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Pearson Algebra 1, Geometry, Algebra 2 Common Core

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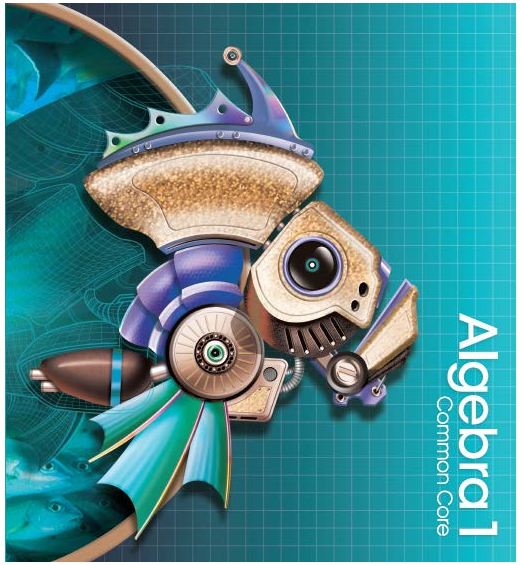

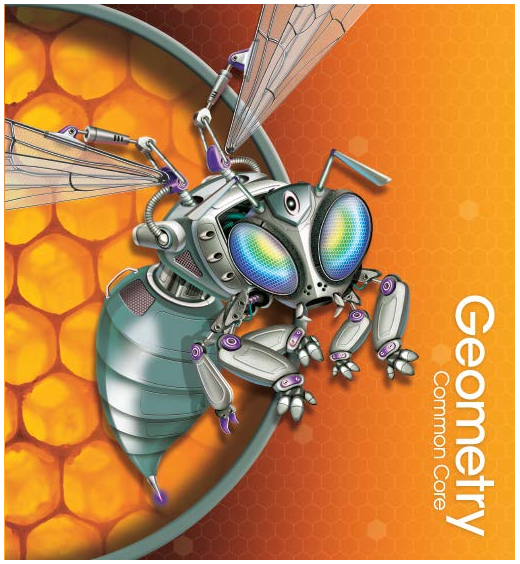

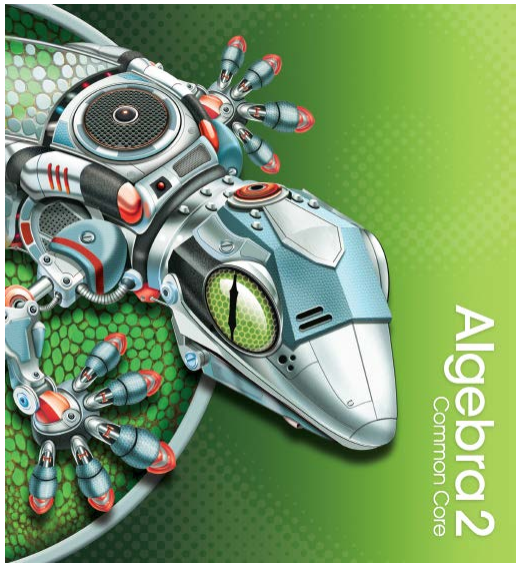

To the

North Carolina High School Mathematics Alignment to Traditional Text - MATH III

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Introduction

This document demonstrates how ***Pearson Algebra 1, Geometry, Algebra 2 Common Core Edition* ©2015** meets the standards of the *North Carolina High School Mathematics Alignment to Traditional Text - MATH III.* Correlation references are to the pages of the Student and Teacher's Editions, Concept Bytes, and Learning Resources within the Teacher's Editions.

Pearson Algebra 1, Geometry, Algebra 2 Common Core Edition ©2015 is a rigorous, flexible, and data-driven high school math program designed to ensure high school students master the Common Core State Standards. The program's 5-step lesson design was built for the requirements of the Common Core, and independent research has proven the program's lesson design is effective for all learners.

Pearson Algebra 1, Geometry, Algebra 2 Common Core Edition ©2015 balances conceptual understanding, procedural fluency, and the application of mathematics to solve problems and formulate models. The lesson design of the program was built specifically to meet the "rigor" criterion of the Common Core State Standards.

- Each lesson begins with **Interactive Learning**, the *Solve It!*, which immediately engages students in their daily learning according to the Standards for Mathematical Practice.

- The second step of the lesson, **Guided Instruction**, uses visual learning principles and a Thinking/Reasoning strand (seen in the *Know/Need/Plan* and *Think/Plan/Write* boxes) to introduce the Essential Understanding of the lesson by teaching THROUGH and FOR problem-solving. **Interactive Learning** and **Guided Instruction** are both deliberately designed to address the essential elements in the Common Core conceptual category of mathematical modeling.

- In the third step of the lesson, the **Lesson Check**, *Do you know HOW?* exercises measure students' procedural fluency, while *Do you UNDERSTAND?* problems measure students' conceptual understanding.

