

Seventh Grade

Mathematical Processes, Number & Operations, Algebra, Geometry & Measurement, Data Analysis & Probability

GLE	SPI	Checks for Understanding	Lessons/Activities	Websites	Textbook	Nine Weeks
0706.1.1 Use mathematical language, symbols, & definitions while developing mathematical reasoning.		0706.1.1 Recognize common abbreviations (such as gcd/gcf and lcm).			Chapter 4 Lessons 1, 2, 4	
0706.1.2 Apply & adapt a variety of appropriate strategies to problem solving, including estimation, and reasonableness of the solution		0706.1.2 Recognize round-off error and the inaccuracies it introduces. 0706.1.3 Check answers both by estimation and by appropriate independent calculations, using calculators or computers judiciously.	NCTM Illuminations: "Football Finances" http://illuminations.nctm.org/LessonDetail.aspx?id=L214	NCTM: "Figure It!" http://figurethis.org/challenges/challenge_index.htm NCTM Illuminations Activities "Primary Krypto" (3-5 & 6-8) http://illuminations.nctm.org/ActivityDetail.aspx?ID=173		
0706.1.3 Develop independent reasoning to communicate mathematical ideas and derive algorithms and/or formulas.						
0706.1.4 Move flexibly between concrete and abstract representations of mathematical ideas in order to solve problems, model mathematical ideas, and communicate solution strategies.	0706.1.2 Generalize a variety of patterns to a symbolic rule from tables, graphs, or words.		Gateway Training: "Function Families Grouper" NCTM – Navigating Through Algebra (3-5) "Squares Cubed" "That's Odd" "Triangle Rule Machine"		Chapter 7 Lessons 7, 8	

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0706.1.5 Use mathematical ideas and processes in different settings to formulate patterns, analyze graphs, set up and solve problems and interpret solutions.	0706.1.1 Use proportional reasoning to solve mixture/concentration problems 0706.1.3 Recognize whether information given in a table, graph, or formula suggests a directly proportional, linear, inversely proportional, or other nonlinear relationship. 0706.1.4 Use scales to read maps.	0706.1.4 Recognize quantities that are inversely proportional (such as the relationship between the lengths of the base and the side of a rectangle with fixed area). 0706.1.5 Understand that a linear function in which $f(0) = 0$ is called a directly proportional relationship. 0706.1.6 Develop meaning of intercept and rate of change in contextual problems. 0706.1.7 Explain and demonstrate how scale in maps and drawings shows relative size and distance. 0706.1.8 Recognize the applications of scale factor by exploring blueprints, shadow measuring, and scale models.	Mike Brown – “Cool Kool-Aid Experiment” “Moon Maneuvers” NCTM Illuminations “Measuring Up – Off the Scale” (6-8) http://illuminations.nctm.org/LessonDetail.aspx?ID=1516 “Measuring Up – In Your Shadow” (6-8) http://illuminations.nctm.org/LessonDetail.aspx?ID=1515 Marilyn Burns Math & Literature (6-8) – “What’s Smaller Than a Pygmy Shrew?”	NCTM Illuminations Activities: “Mixtures” http://illuminations.nctm.org/ActivityDetail.aspx?ID=154	Chapter 8 Lesson 3, 6	
0706.1.6 Read and interpret the language of mathematical and use written/oral communication to express mathematical ideas precisely.						
0706.1.7 Recognize the historical development of mathematics, mathematics in context, and the connections between mathematics and the real world.		0706.1.9 Use age-appropriate books, stories, and videos to convey ideas of mathematics.	“If the World Were a Village” Marilyn Burns – Math and Literature Books “Math Curse”, “How Much Is a Million?”, “On the Day You Were Born”, “Anno’s Magic Seeds”, “Beasts of burden”, “Esio Trot”, “A Remainder of One”, “What’s Smaller Than a Pygmy Shrew?”, “Fantastic Book of 1001 Lists”, “The Warlord’s Puzzle”, “Sam Johnson & the Blue Ribbon Quilt”, “Grandfather Tang’s Story”, “One Hundred Hungary Ants” http://sci.tamucc.edu/~eyoung/Literature%20webpages/HundredAnts.html, “Two Ways to Count to Ten”, “Is a Blue Whale the Biggest Thing There Is?”, “The \$1.00 Word Riddle Book”, “Spaghetti &			

