

Mathematics – PLANNED COURSE OUTLINE
 Avon Grove School District
 Grade 2

State Benchmarks (K,3,5,8,11) & Grade Specific Benchmark	Eligible Content	Instructional Strategies and Resources	Assessments
Standard: 2.1. Numbers, Number Systems and Number Relationships			
Enduring Understandings Students will understand that: <ol style="list-style-type: none"> 1. New understandings evolve from the connection between prior knowledge and new concepts. 2. Numbers are part of our daily lives. 3. Numbers can be represented in different ways. 4. Numbers are related to each other operationally. 5. Patterns exist in many forms. 6. Place value of digits helps us count, order, and group numbers. 		Essential Questions <ol style="list-style-type: none"> 1. How do we use the connection between prior knowledge and new concepts to form new understandings? 2. How are numbers important in our daily lives? 3. How can numbers be represented? 4. How can parts of a whole be represented? 5. How do facts families help us understand basic operation problems? 6. How do patterns help us solve problems? 7. How are numbers compared and sequenced? 8. How is money counted? 9. How does the place value of digits help us in counting, ordering, and grouping numbers? 	
A. Count using whole numbers (to 10,000) and by 2's, 3's, 5's, 10's, 25's and 100's. <u>Early Childhood Learning Continuum Indicators (ECLCI)</u> Count to 1000 by 1's, 2's, 3's, 5's, 10's, 25's, 100's.		Investigations: <ul style="list-style-type: none"> • Mathematical Thinking • Coins, Coupons, and Combinations • Putting Together and Taking Apart • Teaching Number Sense (Scharton) Ideal: <ul style="list-style-type: none"> • 100 Activities for the Hundred Number Board Scholastic: <ul style="list-style-type: none"> • Exploring the Numbers 1-100 	Formative: Routines Observation Assessment 1 Summative: Number Sense Assessment
B. Use whole numbers and fractions to represent quantities. <u>ECLCI</u> Divide a set of concrete objects into equal parts using terms one-sixth and one-eighth. Use drawings, diagrams, or models to show one-sixth, and one-eighth.	Write the fraction that corresponds to a drawing or part of a set (numerators 1-9, denominators 2-10. No equivalent or improper fractions or mixed numbers). M3.A.1.2.1	Investigations: <ul style="list-style-type: none"> • Shapes, Halves, and • Symmetry • Supplemental Fraction Unit • Creative Publications: Fraction Circles Plus • Manipulatives 	Formative: Routines Observation Assessment 5 Checklist L Summative: Number Sense Assessment

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<p>C. Represent equivalent forms of the same number through the use of concrete objects, drawings, word names and symbols.</p> <p><u>ECLCI</u> Demonstrate 1 to 1 correspondence to 1000.</p> <p>Identify/match word names and numbers in symbolic form (pictures and base ten blocks).</p>	<p>Match the word name with the appropriate whole number (up through 9,999). M3.A.1.1.1</p> <p>Match a symbolic representation of numbers to appropriate whole numbers (e.g. base ten blocks, 7 hundreds, 4 tens, 8 ones, etc.). M3.A.1.1.5</p>	<p>Investigations:</p> <ul style="list-style-type: none"> • Mathematical Thinking • Investigations: • Coins, Coupons, and Combinations • Investigations: • Putting Together and Taking Apart • Teaching Number Sense (Scharton) 	<p>Formative:</p> <p>Routines Observation Assessment 2 Assessment 7 Checklist B</p> <p>Summative:</p> <p>Number Sense Assessment</p>
<p>D. Use drawings, diagrams or models to show the concept of fraction as part of a whole.</p> <p><u>ECLCI</u> Use drawings, diagrams or models to show one-sixth and one-eighth.</p> <p>Use concrete objects to identify mixed numbers as a whole and parts.</p>	<p>Create a drawing or set that represents a given fraction (numerator 1-9, denominator 2-10. No equivalent or improper fractions or mixed numbers). M3.A.1.2.2</p>	<p>Investigations:</p> <ul style="list-style-type: none"> • Shapes, Halves, and Symmetry • Supplemental Fraction Unit • Creative Publications: Fractions Circles Plus • Manipulatives 	<p>Formative:</p> <p>Routines Observation Assessment 5 Checklist L</p> <p>Summative:</p> <p>Number Sense Assessment</p>
<p>E. Count, compare and make change using a collection of coins and one-dollar bills.</p> <p><u>ECLCI</u> Count a collection of coins up to one dollar.</p> <p>Compare a collection of coins up to one dollar.</p> <p>Make change for one-dollar.</p>	<p>Count a collection of bills and coins less than \$5.00 (penny, nickel, dime, quarter, dollar). Money may be represented as 15 cents, 15c or \$0.15. M3.A.1.3.1</p> <p>Compare total values of combinations of coins less than \$5.00 (penny, nickel, dime, quarter, dollar). M3.A.1.3.2</p> <p>Make change for an amount up to \$5.00 with no more than \$2.00 change given (penny, nickel, dime, quarter, dollar). M3.A.1.3.3</p>	<p>Investigations:</p> <ul style="list-style-type: none"> • Mathematical Thinking • Coins, Coupons, and Combinations: • Putting Together and Taking Apart • Teaching Number Sense (Scharton) • Manipulatives 	<p>Formative:</p> <p>Routines Observation Assessment 6 Checklist A</p> <p>Summative:</p> <p>Number Sense Assessment</p>

