

8th Grade Mathematics Curriculum Map 2008-2009 School Year

****DRAFT****

() means introduced but not assessed

First Semester			Second Semester				
Unit 1	Unit 2	Unit 3	Unit 4	Unit 5	Unit 6	Unit 7	
What's My Line? (10 weeks)	Algebraic Expressions (5 weeks)	The Powers That Be (3 weeks)	Probability, Sets & Subsets (4 weeks)	Algebra (5 weeks)	Square Roots & Pythagorean Theorem (5 weeks)	Show What We Know (5 weeks)	
Georgia Performance Standards							
M8A1 d M8A3 a, b, c, d, e, f, g, h, i M8A4 a, b, c, f, g M8D4 a, b (M8G1a) (M8A5b) M8P1-M8P5 MRC	M8A1 a, b, c, d, e M8P5 b M8P2 a, b, c, d M8P1-M8P5 MRC	M8A1 b M8N1 i, j, (k) M8P1 - M8P5 MRC	M8D1 a, b, c M8D2 a & b M8D3 a & b M8P1-M8P5 MRC	M8A2 a, b, c, d M8A4 d, e M8A5 a, b, c, d M8G1 a, b, c, d M8P1-M8P5 MRC	M8A1 b M8N1 a-h and k M8G2 a, b M8G1 d M8P1-M8P5 MRC	All 8 th grade standards Remediation and/or Acceleration	
Overarching Essential Questions							
<p>“How does a change in one variable affect the other variables in given situations?”</p> <p>“What are the key variables in a variety of situations?”</p> <p>“What is the pattern relating the variables?”</p>	<p>“How can symbolic reasoning help confirm a conjecture?”</p>	<p>“How do you represent very large and very small numbers?”</p>	<p>“How can expected value be used to help make decisions?”</p>	<p>“How do you manipulate a given variable in a variety of equations or inequalities?”</p>	<p>“How can I find the length of something without directly measuring it?”</p>	<p>“How can what we learned this year impact how we think in preparation for next year?”</p>	

Process standards are addressed throughout the year!

HENRY COUNTY SCHOOLS
Curriculum Map (Yearly Overview)
2008-2009

First Semester

Course: 8th Grade Mathematics

Grade Level: 8

	STANDARDS/ CONTENT	ESSENTIAL QUESTIONS	SKILLS	ASSESSMENTS	RESOURCES
AUGUST (Aug 4 - Oct 17)	<p><u>UNIT 1:</u> <i>What's My Line?</i></p> <p>M8A1 d M8A3 a, b, c, d, e, f, g, h, i M8A4 a, b, c, f, g M8D4 a, b (M8G1a) (M8A5b)</p> <p>M8P1-M8P5 MRC</p>	<p><u>UNIT 1:</u></p> <p>*How does a change in one variable affect the other variables in given situations? *How do you know if the variables in the problem have a linear relationship to each other? *What patterns in a problem suggest that the graph is linear? *How can tables, graphs, & equations of linear relationships be used to express and answer questions? *How does evidence impact the decision-making process? *Why is it important to edit and revise? *What are the common graphic features of informational texts?</p>	<p><u>UNIT 1:</u></p> <p>* Linear & Non-Linear Relations * Construct and translate tables, graphs, & equations that express linear relationships * Function * Rate of change * Y-Intercept * Graph lines * Slope * Interpreting Tables, Graphs and Equations * Point of intersection * Parallel & perpendicular lines</p>	<p><u>UNIT 1:</u></p> <p>*Reflection Pg. 45 #1-2 in <i>Moving Straight Ahead</i> student book *Vocabulary activities/quizzes *Quizzes *Unit test *Ticket out the door *CFA Questions</p>	<p><u>UNIT 1:</u></p> <p>*<i>Moving Straight Ahead</i> (7th grade Book) *GPS Framework Unit#5 Investigation 5 "Heart Beats" *<i>CRCT Coach</i> book *Punchline <i>Algebra</i> book A & B *<i>CRCT Coach Workout</i> book, Lesson 18-23 & 31 *GPS Framework Notebook</p> <ul style="list-style-type: none"> • <i>Reading Strategies for Math</i> p29-30 • <i>Reading Strategies for Math</i> p131-133 (Pre-reading) • <i>Reading Strategies for Math</i> p158-161 (Post Reading) • <i>Reading Strategies for Math</i> p189-191 (Graphic Organizers) • For the Advanced Classes: "Math Biography"
SEPTEMBER (Aug 4 - Oct 17)	<p><u>UNIT 1:</u> <i>What's My Line?</i></p> <p>M8A1 d M8A3 a, b, c, d, e, f, g, h, i M8A4 a, b, c, f, g M8D4 a, b (M8G1a) (M8A5b)</p> <p>M8P1-M8P5 MRC</p>	<p><u>Unit 1:</u></p> <p>*What are the key variables in a variety of situations? *What is the pattern relating the variables? *What kind of equation will express a given relationship? *How can I use the equation to answer questions about the relationship? *How can I relate arithmetic sequences to a linear functions? *Can you define a linear and nonlinear function defined by slope? *How is a linear inequality like/different from a linear equation?</p>	<p><u>Unit 1:</u></p> <p>*Describe data patterns * Write equations to represent data * Solve 1 & 2 step equations * Writing & simplifying expressions</p>	<p><u>Unit 1:</u></p> <p>*Reflection Pg. 46 *<i>Writing; Algebra Out Loud</i> Book- "Math Ads" *Vocabulary activities/quizzes *Quizzes *Unit test *Ticket out the door *CFA Questions</p>	<p><u>Unit 1:</u></p> <p>*<i>Thinking with Mathematical Models</i> (Investigations 1 & 2) * Topic 1 Functions * Topic 2 Sequences * Topic 3 Modeling Data w/ Linear Equations *<i>CRCT Coach</i> book Lessons # 18-23, 31 *GPS Framework Unit 4: Investigation 2 "What's My Pattern?" *Exemplars Inv#1 Pg. 377 "Whatcha Driving" *GPS Framework Notebook</p>

