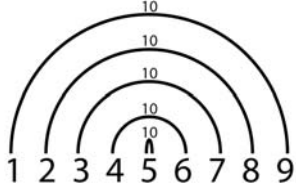


Unit 1: Numbers and Routines								
Overview: To review number patterns, number sequences, number grids, and number lines; to review months, weeks, and days, and telling time; to practice addition facts; to give equivalent names for numbers; and to compare numbers using the symbols <, >, and =								
Big Ideas		Place Value: There is a predictable pattern in the Base-Ten numeration system. The value of the digits 0-9 is determined by their position. Comparison: Numbers can be compared by their relative sizes, by analyzing corresponding place values or by their position on the number-line. Equivalence 1: Any number or equation can be represented in multiple ways. Equivalence 2: Numbers represent values that can be put together and taken apart.						
	Performance Expectations	Learning Target	Comments	Vocabulary	Games	Advanced Prep	RSAs	Writing/Reasoning–Math Boxes
1♦1	1.1.A Count by ones forward and backward from 1 to 120, starting at any number, and count by twos, fives, and tens to 100. 1.1.E Write, compare, and order numbers to 120	Use a number line to sequence numbers to 1000. PE 1.1.A▲		Math Message, number line	P3R <i>Number Line Squeeze</i> : MM p464 PE 1.1.E	Start collecting for your “Mathematics All Around” Bulletin Board. See TLG p18 for details. Planning Ahead: For 1♦2, prepare coins for student toolkits (4 Q, 10 D, 5N, 20P) Collect socks for slate activities (white boards).	Write and order numbers. PE 1.1.A	
1♦2	2.2.I Determine the value of a collection of coins totaling less than \$1.00.	Use a counting-up strategy to calculate the total value of coin combinations. PE 2.2.I		slate, tool kit, Lost-and-Found Box, Pattern-Block Template		Prepare and label Toolkits. Provide ‘Lost-and-Found’ box for misplaced Toolkit items. See TLG p23. Part 3 (EP) uses the book. <i>Arctic Fives Arrive</i> .	Count coin combinations. PE 2.2.I	
1♦3	2.3.D Describe the relative size among minutes, hours, days, weeks, months, and years. 2.3.E Use both analog and digital clocks to tell time to the minute.	Use clocks to tell & show time to the nearest half-hour. PE 2.3.D & 2.3.E▼	Note: The 2 nd grade standard requires telling time to the minute. The lessons in EDM only go as far as to the nearest 5 minutes. To adequately address PE 2.3.E, have an analog clock in your class (if you have a digital clock cover it up) and have students enter the date and time in their Math Journal every day. Build up the level of accuracy required as the year progresses until the standard is met. Use Gr2 Singapore Extra Practice Book p87-88.	calendar, ordinal numbers		Post name of the months in classroom.	Tell time to the nearest half-hour. PE 2.3.E	
1♦4	1.2.F Apply and explain strategies to compute addition facts and related subtraction facts for sums to 18. 2.2.A Quickly recall basic addition facts and related subtraction facts from sums through 20. 2.2.F Create and state a rule for patterns that can be generated by addition and extend the pattern. 2.2.I Determine the value of a collection of coins totaling less than \$1.00.	Compare sums to 20 (<i>Addition Top-It</i>). PE 2.2.A & 2.2.F			P1, 3R <i>Addition Top-It</i> : MRB p122, SMJ p5, MM p449 PE 1.2.F; P3E <i>Coin Top-It</i> : MM p452-3 PE 2.2.I	Post ‘Working With a Partner’ poster. Display Number-Grid Poster (yearlong). Copy MM p416 or p418 on cardstock and laminate or use sheet protectors for students to always have available.	Recall basic addition facts. PE 2.2.A	
1♦5	1.2.E Add three or more one-digit numbers using the commutative and associative properties of addition. 2.1.B Connect place value models with their numerical equivalents to 1,000. 2.1.C Identify the ones, tens, and hundreds place in a number and the digits occupying them. 2.2.H Name each standard U.S. coin, write its value using the \$ sign and ¢ sign, and name combinations of other coins with the same total value	Use bills to make exchanges on a place value mat. PE 2.1.B	This is a great opportunity to address PE 2.1.C to support place value. After completing SMJ p6, have students identify place value digits (i.e. “Which digit in \$325 tells me how many ten dollar bills I have?”) For additional practice use Gr2 Singapore Extra Practice Book p74 problems 1-5		P1, 2 <i>Money Exchange Game</i> : MRB p128, MM p448-461 PE 2.1.B; P2 <i>Addition Top-It</i> : MM p449 PE 1.2.E; P3R <i>Penny-Nickel Exchange Game</i> : MRB p128 PE 2.2.H	Prepare money for toolkits. See TLG p38. Teaching Master of MM p458.	Count bill combinations. PE 2.1.B	

1♦6	<p>1.1.F Fluently compose and decompose numbers to 10. 1.2.F Apply and explain strategies to compute addition facts and related subtraction facts for sums to 18.</p>	<p>Find equivalences for 10-Complements of 10 (<i>Penny Plate</i>). PE 1.1.F</p>		<p><i>My Reference Book</i>, Table of Content, Math Boxes</p>	<p>P2 <i>Penny Plate</i>: MRB p146-7, MM p468 PE 1.1.F; P3R <i>Two-Fisted Penny Addition</i> PE 1.1.F & 1.2.F</p>	<p>Part 2, <i>Penny-Plate</i> game requires containers such as paper or plastic plates.</p>	<p>Find missing addends. PE 1.1.F</p>	
1♦A	<p>1.1.F Fluently compose and decompose numbers to 10.</p>	<p>Find equivalences for 10-Complements of 10. PE 1.1.F</p>	<p>Supplemental Activities to support Fluency with complements of 10: 1 Day Complements of 10 are extremely important for a variety of strategies and algorithms as well as for strength in number sense. Take an additional day for these activities to practice, reinforce and make sure students master this skill. You can use a diagram like the one shown here (Addition Rainbow for 10) as a reference guide for student having difficulties memorizing the pairs. A variation on the classic "Concentration" game where students find matches when cards add up to 10 (use cards 1-9) is also good practice. Consider a variation of a Top-It game where 2 students face each other each with their own deck of cards face down (cards 0-10). Students take turns flipping the top card of their deck and whoever calls out the correct complement the fastest gets to keep the card. For example, student A flips an 8; whoever says 2 the fastest keeps the card; then student B flips a card. PE 1.1.F</p>					
1♦7	<p>1.2.E Add three or more one-digit numbers using the commutative and associative properties of addition. 1.2.I Recognize, extend, and create number patterns. 2.1.A Count by tens or hundreds forward and backward from 1 to 1,000, starting at any number.</p>	<p>Use a number grid poster to find patterns in the base-10 number system. PE 1.2.I & 2.1.A</p>		<p>number scroll, even number, odd number</p>	<p>P2 <i>Addition Top-It</i>: MRB p122-3, MM p449 PE 1.2.E</p>	<p>Prepare poster for Group Work. Classroom Management Tip: See margin of TLG p48 for red cup / green cup group agreement system, when help from teacher is needed. Prepare adequate copies of MM p9 & p10 for number scrolls.</p>	<p>Complete & describe a number pattern. PE 1.2.I</p>	<p>TLG p49, "Explain your strategies for finding the missing numbers on the number grid in No. 2."</p>
1♦8	<p>K.1.G Locate numbers from 1 to 31 on the number line. 1.1.A count by ones forward and backward from 1 to 120, starting at any number, and count by twos, fives, and tens to 100. 1.1.B Name the number that is one less or one more than any number given verbally up to 120. 2.1.A Count by tens or hundreds forward and backward from 1 to 1,000, starting at any number.</p>	<p>Use patterns in the base-10 number system to complete number grid puzzles. PE 1.1.B & 2.1.A</p>			<p>P2 <i>Number Grid Game</i>: MRB p142-3, MM p418 PE 1.1.A & 2.1.A</p>	<p>Part 3 R, MM p12, cut out and laminate or use cardstock.</p>	<p>Identify number grid-patterns. PE K.I.G▲</p>	
1♦9	<p>1.2.B Use the equal sign (=) and the word equals to indicate that two expressions are equivalent.</p>	<p>Use a calculator to show equivalent names for numbers. PE 1.2.B</p>		<p>equivalent name, program</p>		<p>Before lesson, practice with student calculators, especially the 'repeat' key. Part 3 R requires a pan balance and a collection of identical objects.</p>	<p>Find equivalent names for numbers. PE 1.2.B</p>	
1♦10	<p>2.2.F Create and state a rule for patterns that can be generated by addition and extend the pattern. 2.2.I Determine the value of a collection of coins totaling less than \$1.00</p>	<p>Identify patterns when counting by different numbers. PE 2.2.F</p>				<p>Planning Ahead: Before 1♦12, prepare Class Thermometer Poster with F°. Unit 4 uses Poster with C° and F°. See TLG p64 for assembly instructions.</p>	<p>Calculate the value of coin calculations. PE 2.2.I</p>	<p>TLG p63, "For No. 3, show 35¢ with the fewest number of coins. Explain how you know that you found the fewest number of coins."</p>

1↔11	<p>1.2.E Add three or more one-digit numbers using the commutative and associative properties of addition.</p> <p>2.1.C Identify the ones, tens, and hundreds place in a number and the digits occupying them.</p> <p>2.1.F Compare and order numbers from 0 to 1,000.</p>	Use symbols to compare number values. PE 2.1.F	Have students who are struggling to remember the pictorial representation of each coin write the values above each one before adding.	is equal to, is less than, is greater than	P2 <i>Addition Top-It</i> . MRB p122-3, MM p449 PE 1.2.E ; P3E <i>Number Top-It</i> (5-digit numbers): MM p465-6 PE 2.1.C & 2.1.F	Compare numbers in the tens and hundreds. PE 2.1.F		
1↔12	<p>1.1.I Classify a number as odd or even and demonstrate that it is odd or even</p> <p>1.2.F Apply and explain strategies to compute addition facts and related subtraction facts for sums to 18</p> <p>2.1.B Connect place value models with their numerical equivalents to 1,000.</p>	Count numbers in the 100s using base-10 blocks (Exploration B). PE 2.1.B	Measuring temperature with a thermometer is a third grade standard. First grade focused on measuring temperature at ten degrees intervals. Second grade will focus on measuring temperature to the nearest degree with positive numbers. This will support third graders to measure temperature with positive and negative numbers.	temperature, thermometer, Fahrenheit, Explorations, base-10 blocks, cube, long, flat	P2 <i>Addition Top-It</i> . MRB p122-3, MM p449 PE 1.2.F	EXPLORATIONS: Plan for group work in Explorations. Consider creating a poster like the one on TLG p73. Cover Celsius side of Class Outdoor Thermometer with masking tape.	Identify even and odd numbers. PE 1.1.I	

