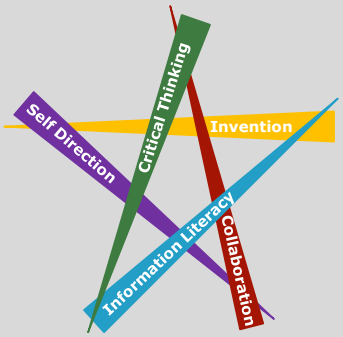
Curriculum Development Course at a Glance
Planning for 3rd Grade Mathematics

Content Area	Mathematics	**Grade Level**	3rd Grade
Course Name/Course Code			

Standard	**Grade Level Expectations (GLE)**	**GLE Code**
1. Number Sense, Properties, and Operations	1. The whole number system describes place value relationships and forms the foundation for efficient algorithms	MA10-GR.3-S.1-GLE.1
	2. Parts of a whole can be modeled and represented in different ways	MA10-GR.3-S.1-GLE.2
	3. Multiplication and division are inverse operations and can be modeled in a variety of ways	MA10-GR.3-S.1-GLE.3
2. Patterns, Functions, and Algebraic Structures	Expectations for this standard are integrated into the other standards at this grade level.	
3. Data Analysis, Statistics, and Probability	1. Visual displays are used to describe data	MA10-GR.3-S.3-GLE.1
4. Shape, Dimension, and Geometric Relationships	1. Geometric figures are described by their attributes	MA10-GR.3-S.4-GLE.1
	2. Linear and area measurement are fundamentally different and require different units of measure	MA10-GR.3-S.4-GLE.2
	3. Time and attributes of objects can be measured with appropriate tools	MA10-GR.3-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**
Multiply, Divide & Conquer	5 weeks	1
Everything Has a Place	4 weeks	2
Inside, Outside, What's it All About?	4 weeks	3
Fun with Fractions	4 weeks	4
Collect, Represent, What Does it Mean?	3 weeks	5
Time, Volume and Mass, Oh My!	3 weeks	6
Shape it Up!	2 weeks	7

Curriculum Development Overview
Unit Planning for 3rd Grade Mathematics

Unit Title	Multiply, Divide & Conquer			**Length of Unit**	5 weeks
Focusing Lens(es)	Interpretation/Relationships	**Standards and Grade Level Expectations Addressed in this Unit**	MA10-GR.3-S.1-GLE.3		
Inquiry Questions (Engaging-Debatable):	• How are multiplication and division related? (MA10-GR.3-S.1-GLE.3-IQ.1)				
Unit Strands	Operations and Algebraic Thinking, Personal Financial Literacy				
Concepts	Multiplication, division, equal groups, arrays, combinations, fair share, rate, scaling, area, unit conversions, addition, subtraction, rows, columns, times as many, times fewer, unknown factor, inverse operations, substitution, models, properties of operations (commutative property, associative property, distributive property, identity property, zero property), equations, arithmetic patterns				

Generalizations **My students will Understand that…**	**Guiding Questions** **Factual**	**Conceptual**
Multiplication and division word problems can involve situations of equal groups, arrays, combinations, fair sharing, rate, scaling, area, and unit conversions (MA10-GR.3-S.1-GLE.3-EO.a.i, a.ii, a.iii)	What does the product (quotient) represent in a context?	How can you determine if a story problem represents a multiplication/division problem?
Compared with addition/subtraction, multiplication and/or division provide highly efficient means to solve equal-group story problems (MA10-GR.3-S.1-GLE.3-EO.c.i)	What does it mean to be efficient? Why was multiplication invented? Why not just add? (MA10-GR.3-S.1-GLE.3-IQ.3) Why was division invented? Why not just subtract? (MA10-GR.3-S.1-GLE.3-IQ.4)	Why is (insert a contextual problem with unequal groups) a multiplication or addition problem?
Division enables decision-making determinations regarding the size of groups or the number of groups in a given context (MA10-GR.3-S.1-GLE.3-EO.a.ii)	What does it mean to count how many are in a group versus the number of groups? What are two types of equal group division problems?	How do equal problems lead to types of answers to division problems?
Arrays such that an array of m rows and n columns has n x m items can model multiplication and division word problems (MA10-GR.3-S.1-GLE.3-EO.a.iii)	What is an array? What are rows and columns? How can an array model be used to help solve a combination problem such as 3 pants and 2 shirts?	How is an array a model for multiplication? How can an array model show the commutative property? How are arrays connected to the concept of area?