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			Meatballs for All" Video Walt Disney – "Donald in Mathemagic Land"			
GLE	SPI	Checks for Understanding	Lessons/Activities	Websites	Textbook	Nine Weeks
0706.1.8 Use technologies & manipulatives appropriately to develop understanding of mathematical algorithms, to facilitate problem solving, and to create accurate and reliable models of mathematical concepts.		0706.1.10 Model algebraic equations with manipulatives, technology, and pencil and paper. 0706.1.11 Translate from calculator notation to scientific/standard notation. 0706.1.12 Use dynamic geometry software to explore scale factor and similarity.		Texas Instruments Site http://education.ti.com/educationportal/activityexchange/activity_list.do?cid=us National Library of Virtual Manipulatives Site http://nlvm.usa.edu/ Interactivate Site http://www.shodor.org/interactivate/activities/ Geogebra (Dynamic Geometry Software): http://www.geogebra.org/cms/ Geometer's Sketchpad		

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GLE	SPI	Checks for Understanding	Lessons/Activities	Websites	Textbook	Nine Weeks
0706.2.1 Extend understandings of addition, subtraction, multiplication and division to integers.	0706.2.5 Solve contextual problems that involve operations with integers.	0706.2.2 Develop and analyze algorithms and compute efficiently with integers and rational number. 0706.2.4 Understand that a and $-a$ are additive inverses and are located the same distance from zero on the number line; relate distance from zero to absolute value. 0706.2.5 Understand that $-(-a) = a$ for any number. 0706.2.6 Use the number line to demonstrate addition and subtraction with integers.	SpringBoard Middle School Math II "1, 2, 3 Red Light"		<i>Chapter 6</i> <i>Lessons 2, 3, 4, 5</i>	<i>Second</i>
0706.2.2 Understand and work with the properties of and operations on the system of rational numbers.	0706.2.1 Simplify numerical expressions involving rational numbers. 0706.2.2 Compare rational numbers using appropriate inequality symbols.	0706.2.1 Understand that the set of rational numbers includes any number that can be written as a ratio of two integers in which the denominator is not zero. 0706.2.2 Develop and analyze algorithms and compute efficiently with integers and rational numbers. 0706.2.3 Recognize that rational numbers satisfy the commutative and associative laws of addition and multiplication and the distributive law.	SpringBoard Middle School Math II "1, 2, 3 Red Light" NCTM Illuminations: "Distributing & Factoring Using Area" (6-8) http://illuminations.nctm.org/LessonDetail.aspx?id=L744	NCTM Illuminations Activities "Primary Krypto" (3-5 & 6-8) http://illuminations.nctm.org/ActivityDetail.aspx?ID=173	<i>Chapter 2</i> <i>Lesson 1</i> <i>Chapter 4</i> <i>Lessons 5, 6, 7</i> <i>Chapter 6</i> <i>Lessons 1, 6, 7</i>	<i>First</i> <i>Second</i> <i>Third</i>
0706.2.3 Develop an understanding of and apply proportionality.			NCTM Illuminations: "Feeding Frenzy" (6-8) http://illuminations.nctm.org/LessonDetail.aspx?id=L781 Mathline: "Something Fishy" (6-8) http://www.pbs.org/teachers/mathline/lessonplans/pdf/msmp/somethingfishy.pdf "How Many Noses Are In Your Arm?" (6-8) http://www.pbs.org/teachers/mathline/lessonplans/pdf/msmp/noses.pdf		<i>Chapter 8</i> <i>Lessons 4, 5</i>	<i>Third</i>

