VASHON ISLAND SCHOOL DISTRICT

MATHEMATICS GUIDE

GRADES 1 AND 2

Revised June 2006

First Grade

First Grade	Introduced/Practiced During Year	Delivery Methods	Year-end Proficiencies	State GLEs
Number Sense	Solve 2-digit addition and subtraction problems Compare fractions less than 1 Find equivalent fractions Identify fractional parts of regions ands sets with a focus on unit fractions Identify fractional parts of a region Find complements of 10 Solve simple addition and subtraction number stories Solve simple addition and subtraction problems by skip counting on the number line and the number grid Identify numbers as odd and even Know the values of pennies, nickels, and dimes, and calculate the value of combinations of these coins Solve simple number stories Find simple sums and missing addends Calculate the value of coin combinations Understand place value for longs ands cubes Compare numbers using < and > Find many names for a number Count sets of quarters, dimes, nickels, ands pennies Identify and use patterns on a number grid Count up and back by 1s on the number grid Understand place value for 10s and 1s Know addition facts for +1, +0, and doubles **Represent a number to at least 100 in different ways (e.g., numerals, pictures, words, physical models) and translate from one representation to another. [CU]** **Group and regroup objects into 1's and 10's.** **Count sets of objects less than 100 using a variety of grouping strategies.** **Order three or more numbers to at least 100 from smallest to largest. [RL]** **Use comparative language (e.g., less than, more than, equal to) to compare numbers to at least 100. [CU]** **Skip count by 2, 5, and 10.** **Count forward and backward, from a given number that is less than 100.** **Express stories involving**	Math Message Student explorations Games Hands on Activities Drill and practice—math masters Modeling Demonstration Cross-age tutoring Direct instruction Discussion Explain your solution orally and in written form Write a math story Journals Projects Minute math	**Represent a number to at least 100 in different ways (e.g., numerals, pictures, words, physical models) and translate from one representation to another. [CU]** **Group and regroup objects into 1's and 10's.** **Count sets of objects less than 100 using a variety of grouping strategies.** **Order three or more numbers to at least 100 from smallest to largest. [RL]** **Use comparative language (e.g., less than, more than, equal to) to compare numbers to at least 100. [CU]** **Skip count by 2, 5, and 10.** **Count forward and backward, from a given number that is less than 100.** **Express stories involving subtraction (e.g., separate) with models, pictures, and symbols. [CU, MC]** **Show relationships between addition and subtraction using physical models, diagrams, and acting out problems. [CU]** **Use strategies (e.g., count on, count back, doubles) for addition to at least sums to 12. [SP, RL]** **Recall addition facts through at least sums to 12.** **Solve problems involving addition using procedures and explaining those procedures. [SP, RL, CU]** **Use strategies and appropriate tools from among mental math, paper and pencil, manipulatives, or calculator to compute in a problem situation. [SP, RL]** **Use counting strategies to combine whole numbers with sums under 12. [SP, RL]** **Use a known quantity (e.g., chunking) to make reasonable estimates. [RL]** **Use numbers that are easy to add or subtract to make a reasonable estimate of a sum (e.g., 9 + 8 should be about 20, since 9 is about 10, 8 is about 10, and 10 + 10 is 20). [RL]**	**1.1.1** **1.1.2** **1.1.5** **1.1.6** **1.1.7** **1.1.8**

	subtraction (e.g., separate) with models, pictures, and symbols. [CU, MC] **Show relationships between addition and subtraction using physical models, diagrams, and acting out problems. [CU]** **Use strategies (e.g., count on, count back, doubles) for addition to at least sums to 12. [SP, RL]** **Recall addition facts through at least sums to 12.** **Solve problems involving addition using procedures and explaining those procedures. [SP, RL, CU]** **Use strategies and appropriate tools from among mental math, paper and pencil, manipulatives, or calculator to compute in a problem situation. [SP, RL]** **Use counting strategies to combine whole numbers with sums under 12. [SP, RL]** **Use a known quantity (e.g., chunking) to make reasonable estimates. [RL]** **Use numbers that are easy to add or subtract to make a reasonable estimate of a sum (e.g., 9 + 8 should be about 20, since 9 is about 10, 8 is about 10, and 10 + 10 is 20). [RL]**			
Measurement	Measure objects to the nearest centimeters Understand digital notation for time Make change for amounts less than $1 Use standard units fro measuring length Calculate the value of coin combinations--"P," "N," "D," and "Q" Calculate the values of various combinations of pennies and nickels Tell time to the nearest half-hour Exchange pennies for nickels Tell time to the nearest hour Tell time to the nearest half-hour **Order three or more objects according to an attribute (e.g., pencil lengths, students' hand span, and thickness of books). [RL]** **Read a clock with only the hour hand and use approximate language (e.g., almost 7, a little after 7). [CU]** **Identify coins (penny, nickel, dime, quarter) and state their value. [CU]** **Select units appropriate to the object being measured (e.g., measure length of classroom with footprints, not beans) and explain why it was selected. [CU]** **Use a uniform unit to measure an object (e.g., cubes, paper strips,**	Math Message Student explorations Games Hands on Activities Drill and practice—math masters Modeling Demonstration Cross-age tutoring Direct instruction Discussion Explain your solution orally and in written form Write a math story Journals Projects Minute math	**Order three or more objects according to an attribute (e.g., pencil lengths, students' hand span, and thickness of books). [RL]** **Read a clock with only the hour hand and use approximate language (e.g., almost 7, a little after 7). [CU]** **Identify coins (penny, nickel, dime, quarter) and state their value. [CU]** **Select units appropriate to the object being measured (e.g., measure length of classroom with footprints, not beans) and explain why it was selected. [CU]** **Use a uniform unit to measure an object (e.g., cubes, paper strips, ruler).** **Measure a variety of objects using appropriate non-standard tools (e.g., arm length, hand width, lengths of rope).** **Use a variety of records of time (e.g., calendar, seasonal plants, animal migrations, moon phases, tides, shadows).** **Use physical models of measuring units to fill, cover, match, or make the desired comparison of the attribute with the unit. [SP, RL]** **Explain the need for appropriate**	**1.2.1** **1.2.4**

