Curriculum Development Course at a Glance Planning for 2nd Grade Mathematics

Content Area	Mathematics		Grade Level	2 nd Grade		
Course Name/Course Code						
Standard	Grade Level Expectations (GLE)	Grade Level Expectations (GLE)				
1. Number Sense, Properties, and Operations	1. The whole number system describes plate efficient algorithms	ace value rela	tionships through 1,000 and form	is the foundation for	MA10-GR.2-S.1-GLE.1	
	2. Formulate, represent, and use strategie efficiency	es to add and s	subtract within 100 with flexibility	y, accuracy, and	MA10-GR.2-S.1-GLE.2	
 Patterns, Functions, and Algebraic Structures 	Expectations for this standard are integrate	d into the oth	er standards at this grade level.			
 Data Analysis, Statistics, and Probability 	1. Visual displays of data can be construct	ed in a variety	of formats to solve problems		MA10-GR.2-S.3-GLE.1	
4. Shape, Dimension, and	1. Shapes can be described by their attrib	utes and used	to represent part/whole relation	ships	MA10-GR.2-S.4-GLE.1	
Geometric Relationships	2. Some attributes of objects are measurable and can be quantified using different tools			MA10-GR.2-S.4-GLE.2		
Self Direction	21 st Century Skills Critical Thinking and Reasoning: Thinking Deeply, Thinking Differently Information Literacy: Untangling the Web Collaboration: Working Together, Learning Together Self-Direction: Own Your Learning Invention: Creating Solutions	1. Ma 2. Res 3. Co 4. Mo 5. Us 6. Att 7. Loo	atical Practices: the sense of problems and persev ason abstractly and quantitatively instruct viable arguments and crit odel with mathematics. the appropriate tools strategically. thend to precision. ok for and make use of structure. ok for and express regularity in re	ι. ique the reasoning of	others.	
Unit Titles			Length of Unit/Contact Hours	Unit Number/S	equence	
Ruling with Rulers			6 weeks	1		
Are you odd or even?			8 weeks	2		
Do all halves look the same?			4 weeks	3		
What does 10 have to do with 100	What does 10 have to do with 1000?			4		

Unit Title	Ruling with Rulers		Length of Unit	6 weeks	
Focusing Lens(es)	Representation/System	Standards and Grade Level Expectations Addressed in this Unit	MA10-GR.2-S.3-GLE.1 MA10-GR.2-S.4-GLE.2		
Inquiry Questions (Engaging- Debatable):	 What would happen if we did not have one ruler that everyone understood and used (Or, what if everyone created their own rulers with their own way of measuring?)? (MA10-GR.2-S.4-GLE.2-IQ-3) What do we measure and why/how? 				
Unit Strands	Measurement and Data				
Concepts			Standard units, inverse relationship, scales, length, distance, estimation, whole number, addition, subtraction, measuring on, difference/comparison, measurement, time, multiples, minute, money, symbolically, line plots, numerical data, number line, frequency		

Generalizations My students will Understand that	Guiding Guiding	Questions Conceptual
Standard units of measure allow measurements to have the same meaning in a variety of settings (MA10-GR.2-S.4- GLE.2-EO.a.i, a.iii)	What tools can we use to measure? What can be measured? (MA10-GR.2-S.4-GLE.2-IQ.1) When is it more appropriate to estimate rather than use exact measures?	Why do we have standard units of measure? Why do we need measurement? How do we decide which tool to use when measuring something? (MA10-GR.2-S.4-GLE.2-IQ.2)
The inverse relationship between unit of measurement and measurement total dictates that smaller units of measure increase measurement totals and vice versa (MA10-GR.2-S.4-GLE.2-EO.a.ii)	How will a measurement total change if you measure the same object in inches and then in feet? What happens to the actual size of an object when you use different units to measure?	How do you choose the appropriate sized unit and tool to measure the length of an object?
The addition of lengths represents appending two or more lengths (measuring on); subtraction represents the difference of two lengths (comparing) (MA10-GR.2-S.4- GLE.2-EO.b.i)	What addition and subtraction strategies can you use to solve measurement problems? How can you measure with a broken ruler that is missing the zero mark?	How can a number line be used to represent and solve addition and subtraction word problems involving lengths? Why is zero important on a ruler?
The minute hand on an analog clock enables understanding of the multiples of 5 represented by the numbers 1-12 (MA10-GR.2-S.4-GLE.2-EO.c.i)	What time is it to the nearest five minutes?	How does skip counting by 5s help you tell time on an analog clock?