HENRY COUNTY SCHOOLS
Curriculum Map (Yearly Overview)
2008-2009

First Semester

Course: 8th Grade Mathematics

Grade Level: 8

	STANDARDS/ CONTENT	ESSENTIAL QUESTIONS	SKILLS	ASSESSMENTS	RESOURCES
<p>OCTOBER</p> <p>(Oct. 20 – Nov. 21)</p>	<p><u>UNIT 1:</u> <i>What's My Line?</i></p> <p>[continued through October 17th]</p> <p><u>UNIT 2:</u> <i>Algebraic Expressions</i></p> <p>M8A1 a, b, c, d, e M8P5 b M8 P2 a, b, c, d M8P1-M8P5 MRC</p>	<p><u>UNIT 2:</u></p> <p>*How do you represent a given situation using algebraic expressions or equations? *How do you determine if mathematical expressions are equivalent? *How do you simplify algebraic expressions? *How can symbolic reasoning help confirm a conjecture? *What do you need to know to solve equations with parentheses?</p>	<p><u>UNIT 2:</u></p> <p>* Write and use equivalent expressions * Interpret equivalent expressions * Solve linear equations involving parentheses * Combining like terms * Use equivalent expressions to solve problems</p>	<p><u>UNIT 2:</u></p> <p>*Reflection 3 Pg. 55 *Vocabulary activities/quizzes *Quizzes *Unit test *Ticket out the door *CFA Questions</p>	<p><u>UNIT 2:</u></p> <p>*<i>Say it with Symbols</i> Investigations 1 to 5 (omit 3.4, 3.5, 4.2 & 4.3) *Topic 5 Solving Absolute Value Equation *<i>CRCT Coach Workout</i> book Lesson #11 & 12 *<i>Developing Skills in Algebra 1</i> BookA *<i>Punchline Algebra</i> Book B Lessons #12.2 - 12.4 *<i>CRCT Coach</i> Book Lesson #11 & 19 *<i>Additional Practice</i> Workbook Pg. 109-111 *GPS Framework Notebook</p>
<p>NOVEMBER</p> <p>(Oct. 20 – Nov. 21)</p>	<p><u>UNIT 2 cont:</u> <i>Algebraic Expressions</i></p> <p>M8A1 a, b, c, d, e M8P5 b M8 P2 a, b, c, d M8P1-M8P5 MRC</p>	<p><u>UNIT 2:</u></p> <p>*How do you represent a given situation using algebraic expressions or equations? *How do you determine if mathematical expressions are equivalent? *How do you simplify algebraic expressions? *How can symbolic reasoning help confirm a conjecture? *What do you need to know to solve equations with parentheses?</p>	<p><u>UNIT 2:</u></p> <p>* Write and use equivalent expressions * Interpret equivalent expressions * Distributive Property * Solve linear equations involving parentheses * Combining like terms * Use equivalent expressions to solve problems</p>	<p><u>UNIT 2:</u></p> <p>*Reflection 3 Pg. 55 *Vocabulary activities/quizzes *Quizzes *Unit test *Ticket out the door *CFA Questions</p>	<p><u>UNIT 2:</u></p> <p>*<i>Say it with Symbols</i> Investigations 1 to 5 (omit 3.4, 3.5, 4.2 & 4.3) *Topic 5 Solving Absolute Value Equation *<i>CRCT Coach Workout</i> book Lesson #11 & 12 *<i>Developing Skills in Algebra 1</i> BookA *<i>Punchline Algebra</i> Book B Lessons #12.2 - 12.4 *<i>CRCT Coach</i> Book Lesson #11 & 19 *<i>Additional Practice</i> Workbook Pg. 109-111 *GPS Framework Notebook</p>

