

8<sup>TH</sup> GRADE – INVESTIGATIONS IN ALGEBRA - CURRICULUM MAP 2007-08

UNITS OF STUDY	STANDARDS, BENCHMARKS, GLCEs OR HSCES	BIG IDEAS / KEY CONCEPTS	ASSESSMENTS		LEARNING STRATEGIES <i>Skills</i>	CONTENT ACTIVITIES <i>Knowledge</i>	VOCABULARY	INSTRUCTIONAL RESOURCES
			FOR LEARNING <i>(Formative)</i>	OF LEARNING <i>(Summative)</i>				
	1 <sup>st</sup> Trimester							Textbook: Connected Mathematics Program 2 Publisher: Prentice Hall Copyright: 2006
	<b>Thinking with Mathematical Models</b>							
<i>Linear and Inverse Variation</i>	A.RP.08.04 Use the vertical line test to determine if a graph represents a function in one variable.	Vertical Line Test	Check Up Partner Quiz Homework	Unit, Trimester, and Completion Assessments	Identify if a graph represents a function.	For every x value there is only one y value	Vertical line test	<b>Thinking Math Models</b> Investigation: 1  Supplemental material needed
	A.PA.08.02 For basic functions, e.g., simple quadratics, direct and indirect variation, and population growth, describe how changes in one variable affect the others.	Changes in One Variable Affect the Others	Check Up Partner Quiz Homework	Unit, Trimester, and Completion Assessments	Show inverse variation and substituting principle  Changing length and/or width will change area of rectangle	Know how changes in length of bridge changes cost and vice versa  Know how length and width changes area of rectangle	Inverse Variation Area of Rectangle	<b>Thinking Math Models</b> Investigation: 1 & 3
	A.RP.08.01 Identify and represent the graphs of linear functions, quadratic functions, and other simple functions including inverse functions; $y = k/x$ , cubic ( $y = ax^3$ ) roots ( $y = \sqrt{x}$ ), and exponentials ( $y = a^x$ , $a > 0$ ), using tables, graphs, and equations.	Graphing Linear And Quadratic Functions	Check Up Partner Quiz Homework	Unit, Trimester, and Completion Assessments	For linear, quadratic, and inverse: make a table and graph the results  Write equations from table and/or graph	Find breaking point of bridge  Write equations from a graph  Calculate area of rectangle	Breaking Weight	<b>Thinking Math Models</b> Investigation: 1 - 3
	N.FL.08.11 Solve problems involving rate units, such as miles per hour, dollars per pound, or persons per square mile.	Unit Rates	Check Up Partner Quiz Homework	Unit, Trimester, and Completion Assessments	Solve linear equations of cost per foot, price per minute, miles per hour, cost per student	Know what part of the equation represents rate of change  Identify slope and y-intercept  Write equations	Rate of Change Linear Relationship	<b>Thinking Math Models</b> Investigation: 2 & 3
	<b>Growing, Growing, Growing</b>							
<i>Exponential Relationships</i>	A.RP.08.01 Identify and represent the graphs of linear functions, quadratic functions, and other simple functions including inverse functions; $y = k/x$ , cubic ( $y = ax^3$ ) roots ( $y = \sqrt{x}$ ), and exponentials ( $y = a^x$ , $a > 0$ ), using tables, graphs, and equations.	Graphing Functions	Check Up Partner Quiz Homework	Unit, Trimester, and Completion Assessments	Identify growth factor from a table or graph  Distinguish between growth factor and growth rate	Recognize growth factor vs decay factor	Exponential Relationship	<b>Growing, Growing, Growing</b> Investigation: 1 - 5

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	A.PA.08.02 For basic functions, e.g., simple quadratics, direct and indirect variation, and population growth, describe how changes in one variable affect the others.	Changes in Functions	Check Up Partner Quiz Homework	Unit, Trimester, and Completion Assessments	Compare and contrast linear vs exponential functions in table, graphs, and equations	Recognize exponential relationships vs linear relationship	Population Growth	<b>Growing, Growing, Growing</b> Investigation: 1 - 5
	N.FL.08.09 Solve problems involving compounded interest or multiple discounts.	Compound Interest	Check Up Partner Quiz Homework	Unit, Trimester, and Completion Assessments	Display algorithm or formula for compound interest	Apply knowledge to investment situations	Compound Interest	<b>Growing, Growing, Growing</b> Investigation: 3