Symbolic representations of dollars and cents facilitate the solution (using addition and/or subtraction) of problems that involve quantities of money (MA10-GR.2- S.4-GLE.2-EO.c.ii)	What symbols are used to represent cents? What symbols represent dollars? How does a dollar compare to a penny? Dime? Nickel? Quarter?	Why do we have different valued coins and bills?
Line plots display data on a number line scale by representing the frequency of a numeric value with (vertically) stacked Xs (MA10-GR.2-S.3-GLE.1-EO.a.i)	 What does it mean when a number on a line plot has no Xs? What does it mean when there are "holes" or "clumps" on your line plot? 	Why on a line plot is it important to have a consistent scale and not skip values?

Key Knowledge and Skills:
My students will...What students will know and be able to do are so closely linked in the concept-based discipline of mathematics. Therefore, in the mathematics
samples what students should know and do are combined.

- Measure the length of objects by selecting and using appropriate tools such as: rulers, yardsticks, meter sticks, measuring tapes (MA10-GR.2-S.4-GLE.2-EO.a.i)
- Estimate and measure length in standard units: inches, feet, centimeters, meters (MA10-GR.2-S.4-GLE.2-EO.a.iii)
- Measure an object two times using different sized units of measure (i.e. feet & inches, centimeters & inches) describing how the results relate to the size of the unit (MA10-GR.2-S.4-GLE.2-EO.a.ii)
- Measure to determine how much longer one object is than another and express the difference in standard unit lengths (MA10-GR.2-S.4-GLE.2-EO.a.iv)
- Use addition and subtraction within 100 to solve word problems involving lengths that are given in the same units using strategies such as drawings and equations with a symbol to represent an unknown (MA10-GR.2-S.4-GLE.2-EO.b.i)
- Tell and write time to the nearest five minutes on analog and digital clocks using a.m. and p.m. (MA10-GR.2-S.4-GLE.2-EO.c.i)
- Solve word problems involving dollar bills, quarters, dimes, nickels, and pennies using the dollar and cent symbols appropriately ((MA10-GR.2-S.4-GLE.2-EO.c.ii)
- Generate measurement data to the nearest whole unit and display using a line plot with a horizontal scale marked off in whole number units (MA10-GR.2-S.3-GLE.1-EO.a.i)

A student in ability to apply and comp through the following sta		I measured the length the frog jumped three times. I measured using feet, inches and centimeters. The centimeter measurement was the largest number and the most accurate.
Academic Vocabulary:	Relationship, scale, length, distance, estimation, measurement, ruler, time, minute hand, money, quarters, dimes, nickels, pennies, dollar sign, cent sign	
Technical Vocabulary:	Units, whole number, addition, subtraction, line plots, numeric data, number line, frequency	

Unit Title	Are you odd or even?		Length of Unit	8 weeks
Focusing Lens(es)	Decision-making/Efficiency	Standards and Grade Level Expectations Addressed in this Unit	MA10-GR.2-S.1-GLE.2 MA10-GR.2-S.3-GLE.1 MA10-GR.2-S.4-GLE.1 MA10-GR.2-S.4-GLE.2	
Inquiry Questions (Engaging- Debatable):	 What is the best way (s) to add and subtract numbers? (MA10-GR.2-S.1-GLE.2-N.1) What makes a strategy efficient? 			
Unit Strands	Operations and Algebraic Thinking, Geometry, Measurement and Data, Personal Financial Literacy			
Concepts	Applications, financial decision-making, addition, sum (addends), subtraction, partitioning, odd/even, equal, word problems (adding to, taking from, putting together, taking apart, comparing), unknown, picture and bar graphs, data, fluency, properties of operations, number line diagram, whole numbers, lengths, line segments/points, differences/take-away, rectangular arrays, rows and columns, skip counting, partition, remainder, halves, equation			

