Fourth Grade Florida Standards Math

Revised, 2014

This is an update of the Fourth Grade Math Curriculum to align with changes in the Florida Standards. It includes emphases for instruction and a required order of instruction pacing guide.

Fourth Grade Florida Standards Math

The district-adopted text for math is Harcourt GOMATH for Florida Standards. Additional materials are available on the Harcourt ThinkCentral website. Math iXL is available at all elementary schools in the district.

MAFS.4

In Grade 4, instructional time should focus on three critical areas: (1) developing understanding and fluency with multi-digit multiplication, and developing understanding of dividing to find quotients involving multi-digit dividends; (2) developing an understanding of fraction equivalence, addition and subtraction of fractions with like denominators, and multiplication of fractions by whole numbers; (3) understanding that geometric figures can be analyzed and classified based on their properties, such as having parallel sides, perpendicular sides, particular angle measures, and symmetry.

(1) Students generalize their understanding of place value to 1,000,000, understanding the relative sizes of numbers in each place. They apply their understanding of models for multiplication (equal-sized groups, arrays, area models), place value, and properties of operations, in particular the distributive property, as they develop, discuss, and use efficient, accurate, and generalization methods to compute products of multi-digit whole numbers. Depending on the numbers and the context, they select and accurately apply appropriate methods to estimate or mentally calculate products. They develop fluency with efficient procedures for multiplying whole numbers; understand and explain why the procedures work based on place value and properties of operations; and use them to solve problems. Students apply their understanding of models for division, place value, properties of operations, and the relationship of division to multiplication as they develop, discuss, and use efficient, accurate, and generalization procedures to find quotients involving multi-digit dividends. They select and accurately apply appropriate methods to estimate and mentally calculate quotients, and interpret remainders based upon the context.

(2) Students develop understanding of fraction equivalence and operations with fractions. They recognize that two different fractions can be equal (e.g., 15/9 = 5/3), and they develop methods for generating and recognizing equivalent fractions. Students extend previous understandings about how fractions are built from unit fractions, composing fractions from unit fractions, decomposing fractions into unit fractions, and using the meaning of fractions and the meaning of multiplication to multiply a fraction by a whole number.

(3) Students describe, analyze, compare, and classify two-dimensional shapes. Through building, drawing, and analyzing two-dimensional shapes, students deepen their understanding of properties of two-dimensional objects and the use of them to solve problems involving symmetry.

Mathematical Practices: The eight Mathematical Practices describe HOW we do math. They must be infused into all math instruction. This is done by having students:

- explain their thinking;
- solve problems in different ways;
- use manipulatives to demonstrate and visualize problem solving;
- work on difficult problems that are accessible but challenging;
- solve fewer problems that require more thinking rather than focusing on working a lot of one-step problems;
- use different tools to make sense of math;
- focus on precision;
- look for patterns in numbers and problems.

In addition, teachers must:

- plan with the practices in mind. This means asking planning questions like: 'What mathematical practice will the students need to use to solve this problem?' or 'What mathematical practice will I be modeling when we are working on this concept?'
- model the practices.
- use the vocabulary of the practices.
- honor student problem solving by giving them time to work on problems without moving quickly to 'the answer', and giving students multiple opportunities to discuss their reasoning in the context of math.
- question and discuss answers.
- make mathematical tools visible by discussing appropriate and available tools for solving problems, and having the tools readily accessible for use.

Explanations of the Mathematical Practices from the Florida Standards for Mathematics:

MAFS.K12.MP.1.1 -- **Make sense of problems and persevere in solving them.**

Mathematically proficient students start by explaining to themselves the meaning of a problem and looking for entry points to its solution. They analyze givens, constraints, relationships, and goals. They make conjectures about the form and meaning of the solution and plan a solution pathway rather than simply jumping into a solution attempt. They consider analogous problems, and try special cases and simpler forms of the original problem in order to gain insight into its solution. They monitor and evaluate their progress and change course if necessary. Older students might, depending on the context of the problem, transform algebraic expressions or change the viewing window on their graphing calculator to get the information they need. Mathematically proficient students can explain correspondences between equations, verbal descriptions, tables, and graphs or draw diagrams of important features and relationships, graph data, and search for regularity or trends. Younger students might rely on using concrete objects or pictures to help conceptualize and solve a problem. Mathematically proficient students check their answers to problems using a different method, and they continually ask themselves, "Does this make sense?" They can understand the approaches of others to solving complex problems and identify correspondences between different approaches.

MAFS.K12.MP.2.1 : **Reason abstractly and quantitatively**.

Mathematically proficient students make sense of quantities and their relationships in problem situations. They bring two complementary abilities to bear on problems involving quantitative relationships: the ability to decontextualize—to abstract a given situation and represent it symbolically and manipulate the representing symbols as if they have a life of their own, without necessarily attending to their referents—and the ability to contextualize, to pause as needed during the manipulation process in order to probe into the referents for the symbols involved. Quantitative reasoning entails habits of creating a coherent representation of the problem at hand; considering the units involved; attending to the meaning of quantities, not just how to compute them; and knowing and flexibly using different properties of operations and objects.

MAFS.K12.MP.3.1 : **Construct viable arguments and critique the reasoning of others.**

Mathematically proficient students understand and use stated assumptions, definitions, and previously established results in constructing arguments. They make conjectures and build a logical progression of statements to explore the truth of their conjectures. They are able to analyze situations by breaking them into cases, and can recognize and use counterexamples. They justify their conclusions, communicate them to others, and respond to the arguments of others. They reason inductively about data, making plausible arguments that take into account the context from which the data arose. Mathematically proficient students are also able to compare the effectiveness of two plausible arguments, distinguish correct logic or reasoning from that which is flawed, and—if there is a flaw in an argument—explain what it is. Elementary students can construct arguments using concrete referents such as objects, drawings, diagrams, and actions. Such arguments can make sense and be correct, even though they are not generalized or made formal until later grades. Later, students learn to determine domains to which an argument applies. Students at all grades can listen or read the arguments of others, decide whether they make sense, and ask useful questions to clarify or improve the arguments.

MAFS.K12.MP.4.1 : **Model with mathematics.**
Mathematically proficient students can apply the mathematics they know to solve problems arising in everyday life, society, and the workplace. In early grades, this might be as simple as writing an addition equation to describe a situation. In middle grades, a student might apply proportional reasoning to plan a school event or analyze a problem in the community. By high school, a student might use geometry to solve a design problem or use a function to describe how one quantity of interest depends on another. Mathematically proficient students who can apply what they know are comfortable making assumptions and approximations to simplify a complicated situation, realizing that these may need revision later. They are able to identify important quantities in a practical situation and map their relationships using such tools as diagrams, two-way tables, graphs, flowcharts and formulas. They can analyze those relationships mathematically to draw conclusions. They routinely interpret their mathematical results in the context of the situation and reflect on whether the results make sense, possibly improving the model if it has not served its purpose.