- In the fourth step of the lesson, **Practice** problems are designed to develop students' fluency in the Content Standards and proficiency with the Mathematical Practices. Real-world STEM problems as well as problems designed to elicit the use of one or more of the Standards for Mathematical Practice are clearly labeled in the **Practice** step of the lesson.

- The final phase of the lesson, **Assess and Remediate,** features a Lesson Quiz to measure students' understanding of lesson concepts. By utilizing the balanced and proven-effective approach of Pearson's 5-step lesson design, you can teach the Common Core State Standards with confidence.

Common Core State Standards for Mathematics	Math III Concept(s)	Pearson Algebra 1, Geometry, Algebra 2 Common Core, ©2015
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.	• Sum or product of two rational numbers is rational • Sum of rational and irrational numbers is irrational • Product of a nonzero and irrational number is irrational	**Algebra 1** **SE/TE:** 16-20, 23-26, 30-33, 38-42, 45 **TE:** 22A-22B, 28A-28B, 36A-36B, 44A-44B
N.Q.1 Use units as a way to understand problems and to guide the solution of multi-step problems; choose and interpret units consistently in formulas; choose and interpret the scale and the origin in graphs and data displays.	• Use units to understand problems and guide solutions • Choose units appropriately • Interpret units in context • Choose and interpret the scale and the origin in graphs and data displays	**Algebra 1** **SE/TE:** 116-119, 122-123, 124-127, 152-156, 158-160, 228-230, 253-257, 283-286, 288-290, 480-482, 658-660, 732-735, 746-749, 786-790, 792-797 **TE:** 121A-121B, 129A-129B, 259A-259B, 737A-737B, 751A-751B **Geometry** **SE/TE:** 59-64, 70-74, 76-78 **TE:** 67A-67B
N.Q.2 Define appropriate quantities for the purpose of descriptive modeling.	• Define appropriate quantities for descriptive modeling	**Algebra 1** **SE/TE:** 116-119, 152-156, 158-160, 178-181, 222-226, 228-230, 262-264, 283-286, 301-304, 353-356, 608-610, 738-742, 786-790 **TE:** 121A-121B, 183A-183B, 267A-267B, 306A-306B, 744A-744B

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Common Core State Standards for Mathematics	Math III Concept(s)	Pearson Algebra 1, Geometry, Algebra 2 Common Core, ©2015
N.Q.3 Choose a level of accuracy appropriate to limitations on measurement when reporting quantities.	• Chose a level of accuracy within context	**Algebra 1** **SE/TE:** 137-141, 144-148, 152-156, 228-230, 358-360, 387-390, 408-410 **TE:** 143A-143B, 150A-150B, 392A-392B **Geometry** **SE/TE:** 283, 291, 331, 339, 340
N-CN.1 Know there is a complex number i such that $i^2 = -1$, and every complex number has the form a + bi with a and b real.	• Know and represent complex numbers	**Algebra 2** **SE/TE:** 248-253 **TE:** 255A-255B
N.CN.2 Use the relation $i^2 = -1$ and the commutative, associative, and distributive properties to add, subtract, and multiply complex numbers.	• Add, subtract, and multiply complex numbers	**Algebra 2** **SE/TE:** 248-253 **TE:**255A-255B
N.CN.7 Solve quadratic equations with real coefficients that have complex solutions.	• Solve quadratics that have complex solutions	**Algebra 2** **SE/TE:** 248-253, 312-315, 319-322 **TE:** 255A-255B, 317A-317B, 324A-324B
N.CN.9 (+) Know the Fundamental Theorem of Algebra; show that it is true for quadratic polynomials.	• Know the Fundamental Theorem of Algebra and show it's true for quadratic polynomials	**Algebra 2** **SE/TE:** 248-253, 312-315, 319-322 **TE:** 255A-255B, 317A-317B, 324A-324B

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A.SSE.1a Interpret parts of an expression, such as terms, factors, and coefficients.	• Interpret parts of an expression	**Algebra 1** **SE/TE:** 4-7, 10-13, 46-49, 68-72, 74-77, 228-230, 262-264, 274-278, 283-286, 308-311, 353-356, 512-515, 518-520, 523-526, 529-531 **TE:** 9A-9B, 15A-15B, 52A-52B, 267A-267B, 281A-281B, 314A-314B, 517A-517B, 522A-522B, 528A-528B, 533A-533B **Algebra 2** **SE/TE:** 288-293, 527-530 **TE:** 295A-295B, 533A-533B
A.SSE.1b Interpret complicated expressions by viewing one or more of their parts as a single entity. For example, interpret $P(1+r)^n$ as the product of P and a factor not depending on P.	• Interpret the meaning of grouped together parts of an expression as single entity	**Algebra 1** **SE/TE:** 207-210, 222-226, 288-290, 523-526, 529-531, 535-538 **TE:** 213A-213B, 528A-528B, 533A-533B **Algebra 2** **SE/TE:** 41-45, 434-439, 442-447, 451-456, 527-530 **TE:** 48A-48B, 441A-441B, 450A-450B, 458A-458B, 533A-533B

