WAKULLA COUNTY SCHOOL BOARD
SUPERINTENDENT'S OFFICE
AGENDA ITEM FOR SCHOOL BOARD APPROVAL

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E-MAIL AGENDA COVER SHEET
AND AGENDA ITEM TO SUPERINTENDENT'S OFFICE

Date submitted: 08/07/2014____ Board Meeting Date: August 18, 2014 @ 5:45 p.m.____

Date agenda item is due in the county office: _August 7, 2014 @12:00 noon_____

Name of person submitting item: Beth Mims, Chief Academic Officer_____

Name of document placed on agenda: K-5 Math Curriculum Revision **(How you want it worded on agenda):**

PLEASE GIVE A DESCRIPTION AND INFORMATION REGARDING ACTION ITEM:
This is a revision of the K-5 Math Curriculum aligned to the Florida Standards. The curriculum includes district expectations for implementation in the introduction, including the increase of math instruction to 90 minutes per day. Each grade level includes a required pacing guide for teachers. The pacing guides were prepared by teachers during vertical team meetings.

Please indicate if signatures are required and place appropriate tabs for signature on document.
Signatures required: __YES XNO

One copy and an original are needed when submitting agenda items:
(Duplicate form as needed for each agenda item.)

Items will be placed on the agenda as received.

WMIS SO500
Rev. 01/10

Kindergarten Florida Standards Math

Revised, 2014

Course #5012020

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

Kindergarten Florida Standards Math – Course #5012020

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.

MAFS.2

In Kindergarten, instructional time should focus on two critical areas: (1) representing, relating, and operating on whole numbers, initially with sets of objects; (2) describing shapes and space. More learning time in Kindergarten should be devoted to number than to other topics.

(1) Students use numbers, including written numerals, to represent quantities and to solve quantitative problems, such as counting objects in a set; counting out a given number of objects; comparing sets or numerals; and modeling simple joining and separating situations with sets of objects, or eventually with equations such as 5 + 2 = 7 and 7 – 2 = 5. (Kindergarten students should see addition and subtraction equations, and student writing of equations in kindergarten is encouraged, but it is not required.) Students choose, combine, and apply effective strategies for answering quantitative questions, including quickly recognizing the cardinalities of small sets of objects, counting and producing sets of given sizes, counting the number of objects in combined sets, or counting the number of objects that remain in a set after some are taken away.

(2) Students describe their physical world using geometric ideas (e.g., shape, orientation, spatial relations) and vocabulary. They identify, name, and describe basic two-dimensional shapes, such as squares, triangles, circles, rectangles, and hexagons, presented in a variety of ways (e.g., with different sizes and orientations), as well as three-dimensional shapes such as cubes, cones, cylinders, and spheres. They use basic shapes and spatial reasoning to model objects in their environment and to construct more complex shapes.

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.

Mathematical Practices from the Florida Standards for Mathematics, with explanations:

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.

MAFS.K12.MP.8.1 : **Look for and express regularity in repeated reasoning.**

Mathematically proficient students notice if calculations are repeated, and look both for general methods and for shortcuts. Upper elementary students might notice when dividing 25 by 11 that they are repeating the same calculations over and over again, and conclude they have a repeating decimal. By paying attention to the calculation of slope as they repeatedly check whether points are on the line through (1, 2) with slope 3, middle school students might abstract the equation $(y – 2)/(x – 1) = 3$. Noticing the regularity in the way terms cancel when expanding $(x – 1)(x + 1)$, $(x – 1)(x^2 + x + 1)$, and $(x – 1)(x^3 + x2 + x + 1)$ might lead them to the general formula for the sum of a geometric series. As they work to solve a problem, mathematically proficient students maintain oversight of the process, while attending to the details. They continually evaluate the reasonableness of their intermediate results.

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.

9. **Have students respond in a variety of ways to questions. Questions should challenge student thinking.** (See question types in the Test Item Specifications.)
10. **Important Concepts Across Grade Levels:**
    a. Equivalence – students need to understand that the answer does not always follow the = sign (ex. □+3 = 2+4, □ = 4+3)
    b. Fractions – students must experience and understand equal parts of a whole leading into formal fraction instruction in third grade.
    c. Use of the number (a ruler is an example of a numberline) – facility with the numberline is critical for later work with fractions.
    d. Solving problems by drawing the concepts – Students who learn to use fraction bars and to draw fractions and fractional combinations can better visualize the m ore difficult operations with fractions.
11. **Math will be taught for 90 minutes every day.** This does not have to be uninterrupted.
12. **Attention must be paid to the *Cognitive Complexity* of items to help determine the rigor of the instruction and expectation.**

Math Progress Monitoring

Progress monitoring must be ongoing in classrooms throughout the year. This includes, but is not limited to, the following:

1. Ongoing checks for development of fluency with basic math facts;
2. Formative assessments on math concepts like equivalency, number, parts of a whole, etc., as appropriate to the grade level standards;
3. Formative assessment through interaction with students as they explain problem solving. It is critical to catch and correct misconceptions early.
4. Review of responses to the High-Yield Routines.

Grading should accurately reflect the students' accomplishment of the grade level standards. If a student is making an 'A', that means that the student is able to, after instruction, independently perform at an above-average level. Be careful of overweighting grades with work habits and citizenship considerations. Grades should reflect a variety of assessments that allow the students to demonstrate proficiency.

Formal Progress Monitoring will occur quarterly.
All students will participate in formal progress monitoring quarterly using Discovery Education Assessments.
Data will be reviewed at the district, school, and classroom level.
Follow-up instruction on for students who are not performing on level is required.

Resources:

- CPALMS – lesson resources and formative assessments are linked to the standards in CPALMS.
- www.FSAssessments.org - This is the link to the online portal with information on the new Florida assessments. Teachers are expected to review and use the test item specifications for their respective grade levels. You will have to cut and paste this address into your browser address bar.
- Math iXL – for ongoing reinforcement and for targeted practice of skills. Please note that this practice does not preclude the necessity for ongoing instruction and problem solving with answer justification in the classroom.

Kindergarten Florida Standards for Math

BODY OF KNOWLEDGE: COUNTING AND CARDINALITY

Cluster 1: Know number names and the count sequence

Standard Identifier	Standard with Complexity Rating	Conceptual and Procedural Understanding – The student understands that:	Student Friendly Language Learning Targets
MAFS.K.CC.1.1	Count to 100 by ones and by tens. *Cognitive Complexity:* Level 1: Recall	• Numbers follow a pattern. **The student is able to:** • Count to 50 by ones. • Count to 100 by ones. • Count to 100 by tens.	• I can count to 50 by ones. • I can count to 100 by ones. • I can count to 100 by tens.
Key Vocabulary: ones, tens, count			
Resources:			

Standard Identifier	Standard with Complexity Rating	Conceptual and Procedural Understanding – The student understands that:	Student Friendly Language Learning Targets
MAFS.K.CC.1.2	Count forward beginning from a given number within the known sequence (instead of having to begin at 1). *Cognitive Complexity:* Level 1: Recall	• Numbers come in a sequence, and you can start counting at any point in the sequence. **The student is able to:** • Count forward from any given number.	• I can count forward from any given number.
Key Vocabulary: count, sequence, forward			
Resources:			

Standard Identifier	Standard with Complexity Rating	Conceptual and Procedural Understanding – The student understands that:	Student Friendly Language Learning Targets
MAFS.K.CC.1.3	Read and write numbers from 0 to 20. Represent a number of objects with a written numeral 0-20 (with 0 representing a count of no objects). *Cognitive Complexity:* Level 1: Recall	• Each object or group of objects that is counted stands for one number and only one number. • Numbers are represented by numerals. **The student is able to:** • Write the numerals 0 to 20 • Represent a group of counted objects with a written numeral.	• I can write numerals from 0 to 20. • I can count objects and write the number. • I can use zero to represent no objects.
Key Vocabulary: objects, numeral, number, zero, one, two, three, four, five, six, seven, eight, nine, ten, eleven, twelve, thirteen, fourteen, fifteen, sixteen, seventeen, eighteen, nineteen, twenty			
Resources:			

Cluster 2: Count to tell the number of objects

Standard Identifier	Standard with Complexity Rating	Conceptual and Procedural Understanding – The student understands that:	Student Friendly Language Learning Targets
MAFS.K.CC.2.4	Understand the relationship between numbers and quantities; connect counting to cardinality. • K.CC.4a - When counting objects, say the number names in the standard order, pairing each object with one and only one number name and each number name with one and only one object. • K.CC.4b - Understand the last number name said tells the number of objects counted. The number of objects is the same regardless of their arrangement or the order in which they were counted. • K.CC.4c - Understand that each successive number name refers to a quantity that is one larger. *Cognitive Complexity:* Level 1: Recall	• Counting shows one to one correspondence. • When counting a group of objects, the last number said tells how many. • Physical arrangement does not change the number of objects. • Each successive number refers to a quantity that is one larger. **The student is able to:** • Touch and count one object at a time while saying the number name. • Count objects arranged differently in groups and justify that the last number said is how many there are in the group. • Show objects to prove the number that is one larger.	• I can touch and count one object at a time saying the number name in order. • I can count each object and know that the last number said is how many there are in the group. • I can move the same objects around and know that I have the same number. • I can count by ones and know that the next number I say is one more.

Key Vocabulary: greater than (more), group, one-to-one, matching, next, count, number name, same, pairing, physical arrangement

Resources:

Standard Identifier	Standard with Complexity Rating	Conceptual and Procedural Understanding – The student understands that:	Student Friendly Language Learning Targets
MAFS.K.CC.2.5	Count to answer "how many?" questions about as many as 20 things arranged in a line, a rectangular array, or a circle, or as many as 10 things in a scattered configuration; given a number from 1-20, count out that many objects. *Cognitive Complexity:* Level 1: Recall	• The last number counted in a group of objects tells "how many". • When counting, each object counted is assigned a number. • Counting is correlated to a chronological order (one-to-one correspondence). **The student is able to:** • Count up to 20 objects in an order (line, rectangular array, and circle). • Show the correct number of objects after given a number from 1-20. • Apply concepts by counting 10 or less objects visually and mentally (not touching them).	• I can count objects in a group up to 20. • I can count up to 10 objects in a group without touching them. • I can count out a group of objects to match a given number up to 20.

Key Vocabulary: arranged, objects/items/things

Resources:

Cluster 3: Compare numbers

Standard Identifier	Standard with Complexity Rating	Conceptual and Procedural Understanding – The student understands:	Student Friendly Language Learning Targets
MAFS.K.CC.3.6	Identify whether the number of objects in one group is greater than, less than, or equal to the number of objects in another group, e.g., by using matching and counting strategies. (Include groups with up to ten objects.) *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts	• The concept of greater than when comparing two groups of objects. • The concept of less than when comparing two groups of objects. • Two groups with the same number of objects are equal. • Counting strategies can be used to determine if one group of objects is greater than, less than, or equal to another groups. • Matching strategies can be used to determine if one group of objects is greater than, less than, or equal to another groups. **The student is able to:** • Identify a group of objects that is greater than another group of objects. • Compare two groups of objects to determine which one has more or less (up to 10 objects). • Investigate group size to determine when a group of objects is equal to another group. • Create groups that show the same, less than and more than • Illustrate groups that show more, less or the same as a specific set.	• I can tell if one group of objects is greater (more) than another group of objects. • I can tell if one group of objects is less than another group of objects. • I can tell if one group of objects is equal to another group of objects.

Key Vocabulary: greater than, less than, equal, counting strategies, matching objects

Resources:

Standard Identifier	Standard with Complexity Rating	Conceptual and Procedural Understanding – The student understands that:	Student Friendly Language Learning Targets
MAFS.K.CC.3.7	Compare two numbers between 1 and 10 presented as written numerals. *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts	• Written numerals represent an amount. • Each number has a different value. **The student is able to:** • Compare two written numerals. (1-10)	• I can compare 2 numbers. • I can tell you which number is greater and which is less.