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Standard: 2.1. Numbers, Number Systems and Number Relationships			
<p>F. Apply number patterns (even and odd) and compare values of numbers on the hundred board.</p> <p><u>ECLCI</u> Identify/describe/extend/create a pattern using numbers on a hundreds board.</p> <p>Identify even and odd numbers.</p>	<p>Differentiate between and/or give examples of even and odd numbers (limit to 3 digits). M3.A.1.1.2</p> <p>Compare two whole numbers using greater than (>), lesser than (<), or equal to (=), (up through 9,999). M3.A.1.1.3</p>	<p>Ideal:</p> <ul style="list-style-type: none"> • 100 Activities for the Hundred Number Board <p>Scholastic:</p> <ul style="list-style-type: none"> • Exploring the Numbers 1-100 	<p>Formative:</p> <p>Routines Observation Assessment 4</p> <p>Summative:</p> <p>Number Sense Assessment</p>
<p>G. Use concrete objects to count, order and group.</p> <p><u>ECLCI</u> Group and compare an equal number of objects in different sets.</p> <p>Order whole numbers from least to greatest (to 1000).</p>	<p>Compare two whole numbers using greater than (>), lesser than (<), or equal to (=), (up through 9,999). M3.A.1.1.3</p>	<p>Investigations:</p> <ul style="list-style-type: none"> • Mathematical Thinking • Investigations: • Coins, Coupons, and Combinations • Investigations: • Putting Together and Taking Apart • Teaching Number Sense (Scharton) 	<p>Formative:</p> <p>Routines Observation Assessment 3</p> <p>Summative:</p> <p>Number Sense Assessment</p>
<p>H. Demonstrate an understanding of one-to-one correspondence.</p> <p><u>ECLCI</u> Demonstrates 1-1 correspondence to 1000.</p> <p>Count and group objects by 1's, 10's, and 100's.</p> <p>Represent equal forms of same number using objects/pictures/ words/names/symbols to 1000.</p> <p>Order whole numbers from least to greatest from 0 to 1000.</p>		<p>Investigations:</p> <ul style="list-style-type: none"> • Mathematical Thinking • Coins, Coupons, and Combinations • Putting Together and Taking Apart • Teaching Number Sense (Scharton) 	<p>Formative:</p> <p>Routines Observation Assessment 2 Assessment 3</p> <p>Summative:</p> <p>Number Sense Assessment</p>

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Standard: Numbers, Number Systems and Number Relationships			
<p>I. Apply place-value concepts and numeration to counting, ordering and grouping.</p> <p><u>ECLCI</u> Write whole numbers to 1000.</p> <p>Read whole numbers to 1000. Identify place value for each digit to 1000.</p> <p>Identify the word name with the whole number (1000).</p> <p>Write numbers to 1000 in expanded form.</p>	<p>Order a set of whole numbers from least to greatest or greatest to least (up through 9,999; limit sets to no more than 4 numbers). M3.A.1.1.4</p>	<ul style="list-style-type: none"> • Lessons for Extending Place Value (Wickett/Burns) • Place Value (Burns) • Creative Publications: Understanding Place Value (Addition and Subtraction) • Handwriting Without Tears • Math Discoveries: • Base Ten Blocks • Manipulatives 	<p>Formative: Routine Observation Assessment 7 Checklist B</p> <p>Summative: Number Sense Assessment</p>
<p>J. Estimate, approximate, round or use exact numbers as appropriate.</p> <p><u>ECLCI</u> Estimate objects to 1000.</p> <p>Verify estimate and explain.</p> <p>Compare estimation with calculated answer.</p>	<p>Estimate sums and differences of quantities: round two-digit numbers to the nearest 10, and three-digit numbers to the nearest 100, before computing (limit to 2 numbers). M3.A.3.2.1</p>	<ul style="list-style-type: none"> • Estimation Station 	<p>Formative: Routines Observation Assessment 13 Checklist E</p> <p>Summative: Number Sense Assessment</p>
<p>K. Describe the inverse relationship between addition and subtraction.</p> <p><u>ECLCI</u> Understand and use the inverse relationship between addition and subtraction to solve problems and check solutions.</p> <p>Use concrete objects to determine a missing addend in a number sentence.</p>	<p>Demonstrate the inverse relationship between addition and subtraction using fact families and/or factors. M3.A.2.1.2</p>	<p>Investigations:</p> <ul style="list-style-type: none"> • Mathematical Thinking • Coins, Coupons, and Combinations • Putting Together and Taking Apart • Teaching Number Sense • (Scharton) 	<p>Formative: Routines Assessment 8 Checklist M</p> <p>Summative: Number Sense Assessment</p>