The comparison of the size of a collection against the size of a group reflects multiplication and division problems related to the concept of "times as many" or "times fewer" (MA10-GR.3-S.1-GLE.3-EO.a)	What is the difference between comparing one group as n "times as many" than another group and comparing by stating how many more are in one group?	How can comparing groups lead to multiplication and division problems?
Because multiplication and division are inverse operations, multiplication provides and effective means to solve division problems as unknown factor problems (MA10-GR.3-S.1-GLE.3-EO.b.ii)	How can you use a multiplication or division fact to find a related fact?	How are multiplication and division related? (MA10-GR.3-S.1-GLE.3-IQ.1) Why is division by zero undefined?
Arithmetic patterns, justified by properties of operation, constitute strategies that can be used to multiply and divide (MA10-GR.3-S.1-GLE.3-EO.d.iv)	What patterns do you notice in a multiplication table? Addition table? How can three numbers be multiplied in any order to solve a multiplication problem (e.g., 2 x 7 x 5 or 14 x 5?) How do arithmetic patterns help to build fluency with basic facts?	Why are zero and one special in multiplication? Why do odd numbers times odd numbers result in odd numbers? Is there another way to get an odd number when multiplying?
Fluency with multiplication and division facts results from multiple experiences with different models, representations, problem types, properties of operations and interrelationships among multiplication and division facts (MA10-GR.3-S.1-GLE.3-EO.c.i, c.ii)	How can you use a multiplication or division fact to find a related fact? (MA10-GR.3-S.1-GLE.3-IQ.2) How can strategies such as doubling, halving, skip counting, partitioning and reassembling help to develop fluency with basic multiplication facts?	Why is relying solely on rote memorization of facts limiting when learning more advanced mathematics?

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.*

- Solve word problems involving equal groups, measurement quantities, and arrays by using multiplication and division (MA10-GR.3-S.1-GLE.3-EO.a.iii)
- Represent multiplication and division story problems by using drawings and equations with a symbol for the unknown number (MA10-GR.3-S.1-GLE.3-EO.a.iii)
- Understand division as an unknown-factor problem (MA10-GR.3-S.1-GLE.3-EO.b.ii)
- Model strategies to achieve a personal financial goal using arithmetic operations (MA10-GR.3-S.1-GLE.3-EO.a.v)*
- Interpret whole-number products and quotients (MA10-GR.3-S.1-GLE.3-EO.a.i, a.ii)
- Determine the unknown whole number in a multiplication or division equation relating three whole numbers (MA10-GR.3-S.1-GLE.3-EO.a.iv, b.ii)
- Apply properties of operations as strategies to multiply and divide (MA10-GR.3-S.1-GLE.3-EO.d)
- Identify and explain patterns in arithmetic (including patterns in addition and multiplication tables) using properties of operations (MA10-GR.3-S.1-GLE.3-EO.d)
- Fluently multiply and divide within 100, using strategies such as the relationship between multiplication and division (MA10-GR.3-S.1-GLE.3-EO.c)

***Denotes connection to Personal Financial Literacy (PFL)**

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):	*If 24 apples are arranged into 4 equal rows, I know that 6 apples will be in each row because 6x4 equals 24, and 24/4 equals 6.*
Academic Vocabulary:	Fair share, represent, equal, groups, model, solve, interpret, rows, columns, times as many, times fewer, unknown
Technical Vocabulary:	Product, quotient, whole number, operation, multiplication, division, pattern, equation, strategy, relationship, unknown factor, properties, array, combinations, area, addition, subtraction, factor, inverse operations,

