

TIS Math Map	Teacher(s): Courtney Childe and Kristin Hoins	Creation Date: 11/23/09
	Grade Level: 4	Revision Date: 04/30/2010

	First Trimester			Second Trimester			Third Trimester		
Math Unit	Mathematical Thinking (2004)	Landmarks and Large Numbers (2008): Addition, Subtraction, and the Number System	Factors, Multiples and Arrays: Multiplication and Division (2008)	Describing the Shape of the Data (2007): Data Analysis and Probability	Multiple Towers and Division Stories (2007)	Size Shape and Symmetry combined with Moving Between Solids and Silhouettes (2007): 2-D and 3-D Geometry **With Measurement	Fraction Cards and Decimal Squares (2007): Fractions and Decimals **With Supplemental Materials (CSAP Review)	(CSAP Review) How Many Packages? How Many Groups? (2007): Multiplication and Division	Penny Jars and Plant Growth (2007): Patterns, Function and Change/ REVIEW
Timeframe and Month	August (1 - 2 weeks)	September (5 weeks)	October (3 - 4 weeks)	November (3 weeks)	December (3 weeks)	January - February (5 weeks)	February - March (4 weeks)	March - April (5 weeks)	May - June (approx. 4 weeks)
Inquiry Questions	<ul style="list-style-type: none"> • How can we predict the next element in a pattern? • Why do we use symbols to represent missing numbers? • Why is finding an unknown quantity important? • 	<ul style="list-style-type: none"> • How is the place value in the Roman counting system different from the place value system used today? • When is an estimate better than an exact answer? • How close is close enough in an estimate? • How does place value affect the accuracy of an estimate? • How might the most commonly used number system be different if humans had only five fingers instead of ten? • 	<ul style="list-style-type: none"> • Is it possible to make multiplication and division of large numbers easy? • How does the commutative property help with learning the basic multiplication facts? • Does skip counting always produce a pattern? Why? • How do patterns help to skip count from randomly selected places? • 	<ul style="list-style-type: none"> • How do patterns assist in making predictions? • How are patterns shown? • What can you learn by collecting data? • What makes a data representation useful? • How do you choose the best representation for data? • What can the shape of data in a display tell you? • How can you know all of the possible outcomes for an event? • How can knowing the likely outcomes in a situation help you make decisions? • In what situations is every possible outcome 	<ul style="list-style-type: none"> • Is it possible to make multiplication and division of large numbers easy? • How does the commutative property help with learning the basic multiplication facts? • 	<ul style="list-style-type: none"> • What is the difference between the base ten counting system and the system used for telling time? • How might the most commonly used number system be different if humans had only five fingers instead of ten? • What are the ways to compare and classify geometric figures? • Why do we classify shapes? • How does using a coordinate grid help in the study of shapes and their relationships? • Do lines exist 	<ul style="list-style-type: none"> • Why isn't there a "oneths" place in decimal fractions? • How can different fractions represent the same quantity? • How are fractions used as models? • Why are fractions so useful? • What would the world be like without fractions? • 	<ul style="list-style-type: none"> • When is an estimate better than an exact answer? • How close is close enough in an estimate? • How does place value affect the accuracy of an estimate? • Is it possible to make multiplication and division of large numbers easy? • How does the commutative property help with learning the basic multiplication facts? • 	<p>***Teachers may choose to address these standards using review activities, extension or challenge activities, or games.</p>