MAFS.K12.MP.5.1 : **Use appropriate tools strategically.**
Mathematically proficient students consider the available tools when solving a mathematical problem. These tools might include pencil and paper, concrete models, a ruler, a protractor, a calculator, a spreadsheet, a computer algebra system, a statistical package, or dynamic geometry software. Proficient students are sufficiently familiar with tools appropriate for their grade or course to make sound decisions about when each of these tools might be helpful, recognizing both the insight to be gained and their limitations. For example, mathematically proficient high school students analyze graphs of functions and solutions generated using a graphing calculator. They detect possible errors by strategically using estimation and other mathematical knowledge. When making mathematical models, they know that technology can enable them to visualize the results of varying assumptions, explore consequences, and compare predictions with data. Mathematically proficient students at various grade levels are able to identify relevant external mathematical resources, such as digital content located on a website, and use them to pose or solve problems. They are able to use technological tools to explore and deepen their understanding of concepts.

MAFS.K12.MP.6.1 : **Attend to precision.**
Mathematically proficient students try to communicate precisely to others. They try to use clear definitions in discussion with others and in their own reasoning. They state the meaning of the symbols they choose, including using the equal sign consistently and appropriately. They are careful about specifying units of measure, and labeling axes to clarify the correspondence with quantities in a problem. They calculate accurately and efficiently, express numerical answers with a degree of precision appropriate for the problem context. In the elementary grades, students give carefully formulated explanations to each other. By the time they reach high school they have learned to examine claims and make explicit use of definitions.

MAFS.K12.MP.7.1 : **Look for and make use of structure.**
Mathematically proficient students look closely to discern a pattern or structure. Young students, for example, might notice that three and seven more is the same amount as seven and three more, or they may sort a collection of shapes according to how many sides the shapes have. Later, students will see 7×8 equals the well remembered $7 \times 5 + 7 \times 3$, in preparation for learning about the distributive property. In the expression $x^2 + 9x + 14$, older students can see the 14 as 2×7 and the 9 as $2 + 7$. They recognize the significance of an existing line in a geometric figure and can use the strategy of drawing an auxiliary line for solving problems. They also can step back for an overview and shift perspective. They can see complicated things, such as some algebraic expressions, as single objects or as being composed of several objects. For example, they can see $5 – 3(x – y)^2$ as 5 minus a positive number times a square and use that to realize that its value cannot be more than 5 for any real numbers x and y.

Lead teachers from across the district met to discuss changes that must be implemented in math instruction in order to appropriately prepare students for new requirements in math and assure students ongoing success. The following principles must be reinforced across grade levels.

District Expectations and Considerations for Instruction: (requirements)

1. **Use of and instruction in correct math terminology is critical.**
    a. Use the language of your standards.

b. Do not substitute 'cute' words for accurate terminology.
c. Have students use the vocabulary multiple times in a variety of contexts.
d. Have students practice categorizing words and have them explain their rules for sorting.
e. Mathematical vocabulary must be evident on Word Walls.
f. Teach vocabulary to mastery.

2. **Consistently use the High-Yield Routines.**
   These routines allow students to practice concepts with higher-order thinking. They incorporate writing with thinking about math.
3. **Use the mathematical practices. They matter.**
   a. Plan with the practices in mind. Sample questions to think about when planning: 'What mathematical practice(s) will I be using when I model this task?' 'What mathematical practice(s) will my students have to use to solve this problem?'
   b. Read the descriptions of what 'mathematically proficient' students do (see the previous two pages), and consistently check to see if your students are growing toward that goal.
4. **Routinely practice having students justify their answers.** Ex. 'Show us how you arrived at that answer. What math concepts did you use to arrive at that answer?'
5. **Always reinforce number sense.** Ask: 'Is this a reasonable answer? Why or why not?'
6. **Teach and practice the basic facts to automaticity. No exceptions. This is foundational to later math success.**
   a. By the end of second grade students should have developed fluency with the basic addition and subtraction facts. This means that they can quickly (with automaticity) give answers for problems like 2 + 6 or 8 + 5, even when those are embedded in more difficult problems. Turning problems around like 13 – 5 = 8 because 8 + 5 = 13 should make sense to them. In other words they should not be stumbling over the basic math.
   b. In third and fourth grades student must develop automaticity with basic multiplication facts. Third grade builds a strong conceptual foundation and begins moving toward fluency and fourth-grade assures that automaticity is reached.
7. **Practice word problems at all levels in a variety of contexts. This goes well beyond teaching key words for solving word problems. Over teaching key words can hinder later math understanding.**
   a. Teach them to understand the problem.
      i. What does it say?
      ii. What information does it provide?
      iii. What is the question?
      iv. What information do I need to answer the question (relevant vs. irrelevant)?
      v. What math procedure(s) will I need to complete to answer the question?
      vi. What tools are available to help me? (drawing, visualizing, graphing or charting, measuring, numberline, etc.)
8. **Make tools visible.** Talk about and practice using mathematical tools. Make them available in the classroom. Discuss which tools are appropriate in which situations.

Fourth Grade Florida Standards for Math

BODY OF KNOWLEDGE: OPERATIONS AND ALGEBRAIC THINKING

Cluster 1: Use the four operations with whole numbers to solve problems.

MAJOR CLUSTER

Don't…sort clusters from Major to Supporting, and then teach them in that order. To do so would strip the coherence of the mathematical ideas and miss the opportunity to enhance the major work of the grade with the supporting clusters.

Standard Identifier	Standard with Complexity Rating	Conceptual and Procedural Understanding – The student understands that:	Student Friendly Language Learning Targets
MAFS.4.OA.1.1	Interpret a multiplication equation as a comparison, e.g., interpret 35 = 5 x 7 as a statement that 35 is 5 times as many as 7 and 7 times as many as 5. Represent verbal statements of multiplicative comparisons as multiplication equations. *Cognitive Complexity:* Level 1: Recall	• The order of factors in a multiplication equation does not change the product. **The student is able to:** • Draw an array demonstrating a multiplication equation as a comparison. • Model multiplication equations as a comparison using manipulatives, students acting etc. • Recite multiplication facts.	• I can demonstrate commutative property. • I can write an equation more than one way. • I can identify an example of commutative property
Key Vocabulary: interpret, comparison, array, commutative property of multiplication, equation, factors			
Resources:			

Standard Identifier	Standard with Complexity Rating	Conceptual and Procedural Understanding – The student understands that:	Student Friendly Language Learning Targets
MAFS.4.OA.1.2	Multiply or divide to solve word problems involving multiplicative comparison, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem, distinguishing multiplicative comparison from additive comparison. *Cognitive Complexity:* Level 2: Basic Application of Skills and Concepts	• Multiplication and division can be used to solve more complex problems. • Word problems can be solved using factors and multiples. **The student is able to:** • Solve word problems. • Use symbols to solve equations. • Choose the best operation to solve a word problem. • Recognize clue words to choose which operation to use	• I can solve word problems using multiplication to find an unknown number in an equation. • I can solve word problems using division to find an unknown number in an equation. • I can choose the best operation to solve a word problem.
Key Vocabulary: equal, variables, equation, factors, multiples, multiply, divide, solve, word problems, product, quotient			
Resources:			