HENRY COUNTY SCHOOLS
Curriculum Map (Yearly Overview)
2008-2009

First Semester

Course: 8th Grade Mathematics

Grade Level: 8

	STANDARDS/ CONTENT	ESSENTIAL QUESTIONS	SKILLS	ASSESSMENTS	RESOURCES
DECEMBER (Dec. 1 – Dec. 19)	<u>UNIT 3:</u> <i>The Powers That Be</i> M8A1 b M8N1 i, j, k	<u>UNIT 3:</u> *How does multiplying and dividing exponents relate to adding and subtracting integers? *How do you prove an exponent of zero is equal to one? *How do you represent very large and very small numbers? *When would you use scientific notation?	<u>UNIT 3:</u> * Simplify integer expressions containing exponents * Multiply & divide expressions containing integer exponents * Use Scientific Notation * Multiply & divide numbers in scientific notation	<u>UNIT 3:</u> *Vocabulary activities/quizzes *Quizzes *Unit test *Ticket out the door *CFA Questions	<u>UNIT 3:</u> <i>CRCT Coach</i> Book Lesson Lessons 32 & 33 <i>Punchline Algebra</i> book A & B <i>CRCT Coach Workout</i> book Lesson 2 Pg. 37 GPS Unit 2 "It's a Big Universe" "Exploring the Powers of Ten" GPS Framework Notebook

HENRY COUNTY SCHOOLS
Curriculum Map (Yearly Overview)
2008-2009

Second Semester

Course: 8th Grade Mathematics

Grade Level: 8

	STANDARDS/ CONTENT	ESSENTIAL QUESTIONS	SKILLS	ASSESSMENTS	RESOURCES
JANUARY (Jan 6 – Jan 30)	<u>UNIT 4:</u> <i>Probability, Sets & Subsets</i> M8D1 a, b, c M8D2 a & b M8D3 a & b M8P1-M8P5 MRC	<u>UNIT 4:</u> *Are the possible outcomes of an event equally likely? * How do I compute the theoretical probability of the outcome of one event followed by a second event? * How can I use expected value to help me make decisions? * How can I use a Venn diagram to organize data?	<u>UNIT 4:</u> * Venn diagrams * Sets, subsets, complements, intersection, and union of sets * Tree diagrams * Addition & multiplication principles of counting * Probability of simple and compound independent events	<u>UNIT 4:</u> * <i>Writing as Authentic Assessment</i> book: “Similes, metaphors, and analogies” * Reflection Pg. 19 #1 * <i>Algebra Out Loud Book</i> : “Math Stay Activity” * Vocabulary activities/quizzes * Quizzes * Unit test * Ticket out the door * CFA Questions	<u>UNIT 4:</u> * <i>What do You Expect?</i> Investigations 1 & 2 * Topic 7 Venn Diagrams, Sets, and Set Notation * GPS Unit 4 The Venn Challenge Weekend Activities * “EggMan” Activity from www.themathlab.com * GPS Framework Notebook * Data Analysis & Probability Kit
FEBRUARY (Feb 2 – March 6)	<u>UNIT 5:</u> <i>Algebra</i> M8A4 d, e M8A2 a, b, c, d M8A5 a, b, c, d M8G1 a, b, c, d M8P1-M8P5 MRC	<u>UNIT 5:</u> * How can you use symbolic reasoning to solve inequalities? * What is the goal of solving a system of linear equations? * When parallel lines are cut by a transversal what angle relationships are formed? * How do you manipulate a given variable in a variety of equations?	<u>UNIT 5:</u> * Solving systems of linear equations and inequalities (Graphically and Algebraically) * Solve and graph inequalities in one & two variables * Interpret the solution to systems of equations and inequalities * Identify angles formed by a transversal * Contrast supplementary & complementary angles * Convert Standard form to Slope Intercept form and vice versa * Solve for a given variable	<u>UNIT 5:</u> * <i>Algebra Outloud Book</i> : “Muddiest Point” * Vocabulary activities * Quizzes * Unit test * Ticket out the door * CFA Questions	<u>UNIT 5:</u> * <i>Shapes of Algebra</i> * Additional Practice Workbook Pg. 137-170 * <i>CRCT Coach</i> book Lessons 8, 26, 27 * <i>PunchLine Algebra</i> book A * Exemplars: “AT & T Choice Dilemma” * GPS Framework Notebook

