Common Core State Standards Correlations

Connected Mathematics (CMP) is a field-tested and research-validated program that focuses on a few big ideas at each grade level. Students explore these ideas in depth, thereby developing deep understanding of key ideas that they carry from one grade to the next. The sequencing of topics within a grade and from grade to grade, the result of lengthy field-testing and validation, helps to ensure the development of students' deep mathematical understanding and strong problem-solving skills. By the end of grade 8, CMP students will have studied all of the content and skills in the Common Core State Standards (CCSS) for middle grades (Grades 6–8).

The sequence of content and skills in CMP2 varies in some instances from that in the CCSS, so in collaboration with the CMP2 authors, Pearson has created a set of investigations for each grade level to further support and fully develop students' understanding of the CCSS. The authors are confident that the CMP2 curriculum supplemented with the additional investigations at each grade level will address all of the content and skills of the CCSS, but even more, will contribute significantly to advancing students' mathematical proficiency as described in the Mathematical Practices of the CCSS. Through the in-depth exploration of concepts, students become confident in solving a variety of problems with flexibility, skill, and insightfulness, and are able to communicate their reasoning and understanding in a variety of ways.

The following alignment of the Common Core State Standards for Mathematics (June 2, 2010 release) to Pearson's *Connected Mathematics 2* (CMP2) ©2009 program includes the supplemental investigations that complete the CMP2 program.

COMMON CORE STATE STANDARDS GRADE 8	CMP2 UNITS	CONTENT
The Number System		
Know that there are numbers that are not rational, and approximate them by rational numbers.		
8.NS.1 Understand informally that every number has a decimal expansion; the rational numbers are those with decimal expansions that terminate in 0s or eventually repeat. Know that other numbers are called irrational.	*Looking For Pythagoras*	**Inv. 4:** Using the Pythagorean Theorem
8.NS.2 Use rational approximations of irrational numbers to compare the size of irrational numbers, locate them approximately on a number line diagram, and estimate the value of expressions (e.g., $\pi 2$). *For example, by truncating the decimal expansion of $\sqrt{2}$, show that $\sqrt{2}$ is between 1 and 2, then between 1.4 and 1.5, and explain how to continue on to get better approximations.*	*Looking For Pythagoras*	**Inv. 4:** Using the Pythagorean Theorem
Expressions and Equations		
Use properties of operations to generate equivalent expressions.		
8.EE.1 Know and apply the properties of integer exponents to generate equivalent numerical expressions. For example, $3^2 \times 3–5 = 3–3 = 1/33 = 1/27$.	*Growing, Growing, Growing* *CC Transition Kit*	**Inv. 5:** Patterns With Exponents Inv. 1: Exponents
8.EE.2 Use square root and cube root symbols to represent solutions to equations of the form $x^2 = p$ and $x3 = p$, where p is a positive rational number. Evaluate square roots of small perfect squares and cube roots of small perfect cubes. Know that $\sqrt{2}$ is irrational.	*Looking For Pythagoras* *CC Transition Kit*	**Inv. 2:** Squaring Off **Inv. 3:** The Pythagorean Theorem **Inv. 4:** Using the Pythagorean Theorem **Inv. 1:** Exponents