Unit 2: Addition and Subtraction Facts								
Overview: To make up, represent, and solve addition and subtraction number stories; to review and apply alternative strategies for addition and subtraction; and to practice addition and subtraction facts for sums and differences up to and including ten.								
Big Ideas		Equivalence 2: Numbers represent values that can be put together and taken apart. Number Relationships: Addition and subtraction are inverse operations of each other and multiplication and division are inverse operations of each other. Properties: Properties of operations and equality are rules based on relationships that are always true.						
Performance Expectations		Learning Target	Comments	Vocabulary	Games	Advanced Prep	RSAs	Writing/Reasoning – Math Boxes
2♦1	2.2.B Solve addition and subtraction word problems that involve joining, separating, and comparing and verify the solution.	Create, write equations (number models) for and solve addition number stories. PE 2.2.B	Model number stories multiple times for students. Have students write the word “equation” above the words “number model” on SMJ p21.	addition number story, story, unit box, number model, equation			Represent an “easy facts” number story using words, drawing, or tallies. PE 2.2.B	
2♦2	1.2.F Apply and explain strategies to compute addition facts and related subtraction facts for sums to 18. 2.2.A Quickly recall basic addition facts and related subtraction facts for sums through 20. Quickly recall basic addition facts and related subtraction facts for sums through 20. 2.2.F Create and state a rule for patterns that can be generated by addition and extend the pattern.	Use properties of +0 and +1 facts to develop automaticity. PE 2.2.A & 2.2.F		addition fact, +0 facts, +1 facts, +0 shortcut, +1 shortcut, fact power	P1 <i>Beat the Calculator</i> . MRB p124-5, SMJ p24 PE 2.2.A ; P3R <i>Domino Top-It</i> . MRB p122-3 PE 1.2.F	Prepare calculators for tool-kits. See margin p101 for poster of fact triangle roles – you might want one for your classroom.	Record addition facts. PE 2.2.A	
2♦3	1.1.A Name the number that is one less or one more than any number given verbally up to 120. 1.2.F Apply and explain strategies to compute addition facts and related subtraction facts for sums to 18. 2.2.A Quickly recall basic addition facts and related subtraction facts for sums through 20. Quickly recall basic addition facts and related subtraction facts for sums through 20.	Use patterns in an addition facts table to develop automaticity with doubles facts. PE 2.2.A		Doubles facts, sum, Facts Table, row, column, diagonal	P1, 2 <i>Doubles or Nothing</i> . SMJ p29, MM p456 PE 1.2.F	Prepare a large Facts Table from SMJ p27 and see TLG p105 for options. Prepare “Unit Box” on board and use accordingly.	Count back by 5s. PE 1.1.A	TLG p109, “How did you know what symbol to put in each in No. 4?”
2♦4	2.2.A Quickly recall basic addition facts and related subtraction facts for sums through 20. 2.2.F Create and state a rule for patterns that can be generated by addition and extend the pattern.	Use patterns in an addition facts table to develop automaticity with +9 facts. PE 2.2.A & 2.2.F	Start with the Readiness activity which provides a concrete model and rationale of the +9 shortcut. Make sure students are familiar with this before memorizing the rule “down one and left one” shortcut on the number grid.	turn-around facts, +9 facts, +9 shortcut	P2 <i>Beat the Calculator</i> . MRB p124-5, SMJ p24 PE 2.2.A	Prepare “Unit Box” on board and use accordingly.	Solve +0 and +1 facts. PE 2.2.A	TLG p114, “Describe how you used your calculator to find the answers for No. 1.”
2♦5	1.2.F Apply and explain strategies to compute addition facts and related subtraction facts for sums to 18 2.2.A Quickly recall basic addition facts and related subtraction facts for sums through 20. Quickly recall basic addition facts and related subtraction facts for sums through 20.	Develop strategies for addition that use doubles facts. PE 2.2.A		doubles-plus-1 facts, doubles-plus 2 facts	P2 <i>Domino Top-It</i> . MRB p122-3 PE 1.2.F	Prepare “Unit Box” on board and use accordingly.	Record doubles facts. PE 2.2.A	
2♦6	1.2.D Demonstrate the inverse relationship between addition and subtraction by undoing an addition problem with subtraction and vice versa. 1.2.F Apply and explain strategies to compute addition facts and related subtraction facts for sums to 18. 2.2.A Quickly recall basic addition facts and related subtraction facts for sums through 20. Quickly recall basic addition facts and related subtraction facts for sums through 20.	Use dominoes to generate related addition and subtraction facts (Fact Families). PE 1.2.D & 2.2.A		subtraction number story, -0 facts, -1 facts, -0 shortcut, -1 shortcut	P2 <i>Beat the Calculator</i> . MRB p124-5, SMJ p24 PE 2.2.A ; P2 <i>Domino Top-It</i> . MRB p122-3 PE 1.2.F	Before 2♦7, have students prepare Fact Triangles from Activity Sheets 1 & 2 in SMJ. Provide zip bags for storage.	Recall & understand turn-around facts. PE 1.2.D	

2♦7	<p>1.2.H Solve and create word problems that match addition or subtraction equations.</p> <p>2.2.A Quickly recall basic addition facts and related subtraction facts for sums through 20. Quickly recall basic addition facts and related subtraction facts for sums through 20.</p>	<p>Use fact triangles to develop automaticity with related addition and subtraction facts (Fact Families). PE 2.2.A</p>		<p>fact triangle & fact family</p>		<p>Teaching Master of MM p423, Fact Triangle.</p>	<p>Write a number story to explain a number sentence. PE 1.2.H</p>	<p>TLG p129, "In No. 3, how does writing two addition facts help you write two subtraction facts?"</p>
2♦8	<p>2.2.A Quickly recall basic addition facts and related subtraction facts for sums through 20.</p> <p>2.2.C Add and subtract two-digit numbers efficiently and accurately using a procedure that works with all two-digit numbers and explain why the procedure works</p> <p>2.4.C Model and describe multiplication situations in which sets of equal size are joined.</p>	<p>Use repeated addition strategies (i.e. doubles facts) to solve equal groups problems (Exploration C). PE 2.4.C</p>	<p>Although Exploration A addresses a 3rd grade standard it supports basic concepts of weight that are appropriate at this time. Optional: Exploration B, requires students to measure in units, which is a third grade standard. .</p>	<p>ounce, pound, pan balance, heavier, lighter, in balance (balanced), spring scale</p>	<p><i>P2 Beat the Calculator:</i> MRB p124-5, SMJ p24 PE 2.2.A</p>	<p>EXPLORATIONS: Exploration A: collect objects found in classroom between ½ ounce and 8 ounces such as student tape measure, 2-in binder clip, calculator, card deck, scissors, mug, pad of paper, small books, etc.</p>	<p>Count by 1s on a number grid. PE 2.2.C</p>	<p>TLG p136, "Describe any patterns you see in the number grid piece in No. 1."</p>
2♦9	<p>1.1.F Fluently compose and decompose numbers to 10.</p> <p>1.2.B Use the equal sign (=) and the word equals to indicate that two expressions are equivalent.</p> <p>2.2.A Quickly recall basic addition facts and related subtraction facts for sums through 20.</p>	<p>Generate addition or subtraction equivalencies for specific values (<i>Name That Number</i>). PE 1.2.B</p>	<p>Have students write one equation under their name-collection box using the target number and one of their examples to review PE 1.2.B.</p>	<p>name-collection box</p>	<p><i>P1 Name That Number:</i> MRB p138, MM p462 PE 2.2.A; <i>P3R Two-Fisted Penny Addition</i> PE 1.1.F</p>	<p>Prepare 'Unit Box' on board and use accordingly.</p>	<p>Write addition and subtraction number sentences; generate equivalent names for a given number. PE 1.2.B</p>	
2♦10	<p>2.2.A Quickly recall basic addition facts and related subtraction facts for sums through 20.</p> <p>2.2.F Create and state a rule for patterns that can be generated by addition and extend the pattern.</p> <p>1.2.D Demonstrate the inverse relationship between addition and subtraction by undoing an addition problem with subtraction and vice versa.</p>	<p>Solve repeated addition or subtraction problems based on a rule (Frames-and-Arrows). PE 2.2.F▲</p>	<p>Although PE 2.2.F only focuses on addition, Frames and Arrows provide opportunities to work with patterns with both addition and subtraction. These activities are grade level appropriate and support the inverse relationship between these operations. PE 1.2.D.</p>	<p>Frames-and-Arrows diagrams, frame, arrow, arrow rule</p>	<p><i>P2 Name That Number:</i> MRB p138, MM p462 PE 2.2.A</p>	<p>Prepare 'Unit Box' on board and use accordingly. For Part 1, prepare Teaching Master of MM p43.</p>	<p>Extend a numeric pattern using addition and subtraction. PE 2.2.F</p>	
2♦11	<p>2.2.F Create and state a rule for patterns that can be generated by addition and extend the pattern.</p>	<p>Develop strategies to solve for missing numbers in function machine problems. PE 2.2.F▲</p>	<p>At this point it is important to have the students understand how the function machine really works, what the position of the missing number (i.e. the "rule", the "in" or the "out") really means and to develop strategies to solve for these. Plan to spend more time for discussion on strategies rather than solving them. A well-based strategy plan will allow students to have a reference to fall back on for all future practice with these problems.</p>	<p>"What's My Rule?", function machine</p>		<p>For Part 1, "What's My Rule?" prepare Teaching Masters of MM 425 & 426 (optional).</p>	<p>Find missing numbers for "What's My Rule?" problems. PE 2.2.F▲</p>	<p>TLG p153, "In No. 1, if you want to pay with the least coins possible, what coins would you use to pay \$1.50? Explain."</p>
2♦12	<p>1.2.D Demonstrate the inverse relationship between addition and subtraction by undoing an addition problem with subtraction and vice versa.</p> <p>1.2.F Apply and explain strategies to compute addition facts and related subtraction facts for sums to 18.</p> <p>2.2.A Quickly recall basic addition facts and related subtraction facts for sums through 20.</p> <p>2.2.C Add and subtract two-digit numbers efficiently and accurately using a procedure that works with all two-digit numbers and explain why the procedure works.</p>	<p>Use counting-up and counting-back strategies to solve subtraction problems. PE 2.2.C</p>	<p>The Counting-Up Activity in Part 1 is extremely important to support the Focus Algorithm for Subtraction. Be sure your students are very comfortable with this method. Spend extra time if needed.</p>	<p>difference</p>	<p><i>P2 Beat the Calculator:</i> MRB p124-5, SMJ p24 PE 2.2.A; <i>P3R Difference Game:</i> MRB p130-1 PE 1.2.F; <i>P3E Number-Grid Difference Game:</i> MRB p140-1, MM p418&463 PE 2.2.C</p>	<p>Before 2♦13, Part 2, have students prepare the Fact Triangles on Activity Sheets 3 & 4.</p>	<p>Write a fact family from a Fact Triangle. PE 1.2.D</p>	<p>TLG p158, "How does a doubles fact like the one in No. 1 help you solve other problems?"</p>