				<p>equally likely?</p> <ul style="list-style-type: none"> • In what situations are some possible outcomes not equally likely? • Why are fractions a good way to describe the likelihood of an event? 		<p>in the world around us?</p> <ul style="list-style-type: none"> • What shapes fit together well to make designs? • How do you decide when close is close enough? • How can you describe the size of geometric figures? • Why do we need standard units of measure? • Why do we measure time? 			
New Concepts	<ul style="list-style-type: none"> • Review from 3rd grade 	<ul style="list-style-type: none"> • Friendly Numbers • Number sense to 1,000 	<ul style="list-style-type: none"> • Breaking it Up • Big Array/Small Array • Algorithm for advanced kids • Moving away from tally marks 	<ul style="list-style-type: none"> • Mean, median, mode, outliers, range • Likelihood line • Representing probability in a fraction 	<ul style="list-style-type: none"> • Using what we know in multiplication to solve large, division problems 	<ul style="list-style-type: none"> • Area and perimeter • Identifying shapes within shapes • Elapsed Time • Real Life Applications 	<ul style="list-style-type: none"> • Fraction, Decimal, Percent Relationship • Using Fractions in Life • Using Decimals in Life • Using Percentages in Life 	<ul style="list-style-type: none"> • Multiplication Breaking It Up Method (Tree) • Friendly Division Method 	<ul style="list-style-type: none"> •
Lessons, Activities, Tasks	<ul style="list-style-type: none"> • Close to 100 • 101 to 200 Bingo • Collecting Dollars • 5-Minute Computations • Patterns and Skip Counting 	<ul style="list-style-type: none"> • 1,000 Books • Changing Places game • Broken Calculator (10-Minute Math) • Supplemental Place Value Activities • Written form vs. extended form • Close to 1,000 game • Number line strategy 	<ul style="list-style-type: none"> • Array posters • Big Array/Small Array • Quick Images (10-Minute Math) • Counting Around the Class (Skip Counting) • Today's Number (10-Minute Math) • Real-world arrays • Using counters and blocks to make arrays • Factor Pairs game • Multiple Turn Over game • Multiplication Cards – start with strategy • Factors and Multiples of 100, 200, and 300 	<ul style="list-style-type: none"> • Raisins in a Box • Height of 4th Grader (Comparing Heights) • Comparing Cavities • Likelihood Line • Individual or Team Surveys with Graphing • Supplemental 4th grade graphing activities • Excel graph (done during lab time) 	<ul style="list-style-type: none"> • Big Array/Small Array • Doubling and Halving Rule and other mathematical strategies • “Zero Rule” • Two strategies for multiplication: Breaking it Apart/Tree Method • Relationship of Multiplication and Division • Factor Families • What to do with the extras? • Divide 2-digit by 1-digit 	<ul style="list-style-type: none"> • Geometric Robot • United Streaming Area and Perimeter/Tools for Measurement Video with supplemental worksheets • Power Polygons • Supplemental Pattern Block and Geoboard Challenge Activities • Marilyn Burns toothpick and triangle activities • Algebra and Pattern Activities • Measurement Benchmarks 	<ul style="list-style-type: none"> • <i>Piece = Part = Portion</i> read aloud • Fraction Cards • Fraction Number Lines, or Ordering Fractions • Crazy Cakes • Fraction Manipulatives (squares, circles, cards, and geoboards) • Combinations that Equal 1 using $\frac{1}{4}$, $\frac{1}{2}$, $\frac{3}{4}$, $\frac{1}{8}$, $\frac{1}{3}$, and $\frac{1}{6}$ • Decimal Compare and Fill Two games 	<ul style="list-style-type: none"> • Multiplication Rock 'n Roll • Bus (Rally Coaching) • Manipulatives to build story problems • Story problem planner (publish problems) • Multiplication Methods: Traditional and Breaking it Up (Tree Method) • Division Method: Focus on “friendly” method or using multiplication instead of DMSB • “Zero” rule • Number 	<ul style="list-style-type: none"> • 4th Grade Game BINGO (includes a variety of games that we have learned throughout the year) • Create your own game project • End of Year Assessment