	ruler). **Measure a variety of objects using appropriate non-standard tools (e.g., arm length, hand width, lengths of rope).** **Use a variety of records of time (e.g., calendar, seasonal plants, animal migrations, moon phases, tides, shadows).** **Use physical models of measuring units to fill, cover, match, or make the desired comparison of the attribute with the unit. [SP, RL]** **Explain the need for appropriate tools for measurement. [CU]**		**tools for measurement. [CU]**	
Geometric Sense	Identify 3-dimensional shapes and know their characteristics Identify symmetrical figures Identify polygons and know their characteristics **Describe two-dimensional figures based on their characteristics (e.g., number of sides, number of equal sides). [CU]** **Identify, compare, and sort two-dimensional figures in their surroundings (e.g., by lengths of sides, general shape). [RL, MC]** **Describe figures using accurate terminology (e.g., square, rectangle, triangle).** **Indicate whether a number is above or below a benchmark number (e.g., greater than or less than 100).** **Describe the location of a given number between 1 and 100 on a number line. [CU]** **Identify a point up to 100 on a positive number line.**	Hands on Activities Drill and practice Cooperative groups Modeling Demonstration Cross-age tutoring Computer lab Lecture Explain your solution orally and in written form Write a math story Journals Projects	**Describe two-dimensional figures based on their characteristics (e.g., number of sides, number of equal sides). [CU]** **Identify, compare, and sort two-dimensional figures in their surroundings (e.g., by lengths of sides, general shape). [RL, MC]** **Describe figures using accurate terminology (e.g., square, rectangle, triangle).** **Indicate whether a number is above or below a benchmark number (e.g., greater than or less than 100).** **Describe the location of a given number between 1 and 100 on a number line. [CU]** **Identify a point up to 100 on a positive number line.**	**1.3.2** **1.3.3**
Probability and Statistics	Write and count tallies **Display results of data collection by making student-invented and conventional displays. [CU]** **Construct bar graphs with physical materials and record pictorially (e.g., shoes, cats, crops, egg rolls, tacos). [CU]** **Collect data related to questions and organize the data into useful categories in familiar situations (e.g., how many students like apples? How many students do NOT like apples?).** **Answer questions about bar graphs or pictographs (e.g., how many dancers, plants, canoes, pets?). [CU]**	Math Message Student explorations Games Hands on Activities Drill and practice—math masters Modeling Demonstration Cross-age tutoring Direct instruction Discussion Explain your solution orally and in written form Write a math story Journals Projects Minute math	**Display results of data collection by making student-invented and conventional displays. [CU]** **Construct bar graphs with physical materials and record pictorially (e.g., shoes, cats, crops, egg rolls, tacos). [CU]** **Collect data related to questions and organize the data into useful categories in familiar situations (e.g., how many students like apples? How many students do NOT like apples?).** **Answer questions about bar graphs or pictographs (e.g., how many dancers, plants, canoes, pets?). [CU]**	**1.4.3** **1.4.5**
Algebraic Sense	Find missing numbers and/or the missing rule in "What's My Rule?" problems Complete Frames-and-Arrows diagrams Sort and identify objects by attributes Identify and complete patterns **Create and describe a variety of**	Math Message Student explorations Games Hands on Activities Drill and practice—math masters Modeling Demonstration	**Create and describe a variety of repeating patterns using sounds, objects, and symbols. [CU]** **Describe and extend a repeating pattern (e.g., ABAC, ABAC; snap, clap, snap, stomp). [CU]** **Identify the unit in a repeating pattern (e.g., in A-A-B-A-A-B the**	**1.5.1**

	repeating patterns using sounds, objects, and symbols. [CU] **Describe and extend a repeating pattern (e.g., ABAC, ABAC; snap, clap, snap, stomp). [CU]** **Identify the unit in a repeating pattern (e.g., in A-A-B-A-A-B the unit is A-A-B). [RL]** **Identify and describe numerical patterns in the 100's chart. [CU, RL]** **Identify geometric patterns in art, textiles, and ceramics.** **Demonstrate equality by recording number sentences with balance using the "=" symbol (e.g., 9 = 4 + 5, 4 + 5 = 2 + 7, 9 = 9). [CU]** **Complete open sentences showing equalities (e.g., 5 = ____). Explain, using pictures or words, the meaning of equality. [CU]** **Give an example of equality in real life (e.g., on the first turn, Juan scored 4 points, on the second turn, he scored 5 points. On the first turn, Ivana scored 2 points, on the second turn, she scored 7 points. After two turns, they are tied with the same number of points). [MC]**	Cross-age tutoring Direct instruction Discussion Explain your solution orally and in written form Write a math story Journals Projects Minute math	**unit is A-A-B). [RL]** **Identify and describe numerical patterns in the 100's chart. [CU, RL]** **Identify geometric patterns in art, textiles, and ceramics.** **Demonstrate equality by recording number sentences with balance using the "=" symbol (e.g., 9 = 4 + 5, 4 + 5 = 2 + 7, 9 = 9). [CU]** **Complete open sentences showing equalities (e.g., 5 = ____). Explain, using pictures or words, the meaning of equality. [CU]** **Give an example of equality in real life (e.g., on the first turn, Juan scored 4 points, on the second turn, he scored 5 points. On the first turn, Ivana scored 2 points, on the second turn, she scored 7 points. After two turns, they are tied with the same number of points). [MC]**	**1.5.3**
Problem Solving	**State information presented in a teacher-led discussion to determine if there is a problem (e.g., a classroom is having a play and each student invited two guests. Chairs are needed for the guests. There are some chairs available in the classroom).** **State the problem in own words (e.g., there aren't enough chairs for the guests. How many more chairs do we need?).** **Generate questions that would need to be answered in order to solve the problem (e.g., how many guests are attending? How many more chairs do we need?).** **Identify known and unknown information with teacher guidance (e.g., known – number of students, number of guests invited, number of chairs in classroom; unknown – number of guests attending, number of chairs needed). [1.1.5]** **Gather and organize categorical data (e.g., in a teacher-guided activity, create a two-column chart – one column for student names and the other to record the number of guests attending the play). [1.4.3]** **Use strategies (chart to count, skip count, cluster, or physical models). [1.1.1, 1.1.5]** **Use appropriate tools from among**	Math Message Student explorations Games Hands on Activities Practice—math masters Modeling Demonstration Discussion Explain your solution orally and in written form Write a math story Journals Projects	**State information presented in a teacher-led discussion to determine if there is a problem (e.g., a classroom is having a play and each student invited two guests. Chairs are needed for the guests. There are some chairs available in the classroom).** **State the problem in own words (e.g., there aren't enough chairs for the guests. How many more chairs do we need?).** **Generate questions that would need to be answered in order to solve the problem (e.g., how many guests are attending? How many more chairs do we need?).** **Identify known and unknown information with teacher guidance (e.g., known – number of students, number of guests invited, number of chairs in classroom; unknown – number of guests attending, number of chairs needed). [1.1.5]** **Gather and organize categorical data (e.g., in a teacher-guided activity, create a two-column chart – one column for student names and the other to record the number of guests attending the play). [1.4.3]** **Use strategies (chart to count, skip count, cluster, or physical models). [1.1.1, 1.1.5]** **Use appropriate tools from among**	**2.1.1** **2.2.1** **2.2.2**