Key Vocabulary: value, compare

Resources:

BODY OF KNOWLEDGE: OPERATIONS AND ALGEBRAIC THINKING

Cluster 1: Understand addition as putting together and adding to, and understand subtraction as taking apart and taking from

Standard Identifier	Standard with Complexity Rating	Conceptual and Procedural Understanding – The student understands that:	Student Friendly Language Learning Targets
MAFS.K.OA.1.1	Represent addition and subtraction with objects, fingers, mental images, drawings (drawings need not show details, but should show the mathematics in the problem), sounds (e.g., claps), acting out situations, verbal explanations, expressions, or equations. *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts	• Adding means putting together. • Subtracting means taking apart. • There are multiple strategies to solve addition and subtraction problems. • There are different strategies that work best for individual students. **The student is able to:** • Use manipulatives to represent an addition or subtraction problem. • Draw a simple picture that represents an addition or subtraction problem.	• I can use a strategy to solve addition problems. • I can use a strategy to solve subtraction problems.
Key Vocabulary: addition, subtraction, represent			
Resources:			

Standard Identifier	Standard with Complexity Rating	Conceptual and Procedural Understanding – The student understands that:	Student Friendly Language Learning Targets
MAFS.K.OA.1.2	Solve addition and subtraction word problems, and add and subtract within 10, e.g., by using objects or drawings to represent the problem.([1]Students are not required to independently read the word problems.) *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts	• The number changes when you add or subtract, except for zero. • Addition is putting together and adding to and subtraction is taking apart and from – decomposing and composing numbers. • Visuals (drawings and manipulatives) can be used to solve word problems. • A word problem is a story that you will use numbers to solve. **The student is able to:** • Model a word problem with objects or drawings.. • Prove/explain solutions using manipulatives or drawings. • Use one or more strategies to solve addition and subtraction word problems.	• I can put together and take apart numbers (addition and subtraction) up to ten after hearing a word problem. • I can use objects or create drawings to show my thinking about numbers.
Key Vocabulary: word problem, all together, total, how many more			
Resources:			

Standard Identifier	Standard with Complexity Rating	Conceptual and Procedural Understanding – The student understands that:	Student Friendly Language Learning Targets
MAFS.K.OA.1.4	For any number from 1 to 9, find the number that makes 10 when added to the given number, e.g., by using objects or drawings, and record the answer with a drawing or equation. *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts	• Addition can be used to combine 2 groups together. • Ten can be composed of 2 smaller numbers (1 + 9). • There are multiple combinations of numbers that make 10 (7+3, 2+8, 6+4 etc). • Number thinking can be recorded with an equation, a drawing, with numerals, or with objects. **The student is able to:** • Identify the different combinations that make 10. • Show ways of making 10 with 2 addends (draw a picture or make an equation), grouping objects together. • Investigate how many more it takes to get 10, when starting from a number, 1-9. • Prove that there is more than 1 way to make 10.	• I can make 10 by adding on to a number 1-9. • I can use drawing, objects, and numerals to show my thinking.
Key Vocabulary: answer, plus			
Resources:			

Standard Identifier	Standard with Complexity Rating	Conceptual and Procedural Understanding – The student understands that:	Student Friendly Language Learning Targets
MAFS.K.OA.1.5	Fluently add and subtract within 5. *Cognitive Complexity:* Level 1: Recall	• Addition means putting together. • Subtraction means taking apart. • There are many ways to add and subtract. **The student is able to:** • Add fluently within 5. • Subtract fluently within 5.	• I can add numbers to make 5. • I can subtract numbers from 5.
Key Vocabulary: addition, subtraction, equals			
Resources:			

Standard Identifier	Standard with Complexity Rating	Conceptual and Procedural Understanding-	Student Friendly Language Learning Targets
MAFS.K.OA.1a	Use addition and subtraction within 10 to solve word problems involving both addends unknown numbers to represent the problem. (Students are not required to independently read the word problems.) *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts	• There is a relationship between addition and subtraction. • When adding, the sum will be greater. • When subtracting, the difference will be less. • Comparing involves subtraction. • There is more than one way to solve a word problem. **The student is able to:** • Use different strategies to solve addition word problems up to 10. • Use different strategies to solve subtraction word problems within10.	• I can solve addition and subtraction word problems up to 10 in a way that makes sense to me. • I can write an equation using the correct symbols to solve word problems with sums or differences up to10.
Key Vocabulary: Add (+) Subtract (-) Solve. Compare. Sum .Difference .Equal (=), Symbol			
Resources:			

BODY OF KNOWLEDGE: NUMBER AND OPERATIONS IN BASE TEN			
Cluster 1: Work with numbers 11-19 to gain foundations for place value			
Standard Identifier	**Standard with Complexity Rating**	**Conceptual and Procedural Understanding – The student understands that:**	**Student Friendly Language Learning Targets**
MAFS.K.NBT.1.1	Compose and decompose numbers from 11 to 19 into ten ones and some further ones, e.g., by using objects or drawings, and record each composition or decomposition by a drawing or equation (such as 18 = 10 + 8); understand that these numbers are composed of ten ones and one, two, three, four, five, six, seven, eight, or nine ones. *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts	• A number from 11-19 can be decomposed into a ten and some ones. • A number from 11-19 can be composed of a ten and some ones. • A composed or decomposed number can be recorded by a drawing or an equation. **The student is able to:** • Compose numbers from 11-19 into a ten plus one(s). • Decompose numbers from 11-19 into a ten plus one(s). • Use objects/drawings to show how many tens and ones are in a number 11-19. • Use an equation to show tens and ones from 11 – 19 (ex. 10 + 1 = 11).	• I can use objects to show how many tens and ones are in a number ,11-19. • I can use a drawing to show how many tens and ones are in a number, 11-19. • I can write an equation to show how many tens and ones are in a number, 11-19
Key Vocabulary: tens, ones			
Resources:			

BODY OF KNOWLEDGE: MEASUREMENT AND DATA

Cluster 1: ***Describe and compare measurable attributes***

Standard Identifier	Standard with Complexity Rating	Conceptual and Procedural Understanding – The student understands that:	Student Friendly Language Learning Targets
MAFS.K.MD.1.1	Describe measurable attributes of objects, such as length or weight. Describe several measurable attributes of a single object. *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts	• Objects can be measured in different ways. • Objects can be described in different ways. **The student is able to:** • Describe the measurable attributes of different objects. • Describe several measurable attributes of a single object.	• I can tell different ways to measure objects, like length and weight. • I can describe an object by telling about its weight or length.
Key Vocabulary: measure, length, weight, attributes			
Resources:			

Standard Identifier	Standard with Complexity Rating	Conceptual and Procedural Understanding – The student understands that:	Student Friendly Language Learning Targets
MAFS.K.MD.1.2	Directly compare two objects with a measurable attribute in common, to see which object has "more of"/"less of" the attribute, and describe the difference. For example, directly compare the heights of two children and describe one child as taller/shorter *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts	• Objects can be measured in different ways. • The sizes of two or more objects can be compared. • When directly comparing the length of two objects, it is important to line up the ends. **The student is able to:** • Directly compare objects based on a common measurable attribute. • Describe measured objects by using the degree of difference (more of/less of).	• I can compare the length or height of two objects and tell which is longer, taller/shorter. • I can use more than and less than to compare two objects.
Key Vocabulary: Compare, Measurable Attributes, Difference, Describe			
Resources:			

Standard Identifier	Standard with Complexity Rating	Conceptual and Procedural Understanding – The student understands that:	Student Friendly Language Learning Targets
MAFS.K.MD.1a	Express the length of an object as a whole number of length units, by laying multiple copies of a shorter object (the length unit) end to end: understand that the length measurement of an object is the number of same –size length units that span it with no gaps or overlaps. Limit to contexts where the object being measured is spanned by a whole number of length units with no gaps or overlaps. *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts	• Objects can be measured using multiple copies of a length unit. • Objects can be described as being longer (taller) or shorter. • The length of an object can be described as a number of length units. • Length units must be uniform when measuring an object. • There can be no gaps or overlaps of the length units when measuring an object. **The student is able to:** • Accurately measure objects using a variety of length units (i.e. linking cubes, markers, paper clips, etc.). • Express length to the nearest whole number. • Use the same length unit when comparing one object with another. • Express length in terms of the length unit when describing an object (Ex. How long is the pencil? The pencil is three *paperclips* long.)	• I can measure the length of an object by laying a shorter object end to end with no gaps or overlaps. • I can tell someone the length of something by telling them how many shorter objects it equals. • I can compare the lengths of two objects by stating how long each is.
Key Vocabulary: measure, unit, end-to-end, gaps, overlaps, whole number			
Resources:			

Cluster 2: **CLASSIFY OBJECTS AND COUNT THE NUMBER OF OBJECTS IN EACH CATEGORY**			
Standard Identifier	**Standard with Complexity Rating**	**Conceptual and Procedural Understanding – The student understands that:**	**Student Friendly Language Learning Targets**
MAFS.K.MD.2.3	Classify objects into given categories; count the numbers of objects in each category and sort the categories by count. Limit category counts to be less than or equal to 10 *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts	• Identifying attributes of items can be used to sort items into like categories. **The student is able to:** • Classify objects into categories. • Count the objects in each category. • Sort the categories by count.	• I can sort objects into groups. • I can count items in each group. • I can sort the groups by the number of objects.
Key Vocabulary: categories, sort, classify, alike, same, different, not alike			
Resources:			

BODY OF KNOWLEDGE: GEOMETRY

Cluster 1: ***Identify and describe shapes (squares, circles, triangles, rectangles, hexagons, cubes, cones, cylinders, and spheres)***			
Standard Identifier	**Standard with Complexity Rating**	**Conceptual and Procedural Understanding – The student understands that:**	**Student Friendly Language Learning Targets**
MAFS.K.G.1.1	Describe objects in the environment using names of shapes, and describe the relative positions of these objects using terms such as above, below, beside, in front of, behind, and next to. *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts	• Using positional words explains the location of objects. • Objects in our environment can be described using names of shapes. **The student is able to:** • Identify different shapes by name. • Describe the location of objects using positional words.	• I can name shapes that I see. • I can describe location by using position words.
Key Vocabulary: square, circle, triangle, rectangle, cube, cone, cylinder, sphere, above, below, in front of, behind, next to, shapes, environment, location, position			
Resources:			
Standard Identifier	**Standard with Complexity Rating**	**Conceptual and Procedural Understanding – The student understands that:**	**Student Friendly Language Learning Targets**
MAFS.K.G.1.2	Correctly name shapes regardless of their orientations or overall size. *Cognitive Complexity:* Level 1: Recall	• Changing orientation does not change the name of the shape. • Changing size does not change the name of the shape. • Shapes can come in a variety of sizes and be placed in a number of orientations. **The student is able to:** • Identify a 2 dimensional shape no matter the orientation. • Identify a 2 dimensional shape regardless of the size of shape. • Identify a 3 dimensional shape regardless of orientation. • Identify a 3 dimensional shape regardless of the orientation of the shape.	• I can correctly name a shape no matter which way it is turned. • I can correctly name a shape no matter what size it is.
Key Vocabulary: shape, size			
Resources:			

Standard Identifier	Standard with Complexity Rating	Conceptual and Procedural Understanding – The student understands that:	Student Friendly Language Learning Targets
MAFS.K.G.1.3	Identify shapes as two-dimensional (lying in a plane, "flat") or three dimensional ("solid"). *Cognitive Complexity*: Level 1: Recall	• Shapes can be two-dimensional or three-dimensional. **The student is able to:** • Identify a shape by name. • State if shape is two-dimensional or three-dimensional. • Sort shapes according to their dimension.	• I can tell if a shape is two-dimensional or three-dimensional.
Key Vocabulary: three-dimensional, solid, flat, two-dimensional			
Resources:			
***Cluster 2:* Analyze, compare, create, and compose shapes**			
Standard Identifier	**Standard with Complexity Rating**	**Conceptual and Procedural Understanding – The student understands that:**	**Student Friendly Language Learning Targets**
MAFS.K.G.2.4	Analyze and compare two- and three-dimensional shapes, in different sizes and orientations, using informal language to describe their similarities, differences, parts (e.g., number of sides and vertices/"corners") and other attributes (e.g., having sides of equal length). *Cognitive Complexity:* Level 3: Strategic Thinking & Complex Reasoning	• Each shape has its own attributes. • Size and orientation do not change the basic shape. **The student is able to:** • Describe the attributes of shapes. • Compare two and three dimensional shapes.	• I can tell how shapes are alike and different.
Key Vocabulary: Sides, Corners, 2 dimensional shapes, 3 dimensional shapes, Attributes, Vertices			
Resources:			
Standard Identifier	**Standard with Complexity Rating**	**Conceptual and Procedural Understanding – The student understands that:**	**Student Friendly Language Learning Targets**
MAFS.K.G.2.5	Model shapes in the world by building shapes from components (e.g., sticks and clay balls) and drawing shapes. *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts	• Real world objects have a shape, or are composed of shapes. • A model is a small scale representation of a larger real-world object. • A model will have the same shape as the real world object. **The student is able to:** • Build a model representing a real world object. • Draw a picture using composite shapes to represent a real world object.	• I can build a model to represent the shapes I see around me. • I can draw shapes that model the shapes I see around me.
Key Vocabulary: Model, represent			
Resources:			