Standards
1. Number
Sense, Properties,
and Operations

								Sense/Estimation activities <ul style="list-style-type: none"> • Related problem sets 	
1.1.1: Count, read, and write whole numbers and number words to 100,000. 1.1.2: Compare and order whole numbers 100,000. 1.1.3: Identify and order place values through one million. 1.1.4: Use expanded notation to represent numbers (e.g. 3,045 = 3,000 + 40 + 5) 1.1.6: Round whole numbers to a given place value 1.1.7: Identify numbers as even or odd 1.1.8: Count forward and backward on a hundreds chart from any number by any multiple. (e.g. start at 4 and count by 4's to 36) 1.2.1: Calculate	1.2.3: Find the sum or difference of two whole numbers between 0 and 1,000 with regrouping 1.2.4: Use the inverse relationship of addition and subtraction to compute and check results	1.2.5: Memorize the multiplication and division facts through 10 1.2.7: Multiply four-digit numbers by two-digit numbers 6.1.1: Analyze problems by identifying relationships, distinguishing relevant from irrelevant information, sequencing and prioritizing information, and observing patterns 6.1.2: Determine when and how to break a problem into simpler parts 6.1.3: Draw a picture or diagram to solve a problem			1.2.8: Divide whole numbers by a single-digit number 1.2.11 Explain how multi-digit multiplication and division procedures work based on place value 1.5.1: Use estimation to verify the reasonableness of calculated results 1.5.2: Apply strategies and results from simpler problems to more complex problems 1.5.3: Express solutions clearly and logically using the appropriate mathematical terms and notation 1.5.4: Explain, in clear, written language, how the problem was solved 1.5.5: Indicate the relative advantages of exact and approximate solutions to problems and give answers to a specified degree of accuracy	1.3.8: Identify and make different combinations of currency and coins up to \$10.00 1.3.9: Count change from the cost of the item (up to \$10.00) to the amount of money paid 1.3.10: Determine the total cost when given a unit cost and number of units 1.3.11: Add and subtract decimals using money notation	1.3.1: Understand the relationship between whole numbers, fractions, and decimals 1.3.2: Use concrete materials and drawings to compare, order, and show equivalency between fractions 1.3.3: Use concrete materials to add and subtract proper fractions and mixed numbers with common denominators 1.3.4: Know and understand that fractions and decimals are two different representations of the same concept 1.3.5: Read, write and represent the decimal fractions of tenths and hundredths 1.3.6: Locate and label common fractions and	1.1.5: Use number properties with any of the four basic operations (commutative, associative, properties of zero and one) 1.2.6: Use the inverse relationship of multiplication and division of whole numbers to compute and check results 1.2.7: Multiply four-digit numbers by two-digit numbers 1.2.8: Divide whole numbers by a single-digit number 1.2.9: Understand that subtraction and division of whole numbers is not commutative 1.2.10: Estimate using strategies such as front end or rounding to	•

	<p>and solve problems involving addition, subtraction, multiplication, and division</p> <p>1.2.2: Continue automatic recall of basic addition and subtraction facts</p>				<p>1.5.6: Make precise calculations and check the validity of the results from the context of the problem**</p>		<p>decimals between whole numbers on a number line</p> <p>1.3.7: Using concrete materials and pictures, equate common fractions with their decimal equivalents</p>	<p>justify reasonableness of solution.</p> <p>1.2.11 Explain how multi-digit multiplication and division procedures work based on place value</p>	
<p>2. Patterns, Functions, and Algebraic Structures</p>	<ul style="list-style-type: none"> • 	<p>2.3.1: Identify a rule using addition, subtraction, or multiplication and solve a problem using the rule (e.g. input/output boxes)</p> <p>2.3.2: Select appropriate operational and relational symbols to make an expression true (e.g. $7 \text{ ___ } 5 = 12$)</p>	<p>2.2.1: Determines how the change in one quantity affects the change in another by addition, subtraction, or multiplication</p> <p>2.2.2: Use a symbol to represent and find an unknown quantity in a problem situation.</p> <p>2.2.3: Write the rule for a scenario that is increasing or decreasing.</p> <p>2.3.1: Identify a rule using addition, subtraction, or multiplication and solve a problem using the rule (e.g. input/output boxes)</p> <p>2.3.2: Select appropriate operational and relational</p>	<p>2.1.2: Complete tables or graphs to show patterns</p>	<p>2.3.1: Identify a rule using addition, subtraction, or multiplication and solve a problem using the rule (e.g. input/output boxes)</p> <p>2.3.2: Select appropriate operational and relational symbols to make an expression true (e.g. $7 \text{ ___ } 5 = 12$)</p>	<p>2.1.1: Reproduce, extend, create and describe patterns using pictures, geometric shapes or numbers</p>	<ul style="list-style-type: none"> • 	<ul style="list-style-type: none"> • 	<ul style="list-style-type: none"> •