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<p>L. Demonstrate knowledge of basic facts in four basic operations.</p> <p><u>ECLCI</u> +/- facts to Set 42 (all facts sums to 18). Multiplication facts 2's, 5's, and 10's.</p>	<p>Solve problems involving multiplication through the 9's table through 9x5. M3.A.3.1.2</p>	<p>Investigations:</p> <ul style="list-style-type: none"> • Putting Together and • Taking Apart • Scholastic: • Making Multiplication • Easy • Mastering Math Fact Families 	<p>Formative: Routines Assessment 1</p> <p>Summative: Number Sense Assessment Computation Assessment</p>

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Standard: 2.2. Computation and Estimation			
Enduring Understandings Students will understand that: <ul style="list-style-type: none"> • Computing numbers is based on the use of strategies and tools. • Students demonstrate good number sense when they can explain reasonableness of an answer. • Computing fluently involves knowing basic facts and understanding the number relationships. 		Essential Questions <ol style="list-style-type: none"> 1. What strategies and tools are used to solve computation problems? 2. What strategies are used to identify reasonable estimates? 3. How do fact families help us understand basic operation problems? 	
A. Apply addition and subtraction in everyday situations using concrete objects. <u>ECLCI</u> Select and use an appropriate method, material, and strategy to solve problems.	Demonstrate the inverse relationship between addition and subtraction using fact families and/or factors. M3.A.2.1.2		Formative: Routines Observation
B. Solve single- and double-digit addition and subtraction problems with regrouping in vertical form. <u>ECLCI</u> Solves addition and subtraction problems with two and three-digit numbers with and without regrouping. Solves addition problems with 3, two-digit numbers (vertical and horizontal).	Solve single and double-digit addition and subtraction problems with and without regrouping in vertical and horizontal form. M3.A.3.1.1 Solve triple digit addition and subtraction problems without regrouping in vertical or horizontal forms. M3.A.3.1.3	Investigations: <ul style="list-style-type: none"> • Putting Together and • Taking Apart • Mastering Math Fact Families 	Formative: Assessment 10 Checklist K Summative: Computation Assessment

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Standard: 2.2. Computation and Estimation			
<p>C. Demonstrate the concept of multiplication as repeated addition and arrays.</p> <p><u>ECLCI</u> Use repeated addition, arrays, and counting by multiples to demonstrate multiplication.</p>	<p>Represent multiplication as repeated addition. M3.A.2.1.1</p> <p>Solve problems involving multiplication through the 9's tables through 9x5. M3.A.3.1.2</p>	<p>Investigations:</p> <ul style="list-style-type: none"> • Coins, Coupons, and • Combinations • Investigations: • Shapes, Halves, and • Symmetry • Scholastic: • Making Multiplication • Easy • Mastering Math Fact Families 	<p>Formative: Routines Number of the Day</p> <p>Summative: Assessment 11 Checklist C</p>
<p>D. Demonstrate the concept of division as repeated subtraction and as sharing.</p> <p><u>ECLCI</u> Use repeated subtraction and equal sharing to form equal groups.</p>			<p>Formative: Routines Number of the Day</p>
<p>E. Use estimation skills to arrive at conclusions.</p> <p><u>ECLCI</u> Estimate using concrete objects up to 1000.</p> <p>Verify estimate.</p> <p>Compare estimation with calculated answer.</p>	<p>Estimate sums and differences of quantities: round two-digit numbers to the nearest 10, and three-digit numbers to the nearest 100, before computing (limit to 2 numbers). M3.A.3.2.1</p>	<p>Investigations:</p> <ul style="list-style-type: none"> • How Long? How Far? • Estimation Station 	<p>Formative: Routines Estimation Station</p> <p>Summative: Assessment 13 Checklist E</p>

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Standard: 2.2. Computation and Estimation			
F. Determine the reasonableness of calculated answers. <u>ECLCI</u> Explain why an estimate is reasonable or not reasonable.		<ul style="list-style-type: none"> • Estimation Station 	Formative: Observation Assessment 13 Checklist E
G. Explain addition and subtraction algorithms with regrouping. <u>ECLCI</u> Retell the computation process of adding and subtracting with regrouping.		Investigations: <ul style="list-style-type: none"> • Putting Together and Taking Apart • Math Discoveries: • Base Ten Blocks • Manipulatives 	Formative: Observation Assessment 10 Checklist K

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Standard: 2.3. Measurement and Estimation			
Enduring Understandings Students will understand that: <ul style="list-style-type: none"> • Measurement is part of our daily lives. • Reasonable estimations can be made about measurement and estimations can be verified. • Objects can be measured using standard or non-standard measures. • Objects have various attributes that can be measured in different ways. • Different tools and units are used for measuring different attributes. • Appropriate application of tools and unit are needed for measurement. 		Essential Questions <ol style="list-style-type: none"> 1. How do we use measurement in our daily lives? 2. How can estimation help us when using measurement in our daily lives? 3. What strategies do we use to make reasonable estimations? 4. How do we verify estimations? 5. When and how do we use standard and non-standard measures? 6. How can one object be measured in many ways? 7. How do units of measure differ? 8. Why is using the appropriate tool and measure important? 9. When do we use specific tools and specific units to measure 	
A. Compare measurable characteristics of different objects on the same dimensions (e.g., time, temperature, area, length, weight, capacity, perimeter). <u>ECLCI</u> Compare objects using standard units of measure (time, temperature, length and weight, area, and perimeter).	Compare and/or order objects according to length, area or weight. M3.B.1.2.2	Investigations: <ul style="list-style-type: none"> • How Long? How Far? • Manipulatives 	Formative: Assessment 14 Checklist F Summative: Measurement Assessment
B. Determine the measurement of objects with non-standard and standard units (e.g., US customary and metric). <u>ECLCI</u> Determine length, height, width of an object to the nearest half-inch.	Use a ruler (provided) to measure to the nearest ½ inch. M3.B.2.1.1	Investigations: <ul style="list-style-type: none"> • How Long? How Far • Manipulatives 	Formative: Assessment 14 Checklist F Summative: Measurement Assessment