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A.SSE.2 Use the structure of an expression to identify ways to rewrite it. For example, see $x^4 – y^4$ as $(x^2)^2 – (y^2)^2$, thus recognizing it as a difference of squares that can be factored as $(x^2 – y^2)(x^2 + y^2)$.	• Rewriting expressions by combining like terms, expanding, and factoring	**Algebra 1** **SE/TE:** 511, 523-526, 529-531, 535-538, 658-660 **TE:** 528A-528B, 533A-533B **Algebra 2** **SE/TE:** 216-221, 296-300, 361-364, 367-370, 374-378, 527-530 **TE:** 223A-223B, 302A-302B, CB 360, 366A-366B, 373A-373B, 380A-380B, 533A-533B
A.SSE.3b Complete the square in a quadratic expression to reveal the maximum or minimum value of the function it defines.	• Produce equivalent forms of expressions to reveal key features • Complete the square to reveal vertex	**Algebra 2** **SE/TE:** 233-237 **TE:** 239A-239B
A.SSE.4 Derive the formula for the sum of a finite geometric series (when the common ratio is not 1), and use the formula to solve problems. For example, calculate mortgage payments.★	• Derive the formula for a finite geometric series and use the formula to solve problems	**Algebra 2** **SE/TE:** 595-598 **TE:** CB 594, 601A-601B

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A-APR.1 Understand that polynomials form a system analogous to the integers, namely, they are closed under the operations of addition, subtraction, and multiplication; add, subtract, and multiply polynomials.	• Add, subtract, and multiply polynomials	**Algebra 1** **SE/TE:** 486-489, 492-494, 497, 498-501, 504-507, 535-538, 540-542, 608-610, 658-660, 720-722, 792-797 **TE:** 491A-491B, 496A-496B, 503A-503B, 509A-509B **Algebra 2** **SE/TE:** 280-285, 288-293, 296-300, 303-308 **TE:** 287A-287B, 295A-295B, 302A-302B, 310A-310B
A.APR.2 Know and apply the Remainder Theorem: For a polynomial p(x) and a number a, the remainder on division by x – a is p(a), so p(a) = 0 if and only if (x – a) is a factor of p(x).	• Know and apply the Remainder Theorem	**Algebra 2** **SE/TE:** 303-308 **TE:** 310A-310B
A.APR.3 Identify zeros of polynomials when suitable factorizations are available, and use the zeros to construct a rough graph of the function defined by the polynomial.	• Identify zeros of polynomials from factored forms • Use zeros to construct rough graph	**Algebra 1** **SE/TE:** 561-563, 603-606 **TE:** 566A-566B **Algebra 2** **SE/TE:** 288-293, 319-322 **TE:** 295A-295B, CB 325, 324A-324B
A.APR.4 Prove polynomial identities and use them to describe numerical relationships. For example, the polynomial identity $(x^2 + y^2)^2 = (x^2 – y^2)^2 + (2xy)^2$ can be used to generate Pythagorean triples.	• Prove polynomial identities and use them to describe numerical relationships	**Algebra 2** **SE/TE:** CB 318

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A.APR.6 Rewrite simple rational expressions in different forms; write a(x)/b(x) in the form q(x) + r(x)/b(x), where a(x), b(x), q(x), and r(x) are polynomials with the degree of r(x) less than the degree of b(x), using inspection, long division, or, for the more complicated examples, a computer algebra system.	• Rewrite rational expressions using long division, synthetic division, or technology	**Algebra 1** **SE/TE:** 678-681, 715-718, 720-722, 792-797 **TE:** 683A-683B **Algebra 2** **SE/TE:** 303-308, 542-545 **TE:** 310A-310B, 548A-548B
A.APR.7 (+) Understand that rational expressions form a system analogous to the rational numbers, closed under addition, subtraction, multiplication, and division by a nonzero rational expression; add, subtract, multiply, and divide rational expressions.	• Perform operations with rational expressions and understand properties	**Algebra 1** **SE/TE:** 664-667, 670-673, 677, 684-687, 715-718, 720-722 **TE:** 669A-669B, 676A-676B, 689A-689B **Algebra 2** **SE/TE:** 534-539, 542-545 **TE:** 541A-541B, 548A-548B

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A.CED.1 Create equations and inequalities in one variable and use them to solve problems. Include equations arising from linear and quadratic functions, and simple rational and exponential functions.	• Create and solve equations and inequalities with one variable	**Algebra 1** **SE/TE:** 53-56, 81-85, 88-91, 94-97, 102-105, 109-112, 124-127, 130-133, 171-174, 178-181, 186-189, 200-204, 207-210, 214-218, 691-695 **TE:** 58A-58B, 87A-87B, 93A-93B, 100A-100B, 108A-108B, 114A-114B, 129A-129B, 136A-136B, 177A-177B, 183A-183B, 192A-192B, 206A-206B, 213A-213B, 220A-220B, 697A-697B **Geometry** **SE/TE:** 323, 346-348, 439, 440-444, 480-482 **TE:** 447A-447B **Algebra 2** **SE/TE:** 26-30, 33-37, 41-45, 194-198, 226-229, 542-545 **TE:** 32A-32B, 40A-40B, 48A-48B, 201A-201B, 231A-231B, 548A-548B