Curriculum Development Overview
Unit Planning for 3rd Grade Mathematics

Unit Title	Everything Has a Place			**Length of Unit**	4 weeks
Focusing Lens(es)	Efficiency	**Standards and Grade Level Expectations Addressed in this Unit**	MA10-GR.3-S.1-GLE.1		
Inquiry Questions (Engaging-Debatable):	• How might our number system be different if humans had twenty figures instead of ten? (MA10-GR.3-S.1-GLE.1-IQ.2)				
Unit Strands	Operations and Algebraic Thinking, Number and Operations in Base Ten				
Concepts	Reasonableness, rounding, number properties, mental computation, common sense, estimation, sums, differences, place value, variables, unknown quantities, properties of operations, addition, subtraction, fluency, flexibility, standard algorithm, multiples of ten, multiplication, decomposing				

Generalizations **My students will Understand that…**	**Guiding Questions** **Factual**	**Conceptual**
Multiple methods of assessing the reasonableness of an answer (e.g., rounding, context clues, number properties, mental computation) provide opportunities to (re)evaluate the interpretation of a problem (MA10-GR.3-S.1-GLE.1-EO.d.i, d.iii)	What is mental computation? What strategies do we use to check or evaluate our mental calculations?	Why is it important to assess the reasonableness of an answer?
Successful estimation of sums and differences by rounding to the nearest 10 or 100 depends on a thorough understanding of place value within a base-ten system (MA10-GR.3-S.1-GLE.1-EO.a.i)	What does it mean to round? How do we use rounding in our everyday use of mathematics?	How does rounding make mental computation easier?
Letters (called variables) often represent unknown quantities in equations (MA10-GR.3-S.1-GLE.1-EO.d.ii)	When might we use a variable and why?	Why are letters used to represent unknown quantities?
Facility with place value, properties of operations and number relationships increases flexibility with addition and subtraction of multi-digit numbers and leads to conceptual understanding of (standard) algorithms (MA10-GR.3-S.1-GLE.1-EO.a.ii)	What is a place value strategy that is useful in problem solving? How is knowledge of properties of operations useful in problem solving? How does the relationship between addition and subtraction strategy help us problem solve	How is place value important in addition and subtraction of multi-digit numbers? Why does the standard algorithm work?

The continued practice of decomposing multiples of ten into ten times a number increases multiplication abilities (MA10-GR.3-S.1-GLE.1-EO.a.iii)	What does it mean to decompose through multiplication? How does previous experience with counting forwards and backwards by decades help when multiplying a number by a multiple of ten?	Why is ten so important when multiplying larger numbers?

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.*

- Use place value understanding to round whole numbers to the nearest 10 or 100. (MA10-GR.3-S.1-GLE.1-EO.a.ii)
- Fluently add and subtract within 1000 using strategies and algorithms based on place value, properties of operations, and/or the relationship between addition and subtraction (MA10-GR.3-S.1-GLE.1-EO.a.iii)
- Multiply one-digit whole numbers by multiples of 10 in the range 10-90 using strategies based on place value and properties of operations (MA10-GR.3-S.1-GLE.1-EO.a.iii)
- Solve two-step word problems using the four operations and asses the reasonableness of answers using mental computation and estimation strategies (MA10-GR.3-S.1-GLE.1-EO.d.i, d.iii)
- Represent word problems using equations with a letter standing for the unknown quantity (MA10-GR.3-S.1-GLE.1-EO.d.ii)