Generalizations	Guiding Questions			
My students will Understand that	Factual	Conceptual		
Applications of addition and subtraction, represented in word problem contexts, involve adding to, taking from, putting together, taking apart, and comparing (MA10-GR.2-S.1-GLE.2- EO.a.i, a.ii)	What types of word problems are addition and subtraction word problems?What information do you need to solve a problem?What are strategies for learning addition and subtraction facts?	How do you know whether to use addition or subtraction to solve a problem? Why does fluency with addition and subtraction facts support success in mathematics?		
Picture graphs and bar graphs represent data sets and provide means to solve addition and subtraction questions that involve put-together, take-apart, and comparison situations (MA10- GR.2-S.3-GLE.1-EO.a.iii)	What types of questions can you answer from a picture or bar graph?	How do we use information from a graph to solve problems?		
A number line diagram can represent whole numbers and sums of numbers by facilitating the combination of line segments as lengths starting from 0 with equally spaced points corresponding to each whole number (MA10-GR.2-S.4-GLE.2-EO.b.ii)	How do you represent a whole number on a number line diagram? How is addition represented on a number line?	Why would you use a number line to solve addition problems?		
A number line diagram can allow the computation of differences by facilitating both comparison and take away models of subtraction (MA10-GR.2-S.4-GLE.2-EO.b.ii)	What are two ways to represent subtraction on a number line?	Why would you use a number line to solve subtraction problems?		

Skip counting the number in each row or the number in each column provides one way to determine the total number of objects arranged in rectangular arrays (rows and columns) (MA10-GR.2-S.1-GLE.2-EO.d.iii) and (MA10-GR.2-S.4-GLE.1-EO.c)	How can you show an equation for the total number of objects in an array?	Why is skip counting an efficient way to find the total number of objects in an array?
Even numbers halved into equal parts leave no remainders while odd numbers when split into two equal parts always leave a remainder of one (MA10-GR.2-S.1-GLE.2-EO.d.i, d.ii)	What does it mean for a number to be even? What does it mean for a number to be odd?	Why do both skip counting by two and being able to divide a number by two, with no remainder, help you determine if a number is even?

Key Knowledge and Skills:	What students will know and be able to do are so closely linked in the concept-based discipline of mathematics. Therefore, in the mathematics
My students will	samples what students should know and do are combined.

- Use addition and subtraction within 100 to solve one and two step word problems involving situations of adding to taking from, putting together, taking apart and comparing with unknowns in all positions and represent the problem by using drawings and equations with a symbol for the unknown number (MA10-GR.2-S.1-GLE.2-EO.a.i)
- Apply addition and subtraction concepts to financial decision making (MA10-GR.2-S.1-GLE.2-EO.a.ii) *
- Fluently add and subtract within 20 using mental strategies (MA10-GR.2-S.1-GLE.2-EO.b, c)
- Determine whether a group of objects (up to 20) has an odd or even number of members (MA10-GR.2-S.1-GLE.2-EO.d.i)
- Write an equation to express an even number as a sum of two equal addends (MA10-GR.2-S.1-GLE.2-EO.d.ii)
- Partition a rectangle into rows and columns of same-size squares and count to find the total number of them (MA10-GR.2-S.4-GLE.1-EO.c)
- Use addition to find the total number of objects arranged in rectangular arrays with up to 5 row and up to 5 columns and write an equation to express the total as a sum of equal addends (MA10-GR.2-S.1-GLE.2-EO.d.iii)
- Represent whole numbers a lengths from 0 on a number line diagram with equally spaced points corresponding to the numbers 0, 1, 2, ... (MA10-GR.2-S.4-GLE.2-EO.b.ii)
- Represent whole number sums and differences within 100 on a number line diagram (MA10-GR.2-S.4-GLE.2-EO.b.ii)
- Draw a picture graph and bar graph (with single unit scale) to represent a data set with up to four categories (MA10-GR.2-S.3-GLE.1-EO.a.ii)
- Solve simple put together, take-apart, and compare problems using information presented in picture and bar graphs (MA10-GR.2-S.3-GLE.1-EO.a.iii)

*Denotes connection to Personal Financial Literacy (PFL)

A student in ability to apply and comp through the following sta		I know the number 18 is even because I can divide it in half with no remainder and when I skip-count by twos starting at 0 I say the number 18.
Academic Vocabulary:	Academic Vocabulary: Addition, subtraction, odd, even, equal, word problems, fluency, lengths, rows, columns, halves	
Technical Vocabulary:	ocabulary: Picture graph, bar graph, number line diagram, line segments, points, differences, take away, rectangular arrays, skip-counting, partition, remainder equation	

Unit Title	Do all halves look the same?		Length of Unit	4 weeks
Focusing Lens(es)	Form	Standards and Grade Level Expectations Addressed in this Unit	MA10-GR.2-S.4-GLE.1	
Inquiry Questions (Engaging- Debatable):	 What makes a shape a shape? Is there more than one way to split a cookie in half? What about a pan of brownies? (MA10-GR.2-S.4-GLE.1-IQ-2) 			
Unit Strands	Geometry			
Concepts	Attributes (sides, faces, angles), shapes, comparison, partition, whole, equal parts, fractional amounts, unit fraction, identical, area			