	N.MR.08.07 Understand percent increase and percent decrease in both sum and product form, e.g., 3% increase of a quantity $x$ is $x + .03x = 1.03x$ .	Percent Increase and Decrease	Check Up Partner Quiz Homework	Unit, Trimester, and Completion Assessments	Distinguish difference between growth rate and factor	Transfer information to exponential equations	Product Form	<b>Growing, Growing, Growing</b> Investigation: 3 & 4
	N.MR.08.08 Solve problems involving percent increases and decreases.	Percent Increase and Decrease	Check Up Partner Quiz Homework	Unit, Trimester, and Completion Assessments	Practice with situations involving compound growth	Understand exponential growth and decay	Growth Factor Growth Rate Exponential Growth Decay Factor Decay Rate Exponential Decay	<b>Growing, Growing, Growing</b> Investigation: 3 & 4
	N.ME.08.02 Understand meanings for zero and negative integer exponents.	Negative Integer Exponents	Check Up Partner Quiz Homework	Unit, Trimester, and Completion Assessments	Convert fractions to negative exponents and recognize rules for exponents	Knowledge of scientific notation and exponential growth and decay	Negative Integer Exponents	<b>Growing, Growing, Growing</b> Investigation: 4
	<b>2<sup>nd</sup> Trimester</b>							
	<b>Frogs, Fleas, &amp; Painted Cubes</b>							
<b>Quadratic Relationships</b>	A.RP.08.01 Identify and represent the graphs of linear functions, quadratic functions, and other simple functions including inverse functions; $y = k/x$ , cubic ( $y = ax^3$ ) roots ( $y = \sqrt{x}$ ), and exponentials ( $y = a^x$ , $a > 0$ ), using tables, graphs, and equations.	Quadratic Graphs	Check Up Partner Quiz Homework	Unit, Trimester, and Completion Assessments	Graph quadratic functions	Graph quadratic functions	Linear Functions Parabola Properties of Equalities Roots Cubic Roots	<b>Frogs, Fleas, &amp; Painted Cubes</b> Investigation: 1, 2 & 4
	A.RP.08.05 Relate quadratic functions in factored form and vertex form to their graphs, and vice versa; in particular, note that solutions of a quadratic equation are the x-intercepts of the corresponding quadratic function.	Factored Form Vertex Form	Check Up Partner Quiz Homework	Unit, Trimester, and Completion Assessments	Draw and create parabola based on quadratic equation  Indicate the x-intercepts	Understand and recognize the parabola shape of quadratic equations  Identify x-intercepts	Maximum Value Minimum Value Parabola	<b>Frogs, Fleas, &amp; Painted Cubes</b> Investigation: 2

	A.RP.08.06 Graph factorable quadratic functions, finding where the graph intersects the x-axis and the coordinates of the vertex; use words “parabola” and “roots”; include functions in vertex form and those with leading coefficient -1, e.g., $y = x^2 - 36$ , $y = (x - 2)^2 - 9$ ; $y = -x^2$ ; $y = -(x - 3)^2$ .	Graphing Quadratic Functions	Check Up Partner Quiz Homework	Unit, Trimester, and Completion Assessments	Draw and create parabola based on quadratic equation Indicate the x-intercepts	Understand and recognize the parabola shape of quadratic equations Identify x-intercepts	Expanded Form Factored Form Like Terms	<b>Frogs, Fleas, &amp; Painted Cubes</b> Investigation: 2
	A.FO.08.07 Recognize and apply the common formulas: $(a + b)^2 = a^2 + 2ab + b^2$ $(a - b)^2 = a^2 - 2ab + b^2$ $(a + b)(a - b) = a^2 - b^2$ ; represent geometrically.	Quadratic Formulas	Check Up Partner Quiz Homework	Unit, Trimester, and Completion Assessments	Write quadratic expressions in expanded form Write quadratic expressions in factored form	Write quadratic expressions in expanded form Write quadratic expressions in factored form	Expanded Form Factored Form	<b>Frogs, Fleas, &amp; Painted Cubes</b> Investigation: 2
	A.FO.08.08 Factor simple quadratic expressions with integer coefficients, e.g., $x^2 + 6x + 9$ , $x^2 + 2x - 3$ , and $x^2 - 4$ ; solve simple quadratic equations, e.g., $x^2 = 16$ or $x^2 = 5$ (by taking square roots); $x^2 - x - 6 = 0$ , $x^2 - 2x = 15$ (by factoring); verify solutions by evaluation.	Factoring Quadratic Equations	Check Up Partner Quiz Homework	Unit, Trimester, and Completion Assessments	Factor quadratic expressions Solve quadratic equations Verify solutions to quadratic equations	Factor quadratic expressions Solve quadratic equations Verify solutions to quadratic equations	Constant Term Function Solutions	<b>Frogs, Fleas, &amp; Painted Cubes</b> Investigation: 2 - 4