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A.CED.2 Create equations in two or more variables to represent relationships between quantities; graph equations on coordinate axes with labels and scales.	• Create and graph equations with two or more variables	**Algebra 1** **SE/TE:** 60, 61-64, 262-264, 282-286, 301-304, 308-311, 315-318, 322-325, 353-356, 460-463, 546-549, 553-556, 573, 698-702, 713 **TE:** 66A-66B, 267A-267B, 306A-306B, 314A-314B, 320A-320B, 328A-328B, 466A-466B, 552A-552B, 558A-558B, 704A-704B **Geometry** **SE/TE:** 189, 191, 193, 197, 210, 257, 431, 467, 798, 800, 801 **TE:** T69, 196A, 204B, 803B **Algebra 2** **SE/TE:** 68-71, 74-78, 81-86, 92-96, 114-118, 134-138, 142-145, 202-206, 434-439, 442-447, 498-503, 507-512 **TE:** 73A-73B, 80A-80B, 88A-88B, 98A-98B, 120A-120B, 141A-141B, 148A-148B, 208A-208B, CB 232, 441A-441B, 450A-450B, 505A-505B, 514A-514B
A.CED.3 Represent constraints by equations or inequalities, and by systems of equations and/or inequalities, and interpret solutions as viable or nonviable options in a modeling context. For example, represent inequalities describing nutritional and cost constraints on combinations of different foods.	• Represent constraints by equations or inequalities and by systems of equations and/or inequalities • Interpret solutions	**Algebra 1** **SE/TE:** 37, 387-390, 394-397, 408-410, 596-599, 603-606 **TE:** 392A-392B, 399A-399B, 601A-601B **Algebra 2** **SE/TE:** 134-138, 142-145, 149-152, 157-160, 258-261 **TE:** 141A-141B, 148A-148B, 155A-155B, 162A-162B, CB 163, 264A-264B, CB 484

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A.CED.4 Rearrange formulas to highlight a quantity of interest, using the same reasoning as in solving equations. For example, rearrange Ohm's law V = IR to highlight resistance R.	• Rearrange formulas	**Algebra 1** **SE/TE:** 109-112, 152-156, 158-160, 228-230, 540-542, 561-563, 603-606, 658-660 **TE:** 114A-114B, 566A-566B **Geometry** **SE/TE:** 698, 699-703 **TE:** 707A-707B **Algebra 2** **SE/TE:** 26-30, 390-394, 498-503 **TE:** 32A-32B, 397A-397B, 505A-505B
A.REI.1 Explain each step in solving a 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.	• Construct an argument for solving simple equations	**Algebra 1** **SE/TE:** 59, 80, 88-91, 94-97, 101, 102-105, 109-112, 152-156, 158-160, 228-230, 288-290 **TE:** 93A-93B, 100A-100B, 108A-108B, 114A-114B **Geometry** **SE/TE:** 798 **TE:** 251B, 264B **Algebra 2** **SE/TE:** 26-30 **TE:** 32A-32B
A.REI.2 Solve simple rational and radical equations in one variable, and give examples showing how extraneous solutions may arise.	• Solve rational equations with one variable • Solve radical equations with one variable • Show how extraneous solutions may arise	**Algebra 1** **SE/TE:** 81-85, 152-156, 619-623, 626-629, 633-636, 653-656, 658-660, 691-695, 715-718, 720-722 **TE:** 87A-87B, 625A-625B, 631A-631B, 638A-638B, 697A-697B **Algebra 2** **SE/TE:** 390-394, 542-545 **TE:** 397A-397B, 548A-548B

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A.REI.4.a Use the method of completing the square to transform any quadratic equation in x into an equation of the form $(x – p)^2 = q$ that has the same solutions. Derive the quadratic formula from this form.	• Complete the square to write quadratics in vertex form • Derive the quadratic formula by completing the square	**Algebra 1** **SE/TE:** 576-579, 582-586, **TE:** 581A-581B, 588A-588B **Algebra 2** **SE/TE:** 233-237 **TE:** 239A-239B
A.REI.4.b Solve quadratic equations by inspection (e.g., for $x^2 = 49$), taking square roots, completing the square, the quadratic formula and factoring, as appropriate to the initial form of the equation. Recognize when the quadratic formula gives complex solutions and write them as a ± bi for real numbers a and b.	• Solve quadratics in all ways	**Algebra 1** **SE/TE:** 561-563, 567, 568-570, 576-579, 582-586, 603-606, 608-610, 720-722 **TE:** 566A-566B, 572A-572B, 581A-581B, 588A-588B **Algebra 2** **SE/TE:** 226-229, 233-237, 240-244 **TE:** 231A-231B, CB 232, 239A-239B, 247A-247B
A.REI.10 Understand that the graph of an equation in two variables is the set of all its solutions plotted in the coordinate plane, often forming a curve (which could be a line).	• Graph of an equation represents all the solutions	**Algebra 1** **SE/TE:** 240-243, 246-248, 253-257, 283-286, 480-482, 720-722 **TE:** 245A-245B, 251A-251B, 259A-259B **Algebra 2** **SE/TE:** 258-261 **TE:** 264A-264B

