Curriculum Development Course at a Glance Planning for 1st Grade Mathematics

Co	ntent Area	Mathematics	Grade Level	1 st Grade	
Co	urse Name/Course Code				
Standard		Grade Level Expectations (GLE)			GLE Code
1.	Number Sense, Properties, and Operations	The whole number system describes place value relationships value foundation for efficient algorithms	vithin and beyond 100 ar	nd forms the	MA10-GR.1-S.1-GLE.1
		2. Number relationships can be used to solve addition and subtraction problems			MA10-GR.1-S.1-GLE.2
2.	Patterns, Functions, and Algebraic Structures	Expectations for this standard are integrated into the other standar	ds at this grade level.		
3.	Data Analysis, Statistics, and Probability	1. Visual displays of information can be used to answer questions			MA10-GR.1-S.3-GLE.1
4.	Shape, Dimension, and	1. Shapes can be described by defining attributes and created by	composing and decompo	sing	MA10-GR.1-S.4-GLE.1
	Geometric Relationships	2. Measurement is used to compare and order objects and events		MA10-GR.1-S.4-GLE.2	

Colorado 21st 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

Mathematical Practices:

- 1. Make sense of problems and persevere in solving them.
- 2. Reason abstractly and quantitatively.
- 3. Construct viable arguments and critique the reasoning of others.
- 4. Model with mathematics.
- 5. Use appropriate tools strategically.
- 6. Attend to precision.
- 7. Look for and make use of structure.
- 8. Look for and express regularity in repeated reasoning.

Unit Titles	Length of Unit/Contact Hours	Unit Number/Sequence
What's in a shape?	3 weeks	
Count, Collect, Compare	6-7 weeks	Should come before "Is it a ten or a one?" and "What's faster than counting?" units
Is it a ten or a one?	6 weeks	
What's Faster than Counting?	6-10 weeks	Should come after "Is it a ten or a one?" unit
Keeping track	4 weeks	

Unit Title	What's in a shape?		Length of Unit	3 weeks
Focusing Lens(es)	Composition/Decomposition	Standards and Grade Level Expectations Addressed in this Unit	MA10-GR.1-S.4-GLE.1	
Inquiry Questions (Engaging- Debatable):	 Are all objects in the world made up of shapes? (MA10-GR.1-S.4-GLE.1-RA.1) Why is it important to be fair when sharing something that you have divided? 			
Unit Strands	Geometry			
Concepts	Shape, attribute, compose, decompose, equal, share, partition, whole, half, fourth			

Generalizations My students will Understand that	Guiding Questions Factual Conceptual	
Attributes (e.g., number of faces, vertices, edges) differentiate and describe shapes (MA10-GR.1-S.4-GLE.1-EO.a)	What are defining attributes? What would we call the defining attributes?	How can shapes be sorted in different ways?
Changes to non-defining attributes, such as size or orientation, do not impact the classification of a shape, but changes to defining attributes, such as length of sides, can alter the classification of a shape (MA10-GR.1-S.4-GLE.1-EO.a, b)	What shape is formed when you shorten one side of a rectangle?	How can you create three different types of triangles? Is an upside-down triangle still a triangle?
Shapes can decompose into equal shares which become progressively smaller the more shares created (i.e., fourths are smaller than halves) (MA10-GR.1-S.4-GLE.1-EO.d)	What can strategy can you use to divide a rectangle into any number of equal shares?	Why is a half circle bigger than a fourth of the same circle?
Complex (new) shapes can result from combining (composing) familiar shapes and separating (decomposing) familiar shapes (MA10-GR.1-S.4-GLE.1-EO.c)	What shapes can be combined to make a square, trapezoid, rectangle, triangle, and circle? (MA10-GR.1-S.4-GLE.1-IQ.1, 2) What shapes are formed from decomposing a trapezoid?	How can shapes be combined to make new shapes? How can shapes be decomposed in different ways?