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A student in _____ can demonstrate the ability to apply and comprehend critical language through the following statement(s):	*I know that 398 +154 is close to 550, because I rounded to the nearest 100 and the nearest 10, so my estimation is 400 +150, and I added those two numbers.*
Academic Vocabulary:	Reasonableness, common sense
Technical Vocabulary:	Round, mental computation, estimation, place value, variable, addition, subtraction, algorithms, multi-digit numbers, digit, fluency, flexibility, standard algorithm, multiples (of ten), multiplication

Unit Title	Inside, Outside, What's it All About?		**Length of Unit**	4 weeks
Focusing Lens(es)	Representations	**Standards and Grade Level Expectations Addressed in this Unit**	MA10-GR.3-S.4-GLE.2	
Inquiry Questions (Engaging-Debatable):	• How does what we measure influence how we measure? (MA10-GR.3-S.4-GLE.2-IQ-3) • Why do we measure area in square units?			
Unit Strands	Measurement and Data			
Concepts	Square, unit, unit square, square units, area, rows, columns, gaps, overlaps, rectangle, addition, multiplication, partitioning, rectangular array, length, width, conservation, formula, compose, decompose, distributive property, perimeter			

Generalizations **My students will Understand that…**	**Guiding Questions** **Factual**	**Conceptual**
A square with side lengths 1 unit, called "a unit square" represents "one square unit," a form of measurement that facilitates the computation of area in rectangles (MA10-GR.3-S.4-GLE.2-EO.a.i)	What is a square unit?	How are square units used to measure area? How does the size of a unit square impact the number of squares required to cover a shape?
Rectangles decomposed into rows and columns of square units encourages the use of repeated addition or multiplication strategies to solve for area- defined as the interior of a two-dimensional figure covered, without gap or overlap, by n unit squares (MA10-GR.3-S.4-GLE.2-EO.a.ii)	What are rows and columns? What does it mean if a shape can tessellate? Which shapes tessellate? Could you use these shapes to measure area?	How can rows and columns be used to efficiently solve for area? Why is it important to measure area with a shape that tessellates? Why were squares chosen as the standard unit for measuring area?
The addition of the number of units in the rows and columns corresponding with the sides of a rectangle determines the rectangle's perimeter (MA10-GR.3-S.4-GLE.2-EO.a.ii)	How can you determine the number of rows and columns in rectangle if you know the length and width? If you know the length plus the width of a rectangle, how can you find its perimeter? How can you determine the unknown side length of any polygon whose perimeter is known? What's the difference between perimeter and area? What are ways to describe the size of an object or shape? (MA10-GR.3-S.4-GLE.2-IQ.2)	How do length and width measurements, measured in units, help to find an area measurement in square units? Why is addition used to find perimeter? How is it possible to have two rectangles with the same perimeter and different areas? How is it possible to have two rectangles with the same area and different perimeters? Why is perimeter considered additive and area multiplicative?

Partitioned rectangles (into rectangular arrays of squares) provides a visual representation of the formula: area of rectangle = length x width (MA10-GR.3-S.4-GLE.2-EO.a.ii)	What is a rectangular array? How can finding the area of rectangles help build fluency with basic multiplication and division facts?	Why is multiplication used to find the area of a rectangle?
Areas of rectangles, combined, illustrate the distributive property if the lengths of one side of each rectangle are the same (i.e., A rectangle with side lengths "a" and "b" combined with a rectangle with side lengths "a" and "c" creates a rectangle whose area can be represented in the equation (a x b) + (a x c) = a (b + c)) (MA10-GR.3-S.4-GLE.2-EO.a.iii)	How can you show that (a x b) + (a x c) = a (b + c) using area models?	Why is (a x b) + (a x c) = a (b + c) true?