	A.PA.08.02 For basic functions, e.g., simple quadratics, direct and indirect variation, and population growth, describe how changes in one variable affect the others.	Quadratic Functions	Check Up Partner Quiz Homework	Unit, Trimester, and Completion Assessments	Demonstrate how one variable affects the other variables in relation to growth	Understand the concepts of how a change in one variable affects the other	Simple Quadratics	<b>Frogs, Fleas, &amp; Painted Cubes</b> Investigation: 3 & 4
	A.FO.08.09 Solve applied problems involving simple quadratic equations.	Solving Applied Problems	Check Up Partner Quiz Homework	Unit, Trimester, and Completion Assessments	Practice quadratic equations that simulate real world situations and applications	Ability to solve real world situations involving quadratic equations	Quadratic Relationship	<b>Frogs, Fleas, &amp; Painted Cubes</b> Investigation: 4
	N.ME.08.01 Understand the meaning of a square root of a number and its connection to the square whose area is the number; understand the meaning of a cube root and its connection to the volume of a cube.	Square Roots And Cube Roots	Check Up Partner Quiz Homework	Unit, Trimester, and Completion Assessments	Calculations of volume and identify to cube root Know volume formula of $l \times w \times h$	Determine the cube root from the volume of a cube	Cube Root	<b>Frogs, Fleas, &amp; Painted Cubes</b> Investigation: 4
	N.FL.08.05 Estimate and solve problems with square roots and cube roots using calculators.	Square Roots And Cube Roots	Check Up Partner Quiz Homework	Unit, Trimester, and Completion Assessments	Use TI-83 calculator to perform operations with square root and cube root	Determine cube root using a calculator	Cube Root	<b>Frogs, Fleas, &amp; Painted Cubes</b> Investigation: 4
	<b>Looking for Pythagoras</b>							

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<b>Pythagorean Theorem</b>	N.ME.08.01 Understand the meaning of a square root of a number and its connection to the square whose area is the number; understand the meaning of a cube root and its connection to the volume of a cube.	Square Roots And Cube Roots	Check Up Partner Quiz Homework	Unit, Trimester, and Completion Assessments	Draw squares with different side lengths Calculations of volume and identify to cube root Know volume formula of $l \times w \times h$	Determine the side length of a perfect square area Determine the cube root from the volume of a cube	Square Root Cube Root	<b>Looking for Pythagoras</b> Investigation: 1
	N.FL.08.06 Find square roots of perfect squares and approximate the square roots of non-perfect squares by locating them between consecutive integers, e.g., $\sqrt{130}$ is between 11 and 12.	Calculating Square Roots	Check Up Partner Quiz Homework	Unit, Trimester, and Completion Assessments	Know all the perfect squares and their square roots to 625 Understand how to estimate a non-perfect square number to be between two integers	Find the length of a side of a square based on its area Provide approximate decimal representation for non-perfect squares	Perfect Square	<b>Looking for Pythagoras</b> Investigation: 2
	N.ME.08.04 Understand that irrational numbers are those that cannot be expressed as the quotient of two integers, and cannot be represented by terminating or repeating decimals; approximate the position of familiar irrational numbers (e.g., $\sqrt{2}$ , $\sqrt{3}$ , $\pi$ ) on the number line.	Irrational Numbers	Check Up Partner Quiz Homework	Unit, Trimester, and Completion Assessments	Demonstrate the length of a side of a square is the square root of the area	Display knowledge when applying side length of a square	Irrational Number Square Root	<b>Looking for Pythagoras</b> Investigation: 2 & 4