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			Algebra Cubed Project List 07-08 "Estimating Deer Population" http://www.ms.uky.edu/algebracubed/lessons/deer_population.pdf			
GLE	SPI	Checks for Understanding	Lessons/Activities	Websites	Textbook	Nine Weeks
0706.2.4 Use ratios, rates, and percents to solve single- and multi-step problems in various contexts.	0706.2.6 Express the ratio between two quantities as a percent, and a percent as a ratio or fraction. 0706.2.7 Use ratios and proportions to solve problems	0706.2.7 Write number sentences to solve contextual problems involving ratio and percent. 0706.2.8 Apply ratios, rates, proportions and percents (such as discounts, interest, taxes, tips, distance/rate/time, and percent increase or decrease).	Algebra Cubed Project List 07-08 "Estimating Deer Population" http://www.ms.uky.edu/algebracubed/lessons/deer_population.pdf "Using Ratio to Taste the Rainbow" http://www.ms.uky.edu/algebracubed/lessons/skittles.pdf Mike Brown- "There are More Fish in the Sea" NCTM Illuminations: "Feeding Frenzy" (6-8) http://illuminations.nctm.org/LessonDetail.aspx?id=L781 "Measuring Up – The Golden Ratio" (6-8) http://illuminations.nctm.org/LessonDetail.aspx?id=L510 "Measuring Up – What's Your Rate" (6-8) http://illuminations.nctm.org/LessonDetail.aspx?id=L511 Mathline: "Something Fishy" (6-8) http://www.pbs.org/teachers/mathline/lessonplans/pdf/msmp/somethingfishy.pdf		Chapter 8 Lessons 1, 2, 4, 5, 5P Chapter 9 Lessons 1, 2, 3, 4, 5, 6, 8	Third
0706.2.5 Understand and work with squares, cubes, square roots and cube roots.	0706.2.3 Use rational numbers and roots of perfect squares/cubes to solve contextual problems. 0706.2.4 Determine the approximate location of square/cube roots on a number line.	0706.2.9 Efficiently compare and order rational numbers and roots of perfect squares/cubes; determine their approximate locations on a number line. 0706.2.10 Recognize that when a whole number is not a perfect square, then its square root is not rational and cannot be written as the ratio of two integers. 0706.2.11 Estimate square/cube roots and use calculators to find approximations. 0706.2.12 Recognize $\sqrt{mn} = \sqrt{m} \times \sqrt{n}$ and $(\sqrt{m})^2 = m$	SpringBoard Middle School Math II "Lockers in View" "Squares & Cubes" "The Media Center"		Chapter 11 Lessons 1, 2	Fourth
0706.2.6 Introduce the concept of negative		0706.2.13 Use the meaning of negative exponents to represent			Chapter 1 Lesson 3 (This only)	Fourth

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exponents.		small numbers; translate between scientific and standard notation.			works with positive exponents) Chapter 2 Lesson 5	
GLE	SPI	Checks for Understanding	Lessons/Activities	Websites	Textbook	Nine Weeks
0706.2.7 Understand scientific notation.		0706.2.14 Express numbers in scientific notation and recognize its importance in representing the magnitude of a number. 0706.2.15 Report results of calculations appropriately in a given context (i.e., using rules of rounding, degree of accuracy, and/or significant <u>digits</u>.)			Chapter 2 Lesson 5	Fourth
GLE	SPI	Checks for	Lessons/Activities	Websites	Textbook	Nine