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A.REI.11 Explain why the x-coordinates of the points where the graphs of the equations y = f(x) and y = g(x) intersect are the solutions of the equation f(x) = g(x); find the solutions approximately, e.g., using technology to graph the functions, make tables of values, or find successive approximations. Include cases where f(x) and/or g(x) are linear, polynomial, rational, absolute value, exponential, and logarithmic functions.★	• Solving systems using function notation	**Algebra 1** **SE/TE:** 260-261, 370, 596-599, 603-606 **TE:** 601A-601B **Algebra 2** **SE/TE:** 258-261 **TE:** 264A-264B
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.	• Use, evaluate, and interpret statements written in function notation	**Algebra 1** **SE/TE:** 268-271, 283-286, 358-360 **TE:** 273A-273B **Algebra 2** **SE/TE:** 60-64 **TE:** 67A-67B

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F.IF.4 For a function that models a relationship between two quantities, interpret key features of graphs and tables in terms of the quantities, and sketch graphs showing key features given a verbal description of the relationship. Key features include: intercepts; intervals where the function is increasing, decreasing, positive, or negative; relative maximums and minimums; symmetries; end behavior; and periodicity.★	• Interpret key features of graphs and tables • Given verbal description, sketch graphs	**Algebra 1** **SE/TE:** 234-237, 240-243, 246-249**,** 283-286, 308-311, 315-318, 322-325, 353-356, 453-456, 474-478, 480-482, 546-549, 553-556, 603-606, 705-710 **TE:** 239A-239B, 245A-245B, 251A-251B, 314A-314B, 320A-320B, 328A-328B, 459A-459B, 552A-552B, 558A-558B, 712A-712B **Algebra 2** **SE/TE:** 74-78, 92-96, 194-198, 202-206, 209-212, 331-335, 828-831, 851-855, 861-864 **TE:** 80A-80B, 98A-98B, 201A-201B, 208A-208B, 214A-214B, 338A-338B, CB 459, 834A-834B, 858A-858B, 867A-867B
F.IF.5 Relate the domain of a function to its graph and, where applicable, to the quantitative relationship it describes. For example, if the function h(n) gives the number of person-hours it takes to assemble n engines in a factory, then the positive integers would be an appropriate domain for the function.★	• Relate the domain of a function to its graph	**Algebra 1** **SE/TE:** 253-257, 283-286, 453-456, 474-478, 546-549, 603-606, 658-660, 698-702 **TE:** 259A-259B, 459A-459B, 552A-552B, 704A-704B **Algebra 2** **SE/TE:** 209-212, 331-335 **TE:** 214A-214B, 338A-338B
F.IF.7c Graph polynomial functions, identifying zeros when suitable factorizations are available, and showing end behavior.	• Graph polynomial functions, identifying zeros and showing end behavior	**Algebra 2** **SE/TE:** 280-285, 288-293, 339-342 **TE:** 287A-287B, 295A-295B, 345A-345B

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F.IF.7e Graph exponential and logarithmic functions, showing intercepts and end behavior, and trigonometric functions, showing period, midline, and amplitude.	• Graph functions expressed symbolically and show key features	**Algebra 1** **SE/TE:** 453-456, 474-478 **TE:** 459A-459B **Algebra 2** **SE/TE:** 434-439, 442-447, 851-855, 861-864, 868-871, 875-880, 883-887 **TE:** 441A-441B, 450A-450B, CB 477, 858A-858B, 867A-867B, 874A-874B, 882A-882B, 890A-890B
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 a context.	• Use factoring and completing the square to show key features	**Algebra 1** **SE/TE:** 553-556, 568-570, 603-606, 792-797 **TE:** 558A-558B, 572A-572B **Algebra 2** **SE/TE:** 233-237 **TE:** 239A-239B
F.IF.9 Compare properties of two functions each represented in a different way (algebraically, graphically, numerically in tables, or by verbal descriptions). For example, given a graph of one quadratic function and an algebraic expression for another, say which has the larger maximum.	• Compare properties of two functions expressed in different ways	**Algebra 1** **SE/TE:** 453-456, 474-478, 553-556, 603-606 **TE:** 459A-459B, 558A-558B **Algebra 2** **SE/TE:** 81-86, 202-206, 339-342, 451-456 **TE:** 88A-88B, 208A-208B, 345A-345B, 458A-458B