Generalizations	Guiding Questions			
My students will Understand that	Factual	Conceptual		
Attributes such as sides, faces, and angles identify/create shapes and provide the foundation for classification of shapes (MA10-GR.2-S.4-GLE.1-EO.a, b)	What attributes can be used to identify shapes? What are the differences between a square and a rectangle? How can attributes be used to draw shapes?	How are shapes similar and different? How do attributes define shapes? How can you determine the name of a shape from its description? (MA10-GR.2-S.4-GLE.1-IQ-1)		
A whole partitioned into equal parts creates fractional amounts of the whole (MA10-GR.2-S.4-GLE.1-EO.d)	When you partition a whole into equal parts how do you name each part? The whole? Why would we name a whole three-thirds?	What makes cutting a circle into thirds more difficult than fourths or halves? How do the strategies for partitioning circles differ from those for rectangles?		
Equal shares of identical wholes share the same area but they do not necessarily share the same shape (MA10- GR.2-S.4-GLE.1-EO.e)	What are two different ways you can partition a rectangle in half? Is half always the same size and shape? (MA10-GR.2-S.4- GLE.1-IQ-2)	How do you know equal shares of identical wholes are equal even if the shapes are different?		

Key Knowledge and Skills:	What students will know and be able to do are so closely linked in the concept-based discipline of mathematics. Therefore, in the
My students will	mathematics samples what students should know and do are combined.

- Recognize and draw shapes having specified attributes, such as given number of angles or a given number of equal faces (MA10-GR.2-S.4-GLE.1-EO.a)
- Identify triangles, quadrilaterals, pentagons, hexagons, and cubes (MA10-GR.2-S.4-GLE.1-EO.b)
- Partition circles and rectangles into two, three, or four equal shares and describe the shares using the words halves, thirds, half of, a third of, fourths, a fourth of, and a quarter of and describe the whole as two halves, three thirds, and four fourths (MA10-GR.2-S.4-GLE.1-EO.d)
- Recognize that equal shares of identical wholes need not have the same shape-conservation of area (MA10-GR.2-S.4-GLE.1-EO.e)

A student in ability to apply and comp through the following sta		When I draw a square, I make sure that I have 4 equal sides and 4 square angles. I know that 4 identical squares can make a larger square or a rectangle and each of the smaller squares represents one-fourth of the whole.
Academic Vocabulary:	Similar, different, strategies, sharing, model, half, halves, half of, third, third of, fourth, fourth of, represent, edges, quarter	
Technical Vocabulary:	Shapes, cubes, hexagon, circle, pentagon, triangle, quadrilateral, sides, angles, faces, congruent, attribute, partition, identical wholes, equal shares, equal shares, unit fraction	

Unit Title	What does 10 have to do with 1000?		Length of Unit	12 weeks
Focusing Lens(es)	Structure/Patterns	Standards and Grade Level Expectations Addressed in this Unit	MA10-GR.2-S.1-GLE.1	
Inquiry Questions (Engaging- Debatable):	 How can 10 be both ten and one? What would happen if there were no such thing as place value? (MA10-GR.2-S.1-GLE.1-RA.2; N.1) 			
Unit Strands	Number and Operations in Base Ten			
Concepts	Skip counting, efficiency, flexibility, grouping, unitizing, compose/decompose, unit, ten times, standard and expanded form, numeric representations (verbal, symbolic), addition, subtraction, increasing/decreasing, place value, comparison, properties of operations (Associative, Commutative, Identity)			

Generalizations My students will Understand that	Guiding	Questions Conceptual	
Skip counting develops efficient and flexible counting of grouped items (e.g., fingers) (MA10-GR.2-S.1-GLE.1-EO.a.ii, a.iii)	What does it mean to skip count?	Why is skip-counting more efficient than counting by ones?	
The ability to unitize a number (i.e. 100 as a bundle of tens) leads to flexible composing and decomposing of numbers based on groupings of ten (e.g., 1s, 10s, and 100s) (MA10-GR.2-S.1-GLE.1-EO.b)	How many tens are in a hundred? How many tens are in a thousand? How many hundreds are in a thousand?	How big is 100? 1,000? (MA10-GR.2-S.1-GLE.1-IQ.1)	
Place value allows understanding of each successive larger unit in the base ten number system as ten times as large as the previous unit (MA10-GR.2-S.1-GLE.1-EO.a)	How can you represent numbers on the decade between 100 and 900 as either groups of 10s or combinations of 100s and 10s? How do you add or subtract multiples of 10 or 100 from a number?	How does the position of a digit in a number affect its value? (MA10-GR.2-S.1-GLE.1-IQ.2) How is adding/subtracting single digit numbers similar to adding/subtracting a multiple of 10 or 100 to/from a three-digit number? How is it different?	
When comparing three-digit numbers the number containing more 100s is greater than a number containing fewer 100s (and vice versa) (MA10-GR.2-S.1-GLE.1-EO.a.v)	What symbols are used to compare two numbers? If 2 three-digit numbers contain the same number of hundreds how do you compare them?	Why is the largest differing place value used to compare two numbers?	