Standard Identifier	Standard with Complexity Rating	Conceptual and Procedural Understanding – The student understands that:	Student Friendly Language Learning Targets
MAFS.4.OA.1.3	Solve multi-step word problems posed with whole numbers and having whole-number answers using the four operations, including problems in which remainders must be interpreted. Represent these problems using	• There are key phrases in word problems. • Fact families help with the self-check process. • Mental math helps with the self-check process. • Estimation helps with the self-check process. • Variables represent the unknown quantity **The student is able to:**	• I can add multi-step word problems with missing digits. • I can subtract multi-step word problems with missing digits. • I can multiply multi-step word problems with missing digits.

	equations with a letter standing for the unknown quantity. Assess the reasonableness of answers using mental computation and estimation strategies including rounding. *Cognitive Complexity:* Level 2: Basic Application of Skills and Concepts	• Solve multi-step word problem. • Solve for the variables in the problem. • Check multi-step problem using mental math and estimation.	• I can divide multi-step word problems with missing digits. • I can review my work to see if it makes sense. • I can explain the steps taken to solve a problem.
Key Vocabulary: difference, sum, total, twice, remainder, estimate, round			
Resources:			

Standard Identifier	Standard with Complexity Rating	Conceptual and Procedural Understanding – The student understands that:	Student Friendly Language Learning Targets
MAFS.OA.1.a	Determine whether an equation is true or false by using comparative relational thinking. For example, without adding 60 and 24, determine whether the equation 60 + 24=57 + 27 is true or false.	• Equations must be mathematically correct to be true. • Comparative relational thinking can help one determine whether or not an equation is true. **The student is able to:** • Use comparative relational thinking to determine whether or not an equation is true. • Use comparative relational thinking to determine whether or not an answer is reasonable.	• I can compare numbers to help me determine if an equation is true. • I can look at number relationships to determine if an answer is reasonable.

Standard Identifier	Standard with Complexity Rating	Conceptual and Procedural Understanding – The student understands that:	Student Friendly Language Learning Targets
MAFS.OA.1.b	Determine the unknown whole number in an equation relating four whole numbers using comparative relational thinking. For example, solve 76 + 9 = n + 5 for n by arguing that nine is four more than five, so the unknown number must be four greater than 76.	• Equations can be solved when there is an unknown number in the equation. • Comparative relational thinking can help one solve for the unknown number. **The student is able to:** • Solve for an unknown in an equation relating four whole numbers by determining how the numbers compare and are related.	• I can solve for an unknown number in an equation with up to four numbers by looking at the relationship of the numbers.

Cluster 2: Gain familiarity with factors and multiples.

SUPPORTING CLUSTER

Don't…sort clusters from Major to Supporting, and then teach them in that order. To do so would strip the coherence of the mathematical ideas and miss the opportunity to enhance the major work of the grade with the supporting clusters.

Standard Identifier	Standard with Complexity Rating	Conceptual and Procedural Understanding – The student understands that:	Student Friendly Language Learning Targets
MAFS.4.OA.2.4	Find all factor pairs for a whole number in the range 1-100. Recognize that a whole number is a multiple of each of its factors. Determine whether a given whole number in the range 1-100 is a multiple of a given one-digit number. Determine whether a given whole number in the range 1-100 is prime or composite. *Cognitive Complexity:* Level 2: Basic Application of Skills and Concepts	• Whole numbers are factors of their product. • The difference between prime and composite numbers. • Multiples are products of any two whole numbers **The student is able to:** • Create a factorization model (eg. factor tree, factor line, etc.) of any given whole number up to 100. • Complete a fact family. • Compose a list of prime and composite numbers.	• I can find factor pairs and multiples of all whole numbers from 1-100. • I can decide if a number from 1-100 is prime (only divisible by one and itself) or composites (has more factors than one and itself).

Key Vocabulary: factors, multiples, composite numbers, prime numbers, whole numbers, Patterns, factor tree, fact family, divisible, product

Resources:

Cluster 3: Generate and analyze patterns.

ADDITIONAL CLUSTER

Don't…sort clusters from Major to Supporting, and then teach them in that order. To do so would strip the coherence of the mathematical ideas and miss the opportunity to enhance the major work of the grade with the supporting clusters.

Standard Identifier	Standard with Complexity Rating	Conceptual and Procedural Understanding – The student understands that:	Student Friendly Language Learning Targets
MAFS.4.OA.3.5	Generate a number or shape pattern that follows a given rule. Identify apparent features of the pattern that were not explicit in the rule itself. For example, given the rule "Add 3" and the starting number 1, generate terms in the resulting sequence and observe that the terms appear to alternate between odd and even numbers. Explain informally why the numbers will continue to alternate in this way. *Cognitive Complexity:* Level 2: Basic Application of Skills and Concepts	• Patterning can alternate between odd and even numbers. • Patterning can be numbers or shapes. • Different patterns can have different rules. **The student is able to:** • Identify number and shape patterns that follow a given rule. • Apply a given rule to continue a number or shape pattern. • Explain what the rule is for a number or shape pattern. • Generate a number or shape pattern.	• I can identify the rule for any number or shape pattern. • I can apply (use) the rule for any number or shape pattern. • I can explain the rule for any number or shape pattern.

Key Vocabulary: sequence, multiples, alternate, identify, generate, patterns, rule, apply, generate

Resources:

BODY OF KNOWLEDGE: NUMBER AND OPERATIONS IN BASE TEN

Cluster 1: Generalize place value understanding for multi-digit whole numbers.

MAJOR CLUSTER

Don't…sort clusters from Major to Supporting, and then teach them in that order. To do so would strip the coherence of the mathematical ideas and miss the opportunity to enhance the major work of the grade with the supporting clusters.

Standard Identifier	Standard with Complexity Rating	Conceptual and Procedural Understanding – The student understands that:	Student Friendly Language Learning Targets
MAFS.4.NBT.1.1	Recognize that in a multi-digit whole number, a digit in one place represents ten times what it represents in the place to its right. For example recognize that 700/70= 10 by applying concepts of place value and division. *Cognitive Complexity:* Level 1: Recall	• Each digit in a multi-digit number has ten times the value of the digit directly on the right. **The student is able to:** • Recognize that each digit's value is multiplied by ten as you move to the left. • Identify the value of a whole number in a given place.	• I can identify the value of each digit in a multi-digit whole number up to one million. • I can describe the structure of the base ten number system.
Key Vocabulary: multi-digit , whole number, place value			
Resources:			

Standard Identifier	Standard with Complexity Rating	Conceptual and Procedural Understanding – The student understands that:	Student Friendly Language Learning Targets
MAFS.4.NBT.1.2	Read and write multi-digit whole numbers using base-ten numerals, number names, and expanded form. Compare two multi-digit numbers based on meanings of the digits in each place, using >, =, and < symbols to record the results of comparisons. (Grade 4 expectations in this domain are limited to whole numbers less than or equal to 1,000,000.) *Cognitive Complexity:* Level 2: Basic Application of Skills and Concepts	• Numbers can be written in expanded form, standard form, and word form. • There are a variety of ways to compare numbers. • The base-ten number system has a place-value structure.. **The student is able to:** • Construct multi-digit numbers using expanded form, base-ten, and word form up to 1,000,000. • Read and compare numbers ≤ 1,000,000 using the >, =, < symbols. • Represent and recognize equivalent representations for the same number.	• I can read, write, and compare multi-digit whole numbers using >, =, < symbols. • I can write and explain the expanded form of multi-digit numbers. • I can write and explain the word form of multi-digit numbers. • I can write and explain the standard form of multi-digit numbers. • I can represent the base-ten form of multi-digit numbers.
Key Vocabulary: multi-digit numbers, compare, whole number, base-ten, expanded form, standard form, word form, equivalent, greater than, less than, equal to			
Resources:			

Standard Identifier	Standard with Complexity Rating	Conceptual and Procedural Understanding – The student understands that:	Student Friendly Language Learning Targets
MAFS.4.NBT.1.3	Use place value understanding to round multi-digit whole numbers to any place. (Grade 4 expectations in the domain are limited to whole numbers less than or equal to 1,000,000)	• Rounding helps to understand if the actual answer is reasonable. • The value of a digit in our number system is determined by its place value position. • Rounding to an appropriate place value allows for reasonable estimates.	• I can round multi-digit whole numbers to any place value up to 1,000,000 (one million).