COMMON CORE STATE STANDARDS GRADE 8	CMP2 UNITS	CONTENT
8.EE.3 Use numbers expressed in the form of a single digit times an integer power of 10 to estimate very large or very small quantities, and to express how many times as much one is than the other. *For example, estimate the population of the United States as* 3×10^8 *and the population of the world as* 7×10^9*, and determine that the world population is more than 20 times larger.*	*Growing, Growing, Growing*	**Inv. 1:** ACE 39–40 **Inv. 2:** ACE 15–17 **Inv. 4:** ACE 8 **Inv. 5:** ACE 56–60
8.EE.4 Perform operations with numbers expressed in scientific notation, including problems where both decimal and scientific notation are used. Use scientific notation and choose units of appropriate size for measurements of very large or very small quantities (e.g., use millimeters per year for seafloor spreading). Interpret scientific notation that has been generated by technology.	*Growing, Growing, Growing*	**Inv. 5:** ACE 56–57, 60
Understand the connections between proportional relationships, lines, and linear equations.		
8.EE.5 Graph proportional relationships, interpreting the unit rate as the slope of the graph. Compare two different proportional relationships represented in different ways. *For example, compare a distance-time graph to a distance-time equation to determine which of two moving objects has greater speed.*	*Thinking With Mathematical Models* *CC Transition Kit*	**Inv. 2:** Linear Models and Equations **Inv. 2:** Functions
8.EE.6 Use similar triangles to explain why the slope m is the same between any two distinct points on a non-vertical line in the coordinate plane; derive the equation $y = mx$ for a line through the origin and the equation $y = mx + b$ for a line intercepting the vertical axis at b.	*Thinking With Mathematical Models* *CC Transition Kit*	**Inv. 2:** Linear Models and Equations **Inv. 2:** Functions
Analyze and solve linear equations and airs of simultaneous linear equations.		
8.EE.7 Solve linear equations in one variable.	*Thinking With Mathematical Models* *Say It With Symbols*	**Inv. 2:** Linear Models and Equations **Inv. 1:** Equivalent Expressions **Inv. 2:** Combining Expressions **Inv. 3:** Solving Equations
8.EE.7.a Give examples of linear equations in one variable with one solution, infinitely many solutions, or no solutions. Show which of these possibilities is the case by successively transforming the given equation into simpler forms, until an equivalent equation of the form $x = a$, $a = a$, or a = b results (where a and b are different numbers).	*CC Transition Kit*	**Inv. 2:** Functions
8.EE.7.b Solve linear equations with rational number coefficients, including equations whose solutions require expanding expressions using the distributive property and collecting like terms.	*Thinking With Mathematical Models* *Say It With Symbols*	**Inv. 2:** Linear Models and Equations **Inv. 1:** Equivalent Expressions **Inv. 2:** Combining Expressions **Inv. 3:** Solving Equations **Inv. 4:** Looking Back at Functions
8.EE.8 Analyze and solve pairs of simultaneous linear equations.	*The Shapes of Algebra*	**Inv. 2:** Linear Equations and Inequalities **Inv. 3:** Equations With Two or More Variables **Inv. 4:** Solving Systems of Linear Equations Symbolically

COMMON CORE STATE STANDARDS GRADE 8	CMP2 UNITS	CONTENT
8.EE.8.a Understand that solutions to a system of two linear equations in two variables correspond to points of intersection of their graphs, because points of intersection satisfy both equations simultaneously.	*The Shapes of Algebra*	**Inv. 2:** Linear Equations and Inequalities **Inv. 3:** Equations With Two or More Variables **Inv. 4:** Solving Systems of Linear Equations Symbolically
8.EE.8.b Solve systems of two linear equations in two variables algebraically, and estimate solutions by graphing the equations. Solve simple cases by inspection. *For example, $3x + 2y = 5$ and $3x + 2y = 6$ have no solution because $3x + 2y$ cannot simultaneously be 5 and 6.*	*The Shapes of Algebra*	**Inv. 1:** ACE 56–57 **Inv. 2:** Linear Equations and Inequalities **Inv. 3:** Equations With Two or More Variables **Inv. 4:** Solving Systems of Linear Equations Symbolically
8.EE.8.c Solve real-world and mathematical problems leading to two linear equations in two variables. *For example, given coordinates for two pairs of points, determine whether the line through the first pair of points intersects the line through the second pair.*	*The Shapes of Algebra*	**Inv. 2:** Linear Equations and Inequalities **Inv. 3:** Equations With Two or More Variables **Inv. 4:** Solving Systems of Linear Equations Symbolically
Functions		
Define, evaluate, and compare functions.		
8.F.1 Understand that a function is a rule that assigns to each input exactly one output. The graph of a function is the set of ordered pairs consisting of an input and the corresponding output. NOTE Function notation is not required in Grade 8.	*CC Transition Kit*	**Inv. 2:** Functions
8.F.2 Compare properties of two functions each represented in a different way (algebraically, graphically, numerically in tables, or by verbal descriptions). *For example, given a linear function represented by a table of values and a linear function represented by an algebraic expression, determine which function has the greater rate of change.*	*Thinking With Mathematical Models* *Growing, Growing, Growing* *Frogs, Fleas and Painted Cubes* *Say It With Symbols*	**Inv. 1:** Exploring Data Patterns **Inv. 1:** ACE 25–26, 38, 47 **Inv. 2:** Quadratic Expressions **Inv. 3:** Quadratic Patterns of Change **Inv. 4:** What Is a Quadratic Function? **Inv. 2:** Combining Expressions
8.F.3 Interpret the equation $y = mx + b$ as defining a linear function, whose graph is a straight line; give examples of functions that are not linear. *For example, the function $A = s^2$ giving the area of a square as a function of its side length is not linear because its graph contains the points (1,1), (2,4) and (3,9), which are not on a straight line.*	*Thinking With Mathematical Models* *Growing, Growing, Growing* *The Shapes of Algebra* *Say It With Symbols*	**Inv. 2:** Linear Models and Equations **Inv. 3:** Inverse Variation **Inv. 5:** Patterns With Exponents **Inv. 3:** Equations With Two or More Variables **Inv. 4:** Solving Systems of Linear Equations Symbolically **Inv. 4:** Looking Back at Functions