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Standard: 2.3. Measurement and Estimation			
<p>C. Determine and compare elapsed times.</p> <p><u>ECLCI</u> Demonstrates an understanding of the months and how they relate to the seasons.</p> <p>Project the date (day, month, number, year).</p> <p>Identifies times as AM/PM.</p>	<p>Find elapsed time to increments of 5 minutes (limited to 2 adjacent hours.) M3.B.1.1.2</p> <p>Identify times of the day and night as AM and PM. M3.B.1.1.3</p>	<p>Investigations: How Long? How Far?</p>	<p>Formative: Routines Observation Assessment 1 Checklist H</p> <p>Summative: Measurement Assessment</p>
<p>D. Tell time (analog and digital) to the minute.</p> <p><u>ECLCI</u></p> <p>Tell/represent time in 5 minute increments: Analog Digital</p>	<p>Tell/show time (analog) to the minute. M3.B.1.1.1</p>	<p>Investigations:</p> <ul style="list-style-type: none"> • Manipulative • Counting by 5's 	<p>Formative: Routines Observation Assessment 15 Checklist G</p> <p>Summative: Measurement Assessment</p>
<p>E. Determine the appropriate unit of measure.</p> <p><u>ECLCI</u></p> <p>Identify units for measuring: time, length, weight, capacity, and temperature.</p>	<p>Select the appropriate unit for the attribute being measured. M3.B.1.2.1</p> <p>Match the object with its approximate measurement (all measurements given must be of the same system). M3.B.2.2.1</p>	<p>Investigations: How Long? How Far?</p>	<p>Formative: Assessment 14 Checklist F</p> <p>Summative: Measurement Assessment</p>

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Standard: 2.3. Measurement and Estimation			
F. Use concrete objects to determine area/perimeter. <u>ECLCI</u> Differentiate between and calculate area and perimeter.			Formative: Assessment 14 Checklist F Summative: Measurement Assessment
G. Estimate and verify measurements. <u>ECLCI</u> Estimate and measure (verify) objects using standard units.	Use a ruler (provided) to measure to the nearest $\frac{1}{2}$ inch. M3.B.2.1.1 Match the object with its approximate measurement (all measurements given must be of the same system). M3.B.2.2.1	Investigations: <ul style="list-style-type: none"> • How Long? How Far? • Manipulatives 	Formative: Assessment 14 Checklist F Summative: Measurement Assessment
H. Demonstrate that a single object has different attributes that can be measured in different ways (e.g., length, mass, weight, time, area, temperature, capacity, perimeter). <u>ECLCI</u> Identify how an object can be measured, what measurement tools would be needed, and what unit would be used and apply to an everyday situation.		Investigations: <ul style="list-style-type: none"> • How Long? How Far? • Manipulatives 	Formative: Routines Assessment 14 Checklist F Summative: Measurement Assessment

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Standard: 2.4 Mathematical Reasoning and Connections			
Enduring Understandings Students will understand that: <ul style="list-style-type: none"> • Measurement is a part of our daily lives. • Reasonable prediction can be made about measurement and predications can be verified. 		Essential Questions <ol style="list-style-type: none"> 1. How is measurement used in our daily lives? 2. What strategies do we use to make reasonable predictions? 3. How can we verify predictions? 	
A. Make, check, and verify predictions about the quantity, size, and shape of objects and groups of objects. <u>ECLCI</u> Verify and explain predictions about quantity, size, and shape			
B. Use measurements in everyday situations (e.g., determine the geography of the school building). <u>ECLCI</u> Identify how an object can be measured, what measurement tools would be needed, and what unit would be used.		Investigations: <ul style="list-style-type: none"> • How Long? How Far 	Formative: Assessment 14 Checklist F Summative: Measurement Assessment

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Standard: 2.5. Mathematical Problem Solving and Communication			
Enduring Understandings: Students will understand that: <ul style="list-style-type: none"> • Appropriate application of number operations is needed to problems. • Solutions to problems can be communicated in a variety of ways. • Not all information in a problem is needed to solve the problem. • Multiple strategies can be used to solve problems. 		Essential Questions: <ol style="list-style-type: none"> 1. How do we use pictures, numbers, and words to communicate the solution to a problem. 2. What information is relevant to solve a problem? 3. How can a problem be solved in a different way? 	
A. Use appropriate problem-solving strategies (e.g., guess and check, working backwards). <u>ECLCI</u> Select appropriate problem solving strategies to solve problems.		Investigations: <ul style="list-style-type: none"> • Strategy List • Problem Solving Notebook • Problem Solving Lessons (Burns) 	Weekly Problem Solving Activities
B. Determine when sufficient information is present to solve a problem and explain how to solve a problem. <u>ECLCI</u> Describe what information is needed to solve a problem. Identify information that is not needed to solve the problem.	Identify the correct operation (s) to solve a word problem (no more than two operations using +, - and/or x). M3.A.2.1.3		Weekly Problem Solving Activities