	Cognitive Complexity: Level 1: Recall	**The student is able to:** • Identify which place value needs to be rounded. • Use rounding strategies to re-write the number to the nearest place value. • Create real world problems to apply their understanding of rounding up to 1,000,000.	
Key Vocabulary: whole numbers, place value (ones to one million), estimate, round, multi-digit, strategies			
Resources:			

Cluster 2: Use place value understanding and properties of operations to perform multi-digit arithmetic.

MAJOR CLUSTER

Don't…sort clusters from Major to Supporting, and then teach them in that order. To do so would strip the coherence of the mathematical ideas and miss the opportunity to enhance the major work of the grade with the supporting clusters.

Standard Identifier	Standard with Complexity Rating	Conceptual and Procedural Understanding – The student understands that:	Student Friendly Language Learning Targets
MAFS.4.NBT.2.4	Fluently add and subtract multi-digit whole numbers using the standard algorithm. (Grade 4 expectations in this domain are limited to whole numbers less than or equal to 1,000,000. A range of algorithms may be used.) *Cognitive Complexity:* Level 1: Recall	• There are a variety of strategies used to add numbers. • Place value determines the value of a digit. • The Commutative and Associative Properties of Addition can be used to solve problems. **The student is able to:** • Calculate the sums of multi-digit numbers using the standard algorithm up to 1 million. • Calculate the differences of multi-digit numbers up to 1 million using the standard algorithm.	• I can add numbers up to one million using an efficient method. • I can subtract numbers up to one million using an efficient method. • I can check my answers using the inverse operation.
Key Vocabulary: addends, sum, difference, regrouping, subtrahend, minuend, Associative Property, Commutative, property, algorithm, inverse operation			
Resources:			

Standard Identifier	Standard with Complexity Rating	Conceptual and Procedural Understanding – The student understands that:	Student Friendly Language Learning Targets
MAFS.4.NBT.2.5	Multiply a whole number of up to four digits by a one-digit whole number, and multiply two two-digit numbers, using strategies based on place value and the properties of operations. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models. (Grade 4 expectations in this domain	• Multiplication is another way to do addition. • There are a variety of strategies used to multiply numbers. • Models can represent multiplication sentences. • There is a relationship between the process of multiplying single-digit numbers and multi-digit numbers. • Estimation can be used to see if an answer is reasonable. **The student is able to:**	• I can multiply a number up to four digits by a one-digit number and explain how I did it. • I can multiply a two digit number by a two digit number and explain how I did it.

	are limited to whole numbers less than or equal to 1,000,000. A range of algorithms may be used.) *Cognitive Complexity:* Level 2: Basic Application of Skills and Concepts	• Display a model from a multiplication problem. • Show more than one way to solve a multiplication problem. • Illustrate and explain the models and calculations of multiplication. • Explain how to use place value, rectangular arrays, and area models to solve multiplication problems. • Make estimation of problems.	• I can solve a multiplication problem in more than one way. • I can construct a model of a multiplication problem by using equations, rectangular arrays, and/or area models.
Key Vocabulary: Place value, repeated addition, distributive property, digit, product, factor/factors, strategy, array, equation, area, whole number			
Resources:			

Standard Identifier	Standard with Complexity Rating	Conceptual and Procedural Understanding – The student understands that:	Student Friendly Language Learning Targets
MAFS.4.NBT.2.6	Find whole-number quotients and remainders with up to four-digit dividends and one-digit divisors, using strategies based on place value, the properties of operations, and/or the relationship between multiplication and division. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models. (Grade 4 expectations in this domain are limited to whole numbers less than or equal to 1,000,000. A range of algorithms may be used.) *Cognitive Complexity:* Level 2: Basic Application of Skills and Concepts	• Explaining your work leads to deeper understanding. • Multiplication and division can be used to solve each other. • There is a relationship between the properties of operations and solutions of division problems. • Equations, rectangular arrays, and area models can be used to find whole number quotients. **The student is able to:** • Apply strategies based on place value to solve division problems. • Apply properties of operations, such as multiplication, to solve division problems. • Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models.	• I can solve division problems with up to four-digit dividends and one-digit divisors. • I can use equations, arrays, and/or area models to explain my calculations.
Key Vocabulary: quotient, remainder, dividend, divisor, equation, array, area model			
Resources:			

BODY OF KNOWLEDGE: NUMBER AND OPERATIONS - FRACTIONS

Cluster 1: Extend understanding of fraction equivalence and ordering.

MAJOR CLUSTER

Don't…sort clusters from Major to Supporting, and then teach them in that order. To do so would strip the coherence of the mathematical ideas and miss the opportunity to enhance the major work of the grade with the supporting clusters.

Standard Identifier	Standard with Complexity Rating	Conceptual and Procedural Understanding – The student understands that:	Student Friendly Language Learning Targets
MAFS.4.NF.1.1	Explain why a fraction a/b is equivalent to a fraction (n x a)/(n x b) by using visual fraction models, with attention to how the number and the size of the parts differ even though the two fractions themselves are the same size. Use this principle to recognize and generate equivalent fractions. *Cognitive Complexity:* Level 3: Strategic Thinking and Complex Reasoning	• Fractions can be equivalent even though numerators and denominators aren't the same. • You can create visual fractions to see the parts of a fraction. **The student is able to:** • Manipulate fraction tools to make equals. • Explain how two fractions are equal. • Draw pictures to represent equivalent fractions. • Create a number sentence using equivalent fractions.	• I can explain that a fraction is equal to another fraction by using hands on tools (manipulatives) even though the numbers are different. • I can create a number sentence to make equivalent fractions.

