Math practice on drawing and interpreting IXL A1.LL.3 Project

	interpret the range, quartiles, and interquartile range of data	
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### Unit: Probability Unit Length: <u>2 weeks</u>

ESSENTIAL QUESTION- ESSENTIAL CONTENT	PERFORMANCE OBJECTIVES	STANDARDS/ ANCHORS	ASSESSMENT/ ACTIVITY
What does probability mean? How is it calculated?	Apply probability to practice situations.	A1.2.3.3.1 Find probabilities for compound events (e.g., find probability of red and blue, find probability of red or blue) and represent as a fraction, decimal, or percent.	Written practice IXL A1.KK.1 IXL A1.KK.2
What are mutually exclusive events?	Calculate the probability of mutually exclusive events.	A1.2.3.3.1 Find probabilities for compound events (e.g., find probability of red and blue, find probability of red or blue) and represent as a fraction, decimal, or percent.	Written practice IXL A1.KK.5 Delta Math practice Roulette Activity
What are independent events? What are dependent events?	Differentiate between independent and dependent events. Calculate the probability of independent and dependent events.	A1.2.3.3.1 Find probabilities for compound events (e.g., find probability of red and blue, find probability of red or blue) and represent as a fraction, decimal, or percent.	Written practice IXL A1.KK.6 IXL A1.KK.7 Delta Math practice Rummy Activity Quiz/Test