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Standard: 2.5. Mathematical Problem Solving and Communication			
C. Select and use an appropriate method, materials and strategy to solve problems, including mental mathematics, paper and pencil and concrete objects. <u>ECLCI</u> Select and use an appropriate method, material, and strategy to solve problems. Use appropriate symbols to solve equations.	Choose the number sentence that matches a given story (one operation, + or – only). M3.D.2.1.2 Identify the correct operation (s) to solve a word problem (no more than two operations using +, - and/or x). M3.A.2.1.3	Strategy List <ul style="list-style-type: none"> • Problem Solving Notebook • Problem Solving Lessons (Burns) 	Weekly Problem Solving Activities

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Standard: 2.6 Statistics and Data Analysis			
Enduring Understandings Students will understand that: <ul style="list-style-type: none"> We use data in our daily lives Data can be collected and represented in a variety of ways. Data are used to make decisions and form opinions. 		Essential Questions <ol style="list-style-type: none"> How do we use data in our daily lives? How do we collect data? What are representations? How do we represent data on charts, bar graphs, and pictographs? How can data help us make decisions and form opinions? 	
A. Gather, organize and display data using pictures, tallies, charts, bar graphs and pictographs. <u>ECLCI</u> Gather, organize, display, and compare data using a bar graph, tallies, and pictograph. Represent data in two forms.	Analyze data shown on tables, charts, or bar graphs using the concepts of largest, smallest, most often, least often, middle. M3.E.1.1.1 Graph data or complete a graph given the data (grid is provided). M3.E.1.2.1 Translate information from one type of display to another (e.g., convert tally chart to bar graph). Limit to tally chart, bar graph and table. M3.E.1.2.2	Investigations: <ul style="list-style-type: none"> How Many Pockets? How Many Teeth? 	Formative: Routines Assessments 17, 18, 19, 20, 21 Summative: Data Assessment
B. Formulate and answer questions based on data shown on graphs. <u>ECLCI</u> Answer questions based on information displayed on a graph. Collect, display, describe, and interpret data using concepts of most often, least often, fewest, more, and middle in tables and on bar graphs.	Describe, interpret and/or answer questions based on data shown in table, charts, or bar graphs. M3.E.1.1.2 Translate information from one type of display to another (e.g., convert tally chart to bar graph). Limit to tally chart, bar graph and table. M3.E.1.2.2	Investigations: <ul style="list-style-type: none"> How Many Pockets? How Many Teeth? 	Formative: Routines Assessments 17, 18, 19, 20, 21 Summative: Data Assessment

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Standard: 2.6 Statistics and Data Analysis			
<p>C. Predict the likely number of times a condition will occur based on analyzed data.</p> <p><u>ECLCI</u></p> <p>Collect and display data over time and predict what conditions will change data.</p>		<p>Investigations:</p> <ul style="list-style-type: none"> • How Many Pockets? • How Many Teeth? 	<p>Formative:</p> <p>Routines Assessments 17, 18, 19, 20, 21</p> <p>Summative:</p> <p>Data Assessment</p>
<p>D. Form and justify an opinion on whether a given statement is reasonable based on a comparison to data.</p> <p><u>ECLCI</u></p> <p>Answer questions and justify an opinion about data from graphs and tables.</p>		<p>Investigations:</p> <ul style="list-style-type: none"> • How Many Pockets? • How Many Teeth? 	<p>Formative:</p> <p>Routines Assessments 17, 18, 19, 20, 21</p> <p>Summative:</p> <p>Data Assessment</p>

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Standard: 2.7 Probability and Predictions			
Enduring Understandings Students will understand that: <ul style="list-style-type: none"> • Reasonable predictions can be made based on information given. • The probability or likelihood of an event can be predicted 		Essential Questions 1. How do we make reasonable predictions?	
A. Predict and measure the likelihood of events and recognize that the results of an experiment may not match predicted outcomes. <u>ECLCI</u> Predict the likelihood of an event and verify the prediction.		Probability (Tank)	Routines; Calendar Weather Lunch Count
B. Design a fair and an unfair spinner. <u>ECLCI</u> Identify if a spinner is fair or unfair and explain why.			