Key Vocabulary: numerator, denominator, fraction, manipulate, equivalent, multiply, divide, compare, greater than, less than, fraction bar

Resources:

Standard Identifier	Standard with Complexity Rating	Conceptual and Procedural Understanding – The student understands that:	Student Friendly Language Learning Targets
MAFS.4.NF.1.2	Compare two fractions with different numerators and different denominators, e.g., by creating common denominators or numerators, or by comparing to a benchmark fraction such as ½. Recognize that comparisons are valid only when the two fractions refer to the same whole. Record the results of comparisons with symbols, >,<,= and justify the conclusions, e.g., by using a visual fraction model. *Cognitive Complexity:* Level 2: Basic Application of Skills and Concepts	• The denominator is how many equal parts that make the whole and the numerator is the number of parts chosen or not chosen. • Comparisons are valid only when the two fractions refer to the same whole. • Other fractions can be used as a benchmark when making comparisons. **The student is able to:** • Construct a visual model of 2 fractions being compared. • Use the correct symbol to compare fractions (<,>.=). • Apply multiplication and division skills to change denominators in order to compare fractions. • Use a variety of strategies to compare fractions.	• I can determine if a fraction is greater than, less than, or equal to a well known fraction such as 1/2. • I can create common denominators to compare two fractions. • I can use >,<, = symbols to compare two fractions. • I can make a model to show I understand comparisons of fractions.

Key Vocabulary: numerator, denominator, common denominator, benchmark fraction, greater than, less than, equal to, visual fraction models, justify

Resources:

Cluster 2: Build fractions from unit fractions by applying and extending previous understandings of operations on whole numbers.

MAJOR CLUSTER

Don't…sort clusters from Major to Supporting, and then teach them in that order. To do so would strip the coherence of the mathematical ideas and miss the opportunity to enhance the major work of the grade with the supporting clusters.

Standard Identifier	Standard with Complexity Rating	Conceptual and Procedural Understanding – The student understands that:	Student Friendly Language Learning Targets
MAFS.4.NF.2.3	Understand a fraction a/b with a>1 as a sum of fractions 1/b. a. Understand addition and subtraction of fractions as joining and separating parts referring to the same whole. b. Decompose a fraction into a sum of fractions with the same denominator in more than one way, recording each decomposition by an equation. Justify decompositions, e.g., by using a visual fraction model. Examples: 3/8 = 1/8 + 1/8 + 1/8 ; 3/8 = 1/8 + 2/8 ; 2 1/8 = 1 + 1 + 1/8 = 8/8 + 8/8 + 1/8. c. Add and subtract mixed numbers with like denominators, e.g., by replacing each mixed number with an equivalent fraction, and/or by using properties of operations and the relationship between addition and subtraction. d. Solve word problems involving addition and subtraction of fractions referring to the same whole and having like denominators, e.g., by using visual fraction models and equations to represent the problem. *Cognitive Complexity:* Level 2: Basic Application of Skills and Concepts	• A fraction is made up of smaller fractions with the same denominator that added together will equal that original fraction. • When adding or subtracting fractions with like denominators, only the numerator is added or subtracted. • A fraction can be broken apart and put back together in more than one way using the same denominator. • There is a relationship between mixed numbers and their equivalent fractions. **The student is able to:** • Decompose a fraction into a sum of fractions with the same denominator in more than one way. • Justify the decomposition and composition of fractions with a visual fraction model. • Add and subtract fractions and mixed numbers with like denominators. • Solve word problems involving addition and subtraction of fractions and mixed numbers with like denominators. • Convert an improper fraction to a mixed fraction and a mixed fraction to an improper fraction.	• I can show and explain that fractions are parts of a whole that can be added or subtracted. • I can break fractions and mixed numbers apart and explain that those parts add back up to the original fraction or mixed number. Ex. 3/8 = 1/8 + 1/8 + 1/8 or 5/8 = 2/8 + 3/8 • I can add and subtract fractions and mixed numbers that have the same denominator. • I can use what I know about adding and subtracting fractions and mixed numbers to solve word problems through equations, pictures, or manipulates.

Key Vocabulary: numerator, denominator, improper fraction, mixed number, decomposition, composition, fraction, equivalent, visual fraction model

Resources:

Standard Identifier	Standard with Complexity Rating	Conceptual and Procedural Understanding – The student understands that:	Student Friendly Language Learning Targets
MAFS.4.NF.2.4	Apply and extend previous understandings of multiplication to multiply a fraction by a whole number. a. Understand a fraction *a*/*b* as a multiple of 1/*b*. *For example, use a visual fraction model to represent 5/4 as the product 5 × (1/4), recording the conclusion by the equation 5/4 = 5 × (1/4).* b. Understand a multiple of a/b as a multiple of 1/b, and use this understanding to multiply a fraction by a whole number. *For example, use a visual fraction model to express 3 × (2/5) as 6 × (1/5), recognizing this product as 6/5. (In general, n × (a/b) = (n × a)/b.)* c. Solve word problems involving multiplication of a fraction by a whole number, e.g., by using visual fraction models and equations to represent the problem. *For example, if each person at a party will eat 3/8 of a pound of roast beef, and there will be 5 people at the party, how many pounds of roast beef will be needed? Between what two whole numbers does your answer lie?* *Cognitive Complexity:* Level 2: Basic Application of Skills and Concepts	• Using number lines and fraction models can help them multiply a fraction and a whole number. • Decompositions with multiples can be compressed by multiplying by a whole number. **The student is able to:** • Multiply a whole number and a fraction. • Use a visual fraction model and equation(s) to represent a problem. • Solve a word problem involving a fraction and a whole number.	• I can show multiplication through repeated addition of a fraction to make a whole number. • I can multiply a fraction by a whole number. • I can use fraction models and equations to represent a problem. • I can solve word problems that include fractions and whole numbers. • I can explain the difference between a whole number and a fraction.
Key Vocabulary: numerator, denominator, multiple, equation, equivalent , factor, whole number, fraction, product, commutative property, associative property			
Resources:			

Cluster 3: Understand decimal notation for fractions, and compare decimal fractions.

MAJOR CLUSTER

Don't…sort clusters from Major to Supporting, and then teach them in that order. To do so would strip the coherence of the mathematical ideas and miss the opportunity to enhance the major work of the grade with the supporting clusters.

Standard Identifier	Standard with Complexity Rating	Conceptual and Procedural Understanding – The student understands that:	Student Friendly Language Learning Targets
MAFS.4.NF.3.5	Express a fraction with denominator 10 as an equivalent denominator 100,and use this technique to add two fractions with respective denominators 10 and 100. For example 3/10 as30/100 and add 3/10+4/100=34/100 *Cognitive Complexity:* Level 1: Recall	• When creating equivalent fractions, you multiply the numerator and denominator by the same number. • There is a relationship between fractions with denominators in powers of ten. (tenths and hundredths) **The student is able to:** • Change a fraction with a denominator of 10 to an equivalent fraction with a denominator of 100. • Add two fractions with respective denominators of 10 and 100.	• I can change a fraction with a denominator of 10 to an equivalent fraction with a denominator of 100. I can then add those two fractions.

Key Vocabulary: fractions, denominator, equivalency, numerator, multiples, place value

Resources:

Standard Identifier	Standard with Complexity Rating	Conceptual and Procedural Understanding – The student understands that:	Student Friendly Language Learning Targets
MAFS.4.NF.3.6	Use decimal notation for fractions with denominators 10 or 100. For example, rewrite 0.62 as 62/100; describe a length as 0.62 meters; locate 0.62 meters; locate 0.62 on a number line diagram. *Cognitive Complexity:* Level 1: Recall	• Fractions and decimals represent parts of a whole. • Fractions can be written as an equivalent decimal. • There is a relationship between the denominator of a fraction and the place value of a decimal number. • The position of a number in relation to the decimal point determines its value. **The student is able to:** • Rewrite fractions as decimals to the hundredths place. • Identify the decimal that is equivalent to a fraction.	• I can write a fraction with a denominator of 10 or 100 as a decimal.