Standard Identifier	Standard with Complexity Rating	Conceptual and Procedural Understanding – The student understands that:	Student Friendly Language Learning Targets
MAFS.K.G.2.6	Compose simple shapes to form larger shapes. For example, "Can you join these two triangles with full sides touching to make a rectangle?" *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts	• Small shapes can be put together to form larger shapes. • Small shapes can be put together to form different shapes. **The student is able to:** • Compose simple shapes. • Put simple shapes together to form larger shapes. • Use two or more simple shapes to make a different shape.	• I can put small shapes together to form larger shapes. • I can put shapes together to form different shapes.
Key Vocabulary: Compose			
Resources:			

Kindergarten Math Vocabulary				
Above	Cube	Height	One	Solid
Add	Cylinder	How many more	Ones	Sort
Addition	Decompose	In front of	One-to-one	sphere
Alike	Describe	Length	Pairing	Square
All together	Difference	Less than	Physical arrangement	Subtract
Answer	Different	Location	Plus	Subtraction
Arranged	Eight	Matching	Position	Ten
Attribute	Eighteen	Measure	Record	Tens
Behind	Eleven	Model	Rectangle	Thirteen
Below	Environment	More	Represent	Three
Categories	Equal	Next	Same	Three-dimensional
Circle	Equation	Next to	Same	Total
Classify	Fifteen	Nine	Sequence	Triangle
Compare	Five	Nineteen	Seven	Twenty
Compose	Flat	Not alike	Seventeen	Two
compose	Forward	Number	Shapes	Two-dimensional
Cone	Four	Number name	Sides	Value
Corners	Fourteen	Numeral	Six	Vertices
Count	Greater than	Object	Sixteen	Weight
Count/counting	Group		Size	Word problem
Counting strategy				zero

<u>Sample</u> Categories for Math Vocabulary

Position Words	Shapes	Counting Words	Comparing Words
Next to	Triangle	One	Greater than
Behind	Rectangle	Two	Less than
In front of	Square	Three	More
Beside	Cone	Four	Equal
Under	Cylinder	Five	Same
Over	Circle	Six	Longer
around	Sphere	Seven	Shorter
		Eight	Taller
		Nine	Same
		Ten	Alike
		Eleven	Not alike
		Twelve	different
		Thirteen	
		Fourteen	
		Fifteen	
		Sixteen	
		Seventeen	
		Eighteen	
		Nineteen	
		Twenty	

For more information on vocabulary categories, see the resource in the Resources for Implementation section of the ELA Curriculum Guide.

Kindergarten MATH Pacing Guide

2014-15 Implementation

	Quarter 1	Quarter 2	Quarter 3	Quarter 4
Overarching Concepts	Numbers to 10, Shapes, classifying, and sorting, positional words, number sense 1-10	Operations and Algebraic Thinking, Making 10,	Counting and Cardinality numbers to 20, Numbers and Operations in Base 10	Measurement/ Data, 2D and 3D Shapes, extend word problems
Standards/ Learning Targets	MAFS K.CC.1.2 MAFS.K.CC.1.3 (to 10) MAFS.K.CC.2.4 MAFS.K.CC.2.5 (to 10) MAFS.K.CC.3.6 (to 10) MAFS.K.CC.3.7 MAFS.K.OA.1.4 MAFS.K.MD.2.3 MAFS.K.G.1.2 MAFS.K.G.2.5 MAFS.K.G.2.6	MAFS.K.CC.1.3 (to 10) MAFS.K.OA.1.1 MAFS.K.OA.1.4 MAFS.K.OA.1.5 MAFS.K.MD.2.3	MAFS.K.CC.1.1 MAFS.K.CC.1.3 (to 20) MAFS.K.CC.2.5 (to 20) MAFS.K.CC.3.6 (to 20) MAFS.K.NBT.1.1	MAFS.K.CC.1.1 MAFS.K.OA.1.2 MAFS.K.OA.1a MAFS.K.MD.1.1 MAFS.K.MD.1.2 MAFS.K.MS.1a MAFS.K.G.1.1 MAFS.K.G.1.2 MAFS.K.G.1.3 MAFS.K.G.2.4 MAFS.K.G.2.5 MAFS.K.G.2.6
Aligned Resources	Go Math Chapters: 9, 12, 1, 2, 3, 4 'Five' Frames	Go Math Chapters: 4, 5 ,6 'Five' and 'Ten' Frames	Go Math Chapters 7, 8 'Five' and 'Ten' Frames	Go Math Chapters: 10, 11 Pattern Blocks Tangrams
Pacing	Week 1-2D Shapes Week 2- Classify/ sorting and positional words Week 3- Numbers 1, 2 Week 4- Numbers 3, 4 Week 5- Number 5 Week 6- Compare to 5 Week 7- Numbers 6, 7 Week 8- Numbers 8, 9 Week 9- Number 10	Week 10- Comparing and ways to make 10 Week 11- Continue to 10 Week 12- Addition to 10 Week 13- Addition to 10 Week 14- Subtraction to 10 Week 15- Subtraction to 10 Week 16- Review Week 17- Review/ Assessments Embed simple word problems in all instruction.	Week 18- Review Week 19- Numbers 11, 12 Week 20- Numbers 13, 14 Week 21- Numbers 15 Week 22- Numbers 16, 17 Week 23- Numbers 18, 19 Week 24- Number 20 Week 25- Number 20 and Review Week 26- Base 10 Week 27- Base 10 Embed simple word problems in all instruction.	Week 28- Measurement Week 29- Measurement Week 30- 3D Shapes Week 31- 3D Shapes Week 32- Apply learning in a variety of contexts Week 33- Apply learning in a variety of contexts Week 34-36: Review/ Assess for mastery Embed simple word problems in all instruction.
High Yield Routine(s)	*Today's Numbers*	*Alike and Different*	*Quick Images*	*How do you know?*

Target Vocabulary	• Count ones • Tens • Sequence • Forward • Objects • Numeral • Number: 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10 • Greater than (more) • Group • One-to-one • Matching • Next • Number • Name • Same pacing • Physical arrangement	• Addition • Subtraction • Represent • Equals • Plus • Minus • Add • More than • Less than • Number line	• Ones • Tens, • …..11, 12, 12, 14, 15, 16, 17, 18, 19, 20	• Word problem • All together • Total • How many more • Sum • Difference • Length • Weight • Attributes • Describe • Shape • Three dimensional • Two dimensional • solid • flat • sides • corners, vertices • ruler, measure
	Include other vocabulary as noted below and in the vocabulary list on page 15.			
Essentials to Remember: Make Use of Structure	Less than, Equal, Value, Compare, Answer, Sort, Classify, Alike, Different, Shape Names, Positional Words, Size, Model, Represent, Compose Make sure to use standards' language and appropriate vocabulary.	MAFS.K.MD.2.3 will be used as a high-yield routine. Represent number sentences in as many ways as possible. Reason abstractly and quantitatively/ make sure of the problem/ persevere/ reason.	Keep samples throughout the year of routines. Look for and express regularity in repeated reasoning.	Make sense of problems and persevere in solving them. Use appropriate tools.

First Grade Florida Standards Math

Revised, 2014

Course # 5012030

This is an update of the First Grade Math Curriculum. It is based upon the Florida Standards Mathematical Standards and incorporates the eight Mathematical Practices. It includes a required order of instruction pacing guide.

First 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 also in use in all elementary schools.

- **MAFS.1**

In Grade 1, instructional time should focus on four critical areas: (1) developing understanding of addition, subtraction, and strategies for addition and subtraction within 20; (2) developing understanding of whole number relationships and place value, including grouping in tens and ones; (3) developing understanding of linear measurement and measuring lengths as iterating length units; and (4) reasoning about attributes of, and composing and decomposing geometric shapes.

1. Students develop strategies for adding and subtracting whole numbers based on their prior work with small numbers. They use a variety of models, including discrete objects and length-based models (e.g., cubes connected to form lengths), to model add-to, take-from, put-together, take-apart, and compare situations to develop meaning for the operations of addition and subtraction, and to develop strategies to solve arithmetic problems with these operations. Students understand connections between counting and addition and subtraction (e.g., adding two is the same as counting on two). They use properties of addition to add whole numbers and to create and use increasingly sophisticated strategies based on these properties (e.g., "making tens") to solve addition and subtraction problems within 20. By comparing a variety of solution strategies, children build their understanding of the relationship between addition and subtraction.

2. Students develop, discuss, and use efficient, accurate, and generalizable methods to add within 100 and subtract multiples of 10. They compare whole numbers (at least to 100) to develop understanding of and solve problems involving their relative sizes. They think of whole numbers between 10 and 100 in terms of tens and ones (especially recognizing the numbers 11 to 19 as composed of a ten and some ones). Through activities that build number sense, they understand the order of the counting numbers and their relative magnitudes.

3. Students develop an understanding of the meaning and processes of measurement, including underlying concepts such as iterating (the mental activity of building up the length of an object with equal-sized units) and the transitivity principle for indirect measurement. Note: Students should apply the principle of transitivity of measurement to make indirect comparisons, but they need not use this technical term.

4. Students compose and decompose plane or solid figures (e.g., put two triangles together to make a quadrilateral) and build understanding of part-whole relationships as well as the properties of the original and composite shapes. As they combine shapes, they recognize them from different perspectives and orientations, describe their geometric attributes, and determine how they are alike and different, to develop the background for measurement and for initial understandings of properties such as congruence and 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.

Mathematical Practices from the Florida Standards for Mathematics, with Explanations:

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.

MAFS.K12.MP.8.1 : **Look for and express regularity in repeated reasoning.**

Mathematically proficient students notice if calculations are repeated, and look both for general methods and for shortcuts. Upper elementary students might notice when dividing 25 by 11 that they are repeating the same calculations over and over again, and conclude they have a repeating decimal. By paying attention to the calculation of slope as they repeatedly check whether points are on the line through (1, 2) with slope 3, middle school students might abstract the equation $(y – 2)/(x – 1) = 3$. Noticing the regularity in the way terms cancel when expanding $(x – 1)(x + 1)$, $(x – 1)(x^2 + x + 1)$, and $(x – 1)(x^3 + x2 + x + 1)$ might lead them to the general formula for the sum of a geometric series. As they work to solve a problem, mathematically proficient students maintain oversight of the process, while attending to the details. They continually evaluate the reasonableness of their intermediate results.

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.
9. **Have students respond in a variety of ways to questions. Questions should challenge student thinking.**
    (See question types in the Test Item Specifications.)

10. Important Concepts Across Grade Levels:

a. Equivalence – students need to understand that the answer does not always follow the = sign (ex. □+3 = 2+4, □ = 4+3)
b. Fractions – students must experience and understand equal parts of a whole leading into formal fraction instruction in third grade.
c. Use of the number (a ruler is an example of a numberline) – facility with the numberline is critical for later work with fractions.
d. Solving problems by drawing the concepts – Students who learn to use fraction bars and to draw fractions and fractional combinations can better visualize the m ore difficult operations with fractions.

11. Math will be taught for 90 minutes every day. This does not have to be uninterrupted.

12. Attention must be paid to the *Cognitive Complexity* of items to help determine the rigor of the instruction and expectation.

Math Progress Monitoring

Progress monitoring must be ongoing in classrooms throughout the year. This includes, but is not limited to, the following:

1. Ongoing checks for development of fluency with basic math facts;
2. Formative assessments on math concepts like equivalency, number, parts of a whole, etc., as appropriate to the grade level standards;
3. Formative assessment through interaction with students as they explain problem solving. It is critical to catch and correct misconceptions early.
4. Review of responses to the High-Yield Routines.