A circle or rectangle partitioned into two (or four) equal pieces results in each piece equaling one-half (or one-fourth) of the original whole and halves of two different wholes are not necessarily the same size (MA10-GR.1-S.4-GLE.1-EO.d)	How can you divide a circle into four equal parts? What are two ways you can divide a rectangle into four equal parts?	Why can't a triangle be divided into four equal squares?
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Key Knowledge and Skills: My students will...

- Distinguish between defining and non-defining attributes (MA10-GR.1-S.4-GLE.1-EO.a)
- Build and draw shapes when given a list of defining attributes (MA10-GR.1-S.4-GLE.1-EO.b)
- Compose two-dimensional shapes or three-dimensional shapes to create a composite shape and compose new shapes from the composite shapes (MA10-GR.1-S.4-GLE.1-EO.c)
- Partition circles and rectangles into two and four equal shares (MA10-GR.1-S.4-GLE.1-EO.d)
- Describe shares using the words halves, fourths and quarters and use the phrases half of, fourth of, quarter of (MA10-GR.1-S.4-GLE.1-EO.d.i)
- Describe the whole as two of, or four of the shares (MA10-GR.1-S.4-GLE.1-EO.d.ii)

EXAMPLE: A stud	Critical Language: includes the Academic and Technical vocabulary, semantics, and discourse which are particular to and necessary for accessing a given discipline. EXAMPLE: A student in Language Arts can demonstrate the ability to apply and comprehend critical language through the following statement: "Mark Twain exposes the hypocrisy of slavery through the use of satire."				
A student in can demonstrate the ability to apply and comprehend critical language through the following statement(s):		My friend and I can divide my cookie into 2 equal parts and each of us will get half. I can build a trapezoid using 3 triangles. A triangle has 3 sides and 3 vertices compared to a rhombus that has 4 sides and 4 vertices.			
Academic Vocabulary:	Academic Vocabulary: Half, model, compare, contrast, compose (build), decompose (take apart), equal shares, divide				
Technical Vocabulary: Attributes, vertex, circle, triangles, whole, cylinder, cube, cone, sides, vertex, rectangle, trapezoid, rhombus, square, rectangular prism, closed shap face					

Unit Title	Count, Collect, Compare		Length of Unit	6-7 weeks
Focusing Lens(es)	Comparison/Representation	Standards and Grade Level Expectations Addressed in this Unit	MA10-GR.1-S.1-GLE.1 MA10-GR.1-S.3-GLE.1	
Inquiry Questions (Engaging- Debatable):		ays count by ones? (MA10-GR nt values? (MA10-GR.1-S.1-GL	·	
Unit Strands	Number and Operations in Base Ten, Measurement and Data, Personal Financial Literacy			
Concepts	Count, compare, number, mor	e, less, represent, coin, value,	skip counting, graphing, data	

Generalizations My students will Understand that	Guiding (Factual	Questions Conceptual
Numerals and number names represent quantities of objects and can be used to keep a cumulative count of objects (MA10-GR.1-S.1-GLE.1-EO.a)	How many ways can you represent a quantity or a group of objects?	What is the best way to represent a quantity?
Skip counting expedites the cumulative counting of objects (MA10-GR.1-S.1-GLE.1-EO.c)	What number comes after 10 when counting by 5's?	Why not always count by one? (MA10-GR.1-S.1-GLE.1-EO-IQ.2)
When comparing the size of groups, the quantity of a group relate as more than, less than or equal to the quantity of another group (MA10-GR.1-S.1-GLE.1-EO.b.iii)	How can you determine if 2 numbers are equal? How can you determine if a quantity is greater than, less than or equal to a given quantity?	When is it useful or necessary to compare the size of groups? (MA10-GR.1-S.1-GLE.1-RA.1)
Coins represent monetary value of varying amounts (MA10-GR.1-S.1-GLE.1-EO.c.ii)	What is the total value of a penny, dime, nickel, and quarter? How many ways can you represent \$0.11?	How does skip counting help to count the value of coins?
Displays of data show not only individual data points but also the overall distributions or collective data (MA10-GR.1-S.3-GLE.1-EO.a)	What information can you learn from a visual display of data? What kinds of questions help us gather data? (MA10-GR.1-S.3-GLE.1-IQ.1) What questions can be answered by a data representation such as a chart or a graph? (MA10-GR.1-S.3-GLE.1-IQ.2)	Why display data visually?