	N.FL.08.05 Estimate and solve problems with square roots and cube roots using calculators.	Square Roots And Cube Roots	Check Up Partner Quiz Homework	Unit, Trimester, and Completion Assessments	Use TI-83 calculator to perform operations with square root and cube root	Apply to Pythagorean Theorem	Pythagorean Theorem	<b>Looking for Pythagoras</b> Investigation: 2 - 4
	G.GS.08.01 Understand at least one proof of the Pythagorean Theorem; use the Pythagorean Theorem and its converse to solve applied problems including perimeter, area, and volume problems.	Pythagorean Theorem	Check Up Partner Quiz Homework	Unit, Trimester, and Completion Assessments	Use cut-outs or squares of the sides of a triangle to show the Pythagorean Theorem	Find the area of squares and solving equations with radicals	Proof Applied Problems	<b>Looking for Pythagoras</b> Investigation: 3
	G.LO.08.02 Find the distance between two points on the coordinate plane using the distance formula; recognize that the distance formula is an application of the Pythagorean Theorem.	Pythagorean Theorem	Check Up Partner Quiz Homework	Unit, Trimester, and Completion Assessments	Practice use of squares and square roots Identify parts of right triangles Solve steps of quadratic equations	Fluent use of squares and square roots Know properties of a right triangle Find the length of an unknown side of a right triangle Application of $a^2 + b^2 = c^2$	Hypotenuse Leg/Side	<b>Looking for Pythagoras</b> Investigation: 3
	N.ME.08.03 Understand that in decimal form, rational numbers either terminate or eventually repeat, and that calculators truncate or round repeating decimals; locate rational numbers on the number line; know fraction forms of common repeating decimals (e.g., $0.\bar{1} = \frac{1}{9}$ ; $0.\bar{3} = \frac{1}{3}$ ).	Repeating and Terminating Decimals	Check Up Partner Quiz Homework	Unit, Trimester, and Completion Assessments	Convert between fractions and repeating or terminating decimals	Apply to exercises involving Pythagorean Theorem	Truncate Repeating Decimals Terminating Decimals	<b>Looking for Pythagoras</b> Investigation: 4
	<b>3<sup>rd</sup> Trimester</b>							

	<b>The Shapes of Algebra</b>							
<i>Linear Systems and Inequalities</i>	A.FO.08.10 Understand that to solve the equation $f(x) = g(x)$ means to find all values of $x$ for which the equation is true, e.g., determine whether a given value, or values from a given set, is a solution of an equation (0 is a solution of $3x^2 + 2 = 4x + 2$ , but 1 is not a solution).	Solutions Of Equations	Check Up Partner Quiz Homework	Unit, Trimester, and Completion Assessments	Use TI-83 calculator and computation table and graph to find solutions to equations	Ability to find all solutions to an equation	Solutions	<b>The Shapes of Algebra</b> Investigation: 2
	A.FO.08.11 Solve simultaneous linear equations in two variables by graphing, by substitution, and by linear combination; estimate solutions using graphs, include examples with no solution and infinitely many solutions.	Solving Systems Of Equations	Check Up Partner Quiz Homework	Unit, Trimester, and Completion Assessments	Graph systems and find point of intersection; use substitution or elimination method	Apply to break even points and cost analysis	Cost Analysis Point of Intersection	<b>The Shapes of Algebra</b> Investigation: 2 - 5
	A.FO.08.12 Solve linear inequalities in one and two variables, and graph the solution sets.	Linear Inequalities	Check Up Partner Quiz Homework	Unit, Trimester, and Completion Assessments	Solve linear inequalities with TI-83 calculators, graphs, and number lines	Apply to break even points and cost analysis	Cost Analysis Point of Intersection	<b>The Shapes of Algebra</b> Investigation: 2 - 5
	A.FO.08.13 Set up and solve applied problems involving simultaneous linear equations and linear inequalities.	Solve Linear Equations And Inequalities	Check Up Partner Quiz Homework	Unit, Trimester, and Completion Assessments	Solve linear inequalities with TI-83 calculators, graphs, and number lines	Apply to break even points and cost analysis	Cost Analysis Point of Intersection	<b>The Shapes of Algebra</b> Investigation: 2 - 5
	<b>Filling and Wrapping</b>							