2♦13	<p>1.2.H Solve and create word problems that match addition or subtraction equations.</p> <p>2.2.A Quickly recall basic addition facts and related subtraction facts for sums through 20.</p> <p>2.2.D Add and subtract two-digit numbers mentally and explain the strategies used.</p>	<p>Use patterns in an addition facts table to develop automaticity with -9 & -8 facts. PE 2.2.A & 2.2.D</p>	<p>As in lesson 2♦4, start with the Readiness Activity to provide a concrete model and rationale of the -9 and -8 shortcuts. Make sure students are familiar with this before memorizing the rule on the number grid.</p>	<p>-9 facts, -9 shortcut, -8 facts, -8 shortcut</p>		<p>For 3♦1, organize base-ten blocks for partners. See TLG p165.</p>	<p>Demonstrate understanding of the – and = symbols in solving subtraction problems. PE 1.2.H</p>	
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Unit 3: Place Value, Money, and Time								
Overview: To review place value in 2-digit and 3-digit numbers; to review coin values and exchanges among coins; to tell time and to write time in digital-clock notation; and to gather data by counting and to analyze data.								
Big Ideas		Place Value: There is a predictable pattern in the Base-Ten numeration system. The value of the digits 0-9 is determined by their position. Comparison: Numbers can be compared by their relative sizes, by analyzing corresponding place values or by their position on the number-line. Data: Data can be collected, classified, analyzed & displayed using tables, charts & graphs.						
Performance Expectations	Learning Target	Comments	Vocabulary	Games	Advanced Prep	RSAs	Writing/Reasoning Prompt – Math Boxes	
3♦1 1.1.E Write, compare, and order numbers to 120. 2.1.B Connect place value models with their numerical equivalents to 1,000. 2.1.C Identify the ones, tens, and hundredths place in a number and the digits occupying them. 2.1.D Write three-digit numbers in expanded form.	Use base-10 blocks, drawings and digit cards to represent 2- and 3-digit numbers. PE 2.1.B & 2.1.C	2 Day Lesson To address PE 2.1.D expanded form, use Supplement 3♦1: Expanded Notation to be completed after SMJ p53. In addition begin to look for opportunities in Math Boxes where students can write numbers in expanded form in addition to what is required. For example in problem #3 in SMJ p84, #3 in SMJ p104, and #1&3 in SMJ p112.	base-10 system, cube, long, flat, base	P2 <i>Digit Game</i> : MRB p132-3 PE 1.1.E	2-Day Lesson Prepare sets of Base-10 blocks for partners. Prepare teaching Master of Place-Value Mat. See TLG p184. Planning Ahead: For 3♦2, prepare poster or Teaching Master of MM p58.	Understand place value PE 2.1.B		
3♦2 2.2.H Name each standard U.S. coin, write its value using the dollar-and-cents notation, and name combinations of other coins with the same total value. Name each standard U.S. coin, write its value using the \$ sign and the ¢ sign, and name combinations of other coins with the same total value. 2.2.I Determine the value of a collection of coins totaling less than \$1.00. Determine the value of a collection of coins totaling less than \$1.00.	Draw coins to show coin combinations for priced market items. PE 2.2.I & 2.2.H	Start with Play <i>Penny-Dime-Dollar Exchange</i> from the Readiness Activity to provide a connection between the place value model and money notation (decimals). Great opportunity to write equations similar to lesson 3♦1. (i.e. if you have one dollar, five dimes and 3 pennies, students can write $100+50+3=153$ pennies or \$1.53) This is the only time this game is referenced in second grade. Play it at least three more times during the year.	nickel, penny, dime, quarter, \$1 bill	P2 <i>Spinning for Money</i> : SMJ p55, MM p472 PE 2.2.H; P3R <i>Penny-Nickel Exchange</i> : MRB p128-9, MM p428 PE 2.2.H; P3R <i>Penny-Dime-Dollar Exchange</i> : MRB p144-5, MM p428 PE 2.2.H	For Part 1, prepare Teaching Master of MM p58, "Fruit and Vegetable Stand". Planning Ahead: Lesson 3♦2 requires a demonstration clock with hour hand only. Use MM p60 & a paper fastener or draw a clock face on the board. Prepare student clocks for tool-kits.	Find values of coin combinations. PE 2.2.I		
3♦A 2.3.E Use both analog and digital clocks to tell time to the minute.	Show and tell time to the nearest quarter hour. PE 2.3.E	Supplemental Lesson to support Telling Time to the Minute Gr1 Lesson 4♦8: Telling Time on the Quarter Hour First Grade has focused on telling time to the hour and half-hour. This lesson was skipped from grade 1 and will support the content on time coming up at this grade Do all of Part 1						
3♦3 1.1.H Group and count objects by tens, fives, and twos. 2.3.E Use both analog and digital clocks to tell time to the minute. Use both analog and digital clocks to tell time to the minute.	Show and tell time to the nearest 5-minute mark. PE 2.3.E	Extension to 2 Days: This is the last lesson that actively teaches time (PE 2.3.E). Spend one day on "Estimating Time with an Hour Hand" only using the same vocabulary as Lesson 3♦A. Spend day two focusing on telling and writing time to the nearest five minutes. Use Gr2 Singapore Exercises 28-30 p87-90. Begin having students write the time and date on each of their papers. Having an analog clock in your classroom, rather than a digital clock, is crucial. Also, provide practice during Daily Routines.	minute hand, hour hand, clock face, analog clock, digital clock		2-day Lesson Math Message uses student clocks. Use MM p61 to prepare take-home clocks for 3♦3 Home-Link.	Record tally marks and correctly group tallies by 5s. PE 1.1.H	TLG p200, "Explain how you found the answers to No. 3."	
3♦4 2.1.B Connect place value models with their numerical equivalents to 1,000. 2.1.E Group three-digit numbers into hundreds, tens, and ones in more than one way. 2.3.E Use both analog and digital clocks to tell time to the minute.	Use base-10 drawings to represent 2-digit numbers (Exploration A). PE 2.1.B & 2.1.E			P3R <i>Base-10 Exchange</i> : MM p428 PE 2.1.E		Show time to the nearest half-hour. PE 2.3.E	TLG p206, "Explain how you found how many more points Room 106 scored than Room 104 in No. 4."	

3↕5	<p>1.2.B Name the number that is one less or one more than any number given verbally up to 120.</p> <p>2.2.I Determine the value of a collection of coins totaling less than \$1.00. Determine the value of a collection of coins totaling less than \$1.00.</p> <p>2.4.B Collect, organize, represent, and interpret data in bar graphs and picture graphs.</p>	<p>Answer questions about pocket data represented on a tally chart and bar graph. PE 2.4.B</p>	<p>Reinforce interpreting the graphs. Although median is a fourth grade standard, it is grade level appropriate to introduce it at this time as the middle number of an ordered set of data. Have students include at least one base ten pictorial model when working with name collection boxes often.</p>	<p>predict, middle number, bar graph, range</p>	<p><i>P2 Dollar Rummy</i> (Complements of 10): SMJ p65, MM p454-5 PE 2.2.I</p>	<p>For Math Message, MM p71, 1 per 2 students. Teaching Masters of MM p72 & 72.</p>	<p>Show equivalent names for 20. PE 1.2.B</p>	
3↕6	<p>2.2.F Create and state a rule for patterns that can be generated by addition and extend the pattern</p>	<p>Solve Frames-and-Arrows problems with 2 rules. PE 2.2.F▲</p>				<p>For Math Message, MM p75, 1 per 2 students. Prepare Teaching Master of MM p75 – 77 and 431, or draw a 2-rule Frames-and-Arrows diagram.</p>	<p>Create number patterns and rules in Frames-and-Arrows problems. PE 2.2.F</p>	
3↕7	<p>1.1.E Write, compare, and order numbers to 120.</p> <p>1.2.F Add three or more one-digit numbers using the commutative and associative properties of addition.</p> <p>2.2.C Add and subtract two-digit numbers efficiently and accurately using a procedure that works with all two-digit numbers and explain why the procedure works.</p>	<p>Use the counting-up method of subtraction to find differences between money amounts (make change). PE 2.2.C</p>	<p>This is a challenging lesson for students. Start small and model frequently. Consider adding “making change” problems to your Daily Routines.</p>	<p>make change by counting up</p>	<p><i>P2 Digit Game</i>: MRB p132-3 PE 1.1.E; P3R <i>High Roller</i>PE 1.2.F</p>		<p>Understand place value. PE 2.2.C</p>	<p>TLG p.222, “Explain how 6 + 8 helped you solve 80 + 60 in No. 4. How will this strategy help you solve 600 + 800?”</p>
3↕8	<p>2.2.H Name each standard U.S. coin, write its value using the dollar-and-cents notation, and name combinations of other coins with the same total value.</p> <p>2.2.I Determine the value of a collection of coins totaling less than \$1.00. Determine the value of a collection of coins totaling less than \$1.00.</p>	<p>Share and justify strategies to determine coin combinations for money amounts. PE 2.2.I & 2.2.H</p>	<p>Model for students putting in exact change vs. not exact change so students can experience the difference first hand. Share and justify strategies are mentioned in several Learning Targets. At times, the TLG mentions sharing opportunities but there may not be a detailed description of a possible discussion. As part of High Leverage Moves, have more than one student not only share, but to also explain why or how they determined their responses.</p>	<p>exact change light</p>		<p>For Math Message Follow-Up, use document camera to display Master of MM p84.</p>	<p>Find values of coin combinations. PE 2.2.I</p>	<p>TLG p228, “Find how many children ate scoops of ice cream in No. 3. Explain how you found the answer.”</p>


Unit 4: Addition and Subtraction								
Overview: To solve number stories; to read and show temperatures; and to develop different strategies for adding 2- and 3-digit numbers.								
Big Ideas		Equivalence 1: Any number or equation can be represented in multiple ways. Place Value: There is a predictable pattern in the Base-Ten numeration system. The value of the digits 0-9 is determined by their position. Estimation: A calculated guess can be made by using numbers that are close to actual numbers but easier to compute.						
Performance Expectations		Learning Target	Comments	Vocabulary	Games	Advanced Prep	RSAs	Writing/Reasoning Prompt – Math Boxes
4♦1	2.2.B Solve addition and subtraction word problems that involve joining, separating, and comparing and verify the solution.	Use change-to-more diagrams to solve addition stories. PE 2.2.B		change-to-more number story, change diagram, mental arithmetic		Display a change diagram. See TLG p248 for options.	Solve number stories using manipulatives. PE 2.2.B	
4♦2	2.2.B Solve addition and subtraction word problems that involve joining, separating, and comparing and verify the solution. Solve addition and subtraction word problems that involve joining, separating, and comparing and verify the solution. 2.2.C Add and subtract two-digit numbers efficiently and accurately using a procedure that works with all two-digit numbers and explain why the procedure works. Add and subtract two-digit numbers efficiently and accurately using a procedure that works with all two-digit numbers and explain	Use parts-and-total diagrams to solve addition stories. PE 2.2.B		parts-and-total diagram, parts-and-total number story	P2 <i>Addition Spin</i> . MRB p120-1, MM p447-8 PE 2.2.C	Display a parts-and-total diagram. See TLG p248 for options. For Part 3 (R) prepare paper plates for parts-and-total diagrams. Planning Ahead: Save extra MM copies for future lessons. Prepare Class Thermometer Poster. See TLG p 259.	Complete parts-and-total diagram with or without the help of number grid and/or manipulatives. PE 2.2.C	
4♦3	2.2.B Solve addition and subtraction word problems that involve joining, separating, and comparing and verify the solution. 2.2.C Add and subtract two-digit numbers efficiently and accurately using a procedure that works with all two-digit numbers and explain why the procedure works.	Use Coin Stamp Booklets to create addition and subtraction word problems involving money. PE 2.2.B & 2.2.I	Combine Lessons 4♦3 and 4♦4 into one day . For Lesson 4♦3, Skip Exploration A and Home-link. Do Exploration B and C. For lesson 4♦4, Skip Part 1. Combine Part 2 from both lessons 4♦3 and 4♦4.	degrees Fahrenheit, degrees Celsius, thermometer, degree marks	P2 <i>Addition Spin</i> . MRB p120-1, MM p447-8 PE 2.2.C		Write at least one equivalent name for \$1.00. PE 2.2.I	TLG p264; “In No. 3, continue counting by 100s for five more spaces. What pattern do you see?”
4♦4	2.2.I Determine the value of a collection of coins totaling less than \$1.00. Determine the value of a collection of coins totaling less than \$1.00. 3.5.B Measure temperature in degrees Fahrenheit and degrees Celsius using a thermometer.					Prepare for display of change diagrams. For Part 3 (R), paper copy and transparency of MM p101 for each child, MM p102, several copies, cut apart. Part 3 (E), 1 glass of ice water.	Read and show temperatures; solve temperature-change problems. PE 2.2.C & 3.5.B	TLG p270, “Explain how you solved how much change LaVon will receive in No. 2.”
4♦5	2.2.A Quickly recall basic addition facts and related subtraction facts for sums through 20. 2.2.C Add and subtract two-digit numbers efficiently and accurately using a procedure that works with all two-digit numbers and explain why the procedure works. 2.2.E Estimate sums and differences.	Share and justify strategies for estimating money amounts. PE 2.2.E		Estimate, , less than (<), greater than (>), equal to (=)	P2 <i>Name That Number</i> . MRB p138-9, MM p462 PE 2.2.A & 2.2.C	Teaching copy of 4♦4 Home Link, MM p99-100. Part 3 (R), prepare pictures or index cards to match items on SMJ2, p 104.	Estimate PE 2.2.E	
4♦6	2.2.C Add and subtract two-digit numbers efficiently and accurately using a procedure that works with all two-digit numbers and explain why the procedure works. 2.2.D Add and subtract two-digit numbers mentally and explain the strategies used. 2.3.E Use both analog and digital clocks to tell time to the minute.	Share and justify strategies for adding 2-digit numbers. PE 2.2.D & 2.2.C			P2 <i>Addition Spin</i> . MRB p120-1, MM p447-8 PE 2.2.C	For Part 1, extra bills are on MM p459-461.	Tell time to the nearest quarter hour. PE 2.3.E	