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		Understanding				Weeks
0706.3.1 Recognize and generate equivalent forms for simple algebraic expressions.	0706.3.1 Evaluate algebraic expressions involving rational values for coefficients and/or variables.	0706.3.1 Perform basic operations on linear expressions (including grouping, order of operations, exponents, simplifying and expanding).	"Twenty-Four" Game Kathy Dillard's "Exponent BINGO" NCTM Illuminations: (6-8) "Order of Operations BINGO" http://illuminations.nctm.org/LessonDetail.aspx?ID=1730 Gateway Training: "Express Yourself" "Chain Reaction" SpringBoard Middle School Math II "The Media Center"	NCTM Illuminations Activities "Primary Krypto" (3-5 & 6-8) http://illuminations.nctm.org/ActivityDetail.aspx?ID=173	Chapter 1 Lessons 2, 3, 4 (Chapter 2 Lesson 2) ? Chapter 7 Lessons 1, 2	First
0706.3.2 Understand and compare various representations of relations and functions.	0706.3.7 Translate between verbal and symbolic representations of real-world phenomena involving linear equations.	0706.3.2 Represent and analyze mathematical situations using algebraic symbols.	NCTM Illuminations: "Geology Rocks Equations" (6-8) http://illuminations.nctm.org/LessonDetail.aspx?id=1786 Mathline: "The Great Race" http://www.pbs.org/teachers/mathline/lessonplans/pdf/msmp/greatrace.pdf Gateway Training "Function Families Grouper" Navigating Through Algebra in Grades 3-5 "What's the Best Deal?" pp. 33-36 & 79 "Triangle-Rule Machine" pp. 58-60 & 84-85 "Tiling a Patio" pp. 18-26		Chapter 7 Lesson 1	
0706.3.3 Understand the concept of function as a rule that assigns to a given input one and only one number (the output).	0706.3.2 Determine whether a relation (represented in various ways) is a function. 0706.3.3 Given a table of inputs x and outputs $f(x)$, identify the function rule and continue the pattern.	0706.3.3 Identify a function from a written description, table, graph, rule, set of ordered pairs, and/or mapping. 0706.3.4 Make tables of inputs x and outputs $f(x)$ for a variety of rules that include rational numbers (including negative numbers) as inputs.	NCTM Illuminations: "Bungee Barbie" (6-8) http://illuminations.nctm.org/LessonDetail.aspx?id=1646 Gateway Training: "Function Families Grouper" Mathline: "Hop to It!" (6-8) http://www.pbs.org/teachers/mathline/lessonplans/pdf/atmp/HoptoIt.pdf "The Great Race" (6-8) http://www.pbs.org/teachers/mathline/lessonplans/pdf/msmp/greatrace.pdf "Mystery Liquids" (9-12) http://www.pbs.org/teachers/mathline/lessonplans/pdf/hmp/mystery.pdf		Chapter 7 Lessons 7, 8	Third
0706.3.4 Use function notation where $f(x)$ represents the output that the function f assigns to the input x .		0706.3.5 Plot points to represent tables of linear function values. 0706.3.6 Understand that the graph of a linear function f is the set of points on a line representing the ordered pairs $(x, f(x))$.	NCTM Illuminations: "Bungee Barbie" (6-8) http://illuminations.nctm.org/LessonDetail.aspx?id=1646 Mathline: "Mystery Liquids" (9-12) http://www.pbs.org/teachers/mathline/lessonplans/pdf/hmp/mystery.pdf "Fill 'Er Up" (6-8)		Chapter 7 Lessons 7, 8	Third