Key Vocabulary: fraction, decimal, decimal notation, numerator, denominator, tenths, hundredths, equivalent, decimal point

Resources:

Standard Identifier	Standard with Complexity Rating	Conceptual and Procedural Understanding – The student understands that:	Student Friendly Language Learning Targets
MAFS.4.NF.3.7	Compare two decimals to hundredths by reasoning about their size. Recognize that comparisons are valid only when the two decimals refer to the same whole. Record the results of comparisons with the symbols >, =, or <, and justify the conclusions, e.g., by using a visual model. *Cognitive Complexity:* Level 2: Basic Application of Skills and Concepts	• Decimals are part of a whole. • The value of a digit in our number system is determined by its place value position. • When comparing decimals they can use symbols such as >, =, or <. • Comparisons are valid only when the two decimals refer to the same whole. **The student is able to:** • Interpret place value in decimals to hundredths. • Explain the relationship of decimals to the whole. • Record results when using comparison symbols such as >, =, or <.	• I can compare two decimals to the hundredths place by using symbols like >, =, or <, and be able to show how I got my answer.
Key Vocabulary: Decimal point, equivalent, hundredth(s), tenth(s), compare, whole number, decimal			
Resources:			

BODY OF KNOWLEDGE: MEASUREMENT AND DATA

Cluster 1: Solve problems involving measurement and conversion of measurements from a larger unit to a smaller unit.

SUPPORTING CLUSTER

Don't…sort clusters from Major to Supporting, and then teach them in that order. To do so would strip the coherence of the mathematical ideas and miss the opportunity to enhance the major work of the grade with the supporting clusters.

Standard Identifier	Standard with Complexity Rating	Conceptual and Procedural Understanding – The student understands that:	Student Friendly Language Learning Targets
MAFS.4.MD.1.1	Know relative sizes of measurement units within one system of units including km, m, cm; kg, g; lb, oz.; l, ml; hr, min, sec. Within a single system of measurement, express measurements in a larger unit in terms of a smaller unit. Record measurement equivalents in a two column table. For example, know that 1 ft is 12 times as long as 1 in. Express the length of a 4 ft snake as 48 in. Generate a conversion table for feet and inches listing the number pairs (1, 12), (2, 24), (3, 36), ... *Cognitive Complexity:* Level 1: Recall	• Measurements can be converted within a measurement system (e.g., 1 foot = 12 inches). • Some measurement units are more appropriate to use than others in a specific context. • There is a relationship between units of measure within a system (e.g., seconds, minutes, hours). **The student is able to:** • Record measurements in a table. • Express the measurements in terms of smaller or larger units that are equivalent. • Convert seconds, minutes, and hours, to properly express time.	• I can solve problems involving measurement. • I can convert measurements from one unit to another.
Key Vocabulary: meters, centimeters, kilograms, grams, pound, ounce, milliliter, liter, second, minute, hour, inch, foot, equivalent			
Resources:			

Standard Identifier	Standard with Complexity Rating	Conceptual and Procedural Understanding – The student understands that:	Student Friendly Language Learning Targets
MAFS.4.MD.1.2	Use the four operations to solve word problems involving distances, intervals of time, liquid volumes, masses of objects, and money, including problems involving simple fractions or decimals, and problems that require expressing measurements given in a larger unit in terms of a smaller unit. Represent measurement quantities using diagrams such as number line diagrams that feature a measurement scale *Cognitive Complexity:* Level 2: Basic Application of Skills and Concepts	• In order to solve word problems, you might have to choose one or more operations. **The student is able to:** • Interpret and solve problems about the distance between two locations.	• I can use a diagram such as a number line to show measurement. • I can use any of the four operations (+,-,x,÷) to solve word problems. • I can convert units of measurement. • I can use fractions and decimals in word problems.
Key Vocabulary: operations, word problems, distance, interval, time, volume, mass, simple fractions, decimals, measurement, unit, quantities, diagrams, number line, measurement scale			
Resources:			

Standard Identifier	Standard with Complexity Rating	Conceptual and Procedural Understanding – The student understands that:	Student Friendly Language Learning Targets
MAFS.4.MD.1.3	Apply the area and perimeter formulas for rectangles in real world and mathematical problems. For example, find the width of a rectangular room given the area of the flooring and the length, by viewing the area formula as a multiplication equation with an unknown factor. *Cognitive Complexity:* Level 2: Basic Application of Skills and Concepts	• A formula can be used to find the perimeter and area of rectangles. • Multiplication or division can be used to find the area if one factor is unknown. **The student is able to:** • Use pictures, models or words to explain the relationship between area and perimeter. • Apply the formulas of perimeter and area for rectangles.	• I can find the area and perimeter of rectangles by using a formula. • I can find the missing length or width of a rectangle using the area formula.
Key Vocabulary: rectangle, area, perimeter, formula, dimension, square units, length, width			
Resources:			

Cluster 2: Represent and interpret data.

SUPPORTING CLUSTER

Don't…sort clusters from Major to Supporting, and then teach them in that order. To do so would strip the coherence of the mathematical ideas and miss the opportunity to enhance the major work of the grade with the supporting clusters.

Standard Identifier	Standard with Complexity Rating	Conceptual and Procedural Understanding – The student understands that:	Student Friendly Language Learning Targets
MAFS.4.MD.2.4	Make a line plot to display a data set of measurements in fractions of a unit (1/2, 1/4, 1/8). Solve problems involving addition and subtraction of fractions by using information presented in line plots. For example, from a line plot find and interpret the difference in length between the longest and shortest specimens in an insect collection. *Cognitive Complexity:* Level 2: Basic Application of Skills and Concepts	• A line plot can be used for organizing data. • A line plot can be used to help compare and interpret data. **The student is able to:** • Create a line plot using a data set of measurements in fractions. • Collect data by measuring objects to 1/8 of an inch and display the data on a line plot. (e.g., measure students' height and create a line plot) • Solve a problem by using the data in a line plot.	• I can make a line plot using fractions. • I can solve problems by using information on a line plot.

Key Vocabulary: line plot, fraction, range, difference

Resources:

Cluster 3: Geometric measurement: understand concepts of angle and measure angles.

ADDITIONAL CLUSTER

Don't…sort clusters from Major to Supporting, and then teach them in that order. To do so would strip the coherence of the mathematical ideas and miss the opportunity to enhance the major work of the grade with the supporting clusters.