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F.BF.1a Determine an explicit expression, a recursive process, or steps for calculation from a context.	• Given context, write a function using an explicit expression, a recursive process, or showing steps for calculations	**Algebra 1** **SE/TE:** 274-278, 283-286, 467-470, 474-478, 480-482 **TE:** 281A-281B, 472A-472B **Algebra 2** **SE/TE:** 564-568, 572-575, 580-583 **TE:** 571A-571B, 577A-577B, CB 578, 586A-586B
F.BF.1b Combine standard function types using arithmetic operations. For example, build a function that models the temperature of a cooling body by adding a constant function to a decaying exponential, and relate these functions to the model.	• Combine standard functions using arithmetic operation	**Algebra 2** **SE/TE:** 398-401, 442-447, 515-521, **TE:** 404A-404B, 450A-450B, 523A-523B
F.BF.2 Write arithmetic and geometric sequences both recursively and with an explicit formula, use them to model situations, and translate between the two forms.★	• Model situations to write arithmetic and geometric sequences both recursively and explicitly	**Algebra 1** **SE/TE:** 274-278, 283-286, 288-290, 467-470, 474-478, 792-797 **TE:** 281A-281B, 472A-472B **Algebra 2** **SE/TE:** 564-568 , 572-575, 580-583 **TE:** 571A-571B, 577A-577B, CB 578, 586A-586B

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F.BF.3 Identify the effect on the graph of replacing f(x) by f(x) + k, k f(x), f(kx), and f(x + k) for specific values of k (both positive and negative); find the value of k given the graphs. Experiment with cases and illustrate an explanation of the effects on the graph using technology. Include recognizing even and odd functions from their graphs and algebraic expressions for them.	• Identify the effects of algebraic transformations to include translations, reflections, and dilations	**Algebra 1** **SE/TE:** 307, 346-348, 353-356, 546-549, 603-606, 608-610, 720-722 **TE:** 350A-350B, 552A-552B **Geometry** **SE/TE:** 545-552, 554-560, CB 586, 587-593, 602, 604 **TE:** 552B, 560B, 593B **Algebra 2** **SE/TE:** 99-103, 107-111, 194-198, 339-342, 507-512 **TE:**106A-106B, 113A-113B, 201A-201B, 345A-345B, 514A-514B
F.BF.4a Solve an equation of the form f(x) = c for a simple function f that has an inverse and write an expression for the inverse. For example, $f(x) = 2x^3$ or $f(x) = (x+1)/(x-1)$ for $x \neq 1$.	• Solve for f(x) = c and find the inverse of the function	**Algebra 2** **SE/TE:** 405-409, 451-456 **TE:** 412A-412B, CB 413, 458A-458B
F.LE.3 Observe using graphs and tables that a quantity increasing exponentially eventually exceeds a quantity increasing linearly, quadratically, or (more generally) as a polynomial function.	• Understanding that a quantity increasing exponentially will eventually exceed all others	**Algebra 1** **SE/TE:** 559, 589-592, 603-606 **TE:** 594A-594B **Algebra 2** **SE/TE:** 469-473, 478-480 **TE:** 476A-476B, CB 477, 483A-483B, CB 484

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F.LE.4 For exponential models, express as a logarithm the solution to $ab^{ct} = d$ where a, c, and d are numbers and the base b is 2, 10, or e; evaluate the logarithm using technology.	• For exponential models, express as a logarithm and evaluate	**Algebra 2** **SE/TE:** 469-473, 478-480 **TE:** 476A-476B, CB 477, 483A-483B, CB 484
F.TF.1 Understand radian measure of an angle as the length of the arc on the unit circle subtended by the angle.	• Understand radian measure of an angle as the length of the arc on the unit circle	**Geometry** **SE/TE:** CB 658 **Algebra 2** **SE/TE:** 844-847 **TE:** CB 843, 850A-850B
F.TF.2 Explain how the unit circle in the coordinate plane enables the extension of trigonometric functions to all real numbers, interpreted as radian measures of angles traversed counterclockwise around the unit circle.	• Explain how the unit circle enables the extension of trig functions, interpreted as radian measures of angles	**Algebra 2** **SE/TE:** 851-855, 861-864, 868-871 **TE:** 858A-858B, CB 860, 867A-867B, 874A-874B
F.TF.5 Choose trigonometric functions to model periodic phenomena with specified amplitude, frequency, and midline.★	• Choose trig functions to model periodic phenomena with specified amplitude, frequency, and midline	**Algebra 2** **SE/TE:** 851-855, 861-864, 868-871, 875-880 **TE:** 858A-858B, CB 860, 867A-867B, 874A-874B, 882A-882B