	mental math, paper and pencil, manipulatives, or calculator (e.g., to determine the total number of guests attending and the total number of chairs needed for the class play). [1.1.7] **Recognize when an approach is unproductive and try a new approach.**		**mental math, paper and pencil, manipulatives, or calculator (e.g., to determine the total number of guests attending and the total number of chairs needed for the class play). [1.1.7]** **Recognize when an approach is unproductive and try a new approach.**	
Reasoning	**Restate understanding of the situation (e.g., each guest attending the play will require a chair; there are not enough in the classroom).** **Predict a numerical solution for a problem (e.g., predict how many more chairs will be needed).** **Use known information to make a reasonable prediction (e.g., if two numbers are each less than 10, the sum will be less than 20).** **Make an inference based on information provided (e.g., the boys in class did a better job convincing their guests to attend because there are more guests coming for the boys than the girls).** **Draw conclusions from displays using comparative language (e.g., more students have two guests coming, or fewer students have only one guest coming) and provide examples from displays to support conclusions.** **Justify the importance of counting in a situation rather than making a guess at a number of items for a specific purpose (e.g., counting the number of chairs needed for the play rather than guessing).** **Check reasonableness of results by using pictures, physical models, or acting it out (e.g., students raise one hand for one guest attending and two hands if two guests are attending).** **Explain why a strategy or tool was used in solving a problem (e.g., why a two-column chart was helpful to gather the information needed about the number of guests attending the play).**	Math Message Student explorations Games Hands on Activities Modeling Demonstration Discussion Explain your solution orally and in written form Journals Projects Minute math	**Restate understanding of the situation (e.g., each guest attending the play will require a chair; there are not enough in the classroom).** **Predict a numerical solution for a problem (e.g., predict how many more chairs will be needed).** **Use known information to make a reasonable prediction (e.g., if two numbers are each less than 10, the sum will be less than 20).** **Make an inference based on information provided (e.g., the boys in class did a better job convincing their guests to attend because there are more guests coming for the boys than the girls).** **Draw conclusions from displays using comparative language (e.g., more students have two guests coming, or fewer students have only one guest coming) and provide examples from displays to support conclusions.** **Justify the importance of counting in a situation rather than making a guess at a number of items for a specific purpose (e.g., counting the number of chairs needed for the play rather than guessing).** **Check reasonableness of results by using pictures, physical models, or acting it out (e.g., students raise one hand for one guest attending and two hands if two guests are attending).** **Explain why a strategy or tool was used in solving a problem (e.g., why a two-column chart was helpful to gather the information needed about the number of guests attending the play).**	**3.1.1** **3.2.1** **3.2.2** **3.2.3** **3.3.1** **3.3.2**
Communication	**Determine what information is needed and how to collect it for a given purpose (e.g., to help explain something, to find out if something is needed) and who the information is for (e.g., for the classroom, for the adults at home, for the librarian).** **Develop and follow a plan to gather data about an event (e.g., how many students will attend the**	Student explorations Games Hands on Activities Modeling Demonstration Cross-age tutoring Discussion Explain your solution orally and in written form Write a math story	**Determine what information is needed and how to collect it for a given purpose (e.g., to help explain something, to find out if something is needed) and who the information is for (e.g., for the classroom, for the adults at home, for the librarian).** **Develop and follow a plan to gather data about an event (e.g., how many students will attend the**	**4.1.1**

	Saturday Movie Afternoon at school?). **Follow simple written directions for creating an art project using a model (e.g., requiring cutting and folding geometric shapes).** **Generate questions that could be answered using informational text (e.g., TV ads, books, menus, cereal boxes).** **Organize and display data on a chart to communicate solution for the given audience (e.g., use a two- or three-column chart to display the number of guests per student attending a class play and, if there is a chair for each guest, inform the custodian as to how many more chairs are needed).** **Display results of data collection by making student-invented and conventional displays (e.g., hair color, eye color, teeth missing).** **Explain or represent ideas using mathematical language from:** ○ **Number sense (e.g., numbers to at least 100) [1.1.1];** ○ **Measurement (e.g., order three or more objects according to an attribute and identify the chosen attribute) [1.2.1];** ○ **Geometric sense (e.g., name and describe two-dimensional figures based on their characteristics) [1.3.1];** ○ **Statistics (e.g., construct bar graphs with physical materials) [1.4.3];** ○ **Algebraic sense (e.g., explain the meaning of equality). [1.5.3]**	Journals Projects	**Saturday Movie Afternoon at school?).** **Follow simple written directions for creating an art project using a model (e.g., requiring cutting and folding geometric shapes).** **Generate questions that could be answered using informational text (e.g., TV ads, books, menus, cereal boxes).** **Organize and display data on a chart to communicate solution for the given audience (e.g., use a two- or three-column chart to display the number of guests per student attending a class play and, if there is a chair for each guest, inform the custodian as to how many more chairs are needed).** **Display results of data collection by making student-invented and conventional displays (e.g., hair color, eye color, teeth missing).** **Explain or represent ideas using mathematical language from:** ○ **Number sense (e.g., numbers to at least 100) [1.1.1];** ○ **Measurement (e.g., order three or more objects according to an attribute and identify the chosen attribute) [1.2.1];** ○ **Geometric sense (e.g., name and describe two-dimensional figures based on their characteristics) [1.3.1];** ○ **Statistics (e.g., construct bar graphs with physical materials) [1.4.3];** ○ **Algebraic sense (e.g., explain the meaning of equality). [1.5.3]**	**4.1.2** **4.2.1** **4.2.2**
Connections	**Interpret results and draw conclusions from student-made displays using comparative language (e.g., more, fewer). [1.4.4, 3.2.2]** **Measure objects using non-standard tools and place resulting numbers in order from shortest (smallest) to longest (largest). [1.2.3, 1.1.2]** **Identify different representations of a number to at least 100 (e.g., numerals, pictures, physical models). [1.1.1]** **Express stories involving subtraction (e.g., separate) with models, pictures, and symbols. [1.1.5]** **Use the characteristics of two-dimensional shapes in art**	Math Message Student explorations Games Hands on Activities Modeling Discussion Explain your solution orally and in written form Write a math story Journals Projects	**Interpret results and draw conclusions from student-made displays using comparative language (e.g., more, fewer). [1.4.4, 3.2.2]** **Measure objects using non-standard tools and place resulting numbers in order from shortest (smallest) to longest (largest). [1.2.3, 1.1.2]** **Identify different representations of a number to at least 100 (e.g., numerals, pictures, physical models). [1.1.1]** **Express stories involving subtraction (e.g., separate) with models, pictures, and symbols. [1.1.5]** **Use the characteristics of two-dimensional shapes in art**	**5.1.1** **5.1.2** **5.2.1**