3. Data, Analysis, Statistics, and Probability

symbols to make an expression true (e.g. $7 - 5 = 12$)

3.1.1: Collect, organize and display data using circle, bar and line graphs, line plots, tables, charts and pictographs
 3.1.2: Determine the best way to display specific data.
 3.2.1: Find the median, mode, and range of a set of data
 3.2.2: Read charts, tables and graphs, interpret the data, formulate questions, and draw conclusions
 3.3.1: Explain the degree of likelihood of events using words such as certain, impossible, possible, maybe, least likely, most likely, and unlikely
 3.3.2: Predict the possible outcomes of flipping a coin, spinning a spinner, or rolling a number cube
 3.3.3: Determine and support which outcomes are most likely, least likely or equally likely when using a

				<p>chance device</p> <p>3.3.4: Compose questions to clarify purpose and generate data</p> <p>3.3.5: Use strategies such as lists, tree diagrams or the counting principle to find all possible combinations of two sets of elements</p> <p>3.3.6: Determine if data gathered is impacted by error or reflects variability</p>					
<p>4. Shape, Dimension, and Geometric Relationships</p>	•	•	•	•	•	<p>4.1.1: Identify and give examples of similar and congruent shapes that have been changed by flips, slides or turns (reflections, translations, and rotations) and construct designs using these transformations.</p> <p>4.1.2: Identify polygons and three-dimensional shapes</p> <p>4.1.3: Identify the lines of symmetry in polygons or other common</p>	•	•	•

						<p>shapes</p> <p>4.1.4: Identify parallel, perpendicular , and intersecting lines and line segments</p> <p>4.1.5: Identify attributes of 2 dimensional shapes such as number of sides, vertices, angles, and parallel sides</p> <p>4.1.6: Describe squares as rectangles and recognize their common attributes</p> <p>4.1.7: Classify angles as obtuse, acute or right and know that a right angle measures 90 degrees</p> <p>4.1.8: Locate objects on a coordinate grid (1st quadrant only) and label ordered pairs</p> <p>4.2.1: Tell time to the nearest minute, including A.M. and P.M., using analog and digital clocks</p> <p>4.2.2:</p>		
--	--	--	--	--	--	--	--	--

						<p>Calculate elapsed time Select an appropriate tool for measuring length, weight, and capacity. 4.3.2: Estimate and measure length to the nearest 1/4 inch and half centimeter 4.4.3: Estimate and measure the perimeter of polygons 4.5.4: Measure the length of sides of squares and rectangles to determine the area 4.5.5: Carry out simple unit conversions within a measurement system (e.g., centimeters to meters, hours to minutes, feet to yards)</p>			
<p>Process Skills 1. Critical Thinking and Reasoning 2. Collaboration</p>	<ul style="list-style-type: none"> • Critical Thinking and Reasoning = • Collaboration = • Invention = • Self Direction = 	<ul style="list-style-type: none"> • Critical Thinking and Reasoning = • Collaboration = • Invention = • Self Direction = 	<ul style="list-style-type: none"> • Critical Thinking and Reasoning = • Collaboration = • Invention = • Self Direction = 	<ul style="list-style-type: none"> • Critical Thinking and Reasoning = • Collaboration = • Invention = • Survey Data and Excel Graphing • Self Direction = 	<ul style="list-style-type: none"> • Critical Thinking and Reasoning = • Collaboration = • Invention = • Self Direction = 	<ul style="list-style-type: none"> • Critical Thinking and Reasoning = • Collaboration = • Invention = • Robot • Self Direction = 	<ul style="list-style-type: none"> • Critical Thinking and Reasoning = • Collaboration = • Invention = • Self Direction = 	<ul style="list-style-type: none"> • Critical Thinking and Reasoning = • Collaboration = • Invention = • Self Direction = 	<ul style="list-style-type: none"> • Critical Thinking and Reasoning = • Collaboration = • Invention = • Self Direction =

