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Pearson Algebra 1, Geometry, Algebra 2 Common Core

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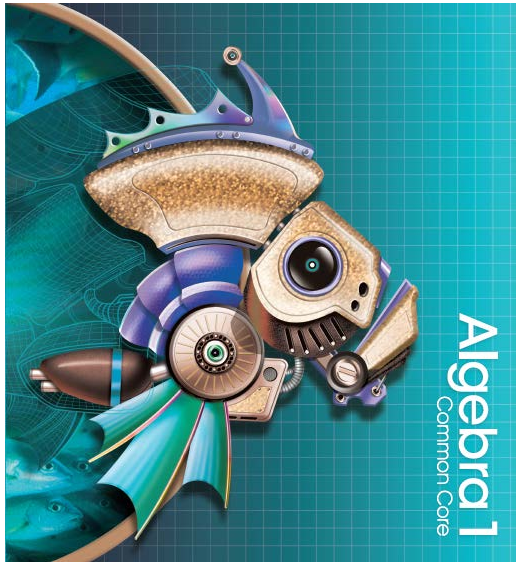

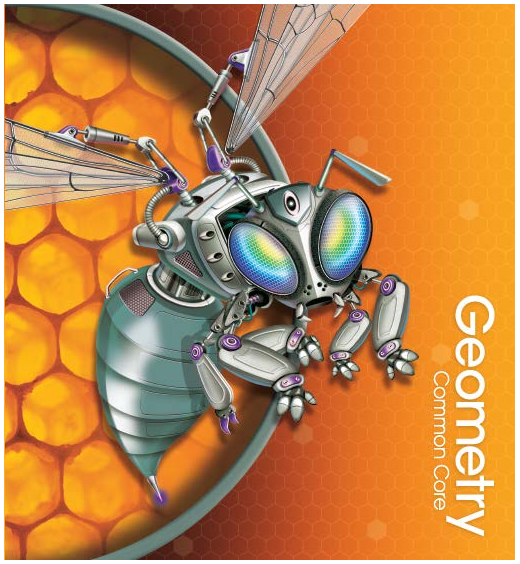

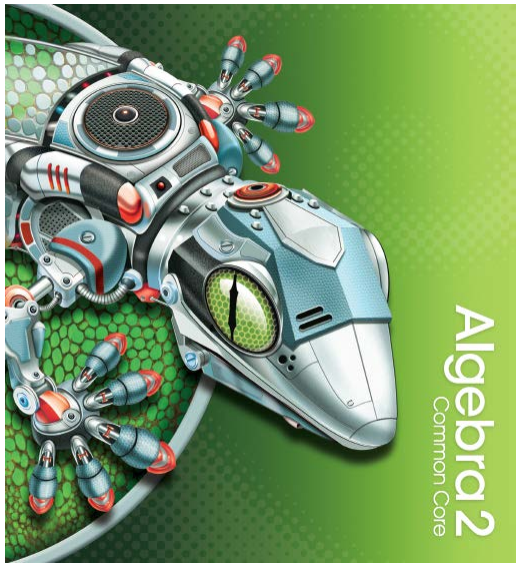

To the

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

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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 II.* 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 II Concept(s)	Pearson Algebra 1, Geometry, Algebra 2 Common Core, ©2015
N.RN.2 Rewrite expressions involving radicals and rational exponents using the properties of exponents.	Convert radicals to exponential form using properties of exponents	**Algebra 1** **SE/TE:** 418-421, 447, 448-450, 474-478, 480-482, 540-542, 720-722, 792-797 **TE:** 423A-423B, 452A-452B **Geometry** **SE/TE:** 1, 23, 79, 349, 399 **TE:** T889, T890
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 the context of a problem • Choose and interpret the scale and 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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N-Q.3 Choose a level of accuracy appropriate to limitations on measurement when reporting quantities.	Choose 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
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 a 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.3c Use the properties of exponents to transform expressions for exponential functions. For example the expression 1.15^t can be rewritten as $(1.15^{1/12})^{12t} \approx 1.012^{12t}$ to reveal the approximate equivalent monthly interest rate if the annual rate is 15%.	Use properties of exponents to transform expressions	**Algebra 1** **SE/TE:** 460-466, 474-478 **TE:** 466A-466B **Algebra 2** **SE/TE:** 361-364, 367-370, 374-378, 381-385 **TE:** CB 360, 366A-366B, 373A-373B, 380A-380B, 388A-388B
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