Grading should accurately reflect the students' accomplishment of the grade level standards. If a student is making an 'A', that means that the student is able to, after instruction, independently perform at an above-average level. Be careful of overweighting grades with work habits and citizenship considerations. Grades should reflect a variety of assessments that allow the students to demonstrate proficiency.

Formal Progress Monitoring will occur quarterly.
All students will participate in formal progress monitoring quarterly using Discovery Education Assessments.
Data will be reviewed at the district, school, and classroom level.
Follow-up instruction on for students who are not performing on level is required.

Resources:

- CPALMS – lesson resources and formative assessments are linked to the standards in CPALMS.
- www.FSAssessments.org - This is the link to the online portal with information on the new Florida assessments. Teachers are expected to review and use the test item specifications for their respective grade levels. You will have to cut and paste this address into your browser address bar.
- Math iXL – for ongoing reinforcement and for targeted practice of skills. Please note that this practice does not preclude the necessity for ongoing instruction and problem solving with answer justification in the classroom.

First Grade Florida Standards for Math - Course #5012030

BODY OF KNOWLEDGE: OPERATIONS AND ALGEBRAIC THINKING

Cluster 1: Represent and solve problems involving addition and subtraction

Standard Identifier	Standard with Complexity Rating	Conceptual and Procedural Understanding – The student understands that:	Student Friendly Language Learning Targets
MAFS.1.OA.1.1	Use addition and subtraction within 20 to solve word problems involving situations of adding to, taking from, putting together, taking apart, and comparing, with unknowns in all positions, e.g., by using objects, drawings, and equations with a symbol for the unknown number to represent the problem.([1]Students are not required to independently read the word problems.) *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts	• There is a relationship between addition and subtraction. • When adding, the sum will be greater. • When subtracting, the difference will be less. • Comparing involves subtraction. • There is more than one way to solve a word problem. **The student is able to:** • Use different strategies to solve addition word problems up to 20. • Use different strategies to solve subtraction word problems within 20.	• I can solve addition and subtraction word problems up to 20 in a way that makes sense to me. • I can write an equation using the correct symbols to solve word problems with sums or differences up to 20.

Key Vocabulary: Add (+) Subtract (-) Solve. Compare. Sum .Difference .Equal (=), Symbol

Resources:

Standard Identifier	Standard with Complexity Rating	Conceptual and Procedural Understanding – The student understands that:	Student Friendly Language Learning Targets
MAFS.1.OA.1.2	Solve word problems that call for addition of three whole numbers whose sum is less than or equal to 20, e.g., by using objects, drawings, and equations with a symbol for the unknown number to represent the problem. *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts	• The sum is greater than the addends. • A symbol can take the place of a number. **The student is able to:** • Solve a story problem with three numbers and an unknown addend. • Use objects, drawings, or equations with a symbol to find the unknown addend in a story problem.	• I can solve addition story problems with 3 numbers up to 20 using a symbol for the missing addend , • I can use drawings and objects to help me solve word problems.

Key Vocabulary: symbol unknown addend equation

Resources:

Cluster 2: Understand and apply properties of operations and the relationship between addition and subtraction

Standard Identifier	Standard with Complexity Rating	Conceptual and Procedural Understanding – The student understands that:	Student Friendly Language Learning Targets
MAFS.1.OA.2.3	Apply properties of operations as strategies to add and subtract. Examples: If 8 + 3 = 11 is known, then 3 + 8 = 11 is also known. (Commutative property of addition.) To add 2 + 6 + 4, the second two numbers	• There are various strategies (properties of operation) that can be used to solve addition and subtraction problems. • Numbers consistently work in certain ways. **The student is able to:**	• I can add and subtract in ways that make sense to me. • I can add two numbers in any order to get the same sum.

	can be added to make a ten, so 2 + 6 + 4 = 2 + 10 = 12. (Associative property of addition.) (Students need not use formal terms for these properties.) *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts	• Apply properties of operations as strategies to add and subtract problems within 20. • Explain strategy used to add and subtract.	• I can group numbers in an equation to solve the equation.
Key Vocabulary: Strategies			
Resources:			

Standard Identifier	Standard with Complexity Rating	Conceptual and Procedural Understanding – The student understands that:	Student Friendly Language Learning Targets
MAFS.1.OA.2.4	Understand subtraction as an unknown-addend problem. For example, subtract 10 – 8 by finding the number that makes 10 when added to 8. *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts	• Addition and subtraction facts are related. **The student is able to:** • Write a subtraction number sentence and its related addition number sentence. • Model using addends and sums to subtract • Identify patterns in the writing of number families.	• I can use addition facts to help me subtract.
Key Vocabulary: Addend, Unknown			
Resources:			

Cluster 3: Add and subtract within 20

Standard Identifier	Standard with Complexity Rating	Conceptual and Procedural Understanding – The student understands that:	Student Friendly Language Learning Targets
MAFS.1.OA.3.5	Relate counting to addition and subtraction (e.g., by counting on 2 to add 2). *Cognitive Complexity:* Level 1: Recall	• Counting is an indication of increasing the number by one. • When you count, the last number said is the total amount. • A number is decreased when objects are subtracted. • When you count backwards, the last number said is the amount left. **The student is able to:** • Apply concepts of counting on and counting back. • Explain why and how a number gets bigger or smaller. • Construct a model to show addition or subtraction.	• I can choose objects or draw a picture to show counting on as addition • I can choose objects or draw a picture to show counting back as subtraction. • I can count on from a given number to add. • I can count back from a given number to subtract.
Key Vocabulary: addition, subtraction			
Resources:			

Standard Identifier	Standard with Complexity Rating	Conceptual and Procedural Understanding – The student understands that:	Student Friendly Language Learning Targets
MAFS.1.OA.3.6	Add and subtract within 20, demonstrating fluency for addition and subtraction within 10. Use strategies such as counting on; making ten (e.g., 8 + 6 = 8 + 2 + 4 = 10 + 4 = 14); decomposing a number leading to a ten (e.g., 13 – 4 = 13 – 3 – 1 = 10 – 1 = 9); using the relationship between addition and subtraction (e.g., knowing that 8 + 4 = 12, one knows 12 – 8 = 4); and creating equivalent but easier or known sums (e.g., adding 6 + 7 by creating the known equivalent 6 + 6 + 1 = 12 + 1 = 13). *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts	• Addition means combining to find the sum. • Subtraction means taking away or comparing to find the difference. • There is a relationship between addition and subtraction problems. • Numbers represent a value and symbols represent an operation. • There are various strategies that can be used for addition and subtraction problems. • Fluency is important to efficient problem solving. **The student is able to:** • Recall addition and subtraction problems up to 10 fluently. • Use manipulatives to demonstrate different strategies for addition and subtraction. • Explain the strategy used to solve problems up to 20. • Choose a strategy to use when working an addition or subtraction problem.	• I can add numbers up to 20 in many different ways. • I can subtract numbers up to 20 in many different ways. • I can fluently solve addition up to 10. • I can fluently solve subtraction up to 10.
Key Vocabulary: fluency, strategies			
Resources:			
Cluster4: Work with addition and subtraction equations.			
Standard Identifier	**Standard with Complexity Rating**	**Conceptual and Procedural Understanding – The student understands that:**	**Student Friendly Language Learning Targets**
MAFS.1.OA.4.7	Understand the meaning of the equal sign, and determine if equations involving addition and subtraction are true or false. For example, which of the following equations are true and which are false? 6 = 6, 7 = 8 – 1, 5 + 2 = 2 + 5, 4 + 1 =5 + 2. *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts	• An equal sign represents balance on both sides of the equation. • The equal sign does not always point to the answer. **The student is able to:** • Explain meaning of equal sign. • Demonstrate understanding of equal sign. • Determine whether an addition or subtraction equation is true or false. • Demonstrate that an equation is balanced with the equal sign in any position. • Use manipulatives to show how the two sides of an equation are equal.	• I can explain that the equal sign means "the same as". • I can determine whether an addition or subtraction number sentence is true or false. • I can show how an equation is balanced on each side of the equal sign.
Key Vocabulary: addition, subtraction, number sentence, balanced equation, true and false, equations, equal, +, -, =			
Resources:			

Standard Identifier	Standard with Complexity Rating	Conceptual and Procedural Understanding – The student understands that:	Student Friendly Language Learning Targets
MAFS.1.OA.4.8	Determine the unknown whole number in an addition or subtraction equation relating three whole numbers. For example, determine the unknown number that makes the equation true in each of the equations 8 + ? = 11, 5 = __ – 3, 6 + 6 = __. *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts	• The relationship between two whole numbers will determine the value of the unknown, third whole number. • An equation has to have the same value on both sides of the equal sign. • The plus sign means to join two numbers. • The minus sign means to take away a determined amount from a group. **The student is able to:** • Explain and demonstrate how both sides of an equation are equal. • Explain and demonstrate how the unknown number was found. • Solve an equation to find the unknown number in an addition or subtraction sentence. • Utilize a variety of strategies to find an unknown number in an equation.	• I can find the missing number in an addition sentence (equation). • I can find the missing number in a subtraction sentence (equation).
Key Vocabulary: whole number, plus/minus, sum/difference, number sentence, balanced equation			
Resources:			

BODY OF KNOWLEDGE: NUMBER AND OPERATIONS IN BASE TEN

Cluster 1: Extend the counting sequence.

Standard Identifier	Standard with Complexity Rating	Conceptual and Procedural Understanding – The student understands that:	Student Friendly Language Learning Targets
MAFS.1.NBT.1.1	Count to 120, starting at any number less than 120. In this range, read and write numerals and represent a number of objects with a written numeral. *Cognitive Complexity:* Level 1: Recall	• Written numbers can represent a quantity of objects. • Numbers can be read. • Numbers can be written. • Numbers are in sequential order according to the representation of the number. **The student is able to:** • Start at any given number less than 120, and count to 120. • Read numbers from 0 to 120. • Write numerals from 0 to 120. • Identify and match objects using one-to-one correspondence with any given number from 0 to 120.	• I can start at any number and count to 120. • I can read my numbers from 0 to 120. • I can write my numbers from 0 to 120. • I can count, tell, and write how many objects are in the group.

Key Vocabulary: quantity, identify ,count on, represent, one-to-one correspondence, sequential

Resources:

Cluster 2: Understand place value.

Standard Identifier	Standard with Complexity Rating	Conceptual and Procedural Understanding – The student understands that:	Student Friendly Language Learning Targets
MAFS.1.NBT.2.2	Understand that the two digits of a two-digit number represent amounts of tens and ones. a. 10 can be thought of as a bundle of ten ones — called a "ten." b. The numbers from 11 to 19 are composed of a ten and one, two, three, four, five, six, seven, eight, or nine ones. c. The numbers 10, 20, 30, 40, 50, 60, 70, 80, 90 refer to one, two, three, four, five, six, seven, eight, or nine tens (and 0 ones). d. Decompose two-digit numbers in multiple ways (e.g., 64 can be decomposed into 6 tens and 4 ones or into 5 tens and 14 ones). *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts	• The two digits of a two-digit number represent amounts of tens and ones. • A bundle of ten ones is called a "ten." • The numbers from 11 to 19 are 1 ten and the appropriate number of ones. (e.g. 11 is 1 ten and 1 one.) • The numbers ending in zero from 10 to 90 include the appropriate number of tens and zero ones. (e.g. 30 is 3 tens and 0 ones.) • Numbers can be decomposed into tens and ones(e.g. 54 is 5 tens and 4 ones **The student is able to:** • Identify tens and ones in any two-digit number. • Create and explain a "ten." • Show and explain tens and ones in any two-digit number. • Organize a group of objects into tens and ones and tell what number it represents. • Decompose two-digit numbers	• I can tell/show the number of tens and ones in any two-digit number. • I can tell what each digit means in a two-digit number. • I can group objects into tens and ones and tell what number it represents. • I can bundle ten ones and know it is called a" ten." • I can tell/show how to take two digit numbers and bundle them into ten(s) and one

Key Vocabulary: place value tens and ones bundle two-digit number

Resources:

Standard Identifier	Standard with Complexity Rating	Conceptual and Procedural Understanding – The student understands that:	Student Friendly Language Learning Targets
MAFS.1.NBT.2.3	Compare two two-digit numbers based on meanings of the tens and ones digits, recording the results of comparisons with the symbols >, =, and <. *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts	• Every number has a different value. • A digit located in the tens place means that many groups of ten. • A digit located in the ones place means that many ones. • Numbers can be greater than, less than, or equal to each other. • Comparisons of numbers can be recorded using symbols. • < means greater than. • < means less than. • = means the same as or equal. **The student is able to:** • Compare two two-digit numbers. • Explain a comparison of two two-digit numbers. • Use the appropriate symbol (<, >, =) to represent the comparison of two numbers.	• I can compare two two-digit numbers based on the meaning of the ones digit. • I can compare two two-digit numbers based on the meaning of the tens digits. • I can record how two two-digit numbers compare using symbols >, =, and <.
Key Vocabulary: compare/comparison two-digit numbers tens and ones record results greater than less than equal			
Resources:			

Cluster 3:Use place value understanding and properties of operations to add and subtract.