	projects and recognize the use of geometric shapes in artwork. **Use a clock to determine when it is time for recess or lunch time.** **Explain how math is used whenever we use money for a purchase**. **Recognize the contributions of women, men,, and people from different cultures (e.g., look at symbols used for numbering in the Mayan culture).** **Generate examples of mathematics in everyday life:** ○ **counting (e.g., the pennies in the penny jar);** ○ **comparing measurements (e.g., standing up against the mark on the wall to check for growth);** ○ **building things (e.g., a snowman with three spheres, a dog house made of a box with a triangular roof);** ○ **playing games (e.g., when counting spaces on a board or knowing money is needed)** **Describe familiar two-dimensional shapes based on their geometric characteristics (e.g., sharp corners, sides of different lengths).** **Identify and sort two-dimensional shapes in their surroundings.** **Skip count by 5s or 10s (e.g., with nickels or dimes).**		**projects and recognize the use of geometric shapes in artwork.** **Use a clock to determine when it is time for recess or lunch time.** **Explain how math is used whenever we use money for a purchase**. **Recognize the contributions of women, men,, and people from different cultures (e.g., look at symbols used for numbering in the Mayan culture).** **Generate examples of mathematics in everyday life:** ○ **counting (e.g., the pennies in the penny jar);** ○ **comparing measurements (e.g., standing up against the mark on the wall to check for growth);** ○ **building things (e.g., a snowman with three spheres, a dog house made of a box with a triangular roof);** ○ **playing games (e.g., when counting spaces on a board or knowing money is needed)** **Describe familiar two-dimensional shapes based on their geometric characteristics (e.g., sharp corners, sides of different lengths).** **Identify and sort two-dimensional shapes in their surroundings.** **Skip count by 5s or 10s (e.g., with nickels or dimes).**	**5.2.2** **5.3.1**

Second Grade

Second Grade	Introduced/Practiced During Year	Delivery Methods	Year-end Proficiencies	State GLEs
Number Sense	Use parentheses in number models Know "harder" multiplication facts Solve stories about multiples of equal groups Solve equal-grouping and equal-sharing division problems Compare fractions Know "easy" addition facts Identify place value for ones, tens and hundreds Find equivalent names for numbers Compare numbers: write symbols <, >, and = Know more difficult subtraction facts Estimate approximate costs and sums Use the trade-first method to solve 2-digit subtraction problems Make ballpark estimates of exact answers Model multiplication problems with arrays Add three 2-digit numbers mentally Find missing addends for any multiple of 10 Understand fractions as names for equal parts of a region or set Understand that the amount represented by a fraction depends on the size of the whole (ONE) Shade a specified fractional part of a collection Give the fraction name for the shaded part of a collection Recognize equivalent fraction names Solve money stories involving change Estimate totals for "ballpark" check of exact answers Know and express automatically the values of digits in 2-, 3-, 4-, and 5-digit numbers Estimate and solve addition and subtraction number stories with dollars and cents Solve 1-digit multiplication stories (multiples of equal groups) Solve simple division stories (equal sharing and equal groupings) Multiply numbers with 2, 5, or 10 as a factor Construct multiplication/division fact families Make difference and ratio comparisons Know "harder" addition facts Know "easier" subtraction facts Solve simple subtraction number stories Add and subtract with multiples of 10 Solve addition and subtraction number stories Construct multiplication/division fact	Math Message Math Boxes—review problems Student explorations Games Hands on Activities Drill and practice—math masters Modeling Demonstration Cross-age tutoring Direct instruction Discussion Explain your solution orally and in written form Write a math story Journals Projects Minute math	Count by 2s, 5s and 10s Know "easier" addition facts Construct fact families for addition and subtraction Solve simple addition number stories Find equivalent names for numbers Identify place value in 2-digit and 3-digit numbers Know all addition facts Know easy subtraction facts Add and subtract multiples of 10 Add three 1-digit numbers mentally Know complements of 10 Shade a specified fractional part of a region Give the fraction name for the shaded part of a region Read and write money amounts in decimal notation Know and express automatically the values of digits in 2-, 3- and 4-digit numbers Multiply numbers with 0 or 1 as a factor **Group and regroup objects into 1's, 10's, and 100's and explain relationships. [CU]** **Determine the value of a digit based on its position in a number.** **Read and write numbers to at least 1,000. [CU]** **Order three or more numbers to at least 1,000 from smallest to largest. [RL]** **Use comparative language (e.g., less than, more than, equal to) to compare numbers to at least 1,000. [CU]** **Show relationships between addition and subtraction using physical models, diagrams, and acting out problems. [CU, MC]** **Model real life situations involving addition (e.g., Peter has 7 peanut butter cookies and 4 chocolate chip. How many cookies does he have?) and subtraction (e.g., Peter has 11 cookies which is 4 more than Teresa. How many cookies does Teresa have?) using physical models and diagrams from various cultures and acting out problems. [CU]** **Use strategies for addition and subtraction combinations through at least 18.** **Recall addition and subtraction facts through at least 18.** **Solve problems involving addition and subtraction with two or three digit numbers using a calculator and explaining**	**1.1.1** **1.1.2** **1.1.5** **1.1.6**