4↕7	<p>2.2.A Quickly recall basic addition facts and related subtraction facts for sums through 20.</p> <p>2.3.B Estimate length using metric and U.S. customary units.</p> <p>2.3.C Measure length to the nearest whole unit in both metric and U.S. customary units.</p>	<p>Compare lengths when measured with different units (Pre-Explorations). PE 2.3.C</p>	<p>A critical discussion in this lesson occurs while examining the two scales before the exploration begins (top of TLG p284). It leads students to make a rule about inches vs. centimeters: "If you measure a length in centimeters you will get a larger number than with inches". Lead the discussion into making a generalization about how the size of the unit affects the measure number. The importance of this activity ties into standard PE 2.3.B "estimate length". Getting a better sense of unit sizes leads to better estimates.</p>	<p>inch (in), centimeter (cm), tiling, attribute blocks</p>		<p>EXPLORATIONS: Spend most of your time on Explorations D & E. For EXPL. E, provide cardstock for tiling. EXPL. F, MM p107-8.</p>	<p>Record at least ten known subtraction facts. PE 2.2.A</p>	<p>TLG p286, "For No. 3, explain how you know a number is even or odd."</p>
4↕8	<p>2.2.C Add and subtract two-digit numbers efficiently and accurately using a procedure that works with all two-digit numbers and explain why the procedure works.</p> <p>2.2.D Add and subtract two-digit numbers mentally and explain the strategies used.</p> <p>2.2.E Estimate sums and differences.</p>	<p>Share and justify invented strategies for finding the sum of 2-digit numbers. PE 2.2.C</p>	<p>Invented Strategies: 2-day Lesson. Provide base-10 blocks to your students (see Adjusting the Activity TLG p290). A focus for the discussion is to identify similarities and differences between strategies. Encourage students to try a different strategy as they solve more problems. A 2nd grade goal is to have students develop their own conceptual models for multi-digit addition and subtraction. They will have plenty of time to learn algorithms in grade 3.</p>	<p>ballpark estimate</p>	<p><i>P2 Fact Extension Game: MRB p134-5</i> PE 2.2.D</p>	<p>2-day Lesson</p>	<p>Make ballpark estimates. PE 2.2.E</p>	<p>TLG p292, "Explain how you know that your answer for No. 2 is correct."</p>
4↕9	<p>2.1.E Group three-digit numbers into hundreds, tens, and ones in more than one way.</p> <p>2.2.C Add and subtract two-digit numbers efficiently and accurately using a procedure that works with all two-digit numbers and explain why the procedure works.</p> <p>2.2.D Add and subtract two-digit numbers mentally and explain the strategies used.</p>	<p>Use base-10 blocks to model Partial-Sums for addition of 2-digit numbers. PE 2.2.C</p>	<p>Extension to 3-day lesson. Students really need time to understand a concrete model before moving onto an algorithm. Day 1: Start with Readiness Activity TLG p298. This is one of the few times available to address PE 2.1.E. Then do Math Message & follow-up and partial-sums introduction using base ten blocks. Day 2: Move to paper-and-pencil method. Day 3: Continue to practice and do Part 2 and the rest of Part 3. Also use Gr2 Singapore Extra Practice Book p13-14.</p>	<p>algorithm</p>	<p><i>P2 Fact Extension Game: MRB p134-5</i> PE 2.2.D</p>	<p>3-day Lesson Plan ahead for how to demonstrate partial-sums addition with base-10 blocks.</p>	<p>Solve addition of multi-digit multiples of ten. PE 2.2.D</p>	<p>TLG p298, "In No. 4, what time will it be in 12 hours? Explain how you solved this problem."</p>

Unit 5: 3-D and 2-D Shapes								
Overview: To develop the concepts of point and line segment; to identify, name, and classify polygons; to observe similarities and differences among 3-dimensional shapes; and to explore symmetry.								
Big Ideas		Measurement & Geometry: Objects and shapes can be quantified, classified and described by their attributes and by using unit amounts. Transformations: Objects in space can be rotated (turned), translated (slid), reflected (flipped) and scaled in multiple ways.						
	Performance Expectations	Learning Target	Comments	Vocabulary	Games	Advanced Prep	RSAs	Writing/Reasoning Prompt – Math Boxes
5♦1	<p>1.3.A Compare and sort a variety of two- and three-dimensional figures according to their geometric attributes.</p> <p>2.2.C Add and subtract two-digit numbers efficiently and accurately using a procedure that works with all two-digit numbers and explain why the procedure works.</p> <p>2.3.E Use both analog and digital clocks to tell time to the minute.</p>	<p>Determine the attribute (rule) for a group of sorted 2-D shapes (Exploration A). PE 1.3.A</p>	<p>Do all explorations and use the Exploration C “Clock Concentration” activity for extra practice if needed.</p>		<p><i>P2 Addition Spin.</i> MRB p120-1, MM p447-8 PE 2.2.C</p>	<p>EXPLORATIONS: For Math Message and Part 1 prep, see TLG p 316 & 317. Plan to spend most of your time on Exploration A.</p>	<p>Read the time and match it to digital notation. PE 2.3.E</p>	
5♦2	<p>3.4.A Identify and sketch parallel, intersecting, and perpendicular lines and line segments.</p>	<p>Use a straightedge to draw a line segment between points. PE 3.4.A▼</p>		<p>point, straightedge, line segment, endpoint</p>		<p>Before 5♦6, collect objects for Shapes Museum. See TLG p326.</p>	<p>Use a straightedge to draw a line segment. PE 3.4.A</p>	
5♦3	<p>3.4.A Identify and sketch parallel, intersecting, and perpendicular lines and line segments.</p>	<p>Identify parallel line segments. PE 3.4.A</p>		<p>parallel</p>			<p>Identify parallel lines. PE 3.4.A</p>	<p>TLG p330, “Explain how you know that you made the largest number in No. 1.”</p>
5♦4	<p>1.3.A Compare and sort a variety of two- and three-dimensional figures according to their geometric attributes.</p> <p>1.3.B Identify and name two-dimensional figures, including those in real-world contexts, regardless of size or orientation.</p> <p>2.2.I Determine the value of a collection of coins totaling less than \$1.00.</p>	<p>Find 2-D shapes that differ by at least one attribute (Exploration F). PE 1.3.A</p>		<p>trapezoid, rhombus, polygon, side, vertex, vertices, angle, triangle, quadrangle, pentagon, hexagon, heptagon, octagon</p>	<p><i>P2 Dollar Rummy.</i> SMJ p65, MM p454-5 PE 2.2.I</p>	<p>EXPLORATIONS: Prepare word wall. Part 3 (EP) uses the book, <i>The Greedy Triangle</i>. For 5♦5, prepare MM p139 & 140 ahead of time. Prepare shapes ahead of time for 5♦5. See TLG p337.</p>	<p>Identify plane figures. PE 1.3.B</p>	<p>TLG p 336, “Explain how you know your numbers are even numbers in No. 3.”</p>
5♦5	<p>2.2.A Quickly recall basic addition facts and related subtraction facts for sums through 20.</p> <p>2.2.C Add and subtract two-digit numbers efficiently and accurately using a procedure that works with all two-digit numbers and explain why the procedure works.</p> <p>2.2.E Estimate sums and differences.</p> <p>5.3.A Classify quadrilaterals.</p>	<p>Identify similarities and differences among attributes of quadrangles. PE 5.3.A▼</p>	<p>Make this a 1 Day Lesson Focus on the concept that shapes may have more than one name (see Note on margin of TLG p340). You may begin an extended discussion by defining a parallelogram and marking its 2 sets of parallel lines. Then look at the rhombus and rectangle as also having 2 sets of parallel lines so therefore can also be called parallelograms.</p>	<p>square corner, square, rhombus, rectangle, trapezoid, parallelogram, kite, polygon, triangle, hexagon, pentagon, heptagon, octagon, trapezoid, rhombus, side, vertex (vertices), angle</p>	<p><i>P2 Name That Number.</i> MRB p138-9, MM p462 PE 2.2.A & 2.2.C</p>	<p>2-day Lesson Part 3 (E) uses Tangrams or MM p142 on cardstock.</p>	<p>Make reasonable estimates for addition problems. PE 2.2.E</p>	<p>TLG p 341, “Explain the strategy you used to fill in the number grid in No. 2.”</p>
5♦6	<p>2.2.B Solve addition and subtraction word problems that involve joining, separating, and comparing and verify the solution.</p> <p>2.4.A Solve problems involving properties of two- and three-dimensional figures.</p>	<p>Use attribute descriptions to identify basic 3-D shapes. PE 2.4.A</p>		<p>cylinder, cone, sphere, curved surface, rectangular prism, cube, pyramid, flat surface, face, edge, vertex, vertices, congruent</p>		<p>Prepare poster of 3-D shapes with labels. Prepare labels for <i>Shapes Museum</i>. See TLG p326 & p343. Before 5♦7 prepare straws. See TLG p348.</p>	<p>Find the difference between two 2-digit numbers. PE 2.2.B</p>	<p>TLG p347, “How many children in all traveled to school in No. 3? Explain how you found your answer.”</p>

5♦7	<p>2.1.A by tens or hundreds forward and backward from 1 to 1,000, starting at any number.</p> <p>2.2.A Quickly recall basic addition facts and related subtraction facts for sums through 20.</p> <p>2.4.A Solve problems involving properties of two- and three-dimensional figures.</p>	<p>Use straws and twist-ties to make and describe different pyramids.</p> <p>PE 2.4.A</p>	<p>2-Day Lesson</p>	<p>base, apex, square pyramid, triangular pyramid, rectangular pyramid, pentagonal pyramid, hexagonal pyramid</p>	<p><i>P2 Beat the Calculator.</i> MRB p124-5, SMJ p24 PE 2.2.A</p>	<p>2-Day Lesson Prepare 8 straws and 12 twist-ties per student. Display 3-D Shapes Poster</p>	<p>Complete patterns on a number grid. PE 2.1.A</p>	
5♦8	<p>2.2.D Add and subtract two-digit numbers mentally and explain the strategies used.</p> <p>2.4.A Solve problems involving properties of two- and three-dimensional figures.</p> <p>5.3.H Determine the number and location of lines of symmetry in triangles and quadrilaterals.</p>	<p>Complete shapes halved along a line of symmetry using a Pattern-Block template. PE 2.4.A</p>	<p>Optional: Although determining all lines of symmetry from triangles and quadrilaterals is a 5th grade standard PE 5.3.H, using folding strategies to determine more than one line of symmetry is appropriate exposure at 2nd grade.</p>	<p>line symmetry, line of symmetry, symmetrical</p>	<p><i>P2 Fact Extension Game.</i> MRB p134-5 PE 2.2.D</p>	<p>Make a triangular pyramid before 5♦7 Home-Link discussion.</p>	<p>Complete symmetric shapes. PE 2.4.A▲</p>	