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.1.NBT.3.4	Add within 100, including adding a two-digit number and a one-digit number, and adding a two-digit number and a multiple of 10, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method and explain the reasoning used. Understand that in adding two-digit numbers, one adds tens and tens, ones and ones; and sometimes it is necessary to compose a ten. *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts	• Numbers have place value. • A variety of strategies can be used to solve addition and subtraction problems. • Number sentences are used to show how numbers were added or subtracted. **The student is able to:** • Add 10 to numbers 1 - 90. • Use objects or drawings to explain strategies used to add. • Compose a ten to help solve a problem (2 + 8 + 3 = 10 + 3 = 13) • Write number sentences to show how numbers were added or subtracted. • Add two-digits to one-digit. • Add two-digits and a multiple of 10. • Explain the reasoning used to solve a problem.	• I can use objects or drawings and explain how I solved a 2-digit addition problem. • I can add 10 to any 1- or 2-digit number. • I can compose a ten to help me add multiple numbers. • I can explain how I got my answer.
Key Vocabulary: addition, subtraction, place value, digits, multiples of ten			
Resources:			

Standard Identifier	Standard with Complexity Rating	Conceptual and Procedural Understanding – The student understands that:	Student Friendly Language Learning Targets
MAFS.1.NBT.3.5	Given a two-digit number, mentally find 10 more or 10 less than the number, without having to count; explain the reasoning used. *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts	• There is a pattern formed by adding 10 to numbers. **The student is able to:** • Mentally add 10 to any two-digit number. • Mentally subtract 10 from any two-digit number. • Explain the reasoning used to get the answer.	• I can add ten to any two-digit number using only my head. • I can subtract ten from any 2-digit number using only my head. • I can explain how I got my answer.
Key Vocabulary: two-digit numbers, mental math			
Resources:			

Standard Identifier	Standard with Complexity Rating	Conceptual and Procedural Understanding – The student understands that:	Student Friendly Language Learning Targets
MAFS.1.NBT.3.6	Subtract multiples of 10 in the range 10-90 from multiples of 10 in the range 10-90 (positive or zero differences), using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method and explain the reasoning used. *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts	• A variety of strategies can be used to add or subtract. • Number sentences are used to show how numbers were added or subtracted. • 20, 30, 40, 50, etc. are multiples of 10. **The student is able to:** • Subtract multiples of 10 from multiples of 10 in the range 10 to 90 (ex. 80 – 40 = 40). • Use objects or drawings to explain strategies used to subtract. • Write number sentences to show how numbers were added or subtracted. • State how many 10s are in a number from 10 – 90.	• I can subtract 10 from any multiple of 10 up to 90. • I can use drawings or models to explain how I solved a problem. • I can write a number sentence to show how I subtracted. • I can explain the thinking I used to solve a problem.
Key Vocabulary: equations, number sentences, strategies, manipulatives, multiples			
Resources:			

BODY OF KNOWLEDGE: MEASUREMENT AND DATA

Cluster 1: Measure lengths indirectly and by iterating length units.

Standard Identifier	Standard with Complexity Rating	Conceptual and Procedural Understanding – The student understands that:	Student Friendly Language Learning Targets
MAFS.1.MD.1.1	Order three objects by length; compare the lengths of two objects indirectly by using a third object. *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts	• Objects can be compared by length. • You can use one object to describe the length of other objects. • Objects can be put in order from shortest to longest and vice versa. **The student is able to:** • Compare the lengths of objects. • Organize up to three objects by their length. • Use one object to compare the length of other objects.	• I can order objects by length. • I can use one object to help me tell about the length of other objects. • I can use one object to help me compare the length of other objects.
Key Vocabulary: length, compare, object, order			
Resources:			

Standard Identifier	Standard with Complexity Rating	Conceptual and Procedural Understanding – The student understands that:	Student Friendly Language Learning Targets
MAFS.1.MD.1.a	Understand how to use a ruler to measure length to the nearest inch. a. Recognize that the ruler is a tool that can be used to measure the attribute of length. b. Understand the importance of zero point and that the length measure is the span between two points. c. Recognize that the units marked on a ruler have equal length intervals and fit together with no gaps or overlaps. These equal interval distances can be counted to determine the overall length of an object. Cognitive Complexity: Level 2: Basic Application of Skills and Concepts	• Recognize that a ruler is a tool that is used to measure length. • A standard unit of measure is always the same. • A ruler is divided into equal segments. • A ruler is a type of numberline. • An inch is a standard unit of measure for measuring length. **The student is able to:** • Identify a ruler as a tool to measure length. • Demonstrate the use of the zero point when measuring the span between two points. • Use a ruler to measure lengths shorter than 12 inches. • Express a length in terms of inches.	• I can use a ruler to measure how long something is. • I can identify the zero point on a ruler.
Key Vocabulary: measure, unit, end-to-end, gaps, overlaps, whole number, zero point, standard, equal, numberline, span			
Resources:			

Cluster 2: Tell and Write

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.1.MD.2.3	Tell and write time in hours and half-hours using analog and digital clocks. *Cognitive Complexity:* Level 1: Recall	• Clocks are used to measure time. • There are different kinds of clocks. • Some clocks are digital. • Some clocks are analog. • The measurement vocabulary for time includes hour, half-hour, and minute. (Other terms are added in other grades.) • There is a particular way to express time in writing. **The student is able to:** • Tell and write time to the hour using an analog clock. • Tell and write time to the hour using a digital clock. • Tell and write time to the half-hour using an analog clock. • Tell and write time to the half-hour using a digital clock.	• I can tell and write time to the hour using an analog clock. • I can tell and write time to the hour using a digital clock. • I can tell and write time to the half-hour using an analog clock. • I can tell and write time to the half-hour using a digital clock.

Key Vocabulary: clock, analog, digital, time

Resources:

Standard Identifier	Standard with Complexity Rating	Conceptual and Procedural Understanding – The student understands that:	Student Friendly Language Learning Targets
MAFS.1.MD.2.a	Identify and combine values of money in cents up to one dollar working with a single unit of currency[1]. a. Identify the value of coins (pennies, nickels, dimes, and quarters.) b. Compute the value of combinations of coins (pennies and/or dimes). c. Relate the value of pennies, dimes, and quarters to the dollar (e.g., There are 100 pennies or ten dimes or four quarters in one dollar.)([1]Students are not expected to understand the decimal notation for combinations of dollars and cents.)	• Coins have different sizes and appearances. • Coins are units of currency. • Skip counting can be used to compute the value of a single unit of currency. • Groups of pennies, dimes, or quarters can be equal to one dollar. **The student is able to:** • Identify coins (penny, nickel, dime, quarter) • Identify the value of coins (penny, nickel, dime, quarter) • Compute the value of combinations of pennies and/or dimes by counting and by adding. • Tell how many pennies, dimes, or quarters equal one dollar.	• I can name each coin. • I can tell the value of each coin. • I can find the value of a group of dimes and/or pennies. • I can tell how many pennies, dimes, or quarters equal one dollar.

Key Vocabulary: coin, penny, nickel, dime, quarter, value, combination

Resources:

Cluster 3: Represent and interpret data.

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.1.MD.3.4	Organize, represent, and interpret data with up to three categories; ask and answer questions about the total number of data points, how many in each category, and how many more or less are in one category than in another. *Cognitive Complexity:* Level 3: Strategic Thinking & Complex Reasoning	• Data is information. • Data can be organized. • Data can be categorizes and represented in a variety of ways. • Data can be interpreted after it has been organized. • There are different types of data. • Math skills are used to interpret data. **The student is able to:** • Record data. • Organize up to three categories of data. • Ask and answer questions about data. • Understand and use descriptive words like more and less to describe data. • Use math skills to help interpret data.	• I can record and read data. • I can tell and explain information about data. • I can answer questions about data.

Key Vocabulary: data, data points, organize, interpret, categories, differences

Resources:

BODY OF KNOWLEDGE: GEOMETRY

Cluster 1: Reason with shapes and their attributes.

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.1.G.1.1	Distinguish between defining attributes (e.g., triangles are closed and three-sided) versus non-defining attributes (e.g., color, orientation, overall size); build and draw shapes to possess defining attributes. *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts	• Shapes have defining attributes. • Shapes have non-defining attributes. • Shapes have similarities and differences. **The student is able to:** • Identify defining and non-defining attributes. • Compare and sort shapes by their attributes. • Use defining attributes to identify shapes. • Build and draw shapes with certain defining attributes (Ex. draw a closed triangle.)	• I can recognize and identify the attributes of shapes. • I can build and draw shapes that have certain attributes. • I can compare and sort shapes based on their attributes.

Key Vocabulary: defining attributes, non-defining attributes, similarities, differences, build, compare, sort

Resources:

Standard Identifier	Standard with Complexity Rating	Conceptual and Procedural Understanding – The student understands that:	Student Friendly Language Learning Targets
MAFS.1.G.1.2	Compose two-dimensional shapes (rectangles, squares, trapezoids, triangles, half-circles, and quarter-circles) or three-dimensional shapes (cubes, right rectangular prisms, right circular cones, and right circular cylinders) to create a composite shape, and compose new shapes from the composite shape.[4] *[4]. Students do not need to learn formal names such as "right rectangular prism.* *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts	• Shapes can be two-dimensional or three-dimensional. • Shapes can be composed of other shapes. • There are many kinds of shapes. • A composite shape is a shape created from other shapes. (i.e., two triangles to make a square) • **The student is able to:** • Use more than one 2-D or 3-D shape to create a composite shape. • Create additional shapes from the composite shapes. • Identify shapes within composite shapes.	• I can use 2-D shapes to create another shape. • I can use 3-D shapes to create another shape. • I can identify the shapes used to make a composite shape.
Key Vocabulary: 2-D shapes, 3-D shapes, composite shapes			
Resources:			

Standard Identifier	Standard with Complexity Rating	Conceptual and Procedural Understanding – The student understands that:	Student Friendly Language Learning Targets
MAFS.1.G.1.3	Partition circles and rectangles into two and four equal shares, describe the shares using the words halves, fourths, and quarters, and use the phrases half of, fourth of, and quarter of. Describe the whole as two of, or four of the shares. Understand for these examples that decomposing into more equal shares creates smaller shares. *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts	• Circles and rectangles can be divided into smaller, equal shares. • The terms halves, fourths, quarters are used to describe equal shares of two and four parts. • Dividing a circle or rectangle into halves or fourths creates smaller, equal shares. • The words halves, fourths, quarters, whole are used when talking about equal shares. **The student is able to:** • Divide a circle or rectangle into two equal shares or parts. • Divide a circle or rectangle into four equal shares or parts. • Identify one half of a circle or rectangle. • Identify one fourth of a circle or rectangle. • Identify a quarter of a circle or rectangle. • Describe the whole as two of, or four of the shares. Understand for these examples that decomposing into more equal shares creates smaller shares	• I can divide a circle or rectangle into two equal shares. • I can divide a circle or rectangle into four equal shares. • I can describe the parts of a circle or rectangle as halves, fourths, or quarters. • I can describe one part of a circle or rectangle as one half of, one fourth of, or one quarter of. • I can describe a whole circle or rectangle as having two equal shares or four equal shares. • I can tell that when there are more shares, the shares are smaller.
Key Vocabulary: equal, fair shares, half, halves, fourth, fourths, quarter, quarters, whole, divide			
Resources:			

First Grade Math Vocabulary				
2-D shapes	Determine	Manipulatives	Plus/minus	three-digit number
3-D shapes	Difference	Measure	Quantity	True
Add	Digits	Mentally	Quarters	Two-digit number
Add/subtract	Divide	More	Reasoning	Unit
Addend	Draw	multiples	Record	Unknown
Addition	End-to-end	Multiples of ten	Rectangle	Value
Balanced	Equal	Non-defining attributes	Represent	Whole number
Build	Equation	Number	Results	Wholes
Bundle	Fair shares	Number sentence	Sentence	
Categories	False	Numeral	Sequential	
Circle	Fluency	Object	Similarities	
Compare/comparison	Fourths	Ones	Solve	
Composite shapes	Gaps	One-to-one	Sort	**NEW:**
Correspondence	Greater than	Order	Strategies	coins
Count	Halves	Organize	Subtract	penny
Counting	Identify	Overlaps	Subtraction	dime
Data	Interpret	Parts	Sum	quarter
Data points	Length	Place	Sum/difference	dollar
decompose	Less	Place value	Symbol	money
Defining attributes	Less than		Tens	currency

<u>Sample</u> Categories for Math Vocabulary

Fraction Words	Operation Words	Place Value Words	Math Action Words	Money Words
whole half halves fourth fourths part quarter quarters	add subtract addition subtraction adding ten mental math sum difference	ones tens hundreds place value base ten	model draw build bundle compose decompose record interpret solve determine	Coin Penny Quarter Nickel Dime Dollar currency

For more information on vocabulary categories, see the resource in the Resources for Implementation section of the ELA Curriculum Guide.