	families Multiply numbers with 2, 5, and 10 as a factor Count by 2s, 5s and 10s Construct fact families for addition and subtraction Solve simple addition number stories Find equivalent names for numbers Identify place value in 2-digit and 3-digit numbers Know all addition facts Know easy subtraction facts Add and subtract multiples of 10 Add three 1-digit numbers mentally Know complements of 10 Shade a specified fractional part of a region Give the fraction name for the shaded part of a region Read and write money amounts in decimal notation Multiply numbers with 0 or 1 as a factor **Group and regroup objects into 1's, 10's, and 100's and explain relationships. [CU]** **Determine the value of a digit based on its position in a number.** **Read and write numbers to at least 1,000. [CU]** **Order three or more numbers to at least 1,000 from smallest to largest. [RL]** **Use comparative language (e.g., less than, more than, equal to) to compare numbers to at least 1,000. [CU]** **Show relationships between addition and subtraction using physical models, diagrams, and acting out problems. [CU, MC]** **Model real life situations involving addition (e.g., Peter has 7 peanut butter cookies and 4 chocolate chip. How many cookies does he have?) and subtraction (e.g., Peter has 11 cookies which is 4 more than Teresa. How many cookies does Teresa have?) using physical models and diagrams from various cultures and acting out problems. [CU]** **Use strategies for addition and subtraction combinations through at least 18.** **Recall addition and subtraction facts through at least 18.** **Solve problems involving addition and subtraction with two or three digit numbers using a calculator and explaining procedures used. [SP, CU]** **Make combinations and name total value of coins.** **Use mental math strategies to compute (e.g., composing and**		**procedures used. [SP, CU]** **Make combinations and name total value of coins.** **Use mental math strategies to compute (e.g., composing and decomposing numbers, finding combinations that are easy to add or subtract) through 100. [RL]** **Use calculator, manipulatives, or paper and pencil to solve addition or subtraction problems.** **Explain methods to mentally group numbers efficiently (e.g., when adding 52 and 59, add the 50's together to get 100, then add eleven more). [CU]** **Use estimation strategies (e.g., front-end estimation, clustering) to predict computation results and to determine the reasonableness of answers. [RL]** **Justify reasonableness of an estimate in addition and subtraction. [CU]** **Decide whether a given estimate for a sum or difference is reasonable. [RL]**	**1.1.7** **1.1.8**

	decomposing numbers, finding combinations that are easy to add or subtract) through 100. [RL] **Use calculator, manipulatives, or paper and pencil to solve addition or subtraction problems.** **Explain methods to mentally group numbers efficiently (e.g., when adding 52 and 59, add the 50's together to get 100, then add eleven more). [CU]** **Use estimation strategies (e.g., front-end estimation, clustering) to predict computation results and to determine the reasonableness of answers. [RL]** **Justify reasonableness of an estimate in addition and subtraction. [CU]** **Decide whether a given estimate for a sum or difference is reasonable. [RL]**			
Measurement	Use alternate names for times of day Identify equivalencies for mm, cm, dm and m Find values of coin and bill combinations Make change Read ºF on a thermometer Use appropriate units for measurement and recognize sensible measurements Measure to the nearest inch Measure to the nearest centimeter Measure to the nearest 1/2 inch Measure to the nearest 1/2 cm Identify equivalencies for inches, feet, and yards Show "P," "N," "D," and "Q" for a given amount Use a ruler, tape measure, and meter/yardstick correctly Use equivalent coins to show money amounts in different ways Use a calculator to compute money amounts Know exchange values of U.S. coins Tell time to 5-minute intervals Demonstrate calendar concepts and skills **Identify attributes of an object that are measurable (e.g., time, length, distance around, or weight of objects).** **Compare lengths or distances where direct comparison is not possible (e.g., use a string, paper strip, arm length, or hand span to compare the height and width of a table). [RL, MC]** **Read a clock to tell time to the half hour.** **Select the most appropriate unit to measure the time of a given situation (e.g., would you use minutes or hours to measure**	Math Message Math Boxes—review problems Student explorations Games Hands on Activities Drill and practice—math masters Modeling Demonstration Cross-age tutoring Direct instruction Discussion Explain your solution orally and in written form Write a math story Journals Projects Minute math	Show "P," "N," "D," and "Q" for a given amount Use a ruler, tape measure, and meter/yardstick correctly Use equivalent coins to show money amounts in different ways Use a calculator to compute money amounts Know exchange values of U.S. coins Tell time to 5-minute intervals Demonstrate calendar concepts and skills **Identify attributes of an object that are measurable (e.g., time, length, distance around, or weight of objects).** **Compare lengths or distances where direct comparison is not possible (e.g., use a string, paper strip, arm length, or hand span to compare the height and width of a table). [RL, MC]** **Read a clock to tell time to the half hour.** **Select the most appropriate unit to measure the time of a given situation (e.g., would you use minutes or hours to measure brushing your teeth, eating dinner, sleeping?). [MC]** **Select a tool that can measure the given attribute (e.g., analogue clock – time, string – length, balance – weight).** **Demonstrate measurement procedure (e.g., start at a beginning point, place units end-to-end, not overlapping, and straight line). [CU]** **Justify the use of one tool over another (e.g., the length of a hand is a better measurement tool for this situation than the length of a small cube). [CU, RL]**	**1.2.1** **1.2.4**