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Mathematics – PLANNED COURSE OUTLINE
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 Grade 2

State Benchmarks (K,3,5,8,11) & Grade Specific Benchmark	Eligible Content	Instructional Strategies and Resources	Assessments
Standard: 2.7 Probability and Predictions			
<p>C. List or graph the possible results of an experiment.</p> <p><u>ECLCI</u></p> <p>Predict the likelihood of an event and verify the prediction.</p>	<p>Translate information from one type of display to another (e.g., convert tally chart to bar graph). Limit to tally chart, bar graph and table. M3.E.1.2.2</p>	<p>Probability (Tank)</p>	<p>Routines</p> <p>Calendar Weather Lunch Count</p>
<p>D. Analyze data using the concepts of largest, smallest, most often, least often and middle.</p> <p><u>ECLCI</u></p> <p>Collect, display, describe, and interpret data using concepts of most often, least often, fewest, more, and middle in tables and on bar graphs.</p>	<p>Analyze data shown on tables, charts, or bar graphs using the concepts of largest, smallest, most often, least often, middle. M3.E.1.1.1</p>	<p>Investigations:</p> <ul style="list-style-type: none"> • How Many Pockets? • How Many Teeth? • Pocket Day 	<p>Formative:</p> <p>Routines Assessments 17, 18, 19, 20, 21</p> <p>Summative:</p> <p>Data Assessment</p>

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Mathematics – *PLANNED COURSE OUTLINE*

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Grade 2

State Benchmarks (K,3,5,8,11) & Grade Specific Benchmark	Eligible Content	Instructional Strategies and Resources	Assessments
Standard: 2.8 Algebra and Functions			
Enduring Understandings Students will understand that: <ul style="list-style-type: none"> Numbers and operations utilize patterns, symbols, and rules. Mathematical symbols have different meanings and help us determine how to solve a problem. Mathematical models can be used to understand and represent quantitative relationships. 		Essential Questions <ol style="list-style-type: none"> How do patterns help us to understand mathematical relationships? What do mathematical symbols ($-$, $+$, $=$, $<$, $>$) mean? How can we use algebraic concepts to determine unknowns? How can mathematical symbols change the meaning of a number sentence? How are models used to represent quantitative relationships? How are a number sentence and the mathematical symbol related to a story problem? 	
A. Recognize, describe, extend, create and replicate a variety of patterns including attribute, activity, number and geometric patterns. <u>ECLCI</u> Identify/describe/extend/create a pattern using numbers on a hundreds board. Identify the missing number in a series of numbers. Identify the rule to describe the pattern. Use a simple function rule to solve problems.	Extend or find a missing element in a pattern of numbers or shapes (pattern must show three repetitions- if multiples are used, limit to 2, 3, 5). M3.D.1.1.1 Identify/describe the rule for a pattern shown (pattern must show three repetitions- if multiples are used limit to 2, 3 or 5). M3.D.1.1.2	<ul style="list-style-type: none"> Hundreds Board Pattern Blocks Problem Solving Activities/ Make a Chart/Identify the Pattern 	Formative: Routines Assessment 4 Summative: Number Sense Assessment
B. Use concrete objects and symbols to model the concept of variables, expressions, equations, and inequalities. <u>ECLCI</u> Use symbols ($+$, $-$, $=$, $<$, $>$) to complete a number sentence. Match the appropriate number sentence to a story problem.	Identify the missing symbol ($+$, $-$, $=$, $<$, $>$) that makes a number sentence true. M3.D.2.2.2		Formative: Weekly Problem Solving Activities Summative: Number Sense Assessment

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State Benchmarks (K,3,5,8,11) & Grade Specific Benchmark	Eligible Content	Instructional Strategies and Resources	Assessments
Standard: 2.8 Algebra and Functions			
<p>C. Substitute a missing addend in a number sentence.</p> <p><u>ECLCI</u> Use concrete objects to show a missing addend in a number sentence.</p>	<p>Find a missing number that makes the number sentence true (one digit or two digit numbers up to 18 using +, - or x through 9×5). M3.D.2.2.1</p>	<p>Problem Solving Activities/ Missing Addend</p>	<p>Summative: Number Sense Assessment</p>
<p>D. Create a story to match a given combination of symbols and numbers.</p> <p><u>ECLCI</u> Match the appropriate number sentence to a story problem.</p>	<p>Create or match a story to a given combinations or symbols (+, -, x, <, >, =) and numbers. M3.D.2.1.1</p> <p>Choose the number sentence that matches a given story (one operation, + or - only). M3.D.2.1.2</p>		
<p>E. Use concrete objects and symbols to model the concepts of variables, expressions, equations and inequalities.</p> <p><u>ECLCI</u> Use concrete objects to show the concepts of variables and inequalities (missing addend).</p>	<p>Find a missing number that makes the number sentence true (one digit or two digit numbers up to 18 using +, - or x through 9×5). M3.D.2.2.1</p>	<p>Problem Solving Activities/ Missing Addend</p>	<p>Summative: Number Sense Assessment</p>

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State Benchmarks (K,3,5,8,11) & Grade Specific Benchmark	Eligible Content	Instructional Strategies and Resources	Assessments
Standard: 2.8 Algebra and Functions			
F. Explain the meaning of solutions and symbols. <u>ECLCI</u> Use appropriate symbols to solve equations +, -, =.	Identify the missing symbol (+, -, =, <, >) that makes a number sentence true. M3.D.2.2.2		
G. Use a table or a chart to display information. <u>ECLCI</u> Gather, organize and display data on a bar graph and pictograph.		Investigations: <ul style="list-style-type: none"> • How Many Pockets? • How Many Teeth? 	Formative: Routines Assessments 17, 18, 19, 20, 21 Summative: Data Test
H. Describe and interpret the data shown in tables and charts. <u>ECLCI</u> Interpret information displayed on a graph.		Investigations: <ul style="list-style-type: none"> • How Many Pockets? • How Many Teeth? 	Formative: Routines Assessments 17, 18, 19, 20, 21 Summative: Data Assessment