First Grade MATH Pacing Guide - 2014-15

	Quarter 1	Quarter 2	Quarter 3	Quarter 4
Overarching Concepts	Understanding addition and subtraction; equivalency; number sense and counting	Understanding addition, subtraction; fluency with basic +/- facts; reasoning with shapes and attributes	Understanding whole number relationships and place value; Measurement: time, length; parts of a whole	Understanding whole number relationship and place value; identify and combine values of money;
Standards/ Learning Targets	**MAFS.1.OA.1.1** – Use different strategies to solve addition and subtraction word problems. **MAFS.1.OA.2.3** – Apply properties of operations as strategies to add and subtract problems. **MAFS.1.OA.2.4** – Write a subtraction number sentence and its related addition number sentence. Model using addends and sums to subtract. Identify patterns in the writing of number families. **MAFS.1.OA.3.5** – Apply concepts of counting on and counting back. Explain why and how a number gets bigger and smaller. Construct a model to show addition or subtraction. **MAFS.1.OA.3.6** – Use manipulatives to demonstrate different strategies for addition and subtraction. **MAFS.1.OA.4.7** –explain the meaning of equal sign. Demonstrate understanding of equivalence. Use manipulatives to show how the two sides of an equation are equal. **MAFS.1.MD.3.4** – Record data. Understand and use descriptive	**MAFS.1.OA.1.1** – Use different strategies to solve addition and subtraction word problems. **MAFS.1.OA.1.2** – Use objects, problems, or equations with a symbol to find the unknown addend in a story problem. **MAFS.1.OA.2.3** – Apply properties of operations as strategies to add and subtract problems. **MAFS.1.OA.2.4** – Write a subtraction number sentence and its related addition number sentence. Model using addends and sums to subtract. Identify patterns in the writing of number families. **MAFS.1.OA.3.5** – Apply concepts of counting on and counting back. Explain why and how a number gets bigger and smaller. Construct a model to show addition or subtraction. **MAFS.1.OA.3.6** – Use manipulatives to demonstrate different strategies for addition and subtraction. Recall addition and subtraction facts with numbers up to 10 fluently. **MAFS.1.OA.4.7** –Explain the meaning of equal sign.	*Continue developing fluency and application with addition and subtraction.* **MAFS.1.OA.1.2** – Solve a story problem with three numbers and an unknown addend. **MAFS.1.NBT.1.1** - Start at any given number less than 120, and count to 120. Fluently read and write numerals to 120. Identify and match objects using one-to-one correspondence with any given number from 0 – 120. **MAFS.1.NBT.2.2** – Identify tens and ones in any two-digit number. Create and explain a 'ten'. Show and explain tens and ones in any two-digit number. Organize a group of objects into tens and ones and tell what number it represents. **MAFS.1.NBT.3.4** – Use objects or drawings to explain strategies used to add. Compose a ten to help solve a problem (2+8+3=10+3=13). Write number sentences to show how numbers were added or subtracted. Explain the reasoning used to solve a problem. **MAFS.1.NBT.3.6-** Use objects or drawings to explain strategies used to subtract. Write number sentences to show how numbers	*Continue developing fluency and application with addition and subtraction.* **MAFS.1.MD.3.4** – Organize up to three categories of data. **MAFS.1.NBT.2.2** – Decompose two-digit numbers **MAFS.1.NBT.3.4** – Add 10 to numbers 1-90. Use objects or drawings to explain strategies used to add. Compose a ten to help solve a problem (2+8+3=10+3=13). Write number sentences to show how numbers were added or subtracted. Explain the reasoning used to solve a problem. **MAFS.1.NBT.3.6** – Subtract multiples of 10 from multiples of 10 in the range 10 to 90. Ex. 80-40=40. Use objects or drawings to explain strategies used to subtract. Write number sentences to show how numbers were added or subtracted. State how many 10s are in a number from 10 – 90.

	Quarter 1	Quarter 2	Quarter 3	Quarter 4
	words like more and less to describe data. Ask and answer questions about data. Use math skills to help interpret data. **MAFS.1.NBT.1.1** – Start at any given number less than 100, and count to 100. Fluently read and write numerals to 50. Identify and match objects using one-to-one correspondence with any given number from 0 – 100.	Demonstrate understanding of equivalence. Use manipulatives to show how the two sides of an equation are equal. Demonstrate that an equation is balanced with the equal sign in any position. **MAFS.1.OA.4.8** – Explain and demonstrate how both sides of an equation are equal. Explain and demonstrate how the unknown number was found. Utilize a variety of strategies to find an unknown number in an equation. Solve an equation to find the unknown number in an addition or subtraction sentence. **MAFS.1.G.1.1** – Identify defining and non-defining attributes. Compare and sort shapes by their attributes. Use defining attributes to identify shapes. Build and draw shapes with given defining attributes (Ex. Draw a closed triangle.) **MAFS.1.G.1.2** – use more than one 2-D or 3-D shape to create a composite shape. Create additional shapes from the composite shapes. Identify shapes within composite shapes. **MAFS.1.MD.3.4** – Ask and answer questions about data. Use math skills to help interpret data.	were added or subtracted. State how many 10s are in a number from 10 – 90. **MAFS.1.G.1.3** – Divide a circle or rectangle into two equal shares or parts. Divide a circle or rectangle into four equal shares or parts. Identify one half of a circle or rectangle. Identify one-fourth of a circle or rectangle. Identify a quarter of a circle or rectangle. Describe the whole as two of, or four of the shares. Understand for these examples that decomposing into more equal shares creates smaller shares **MAFS.1.MD.1.1** – Compare the lengths of objects. Organize up to three objects by their length. Use one object to compare the length of other objects. **MAFS.1.MD.1.a** – Identify a ruler as a tool to measure length. Demonstrate the use of the zero point when measuring the span between two points. Use a ruler to measure lengths shorter than 12 inches. Express a length in terms of inches. **MAFS.1.MD.2.3** – Tell and write time to the hour using an analog clock. Tell and write time to the hour using a digital clock. Tell and write time to the half-hour using an analog clock. Tell and write time to the half hour using a digital clock.	**MAFS.1.NBT.2.3** – Compare two two-digit numbers. Explain a comparison of two two-digit numbers. Use the appropriate symbol (<, =, >) to represent the comparison of two numbers **MAFS.1.NBT.3.5** – Mentally add 10 to any two-digit number. Mentally subtract 10 from any two-digit number. Explain the reasoning used to get the answer. **MAFS.1.MD.2.a** – Identify the value of coins (pennies, nickels, dimes, and quarters). Identify coins. Compute the value of combinations of pennies and/or dimes by counting and by adding. Tell how many pennies, dimes, or quarters equal a dollar.

	Quarter 1	Quarter 2	Quarter 3	Quarter 4
High-Yield Routine(s)	Today's Number Pg. 5 High-Yield Routines	Quick Images (page. 45 High-Yield Routines	Mystery Number (pg. 13 High-Yield Routines)	How Do You Know? (pg. 63 High-Yield Routines)
Target Vocabulary	Add, subtract, addition, subtraction, solve, compare, sum, difference, combine, equal, symbol, addend, equation, strategies, represent, true/false, categories, organize, interpret, count on, more, less	Model, attributes, similarities, differences, build, compare, sort, two-dimensional shapes, three-dimensional shapes, composite, equal, whole, digit, two-digit number, compose, decompose, Mental math, balanced equation	Shares, half/halves, fourth/fourths, quarter/quarters, divide, part, place value, tens, ones, order, less than, greater than, pattern, bundle, digital, analog, hour, minute, half-hour, hour hand, minute hand, ruler, inch, measure, length	Value, penny, nickel, dime, quarter, cent, dollar, coin, money, decompose
Essentials to Remember	• Students need strong number sense and fluency with addition and subtraction to ten. • Data should be reviewed all year. • Students must understand that the equation has to have the same value on both sides of the equal sign.	• Continue to build number sense and fluency with basic facts. • Students must have strong conceptual knowledge of equivalency and +/- in order to work with missing addends.	• Continue to develop fluency with addition and subtraction basic facts. • Use first semester concepts for word problems and applications. • A ruler is a number line. • Relate telling time to dividing a circle in half. • Relate coins to parts of a whole.	• Continue to review concepts from first semester. • Extend double-digit addition and subtraction to include money (dimes and pennies).

Second Grade Florida Standards Math

Revised, 2014

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

Second 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.2

In Grade 2, instructional time should focus on four critical areas: (1) extending understanding of base-ten notation; (2) building fluency with addition and subtraction; (3) using standard units of measure; and (4) describing and analyzing shapes.

1. Students extend their understanding of the base-ten system. This includes ideas of counting in fives, tens, and multiples of hundreds, tens, and ones, as well as number relationships involving these units, including comparing. Students understand multi-digit numbers (up to 1000) written in base-ten notation, recognizing that the digits in each place represent amounts of thousands, hundreds, tens, or ones (e.g., 853 is 8 hundreds + 5 tens + 3 ones).
2. Students use their understanding of addition to develop fluency with addition and subtraction within 100. They solve problems within 1000 by applying their understanding of models for addition and subtraction, and they develop, discuss, and use efficient, accurate, and generalizable methods to compute sums and differences of whole numbers in base-ten notation, using their understanding of place value and the properties of operations. They select and accurately apply methods that are appropriate for the context and the numbers involved to mentally calculate sums and differences for numbers with only tens or only hundreds.
3. Students recognize the need for standard units of measure (centimeter and inch) and they use rulers and other measurement tools with the understanding that linear measure involves an iteration of units. They recognize that the smaller the unit, the more iterations they need to cover a given length.
4. Students describe and analyze shapes by examining their sides and angles. Students investigate, describe, and reason about decomposing and combining shapes to make other shapes. Through building, drawing, and analyzing two- and three-dimensional shapes, students develop a foundation for understanding area, volume, congruence, similarity, and symmetry in later grades.

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 × 5 + 7 × 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.

MAFS.K12.MP.8.1 : **Look for and express regularity in repeated reasoning.**

Mathematically proficient students notice if calculations are repeated, and look both for general methods and for shortcuts. Upper elementary students might notice when dividing 25 by 11 that they are repeating the same calculations over and over again, and conclude they have a repeating decimal. By paying attention to the calculation of slope as they repeatedly check whether points are on the line through (1, 2) with slope 3, middle school students might abstract the equation $(y – 2)/(x – 1) = 3$. Noticing the regularity in the way terms cancel when expanding $(x – 1)(x + 1)$, $(x – 1)(x^2 + x + 1)$, and $(x – 1)(x^3 + x2 + x + 1)$ might lead them to the general formula for the sum of a geometric series. As they work to solve a problem, mathematically proficient students maintain oversight of the process, while attending to the details. They continually evaluate the reasonableness of their intermediate results.