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F.TF.8 Prove the Pythagorean identity $\sin^2(\theta) + \cos^2(\theta) = 1$ and use it to find $\sin(\theta)$, $\cos(\theta)$, or	• Prove the Pythagorean identity $\sin^2(\theta) + \cos^2(\theta) = 1$ and use it to find trig ratios	**Geometry** **SE/TE:** 507-508, 512 **TE:** 513A-513B **Algebra 2** **SE/TE:** 904-908 **TE:** 910A-910B
G.CO.1 Know precise definitions of angle, circle, perpendicular line, parallel line, and line segment, based on the undefined notions of point, line, distance along a line, and distance around a circular arc.	• Define angle, circle, perpendicular line, parallel line, and line segment	**Geometry** **SE/TE:** 11-16, 20-23, 27-31, 44, 140-143, 649-655 **TE:** 33A-33B, 146A-146B, 657A-657B
G.CO.9 Prove theorems about lines and angles. Theorems include: vertical angles are congruent; when a transversal crosses parallel lines, alternate interior angles are congruent and corresponding angles are congruent; points on a perpendicular bisector of a line segment are exactly those equidistant from the segment's endpoints.	• Prove theorems about lines and angles	**Geometry** **SE/TE:** 120-127, 148-155, 292-299 **TE:** 127A-127B, 155A-155B, 299A-299B

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G.CO.10 Prove theorems about triangles. Theorems include: measures of interior angles of a triangle sum to 180°; base angles of isosceles triangles are congruent; the segment joining midpoints of two sides of a triangle is parallel to the third side and half the length; the medians of a triangle meet at a point.	• Prove theorems about triangles	**Geometry** **SE/TE:** 171-178, 250-256, 285-290, CB 308, 309-315 **TE:** 178A-178B, 256A-256B, 290A-290B, 315A-315B
G.CO.11 Prove theorems about parallelograms. Theorems include: opposite sides are congruent, opposite angles are congruent, the diagonals of a parallelogram bisect each other, and conversely, rectangles are parallelograms with congruent diagonals.	• Prove theorems about parallelograms	**Geometry** **SE/TE:** 359-366, 367-374, 375-382, 383-388 **TE:** 351A-351B, 366A-366B, 374A-374B, 382A-382B, 388A-388B
G.CO.12 Make formal geometric constructions with a variety of tools and methods (compass and straightedge, string, reflective devices, paper folding, dynamic geometric software, etc.). Copying a segment; copying an angle; bisecting a segment; bisecting an angle; constructing perpendicular lines, including the perpendicular bisector of a line segment; and constructing a line parallel to a given line through a point not on the line.	• Make formal geometric constructions with a variety of tools and methods	**Geometry** **SE/TE:** CB 42, 43-48, CB 147, 182-186, 244-248, CB 249, 292-297, CB 413, CB 470 **TE:** 48A-48B, 186A-186B, 248A-248B, 297A-297B

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G.SRT.2 Given two figures, use the definition of similarity in terms of similarity transformations to decide if they are similar; explain using similarity transformations the meaning of similarity for triangles as the equality of all corresponding pairs of angles and the proportionality of all corresponding pairs of sides.	• Define similarity by using geometric transformations • Explain using similarity transformations the meaning of similarity for triangles	**Geometry** **SE/TE:** 594-601, 606 **TE:** 600A-600B
G.SRT.3 Use the properties of similarity transformations to establish the AA criterion for two triangles to be similar.	• Establish the AA criterion for two triangles to be similar	**Geometry** **SE/TE:** 594-600 **TE:** 600A-600B
G.SRT.4 Prove theorems about triangles. Theorems include: a line parallel to one side of a triangle divides the other two proportionally, and conversely; the Pythagorean Theorem proved using triangle similarity.	• Prove theorems about triangles	**Geometry** **SE/TE:** CB 470, 471-478, CB 490, 491-498 **TE:** 478A-478B, 498A-498B

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G.SRT.5 Use congruence and similarity criteria for triangles to solve problems and to prove relationships in geometric figures.	• Use congruence and similarity criteria for triangles to solve problems and to prove relationships	**Geometry** **SE/TE:** CB 225, 226-233, 234-240, 244-248, 250-256, 258-264, 265-271, 285-291, 292-299, 309-315, 353-358, 359-366 **TE:** 233A-233B, 241A-241B, 256A-256B, 264A-264B, 271A-271B, 291A-291B, 299A-299B, 315A-315B, 358A-359B, 366A-366B
G.C.1 Prove that all circles are similar.	• Prove all circles are similar	**Geometry** **SE/TE:** 649-657 **TE:** 657A-657B
G.C.2 Identify and describe relationships among inscribed angles, radii, and chords. Include the relationship between central, inscribed, and circumscribed angles; inscribed angles on a diameter are right angles; the radius of a circle is perpendicular to the tangent where the radius intersects the circle.	• Relationships among inscribed angles, radii, and chords	**Geometry** **SE/TE:** 649-657, CB 658, 762-769, 771-779, 780-787 **TE:** 657A-657B, 769A-769B, 779A-779B, 787A-787B