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State Benchmarks (K,3,5,8,11) & Grade Specific Benchmark	Eligible Content	Instructional Strategies and Resources	Assessments
Standard: 2.8 Algebra and Functions			
I. Demonstrate simple function rules. <u>ECLCI</u> Demonstrate simple function rules and use to solve problems.		Problem Solving Activities/Make a Chart	Formative: Weekly Problem Solving
J. Analyze simple functions and relationships and locate points on a simple grid. <u>ECLCI</u> Locate points on a simple grid.		Computer Activity	

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State Benchmarks (K,3,5,8,11) & Grade Specific Benchmark	Eligible Content	Instructional Strategies and Resources	Assessments
Standard: 2.9. Geometry			
Enduring Understandings Students will understand that: <ul style="list-style-type: none"> • Our world is made up of two and three-dimensional shapes. • Two and three-dimensional shapes have attributes. • Spatial reasoning is used to solve problems. 		Essential Questions <ol style="list-style-type: none"> 1. What two and three-dimensional shapes are found in our world? 2. What are the attributes of two and three-dimensional shapes? 3. How do shapes relate to each other? 4. What is symmetry? 5. What is a reflection? 	
A. Name and label geometric shapes in two and three dimensions (e.g., circle/sphere, square/cube, triangle/pyramid, rectangle/prism). <u>ECLCI</u> Identify and label three dimensional geometrical shapes: Sphere, cube, cone, cylinder, pyramid, and rectangular prism.	Name/identify/ describe geometric shapes in two dimensions (circle, square, rectangle, triangle, pentagon, hexagon, octagon). M3.C.1.1.1 Name/identify geometric shapes in three dimensions (sphere, cube, cylinder, cone, pyramid, rectangular prism). M3.C.1.1.2	Investigations: <ol style="list-style-type: none"> 1. Shapes, Halves, and Symmetry 2. Symmetry 3. Creative Publications: Hands On Geoboards 4. Geometry (Confer) 5. Manipulatives 	Formative: Assessment 22 Summative: Geometry Assessment
B. Build geometric shapes using concrete objects (e.g., manipulative). <u>ECLCI</u> Reproduce three-dimensional geometric shapes using concrete objects.		Investigations: <ul style="list-style-type: none"> • Shapes, Halves, and Symmetry • Computer Program • Creative Publications: Hands On Geoboards • Geometry (Confer) • Manipulatives 	Formative: Assessment 22 Summative: Geometry Assessment

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State Benchmarks (K,3,5,8,11) & Grade Specific Benchmark	Eligible Content	Instructional Strategies and Resources	Assessments
Standard: 2.9. Geometry			
<p>C. Draw two- and three-dimensional geometric shapes and construct rectangles, squares and triangles on the geoboard and on graph paper satisfying specific criteria.</p> <p><u>ECLCI</u> Draw and construct two-dimensional geometric shapes: square rhombus trapezoid hexagon</p>	<p>Name/identify/describe geometric shapes in two dimensions (circle, square, rectangle, triangle, pentagon, hexagon, octagon). M3.C.1.1.1</p> <p>Name/identify geometric shapes in three dimensions (sphere, cube, cylinder, cone, pyramid, rectangular prism). M3.C.1.1.2</p>	<p>Investigations:</p> <ul style="list-style-type: none"> • Shapes, Halves, and • Symmetry • Computer Program • Creative Publications: Hands On Geoboards • Geometry (Confer) • Manipulatives 	<p>Formative: Assessment 22</p> <p>Summative: Geometry Assessment</p>
<p>D. Find and describe geometric figures in real life.</p> <p><u>ECLCI</u> Name and describe two-dimensional geometric figures in real life.</p>		<p>Investigations:</p> <ul style="list-style-type: none"> • Shapes, Halves, and • Symmetry • Creative Publications: Hands On Geoboards • Geometry (Confer) 	<p>Formative: Assessment 22</p> <p>Summative: Geometry Assessment</p>
<p>E. Identify and draw lines of symmetry in geometric figures.</p> <p><u>ECLCI</u> Identify and create a line of symmetry in a square or rectangle.</p>	<p>Identify/draw one line of symmetry in a two dimensional figure. M3.C.2.1.1</p> <p>Identify symmetrical two-dimensional shapes. M3.C.2.1.2</p>	<p>Investigations:</p> <ul style="list-style-type: none"> • Shapes, Halves, and • Symmetry • Creative Publications: • Hands On Geoboards • Geometry (Confer) • Art class 	<p>Formative: Observation</p> <p>Summative: Assessment 23 Checklist I</p>