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.*

- Know that a plane figure, which can be covered without gaps or overlaps by *n* unit squares is said to have an area of *n* square units (MA10-GR.3-S.4-GLE.2-EO.a.i)
- Find the area of a rectangle with whole-number side lengths using a variety of methods, including counting unit squares, tiling using a row and column structure, and multiplying side lengths (MA10-GR.3-S.4-GLE.2-EO.a.ii)
- Represent whole-number products as rectangular areas (MA10-GR.3-S.4-GLE.2-EO.a.iii)
- Recognize area as additive (MA10-GR.3-S.4-GLE.2-EO.a.iii)
- Find areas of rectilinear figures by decomposing them into non-overlapping rectangles and adding the areas for the non-overlapping parts (MA10-GR.3-S.4-GLE.2-EO.a.iii)
- Use tiling to show in a concrete case that the area of a rectangle with whole-number side lengths a and b + c is the sum of a x b and b x c (MA10-GR.3-S.4-GLE.2-EO.a.iii)
- Use area models to represent the distributive property in mathematical reasoning (MA10-GR.3-S.4-GLE.2-EO.a.iii)
- Find the perimeter given the side lengths of a polygon (MA10-GR.3-S.4-GLE.2-EO.c.i)
- Find an unknown side length of a polygon given the perimeter (MA10-GR.3-S.4-GLE.2-EO.c.ii)
- Find rectangles with the same perimeter and different areas or with the same area and different perimeters (MA10-GR.3-S.4-GLE.2-EO.c.iii)
- Show how area can remain constant when composing and decomposing shapes made up of square units (MA10-GR.3-S.4-GLE.2-EO.c)

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A student in _____ can demonstrate the ability to apply and comprehend critical language through the following statement(s):	*I multiplied the side lengths of this rectangle to find the area.* *I know this first column has 7 square units and there are 6 columns, which means my area will be 7+7+7+7+7+7 or 7x6.* *I found the perimeter of this shape by adding the side lengths together.*
Academic Vocabulary:	Measure, row, column, gaps, overlaps, rectangle, length, width,
Technical Vocabulary:	Unit, unit square, square units, array, area, perimeter, multiplication, addition, square unit, unit square, conservation, formula,

Curriculum Development Overview
Unit Planning for 3rd Grade Mathematics

Unit Title	Fun with Fractions			**Length of Unit**	4 weeks
Focusing Lens(es)	Part/Whole	**Standards and Grade Level Expectations Addressed in this Unit**	MA10-GR.3-S.1-GLE.2		
Inquiry Questions (Engaging-Debatable):	• Why do fractions have more than one name? (MA10-GR.3-S.1-GLE.2-IQ-2) • When are two halves not equal?				
Unit Strands	Number and Operations – Fractions				
Concepts	Fraction, whole, equal part, equivalent fraction, numerator, denominator, represent, partition, quantity				

Generalizations **My students will Understand that…**	**Guiding Questions** **Factual**	**Conceptual**
Partitioning a whole into equal parts establishes/results in/creates fractions (MA10-GR.3-S.1-GLE.2-EO.a.i)	What is partitioning? How does partitioning a whole into equal parts establish/result in/creates fractions? (MA10-GR.3-S.1-GLE.2-IQ-1)	Why and when do we need to break wholes into parts?
The size of a fractional part (of a fraction) directly relates to the size of the whole (MA10-GR.3-S.1-GLE.2-EO.a.i; IQ.3)	Why do we distinguish the fractional part of a fraction? How does the size of the fractional part change when the size of the whole changes?	When would we change the size of the "whole" part of a fraction?
Equivalent fractions represent the same quantity (size) and point on number line but can have different numerators and denominators (MA10-GR.3-S.1-GLE.2-EO.a.ii, a.iii.1)	What are the numerator and denominator? What is the relationship between the numerator and denominator?	Why would you need to represents two equivalent fractions as having different numerators and denominators?
Two fractions with the same numerators and denominators represent the same quantity (size) and can be compared to each other if they refer to the same whole (MA10-GR.3-S.1-GLE.2-EO.a.iii.5; RA.2)	Can you imagine when getting I/2 of a particular "whole" would not be as good as getting 1/8 of another "whole"? (MA10-GR.3-S.1-GLE.2-RA.1)	How can fractions be used to mislead our thinking about the value of our share?
Fractions represent numbers equal to, less than, or greater than 1 (MA10-GR.3-S.1-GLE.2-EO.a.ii)	What does represent mean? How do you know when a fraction represents a number less than one? Equal to one? More than one?	Why would you use a fraction to represent a number greater than one?