	brushing your teeth, eating dinner, sleeping?). [MC] **Select a tool that can measure the given attribute (e.g., analogue clock – time, string – length, balance – weight).** **Demonstrate measurement procedure (e.g., start at a beginning point, place units end-to-end, not overlapping, and straight line). [CU]** **Justify the use of one tool over another (e.g., the length of a hand is a better measurement tool for this situation than the length of a small cube). [CU, RL]** **Explain why, when the unit is smaller it takes more to measure an item than when the unit is larger (e.g., it takes more small paper clips than large paper clips to measure the same length). [CU]** **Estimate length and weight using non-standard units. [RL]** **Use important benchmarks (referents) (e.g., 5 or 10) to make initial and revised estimates.** **Explain how a benchmark (referent) helps to make a reasonable estimate. [CU]**		**Explain why, when the unit is smaller it takes more to measure an item than when the unit is larger (e.g., it takes more small paper clips than large paper clips to measure the same length). [CU]** **Estimate length and weight using non-standard units. [RL]** **Use important benchmarks (referents) (e.g., 5 or 10) to make initial and revised estimates.** **Explain how a benchmark (referent) helps to make a reasonable estimate. [CU]**	**1.2.6**
Geometric Sense	Identify 3-dimensional shapes, such as rectangular prisms, cylinders, pyramids, cones, and spheres Identify symmetrical figures Find common attributes of shapes Identify parallel and nonparallel line segments Find area concretely Find perimeter concretely Draw line segments Identify 2-dimensional shapes **Sort and describe characteristics of two-dimensional geometric figures (e.g., various polygons). [RL, CU]** **Draw a two-dimensional shape that matches a set of characteristics (e.g., draw a four-sided shape that has all sides the same length).** **Indicate whether a number is above or below a benchmark number (e.g., greater than or less than 1000).** **Describe the location of a given number between 1 and 1000 on a number line. [CU]** **Identify a point up to 1000 on a positive number line.**	Math Message Math Boxes—review problems Student explorations Games Hands on Activities Drill and practice—math masters Modeling Demonstration Cross-age tutoring Direct instruction Discussion Explain your solution orally and in written form Write a math story Journals Projects Minute math	Identify 2-dimensional shapes **Sort and describe characteristics of two-dimensional geometric figures (e.g., various polygons). [RL, CU]** **Draw a two-dimensional shape that matches a set of characteristics (e.g., draw a four-sided shape that has all sides the same length).** **Indicate whether a number is above or below a benchmark number (e.g., greater than or less than 1000).** **Describe the location of a given number between 1 and 1000 on a number line. [CU]** **Identify a point up to 1000 on a positive number line.**	**1.3.2** **1.3.3**
Probability and Statistics	Determine the mode of a data set Find the median (middle value) of a data set Determine the median, maximum, minimum, and range of a data set Make tallies and give the total	Math Message Math Boxes—review problems Student explorations Games Hands on Activities	Make tallies and give the total Plot data on a bar graph Compare quantities from a bar graph **Identify title, horizontal and vertical axes, and key.** **Construct a bar graph that**	**1.4.3**

	Plot data on a bar graph Compare quantities from a bar graph **Identify title, horizontal and vertical axes, and key.** **Construct a bar graph that includes a title, key, and single unit increment. [CU]** **Name an appropriate title for a display of data. [CU]** **Conduct a survey for a predetermined question and collect data using tallies, charts, lists, or pictures (e.g., who has animals at home, how many, what type?). [SP, RL]** **Identify a question that could be answered from a display.** **Interpret results and draw conclusions from displays (e.g., pictographs, bar graphs) using comparative language (e.g., more, fewer). [CU, MC]** **Read the labels from each axis of a graph. [CU]**	Drill and practice—math masters Modeling Demonstration Cross-age tutoring Direct instruction Discussion Explain your solution orally and in written form Write a math story Journals Projects Minute math	**includes a title, key, and single unit increment. [CU]** **Name an appropriate title for a display of data. [CU]** **Conduct a survey for a predetermined question and collect data using tallies, charts, lists, or pictures (e.g., who has animals at home, how many, what type?). [SP, RL]** **Identify a question that could be answered from a display.** **Interpret results and draw conclusions from displays (e.g., pictographs, bar graphs) using comparative language (e.g., more, fewer). [CU, MC]** **Read the labels from each axis of a graph. [CU]**	**1.4.5**
Algebraic Sense	Complete number sequences; identify and use number patterns to solve problems Solve Frames-and-Arrows problems having two rules Devise and use strategies for finding sums of 2-digit numbers Devise and use strategies for finding differences of 2-digit numbers Complete "What's My Rule?" tables Complete simple Frames-and-Arrows diagrams Count by 2s, 5s, and 10s and describe the patterns Find missing addends for the next multiple of 10 Solve number-grid puzzles **Translate a pattern from one representation to another (e.g., snap-clap-stomp translates to ABC). [CU, MC]** **Identify, extend, create, and explain patterns of addition and subtraction represented in charts and tables. [CU, RL, MC]** **Use number sentences with symbols and labels to represent real-world problems involving addition and subtraction. [MC]** **Give an example of inequality in real life (e.g., on the first turn, Juan scored 6 points, on the second turn, he scored 8 points. On the first turn, Ivana scored 9 points, on the second turn, she scored 7 points. After two turns, Juan's points are less than Ivana's points). [CU, MC]** **Solve equations with an "unknown" (e.g., 6 + ☐ = 11; 11=☐+6). [RL]** **Justify the selection of a**	Math Message Math Boxes—review problems Student explorations Games Hands on Activities Drill and practice—math masters Modeling Demonstration Cross-age tutoring Direct instruction Discussion Explain your solution orally and in written form Write a math story Journals Projects Minute math	Complete simple Frames-and-Arrows diagrams Count by 2s, 5s, and 10s and describe the patterns Find missing addends for the next multiple of 10 Solve number-grid puzzles **Translate a pattern from one representation to another (e.g., snap-clap-stomp translates to ABC). [CU, MC]** **Identify, extend, create, and explain patterns of addition and subtraction represented in charts and tables. [CU, RL, MC]** **Use number sentences with symbols and labels to represent real-world problems involving addition and subtraction. [MC]** **Give an example of inequality in real life (e.g., on the first turn, Juan scored 6 points, on the second turn, he scored 8 points. On the first turn, Ivana scored 9 points, on the second turn, she scored 7 points. After two turns, Juan's points are less than Ivana's points). [CU, MC]** **Solve equations with an "unknown" (e.g., 6 + ☐ = 11; 11=☐+6). [RL]** **Justify the selection of a particular value for an unknown quantity in a real world situation (e.g., Two girls had 10 cookies. If Kwame had 6, how many did Ellie have? Explain). [RL, MC]**	**1.5.1** **1.5.3** **1.5.6**