Standard Identifier	Standard with Complexity Rating	Conceptual and Procedural Understanding – The student understands that:	Student Friendly Language Learning Targets
MAFS.4.MD.3.5	Recognize angles as geometric shapes that are formed wherever two rays share a common endpoint, and understand concepts of angle measurement: a. An angle is measured with reference to a circle with its center at the common endpoint of the rays, by considering the fraction of the circular arc between the points where the two rays intersect the circle. An angle that turns through 1/360 of a circle is called a "one-degree angle," and can be used to measure angles. b. An angle that turns through n one-degree angles is said to have an angle measure of n degrees *Cognitive Complexity:* Level 1: Recall	• An angle is made up of two rays with a common endpoint. • An angle can be measured with reference to a circle. • The number of one-degree turns determines the measurement of the angle. **The student is able to:** • Identify an angle. • Measure an angle with reference to a circle in degrees.	• I can identify angles as two rays that share a point. • I can measure an angle in units called degrees. • I can use fractions of a circle to measure an angle. • I can count the number of one degree turns to measure an angle.

Key Vocabulary: angle, ray, degrees, circle, arc, endpoint

Resources:

Standard Identifier	Standard with Complexity Rating	Conceptual and Procedural Understanding – The student understands that:	Student Friendly Language Learning Targets
MAFS.4.MD.3.6	Measure angles in whole-number degrees using a protractor. Sketch angles of specified measure. *Cognitive Complexity:* Level 2: Basic Application of Skills and Concepts	• A protractor measures angles to whole number degrees. • A protractor can be used to construct angles to a given whole-number degrees. **The student is able to:** • Use a protractor to measure angles to the nearest degrees. • Use a protractor to draw angles to the degrees given.	• I can use a protractor to measure and draw angles.
Key Vocabulary: protractor, whole number, angle, degree			
Resources:			

Standard Identifier	Standard with Complexity Rating	Conceptual and Procedural Understanding – The student understands that:	Student Friendly Language Learning Targets
MAFS.4.MD.3.7	Recognize angle measure as additive. When an angle is decomposed into non-overlapping parts, the angle measure of the whole is the sum of the angle measures of the parts. Solve addition and subtraction problems to find unknown angles on a diagram in real world and mathematical problems, e.g., by using an equation with a symbol for the unknown angle measure. *Cognitive Complexity:* Level 2: Basic Application of Skills and Concepts	• An angle can be measured finding the sum of each non-overlapping part of an angle. • Unknown angles can be found using equations with a symbol for the unknown angle. **The student is able to:** • Decompose an angle into non-overlapping parts. • Find the angle measure of the whole by adding together the degrees in each decomposed part. • Write an equation, with a symbol for an unknown angle measure. • Use an equation, by adding or subtracting to find the amount of an unknown angle.	• I can measure an angle. • I can measure pieces of an angle to find the total degrees. • I can find unknown angles using an equation (math sentence).
Key Vocabulary: degree, angle measure, decomposed, non-overlapping, equation			
Resources:			

BODY OF KNOWLEDGE: GEOMETRY

Cluster 1: Draw and identify lines and angles, and classify shapes by properties of their lines and angles.

ADDITIONAL CLUSTER

Don't…sort clusters from Major to Supporting, and then teach them in that order. To do so would strip the coherence of the mathematical ideas and miss the opportunity to enhance the major work of the grade with the supporting clusters.

Standard Identifier	Standard with Complexity Rating	Conceptual and Procedural Understanding – The student understands that:	Student Friendly Language Learning Targets
MAFS.4.G.1.1	Draw points, lines, line segments, rays, angles (right, acute, obtuse), and perpendicular and parallel lines. Identify these in two-dimensional figures. *Cognitive Complexity:* Level 1: Recall	• Lines, line segments, and rays can be identified by their different characteristics. • Angles can be classified according to their measures. • Two-dimensional figures can be used to find points, lines, line segments, rays, acute angles, right angles, obtuse angles, parallel and perpendicular lines. **The student is able to:** • Label points, lines, line segments, rays, angles, parallel and perpendicular lines to two-dimensional figures. • Draw examples of lines, lines segments, rays, angles (right, acute, and obtuse), parallel and perpendicular lines	• I can draw and identify points, lines, line segments, and rays in two dimensional figures. • I can draw and identify angles (acute, obtuse, right) in two dimensional figures. • I can draw and identify parallel and perpendicular line segments in two-dimensional figures.

Key Vocabulary: points, lines, line segments, rays, angles, parallel and perpendicular line segments, two-dimensional figures

Resources:

Standard Identifier	Standard with Complexity Rating	Conceptual and Procedural Understanding – The student understands that:	Student Friendly Language Learning Targets
MAFS.4.G.1.2	Classify two-dimensional figures based on the presence or absence of parallel or perpendicular lines, or the presence or absence of angles of a specified size. Recognize right triangles as a category, and identify right triangles. *Cognitive Complexity:* Level 2: Basic Application of Skills and Concepts	• Two-dimensional figures may be classified using different characteristics, such as parallel or perpendicular lines or by angle measurements. • Benchmark angles (90˚, 180˚ and 360˚) can be used to approximate the measurements of angles. **The student is able to:** • Use line models to determine if lines are parallel. • Use geometry software to create and measure different sized angles. • Create artwork using parallel and perpendicular lines. • Sort polygons based on line and angle types and justify sorting rules. • Draw and name figures with specific types of lines and/or angles.	• I can group shapes based on the types of lines they have. • I can group shapes based on the types of angles they have. • I can tell the difference between right triangles and other triangles.

Key Vocabulary: lines, parallel, perpendicular, angles, acute angle, obtuse angle, right angle, right triangles

Resources:

<table>
<tr><th>Standard Identifier</th><th>Standard with Complexity Rating</th><th>Conceptual and Procedural Understanding – The student understands that:</th><th>Student Friendly Language Learning Targets</th></tr>
<tr><td rowspan="3">MAFS.4.G.1.3</td><td rowspan="3">Recognize a line of symmetry for a two-dimensional figure as a line across the figure such that the figure can be folded along the line into matching parts. Identify line-symmetric figures and draw lines of symmetry.

<u>Cognitive Complexity:</u> Level 2: Basic Application of Skills and Concepts</td><td>• Lines of symmetry divide an object in half.
• Figures may have zero lines of symmetry.
• Figures may have more than one line of symmetry.</td><td rowspan="3">• I can identify a line of symmetry in a variety of figures.
• I can draw a line(s) of symmetry.</td></tr>
<tr><td>The student is able to:</td></tr>
<tr><td>• Identify lines of symmetry in figures.
• Fold various shapes along a line of symmetry to make matching parts.
• Construct figures with geoboards or dot paper to show lines of symmetry.
• Draw a line(s) of symmetry on a variety of figures.</td></tr>
<tr><td colspan="4">Key Vocabulary: symmetry, identical, two dimensional, congruent, line-symmetric figures</td></tr>
<tr><td colspan="4">Resources:</td></tr>
</table>