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.

- Name coins and find the value of a collection of two coins (MA10-GR.1-S.1-GLE.1-EO.c.ii)*
- Compare 2 sets of objects up to at least 25 using language such as "three more or three less" (MA10-GR.1-S.1-GLE.1-EO.b.ii)*
- Count to 120 starting at any number (MA10-GR.1-S.1-GLE.1-EO.a.i)
- Read and write numerals and use them to represent the quantity of a group of 120 or less objects with a numeral (MA10-GR.1-S.1-GLE.1-EO.a.ii)
- Count groups of objects by 2's, 5's, and 10's (MA10-GR.1-S.1-GLE.1-EO.c)
- Organize, represent and interpret data in a visual display with up to three categories (MA10-GR.1-S.3-GLE.1-EO.a.i)
- Ask and answer questions about the total number of data points, (e.g., how many in each category, how many more/less in one category than in another) (MA10-GR.1-S.3-GLE.1-EO.a.ii)

Critical Language: includes the Academic and Technical vocabulary, semantics, and discourse which are particular to and necessary for accessing a given discipline.

EXAMPLE: A student in Language Arts can demonstrate the ability to apply and comprehend critical language through the following statement: "Mark Twain exposes the hypocrisy of slavery through the use of satire."

A student in _____ can demonstrate the ability to apply and comprehend critical language through the following statement(s):

This dime is smaller than the nickel but the dime is worth two nickels.

Ten more people like hopscotch than four square according to the survey we did at recess.

Ten more people like hopscotch than four square according to the survey we did at recess.

Cademic Vocabulary:

Quarter, penny, dime, nickel, count, hundred, compare, more, less, equal, coins, digits

Skip counting, numerals, number names,

^{*}Denotes connection to Personal Financial Literacy (PFL)

Unit Title	Is it a ten or a one?		Length of Unit	6 weeks
Focusing Lens(es)	Reasoning/Representation	Standards and Grade Level Expectations Addressed in this Unit	MA10-GR.1-S.1-GLE.1 MA10-GR.1-S.1-GLE.2	
Inquiry Questions (Engaging- Debatable):	 Can all numbers be represented with tens and ones? (MA10-GR.1-S.1-GLE.1-IQ.1) Why do we need a place value system? (MA10-GR.1-S.1-GLE.1-IQ.3) 			
Unit Strands	Operations and Algebraic Thinking, Number an Operations in Base Ten			
Concepts	Addition, subtraction, unknown quantity, join (combine/compose), separate (take away/decompose), compare (difference), place value, digit, tens, ones, unitizing, model, symbols, comparison			