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State Benchmarks (K,3,5,8,11) & Grade Specific Benchmark	Eligible Content	Instructional Strategies and Resources	Assessments
Standard: 2.9. Geometry			
F. Identify symmetry in nature. <u>ECLCI</u> Identify symmetry in nature.		Investigations: <ul style="list-style-type: none"> • Mathematical Thinking • Shapes, Halves, and • Symmetry • Creative Publications: Hands On Geoboards • Geometry (Confer) • Art class 	Formative: Observation Summative: Assessment 23 Checklist I
G. Fold paper to demonstrate the reflections about a line. <u>ECLCI</u> Identify and create a reflection.		Investigations: <ul style="list-style-type: none"> • Mathematical Thinking • Shapes, Halves, and • Symmetry • Creative Publications: Hands On Geoboards • Geometry (Confer) • Art class • Manipulatives 	Formative: Observation Summative: Assessment 23 Checklist I
H. Show relationships between and among figures using reflections. <u>ECLCI</u> Identify and create a reflection.		Investigations: <ul style="list-style-type: none"> • Mathematical Thinking • Investigations: • Shapes, Halves, and • Symmetry • Creative Publications: • Hands On Geoboards • Geometry (Confer) • Art class • Manipulatives 	Formative: Observation Summative: Assessment 23 Checklist I
I. Predict how combining or dividing them can change shapes. <u>ECLCI</u> Identify smaller shapes within given shapes.		Investigations: <ul style="list-style-type: none"> • Mathematical Thinking • Shapes, Halves, and • Symmetry • Creative Publications: • Hands On Geoboards • Geometry (Confer) • Manipulatives 	

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State Benchmarks (K,3,5,8,11) & Grade Specific Benchmark	Eligible Content	Instructional Strategies and Resources	Assessments
Standard: 2.10. Trigonometry			
Enduring Understandings Students will understand that: <ul style="list-style-type: none"> • Triangles have characteristics that are both alike and different. • Triangles are made up of lines and angles. 		Essential Questions <ol style="list-style-type: none"> 1. How are triangles alike? 2. How are triangles different? 3. What makes a right triangle right? 	
A. Identify right angles in the environment. <u>ECLCI</u> Identify right triangles and right angles.		Investigations: <ul style="list-style-type: none"> • Mathematical Thinking • Investigations: • Shapes, Halves, and • Symmetry • Creative Publications: • Hands On Geoboards • Geometry (Confer) 	Formative: Assessment 24 Summative: Geometry Assessment
B. Model right angles and right triangles using concrete objects. <u>ECLCI</u> Identify right triangles and right angles.		Investigations: <ul style="list-style-type: none"> • Mathematical Thinking • Shapes, Halves, and • Symmetry • Creative Publications: Hands On Geoboards • Geometry (Confer) 	Formative: Assessment 24 Summative: Geometry Assessment

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State Benchmarks (K,3,5,8,11) & Grade Specific Benchmark	Eligible Content	Instructional Strategies and Resources	Assessments
Standard: 2.11. Concepts of Calculus			
Enduring Understandings Students will understand that: <ul style="list-style-type: none"> • Objects, time, and data can be ordered based on their quantities. • Patterns and rules can help us order quantities. 		Essential Questions <ol style="list-style-type: none"> 1. How can we order objects and quantities from least to greatest and greatest to least? 2. How can we determine missing numbers on a hundreds board? 3. How can we use a rule to complete a series of numbers? 	
A. Identify whole number quantities and measurements from least to most and greatest value. <u>ECLCI</u> Order whole numbers from least to greatest from 0 to 1000.	Order a set of whole numbers from least to greatest or greatest to least (through 9,999; limit sets to no more than 4 numbers). M3.A.1.1.4	Investigations: <ul style="list-style-type: none"> • Mathematical Thinking • Coins, Coupons, and Combinations • Putting Together and Taking Apart • Teaching Number Sense (Scharton) 	Formative: Routines Observation Assessment 3 Summative: Number Sense Assessment
B. Identify least and greatest values represented in bar graphs and pictographs. <u>ECLCI</u> Collect, display and describe data using concepts of most often, least often, more, fewer, same and fewest on bar graphs.	Analyze data shown on tables, charts, or bar graphs using the concepts of largest, smallest, most often, least often, and middle. M.3.E.1.1.1	Investigations: <ul style="list-style-type: none"> • How Many Pockets? • How Many Teeth? 	Formative: Routines Assessments 17, 18, 19, 20, 21 Summative: Data Assessment

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State Benchmarks (K,3,5,8,11) & Grade Specific Benchmark	Eligible Content	Instructional Strategies and Resources	Assessments
Standard: 2.11. Concepts of Calculus			
C. Categorize rates of change as faster and slower. NA			
D. Continue a pattern of numbers or objects that could be extended infinitely. <u>ECLCI</u> Identify/describe/extend/create a pattern using numbers on a hundreds board. Identify the missing number in a series of numbers. Identify the rule to describe the pattern.	Extend or find a missing element in a pattern of numbers or shapes (pattern must show three repetitions- if multiples are used, limit to 2, 3, 5). M3.D.1.1.1 Identify/describe the rule for a pattern shown (pattern must show three repetitions- if multiples are used limit to 2, 3 or 5). M3.D.1.1.2	Hundreds Board 100 Activities for the Hundreds Board	Formative: Routines Observation Assessment 3 Summative: Number Sense Assessment

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