Fourth Grade MATH Pacing Guide

	Quarter 1	Quarter 2	Quarter 3	Quarter 4
Overarching Concepts *Ongoing*: *Multiplication Timed Tests, Word Problems, +/-*	• Geometry (classification, arguments, protractors) • Algebraic Thinking (Expressions, True/ False) • Place Value • (3 Forms, Compare, Round, +/-) • Start Multiplication o (if time permits	▪ Multiplication ▪ (Factors, Multiples, Prime/Composite, 2x1, 3x1, 4x1, 2x2) ▪ Area/ Perimeter ▪ Division (Division w/ remainders, interpreting remainders)	▪ Measurement (with tables and conversions) ▪ Fractions ▪ Data (Line Plots) ▪ Decimals ▪ Review Geometry (Fractions/ Circles)	▪ Upon Review of 3rd DEA assessment, differentiation will occur to review skills needed by students ▪ 4th Grade Math Project
High-Yield Routine(s)	Guess My Rule	Number Line	How Do You Know?	Mystery Number
	(Ongoing Math word wall/ notebook)			
Target Vocabulary	• Points • Line Segments • Rays • Angles (right, acute, obtuse) • Parallel Lines • Perpendicular Lines • Triangle (all types) • Symmetry • Identical • Congruent • 2-Dimensional • Line • Symmetrical Figures • Variable • Expression • Equation • Compare • Round • Standard Form • Expanded Form • Written Form • Degree • Protractor • Decompose • Compose • Generate • Manipulate • Compare	• Array • Factors • Multiples • Prime • Composite • Product • Quotient • Patterns • Remainder • Divisible • Fact Family • Area • Perimeter • Length • Width • Dimension • Measurement words • Square unit	• Numerator • Denominator • Equivalent • Benchmark • Fraction • Improper fraction • Mixed Number • Decimal • Decimal point • Tenths • Hundredths • Line • Plot • Range	
Essentials to Remember	**Math Practices** will be used throughout the year but some will be targeted more with specific skills. **Solving Word Problems** is explicitly stated over and over again in the Florida Standards.			

Essentials for Instruction

- **Memorization of multiplication and division facts is mandatory -Attend to precision!**
- Use daily bellwork to review and infuse math practices
- Do fewer problems that have "more math" in them throughout the year.
- Solve word problems daily!
- Solve problems with more than one right answer.
- Cluster problems and let students show multiple ways to solve them. EX: Solve 46x25 using 4x25, 6x25, 10x25, 40x25, 50x25. Also have students explain why certain answers do not work.
- Write to explain thinking, problem solving, and arguments.
- *Remember, the textbook authors did not have AIR test specifications when they wrote our book. Go with the Florida Standards over the textbook at all times and supplement with outside resources. This cannot be stressed enough!

Bellwork

- *Use math vocabulary from test specifications and write word problems with the language of the standards
- Fluently adding and subtracting
- Patterns, algebraic thinking, equations, true and false
- Prime or composite
- Factors and multiples (problems with more than 1 right answer)
- Measurement in "two column tables"
- Geometry vocabulary
- Area and perimeter of rectangles

Month – By – Month

August	• Multiplication timed pretest, differentiated instruction and practice throughout the year **(MAFS.4.OA.1.1)** • Points, lines, line segments, rays, benchmark angles, acute, right, obtuse, benchmark angles, perpendicular and parallel lines **Ch 10, MAFS.4.G.1.1** • Missing angle measures (angles are additive – use protractors – reinforce with algebra) **Ch 11, MAFS.4.MD.3.5, 3.6, 3.7**
September	• Identify triangles (right, acute, obtuse, scalene, isosceles, equilateral) **Ch 10 MAFS.4.G.1.2** • (Review names of polygons) Classify and argue about 2 dimensional figures based on perpendicular and/or parallel lines and/or angles (quadrilaterals – parallelogram, rectangle, square, rhombi, trapezoid, hexagon, octagon, pentagon) **Ch 10, MAFS.4.G.1.2** • Symmetry with folding two-dimensional shapes and using properties of polygons **Ch 10, MAFS.4.G.1.3** • Angles in a 360 degree circle (1/360), acute, right, obtuse, benchmark angles **Ch 11, MAFS.4.MD.3.5, MAFS.4.G.1.1** • Algebra: True and false equations , fill in the blank equations, solving equations **No Go Math chapter, MAFS.4.OA.1.a, 1.b, MAFS.4.OA.1.2**

October	• Place value – standard, expanded, word form, rounding, comparing, place value = 10 x greater (expand on in multiplication), fluently adding and subtracting multi-digit numbers **Ch 1, MAFS.4.NBT.1.1, 1.2, 1.3, 2.4** • Factors, multiples, prime, composite (arguments) **Ch 5, MAFS.4.OA.2.4** • 1x1, 1x10, 1x100, 1x1,000 place value relationships **Ch 2, MAFS.4.NBT.1.1** • Use place value to teach 2x1, 3x1, 4x1, 2x2 multiplication. Use equations, rectangular arrays and area models. Show different forms of distributive property. *Each day have student solve word problems that use addition, subtraction, and/or multiplication. Choose operations and justify. **Ch 2 and Ch 3, MAFS.4.NBT.2.5, MAFS.4.OA.1.1, 1.2, 1.3**
November	• Area and perimeter **Ch 13, MAFS.4.NBT.2.6, MAFS.4.MD, 1.3** • Teach division as inverse of multiplication. 2 ÷1, 3÷1, 4÷1 digit. Each day have students Backwards blueprints (Fill in missing factor by solving with division) *Each day have students solve word problems that use addition, subtraction, multiplication, and/or division. Include problems with **interpreting remainders**. **Ch 4, MAFS.4.NBT.2.6**
December	• Continue division **Ch 4, MAFS.4.NBT.2.6**
January	• Measurement conversions using multiplication and division (continue reviewing through bellwork) **Ch 12, MAFS.4.MD.1.1, 1.2** • Fraction parts (1/3 +1/3 + 1/3 = 1 whole and 2/3 + 1/3 = 1 whole) **Ch 6, MAFS.4.NF.2.3** • Add and subtraction fractions with like denominators in word problems **Ch 6, MAFS.4.NF.2.3** • Add and subtract mixed numbers with like denominators in word problems **Ch 7, MAFS.4.NF.2.3** • Multiply fractions by whole numbers 5 x ¼ = 5/4 and solve word problems * Also: 5 x ? = 5/4 **Ch 8, MAFS.4.NF.2.4** • Review multiplying fractions by whole numbers and extend to 3 x (2/5) = 6 x (1/5) - relate equivalencies **Ch 8, MAFS.NF.2.3**
February	• Comparing fractions (benchmark fractions, simplest form, equivalent fractions 1/5 vs. 1/4) **Ch 6, MAFS.4.4NF.1.1, 1.2 *Level 3 cognitive complexity – this is our most difficult standard according to complexity level** • Fraction line plots **Ch 12, MAFS.MD.2.4** • Introduce decimals - show equivalencies between tenths and hundredths **Ch 9, MAFS.4.NF.3.5** • Convert fractions to tenths and hundredths as decimals **Ch 9, MAFS.4.NF.3.6** • Compare decimals to the hundredths place **Ch 9, MAFS.4.NF.3.7** • Add and subtract between tenths and hundredths (fractions and decimals) **Ch 9, MAFS.4.NF.3.5** • *Review fractions as parts of a circle and angles in a circle
March	• Review geometry • Review for AIR test **(March 23-April 10 test window**) • *Reinforce solving problems with more than one right answer
April	• Assure fluency of multiplication facts. • Review assessment data from DEA AP3 and remediate/accelerate as needed. • Begin work on Math Project
May	• Math Project work • DEA AP4 • Review data and continue instruction as needed.