Unit 6: Whole-Number Operations and Number Stories								
Overview: To introduce and practice array models; to review strategies for solving addition and subtraction problems; and to develop procedures for multiplication / division problems.								
Big Ideas		Number Relationships: Addition and subtraction are inverse operations of each other and multiplication and division are inverse operations of each other. Properties: Properties of operations and equality are rules based on relationships that are always true. Data: Data can be collected, classified, analyzed & displayed using tables, charts & graphs.						
Performance Expectations		Learning Target	Comments	Vocabulary	Games	Advanced Prep	RSAs	Writing/Reasoning Prompt – Math Boxes
6♦1	1.2.E Add three or more one-digit numbers using the commutative and associative properties of addition. 2.2.D Add and subtract two-digit numbers mentally and explain the strategies used.	Use the Associative Property as a strategy to solve problems with 3 or more addends. PE 1.2.E▲	A crucial component of this lesson should be to build the language and representation skills needed for students to adequately be able to share strategies with each other.		P1 <i>Three-Addends</i> : SMJ p131, MM p473 PE 2.2.D		Add three 1-digit numbers. PE 1.2.E	
6♦2	2.2.B Solve addition and subtraction word problems that involve joining, separating, and comparing and verify the solution. 2.2.D Add and subtract two-digit numbers mentally and explain the strategies used. 2.5.A Identify the question(s) asked in a problem and any other questions that need to be answered in order to solve the problem.	Use comparison diagram when solving number stories involving differences. PE 2.2.B & 2.5.A	Problems #5-7 on SMJ p135 have students writing both addition and subtraction equations for each story. Plan to spend time discussing how each model interprets the number story.	comparison number story, difference, comparison diagram	P2 <i>Addition Top-It</i> . MRB p122-3, MM p449 PE 2.2.D	See TLG p384 for suggestions on preparing a comparison diagram.	Solve comparison number stories. PE 2.2.B	TLG p388, "Explain how you know you have written all the possible coin combinations for 30¢ in No. 2."
6♦3	2.4.B Collect, organize, represent and interpret data in bar graphs and picture graphs.	Answer questions about data represented on a tally chart and bar graph. PE 2.4.B		basic food groups, data table, bar graph		For Part 1, prepare teaching masters or transparencies, MM p162-64.	Read graphs. PE 2.4.B	TLG p394, "In No. 2, How many more inches would you need to add to the line segment to make it 10 inches long? Write a number model."
6♦4	2.2.B Solve addition and subtraction word problems that involve joining, separating, and comparing and verify the solution. 2.5.D Select from a variety of problem-solving strategies and use one or more strategies to solve a problem.	Choose the most appropriate diagram when solving number stories (change, parts-and-total, or comparison). PE 2.2.B & 2.5.D	2-day Lesson Extension: As stated on TLG p397 this is the first time students are deciding what operation to use to solve story problems. Start with whole group discussion using the Enrichment activity on TLG p400. Provide ample time having students share strategies that helped them make those decisions. To support solving problems with the unknown in various positions review the meaning of the equal sign and use Supplement 6♦4: Balanced Equations to provide practice with this.			2-day Lesson For Part 1, prepare teaching master, transparency or poster of MM p437.	Solve number stories. PE 2.2.B	
6♦A	2.2.C Add and subtract two-digit numbers efficiently and accurately using a procedure that works with all two-digit numbers and explain why the procedure works.	Share and justify invented strategies for finding the difference of 2-digit numbers. PE 2.2.C	Supplemental Activities for Subtraction Invented Strategies: Just like student developed their own strategies for additions in lesson 4♦8, take the time to have students come up with their own strategies for multi-digit subtraction before showing them the EDM models. Provide students with a variety of materials including base-10 blocks, number grids, number lines, and counters. Again, make a record of what they share and focus the discussion on identifying similarities and differences between strategies. Encourage students to try a different strategy as they solve more problems. A 2 nd grade goal is to have students develop their own conceptual models for multi-digit addition and subtraction. They will have plenty of time to learn algorithms in grade 3.			1 Day Lesson		

6•5	<p>2.1.E Group three-digit numbers into hundreds, tens, and ones in more than one way.</p> <p>2.2.C Add and subtract two-digit numbers efficiently and accurately using a procedure that works with all two-digit numbers and explain why the procedure works.</p> <p>4.4.F Describe and compare the likelihood of events.</p>	<p>Use base-10 blocks to develop strategies for solving 2-digit by 2-digit subtraction problems. PE 2.2.C</p>	<p>Read the important NOTE on TLG p403. Between now and Unit 11 provide your students with plenty of opportunities to work, refine and discuss invented strategies.</p>	<p>trade (a base-10 long for 10 cubes)</p>	<p>P2 <i>Number-Grid Difference Game</i>: MRB p140-1, MM p463 PE 2.2.C; P3R <i>Base-10 Trading Game</i>: MM p427 PE 2.1.E</p>		<p>Make a probability statement. PE 4.4.F</p>	
6•6	<p>2.2.D Add and subtract two-digit numbers mentally and explain the strategies used.</p> <p>2.2.I Determine the value of a collection of coins totaling less than \$1.00.</p> <p>2.4.C Model and describe multiplication situations in which sets of equal size are joined.</p> <p>3.2.A Represent multiplication as repeated addition, arrays, counting by multiples, and equal jumps on the number line, and connect each representation to the related equation.</p>	<p>Use geoboards to model multiplication arrays (Exploration A). PE 2.4.C & 3.2.A</p>	<p>Arrays are closely connected to the area model of multiplication. Putting rubber bands around geoboard pegs creates a perimeter, but the area of the rectangle created no longer matches the array (number of pegs inside). For example the 2X5 array in MM p172 shows a rectangle that really has an area of 4 squares. This may create confusion later on. Place counters (pennies) inside the squares and count those instead of the geoboard pegs. A 2X5 array should be represented like the graphic here.</p>		<p>P2 <i>Three-Adds</i>: SMJ p131, MM p473 PE 2.2.D</p>	<p>EXPLORATIONS: Plan to spend most of the time on Exploration A. MM p172, 175, & 176 give directions for the Explorations.</p>	<p>Make bill and coin exchanges. PE 2.2.I</p>	<p>TLG p410, No. 2, "Draw a shape that has one line of symmetry. Next, draw another shape that has more than one line of symmetry."</p>
6•7	<p>2.4.C Model and describe multiplication situations in which sets of equal size are joined.</p>	<p>Solve multiplication number stories using "equal group" counting strategies. PE 2.4.C</p>		<p>equal groups, multiplication, times, multiplied by</p>		<p>Part 3 (EP), uses the book <i>Each Orange Had Eight Slices</i>.</p>	<p>Combine equal groups to find totals. PE 2.4.C</p>	<p>TLG p416, "In No. 5, if Lauren was born the same year as you, is she older or younger? What strategy did you use to solve the problem?"</p>
6•8	<p>2.2.D Add and subtract two-digit numbers mentally and explain the strategies used.</p> <p>2.4.D Add and subtract two-digit numbers mentally and explain the strategies used.</p> <p>3.2.A Represent multiplication as repeated addition, arrays, counting by multiples, and equal jumps on the number line, and connect each representation to the related equation.</p>	<p>Solve multiplication number stories using an array model and multiplication diagrams. PE 3.2.A</p>		<p>multiplication diagram, x-by-y array</p>	<p>P2 <i>Fact Extension Game</i>: MRB p134-5 PE 2.2.D; P3R <i>Simon Says</i> PE 2.4.D</p>	<p>For Part 1, MM p438, use transparency or create wall chart for multiplication models.</p>	<p>Show arrays. PE 3.2.A</p>	
6•9	<p>2.3.C Measure length to the nearest whole unit in both metric and U.S. customary units.</p> <p>2.4.C Model and describe multiplication situations in which sets of equal size are joined.</p> <p>3.2.D Apply and explain strategies to compute multiplication facts to 10x10 and the related division facts.</p>	<p>Use array cards to develop visual automaticity with some basic multiplication facts (<i>Array Bingo</i>). PE 3.2.D</p>	<p>See comments for 6•6 to adjust Home Link for this lesson.</p>		<p>P1, <i>2 Array Bingo</i>: SMJ p154-5, MM p450 PE 2.4.C</p>	<p>Part 1, <i>Array Bingo</i> uses MM p450 copied on cardstock, cut apart and stored.</p>	<p>Draw and measure a 3-inch line segment. PE 2.3.C</p>	
6•10	<p>2.2.C Add and subtract two-digit numbers efficiently and accurately using a procedure that works with all two-digit numbers and explain why the procedure works.</p> <p>2.4.D Model and describe division situation in which sets are separated into equal parts.</p>	<p>Model equal sharing to solve division problems with and without remainders. PE 2.4.D</p>		<p>division, equal sharing, remainder, equal grouping</p>	<p>P2 <i>Number-Grid Difference Game</i>: MRB p140-1, MM p418&463 PE 2.2.C</p>		<p>Solve equal-sharing problems. PE 2.4.D</p>	

Unit 7: Patterns and Rules								
Overview: To describe patterns that result from skip counting by 2s, 5s, and 10s; to build mental arithmetic skills for adding 1- and 2-digit numbers; and to make frequency tables, line plots, and bar graphs from real-life data.								
Big Ideas		Patterns: Patterns repeat and can be extended in predictable ways. Place Value: There is a predictable pattern in the Base-Ten numeration system. The value of the digits 0-9 is determined by their position. Data: Data can be collected, classified, analyzed & displayed using tables, charts & graphs.						
	Performance Expectations	Learning Target	Comments	Vocabulary	Games	Advanced Prep	RSAs	Writing/Reasoning Prompt – Math Boxes
7♦1	<p>1.1.A Count by ones forward and backward from 1 to 120, starting at any number, and count by twos, fives, and tens to 100.</p> <p>2.2.F Create and state a rule for patterns that can be generated by addition and extend the pattern.</p>	Identify patterns on a number grid when skip counting by different numbers. PE 2.2.F		multiple of 10		For Part 1, make extra copies of MM p195 plus teaching master or transparency.	Count by 2s. PE 1.1.A	TLG p547, “Describe any patterns you see in No. 2.”
7♦2	<p>2.2.C Add and subtract two-digit numbers efficiently and accurately using a procedure that works with all two-digit numbers and explain why the procedure works.</p> <p>2.2.D Add and subtract two-digit numbers mentally and explain the strategies used.</p>	Use complements of 10 to change numbers to and from multiples of 10 (see commentary for Lesson 1♦A). PE 2.2.D	Modification: Provide a number line to conceptually support <i>Hit the Target</i> . Encourage students to use complements of ten for their first change. For example on SMJ p163, the first table shows +38 as the first change; encourage your students to use +8 instead. This sets the seeds for later development of the Counting-Up Strategy for multi-digit subtraction.		P1 <i>Hit the Target</i> : MRB p136-7, MF p163, MM p418&457 PE 2.2.C		Find the difference between 2-digit numbers and higher multiples of 10. PE 2.2.D	
7♦3	<p>2.2.C Add and subtract two-digit numbers efficiently and accurately using a procedure that works with all two-digit numbers and explain why the procedure works.</p>	Share and justify strategies for adding 3 or more numbers. PE 2.2.C	Provide ample time for students to share addition strategies (see #4 TLG p556). Provide number grids base-10 blocks to help students.		P1 <i>Basketball Addition</i> : SMJ p166-7, MM p200, 418&451 PE 2.2.C	For <i>Basketball Addition</i> , prepare class chart of scoreboard MM p200 or SMJ p167, or transparency.	Solve addition problems with multiple addends. PE 2.2.C	
7♦4	<p>2.2.C Add and subtract two-digit numbers efficiently and accurately using a procedure that works with all two-digit numbers and explain why the procedure works.</p> <p>2.2.F Create and state a rule for patterns that can be generated by addition and extend the pattern.</p>	Find and record patterns for doubling and halving. PE 2.2.F▲	Literature Link: If possible read <i>One Grain of Rice</i> by Demi to reinforce the concept of doubling. Students can use a calculator to follow the events of the story.	half, double	P2 <i>Hit the Target</i> : MRB p136-7, MM p418&457 PE 2.2.C	For 7♦5, collect books of varying weights and analog bath scale. See TLG p564 for details. <i>One Grain of Rice</i> by Demi.	Use rules to find patterns. PE 2.2.F	TLG p563, “Explain how you figured out how many groups of 3 you could make with the 29 counters in No. 1.”
7♦5	<p>2.2.C Add and subtract two-digit numbers efficiently and accurately using a procedure that works with all two-digit numbers and explain why the procedure works.</p> <p>2.2.H Name each standard U.S. coin, write its value using the \$ and cent sign, and name combinations of other coins with the same total value.</p> <p>2.2.I Determine the value of a collection of coins totaling less than \$1.00.</p> <p>2.4.A Solve problems involving properties of two- and three-dimensional figures.</p> <p>3.2.A Represent multiplication as repeated addition, arrays, counting by multiples, and equal jumps on the number line, and connect each representation to the related equation.</p>	Use pattern blocks to create and record visual patterns- tessellations (Exploration C). PE 2.4.A	Bring in a bath scale for the students to use. Part 3 Readiness activity supports PE 2.2.H & 2.2.I . Use this as a 4 th station.		P2 <i>Hit the Target</i> : MRB p136-7, MM p418&457 PE 2.2.C	EXPLORATIONS: For Math Message, have a 1 pound and a 3 pound book available.	Create an array. PE 3.2.A	