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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 from factored form • Use zeros to sketch graphs	**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.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 in 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/inequalities and by systems of equations/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 simple rational equations in one-variable • Solve simple radical equations in one-variable • Give examples of extraneous solutions	**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.4b 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 quadratic equations in one-variable	**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.7 Solve a simple system consisting of a linear equation and a quadratic equation in two variables algebraically and graphically. For example, find the points of intersection between the line $y = –3x$ and the circle $x^2 + y^2 = 3$.	Solve a system consisting of a linear and quadratic equation.	**Algebra 1** **SE/TE:** 596-599, 603-606, 720-722, 792-797 **TE:** 601A-601B **Algebra 2** **SE/TE:** 258-261 **TE:** 264A-264B
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 is the set of all of its solutions plotted in the coordinate plane	**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 functions 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 and sketch graphs showing features	**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

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F-IF.7b Graph square root, cube root, and piecewise-defined functions, including step functions and absolute value functions.	Graph functions expressed symbolically and show key features of the graph	**Algebra 1** **SE/TE:** 346-348, 351, 353-356, 639-341, 720-722 **TE:** 350A-350B, 644A-644B **Algebra 2** **SE/TE:** 107-111, 114-118, 414-418 **TE:** CB 90, 113A-113B, 120A-120B, 420A-420B
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 of the graph	**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 to show zeros, extreme values, and symmetry of the graph; interpret within a context	**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-239

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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
F-BF.1a Determine an explicit expression, a recursive process, or steps for calculation from a context.	Given context write a function to using an explicit expression, recursive process, or steps for calculation	**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	**Algebra 2** **SE/TE:** 398-401, 442-447, 515-521, **TE:** 404A-404B, 450A-450B, 523A-523B

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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
G-CO.2 Represent transformations in the plane using, e.g., transparencies and geometry software; describe transformations as functions that take points in the plane as inputs and give other points as outputs. Compare transformations that preserve distance and angle to those that do not (e.g., translation versus horizontal stretch).	• Represent transformations in the plane • Describe transformations as points • Compare transformations that preserve distance and angles to those that do not	**Geometry** **SE/TE:** CB 544, 545-552, 554-560, 561-563, 570-576 **TE:** 543A-543B, 552A-552B, 560A-560B, 576A-576B **Algebra 2** **SE/TE:** 801-806 **TE:** 808A-808B
G-CO.3 Given a rectangle, parallelogram, trapezoid, or regular polygon, describe the rotations and reflections that carry it onto itself.	Describe the rotations and reflections of geometric figures that carry it onto itself	**Geometry** **SE/TE:** CB 568-569
G-CO.4 Develop definitions of rotations, reflections, and translations in terms of angles, circles, perpendicular lines, parallel lines, and line segments.	Develop definitions of rotations, reflections, and translations	**Geometry** **SE/TE:** 545-552, 554-560, 561-563 **TE:** 552A-552B, 560A-560B

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G-CO.5 Given a geometric figure and a rotation, reflection, or translation, draw the transformed figure using, e.g., graph paper, tracing paper, or geometry software. Specify a sequence of transformations that will carry a given figure onto another.	Use geometric transformations to draw a new figure and describe the sequence of transformations	**Geometry** **SE/TE:** CB 544, 545-552, CB 553, 554-560, 561-567 **TE:** 552A-552B, 560A-560B, 567A-567B **Algebra 2** **SE/TE:** 801-806 **TE:** 808A-808B
G-CO.6 Use geometric descriptions of rigid motions to transform figures and to predict the effect of a given rigid motion on a given figure; given two figures, use the definition of congruence in terms of rigid motions to decide if they are congruent.	Use rigid motions to move, predict the effects, and decide if the two figures are congruent	**Geometry** **SE/TE:** 545-547, 550, 554-561, 568, 570, 578-582, 587 **TE:** 552A-552B, 560A, 567A, 585A-585B
G-CO.7 Use the definition of congruence in terms of rigid motions to show that two triangles are congruent if and only if corresponding pairs of sides and corresponding pairs of angles are congruent.	Use congruence to show two triangles are congruent if and only if their corresponding sides and corresponding angles are congruent	**Geometry** **SE/TE:** 578-585 **TE:** 585A-585B
G-CO.8 Explain how the criteria for triangle congruence (ASA, SAS, and SSS) follow from the definition of congruence in terms of rigid motions.	Explain how triangle congruence follows from the definition of congruence in terms of rigid motions.	**Geometry** **SE/TE:** 578-585 **TE:** 585A-585B