Generalizations My students will Understand that	Guidin _g Factual	g Questions Conceptual	
Addition and subtraction problems involving unknown quantities develop the relationship of addition and subtraction and can be represented with symbols such as letters to express unknown numbers or quantities (MA10-GR.1-S.1-GLE.1-EO.c.v) and (MA10-GR.1-S.1-GLE.2-EO.a.i)	What is addition and how is it used? (MA10-GR.1-S.1-GLE.2-IQ-1) What is subtraction and how is it used? (MA10-GR.1-S.1-GLE.2-IQ-2)	How are addition and subtraction related? (MA10-GR.1-S.1-GLE.2-IQ.3) Why can the context below be represented as both an addition and subtraction problem, "5 blocks join with some more blocks makes 12 blocks, how many blocks were joined with the 5 to make 12?"	
Mathematicians solve the three situations of "join, separate and compare" with addition and subtraction (MA10-GR.1-S.1-GLE.2-EO.a.i)	What are examples of "join, separate and compare" problems?	How do "join, separate and compare" problems develop the meaning of addition and subtraction?	
Comparison word problems enhance understanding of subtraction, which includes the concepts of "take away" and difference (MA10-GR.1-S.1-GLE.2-EO.a.i)	What are two meanings of subtraction?	How can you model compare problems and how is the model different from take away problems	
Place value (the placement of digits in a number) determines the size of group represented (e.g., ones, tens, etc.), and increases from right to left as each "value" is ten times as large as the previous value (MA10-GR.1-S.1-GLE.1-EO.b.i)	What is the value of a digit in the ten places versus the same digit in the ones place?	How can place value help you understand quantities? How does a digit's position affect its value? (MA10-GR.1-S.1-GLE.1-IQ.4)	
Place value allows the decomposition of numbers beyond ten into tens and ones (MA10-GR.1-S.1-GLE.1-EO.b.i)	What are 2 numbers that have 3 tens?	How are tens and ones related?	

The creation of equal-sized groups (i.e., unitizing) allows for efficient counting by creating larger units (e.g., twos, fives, or tens) (MA10-GR.1-S.1-GLE.1-EO.c.iii, c.iv)	What is skip counting?	Why not always count by one? (MA10-GR.1-S.1-GLE.1-IQ.2) How can the number 20 represent twenty individual things and 2 groups of ten?
Knowledge of place value can greatly facilitate the addition and subtraction of multiples of ten (MA10-GR.1-S.1-GLE.1-EO.c.iii, c.iv)	How many units of ten are in 80?	How does a number change when increasing or decreasing it by ten? How does it stay the same?
The comparison of multi-digit numbers depends on place value and number relationships (MA10-GR.1-S.1-GLE.1-EO.b.ii)	When comparing numbers what symbols are used to show greater than, less than, or equal?	How can you compare 2 numbers without using words? How can you show the relationship between two unequal numbers in multiple ways using symbols?

Key Knowledge	and	Skills:
My students will		

- Understand in a two-digit number the two-digits represent amounts of tens and ones (MA10-GR.1-S.1-GLE.1-EO.b.i)
- Solve addition and subtraction word problems involving situations of adding to, taking from, putting together, taking apart, and comparing, using a symbol for the unknown number (MA10-GR.1-S.1-GLE.2-EO.a.i)
- Compare two two-digit numbers based on meanings of tens and ones digits and record with symbols (MA10-GR.1-S.1-GLE.1-EO.b.ii)
- Represent the digits of two-digit number as tens and ones (MA10-GR.1-S.1-GLE.1-EO.b.i)
- Mentally find 10 more or 10 less than a number without counting and explain reasoning used (MA10-GR.1-S.1-GLE.1-EO.c.iii)
- Subtract multiples of 10 between 10 and 90 from multiplies of 10 between 10 and 90 using concrete models, drawings and strategies based on place value, properties of operations and the relationship between addition and subtraction and explain the reasoning used (MA10-GR.1-S.1-GLE.1-EO.c.v)

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A student in can demonstrate the ability to apply and comprehend critical language through the following statement(s):		31 is less than 37 because they both have three tens but 37 has more ones than 31. The problem "How much older are you than me" is a (comparison) difference problem rather than take away problem because you can't take away someone's age.	
Academic Vocabulary:	Compare, comparison, model, adding to, taking from, putting together, taking apart, drawings, explain, efficient		
Technical Vocabulary:	Addition, subtraction, unknown quantity, join, separate, compare, difference, place value, digit, tens, ones, decompose, symbols, equation		