7↕6	<p>1.4.E Describe the connection between the size of the measurement unit and the number of units needed to measure something.</p> <p>2.3.C Measure length to the nearest whole unit in both metric and U.S. customary units.</p> <p>2.4.B Collect, organize, represent, and interpret data in bar graphs and picture graphs.</p> <p>2.4.C Model and describe multiplication situations in which sets of equal size are joined.</p>	<p>Develop routines and procedures for consistent and accurate use of measuring tools. PE 2.4.B & 2.3.C</p>		arm span	<p>P2 <i>Array Bingo</i>. SMJ p154-5, MM p450 PE 2.4.C</p>	<p>For Math Message, prepare stick figure diagram from TLG p571. Part 1, mark several “starting” lines on floor with masking tape for long jump activity, or go outside.</p>	<p>Understand units of lengths. PE 1.4.E</p>	
7↕7	<p>2.3.E Use both analog and digital clocks to tell time to the minute.</p> <p>3.5.E Construct and analyze pictographs, frequency tables, line plots, and bar graphs.</p>	<p>Use a concrete model to find the median of a set of data. PE 3.5.E</p>	<p>Although median is a 4th grade vocabulary word the introduction of the concept of the middle value is appropriate as a way to analyze data.</p>	median, middle value, sort (the data)		<p>For Math Message, prepare half-sheets of paper for recording. Prepare 20-foot baseline on floor. See TLG p576 & 578.</p>	<p>Tell time to the quarter-hour. PE 2.3.E</p>	<p>TLG p580, “Tell the time 2 hours later than the time shown in No. 1. How did you figure it out?”</p>
7↕8	<p>3.5.E Construct and analyze pictographs, frequency tables, line plots, and bar graphs.</p> <p>4.4.E Determine the median, mode, and range of a set of data and describe what each measure indicates about the data.</p> <p>4.4.G Determine a simple probability from a context that includes a picture.</p>	<p>Use collected data to create frequency tables, line plots and bar graphs. PE 3.5.E</p>	<p>Keep this a 1 Day Lesson</p>	line plot	<p>P2 <i>Soccer Spin</i>. SMJ p179, MM p470-1 PE 4.4.G▼</p>	<p>Possible 2-Day Lesson: Math Message requires sticky notes for recording arm-span. For Part 1, prepare Teaching Masters, transparencies or charts of MM p219 & 220.</p>	<p>Find the median. PE 4.4.E</p>	<p>TLG p586, “In No. 5, explain how you used your ballpark estimate to check your answer.”</p>

Unit 8: Fractions									
Overview: To review basic fraction concepts; to use fractions to name parts of a whole and of a collection; to find pairs of equivalent fractions; and to solve number stories involving fractions.									
Big Ideas		Number 1: Every number has a point on the number line. Two numbers are equal when they share the same point on the number line. Number 2: A fraction represents a comparison of a part to the whole (region, set, segment).							
Performance Expectations		Learning Target	Comments	Vocabulary	Games	Advanced Prep	RSAs	Writing/Reasoning Prompt – Math Boxes	
8♦1	2.4.E Interpret a fraction as a number of equal parts of a whole or a set.	Use folded paper and colors to find and name fractional parts of a whole. PE 2.4.E	Start with the Readiness Activity to provide a solid conceptual introduction. Note typo: top of TLG p606. MRB pages should be 12-15 or at least 12-13	congruent, ONE (the whole), fraction, denominator, numerator		Before Math Message, prepare three, 8” paper squares per student. Read TLG p603, Fractions Museum before distributing Home-Link 8♦1. Part 3 (EP) uses the book Ed Emberley’s <i>Picture Pie</i> .	Model fractions as equal parts of a region. PE 2.4.E	TLG p608, “How did you figure the in number in No. 3 when you only knew the out number? Explain your strategy.”	
8♦2	2.2.A Quickly recall basic addition facts and related subtraction facts for sums through 20. 2.4.E Interpret a fraction as a number of equal parts of a whole or a set.	Use pattern blocks to compare fractional parts with varied representations of ONE (Exploration A). PE 2.4.E		cubic centimeter, volume		EXPLORATIONS: Prepare area for Fractions Museum in classroom.	Record addition and subtraction facts. PE 2.2.A	TLG p614, “Explain how you knew how many dots to color green in No. 4.”	
8♦3	2.2.I Determine the value of a collection of coins totaling less than \$1.00. 2.4.E Interpret a fraction as a number of equal parts of a whole or a set.	Use manipulatives to find and name fractional parts of a set. PE 2.4.E					Calculate coin combinations. PE 2.2.I		
8♦4	2.2.A Quickly recall basic addition facts and related subtraction facts for sums through 20. 2.2.C Add and subtract two-digit numbers efficiently and accurately using a procedure that works with all two-digit numbers and explain why the procedure works. 2.1.C Identify the ones, tens, and hundreds place in a number and the digits occupying them. 3.3.C Represent and identify equivalent fractions with denominators of 2, 3, 4, 5, 6, 8, 9, 10, and 12.	Use manipulatives to find and name equivalent fractions. PE 3.3.C	Caution: The activities in these lessons are extremely valuable in order to support the fraction work students need to master in 3 rd grade. A goal for 2 nd grade is to provide ample opportunity for students to engage in discussions about fraction concepts with each other in a safe environment. Note that mastery is not required at this point. Look at all Readiness Activities for additional support.	equivalent, equivalent fractions	P2 <i>Name That Number</i> : MRB p138-9, MM p462 PE 2.2.A & 2.2.C	Math Message uses MM p239, one per student plus extras. Part 1 uses fraction circles (commercial) or cut from MM p239 for teacher modeling.	Identify the value of digits. PE 2.1.C		
8♦5	2.4.E Interpret a fraction as a number of equal parts of a whole or a set. 3.3.C Represent and identify equivalent fractions with denominators of 2, 3, 4, 5, 6, 8, 9, 10, and 12.	Use fraction cards to share and justify strategies for determining fractional equivalencies. PE 2.4.E				P1 <i>Equivalent Fractions Game</i> : SMJ p198-9 PE 3.3.C	Use SMJ, Activity Sheets 5 & 6 (with storage bag or paper clips) or matching Everyday Math Deck cards.	Record equivalent fraction pairs. PE 3.3.C	TLG p629, “Describe how you found the arrow rules in No. 3.”
8♦6	2.3.D Describe the relative size among minutes, hours, days, weeks, months, and years. 3.3.B Compare and order fractions that have denominators of 2, 3, 4, 5, 6, 8, 9, 10, and 12. 3.3.C Represent and identify equivalent fractions with denominators of 2, 3, 4, 5, 6, 8, 9, 10, and 12. 3.3.D Solve single- and multi-step word problems involving comparison of fractions and verify the solutions.	Use fraction cards to share and justify strategies for comparing fractions. PE 3.3.D			unit fraction	P1 <i>Fraction Top-It</i> : SMJ p203-4 PE 3.3.B ; P2 <i>Equivalent Fractions Game</i> : SMJ p198-9 PE 3.3.C		Identify units of time. PE 2.3.D	

8♦7	<p>2.4.E Interpret a fraction as a number of equal parts of a whole or a set.</p> <p>3.3.B Compare and order fractions that have denominators of 2, 3, 4, 5, 6, 8, 9, 10, and 12.</p>	<p>Solve number stories involving fractions. PE 2.4.E</p>	<p>Be sure your students use counters and record their pictures when solving number stories.</p>		<p><i>P2 Fraction Top-It.</i> SMJ p203-4 PE 3.3.B</p>	<p>Before Part 1, SMJ p206, create and pose additional fraction number stories as needed. Use similar problems in future Mental Math and Reflexes sessions.</p>	<p>Solve fraction number stories. PE 2.4.E</p>	
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Unit 9: Measurement								
Overview: To review measuring with yards and meters; to measure longer distances; to develop the concepts of perimeter and area; and to know units of weight.								
Big Ideas		Place Value: There is a predictable pattern in the Base-Ten numeration system. The value of the digits 0-9 is determined by their position. Estimation: A calculated guess can be made by using numbers that are close to actual numbers but easier to compute.						
	Performance Expectations	Learning Target	Comments	Vocabulary	Games	Advanced Prep	RSAs	Writing/Reasoning Prompt – Math Boxes
9♦1	<p>1.4.A Recognize that objects used to measure an attribute (length, weight, capacity) must be consistent in size.</p> <p>2.4.B Collect, organize, represent, and interpret data in bar graphs and picture graphs.</p>	Share examples of when a standard unit may be necessary over a non-standard unit. PE 1.4.A		standard unit, yard, meter		Part 1 requires an actual yard stick (36" long) and a meter stick. For Part 3 (E), create masking tape paths. See TLG p660. Planning Ahead: For 9♦2, gather materials for Measures All Around Museum.	Find the mode. PE 2.4.B	TLG p664, "Explain how you found the median in No. 4."
9♦2	<p>1.4.E Describe the connection between the size of the measurement unit and the number of units needed to measure something.</p> <p>2.2.A Quickly recall basic addition facts and related subtraction facts for sums through 20.</p> <p>2.2.C Add and subtract two-digit numbers efficiently and accurately using a procedure that works with all two-digit numbers and explain why the procedure works.</p> <p>2.3.C Measure length to the nearest whole unit in both metric and U.S. customary units.</p>	Use rulers to measure objects to the nearest inch, foot, centimeter, and decimeter. PE 2.3.C	Have students compare their measurement in inches to their measurement in centimeters. Ask students why the results are different to support PE 1.4.E . For additional practice use Gr2 Singapore Extra Practice Book p27-28.	inch, centimeter, foot, decimeter	<i>P2 Name That Number:</i> MRB p138-9, MM p462 PE 2.2.A & 2.2.C	Set up Museum. For Part 3 (ELL), collect materials and create posters. Planning Ahead: Organize boxes students brought for 9♦4. See TLG p671.	Use a ruler. PE 2.3.C	
9♦3	<p>2.3.C Measure length to the nearest whole unit in both metric and U.S. customary units.</p> <p>3.3.C Represent and identify equivalent fractions with denominators of 2, 3, 4, 5, 6, 8, 9, 10, and 12.</p>	Use ruler enlargements to identify fractional parts of an inch and centimeter. PE 2.3.C	For SMJ p214 students work as partners for problems #1-3. Do problem #4 whole class.	millimeter	<i>P2 Equivalent Fractions Game:</i> SMJ p198-9 PE 3.3.C	For Part 1, MM p260 & 261 will be helpful for teacher demo. For Part 3 (R) and (E) activities see prep TLG p672.	Measure to the nearest inch. PE 2.3.C	
9♦4	<p>2.2.C Add and subtract two-digit numbers efficiently and accurately using a procedure that works with all two-digit numbers and explain why the procedure works.</p> <p>2.3.C Measure length to the nearest whole unit in both metric and U.S. customary units.</p> <p>3.4.D Measure and calculate perimeters of quadrilaterals.</p>	Find the perimeter of polygons by measuring all sides and adding them up. PE 2.3.C & 3.4.D		perimeter	<i>P2 Number-Grid Difference Game:</i> MRB p140-1, MM p417&463 PE 2.2.C	For Math Message, MM p267, 1 per 4 students, cut apart.	Measure to the nearest inch. PE 2.3.C	TLG p681, "Explain how you knew what numbers to fill in on the number grid in No. 1."
9♦5	<p>2.3.B Estimate length using metric and U.S. customary units.</p> <p>2.4.E Interpret a fraction as a number of equal parts of a whole or a set.</p>	Share and justify examples of when miles/kilometers should be used for measurement. PE 2.3.B	This is an introduction to larger units of mile and kilometer which are used for lengths that are too big for a ruler. Provide a calculator to assist with SMJ p218.	mile, kilometer			Understand fractions as equal parts of a collection. PE 2.4.E	