COMMON CORE STATE STANDARDS GRADE 8	CMP2 UNITS	CONTENT
Use functions to model relationships between quantities.		
8.F.4 Construct a function to model a linear relationship between two quantities. Determine the rate of change and initial value of the function from a description of a relationship or from two (*x*, *y*) values, including reading these from a table or from a graph. Interpret the rate of change and initial value of a linear function in terms of the situation it models, and in terms of its graph or a table of values.	*Thinking With Mathematical Models* *The Shapes of Algebra* *Say It With Symbols*	**Inv. 1:** Exploring Data Patterns **Inv. 2:** Linear Models and Equations **Inv. 3:** Equations With Two or More Variables **Inv. 4:** Solving Systems of Linear Equations Symbolically **Inv. 4:** Looking Back at Functions
8.F.5 Describe qualitatively the functional relationship between two quantities by analyzing a graph e.g., where the function is increasing or decreasing, linear or nonlinear). Sketch a graph that exhibits the qualitative features of a function that has been described verbally.	*Thinking With Mathematical Models*	**Inv. 2:** Linear Models and Equations
Geometry		
Understand congruence and similarity using physical models, transparencies, or geometry software.		
8.G.1 Verify experimentally the properties of rotations, reflections, and translations:	*Kaleidoscopes, Hubcaps, and Mirrors* *CC Transition Kit*	**Inv. 1:** Three Types of Symmetry **Inv. 2:** Symmetry Transformations **Inv. 3:** Exploring Congruence **Inv. 4:** Applying Congruence and Symmetry **Inv. 5:** Transforming Coordinates **Inv. 3:** Transformations
8.G.1.a Lines are taken to lines, and line segments to line segments of the same length.	*Kaleidoscopes, Hubcaps, and Mirrors* *CC Transition Kit*	**Inv. 1:** Three Types of Symmetry **Inv. 2:** Symmetry Transformations **Inv. 3:** Exploring Congruence **Inv. 4:** Applying Congruence and Symmetry **Inv. 5:** Transforming Coordinates **Inv. 3:** Transformations
8.G.1.b Angles are taken to angles of the same measure.	*Kaleidoscopes, Hubcaps, and Mirrors* *CC Transition Kit*	**Inv. 1:** Three Types of Symmetry **Inv. 2:** Symmetry Transformations **Inv. 3:** Exploring Congruence **Inv. 4:** Applying Congruence and Symmetry **Inv. 5:** Transforming Coordinates **Inv. 3:** Transformations