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G.C.3 Construct the inscribed and circumscribed circles of a triangle, and prove properties of angles for a quadrilateral inscribed in a circle.	• Construct the inscribed and circumscribed circles of a triangle • Prove properties of angles for a quadrilateral inscribed in a circle	**Geometry** **SE/TE:** 301-307, 780-787 **TE:** 307A-307B, 787A-787B
G.C.5 Derive using similarity the fact that the length of the arc intercepted by an angle is proportional to the radius, and define the radian measure of the angle as the constant of proportionality; derive the formula for the area of a sector.	• Derive using similarity that the length of the arc intercepted is proportional to the radius • Define the radian measure of the angle as the constant of proportionality • Derive the formula for the area of a sector	**Geometry** **SE/TE:** 649-657, CB 658, 660-666 **TE:** 657A-657B, 666A-666B
G.GPE.1 Derive the equation of a circle of given center and radius using the Pythagorean Theorem; complete the square to find the center and radius of a circle given by an equation.	• Derive equation of a circle from Pythagorean Theorem • Complete the square to find the center and radius of circle	**Geometry** **SE/TE:** 798-803 **TE:** 803A-803B **Algebra 2** **SE/TE:** 630-634, 653-658 **TE:** 636A-636B, 660A-660B
G.GPE.2 Derive the equation of a parabola given a focus and directrix.	• Derive the equation of a parabola give a focus and directrix	**Geometry** **SE/TE:** CB 804-805 **Algebra 2** **SE/TE:** 622-627, 653-658 **TE:** 629A-629B, 660A-660B

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G.MG.3 Apply geometric methods to solve design problems (e.g., designing an object or structure to satisfy physical constraints or minimize cost; working with typographic grid systems based on ratios).★	• Apply geometric methods to solve design problems	**Geometry** **SE/TE:** 164-165, 167-168 **TE:** 169B
S.ID.4 Use the mean and standard deviation of a data set to fit it to a normal distribution and to estimate population percentages. Recognize that there are data sets for which such a procedure is not appropriate. Use calculators, spreadsheets, and tables to estimate areas under the normal curve.	• Use mean and standard deviation to analyze and estimate • Estimate areas under the normal curves	**Algebra 1** **SE/TE:** 783-784, 786-790 **Geometry** **SE/TE:** 850-851 **Algebra 2** **SE/TE:** 719-722, 739-743 **TE:** 724A-724B, 745A-745B
S.IC.1 Understand statistics as a process for making inferences about population parameters based on a random sample from that population.	• Process for make inferences about populations based on random samples	**Geometry** **SE/TE:** 867 **Algebra 2** **SE/TE:** 725-728 **TE:** 730A-730B

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S.IC.3 Recognize the purposes of and differences among sample surveys, experiments, and observational studies; explain how randomization relates to each.	• Purposes of and differences among sample surveys, experiments, and observational studies and explain how randomization relates to each	**Algebra 1** **SE/TE:** 752, 753-756, 786-790 **TE:** 759A-759B **Geometry** **SE/TE:** 862-867 **TE:** 867A-867B **Algebra 2** **SE/TE:** 725-728 **TE:** 730A-730B
S.IC.4 Use data from a sample survey to estimate a population mean or proportion; develop a margin of error through the use of simulation models for random sampling.	• Use data from a sample survey to estimate a population mean or proportion • Develop a margin of error	**Geometry** **SE/TE:** 856-860 **Algebra 2** **SE/TE:** 725-728 **TE:** 730A-730B, CB 746
S.IC.5 Use data from a randomized experiment to compare two treatments; use simulations to decide if differences between parameters are significant.	• Use data from a randomized experiment to compare • Use simulations to decide if differences are significant	**Algebra 1** **SE/TE:** 775 **Geometry** **SE/TE:** 860 **Algebra 2** **TE:** CB 748
S.IC.6 Evaluate reports based on data.	• Evaluate reports based on data	**Geometry** **SE/TE:** 842, 849, 850-853, 860, 867 **TE:** 835A-835B, 855A-855B **Algebra 2** **SE/TE:** 711-715, 719-722, 725-728 **TE:** 718A-718B, 724A-724B, 730A-730B

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S.MD.6 (+) Use probabilities to make fair decisions (e.g., drawing by lots, using a random number generator).	• Use probabilities to make fair decisions	**Geometry** **SE/TE:** 862-865, CB 868 **TE:** 867A-867B **Algebra 2** **SE/TE:** 703-707 **TE:** 709A-709B
S.MD.7 (+) Analyze decisions and strategies using probability concepts (e.g., product testing, medical testing, pulling a hockey goalie at the end of a game).	• Analyze decisions and strategies using probability concepts	**Geometry** **SE/TE:** 862-865, CB 868 **TE:** 867A-867B **Algebra 2** **SE/TE:** 703-707 **TE:** 709A-709B