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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.13 Construct an equilateral triangle, a square, and a regular hexagon inscribed in a circle.	Construct figures inscribed in a circle	**Geometry** **SE/TE:** 182-188, 250-256, 629 **TE:** 188A-188B, 256A-256B, 634B
G-SRT.1a A dilation takes a line not passing through the center of the dilation to a parallel	Dilations	**Geometry** **SE/TE:** CB 586, 587-593 **TE:** 593A-593B
G-SRT.1b The dilation of a line segment is longer or shorter in the ratio given by the scale factor.	Dilations	**Geometry** **SE/TE:** CB 586, 587-593 **TE:** 593A-593B
G-SRT.6 Understand that by similarity, side ratios in right triangles are properties of the angles in the triangle, leading to definitions of trigonometric ratios for acute angles.	Understand side properties of the angles	**Algebra 1** **SE/TE:** 645-648, 653-656 **TE:** 651A-651B **Geometry** **SE/TE:** CB 506, 506-513 **TE:** 513A-513B **Algebra 2** **SE/TE:** 919-923 **TE:** 926A-926B

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G-SRT.7 Explain and use the relationship between the sine and cosine of complementary angles.	Explain and use the relationship between sine and cosine of complementary angles	**Geometry** **SE/TE:** 506-513 CB 514 **TE:** 513A-513B
G-SRT.8 Use trigonometric ratios and the Pythagorean Theorem to solve right triangles in applied problems.★	Use trigonometric ratios and Pythagorean Theorem to solve application problems	**Algebra 1** **SE/TE:** 614-616, 645-648, 653-656, 658-660, 792-797 **TE:** 618A-618B, 651A-651B **Geometry** **SE/TE:** CB 490, 491-498, 499-505, 506-513, 516-521 **TE:** 498A-498B, 505A-505B, 513A-513B, 521A-521B **Algebra 2** **SE/TE:** 919-923 **TE:** 926A-926B
G-SRT.9 (+) Derive the formula A = 1/2 ab sin(C) for the area of a triangle by drawing an auxiliary line from a vertex perpendicular to the opposite side.	Derive the formula for A = 1/2absin(c)	**Geometry** **SE/TE:** 643-648 **TE:** 648A-648B **Algebra 2** **SE/TE:** 928-932 **TE:** 934A-934B
G-SRT.11 (+) Understand and apply the Law of Sines and the Law of Cosines to find unknown measurements in right and non-right triangles (e.g., surveying problems, resultant forces).	Understand and apply the Law of Sines and Law of Cosines	**Geometry** **SE/TE:** 522-526, 527-532 **TE:** 526A-526B, 532A-532B **Algebra 2** **SE/TE:** 928-932, 936-939 **TE:** 934A-934B, CB 935, 942A-942B

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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 equation of a circle using the Pythagorean Theorem	**Geometry** **SE/TE:** 798-803 **TE:** 803A-803B **Algebra 2** **SE/TE:** 630-634, 653-658 **TE:** 636A-636B, 660A-660B
G-GPE.6 Find the point on a directed line segment between two given points that partitions the segment in a given ratio.	Find given points on a segment that partitions the segment into given ratios	**Geometry** **SE/TE:** 20-26, 50-56, CB 57 **TE:** 26A-26B, 56A-56B
G-GMD.4 Identify the shapes of two-dimensional cross-sections of three-dimensional objects, and identify three-dimensional objects generated by rotations of two-dimensional objects.	Identify three-dimensional cross sections and three-dimensional objects generated by rotations	**Geometry** **SE/TE:** 688-695, 806-811 **TE:** 695A-695B, 811A-811B
G-MG.1 Use geometric shapes, their measures, and their properties to describe objects (e.g., modeling a tree trunk or a human torso as a cylinder).★	Use geometric shapes to describe objects	**Geometry** **SE/TE:** 58, 507-513, 616-622, 623-628, 629-634, 699-707, 708-715, 717-724, 726-732, 742-759 **TE:** 513A-513B, 622A-622B, 628A-628B, 634A-634B, 707A-707B, 715A-715B, 724A-724B, 732A-732B, 759A-759B
G-MG.2 Apply concepts of density based on area and volume in modeling situations (e.g., persons per square mile, BTUs per cubic foot).★	Apply density concepts in modeling situations	**Geometry** **SE/TE:** 742-759, CB 741 **TE:** 759A-759B