	particular value for an unknown quantity in a real world situation (e.g., Two girls had 10 cookies. If Kwame had 6, how many did Ellie have? Explain). [RL, MC]			
Problem Solving	**State or record information presented in situation (e.g., the classroom is planning a skating party on Thursday. Each student must pay for admission, lunch, and skates. The teacher needs to know the total cost in order to reserve the rink).** **Explain the problem, verbally or in writing, in own words (e.g., how much will the skating party cost?).** **Generate questions that would need to be answered in order to solve problem (e.g., what is the cost of a ticket and skate rental for the skating rink? What is the cost of food? What is the cost for each student? What will a skating party cost?). [1.4.4]** **Identify known and unknown information (e.g., known – the cost of admission, skates, lunch, and the number of students going; unknown – cost for each student and total cost).** **Identify extraneous information (e.g., the party is planned for Thursday).** **Gather and organize relevant information (e.g., create a four-column chart with student names in one column and the other three for costs related to the party – admission, skates, lunch; draw a seating chart and write in costs by each student).** **Use estimation strategies (e.g., front-end estimation, clustering) to predict computation results. [1.1.8]** **Use appropriate tools from among mental math, paper and pencil, manipulative, or calculator (e.g., to determine the total cost of the skating party). [1.1.7]** **Recognize when an approach is unproductive and try a new approach.**	Math Message Math Boxes—review problems Student explorations Games Hands on Activities Practice—math masters Modeling Demonstration Discussion Write a math story Journals Projects	**State or record information presented in situation (e.g., the classroom is planning a skating party on Thursday. Each student must pay for admission, lunch, and skates. The teacher needs to know the total cost in order to reserve the rink).** **Explain the problem, verbally or in writing, in own words (e.g., how much will the skating party cost?).** **Generate questions that would need to be answered in order to solve problem (e.g., what is the cost of a ticket and skate rental for the skating rink? What is the cost of food? What is the cost for each student? What will a skating party cost?). [1.4.4]** **Identify known and unknown information (e.g., known – the cost of admission, skates, lunch, and the number of students going; unknown – cost for each student and total cost).** **Identify extraneous information (e.g., the party is planned for Thursday).** **Gather and organize relevant information (e.g., create a four-column chart with student names in one column and the other three for costs related to the party – admission, skates, lunch; draw a seating chart and write in costs by each student).** **Use estimation strategies (e.g., front-end estimation, clustering) to predict computation results. [1.1.8]** **Use appropriate tools from among mental math, paper and pencil, manipulative, or calculator (e.g., to determine the total cost of the skating party). [1.1.7]** **Recognize when an approach is unproductive and try a new approach.**	**2.1.1** **2.2.1** **2.2.2**
Reasoning	**Explain understanding of a situation, verbally or in writing (e.g., there are costs for admission, skates, lunch for the party; we need to know what it will cost for all of us so our teacher can reserve the rink).** **Estimate how much money will be needed for all 25 students to attend.** **Predict a numerical solution for a problem (e.g., predict how much**	Math Message Math Boxes—review problems Student explorations Games Hands on Activities Modeling Demonstration Discussion Explain your solution orally and in written form Journals	**Explain understanding of a situation, verbally or in writing (e.g., there are costs for admission, skates, lunch for the party; we need to know what it will cost for all of us so our teacher can reserve the rink).** **Estimate how much money will be needed for all 25 students to attend.** **Predict a numerical solution for a problem (e.g., predict how much**	**3.1.1** **3.2.1**

	it will cost for the class to attend the skating party). **Use known information to make a reasonable prediction (e.g., if most students in one class like red apples, then most students in another class will like red apples).** **Make an inference based on information provided (e.g., when you skate at the rink with a big group it costs less for each person than when you go with a friend).** **Draw conclusions from displays using comparative language (e.g., greater than, less than).** **Provide data to justify conclusions.** **Provide examples from displays to support conclusions.** **Justify the use of a chart or table to collect and organize information used to solve a problem (e.g., the two- or four-column chart helped to keep track of the information).** **Justify the use of one mathematical tool over another (e.g., is a calculator or 100's chart a better tool in this situation?).** **Check for reasonableness of results by using a calculator for repeated addition (e.g., to determine the total cost of the skating party).** **Explain why a strategy or tool used in solving a problem (e.g., why a seating chart was helpful to help determine total cost of skating).**	Projects	**it will cost for the class to attend the skating party).** **Use known information to make a reasonable prediction (e.g., if most students in one class like red apples, then most students in another class will like red apples).** **Make an inference based on information provided (e.g., when you skate at the rink with a big group it costs less for each person than when you go with a friend).** **Draw conclusions from displays using comparative language (e.g., greater than, less than).** **Provide data to justify conclusions.** **Provide examples from displays to support conclusions.** **Justify the use of a chart or table to collect and organize information used to solve a problem (e.g., the two- or four-column chart helped to keep track of the information).** **Justify the use of one mathematical tool over another (e.g., is a calculator or 100's chart a better tool in this situation?).** **Check for reasonableness of results by using a calculator for repeated addition (e.g., to determine the total cost of the skating party).** **Explain why a strategy or tool used in solving a problem (e.g., why a seating chart was helpful to help determine total cost of skating).**	**3.2.2** **3.2.3** **3.3.1** **3.3.2**
Communication	**Determine what information is needed and how to collect it for a given purpose (e.g., to help explain something, to find out if something is needed) and who the information is for (e.g., for the classroom, for the adults at home, for the cafeteria, for the principal).** **Develop and follow a plan to gather information about supplies needed for a project (e.g., how many pieces of paper will be needed to create a pattern design for each of the kindergarten windows?).** **Decide what information would be important to learn about the students in the second grade after reading an informational text (e.g., health article) in class (e.g., how many students eat a nutritious breakfast). Determine what questions to ask in a survey. Graph the results.**	Student explorations Games Hands on Activities Modeling Demonstration Cross-age tutoring Discussion Explain your solution orally and in written form Write a math story Journals Projects	**Determine what information is needed and how to collect it for a given purpose (e.g., to help explain something, to find out if something is needed) and who the information is for (e.g., for the classroom, for the adults at home, for the cafeteria, for the principal).** **Develop and follow a plan to gather information about supplies needed for a project (e.g., how many pieces of paper will be needed to create a pattern design for each of the kindergarten windows?).** **Decide what information would be important to learn about the students in the second grade after reading an informational text (e.g., health article) in class (e.g., how many students eat a nutritious breakfast). Determine what questions to ask in a survey. Graph the results.**	**4.1.1** **4.1.2** **4.2.1**

