

New York State Next Generation Mathematics Learning Standards		
Algebra I Crosswalk		
Number and Quantity		
The Real Number System (NRN)		
Cluster	NYS P-12 CCLS	NYS Next Generation Learning Standard
Use properties of rational and irrational numbers.	N-RN.3 Explain why the sum or product of two rational numbers is rational; that the sum of a rational number and an irrational number is irrational; and that the product of a nonzero rational number and an irrational number is irrational.	<p>AI-N.RN.3 Use properties and operations to understand the different forms of rational and irrational numbers.</p> <p>a.) Perform all four arithmetic operations and apply properties to generate equivalent forms of rational numbers and square roots.</p> <p><u>Note:</u> Tasks include rationalizing numerical denominators of the form $\frac{\pm}{\sqrt{a}}$ where a is an integer and b is a natural number.</p> <p>b.) Categorize the sum or product of rational or irrational numbers.</p> <ul style="list-style-type: none"> x The sum and product of two rational numbers is rational. x The sum of a rational number and an irrational number is irrational. x The product of a nonzero rational number and an irrational number is irrational. x The sum and product of two irrational numbers could be either rational or irrational.

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Algebra

Seeing Structure in Expressions (A-SSE)

Cluster	NYS P-12 CCLS	NYS Next Generation Learning Standard
<p>Interpret the structure of expressions.</p>	<p>A-SSE.2 Use the structure of an expression to identify ways to rewrite it. <i>For example, see $x^2 - y^2$ as $(x^2) - (y^2)$, thus recognizing it as a difference of squares that can be factored as $(x - y)(x + y)$.</i></p> <p>PARCC: Tasks limited to numerical and polynomial expressions in one variable. Recognize $53 - 47^2$ as a difference of squares and see an opportunity to rewrite it in the easier-to-evaluate form $(53 + 47)(53 - 47)$. See an opportunity to rewrite $a^2 + 9a + 14$ as $(a + 7)(a + 2)$.</p> <p>NYSED: Does not include factoring by grouping and factoring the sum and difference of cubes.</p>	<p>AI -A.SSE.2 Recognize and use the structure of an expression to identify ways to rewrite it. (Shared standard with Algebra II)</p> <p>e.g., $x^3 - x^2 - x = x(x^2 - x - 1)$ $53^2 - 47^2 = (53 + 47)(53 - 47)$ $16x^2 - 36 = (4x)^2 - (6)^2 = (4x + 6)(4x - 6) = 4(2x + 3)(2x - 3)$ or $16x^2 - 36 = 4(4x^2 - 9) = 4(2x + 3)(2x - 3)$ $2x^2 + 8x + 10 = 2(x^2 - 4x - 5) = -2(x - 5)(x + 1)$ $x^4 + 6x^2 - 7 = (x^2 + 7)(x^2 - 1) = (x^2 + 7)(x + 1)(x - 1)$</p> <p><u>Note:</u> Algebra I expressions are limited to numerical and polynomial expressions in one variable. Use factoring techniques such as factoring out a greatest common factor, factoring the difference of two perfect squares, factoring trinomials of the form $ax^2 + bx + c$ with a lead coefficient of 1, or a combination of methods to factor completely. Factoring will not involve factoring by grouping and factoring the sum and difference of cubes.</p>

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Algebra		
Seeing Structure in Expressions (A-SSE)		
Cluster	NYS P-12 CCLS	NYS

NYSED Algebra I Draft: Specific modeling domains, clusters and standards are indicated by a star symbol

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Algebra		
Reasoning with Equations and Inequalities (AEI)		
Cluster	NYS P-12 CCLS	NYS Next Generation Learning Standard
Understand solving equations as a process of reasoning and explain the reasoning.	<p>A-REI.1 Explain each step in solving simple equation as following from the equality of numbers asserted at the previous step, starting from the assumption that the original equation has a solution. Construct a viable argument to justify a solution method.</p> <p>PAROC: Tasks are limited to quadratic equations.</p>	<p>AI -A.REI.1a Explain each step when solving linear or quadratic equation as following from the equality of numbers asserted at the previous step, starting from the assumption that the original equation has a solution. Construct a viable argument to justify a solution method.</p>
Solve equations and inequalities in one variable.	<p>A-REI.3 Solve linear equations and inequalities in one variable, including equations with coefficients represented by letters.</p>	<p>AI -A.REI.3 Solve linear equations and inequalities in one variable, including equations with coefficients represented by letters.</p> <p><u>Note:</u> Algebra I tasks do not involve solving compound inequalities.</p>
	<p>A-REI.4 Solve quadratic equations in one variable.</p> <p>NYSED: Solutions may include simplifying radicals.</p>	<p>AI -A.REI.4 Solve quadratic equations in one variable.</p> <p><u>Note:</u> Solutions may include simplifying radicals.</p>
	<p>A-REI.4a Use the method of completing the square to transform any quadratic equation into an equation of the form $(x-p)^2 = q$ that has the same solutions. Derive quadratic formula from this form.</p>	

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Algebra

Reasoning with Equations and Inequalities (A.REI)

Cluster	NYS P-12 CCLS	NYS Next Generation Learning Standard
Solve systems of equations.	A-REI.5 Prove that, given a system of two equations in two variables, replacing one equation by the sum of that equation and a multiple of the other produces a system with the same solutions. A-REI.6 Solve systems of linear equations exactly and approximately (e.g., with graphs), focusing on pairs of linear equations in two variables.	STANDARD REMOVED

PARCC: Tasks have a reword content1.2(h)0.5(Td (on)0.5(t)-12.6(176.4 40a.35 >>)-296 543.12 459.12Re(t)-12.t)-14-1719.8(s)-12Re(on)0.4on45(Td (o ofo)-4(n).007 T6 1