<p>3. Invention 4. Self-Direction 5. Information Literacy</p>	<ul style="list-style-type: none"> Self Direction = Completing Problems Independently 					=			
<p>Resources</p>	<p>Investigations Book 1, 2004 Game Materials Computation games on the computer (wiki links for practice)</p>	<p>Investigations Book 5, 2007 Computation games on the computer (wiki links for practice)</p>	<p>Investigations Book 1, 2007 Computation games on the computer (wiki links for practice)</p>	<p>Investigations Book 2, 2007</p>	<p>Investigations, Book 3 2007</p>	<p>Investigations, Book 4, 2007 United Streaming Clips Marilyn Burns supplemental activities</p>	<p>Investigations, Book 6, 2007 Fraction Squares, Foam Pies, Geoboard Supplemental Materials Measurement Fair/Measurement Olympics</p>	<p>Investigations, Book 8, 2007</p>	<p>Investigations, Book 9 with favorite games/activities from Books 1 - 8</p>
<p>Assessments</p>	<p>Beginning of Year Assessment Combination of Investigations Assessment and Teacher Generated Assessment Timed Weekly Test Regular Checkpoints with Tickets Out the Door</p>	<p>Combination of Investigations Assessment and Teacher Generated Assessment Timed Weekly Test Regular Checkpoints with Tickets Out the Door</p>	<p>Combination of Investigations Assessment and Teacher Generated Assessment Timed Weekly Test End of Trimester Assessment Regular Checkpoints with Tickets Out the Door</p>	<p>Combination of Investigations Assessment and Teacher Generated Assessment Timed Weekly Test Regular Checkpoints with Tickets Out the Door</p>	<p>Combination of Investigations Assessment and Teacher Generated Assessment Timed Weekly Test Regular Checkpoints with Tickets Out the Door</p>	<p>Combination of Investigations Assessment and Teacher Generated Assessment Timed Weekly Test Regular Checkpoints with Tickets Out the Door</p>	<p>Combination of Investigations Assessment and Teacher Generated Assessment Timed Weekly Test Regular Checkpoints with Tickets Out the Door</p>	<p>Combination of Investigations Assessment and Teacher Generated Assessment Timed Weekly Test Regular Checkpoints with Tickets Out the Door</p>	<p>Combination of Investigations Assessment and Teacher Generated Assessment Timed Weekly Test Regular Checkpoints with Tickets Out the Door</p>
<p>Vocabulary</p>	<p>Numbers 1 – 300 Compare Add Plus Subtract Minus Difference Lowest Close To 100 Coins Cents Penny Pattern – skip counting Shape</p>	<p>Landmark Friendly Numbers Skip Counting Place Value Estimation Addition Strategies - Break it Up - Number Line - Traditional Algorithm Subtraction Strategies</p>	<p>Factors Multiples Estimate</p>	<p>Graph (Bar, Line Plot, Pictograph) Data Average Probability Mean Median Mode Range Minimum Maximum</p>	<p>Skip Counting Multiples Fact Families Related Problem Sets Double-Digit Multiplication (2 x 1 and 3 x 1) Division Strategies - Friendly Method - Traditional Algorithm (Packages and Groups lays foundation)</p>	<p>Similar Symmetry Parallel lines Intersecting lines Perpendicular lines Vertices Coordinates Congruent Equilateral triangle Isosceles triangle Scalene triangle Right triangle Right Angle Obtuse Angle Acute Angle Edge Face Quadrilateral Polygon Pentagon Hexagon Octagon Trapezoid Rectangle Area Perimeter Flip Slide Turn Distance</p>	<p>Fraction Halves Fourths Eighths Quarter Order Compare</p>	<p>Long multiplication Long division</p>	

						Scale Measure			
--	--	--	--	--	--	---------------	--	--	--