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			http://www.pbs.org/teachers/mathline/lessonplans/pdf/msmp/fillerup.pdf			
GLE	SPI	Checks for Understanding	Lessons/Activities	Websites	Textbook	Nine Weeks
0706.3.5 Understand and graph proportional relationships.	0706.3.5 Represent proportional relationships with equations, tables and graphs.	0706.3.7 Distinguish proportional relationships ($y/x = k$, or $y = kx$) from other relationships, including inverse proportionality ($xy = k$, or $y = k/x$).	"Constant Dimensions" (6-8) http://illuminations.nctm.org/LessonDetail.aspx?id=L572		Chapter 7 Lessons 7, 8 Chapter 8 Lesson 3 ?	Third
0706.3.6 Conceptualize the meaning of slope using various interpretations, representations and contexts.	0706.3.4 Interpret the slope of a line as a unit rate given the graph of a proportional relationship.	0706.3.8 Understand slope as the ratio of vertical change to horizontal change. 0706.3.9 Identify a function exhibiting a constant rate of change as a linear function and identify the slope as a unit rate. 0706.3.10 Solve problems involving unit rates (e.g., mile per hour, works per minute). 0706.3.12 Use linear equations to solve problems and interpret the meaning of slope, m , and the y -intercept, b , in $f(x) = mx + b$ in terms of the context. 0706.3.13 Given a graph that exhibits the intersection of a line and the y -axis, write a linear function in slope-intercept form: $y = mx + b$.	NCTM Illuminations: "Bungee Barbie" (6-8) http://illuminations.nctm.org/LessonDetail.aspx?id=L646 "Constant Dimensions" (6-8) http://illuminations.nctm.org/LessonDetail.aspx?id=L572 Mathline: "Up, Up, & Away" http://www.pbs.org/teachers/mathline/lessonplans/pdf/atmp/UpUpAway.pdf	NCTM Illuminations: "Exploring Linear Data" (6-8) http://illuminations.nctm.org/LessonDetail.aspx?id=L298 "Extending to Symbols" (6-8) http://illuminations.nctm.org/LessonDetail.aspx?id=L755 "Finding Out Top Speed" (6-8) http://illuminations.nctm.org/LessonDetail.aspx?id=L254	Chapter 8 Lesson 3	Third
0706.3.7 Use mathematical models involving linear equations to analyze real-world phenomena.	0706.3.7 Translate between verbal and symbolic representations of real-world phenomena involving linear equations.	0706.3.11 Relate the features of a linear equation to a table and/or graph of the equation.	Mathline: "Rumors" http://www.pbs.org/teachers/mathline/lessonplans/pdf/msmp/rumors.pdf "The Yo-Yo Problem" (9-12) http://www.pbs.org/teachers/mathline/lessonplans/pdf/hmp/yoyo.pdf "Fill 'Er Up" (6-8) http://www.pbs.org/teachers/mathline/lessonplans/pdf/msmp/fillerup.pdf Gateway Training: "Function Families Grouper" Navigating Through Algebra in Grades 3-5 "Triangle-Rule Machine" pp. 58-60 & 84-85 "Tiling a Patio" pp. 18-26 "What's the Best Deal?" pp. 33-36 & 79		Chapter 7 Lessons 1, 2, 3, 4, 5 Chapter 9 Lessons 4P, 4	Third
GLE	SPI	Checks for Understanding	Lessons/Activities	Websites	Textbook	Nine Weeks
0706.3.8 Use a variety of	0706.3.6 Solve linear	0706.3.14 Understand that when	Mathline:	National Library of Virtual	Chapter 7	Third

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strategies to efficiently solve linear equations and inequalities.	equations with rational coefficients symbolically or graphically. 0706.3.8 Solve contextual problems involving two-step linear equations. 0706.3.9 Solve linear inequalities in one variable with rational coefficients symbolically or graphically.	solving linear inequalities, multiplication or division by a negative reverses the inequality symbol.	"The Yo-Yo Problem" (9-12) http://www.pbs.org/teachers/mathline/lessonplans/pdf/hsmg/yoyo.pdf	Manipulatives: "Balance Scale" (Algebra 9-12) http://nlvm.usa.edu/	Lessons 3, 4, 5, 6, 7, 8	
GLE	SPI	Checks for Understanding	Lessons/Activities	Websites	Textbook	Nine Weeks
0706.4.1 Understand the application of	0706.4.1 Solve contextual problems	0706.4.2 Use similar triangles and proportionality to find the			Chapter 10 Lesson 5	Third