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Algebra I Crosswalk

Functions

Interpreting Functions (F.IF)

Cluster	NYS P-12 CCLS	NYS Next Generation Learning Standard
<p>Understand the concept of a function and use function notation.</p>	<p>F-IF.1 Understand that a function from one set (called the domain) to another set (called the range) assigns to each element of the domain exactly one element of the range. If f is a function and x is an element of its domain, then $f(x)$ denotes the output of f corresponding to the input x. The graph of f is the graph of the equation $y = f(x)$.</p>	<p>AI-F.IF.1 Understand that a function from one set (called the domain) to another set (called the range) assigns to each element of the domain exactly one element of the range. If f is a function and x is an element of its domain, then $f(x)$ denotes the output of f corresponding to the input x. The graph of f is the graph of the equation $y = f(x)$.</p> <p><u>Note:</u> Domain and range can be expressed using inequalities, set builder notation, verbal description, and interval notations for functions of subsets of real numbers to the real numbers.</p>
	<p>F-IF.2 Use function notation, evaluate functions for inputs in their domains, and interpret statements that use function notation in terms of a context.</p>	<p>AI-F.IF.2 Use function notation, evaluate functions for inputs in their domains, and interpret statements that use function notation in terms of a context.</p>
	<p>F-IF.3 Recognize that sequences are functions, sometimes defined recursively, whose domain is a subset of the integers. <i>For example, the Fibonacci sequence is defined recursively by $f(0) = f(1) = 1, f(n+1) = f(n) + f(n-1)$ for $n \geq 1$.</i></p> <p>PARCC: This standard is part of the Major work in Algebra I and will be assessed accordingly.</p>	<p>AI-F.IF.3 Recognize that a sequence is a function whose domain is a subset of the integers. (Shared standard with Algebra II)</p> <p><u>Notes</u></p> <ul style="list-style-type: none"> x Sequences (arithmetic and geometric) will be written explicitly and only in subscript notation. x Work with geometric sequences may involve an exponential equation/formula of the form $a_n = ar^{n-1}$, where a is the first term and r is the common ratio.

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Interpreting Functions (F.IF)

Cluster	NYS P-12 CCLS	NYS Next Generation Learning Standard
Interpret functions that arise in applications in terms of the context. t	F-IF.4	

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Functions		
Interpreting Functions (F.IF)		
Cluster	NYS P-12 CCLS	NYS Next Generation Learning Standard
Analyze functions using different representations	F-IF.8 Write a function defined by an expression in different but equivalent forms to reveal and explain different properties of the function.	AI-F.IF.8 Write a function in different but equivalent forms to reveal and explain different properties of the function (Shared standard with Algebra II)
	F-IF.8a Use the process of factoring and completing the square in a quadratic function to show zeros, extreme values, and symmetry of the graph, and interpret these in terms of context.	AI-F.IF.8a For a quadratic function, use an algebraic process to find zeros, maxima, minima, and symmetry of the graph, and interpret these in terms of context. <u>Note:</u> Algebraic processes include but not limited to factoring, completing the square, use of the quadratic formula, and those of the axis of symmetry.
	F-IF.9 Compare properties of two functions each represented in a different way (algebraically, graphically, numerically in tables, or by verbal descriptions). <i>For example, given a graph of one quadratic function and an algebraic expression for another, say which has the larger maximum.</i> PARCC: Tasks are limited to linear functions, quadratic functions, square root, cube root, piecewise defined (including step functions and absolute value functions), and exponential functions with domains in the integers	AI-F.IF.9 Compare properties of two functions each represented in different way (algebraically, graphically, numerically in tables, or by verbal descriptions) (Shared standard with Algebra II) <u>Note:</u> Algebra I tasks are limited to the following functions: linear, quadratic, square root, piecewise defined (including step and absolute value), and exponential functions of the form $f(x) = a(b)^x$ where $a > 0$ and $b > 0$ ($b \neq 1$)

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Functions

Building Functions (F.BF)

Cluster

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Algebra I Crosswalk		
Functions		
Linear, Quadratic and Exponential Models (F.LE) †		
Cluster	NYS P-12 CCLS	NYS Next G 9 468.96 220.081 13.8896 220.08

New York State Next Generation Mathematics Learning Standards		
Algebra I Crosswalk		
Statistics and Probability		
Interpreting Categorical and Quantitative Data (SID)		
Cluster	NYS P-12 CCLS	NYS Next Generation Learning Standard
Summarize, represent, and interpret data on two categorical and quantitative variables.	S-ID.5 Summarize categorical data for two categories in two-way frequency tables. Interpret relative frequencies in the context of the data (including joint, marginal, and conditional relative frequencies). Recognize possible associations and trends in the data.	AI-S.ID.5 Summarize categorical data for two categories in two-way frequency tables. Interpret relative frequencies in the context of the data (including joint, marginal, and conditional relative frequencies). Recognize possible associations and trends in the data.
	S-ID.6 Represent data on two quantitative variables on a scatter plot, and describe how the variables are related.	AI-S.ID.6 Represent bivariate data on a scatter plot, and describe the variables' values are related. <u>Note:</u> It's important to keep in mind that the data must be linked to the same "subjects," not just two unrelated quantitative variables; being careful not to assume a relationship between the actual variables (correlation/causation issue).
	S-ID.6a Fit a function to the data; use functions fitted to data to solve problems in the context of the data. Use given functions or choose a function suggested by	

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Statistics and Probability

Interpreting Categorical and Quantitative Data (SID)