Unit Title	What's Faster than Counting?		Length of Unit	6-10 weeks
Focusing Lens(es)	Relationships/Structure	Standards and Grade Level Expectations Addressed in this Unit	MA10-GR.1-S.1-GLE.1 MA10-GR.1-S.1-GLE.2	
Inquiry Questions (Engaging- Debatable):	 How are addition and subtracted related? (MA10-GR.1-S.1-GLE.2-IQ.3) How can addition be used to solve a subtraction problem? 			
Unit Strands	Operations and Algebraic Thinking, Numbers and Operations in Base Ten			
Concepts	Addition, subtraction, commutative, associative, identity, efficiency, inverse, counting on, counting back, counting all, unknown, addend, equation, strategies, tens, ones, making ten, equal, equivalent			

Generalizations My students will Understand that	Guiding Questions Factual Conceptual	
Subtraction, interpreted and represented as unknown addend problems, demonstrates the inverse relationship between addition and subtraction (MA10-GR.1-S.1-GLE.2-EO.b.ii)	What is addition and how/when is it used? (MA10-GR.1-S.1-GLE.2-IQ.1) What is subtraction and how/when is it used? (MA10-GR.1-S.1-GLE.2-IQ.2)	How does knowing how to add help us subtract?
Counting strategies such as counting on and counting back can enable the efficient solving of addition and subtraction problems (MA10-GR.1-S.1-GLE.1-EO.c.v) and (MA10-GR.1-S.1-GLE.2-EO.c.i)	When is counting on better than counting back for solving a subtraction problem and vice versa? What are 2 strategies for addition?	Why is counting on/counting back more efficient than counting all? Why are strategies such as making a ten using doubles quicker than counting ones?
When adding two-digit numbers, mathematicians add tens and tens, ones and ones; and sometimes it is necessary to compose a ten (MA10-GR.1-S.1-GLE.2-EO.c.ii)	What does it mean to compose a ten?	Why do we add the same place values together when adding multi-digit numbers?
The commutative, associative and identity properties of addition apply as strategies to solve problems (MA10-GR.1-S.1-GLE.2-EO.b.i)	What is the commutative property of addition? What is the associative property of addition? What is the identity property of addition?	Why does the commutative property not work for subtraction? How do commutative, associative and identity properties help to solve problems? Why is the number zero special in addition?

The equal sign signifies quantities or expressions that represent the same value (MA10-GR.1-S.1-GLE.2-EO.d.i)	Using compensation strategies rather than direct calculation, how can you find an amount that makes this statement true: 28 + 5 = + 6?	Why is the balance scale a good model for the equal sign? Why is the "answer comes next" not the meaning of the equal sign?
Addition and subtraction equations relate three numbers any of which can be unknown (MA10-GR.1-S.1-GLE.2-EO.b.ii)	How can you symbolize an unknown in an equation?	How do you know when to add or subtract?

Key Knowledge and Skills: My students will...

- Solve word problems that call for addition of three whole numbers using objects, drawings, and equations with a symbol representing the unknown for sums less than or equal to 20 (MA10-GR.1-S.1-GLE.2-EO.a)
- Understand subtraction as an unknown-added problem (MA10-GR.1-S.1-GLE.2-EO.b.ii)
- Relate counting to addition and subtraction (MA10-GR.1-S.1-GLE.2-EO.c.i)
- Add and subtract within 20 using strategies of counting on, making ten, decomposing a number to make ten, the relationship of addition and subtraction, easier or known sums, and properties of operations (MA10-GR.1-S.1-GLE.2-EO.c.ii)
- Fluently add and subtract within 10 (MA10-GR.1-S.1-GLE.2-EO.c.iii)
- Understand the meaning of the equal sign (MA10-GR.1-S.1-GLE.2-EO.d.i)
- Determine if equations addition and subtraction are true or false (MA10-GR.1-S.1-GLE.2-EO.d.i)
- Determine the unknown whole number in an addition or subtraction equation relating three whole numbers (MA10-GR.1-S.1-GLE.2-EO.a.ii)
- Add within 100 using concrete models or drawings and strategies based on place value, properties of operations, and/or relationship of addition and subtraction and relate strategy to written method (MA10-GR.1-S.1-GLE.2-EO.c.i)
- Understand when adding two-digit numbers, one adds tens and tens ones and ones; and sometimes it is necessary to compose a ten (MA10-GR.1-S.1-GLE.1-EO.c.i)