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.

9. **Have students respond in a variety of ways to questions. Questions should challenge student thinking.** (See question types in the Test Item Specifications.)
10. **Important Concepts Across Grade Levels:**
    a. Equivalence – students need to understand that the answer does not always follow the = sign (ex. □+3 = 2+4, □ = 4+3)
    b. Fractions – students must experience and understand equal parts of a whole leading into formal fraction instruction in third grade.
    c. Use of the number (a ruler is an example of a numberline) – facility with the numberline is critical for later work with fractions.
    d. Solving problems by drawing the concepts – Students who learn to use fraction bars and to draw fractions and fractional combinations can better visualize the m ore difficult operations with fractions.
11. **Math will be taught for 90 minutes every day.** This does not have to be uninterrupted.
12. **Attention must be paid to the *Cognitive Complexity* of items to help determine the rigor of the instruction and expectation.**

Math Progress Monitoring

Progress monitoring must be ongoing in classrooms throughout the year. This includes, but is not limited to, the following:

1. Ongoing checks for development of fluency with basic math facts;
2. Formative assessments on math concepts like equivalency, number, parts of a whole, etc., as appropriate to the grade level standards;
3. Formative assessment through interaction with students as they explain problem solving. It is critical to catch and correct misconceptions early.
4. Review of responses to the High-Yield Routines.

Grading should accurately reflect the students' accomplishment of the grade level standards. If a student is making an 'A', that means that the student is able to, after instruction, independently perform at an above-average level. Be careful of overweighting grades with work habits and citizenship considerations. Grades should reflect a variety of assessments that allow the students to demonstrate proficiency.

Formal Progress Monitoring will occur quarterly.
All students will participate in formal progress monitoring quarterly using Discovery Education Assessments.
Data will be reviewed at the district, school, and classroom level.
Follow-up instruction on for students who are not performing on level is required.

Resources:

- CPALMS – lesson resources and formative assessments are linked to the standards in CPALMS.
- www.FSAssessments.org - This is the link to the online portal with information on the new Florida assessments. Teachers are expected to review and use the test item specifications for their respective grade levels. You will have to cut and paste this address into your browser address bar.
- Math iXL – for ongoing reinforcement and for targeted practice of skills. Please note that this practice does not preclude the necessity for ongoing instruction and problem solving with answer justification in the classroom.

Second Grade Florida Standards for Math

BODY OF KNOWLEDGE: OPERATIONS AND ALGEBRAIC THINKING

Cluster 1: Represent and solve problems involving addition and subtraction.

Standard Identifier	Standard with Complexity Rating	Conceptual and Procedural Understanding – The student understands that:	Student Friendly Language Learning Targets
MAFS.2.OA.1.1	Use addition and subtraction within 100 to solve one- and two-step word problems involving situations of adding to, taking from, putting together, taking apart, and comparing, with unknowns in all positions, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem. *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts	• Some problems require multiple steps when solving. • Vocabulary words can be helpful in determining the operation necessary to solve addition and subtraction problems. • Symbols can be used to represent something unknown. • Multiple strategies can be used to arrive at a common solution. • Number sentences, models, and drawings can be used to represent word problems. • Word problems represent real-life situations where math skills are applied. **The student is able to:** • Distinguish word problem types. [See table 1 at the end of this document.] • Determine relevant information in a word problem. • Use a variety of strategies to solve one- and two-step addition and subtraction word problems. • Represent understanding with objects, drawings, equations, and words. • Describe more than one way to solve a problem.	• I can find an unknown in an equation. • I can represent the unknown with a symbol. • I can solve two-step word problems. • I can describe the strategies I use to solve a word problem.
Key Vocabulary: position, addition, subtraction, represent, unknown, one and two-step problems			
Resources:			

Standard Identifier	Standard with Complexity Rating	Conceptual and Procedural Understanding – The student understands that:	Student Friendly Language Learning Targets
MAFS.2.OA.1.a	Determine the unknown whole number in an equation relating four or more whole numbers. For example, determine the unknown number that makes the equation true in the equations 37 + 10 + 10 = _____ + 18, ? + 6 = 13 – 4, and 15-9 = 7+☐.	• More than two numbers can be added in an equation. • The = sign indicates that both sides have the same value. • Equations are not always written in the same order. • If a number is missing from an equation, one can use math operations to determine what the missing number is. **The student is able to:** • Use addition and subtraction to determine the unknown whole number in an equation. • Complete equations so that both sides have the same value.	• I can add and subtract to find the missing number in an equation. • I can make the numbers on both sides of an = symbol equal the same value.
Key Vocabulary: whole number, unknown, equation, true			
Resources:			

Cluster 2: Add and subtract within 20.			
Standard Identifier	**Standard with Complexity Rating**	**Conceptual and Procedural Understanding – The student understands that:**	**Student Friendly Language Learning Targets**
MAFS.2.OA.2.2	Fluently add and subtract within 20 using mental strategies. By end of Grade 2, know from memory all sums of two one-digit numbers. *Cognitive Complexity:* Level 1: Recall	• Adding/combining two (positive) numbers will result in a greater number. • Subtracting/taking away (positive whole numbers will result in a smaller number. • Multiple strategies can be used to solve the same problem mentally. **The student is able to:** • Find the sum of adding two numbers between 0-9. • Memorize the sums for two one-digit numbers. • Apply different strategies to add and subtract with 2	• I can add numbers to 20 in my head. • I can subtract numbers under 20 in my head. • I know the sums of one-digit addition problems.
Key Vocabulary: mental strategies, one-digit, sums			
Resources:			

Cluster 3: Work with equal groups of objects to gain foundations for multiplication.			
Standard Identifier	**Standard with Complexity Rating**	**Conceptual and Procedural Understanding – The student understands that:**	**Student Friendly Language Learning Targets**
MAFS.2.OA.3.3	Determine whether a group of objects (up to 20) has an odd or even number of members, e.g., by pairing objects or counting them by 2s; write an equation to express an even number as a sum of two equal addends. *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts	• Partnering objects can help us see if a number is even or odd. • All whole numbers are either even or odd. • An even number can be described as having none left over when all objects are partnered. • An odd number can be described as having one left over when all objects are partnered. **The student is able to:** • Count by two's. • Pair objects. • Write an equation with two equal addends. • Explain why the sum of two equal addends will always be even. • Prove that numbers are even or odd.	• I can tell if a number is odd or even by counting by two's. • I can tell if a number is odd or even by pairing objects. • I can use doubles facts to find an even number. • I can write an equation to show an even sum of two equal addends.
Key Vocabulary: odd, even, equal, addends			
Resources:			

Standard Identifier	Standard with Complexity Rating	Conceptual and Procedural Understanding – The student understands that:	Student Friendly Language Learning Targets
MAFS.2.OA.3.4	Use addition to find the total number of objects arranged in rectangular arrays with up to 5 rows and up to 5 columns; write an equation to express the total as a sum of equal addends. *Cognitive Complexity:* Level 1: Recall	• Objects can be arranged in rows and columns to form an array. • An array can be represented by an equation as the sum of equal addends. • Repeated addition is the foundation of multiplication. **The student is able to:** • Show (using manipulatives or pictures) or explain how an array can be used to show repeated addition. • Show (using manipulatives or pictures) or explain a reverse process to form an array from the equation. • Write a repeated addition equation to represent an array.	• I can create an array. • I can use an array to write an equation.
Key Vocabulary: total, rectangular array, row, column			
Resources:			

BODY OF KNOWLEDGE: NUMBER AND OPERATIONS IN BASE 10

Cluster 1: Understand place value.

Standard Identifier	Standard with Complexity Rating	Conceptual and Procedural Understanding – The student understand that:	Student Friendly Language Learning Targets
MAFS.2.NBT.1.1	Understand that the three digits of a three-digit number represent amounts of hundreds, tens, and ones; e.g., 706 equals 7 hundreds, 0 tens, and 6 ones. Understand the following as special cases: a. 100 can be thought of as a bundle of ten tens — called a "hundred. b. The numbers 100, 200, 300, 400, 500, 600, 700, 800, 900 refer to one, two, three, four, five, six, seven, eight, or nine hundreds (and 0 tens and 0 ones). *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts	• The value of a digit in our number system is determined by its place value position. • Our number system is based on groups of ten. • The highest digit that any place can hold is nine. **The student is able to:** • Label a three-digit number with ones, tens, and hundreds. • Identify the value of each digit in a three-digit number. • Represent a three-digit number using blocks or a picture. • Regroup quantities into groups of ten to be able to write the number in digit form. (e.g. 53 tens is regrouped as 5 hundreds and 3 tens and written as "530", 24 ones is regrouped as 2 tens and 4 ones and written as "24")	• I can identify the ones digit, tens digit, and hundreds digit in a three-digit number. • I can identify the value of each digit. • I can use manipulatives or a picture to show the ones, tens, and hundreds in a three-digit number.

Key Vocabulary: Digit Ones Tens Hundreds Place Place Value

Resources:

Standard Identifier	Standard with Complexity Rating	Conceptual and Procedural Understanding – The student understand that:	Student Friendly Language Learning Targets
MAFS.2.NBT.1.2	Count within 1000; skip-count by 5s, 10s, and 100s.	• Skip-counting is an efficient way to count. • Skip-counting creates a continuing pattern. **The student is able to:** • Apply a variety of models to represent groups of 5's, 10's and 100's. • Count by 1's starting from any number less than 1,000. • Use skip-counting to efficiently count by 5's starting from any number less than 1,000. • Use skip-counting to efficiently count by 10's to 100 starting from any number less than 1,000. • Use skip counting to efficiently count by 100's starting from any number less than 1,000. • Describe the patterns created by skip-counting.	• I can count by 1's, 5's, 10's, or 100's. • I can create a continuing pattern by skip-counting. • I can use manipulatives or a picture to help me skip-count by 5's, 10's, or 100's. • I can use manipulatives or a picture to show how I skip-count by 5's, 10's, or 100's.

Key Vocabulary: skip count repeated pattern growing pattern

Resources:

Standard Identifier	Standard with Complexity Rating	Conceptual and Procedural Understanding – The student understand that:	Student Friendly Language Learning Targets
MAFS.2.NBT.1.3	Read and write numbers to 1000 using base-ten numerals, number names, and expanded form.	• That numbers are sequential and composed of ones, tens, hundreds, and thousands **The student is able to:** • Read numerals to 1000. • Write numerals to 1000. • Write the expanded form of numbers to 1000. • Write number names.	• I can read and write numerals to 1000. • I can write number names. • I can write the expanded form of numbers to 1000.
Key Vocabulary: base-ten numerals, expanded form			
Resources:			

Standard Identifier	Standard with Complexity Rating	Conceptual and Procedural Understanding – The student understand that:	Student Friendly Language Learning Targets
MAFS.2.NBT.1.4	Compare two three-digit numbers based on meanings of the hundreds, tens, and ones digits, using >, =, and < symbols to record the results of comparisons.	• Place value determines the value of the number. • When comparing two numbers, one must first compare the digits in the highest place. **The student is able to:** • Compare two three-digit numbers to determine greater than, less than, or equal to. • Record comparisons using >, <, and =. • Explain why one three-digit number is greater than, less than, or equal to another three-digit number.	• I can use symbols (<, >, and =) to compare two 3-digit numbers. • I can use words, such as greater than, less than, and equal to, to compare two 3-digit numbers.
Key Vocabulary: compare place value digit hundreds tens ones less than greater than equal to			
Resources:			

Cluster 2: Use place value understanding and properties of operations to add and subtract.