HENRY COUNTY SCHOOLS
Curriculum Map (Yearly Overview)
2008-2009

Second Semester

Course: 8th Grade Mathematics Grade Level: 8

	STANDARDS/ CONTENT	ESSENTIAL QUESTIONS	SKILLS	ASSESSMENTS	RESOURCES
<p align="center">MARCH APRIL</p> <p>(March 9 - April 17)</p>	<p><u>UNIT 5 cont:</u> <i>Algebra</i> continued through March 6th</p> <p><u>UNIT 6:</u> <i>Square Roots & Pythagorean Theorem</i></p> <p>M8A1 b M8 N1 a-h and k M8 G1 d M8 G2 a, b M8P1-M8P5 MRC</p>	<p align="center"><u>UNIT 6:</u></p> <p>* How can I find the length of something without directly measuring it? * How are irrational numbers and the area of squares related?</p>	<p align="center"><u>UNIT 6:</u></p> <p>* Relate the area of a square to its side length * Pythagorean Theorem * Estimate square roots of whole numbers * Locate irrational numbers on a number line * Use the Pythagorean Theorem to solve problems</p>	<p align="center"><u>UNIT 6:</u></p> <p>* Reflection Pg. 45 * Vocabulary activities/quizzes Quizzes Unit test Ticket out the door CFA Questions</p>	<p align="center"><u>UNIT 6:</u></p> <p>* <i>Looking for Pythagoras</i> Investigations 1.1, 1.2 Investigations 2.1, 2.1 * <i>CRCT Coach</i> Lessons 3&4 * <i>Looking for Pythagoras</i> Investigations 3.1, 3.3, 3.4 Investigations 4.1, 4.2 * Topic 4 Congruence * <i>CRCT Workout</i> book Lessons 3 to 7 * <i>CMP Additional Practice Workbook</i> Pgs. 31-34 * <i>Algebra Survival Guide Book</i> (Graphic Organizer) Pg. 24 * <i>GPS Framework Notebook</i></p>
<p align="center">MAY</p> <p>(April 20 – May 29)</p>	<p><u>UNIT 7:</u> <i>Show What We Know</i></p> <p>(Either begins work on Math I standards OR Reviews and reinforces concepts from 8th grade standards)</p>	<p align="center"><u>UNIT 7:</u></p> <p>* How can what we learned this year impact how we think in preparation for next year?</p>	<p align="center"><u>UNIT 7:</u></p> <p>* Students will either begin work on Math I standards OR review and reinforce concepts from 8th grade standards.</p>	<p align="center"><u>UNIT 7:</u></p> <p>* Reflection Pg. 18 #1 a & b * Vocabulary activities/quizzes * Quizzes * Unit test * Ticket out the door * CFA Questions</p>	<p align="center"><u>UNIT 7:</u></p> <p><u>Review</u> * <i>“Choosing Camp Coaches”</i> * <i>Other GADOE culminating tasks for 8th grade math</i></p> <p><u>Acceleration</u> * <i>GaDOE tasks for Math I</i></p>

First Semester

<p style="text-align: center;">Unit 1</p> <p style="text-align: center;">What's My Line?</p> <p style="text-align: center;"><u>August 4 - October 17</u></p>	<p style="text-align: center;">Unit 2</p> <p style="text-align: center;">Algebraic Expressions</p> <p style="text-align: center;"><u>October 20 - November 21</u></p>	<p style="text-align: center;">Unit 3</p> <p style="text-align: center;">The Powers That Be</p> <p style="text-align: center;"><u>December 1 - December 19</u></p>
<p>Georgia Performance Standards</p>		
<p>M8A1. Students will use algebra to represent, analyze, and solve problems. d. Solve equations involving several variables for one variable in terms of the others.</p> <p>M8A3. Students will understand relations and linear functions. a. Recognize a relation as a correspondence between varying quantities. b. Recognize a function as a correspondence between inputs and outputs where the output for each input must be unique. c. Distinguish between relations that are functions and those that are not functions. d. Recognize functions in a variety of representations and a variety of contexts. e. Use tables to describe sequences recursively and with a formula in closed form. g. Interpret the constant difference in an arithmetic sequence as the slope of the associated linear function. h. Identify relations and functions as linear or nonlinear. i. Translate among verbal, tabular, graphic, and algebraic representations of functions.</p> <p>M8A4. Students will graph and analyze graphs of linear equations and inequalities. a. Interpret slope as a rate of change. b. Determine the meaning of the slope and y-intercept in a given situation. c. Graph equations of the form $y = mx + b$. f. Determine the equation of a line given a graph, numerical information that defines the line or a context involving a linear relationship. g. Solve problems involving linear relationships.</p> <p>M8D4. Students will organize, interpret, and make inferences from statistical data a. Gather data that can be modeled with a linear function. b. Estimate and determine a line of best fit from a scatter plot.</p> <p style="text-align: center;"><u>Introduced but not assessed:</u></p> <p>M8G1. Students will understand and apply the properties of parallel and perpendicular lines and understand the meaning of congruence. a. Investigate characteristics of parallel and perpendicular lines both algebraically and geometrically.</p> <p>M8A5. Students will understand systems of linear equations and inequalities and use them to solve problems. b. Solve systems of equations graphically and algebraically, using technology as appropriate.</p>	<p>M8A1. Students will use algebra to represent, analyze, and solve problems.</p> <p>a. Represent a given situation using algebraic expressions or equations in one variable. b. Simplify and evaluate algebraic expressions. c. Solve algebraic equations in one variable, including equations involving absolute values. d. Solve equations involving several variables for one variable in terms of the others. e. Interpret solutions in problem contexts.</p>	<p>M8A1. Students will use algebra to represent, analyze, and solve problems.</p> <p>b. Simplify and evaluate algebraic expressions.</p> <p>M8N1. Students will understand different representations of numbers including square roots, exponents, and scientific notation. i. Simplify expressions containing integer exponents. j. Express and use numbers in scientific notation.</p> <p style="text-align: center;"><u>Introduced but not assessed:</u></p> <p>k. Use appropriate technologies to solve problems involving square roots, exponents, and scientific notation.</p>