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.*

- Understand a fraction 1/b as the quantity formed by 1 part when a whole is partitioned into be equal parts and a fraction a/b as the quantity formed by a parts of size 1/b (MA10-GR.3-S.1-GLE.2-EO.a.i)
- Represent a fraction 1*/b* on a number line diagram by defining the interval from 0 to 1 as the whole and partitioning it into *b* equal parts and recognize that each part has size 1*/b* and the endpoint of the part based at 0 locates the number 1*/b* on the number line (MA10-GR.3-S.1-GLE.2-EO.a.ii)
- Represent a fraction *a/b* on number line diagram by marking off a lengths 1*/b* from 0 and recognize that the resulting interval has size *a/b* and that its endpoint locates the number *a/b* on the number line (MA10-GR.3-S.1-GLE.2-EO.a.ii)
- Understand two fractions are equivalent (equal) if they are the same size, or the same point on a number line (MA10-GR.3-S.1-GLE.2-EO.a.iii.1)
- Recognize and generate simple equivalent fractions (MA10-GR.3-S.1-GLE.2-EO.a.iii.2)
- Explain why two fraction are equivalent (MA10-GR.3-S.1-GLE.2-EO.a.iii.2)
- Express whole numbers as fractions, and recognize fractions that are equivalent to whole numbers (MA10-GR.3-S.1-GLE.2-EO.a.iii.3)
- Compare two fractions with the same numerator or the same denominator by reasoning about their size (MA10-GR.3-S.1-GLE.2-EO.a.iii.4)
- Explain why comparisons are valid only when the two fractions refer to the same whole (MA10-GR.3-S.1-GLE.2-EO.a.iii.5)
- Record the results of comparisons with the symbols >, =, or <, and justify the conclusions (MA10-GR.3-S.1-GLE.2-EO.a.iii.6)

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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):	*Sharing one quarter of my banana is not the same as sharing one quarter of your watermelon, therefore, ¼ = ¼ does not always tell the complete story. Actual comparison or value judgments depend on the whole!*
Academic Vocabulary:	Compare, explain, record, reason
Technical Vocabulary:	Numerator, denominator, fraction, whole, part, equivalent fraction, number line, partition, equivalence

Curriculum Development Overview
Unit Planning for 3rd Grade Mathematics

Unit Title	Collect, Represent, What Does it Mean?		**Length of Unit**	3 weeks
Focusing Lens(es)	Interpretation	**Standards and Grade Level Expectations Addressed in this Unit**	MA10-GR.3-S.3-GLE.1	
Inquiry Questions (Engaging-Debatable):	• Why are data displays important and what data are important to display? (MA10-GR.3-S.3-GLE.1-IQ.2) • Do data displays simply help us understand information, or can they (mis)lead us to particular conclusions?			
Unit Strands	Measurement and Data			
Concepts	Data, graph, representation, interpretation, icons, pictographs (scaled picture graph), bar graph, axis, unit, measurement, variation, measurement error, communities			

Generalizations **My students will Understand that…**	**Guiding Questions** **Factual**	**Conceptual**
Data represented visually (e.g., graphs) provide a means to capture, convey, and facilitate greater understanding of information (MA10-GR.3-S.3-GLE.1-EO.a)	What is data? What does it mean to interpret a graph?	Why do we use graphs to represent data? How does interpreting a graph help you learn more about the data collected?
The creators of graphs often use icons, pictographs (scaled picture graph) and tick marks on the axis of a bar graph to denote more than one unit when trying to concisely represent a large amount of data (MA10-GR.3-S.3-GLE.1-EO.a.i, a.ii)	How can you a pictograph or bar graph to answer questions such as, “how many more” or “how many less”?	How can you represent large numbers on a pictograph? Bar graph?
Visual data representations of people’s experiences, beliefs, preferences, and attitudes increase understandings of given communities (MA10-GR.3-S.3-GLE.1-RA.1)	What can data tell us about our school or class? What kinds of information could we collect and display about our community?	What can we do with the data we collect and display?