COMMON CORE STATE STANDARDS GRADE 8	CMP2 UNITS	CONTENT
8.G.1.c Parallel lines are taken to parallel lines.	*Kaleidoscopes, Hubcaps, and Mirrors*	**Inv. 1:** Three Types of Symmetry **Inv. 2:** Symmetry Transformations **Inv. 3:** Exploring Congruence **Inv. 4:** Applying Congruence and Symmetry **Inv. 5:** Transforming Coordinates
	CC Transition Kit	**Inv. 3:** Transformations
8.G.2 Understand that a two-dimensional figure is congruent to another if the second can be obtained from the first by a sequence of rotations, reflections, and translations; given two congruent figures, describe a sequence that exhibits the congruence between them.	*Kaleidoscopes, Hubcaps, and Mirrors*	**Inv. 3:** Exploring Congruence
8.G.3 Describe the effect of dilations, translations, rotations, and reflections on two-dimensional figures using coordinates.	*Kaleidoscopes, Hubcaps, and Mirrors*	**Inv. 2:** ACE 24–25, 32 **Inv. 5:** Transforming Coordinates
	CC Transition Kit	**Inv. 3:** Transformations
8.G.4 Understand that a two-dimensional figure is similar to another if the second can be obtained from the first by a sequence of rotations, reflections, translations, and dilations; given two similar two dimensional figures, describe a sequence that exhibits the similarity between them.	*CC Transition Kit*	**Inv. 4:** Geometry Topics
8.G.5 Use informal arguments to establish facts about the angle sum and exterior angle of triangles, about the angles created when parallel lines are cut by a transversal, and the angle-angle criterion for similarity of triangles. *For example, arrange three copies of the same triangle so that the sum of the three angles appears to form a line, and give an argument in terms of transversals why this is so.*	*CC Transition Kit*	**Inv. 4:** Geometry Topics
Understand and apply the Pythagorean Theorem.		
8.G.6 Explain a proof of the Pythagorean Theorem and its converse.	*Looking For Pythagoras*	**Inv. 3:** The Pythagorean Theorem
8.G.7 Apply the Pythagorean Theorem to determine unknown side lengths in right triangles in real-world and mathematical problems in two and three dimensions.	*Looking For Pythagoras*	**Inv. 3:** The Pythagorean Theorem **Inv. 4:** Using the Pythagorean Theorem
8.G.8 Apply the Pythagorean Theorem to find the distance between two points in a coordinate system.	*Looking For Pythagoras*	**Inv. 2:** Squaring Off **Inv. 3:** The Pythagorean Theorem
Solve real-world and mathematical problems involving volume of cylinders, cones, and spheres .		
8.G.9 Know the formulas for the volumes of cones, cylinders, and spheres and use them to solve real-world and mathematical problems.	*Kaleidoscopes, Hubcaps, and Mirrors*	**Inv. 1:** ACE 47–49 **Inv. 2:** ACE 28 **Inv. 3:** ACE 24
	Looking For Pythagoras	**Inv. 3:** ACE 18–22, 25–26 **Inv. 4:** ACE 57–58
	Say It With Symbols	**Inv. 1:** ACE 55 **Inv. 3:** ACE 41 **Inv. 4:** ACE 39
	CC Transition Kit	**Inv. 4:** Geometry Topics

COMMON CORE STATE STANDARDS GRADE 8	CMP2 UNITS	CONTENT
Statistics and Probability		
Investigate patterns of association in bivariate data.		
8.SP.1 Construct and interpret scatter plots for bivariate measurement data to investigate patterns of association between two quantities. Describe patterns such as clustering, outliers, positive or negative association, linear association, and nonlinear association.	*Samples and Populations*	**Inv. 4:** Relating Two Variables
8.SP.2 Know that straight lines are widely used to model relationships between two quantitative variables. For scatter plots that suggest a linear association, informally fit a straight line, and informally assess the model fit by judging the closeness of the data points to the line.	*Samples and Populations* *Thinking With Mathematical Models*	**Inv. 4:** Relating Two Variables **Inv. 2:** Linear Models and Equations
8.SP.3 Use the equation of a linear model to solve problems in the context of bivariate measurement data, interpreting the slope and intercept. *For example, in a linear model for a biology experiment, interpret a slope of 1.5 cm/hr as meaning that an additional hour of sunlight each day is associated with an additional 1.5 cm in mature plant height.*	*The Shapes of Algebra* *Thinking With Mathematical Models*	**Inv. 2:** Linear Equations and Inequalities **Inv. 3:** Equations With Two or More Variables **Inv. 2:** Linear Models and Equations **Inv. 3:** Inverse Variation
8.SP.4 Understand that patterns of association can also be seen in bivariate categorical data by displaying frequencies and relative frequencies in a two-way table. Construct and interpret a two-way table summarizing data on two categorical variables collected from the same subjects. Use relative frequencies calculated for rows or columns to describe possible association between the two variables. *For example, collect data from students in your class on whether or not they have a curfew on school nights and whether or not they have assigned chores at home. Is there evidence that those who have a curfew also tend to have chores?*	*CC Transition Kit*	**Inv. 5:** Categorical Data