Second Semester

<p>Unit 4 Probability, Sets & Subsets <u>January 6 - January 30</u></p>	<p>Unit 5 Algebra <u>February 2 - March 6</u></p>	<p>Unit 6 Square Roots & Pythagorean Theorem <u>March 9 - April 17</u></p>	<p>Unit 7 Show What We Know <u>April 30 - May 29</u></p>
--	--	---	---

Georgia Performance Standards

<p>M8D1. Students will apply basic concepts of set theory.</p> <ul style="list-style-type: none"> a. Demonstrate relationships among sets through use of Venn diagrams. b. Determine subsets, complements, intersection, and union of sets. c. Use set notation to denote elements of a set. <p>M8D2. Students will determine the number of outcomes related to a given event.</p> <ul style="list-style-type: none"> a. Use tree diagrams to find the number of outcomes. b. Apply the addition and multiplication principles of counting. <p>M8D3. Students will use the basic laws of probability.</p> <ul style="list-style-type: none"> a. Find the probability of simple independent events. b. Find the probability of compound independent events. 	<p>M8A2. Students will understand and graph inequalities in one variable.</p> <ul style="list-style-type: none"> a. Represent a given situation using an inequality in one variable. b. Use the properties of inequality to solve inequalities. c. Graph the solution of an inequality on a number line. d. Interpret solutions in problem contexts. <p>M8A4. Students will graph and analyze graphs of linear equations and inequalities.</p> <ul style="list-style-type: none"> d. Graph equations of the form $ax + by = c$. e. Graph the solution set of a linear inequality, identifying whether the solution set is an open or a closed half-plane. <p>M8A5. Students will understand systems of linear equations and inequalities and use them to solve problems.</p> <ul style="list-style-type: none"> a. Given a problem context, write an appropriate system of linear equations or inequalities. b. Solve systems of equations graphically and algebraically, using technology as appropriate. c. Graph the solution set of a system of linear inequalities in two variables. d. Interpret solutions in problem contexts. <p>M8G1. Students will understand and apply the properties of parallel and perpendicular lines and understand the meaning of congruence.</p> <ul style="list-style-type: none"> a. Investigate characteristics of parallel and perpendicular lines both algebraically and geometrically. b. Apply properties of angle pairs formed by parallel lines cut by a transversal. c. Understand the properties of the ratio of segments of parallel lines cut by one or more transversals. d. Understand the meaning of congruence: that all corresponding angles are congruent and all corresponding sides are congruent. 	<p>M8A1. Students will use algebra to represent, analyze, and solve problems.</p> <ul style="list-style-type: none"> b. Simplify and evaluate algebraic expressions. <p>M8N1. Students will understand different representations of numbers including square roots, exponents, and scientific notation.</p> <ul style="list-style-type: none"> a. Find square roots of perfect squares. b. Recognize the (positive) square root of a number as a length of a side of a square with a given area. c. Recognize square roots as points and as lengths on a number line. d. Understand that the square root of 0 is 0 and that every positive number has two square roots that are opposite in sign. e. Recognize and use the radical symbol to denote the positive square root of a positive number. f. Estimate square roots of positive numbers. g. Simplify, add, subtract, multiply, and divide expressions containing square roots. h. Distinguish between rational and irrational numbers. j. Express and use numbers in scientific notation. k. Use appropriate technologies to solve problems involving square roots, exponents, and scientific notation. <p>M8G1. Students will understand and apply the properties of parallel and perpendicular lines and understand the meaning of congruence.</p> <ul style="list-style-type: none"> d. Understand the meaning of congruence: that all corresponding angles are congruent and all corresponding sides are congruent. <p>M8G2. Students will understand and use the Pythagorean theorem.</p> <ul style="list-style-type: none"> a. Apply properties of right triangles, including the Pythagorean theorem. b. Recognize and interpret the Pythagorean theorem as a statement about areas of squares on the sides of a right triangle. 	<p style="text-align: center;">Remediation and/or Acceleration</p> <p>The following process standards are essential to mastering each of the mathematics content standards. They emphasize critical dimensions of the mathematical proficiency that all students need. These will be taught throughout the year in conjunction with content standards.</p> <p>M8P1. Students will solve problems (using appropriate technology) and build new mathematical knowledge through problem solving.</p> <p>M8P2. Students will reason and evaluate mathematical arguments.</p> <p>M8P3. Students will communicate mathematically.</p> <p>M8P4. Students will make connections among mathematical ideas and to other disciplines.</p> <p>M8P5. Students will represent mathematics in multiple ways by creating and using representations to communicate mathematical ideas.</p>
--	--	---	---

Key Vocabulary

- Additive inverse
- Multiplicative inverse
- Sequence
- Arithmetic sequence
- Recursive
- Linear equation
- Linear & Non-Linear Relations
- Linear function
- Function
- relation
- Rate of change
- Intercept (x & y intercept)
- Graph lines
- Slope
- Point of intersection
- Parallel lines
- Perpendicular lines
- Line of best fit
- Like terms
- System of equations

Prerequisite Skills

It is expected that students will have prior knowledge/experience related to the concepts and skills identified below. It may be necessary to pre-assess in order to determine if time needs to be spent on conceptual activities that help students develop a deeper understanding of these ideas.