9♦6	<p>2.2.A Quickly recall basic addition facts and related subtraction facts for sums through 20.</p> <p>4.3.B Determine the approximate area of a figure using square units.</p>	<p>Count unit squares to find area of a rectangle (Exploration B). PE 4.3.B▼</p>	<p>Optional Lesson: Exploration B provides a brief introduction to area. At this point students should be able to rely on merely counting squares to determine area, so choose objects that trace exactly on the gridlines (not the EDM deck) For example a small post-it is 4x5 cm, a small square attribute block is 3x3 cm, the rectangle from their template is 4x2 cm, and the bottom of a box of thick school markers is 7x5 cm. Otherwise students can draw their own rectangles along the lines. For Exploration A, find 2 containers (one tall & skinny and one short & wide) instead of using the paper.</p>	<p>area, square centimeter, square inch</p>		<p>EXPLORATIONS: MM p275 – 280, 1 per student. Exploration A requires adult help. Exploration B is background for the next lesson and covers material assessed at end of unit. Exploration C requires an assortment of measuring tools. Planning Ahead: Lesson 9♦7, Part 3 (EP) requires a chess board.</p>	<p>Record addition and subtraction facts. PE 2.2.A</p>	<p>TLG p692, “Describe how you determined the perimeter of the rectangle in No. 4.”</p>
9♦7	<p>2.4.D Model and describe division situations in which sets are separated into equal parts.</p> <p>3.3.B Compare and order fractions that have denominators of 2, 3, 4, 5, 6, 8, 9, 10, and 12.</p> <p>3.3.C Represent and identify equivalent fractions with denominators of 2, 3, 4, 5, 6, 8, 9, 10, and 12.</p> <p>4.3.B Determine the approximate area of a figure using square units.</p>	<p>Count unit squares to find area of figures that follow unit gridlines (Readiness & Extra Practice). PE 4.3.B▼</p>		<p>surface, square unit</p>	<p>P2 <i>Fraction Top-It</i>: SMJ p203-4 PE 3.3.B; P2 <i>Equivalent Fractions Game</i>: SMJ p198-9 PE 3.3.C</p>	<p>Planning Ahead: Lesson 9♦8 requires an assortment of containers with original labels & measuring materials. Lesson 9♦9 requires, per group, a spring scale, 40 pennies and a holding cup. See TLG p698.</p>	<p>Understand equal shares. PE 2.4.D</p>	<p>TLG p697, “Explain your answer to No. 4.”</p>
9♦8	<p>2.2.F Create and state a rule for patterns that can be generated by addition and extend the pattern.</p> <p>3.5.D Estimate, measure, and compare capacity using appropriate-sized U.S.</p>	<p>Use a graphic representation to determine relationships between US Customary units of capacity. PE 3.5.D</p>	<p>Touch & Go: These lessons are exposure and support the work in grades above. Do them as written but do not expect mastery.</p> <p>The graphic representation for capacity on TLG p701 should be an anchor chart.</p>	<p>capacity, cup, pint, quart, gallon, liter</p>		<p>Part 3, (E) requires advanced set-up. See TLG p699 & 704. Planning Ahead: For Lesson 9♦9, collect items that weigh less than 1 lb. Home-Link discussion requires measuring spoons and cups and scales. See TLG p704.</p>	<p>Continue numerical patterns. PE 2.2.F▲</p>	
9♦9	<p>1.2.B Use the equal sign (=) and the word equals to indicate that two expressions are equivalent.</p> <p>2.2.A Count by tens or hundreds forward and backward from 1 to 1,000, starting at any number.</p> <p>2.2.C Add and subtract two-digit numbers efficiently and accurately using a procedure that works with all two-digit numbers and explain why the procedure works.</p> <p>3.5.C Estimate, measure, and compare weight and mass using appropriate-sized U.S. customary and metric units.</p>	<p>Use a spring scale to weigh objects (< 1lb). PE 3.5.C</p>		<p>weigh, scale, weight, ounce, pound, gram, kilogram</p>	<p>P2 <i>Name That Number</i>: MRB p138-9, MM p462 PE 2.2.A & 2.2.C</p>	<p>See TLG p705 for Math Message preparation. For Part 1, attach holding cups to spring scales.</p>	<p>Write number sentences, generate equivalent names for numbers. PE 1.2.B</p>	

Unit 10: Decimals and Place Value								
Overview: To review notation and equivalencies for money amounts; to provide experiences with comparing prices, estimating costs, and making change; and to develop and extend place-value concepts.								
Big Ideas		Place Value: There is a predictable pattern in the Base-Ten numeration system. The value of the digits 0-9 is determined by their position. Estimation: A calculated guess can be made by using numbers that are close to actual numbers but easier to compute.						
Performance Expectations		Learning Target	Comments	Vocabulary	Games	Advanced Prep	RSAs	Writing/Reasoning Prompt – Math Boxes
10♦1	2.2.H Name each standard U.S. coin, write its value using the \$ sign and the cent sign, and name combinations of other coins with the same total value.	Use coins and bills to make equivalent values to purchase “store” items. PE 2.2.H▲			P2 <i>Spinning for Money</i> . SMJ1 p55, MM p472 PE 2.2.H	For Part 1, MM p441, 1 copy. The Game in Part 2, “ <i>Spinning for Money</i> ” can reuse the spinners from Unit 3, or prepare new ones from MM p472.	Count coin and bill combinations. PE 2.2.H▲	
10♦2	2.2.E Estimate sums and differences. 2.2.H Name each standard U.S. coin, write its value using the \$ sign and the cent sign, and name combinations of other coins with the same total value.	Use both \$ notation and ¢ notation to represent money amounts. PE 2.2.H▲		decimal point		Part 3 (R), prepare a 10 X 10 grid from 2 copies of MM p299.	Estimate the combined value of two items. PE 2.2.E	
10♦3	2.2.I Determine the value of a collection of coins totaling less than \$1.00. 2.4.E Interpret a fraction as a number of equal parts of a whole or a set.	Calculate values of coin and bill combinations entered in a table (<i>Pick-a-Coin</i>). PE 2.2.I▲	Combine calculator activities into a one day Part 1. Focus the discussion on dollar-and-cent (\$) notation and how it differs from decimal notation in that it must be written to 2 place values (i.e. it's \$0.60 not \$.6). For <i>Pick-a-Coin</i> use Supplement 10♦3: <i>Pick-a-Coin Alternate</i> instead if SMJ p237 for a recording sheet and have student write the values of each coin set before adding it up in the calculator.		P1 <i>Pick-a-Coin</i> . SMJ p236-7, MM p469 PE 2.2.I	For Part 1 an overhead calculator is useful. For game, <i>Pick-a-Coin</i> , MM p469, extra copies plus teaching master (and for Lesson 10♦4)	Model fractions as equal parts of a collection. PE 2.4.E	TLG p741, “Explain why the number of nickels in \$3.00 is double the number of dimes in \$3.00 in No. 1.”
10♦4	2.2.I Determine the value of a collection of coins totaling less than \$1.00.				P2 <i>Pick-a-Coin</i> . SMJ p236-7, MM p469 PE 2.2.I		Calculate coin and bill combinations. PE 2.2.I▲	TLG p746, “Describe the steps you took to find the median in No. 3”
10♦5	2.2.E Estimate sums and differences. 2.2.F Create and state a rule for patterns that can be generated by addition and extend the pattern. 3.1.B Round whole numbers through 10,000 using numbers, words, and symbols.	Share and justify strategies for rounding numbers to the nearest 10 (Readiness). PE 3.1.B▼	Start with the Readiness Activity to introduce rounding (PE 3.1.B) and then have students use rounding to make estimates during Part 1 to support PE 2.2.E. Caution: make sure that students round the addends and not just the result of their calculation.			Part 1, provide extra copies of the “Good Buys” poster, MM p441, so students don’t have to flip back in their SMJs. Save them for 10♦6.	Identify a rule for a function. PE 2.2.F	
10♦6	2.2.C Add and subtract two-digit numbers efficiently and accurately using a procedure that works with all two-digit numbers and explain why the procedure works. 3.3.B Compare and order fractions that have denominators of 2, 3, 4, 5, 6, 8, 9, 10, and 12. 3.3.C Represent and identify equivalent fractions with denominators of 2, 3, 4, 5, 6, 8, 9, 10, and 12. 3.5.B Measure temperature in degrees Fahrenheit and degrees Celsius using a thermometer.	Use counting-up method for subtraction to make change for money amounts. PE 2.2.C▲	Modification: Have students pick only one item that is less than a dollar and then make change from \$1.00 and use counting up strategies to 100 cents. Use Readiness Activity to help with this.	counting up to make change	P2 <i>Equivalent Fractions Game</i> : SMJ p198-9 PE 3.3.C; P2 <i>Fraction Top-It</i> : SMJ p203-4 PE 3.3.B	Math Message is also on MM p310, 1 per 2 students, cut apart.	Read the temperature. PE 3.5.B	TLG p756, “In No. 3, what temperature would it be if it were 20°F warmer? Show your work and explain what you did.”
10♦7	2.2.A Quickly recall basic addition facts and related subtraction facts for sums through 20. 2.4.A Solve problems involving properties of two- and three-dimensional figures.	Use pattern block trapezoids to model different polygons (Exploration B). PE 2.4.A	Optional: Exploration B is the only activity which supports grade level standards.			EXPLORATIONS: Math Message is also on MM p313, 1 per 4 students, cut apart. Planning Ahead: Choose from 3 versions, then prepare Place-Value tools for Lesson 10♦9. See TLG p763. Read assembly directions in TLG p770-771.	Know basic addition and subtraction facts. PE 2.2.A	

10↔8	<p>2.1.B Connect place value models with their numerical equivalents to 1,000.</p> <p>2.1.D Write three-digit numbers in expanded form.</p> <p>2.2.E Estimate sums and differences.</p>	<p>Use base-10 blocks to represent 3- and 4- digit numbers.</p> <p>PE 2.1.B▲</p>	<p>To support PE 2.1.D have students write numbers in expanded form during the first activity in Part 1.</p>	<p>flat, long, cube, place value, big cube</p>	<p>P1 <i>Money Exchange Game</i>: SMJ p253-4, MM p321 PE 2.1.B</p>	<p>For Math Message, display 1 each of base-10 blocks. For Part 1, teaching master of MM p320 & 321.</p>	<p>Estimate change.</p> <p>PE 2.2.E</p>	
10↔9	<p>2.1.C Identify the ones, tens, and hundreds place in a number and the digits occupying them.</p> <p>2.3.D Describe the relative size among minutes, hours, days, weeks, months, and years.</p> <p>3.1.A Read, write, compare, order, and represent numbers to 10,000 using numbers, words, and symbols.</p>	<p>Use a Place-Value Book to display and read 3- and 4-digit numbers. PE 3.1.A</p>	<p>The Routines from Part 2 are extremely valuable to support place value (PE 2.1.C). Incorporate them regularly into your Daily Routines from now on.</p>	<p>ones, tens, hundreds, thousands, ten-thousands</p>		<p>To prepare demo model of place-value tools, use MM p330-336. Paper Card Holder uses 5 copies of MM p327 for repeated digits.</p>	<p>Understand units of time.</p> <p>PE 2.3.D</p>	<p>TLG p773, "Make up a "What's My Rule?" table like the one in No. 4, using 3 feet = 1 yard as the rule. Fill in all of the in and out numbers."</p>
10↔10	<p>2.1.C Identify the ones, tens, and hundreds place in a number and the digits occupying them.</p>	<p>Solve place value problems with 4- and 5-digit numbers using a Place-Value-Book.</p> <p>PE 2.1.C▲</p>		<p>ten-thousands (10,000s)</p>			<p>Identify the value of digits.</p> <p>PE 2.1.C▲</p>	<p>TLG p778, "Explain how you found the correct amount of change in No. 2"</p>
10↔11	<p>2.4.E Interpret a fraction as a number of equal parts of a whole or a set.</p> <p>4.4.G Determine a simple probability from a context that includes a picture.</p> <p>5.4.C Write algebraic expressions that represent simple situations and evaluate the expressions, using substitution when variables are involved.</p>	<p>Solve problems involving parentheses. PE 5.4.C▼</p>	<p>Optional: Part 1. Solving problems with parentheses is a 5th grade standard. Do all of Part 2.</p>	<p>parentheses, parenthesis</p>	<p>P2 <i>Soccer Spir.</i>: SMJ p179, MM p470-1 PE 4.4.G▼</p>		<p>Identify fractions of collections.</p> <p>PE 2.4.E</p>	