	G.SR.08.07 Understand the concept of surface area, and find the surface area of prisms, cones, spheres, pyramids, and cylinders.	Surface Area of Three-dimensional Figures	Check Up Partner Quiz Homework	Unit, Trimester, and Completion Assessments	Identify the faces of a figure that relate to calculating surface area	Demonstrate ability to calculate surface area of three-dimensional figures	Surface Area	<b>Filling and Wrapping</b> Investigation: 3
	A.PA.08.03 Recognize basic functions in problem context, e.g., area of a circle is $\pi r^2$ , volume of a sphere is $\frac{4}{3} \pi r^3$ , and represent them using tables, graphs, and formulas.	Area of Circles Volume of Spheres	Check Up Partner Quiz Homework	Unit, Trimester, and Completion Assessments	Manipulate formulas to solve  Work with squares and cubes in a formula	Calculate area of circle and volume of sphere using appropriate formulas	Pi Radius	<b>Filling and Wrapping</b> Investigation: 3 and 4
	G.SR.08.06 Know the volume formulas for generalized cylinders ((area of base) x height), generalized cones and pyramids ( $\frac{1}{3}$ (area of base) x height), and spheres ( $\frac{4}{3} n^3$ (radius) ) and apply them to solve problems.	Volume Formulas	Check Up Partner Quiz Homework	Unit, Trimester, and Completion Assessments	Investigate volume formulas for cylinders, cones, pyramids, and spheres	Understand the formulas for cylinders, cones, pyramids, and spheres	Volume Formula	<b>Filling and Wrapping</b> Investigation: 3 and 4

	G.SR.08.07 Understand the concept of surface area, and find the surface area of prisms, cones, spheres, pyramids, and cylinders.	Surface Area of Three-dimensional Figures	Check Up Partner Quiz Homework	Unit, Trimester, and Completion Assessments	Counting square units Relating the area to the length of a side Strategies for determining area of irregular figures	Recognize different shapes and draw different shapes Definition of area Calculating area of regular and irregular figures	Surface Area	<b>Filling and Wrapping</b> Investigation: 3 and 4
	G.SR.08.08 Sketch a variety of two-dimensional representations of three-dimensional solids including orthogonal views (top, front, and side), picture views (projective or isometric), and nets; use such two-dimensional representation to help solve problems.	Two- and Three-Dimensional Drawings	Check Up Partner Quiz Homework	Unit, Trimester, and Completion Assessments	Demonstrate sketches of two-dimensional and three-dimensional figures Identify nets of three-dimensional figures Identify projective and isometric views	Knowledge of different views of nets Ability to draw orthogonal views of three-dimensional figures Sketch projective views	Nets Projective View Isometric	Use supplemental material in binder
	G.SR.08.04 Find area and perimeter of complex figures by sub-dividing them into basic shapes (quadrilaterals, triangles, circles).	Area and Perimeter of Polygons	Check Up Partner Quiz Homework	Unit, Trimester, and Completion Assessments	Divide complex shapes and figures into smaller basic shapes to determine area and perimeter	Find area and perimeter by sub-dividing complex shapes and figures into basic shapes	Complex Shapes Area Perimeter	Use supplemental material in binder
	G.SR.08.03 Understand the definition of a circle; know and use the formulas for circumference and area of a circle to solve problems.	Properties Of Circles	Check Up Partner Quiz Homework	Unit, Trimester, and Completion Assessments	$C = \pi d$ $A = \pi r^2$	Use formulas of circles to find circumference and area	Circumference Pi Radius	Use supplemental material in binder
	<b>G.SR.08.05</b> Solve applied problems involving areas of triangles, quadrilaterals, and circles.	Applied Area Problems	Check Up Partner Quiz Homework	Unit, Trimester, and Completion Assessments	Solve applied problems involving areas of triangles, quadrilaterals, and circles.	Know which formula to use to solve different area problems	Area Triangle Quadrilateral Circle	Use supplemental material in binder
	<b>What Do You Expect?</b>							