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proportionality with similar triangles.	involving similar triangles. 0706.4.2 Use SSS, SAS, and AAA to determine if two triangles are similar.	lengths of unknown line segments in a triangle. 0706.4.4 Compare angles, side lengths, perimeters and areas of similar shapes.				
0706.4.2 Apply proportionality to converting among different units of measurements to solve problems involving rates such as motion at a constant speed.		0706.4.5 Solve problems using ratio quantities: velocity (measured in units such as mile per hour), density (measured in units such as kilograms per liter), pressure (measured in units such as pounds per square foot), and population density (measured in units such as persons per square mile).				Third
0706.4.3 Understand and use scale factor to describe the relationships between length, area, and volume.	0706.4.3 Apply scale factor to solve problems involving area and volume.	0706.4.3 Understand that if a scale factor describes how corresponding lengths in two similar objects are related, then the square of the scale factor describes how corresponding areas are related, and the cube of the scale factor describes how corresponding volumes are related.	Algebra Cubed Project List 06-07 "Shadow Project-The Shadow Knows" http://www.ms.uky.edu/algebracubed/lessons/ShadowProject.pdf SpringBoard Middle School Math II "Squares & Cubes" "Putting Back the Pieces"		Chapter 8 Lesson 6	Third Fourth
0706.4.4 Understand and use ratios, derived quantities, and indirect measurements.		0706.4.1 Solve problems involving indirect measurement such as finding the height of a building by comparing its shadow with the height and shadow of a known object.				Third
GLE	SPI	Checks for Understanding	Lessons/Activities	Websites	Textbook	Nine Weeks
0706.5.1 Collect, organize, and analyze both single- and two-			Mathline: "Reaching New Heights" (6-8) http://www.pbs.org/teachers/mathline/lessonplans	"Estimating Ages of Famous People" http://mathbits.com/MathBits/	Chapter 6 Lesson 8	Third

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variable data.			/pdf/atmp/ReachingNewHeights.pdf "In a Heartbeat" (6-8) http://www.pbs.org/teachers/mathline/lessonplans/pdf/msmp/heartbeat.pdf	ppt/EstimateAge.htm		
0706.5.2 Select, create, and use appropriate graphical representations of data.	0706.5.1 Interpret and employ various graphs and charts to represent data. 0706.5.2 Select suitable graph types (such as bar graphs, histograms, line graphs, circle graphs, box-and-whisker plots, and stem-and-leaf plots) and use them to create accurate representations of given data.	0706.5.1 Create and interpret box-and-whisker plots and stem-and-plots. 0706.5.2 Interpret and solve problems using information presented in various visual forms. 0706.5.5 Apply percentages to make and interpret histograms and circle graphs	"If the World Were a Village" NCTM Illuminations: "Representing Data - Skin Weight" (6-8) http://illuminations.nctm.org/LessonDetail.aspx?ID=L172 "Summer Daze" (6-8) http://illuminations.nctm.org/LessonDetail.aspx?id=L779 Mathline: "Steppin' Out" (6-8) http://www.pbs.org/teachers/mathline/lessonplans/pdf/msmp/steppinout.pdf SpringBoard Middle School Math II "Toss Up" "The Media Center" "When Were You Born?" "Thinking in Circles"		Chapter 3 Lessons 2, 2T, 3, 4, 5, 6 Chapter 9 Lesson 5	First Second Third
0706.5.3 Formulate questions and design studies to collect data about a characteristic shared by two populations, or different characteristics within one population.		0706.5.3 Predict and compare the characteristics of two populations based on the analysis of sample data. 0706.5.4 Use proportional reasoning to make predictions about results of experiments and simulations. 0706.5.5 Evaluate the design of an experiment.	NCTM Illuminations: "Getting Into the Electoral College" (6-8) http://illuminations.nctm.org/LessonDetail.aspx?id=U189 Mathline: "We're All Tuned In" (6-8) http://www.pbs.org/teachers/mathline/lessonplans/pdf/msmp/tunedin.pdf			Fourth
0706.5.4 Use descriptive statistics to summarize and compare data.	0706.5.3 Calculate and interpret the mean, median, upper-quartile, lower-quartile, and interquartile range of a set of data.		Mathline: "Steppin' Out" (6-8) http://www.pbs.org/teachers/mathline/lessonplans/pdf/msmp/steppinout.pdf SpringBoard Middle School Math II "Toss Up"	NCTM Illuminations: "Mean and Median" http://illuminations.nctm.org/ActivityDetail.aspx?ID=160	Chapter 3 Lesson 1, 4	First
0706.5.5 Understand and apply basic concepts of probability.	0706.5.4 Use theoretical probability to make predictions.	0706.5.6 Use a tree diagram or organized list to determine all possible outcomes of a simple probability experiment.			Chapter 13 Lessons 1, 2, 3, 6	Fourth