Unit 11: Whole-Number Operations Revisited								
Overview: To review addition and subtraction algorithms using sums of money; to introduce and practice the trade-first subtraction algorithm; to solve multiplication and division number stories; and to practice multiplication and division facts using a products table and fact families.								
Big Ideas		Equivalence 1: Any number or equation can be represented in multiple ways. Equivalence 2: Numbers represent values that can be put together and taken apart. Number Relationships: Addition and subtraction are inverse operations of each other and multiplication and division are inverse operations of each other.						
	Performance Expectations	Learning Target	Comments	Vocabulary	Games	Advanced Prep	RSAs	Writing/Reasoning Prompt – Math Boxes
11♦1	2.2.C Add and subtract two-digit numbers efficiently and accurately using a procedure that works with all two-digit numbers and explain why the procedure works.	Share and justify strategies for solving addition problems involving money. PE 2.2.C▲	Optional Lessons: The number combinations and the use of decimal go beyond what is appropriate for grade level. <i>Play Hit the Target.</i>		<i>P2 Hit the Target.</i> MRB p136-7, MM p418&457 PE 2.2.C		Find differences between 2-digit numbers. PE 2.2.C	TLG p805, “Explain how you solved No. 5.”
11♦2	2.2.C Add and subtract two-digit numbers efficiently and accurately using a procedure that works with all two-digit numbers and explain why the procedure works. 2.3.E Use both analog and digital clocks to tell time to the minute.	Share counting up strategies for solving subtraction problems involving money. PE 2.2.C▲					Tell time to the nearest 5 minutes. PE 2.3.E	
11♦3	2.2.C Add and subtract two-digit numbers efficiently and accurately using a procedure that works with all two-digit numbers and explain why the procedure works. 2.2.D Add and subtract two-digit numbers mentally and explain the strategies used.	Solve subtraction problems using the Trade-First algorithm. PE 2.2.C	By this time students should have had plenty of time developing invented strategies. It is appropriate at this time to introduce an algorithm. Have base-10 blocks available.	algorithm, trade-first (subtraction)			Use strategies for subtraction problems involving two digits. PE 2.2.D	
11♦4	2.4.C Model and describe multiplication situations in which sets of equal size are joined.	Share and justify strategies for solving number stories involving equal groups. PE 2.4.C	Start with the Readiness Activity to provide a model for multiplication (repeated addition) students have not seen before.	multiplication diagram, per, in each, for each, factor, product, rate multiplication stories	<i>P2 Array Bingo.</i> SMJ1 p154, MM p450 PE 2.4.C	Before Part 1, decide how to display a multiplication diagram. See TLG p818. Part 3 (EP) uses the book, <i>Each Orange Had Eight Slices.</i>	Solve problems involving equal groups. PE 2.4.C	TLG p822, “Describe how you shared the baseball cards equally in No. 4.”
11♦5	2.4.D Model and describe division situations in which sets are separated into equal parts. 4.4.G Determine a simple probability from a context that includes a picture.	Use equal sharing models to solve division number stories. PE 2.4.D	Start with the Readiness Activity to provide students with an opportunity to model equal sharing with manipulatives.	multiplication/division diagram, division, quotient, remainder, divided by	<i>P2 Soccer Spin.</i> SMJ p179, MM p470-1 PE 4.4.G▼	This lesson uses the Multiplication diagram from 11♦4. Part 3 (EP) uses the book, “A Remainder of One”.	Understand equal sharing. PE 2.4.D	
11♦6	2.2.A Quickly recall basic addition facts and related subtraction facts for sums through 20. 2.2.C Add and subtract two-digit numbers efficiently and accurately using a procedure that works with all two-digit numbers and explain why the procedure works. 3.2.A Represent multiplication as repeated addition, arrays, counting by multiples, and equal jumps on the number line, and connect each representation to the related equation. 3.2.E Quickly recall those multiplication facts for which one factor is 1, 2, 5, or 10 and the related division facts.	Use skip-counting to develop automaticity with multiplication facts (2s, 5s & 10s). PE 3.2.E		multiplication fact, fact power	<i>P2 Name That Number.</i> MRB p138-9, MM p462 PE 2.2.A & 2.2.C		Draw an array to answer a multiplication problem. PE 3.2.A	TLG p833, “Describe how you found ½ of the counters in No. 4.”

11♦7	<p>2.3.C Measure length to the nearest whole unit in both metric and U.S. customary units.</p> <p>3.2.D Apply and explain strategies to compute multiplication facts to 10 X 10 and the related division facts.</p>	<p>Find patterns in a Products Table. PE 3.2.D</p>		square (of a number), turn-around rule for multiplication		<p>A teaching master or poster of MM p443 might be helpful for introducing the Products Table activity.</p>	<p>Measure to the nearest inch. PE 2.3.C</p>	
11♦8	<p>3.2.C Determine products, quotients, and missing factors using the inverse relationship between multiplication and division.</p> <p>3.5.E Construct and analyze pictographs, frequency tables, line plots, and bar graphs.</p>	<p>Use fact triangles to write equations for multiplication/division fact families. PE 3.2.C</p>		fact family		<p>2-Day Lesson Prepare multiplication/division diagram and a Fact Triangle for teaching masters. MM p442 & 444.</p>	<p>Find the median of a set of data. PE 3.5.E▲</p>	
11♦9	<p>3.1.D Estimate sums and differences to approximate solutions to problems and determine reasonableness of answers.</p> <p>4.1.A Quickly recall multiplication facts through 10x10 and the related division facts.</p>	<p>Use fact triangles to develop automaticity for multiplication facts. PE 4.1.A</p>			<p><i>P1 Beat the Calculator Multiplication.</i> SMJ p286-7 PE 4.1.A</p>		<p>Give a reasonable estimate. PE 3.1.D▲</p>	<p>TLG p848, "How did you solve No. 1?"</p>

Unit 12: Year-End Review and Extensions								
Overview: To review time equivalencies and calendar facts, to read times in different ways and show time on a clock face; to show events on a timeline; to review and extend shortcuts and strategies for learning multiplication facts; to investigate the relationship between multiplication and division; and to read, draw, and interpret bar graphs and identify the range, median, and mode.								
Big Ideas		Number Relationships: Addition and subtraction are inverse operations of each other and multiplication and division are inverse operations of each other. Data: Data can be collected, classified, analyzed & displayed using tables, charts & graphs.						
Performance Expectations		Learning Target	Comments	Vocabulary	Games	Advanced Prep	RSAs	Writing/Reasoning Prompt – Math Boxes
12♦1	2.3.D Describe the relative size among minutes, hours, days, weeks, months, and years.	Use a calendar and clock to describe relationships among units of time. PE 2.3.D				For Math Message, MM p377, 1 per 4 students, cut apart. For Part 3 (EP) you will need the dates for the 1 st day of summer vacation and the 1 st day of next school year.	Describe the relationship between days in a week and hours in a day. PE 2.3.D	TLG p869, “Explain how you found the answer to No. 4.”
12♦2	2.2.A Quickly recall basic addition facts and related subtraction facts for sums through 20. 2.3.E Use both analog and digital clocks to tell time to the minute.	Use and recognize alternate phrases to tell time. PE 2.3.E	Students should be able to tell time to the minute by this time (see comment for lesson 1♦3). Use Supplement 12♦2: Time to the Minute for a final practice of this skill. The activity “Finding the Time Before and After a Given Time” is optional. PE 2.3.E				Record known addition and subtraction facts. PE 2.2.A	
12♦3	2.1.F Compare and order numbers from 0 to 1,000. 2.3.D Describe the relative size among minutes, hours, days, weeks, months, and years. 2.3.E Use both analog and digital clocks to tell time to the minute.	Use a timeline to display events in sequential order. PE 2.1.F▲	For Part 2 “Making Clock Concentration Cards”, include times to the minute PE 2.3.E .	communicate, timeline, decade, century		For Part 1, prepare a timeline from 1830 to 2010, showing 10-year intervals.	Identify units of time. PE 2.3.D	
12♦4	2.2.A Quickly recall basic addition facts and related subtraction facts for sums through 20. 2.2.C Add and subtract two-digit numbers efficiently and accurately using a procedure that works with all two-digit numbers and explain why the procedure works. 2.4.C Model and describe multiplication situations in which sets of equal size are joined. 3.2.D Apply and explain strategies to compute multiplication facts to 10 X 10 and the related division facts.	Use a variety of strategies to quickly compute basic multiplication facts. PE 3.2.D		fFactor, product, turn-around rule	P2 <i>Name That Number</i> : MRB p138-9, MM p462 PE 2.2.A & 2.2.C		Use manipulatives and drawings to model multiplication. PE 2.4.C	TLG p888, “How did you find solutions to the three parts of No. 6?”
12♦5	2.2.C Add and subtract two-digit numbers efficiently and accurately using a procedure that works with all two-digit numbers and explain why the procedure works. 3.2.A Represent multiplication as repeated addition, arrays, counting by multiples, and equal jumps on the number line, and connect each representation to the related equation. 3.2.C Determine products, quotients, and missing factors using the inverse relationship between multiplication and division.	Use the inverse of multiplication on fact triangles to solve division problems (i.e. $3 \times ? = 12$). PE 3.2.C	Note typo: Some TLGs p 891 have $4 \times 2 = 7$ on blackboard graphic)		P2 <i>Addition Card Draw</i> : SMJ p300, MM p446 PE 2.2.C	Use MM p444 of Fact Triangle for teaching master from 11♦8.	Use arrays to model multiplication. PE 3.2.A	TLG p894, “How did you find the missing numbers in $___ - 23 = 17$ and $60 - ___ = 28$ in No. 6?”

12♦6	<p>2.4.B Collect, organize, represent and interpret data in bar graphs and picture graphs.</p>	<p>Answer questions about data represented on a bar graph. PE 2.4.B</p>		<p>median, range</p>			<p>Use a graph to draw conclusions. PE 2.4.B</p>	
12♦7	<p>2.2.C Add and subtract two-digit numbers efficiently and accurately using a procedure that works with all two-digit numbers and explain why the procedure works. 3.5.E Construct and analyze pictographs, frequency tables, line plots, and bar graphs.</p>	<p>Represent and interpret data using tables, line plots and bar graphs. PE 3.5.E</p>		<p>mode</p>	<p><i>P2 Addition Card</i> <i>Draw:</i> SMJ p300, MM p446 PE 2.2.C</p>	<p>For Math Message, prepare a number line, marked 0 to 10. Two sticky-notes per student.</p>	<p>Find the landmarks of a data set. PE 3.5.E</p>	