Reading and writing numbers in standard and expanded forms develops meaningful connections between verbal (number-names) and symbolic (numerals) representations of quantities and increases flexibility with composing and decomposing numbers (MA10-GR.2-S.1-GLE.1-EO.a.i, a.iv)	What are multiple ways of breaking apart and putting backing together a number? (MA10-GR.2-S.1-GLE.1- IQ.1)	Why can you represent a number in multiple ways? How does the structure of the number system support the learning of larger numbers?
Place value strategies, properties of operations (commutative, associative, and identity properties of addition) and the inverse relationships between addition and subtraction build addition and subtraction fluency (MA10-GR.2-S.1-GLE.1-EO.b.i)	What is the relationship between addition and subtraction?	How does understanding place value and the relationship between addition and subtraction make addition and subtraction problems easier?
The adding or subtracting of three-digit numbers often requires composing or decomposing tens and/or hundreds (MA10-GR.2-S.1-GLE.1-EO.b)	How does decomposing numbers into ones, tens, and hundreds help you add or subtract them?	Why do we combine digits with the same place value when adding multi-digit numbers?

Key Knowledge and Skills:	What students will know and be able to do are so closely linked in the concept-based discipline of mathematics. Therefore, in the mathematics
My students will	samples what students should know and do are combined.

- Understand the three digits of a three-digit number represent the amount of hundreds, tens, and ones (MA10-GR.2-S.1-GLE.1-EO.a.i)
- Represent the digits of a three-digit number as hundreds, tens, and ones (MA10-GR.2-S.1-GLE.1-EO.a.i)
- Count forward and backward within 1000 (MA10-GR.2-S.1-GLE.1-EO.a.ii)
- Skip-count by 5s, 10s, and 100s (MA10-GR.2-S.1-GLE.1-EO.a.iii)
- Read and write numbers to 1000 using base-ten numerals, number names, and expanded form (MA10-GR.2-S.1-GLE.1-EO.a.iv)
- Compare two three-digit numbers based on meanings of the hundreds, tens, and ones digits, using >, =, and < symbols to record the results of comparisons. (MA10-GR.2-S.1-GLE.1-EO.a.v)
- Fluently add and subtract within 100 using strategies based on place value understanding, properties of operations, and/or the relationship between addition and subtraction (MA10-GR.2-S.1-GLE.1-EO.b.i)
- Add up to four two-digit numbers using strategies based on place value and properties of operations (MA10-GR.2-S.1-GLE.1-EO.b.ii)
- Add and subtract within 1000 using concrete models or drawings, strategies based on place value, properties of operations, and/or the relationship between addition and subtraction (MA10-GR.2-S.1-GLE.1-EO.b.iii)
- Make connections between solution strategies and written representations of addition and subtraction within 1,000 (MA10-GR.2-S.1-GLE.1-EO.b.iii)
- Explain why addition and subtraction strategies work, using place value and the properties of operations (MA10-GR.2-S.1-GLE.1-EO.b.v)
- Mentally add 10 or 100 to a given number 100–900, and mentally subtract 10 or 100 from a given number 100–900 (MA10-GR.2-S.1-GLE.1-EO.b.iv)
- Increase or decrease three-digit numbers by multiples of 10 or 100 by applying the concept of addition and subtraction of single digit numbers and by utilizing concepts of place value (MA10-GR.2-S.1-GLE.1-EO.b.iv)

A student in ability to apply and comp through the following sta		When I compare eight hundred thirty-nine to seven hundred forty-two I know eight hundred thirty-nine is larger because eight hundred is larger than seven hundred.
Academic Vocabulary:	Efficient, flexible, number names (e.g., eight hundred thirty-two), compare, thousand, hundred, ten, one, addition, subtraction, greater, larger, smaller, increase, decrease	
Technical Vocabulary:	Skip counting, grouping, compose, decompose, unit, ten times, standard form, expanded form, place value	