- Plotting points
- x & y axis
- Integer operations
- Knowledge of Coordinate plane
- Solving one-step and two-step equations
- Combining like terms

Unit 1**DRAFT**

What's My Line?

August 4 - October 17, 2008

GPS Standards Addressed:

M8A1 d
M8A3 a, b, c, d, e, f, g, h, i
M8A4 a, b, c, f, g
M8D4 a, b
(M8G1a)
(M8A5b)
M8P1-M8P5
MRC

Essential Question

“How does a change in one variable affect the other variables in given situations?”

“What are the key variables in a variety of situations?”

“What is the pattern relating the variables?”

Suggested Learning Resources/ Performance Tasks

- * *Moving Straight Ahead* (7th grade Book)
- * *Thinking with Mathematical Models* (Investigations 1 & 2)
- * GPS Framework Unit 4: Investigation 2 - “What’s My Pattern?”
- * GPS Framework Unit#5 Investigation 5 “Heart Beats”
- * *CRCT Coach* book
- * *Punchline Algebra* book A & B
- * *CRCT Coach Workout* book, Lessons 18-23, 31
- * Topic 1 Functions
- * Topic 2 Sequences
- * Topic 3 Modeling Data w/ Linear Equations
- * **Exemplars**
 - “Whatcha Driving” - Inv#1 Pg. 377
- * GPS Framework Notebook
 - *Reading Strategies for Math* p29-30
 - *Reading Strategies for Math* p131-133 (Pre-reading)
 - *Reading Strategies for Math* p158-161 (Post Reading)
 - *Reading Strategies for Math* p189-191 (Graphic Organizers)

For the Advanced Classes: “Math Biography”

Enduring Understandings

Students will be able to...

- * Investigate linear & non-linear relations
- * Construct and translate tables, graphs, & equations that express linear relationships
- * Identify functions
- * Understand rate of change in relation to slope
- * Identify y-Intercept
- * Graph lines
- * Interpret Tables, Graphs and Equations
- * Identify intercepts and points of intersection
- * Recognize parallel & perpendicular lines
- * Describe data patterns
- * Write equations to represent data
- * Solve 1 & 2 step equations
- * Write & simplifying expressions

Unit 2***DRAFT***
Algebraic Expressions
October 20 - November 21, 2008

Key Vocabulary

- Like terms
- Equivalent expressions
- Conjecture
- Algebraic expression

GPS Standards Addressed:

M8A1 a, b, c, d, e
M8P1-M8P5
MRC

Essential Question

“ How can symbolic reasoning help confirm a conjecture?”

GPS Standards Addressed:

M8A1. Students will use algebra to represent, analyze, and solve problems.

- Represent a given situation using algebraic expressions or equations in one variable.
- Simplify and evaluate algebraic expressions.
- Solve algebraic equations in one variable, including equations involving absolute values.
- Solve equations involving several variables for one variable in terms of the others.
- Interpret solutions in problem contexts.

**Suggested Learning Resources/
Performance Tasks**

**Say it with Symbols*
Investigations 1 to 5

(omit 3.4, 3.5, 4.2 & 4.3)

**Topic 5*
Solving Absolute Value Equation

**CRCT Coach Workout* book
Lesson #11 & 12

**Developing Skills in Algebra 1*
BookA

**Punchline Algebra* Book B
Lessons #12.2 - 12.4

**CRCT Coach* Book
Lesson #11 & 19

**Additional Practice* Workbook
Pg. 109-111

**GPS Framework* Notebook

Prerequisite Skills

It is expected that students will have prior knowledge/experience related to the concepts and skills identified below. It may be necessary to pre-assess in order to determine if time needs to be spent on conceptual activities that help students develop a deeper understanding of these ideas.

- Order of operations
- Combining like terms
- Plotting points on a coordinate plane
- Graphing
- Patterns and sequences
- Distributive property
- Substituting values to unknown

Enduring Understandings

Students will...

- * Write and use equivalent expressions
- * Interpret equivalent expressions
- * Use the Distributive Property
- * Solve linear equations involving parentheses
- * Combine like terms
- * Use equivalent expressions to solve problems

Unit 3***DRAFT***
The Powers That Be
December 1 - December 19, 2008

Key Vocabulary

- Exponent
- Scientific notation
- Significant digits

GPS Standards Addressed:

M8A1b
M8N1 i, j, k
M8P1-M8P5
MRC

Essential Question

“How do you represent very large and very small numbers?”

GPS Standards Addressed:

M8A1. Students will use algebra to represent, analyze, and solve problems.

b. Simplify and evaluate algebraic expressions.

M8N1. Students will understand different representations of numbers including square roots, exponents, and scientific notation.

i. Simplify expressions containing integer exponents.

j. Express and use numbers in scientific notation.