<b>Probability</b>	<b>D.PR.08.05</b> Find and/or compare the theoretical probability, experimental probability, and/or the relative frequency of a given event	Theoretical and Experimental Probability	Check Up Partner Quiz Homework	Unit, Trimester, and Completion Assessments	Calculate theoretical and experimental probability Calculate relative frequency	Identify the difference between theoretical and experimental probability	Theoretical Probability Experimental Probability Relative Frequency	<b>What Do You Expect?</b> Investigation: 1

	<b>D.PR.08.04b</b> Calculate the probabilities using organized lists or tree diagrams	Counting Principles	Check Up Partner Quiz Homework	Unit, Trimester, and Completion Assessments	Calculate probabilities using lists and diagrams	Create lists and tree diagrams	Organized Lists Tree Diagrams	<b>What Do You Expect?</b> Investigation: 1
	<b>D.PR.08.03a</b> Compute relative frequencies from a table or experimental results for a repeated event	Relative and Cumulative Frequency	Check Up Partner Quiz Homework	Unit, Trimester, and Completion Assessments	Compute relative frequencies and experimental results	Interpret data from a table or repeated event	Relative Frequencies Experimental Results	<b>What Do You Expect?</b> Investigation: 1
	<b>D.PR.08.03b</b> Interpret the results using relationships of probability to relative frequency	Relative and Cumulative Frequency	Check Up Partner Quiz Homework	Unit, Trimester, and Completion Assessments	Relate probability to relative frequency	Identify relationships of probability to relative frequency	Probability Relative Frequency	<b>What Do You Expect?</b> Investigation: 1
	<b>D.PR.08.04a</b> Apply the Basic Counting Principle to find total number of outcomes possible for independent and dependent events	Counting Principles and Dependent vs. Independent Events	Check Up Partner Quiz Homework	Unit, Trimester, and Completion Assessments	Calculate total outcomes using Basic Counting Principles	Use Basic Counting Principle	Basic Counting Principle	<b>What Do You Expect?</b> Investigation: 1
	<b>D.PR.08.06</b> Understand the difference between independent and dependent events, and recognize common misconceptions involving probability, e.g., Alice rolls a 6 on a die three times in a row; she is just as likely to roll a 6 on the fourth roll as she was on any previous roll	Misconceptions in Probability	Check Up Partner Quiz Homework	Unit, Trimester, and Completion Assessments	Recognize misconceptions regarding probability	Identify the difference between independent and dependent events	Independent Events Dependent Events	<b>What Do You Expect?</b> Investigation: 1
	<b>N.MR.08.10</b> Calculate weighted averages such as course grades, consumer price indices, and sport ratings	Weighted Averages	Check Up Partner Quiz Homework	Unit, Trimester, and Completion Assessments	Calculate weighted average	Calculate weighted average	Weighted Averages	<b>What Do You Expect?</b> Investigation: 1
	<b>Taught in Seventh Grade</b>							

	<b>D.AN.08.01</b> Determine which measure of central tendency (mean, median, mode) best represents a dataset							
	<b>D.AN.08.02</b> Recognize practices of collecting and displaying data that may bias the presentation or analysis							
	<b>Kaleidoscopes, Hubcaps, &amp; Mirrors</b>							
<b>Symmetry and Transformations</b>	G.TR.08.10 Understand and use reflective and rotational symmetries of two-dimensional shapes and relate them to transformations to solve problems.	Reflective And Rotational Symmetry	Check Up Partner Quiz Homework	Unit, Trimester, and Completion Assessments	Practice reflection, rotation, translation, and combinations (transformations)  Identify line symmetry and point reflections	Apply concepts to find distances, congruency, and properties of triangles	Reflection Rotation Translation Transformations Symmetry	<b>Kaleidoscopes, Hubcaps, &amp; Mirrors</b> Investigation: 1 & 3
	G.TR.08.09 Understand the definition of a dilation from a point in the plane, and relate it to the definition of similar polygons.	Dilation	Check Up Partner Quiz Homework	Unit, Trimester, and Completion Assessments	Demonstrate a dilation from a point in a plane, and relate to polygons	Understand a dilation from a point	Dilation	<b>Kaleidoscopes, Hubcaps, &amp; Mirrors</b> Investigation: 2  Supplemented material needed