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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-IC.2 Decide if a specified model is consistent with results from a given data-generating process, e.g., using simulation. For example, a model says a spinning coin falls heads up with probability 0.5. Would a result of 5 tails in a row cause you to question the model?	Decide if a model is consistent with results from a data generating process	**Algebra 2** **TE:** CB 694
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
S-CP.1 Describe events as subsets of a sample space (the set of outcomes) using characteristics (or categories) of the outcomes, or as unions, intersections, or complements of other events (“or,” “and,” “not”).	Describe events as subsets of sample space	**Algebra 1** **SE/TE:** 769-772, 786-790 **TE:** 774A-774B **Geometry** **SE/TE:** 668-673, 824-829 **TE:** 829A-829B **Algebra 2** **SE/TE:** 681-685 **TE:** 687A-687B

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S-CP.2 Understand that two events A and B are independent if the probability of A and B occurring together is the product of their probabilities, and use this characterization to determine if they are independent.	Understand independent events	**Geometry** **SE/TE:** 856-860 **TE:** 860A-860B **Algebra 2** **SE/TE:** 688-691 **TE:** 693A-693B
S-CP.3 Understand the conditional probability of A given B as P(A and B)/P(B), and interpret independence of A and B as saying that the conditional probability of A given B is the same as the probability of A, and the conditional probability of B given A is the same as the probability of B.	Understand conditional probability	**Geometry** **SE/TE:** 856-360 **TE:** 860A-860B **Algebra 2** **SE/TE:** 696-700 **TE:** 702A-702B
S-CP.4 Construct and interpret two-way frequency tables of data when two categories are associated with each object being classified. Use the two-way table as a sample space to decide if events are independent and to approximate conditional probabilities. For example, collect data from a random sample of students in your school on their favorite subject among math, science, and English. Estimate the probability that a randomly selected student from your school will favor science given that the student is in tenth grade. Do the same for other subjects and compare the results.	Construct and interpret two-way frequency tables	**Algebra 1** **SE/TE:** 769-772, 786-790 **TE:** 774A-774B **Geometry** **SE/TE:** 824-828, 830-834, 850-854 **TE:** 828A-828B, 834A-834B, 854A-854B **Algebra 2** **SE/TE:** 696-700 **TE:** 702A-702B

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S-CP.5 Recognize and explain the concepts of conditional probability and independence in everyday language and everyday situations. For example, compare the chance of having lung cancer if you are a smoker with the chance of being a smoker if you have lung cancer.	Recognize and explain conditional probability and independence in everyday language and situations	**Geometry** **SE/TE:** 830-834, 856-860 **TE:** 834A-834B, 860A-860B **Algebra 2** **SE/TE:** 688-691, 696-700 **TE:** 693A-693B, 702A-702B
S-CP.6 Find the conditional probability of A given B as the fraction of B's outcomes that also belong to A, and interpret the answer in terms of the model.	Find conditional probability and interpret answers	**Geometry** **SE/TE:** 856-860 **TE:** 860A-860B **Algebra 2** **SE/TE:** 696-700 **TE:** 702A-702B
S-CP.7 Apply the Addition Rule, P(A or B) = P(A) + P(B) – P(A and B), and interpret the answer in terms of the model.	Apply to addition rule	**Algebra 1** **SE/TE:** 776-780, 786-790 **TE:** 782A-782B **Geometry** **SE/TE:** 844-848 **TE:** 848A-848B **Algebra 2** **SE/TE:** 688-691 **TE:** 693A-693B

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S-CP.8 (+) Apply the general Multiplication Rule in a uniform probability model, P(A and B) = P(A)P(B|A) = P(B)P(A|B), and interpret the answer in terms of the model.	Apply the multiplication rule	**Algebra 1** **SE/TE:** 776-780, 786-790 **TE:** 782A-782B **Geometry** **SE/TE:** 844-848 **TE:** 848A-848B **Algebra 2** **SE/TE:** 696-700 **TE:** 702A-702B
S-CP.9 (+) Use permutations and combinations to compute probabilities of compound events and solve problems.	Use permutations and combinations to compute probabilities	**Algebra 1** **SE/TE:** 762-765, 786-790 **TE:** 768A-768B **Geometry** **SE/TE:** 836-838, 844-848 **TE:** 838A-838B, 848A-848B **Algebra 2** **SE/TE:** 674-678 **TE:** 680A-680B

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