Introduced but not assessed:

k. Use appropriate technologies to solve problems involving square roots,

**Suggested Learning Resources/
Performance Tasks**

CRCT Coach Book Lesson
Lessons 32 & 33

Punchline *Algebra* book A & B

CRCT Coach Workout book
Lesson 2 Pg. 37

GPS Unit 2
“It’s a Big Universe”
“Exploring the Powers of Ten”

GPS Framework Notebook

Prerequisite Skills

It is expected that students will have prior knowledge/experience related to the concepts and skills identified below. It may be necessary to pre-assess in order to determine if time needs to be spent on conceptual activities that help students develop a deeper understanding of these ideas.

- Exponents
- Integer operations

Enduring Understandings

Students will...

- * Simplify integer expressions containing exponents
- * Multiply & divide expressions containing integer exponents
- * Use Scientific Notation
- * Multiply & divide numbers in scientific notation

Key Vocabulary

- Set
- { }
- Element
- \in
- Subset
- \subset
- Complement of a set (& the notation)
- Intersection
- \cap
- Union
- \cup
- Venn diagram
- Tree diagram
- Multiplication principle
- Addition principle

Prerequisite Skills

It is expected that students will have prior knowledge/experience related to the concepts and skills identified below. It may be necessary to pre-assess in order to determine if time needs to be spent on conceptual activities that help students develop a deeper understanding of these ideas.

- Reading & interpreting all types of graphs
- Measures of central tendency
- Measures of variation
- Frequency distribution
- Predictive probability
- Patterns and sequences
- Theoretical probability
- Box & whisker plots
- Stem-and-leaf plots

Unit 4***DRAFT***

Probability, Sets, & Subsets

January 6 - January 30, 2008

GPS Standards Addressed:

M8D1 a, b, c
M8D2 a & b
M8D3 a & b
M8P1-M8P5
MRC

Suggested Learning Resources/ Performance Tasks

**What do You Expect?*
Investigations 1 & 2

**Topic 7*
Venn Diagrams,
Sets, and Set Notation

**GPS Unit 4*
The Venn Challenge
Weekend Activities

**"EggMan" Activity*
from www.themathlab.com

**GPS Framework Notebook*

Essential Question

"How can expected value be used to help make decisions?"

GPS Standards Addressed:

M8D1. Students will apply basic concepts of set theory.

- a. Demonstrate relationships among sets through use of Venn diagrams.
- b. Determine subsets, complements, intersection, and union of sets.
- c. Use set notation to denote elements of a set.

M8D2. Students will determine the number of outcomes related to a given event.

- a. Use tree diagrams to find the number of outcomes.
- b. Apply the addition and multiplication principles of counting.

M8D3. Students will use the basic laws of probability.

- a. Find the probability of simple independent events.
- b. Find the probability of compound independent events.

Enduring Understandings

Students will understand...

- * Venn diagrams
- * Sets, subsets, complements, intersection, and union of sets
- * Tree diagrams
- * Addition & multiplication principles of counting
- * Probability of simple and compound independent events

Key Vocabulary

- Systems of linear equations
- Inequality
- Linear inequality
- Transversal
- Vertical angles
- Complementary angles
- Supplementary angles
- Alternate interior angles
- Alternate exterior angles
- Corresponding angles

Prerequisite Skills

- Absolute value
- Angle basics
- Ordering integers
- Substitution

Enduring Understandings

Students will be able to...

- * Solve systems of linear equations and inequalities (Graphically and Algebraically)
- * Graph systems of equations
- * Solve and graph inequalities in one & two variables
- * Interpret the solution to systems of equations and inequalities
- * Identify angles formed by a transversal
- * Contrast supplementary & complementary angles
- * Convert Standard form to Slope Intercept form and vice versa
- * Solve for a given variable

Unit 5**DRAFT**

Algebra

January 6 - January 30, 2009

GPS Standards Addressed:

M8A2 a, b, c, d
M8A4 d, e
M8A5 a, b, c, d
M8G1 a, b, c, d
M8P1-M8P5
MRC

Suggested Learning Resources/ Performance Tasks

- * *Shapes of Algebra*
- * Additional Practice Workbook
Pg. 137-170
- * *CRCT Coach* book
Lessons 8, 26, 27
- * *PunchLine Algebra* book A
- * Exemplars:
"AT & T Choice Dilemma"
- * GPS Framework Notebook

Essential Question

"How do you manipulate a given variable in a variety of equations or inequalities?"

GPS Standards Addressed:

M8A2. Students will understand and graph inequalities in one variable.

- a. Represent a given situation using an inequality in one variable.
- b. Use the properties of inequality to solve inequalities.
- c. Graph the solution of an inequality on a number line.
- d. Interpret solutions in problem contexts.

M8A4. Students will graph and analyze graphs of linear equations and inequalities.

- d. Graph equations of the form $ax + by = c$.
- e. Graph the solution set of a linear inequality, identifying whether the solution set is an open or a closed half-plane.