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.*

- Draw scaled picture graphs and scaled bar graphs to represent a data set with several categories (MA10-GR.3-S.3-GLE.1-EO.a.i)
- Solve one- and two-step "how many more" and "how many less" problems using information presented in scaled bar graphs (MA10-GR.3-S.3-GLE.1-EO.a.ii)
- Generate measurement data by measuring lengths using rulers marked with halves and fourths of an inch then show the data by making a line plot, where the horizontal scale is marked off in appropriate units (e.g. whole numbers, halves, or quarters) (MA10-GR.3-S.3-GLE.1-EO.a.iii)

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A student in _____ can demonstrate the ability to apply and comprehend critical language through the following statement(s):	*This graph shows me that 5 more kids in our class have dogs than have cats.*
Academic Vocabulary:	Generate, draw, represent, interpret, collect, icon
Technical Vocabulary:	Graph, line plot, scaled picture graph (pictograph), scaled bar graph, data set, data, categories, axis, unit

Curriculum Development Overview
Unit Planning for 3rd Grade Mathematics

Unit Title	Time, Volume and Mass, Oh My!		**Length of Unit**	3 weeks
Focusing Lens(es)	Reliability	**Standards and Grade Level Expectations Addressed in this Unit**	MA10-GR.3-S.4-GLE.3	
Inquiry Questions (Engaging-Debatable):	• What would happen if we did not have standard units of measure for time or volume or mass? (MA10-GR.3-S.4-GLE.3-IQ-1) • What is the best way to measure the passage of time?			
Unit Strands	Measurement and Data			
Concepts	Hours, seconds, minutes, elapsed time, time, standard units, measurement, revolution, regrouping, base number systems, units, number line diagram, liquid volume, capacity, masses, height, base			

Generalizations **My students will Understand that…**	**Guiding Questions** **Factual**	**Conceptual**
Standardized forms of measurement (e.g., for time, liquid volume and mass) provide common terms/connotations that facilitate mathematical communication and problem solving (MA10-GR.3-S.4-GLE.3-EO.a)	What are the differences between time, liquid volume and mass? What is a standard unit?	Why do they need different types of measurement? How do having standard units of measure help us?
Although clocks (analog and digital) may have different ways of representing and denoting the passage of time they share a language of time increments (i.e., hours, minutes and seconds) which facilitates their universality (MA10-GR.3-S.4-GLE.3-EO.a.i, a.ii)	How do you read an analog clock to the nearest minute? What do the revolutions of the second and minute hands communicate? How many minutes in an hour? How many seconds in a minute?	Why are there five tick marks between each number on an analog clock? Why do we measure time? (MA10-GR.3-S.4-GLE.3-IQ.2)
Solving elapsed time problems involves composing and decomposing units of hours, minutes and seconds and provides experience with a real-world number base system other than base-ten (MA10-GR.3-S.4-GLE.3-EO.a.iii)	When do you regroup in problems involving time? How can a number line diagram be used to solve elapsed time problems?	How are addition and subtraction problems about time similar/different from addition and subtraction problems not involving time?