	Organize and display data on a chart to communicate a solution to a specific audience (e.g., use a chart to display individual costs and total cost for the skating party for parents and PTA). **Construct a bar graph with a title, key, and single unit increment to display survey results (e.g., the number of brothers and sisters of students in the class).** **Explain or represent ideas using mathematical language from:** **○ Number sense (e.g., numbers to at least 1000) [1.1.1];** **○ Measurement (e.g., identify attributes of an object that are measurable – time, length, distance around, capacity, area or weight of objects) [1.2.1];** **○ Geometric sense (e.g., describe characteristics of two-dimensional geometric figures, various polygons) [1.3.1];** **○ Statistics (e.g., construct bar graph using a single increment scale) [1.4.3];** **○ Algebraic sense (e.g., explain and use the symbols < and > to express relationships). [1.5.3]**		**Organize and display data on a chart to communicate a solution to a specific audience (e.g., use a chart to display individual costs and total cost for the skating party for parents and PTA).** **Construct a bar graph with a title, key, and single unit increment to display survey results (e.g., the number of brothers and sisters of students in the class).** **Explain or represent ideas using mathematical language from:** **○ Number sense (e.g., numbers to at least 1000) [1.1.1];** **○ Measurement (e.g., identify attributes of an object that are measurable – time, length, distance around, capacity, area or weight of objects) [1.2.1];** **○ Geometric sense (e.g., describe characteristics of two-dimensional geometric figures, various polygons) [1.3.1];** **○ Statistics (e.g., construct bar graph using a single increment scale) [1.4.3];** **○ Algebraic sense (e.g., explain and use the symbols < and > to express relationships). [1.5.3]**	**4.2.2**
Connections	**Conduct a survey for a predetermined question, collect data, and use addition and subtraction procedures to compute the results of the survey. [1.4.4, 1.1.6]** **Interpret a bar graph for comparative information (e.g., how many more than, less than) and draw conclusions about the data. [1.4.5, 3.2.2]** **Represent addition and subtraction situations with physical models, diagrams, and acting out problems. [1.1.5]** **Identify different representations of a pattern (e.g., snap-clap-stomp translates to ABC). [1.5.1]** **Collect and display data based on a science experiment (e.g., plant growth, magnetism).** **Identify patterns used in the design of common objects (e.g., skateboards, clothing).** **Describe how estimation can be used to know about how much something costs.** **Recognize the contributions of**	Math Message Math Boxes—review problems Student explorations Games Hands on Activities Modeling Demonstration Discussion Explain your solution orally and in written form Write a math story Journals Projects	**Conduct a survey for a predetermined question, collect data, and use addition and subtraction procedures to compute the results of the survey. [1.4.4, 1.1.6]** **Interpret a bar graph for comparative information (e.g., how many more than, less than) and draw conclusions about the data. [1.4.5, 3.2.2]** **Represent addition and subtraction situations with physical models, diagrams, and acting out problems. [1.1.5]** **Identify different representations of a pattern (e.g., snap-clap-stomp translates to ABC). [1.5.1]** **Collect and display data based on a science experiment (e.g., plant growth, magnetism).** **Identify patterns used in the design of common objects (e.g., skateboards, clothing).** **Describe how estimation can be used to know about how much something costs.** **Recognize the contributions of**	**5.1.1** **5.1.2** **5.2.1** **5.2.2**

	women, men, and people from different cultures (e.g., examine design and patterns on tapestry from various African cultures). **Generate examples of mathematics in everyday life:** ○ **counting (e.g., tallies to keep score during a game);** ○ **comparing lengths or distances where direct comparison is not possible (e.g., using a string or paper strip to compare the height and width of a desk to see if it fits in the room);** ○ **drawing geometric shapes (e.g., using a ruler to create shapes with equal sides);** **Select the most appropriate unit to measure a given time (e.g., would you use minutes or hours to measure brushing your teeth, eating dinner, sleeping?);** **Estimate the cost of two items knowing the approximate cost of one (e.g., one game costs about $8).**		**women, men, and people from different cultures (e.g., examine design and patterns on tapestry from various African cultures).** **Generate examples of mathematics in everyday life:** ○ **counting (e.g., tallies to keep score during a game);** ○ **comparing lengths or distances where direct comparison is not possible (e.g., using a string or paper strip to compare the height and width of a desk to see if it fits in the room);** ○ **drawing geometric shapes (e.g., using a ruler to create shapes with equal sides);** **Select the most appropriate unit to measure a given time (e.g., would you use minutes or hours to measure brushing your teeth, eating dinner, sleeping?);** **Estimate the cost of two items knowing the approximate cost of one (e.g., one game costs about $8).**	**5.3.1**

Adopted Instructional Materials

Pre-kindergarten and Kindergarten:

Growing with Mathematics, The Wright Group/McGraw Hill

First Grade through Fifth Grade:

Everyday Mathematics, The Wright Group/McGraw Hill

Sixth Grade through Eighth Grade:

Connected Mathematics Program, Prentice Hall
Accelerated Mathematics, SRA (Supplemental, not primary instructional materials)
Algebra 1, Prentice Hall, 2004 (Honors Algebra, 8th grade)

Ninth Grade through Twelfth Grade:

Pre-Algebra, Prentice Hall, 2004
Algebra 1, Prentice Hall, 2004
Geometry, Prentice Hall, 2004
Geometry, Houghton Mifflin, 1978 (Honors Geometry, 9th grade)
Algebra 2, Prentice Hall, 2004
Precalculus: Numerical, Graphical, Algebraic, Pearson/Prentice Hall, 2004
Calculus: Numerical, Graphical, Algebraic, Prentice Hall, 2003