M8A5. Students will understand systems of linear equations and inequalities and use them to solve problems.

- a. Given a problem context, write an appropriate system of linear equations or inequalities.
- b. Solve systems of equations graphically and algebraically, using technology as appropriate.
- c. Graph the solution set of a system of linear inequalities in two variables.
- d. Interpret solutions in problem contexts.

M8G1. Students will understand and apply the properties of parallel and perpendicular lines and understand the meaning of congruence.

- a. Investigate characteristics of parallel and perpendicular lines both algebraically and geometrically.
- b. Apply properties of angle pairs formed by parallel lines cut by a transversal.
- c. Understand the properties of the ratio of segments of parallel lines cut by one or more transversals.
- d. Understand the meaning of congruence: that all corresponding angles are congruent and all corresponding sides are congruent.

Unit 6***DRAFT***

Square Roots & Pythagorean Theorem

March 9 - April 17, 2009

Key Vocabulary

- Square root
- Radical
- Rational
- Irrational
- Pythagorean theorem
- Legs
- Hypotenuse
- Perfect squares

Prerequisite Skills

It is expected that students will have prior knowledge/experience related to the concepts and skills identified below. It may be necessary to pre-assess in order to determine if time needs to be spent on conceptual activities that help students develop a deeper understanding of these ideas.

- Rational numbers
- Substitution
- Area
- Decimals to the tens place
- Recognition of numbers on a number line
- Factors & multiples
- Prime factorization

Enduring Understandings

Students will...

- * Relate the area of a square to its side length
- * Pythagorean Theorem
- * Estimate square roots of whole numbers
- * Locate irrational numbers on a number line
- * Use the Pythagorean Theorem to solve problems

GPS Standards Addressed:

- M8A1 b
- M8N1 a-h and k
- M8G2 a, b
- M8G1 d
- M8P1-M8P5
- MRC

**Suggested Learning Resources/
Performance Tasks**

**Looking for Pythagoras*

Investigations 1.1, 1.2

Investigations 2.1, 2.1

**CRCT Coach Lessons 3 & 4*

**Looking for Pythagoras*

Investigations 3.1, 3.3, 3.4

Investigations 4.1, 4.2

**Topic 4 Congruence*

**CRCT Workout book*

Lessons 3 to 7

**CMP Additional Practice Workbook*

Pgs. 31-34

**Algebra Survival Guide Book*

(Graphic Organizer) Pg. 24

**GPS Framework Notebook*

Essential Question

"How can I find the length of something without directly measuring it?"

GPS Standards Addressed:

M8A1. Students will use algebra to represent, analyze, and solve problems.

b. Simplify and evaluate algebraic expressions.

M8N1. Students will understand different representations of numbers including square roots, exponents, and scientific notation.

a. Find square roots of perfect squares.

b. Recognize the (positive) square root of a number as a length of a side of a square with a given area.

c. Recognize square roots as points and as lengths on a number line.

d. Understand that the square root of 0 is 0 and that every positive number has two square roots that are opposite in sign.

e. Recognize and use the radical symbol to denote the positive square root of a positive number.

f. Estimate square roots of positive numbers.

g. Simplify, add, subtract, multiply, and divide expressions containing square roots.

h. Distinguish between rational and irrational numbers.

j. Express and use numbers in scientific notation.

k. Use appropriate technologies to solve problems involving square roots, exponents, and scientific notation.

M8G1. Students will understand and apply the properties of parallel and perpendicular lines and understand the meaning of congruence.

d. Understand the meaning of congruence: that all corresponding angles are congruent and all corresponding sides are congruent.

M8G2. Students will understand and use the Pythagorean theorem.

a. Apply properties of right triangles, including the Pythagorean theorem.

b. Recognize and interpret the Pythagorean theorem as a statement about areas of squares on the sides of a right triangle.

Unit 7***DRAFT***
Show What We Know
April 20 - May 29, 2009

GPS Standards Addressed:

Math I Standards
M8P1-M8P5
MRC

Key Vocabulary

Review
vocabulary from
previous units

Prerequisite Skills

All 8th grade
concepts and
standards

**Suggested Learning Resources/
Performance Tasks**

Review

- * "Choosing Camp Coaches"
- Cholesterol – The Worst Scenario
- What Are the Coefficients
- Supply and Demand
- How Much Change?
- Choosing Camp Coaches
- Cara's Candles
- DVD Club
- Healthy Heartbeats while Exercising
- Free Throw Percentages
- Field Day
- How Much Do They Cost?
- Lunch Lines Continued
- Planning a Party
- How Many Games?
- Trumpet Lessons

Acceleration

- *GaDOE tasks for Math I
- *CMP – Frogs, Fleas, and Painted Cubes

Essential Question

"How can what we learned this
year impact how we think in
preparation for next year?"

GPS Standards Addressed:

All 8th grade standards

(or Math I standards for
accelerations)

**Enduring
Understandings**

Students will...

- * Use the concepts learned in 8th
grade to complete a culminating
task or preview tasks from Math I
to prepare for 9th grade.