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.*

- Tell and write time to the nearest minute (MA10-GR.3-S.4-GLE.3-EO.a.i)
- Measure time intervals in minutes (MA10-GR.3-S.4-GLE.3-EO.a.ii)
- Solve word problems including elapsed time problems using addition and subtraction of time intervals in minutes using a number line diagram (MA10-GR.3-S.4-GLE.3-EO.a.iii)
- Measure and estimate liquid volumes and masses of objects using standard units of grams (g), kilograms (kg), and liters (l) (MA10-GR.3-S.4-GLE.3-EO.a.iv)
- Use models to add, subtract, multiply, or divide to solve one-step word problems involving masses or volumes that are given in the same units (MA10-GR.3-S.4-GLE.3-EO.a.v)

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):	*I eat breakfast at 6:15 in the morning and I leave for school at 8:00 the amount of elapsed time from 6:15 to 8:00 is 1 hour and 45 minutes. I used an open number line diagram to solve this problem.*
Academic Vocabulary:	Measure, estimate, model, hours, seconds, minutes, time
Technical Vocabulary:	Gram, kilogram, liter, liquid volume, mass, number line diagram, standard unit, elapsed time, units

Unit Title	Shape it Up!		**Length of Unit**	2 weeks
Focusing Lens(es)	Relationship	**Standards and Grade Level Expectations Addressed in this Unit**	MA10-GR.3-S.4-GLE.1	
Inquiry Questions (Engaging-Debatable):	• Why do mathematicians use different terms to describe the same shape? (MA10-GR.3-S.4-GLE.1-IQ.2)			
Unit Strands	Geometry			
Concepts	Equipartitioning, partitioning, attributes, properties, unit fraction, quadrilaterals, categorization, shapes, sides, vertices, relationships, equivalent, length, parallel, perpendicular, angle, right angle, area, whole			

Generalizations **My students will Understand that…**	**Guiding Questions** **Factual**	**Conceptual**
Shapes in different categories typically share attributes that allow the creation and definition of larger categories (MA10-GR.3-S.4-GLE.1-EO.a.i)	What attributes are typically used to categorize shapes?	Why do we categorize shapes by their attributes?
Attributes (properties) of shapes include sides and vertices and the relationships among sides and vertices (MA10-GR.3-S.4-GLE.1-EO.a.i, a.i.1)	What is a quadrilateral? Which quadrilaterals have multiple names? How do you know if a shape is a quadrilateral?	Why might a shape have multiple names?
Relationships between the sides and vertices of a shape typically highlight lengths (equivalent and non-equivalent) and lines (parallel or perpendicular) (MA10-GR.3-S.4-GLE.1-EO.a.i, a.i.1)	Which shapes have parallel sides? Which shapes have square corners?	How do parallel and perpendicular sides help to classify shapes?
Equipartitioning a shape creates equal areas which can each be represented as a unit fraction (MA10-GR.3-S.4-GLE.1-EO.a.ii)	What is a unit fraction? How do you represent an equal part of a shape using a unit fraction?	Into how many parts can a shape be partitioned into evenly?

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.*

- Understand shapes in different categories may share attributes and that shared attributes can define a larger category (MA10-GR.3-S.4-GLE.1-EO.a.i)
- Recognize rhombuses, rectangles, and squares as examples of quadrilaterals (MA10-GR.3-S.4-GLE.1-EO.a.i.1)
- Draw examples of quadrilaterals that do not belong to any of the subcategories of rhombuses, rectangles, and squares (MA10-GR.3-S.4-GLE.1-EO.a.i.1)
- Partition shapes into equal parts with equal areas and express the area of each part as a unit fraction of the whole (MA10-GR.3-S.4-GLE.1-EO.a.iii)

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):	*I partitioned this rectangle into four equal parts, and I know that each part is ¼ of the whole.* *This rhombus is a quadrilateral because it is a shape with four sides.* *I know this shape I drew is a quadrilateral because it has four sides. I know it's not a rhombus, rectangle or square, because it doesn't share the attributes of those shapes.*
Academic Vocabulary:	Partition, identify, category, example, non-example, corner, length
Technical Vocabulary:	Quadrilateral (e.g., rhombuses, rectangles, and squares), attributes, unit fractions, area, angle, side, vertices, equal, parallel, perpendicular, right angle, whole