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A student in can demonstrate the ability to apply and comprehend critical language through the following statement(s):		Finding the sum of 5 plus 6 is easy if you know that 5 plus 5 equals ten and 5 is one less than 6.	
Academic Vocabulary:	Arithmetic, efficiency, unknown, strategies, symbol		
Technical Vocabulary:	Addition, subtraction, commutative, associative, identity, inverse, counting on, counting back, counting all, addend, equation, tens, ones, making ten, equal, equivalent, compose		

Unit Title	Keeping track		Length of Unit	4 weeks
Focusing Lens(es)	Comparison/Measurement	Standards and Grade Level Expectations Addressed in this Unit	MA10-GR.1-S.4-GLE.2	
Inquiry Questions (Engaging- Debatable):	 Why keep track of time? (MA10-GR.1-S.4-GLE.2-IQ.2) Why do we measure objects? (MA10-GR.1-S.4-GLE.2-IQ.2) How are length and time different? How are they the same? (MA10-GR.1-S.4-GLE.2-IQ.3) 			
Unit Strands	Measurement and Data, Geometry			
Concepts	Length, units, order, measure, time, hour, half hour, minute, rounding, indirect comparison, analog, digital			

Generalizations My students will Understand that	Guiding (Factual	Questions Conceptual
In different ways, both analog and digital clocks display and communicate hours and minutes (MA10-GR.1-S.4-GLE.2-EO.b)	How does a digital clock show a half hour? How does an analog clock show a half hour?	Why are there two hands on an analog clock?
Time telling requires an understanding of the half-hour unit of measure that can be composed into an hour and multiple hour increments (MA10-GR.1-S.4-GLE.2-EO.b.i)	How is a half hour different than an hour?	Why would we measure time in increments smaller than an hour?
When comparing the size of two objects that cannot be placed next to each other, a third object can be used for indirect comparison (MA10-GR.1-S.4-GLE.2-EO.a.i)	What kind of object could you use to indirectly compare the length of your desk and the length of the foursquare court on the playground?	How can you order three objects by length if you are not able to directly compare them? How can you tell when one object is bigger than another (MA10-GR.1-S.4-GLE.2-IQ.1) How can you be sure that two things that appear to be the same size truly are the same size?
Accurate length measurement of an object requires precise iteration of same-size length units that span the object without gaps or overlaps (MA10-GR.1-S.4-GLE.2-EO.a.ii)	What errors might occur when measuring?	Why might different measurements occur from measuring the same object with non-standard units?

Key Knowledge and Skills: My students will...

- Order three objects by length (MA10-GR.1-S.4-GLE.2-EO.a.i)
- Compare the lengths of two objects indirectly by using a third object (MA10-GR.1-S.4-GLE.2-EO.a.i)
- Measure the length of an object by laying multiple copies of a shorter object end to end without gaps or overlaps and express the length of the object as a whole number of length units of the shorter object (MA10-GR.1-S.4-GLE.2-EO.a.ii)
- Track the number of placed units to produce a measure of units (MA10-GR.1-S.4-GLE.2-EO.a.ii)
- Tell and write time in hours and half-hours using analog and digital clocks (MA10-GR.1-S.4-GLE.2-EO.b)

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A student in can demonstrate the		It is a few minutes before nine o'clock.	
ability to apply and comprehend critical language through the following statement(s):		The length of my pencil is longer than my hand and then length of your pencil is shorter than my hand, which means my pencil is longer than your pencil.	
tinough the following sta	my pencir's longer than your pencir.		
Academic Vocabulary:	Analog clock, digital clock, compare, half-hour, hour, minute, time		
Technical Vocabulary:	Unit, indirect comparison, length, rounding		
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