Standard Identifier	Standard with Complexity Rating	Conceptual and Procedural Understanding – The student understand that:	Student Friendly Language Learning Targets
MAFS.2.NBT.2.5	Fluently add and subtract within 100 using strategies based on place value, properties of operations, and/or the relationship between addition and subtraction.	• The value of a number is defined by its place value position. • There is a relationship between addition and subtraction (fact families). • A variety of strategies or properties can be used to solve addition and subtraction problems. **The student is able to:** • Add and subtract within 100 using a variety of strategies. • Apply and explain properties of operations to add numbers within 100.	• I can add and subtract numbers to 100 quickly and accurately. • I can show how the properties are related.
Key Vocabulary: fact families properties of operations fluently place value strategies expanded form			
Resources:			

Standard Identifier	Standard with Complexity Rating	Conceptual and Procedural Understanding – The student understand that	Student Friendly Language Learning Targets
MAFS.2.NBT.2.6	Add up to four two-digit numbers using strategies based on place value and properties of operations.	• New numbers can be composed based on place value (13 + 7 tens is the same as 8 tens and 3 ones). • Base ten blocks represent place value and place value is how much a number is worth. • Vertically-arranged number sentences need to be aligned by place value. **The student is able to:** • Calculate addition problems with up to 4 two-digit numbers. • Apply a variety of strategies, including properties of addition, to solve addition problems. • Apply place value to solve mental math problems (e.g. making groups of 10). • Prove/explain solutions using manipulatives.	• I can add up to 4 two-digit numbers using many strategies.
Key Vocabulary: add strategies place value properties of operations two-digit number			
Resources:			

Standard Identifier	Standard with Complexity Rating	Conceptual and Procedural Understanding – The student understand that:	Student Friendly Language Learning Targets
MAFS.2.NBT.2.7	Add and subtract within 1000, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method. Understand that in adding or subtracting three-digit numbers, one adds or subtracts hundreds and hundreds, tens and tens, ones and ones; and sometimes it is necessary to compose or decompose tens or hundreds.	• The value of a digit in our number system is determined by its place value position. • Numbers in the 10s and 100s place values can be composed and decomposed to solve addition and subtraction problems within 1000. • There is a relationship between addition and subtraction. (Fact families). • A variety of strategies of properties can be used to solve addition and subtraction problems. **The student is able to:** • Construct fact families to show relationships between adding and subtracting. • Decompose and compose 10s and 100s when necessary. • Add and subtract using a variety of strategies and models. • Recognize and explain the properties of different operations.	• I can add and subtract numbers to 999 in many ways using a strategy, model or drawing that makes sense to me. • I can use place value understanding to regroup when adding or subtracting if I need to. • I can record my thinking.
Key Vocabulary: strategies place value properties decompose numbers compose numbers concrete regrouping hundreds tens ones			
Resources:			

Standard Identifier	Standard with Complexity Rating	Conceptual and Procedural Understanding – The student understand that:	Student Friendly Language Learning Targets
MAFS.2.NBT.2.8	Mentally add 10 or 100 to a given number 100 – 900, and mentally subtract 10 or 100 from a given number 100 – 900.	• Each digit in a three-digit number has a specific place value. • Adding and subtracting by 10s and 100s has a predictable pattern that can be found by skip counting. • The ability to add and subtract by 10 and 100 mentally is essential to efficient problem solving. **The student is able to:** • Use mental math and place value concepts to add or subtract 10 or 100 to/from any number 0 to 900. • Apply place value to solve mental math problems. • Apply skip counting strategy to subtract 10 or 100 from any number from 100 - 900.	• I can add 10 or 100 to any number from 100-900 in my head without counting. • I can subtract 10 or 100 from any number from 100-900 in my head without counting.
Key Vocabulary: add subtract mental math number 100 – 900 place value skip count digit hundred chart base 10 blocks			
Resources:			

Standard Identifier	Standard with Complexity Rating	Conceptual and Procedural Understanding – The student understand that:	Student Friendly Language Learning Targets
MAFS.2.NBT.2.9	Explain why addition and subtraction strategies work, using place value and the properties of operations.	• Strategies help us solve problems efficiently. • The value of a digit in our number system is determined by its place value position. • Knowledge of fact families will help solve related addition and subtraction problems. • Knowledge of addition properties will help solve addition problems. **The student is able to:** • Apply strategies to solve problems. • Show or draw the strategy used to solve an addition or subtraction problem. • Apply place value and the properties of operations to solve addition and subtraction problems.	• I can show, draw, or explain the strategies I use to solve addition and subtraction problems.
Key Vocabulary: addition and subtraction strategies, place value, properties of operations			
Resources:			

BODY OF KNOWLEDGE: MEASUREMENT AND DATA

Cluster 1: Measure and estimate lengths in standard units.

Standard Identifier	Standard with Complexity Rating	Conceptual and Procedural Understanding – The student understand that:	Student Friendly Language Learning Targets
MAFS.2.MD.1.1	Measure the length of an object to the nearest inch, foot, centimeter, or meter by selecting and using appropriate tools such as rulers, yardsticks, meter sticks, and measuring tapes. by selecting and using appropriate tools such as rulers, yardsticks, meter sticks, and measuring tapes. Cognitive Complexity: Level 2: Basic Applications Of Skills & Concepts	• Tools are used to measure length. • Some tools are more useful than others depending on what is being measured. • Accuracy is essential when measuring. **The student is able to:** • Measure accurately the length of objects using a variety of measuring tools. • Choose appropriate tools to measure length efficiently. • Record measurements with accuracy.	• I can use the correct measuring tool to measure lines and/or objects in both standard and metric units (inches, feet, centimeters, meters). • I can explain which measuring tool would be a good choice, depending on what I want to measure (rulers, yardsticks, meter sticks, measuring tapes).

Key Vocabulary: inch, centimeter, foot ,yard, meter, measure, unit, length, ruler, yardstick, meter stick, and measuring tape

Resources:

Standard Identifier	Standard with Complexity Rating	Conceptual and Procedural Understanding – The student understand that:	Student Friendly Language Learning Targets
MAFS.2.MD.1.2	Describe the inverse relationship between the size of a unit and number of units needed to measure a given object. Example: Suppose the perimeter of a room is lined with one-foot rulers. Now, suppose we want to line it with yardsticks instead of rulers. Will we need more or fewer yardsticks than rulers to do the job? Explain your answer. *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts	• Shorter units of measure will give a greater number of units than a longer unit of measure when used to measure the same object. • Even though there are several units of measure to choose from, some units are more efficient than others. **The student is able to:** • Measure length using standard and non-standard units (inches, feet, yards, cm, m, paper clips, etc.; see standard MD.2.1 for more details). • Choose appropriate units of measure (see MD.2.1). • Compare two measurements of an object's length, each done with a different appropriate unit. (e.g. 3 paper clips = 4 unifix cubes) • Describe how the size of the unit affects the measurement. (Smaller unit means greater number in measurement.)	• I can measure the length of an object using different units. • I can compare different units used to measure the length of a single object.

Key Vocabulary: length, comparison, measure length units ,standard unit ,foot, inch, yard, meter, and centimeter

Resources:

Standard Identifier	Standard with Complexity Rating	Conceptual and Procedural Understanding – The student understand that:	Student Friendly Language Learning Targets
MAFS.2.MD.1.3	Estimate lengths using units of inches, feet, yards, centimeters, and meters. *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts	• Estimating means using what we know to make an educated guess of something. • We can use measurements we know as a reference point for making an estimate. **The student is able to:** • Estimate lengths in inches, feet, meters, or centimeters. • Measure the true length using units of inch, foot, meter and centimeter to check estimates. • Use what we know/points of reference to make an estimation of length. • Identify points of reference by comparing common objects with specific lengths (e.g. feet in a football field, how many centimeters wide your hand is).	• I can estimate the length of an object in inches. • I can estimate the length of an object in feet. • I can estimate the length of an object in centimeters. • I can estimate the length of an object in meters.

Key Vocabulary: estimation, foot, inch, centimeter, meter, unit, length, measurement

Resources:

Standard Identifier	Standard with Complexity Rating	Conceptual and Procedural Understanding – The student understand that:	Student Friendly Language Learning Targets
MAFS.2.MD.1.4	Measure to determine how much longer one object is than another, expressing the length difference in terms of a standard length unit. *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts	• Measuring lengths to compare objects must be done using the same units. • It is important to use the same units when comparing the length of two objects. **The student is able to:** • Measure the length of two objects using the same standard unit. • Calculate the difference in length between two objects using the same units.	• I can find the difference between the lengths of two objects by measuring them using the same units.

Key Vocabulary: measure, length difference, standard units, compare

Resources:

Cluster 2: Relate addition and subtraction to length.

Standard Identifier	Standard with Complexity Rating	Conceptual and Procedural Understanding – The student understand that:	Student Friendly Language Learning Targets
MAFS.2.MD.2.5	Use addition and subtraction within 100 to solve word problems involving lengths that are given in the same units, e.g., by using drawings (such as drawings of rulers) and equations with a symbol for the unknown number to represent the problem. *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts	• Unknown lengths can be found by using a variety of mathematical tools/strategies such as number lines, drawings, rulers, or equations. • A symbol can be used in an equation to represent an unknown length. • An unknown length can be found using either addition or subtraction instead of measuring. • How to select and use important information from a story problem to develop a strategy for finding an unknown length. **The student is able to:** • Demonstrate while explaining how to find an unknown length using mathematical tools/strategies such as number lines, drawings, equations, or rulers. • Choose an appropriate tool/strategy e.g. a number line, drawing, equation, or ruler to find an unknown length. • Solve an equation to find an unknown length using either addition or subtraction. • Identify important information from a story problem before developing a strategy to figure out an unknown length. • Use drawings to help solve problems involving length.	• I can use addition and subtraction to find unknown lengths in word problems. • I can use a symbol to represent an unknown length in an equation. • I can use mathematical tools/strategies such as number lines, drawings, rulers, and equations to find an unknown length.

Key Vocabulary: lengths addition subtraction same units equation symbol unknown word problems represent

Resources:

Standard Identifier	Standard with Complexity Rating	Conceptual and Procedural Understanding – The student understand that:	Student Friendly Language Learning Targets
MAFS.2.MD.2.6	Represent whole numbers as lengths from 0 on a number line diagram with equally spaced points corresponding to the numbers 0, 1, 2, ..., and represent whole-number sums and differences within 100 on a number line diagram. *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts	• Whole numbers on a number line are equally spaced. • Addition and subtraction sentences can be solved using a number line. • Whole numbers, sums and differences can be represented as lengths on a number line. • Any standard measuring tool for length (e.g., rulers, yardsticks, etc.) could represent a number line. **The student is able to:** • Show and explain how to use a number line to solve an addition or subtraction problem. • Create a number line with equally-spaced sections to solve an addition or subtraction problem. • Represent whole numbers as lengths on a number line. • Explain the importance of equally spacing numbers on a number line.	• I can show equally spaced whole numbers on a number line. • I can show how to add numbers between 0 and 100 on a number line. • I can show how to subtract numbers between 0 and 100 on a number line.

Key Vocabulary: number line diagram equally-spaced whole numbers addition sum subtraction difference length measurement number sentence

Resources:

Cluster 3: Work with time and money.

Standard Identifier	Standard with Complexity Rating	Conceptual and Procedural Understanding – The student understand that:	Student Friendly Language Learning Targets
MAFS.2.MD.3.7	Tell and write time from analog and digital clocks to the nearest five minutes. *Cognitive Complexity:* Level 1: Recall	• Time can be stated in five minute intervals. **The student is able to:** • Tell and write time to the nearest five minutes on digital and analog clocks.	• I can tell and write time to the nearest five minutes on different styles of clocks. • I can use a.m. and p.m. when telling and writing time.
Key Vocabulary: analog clock digital clock a.m. and p.m. minute hour parts of the clock (hour and minute hand)			
Resources:			

Standard Identifier	Standard with Complexity Rating	Conceptual and Procedural Understanding – The student understand that:	Student Friendly Language Learning Targets
MAFS.2.MD.3.8	Solve one-and two steps word problems involving dollar bills(single, fives, tens, twenties, and hundreds) or coins(quarters, dimes nickels, and pennies) using $ and ¢ symbols appropriately. Word problems may involve addition, subtraction, and equal groups situations[1]. Example: The cash register shows that the total for your purchase is 59¢. You gave the cashier three quarters. How much change should you receive form the cashier? a. Identify the value of coins and paper currency. b. Compute the value of any combination of coins within one dollar. c. Compute the value of any combinations of dollars(e.g., If you have three ten-dollars bills, one five-dollars bill, and tow one-dollar bills, how much money do you have?). d. Relate the value of pennies, nickels, dimes, and quarters to other coins and to the dollar (e.g., There are five nickels in one quarter. There are two and a half dimes in one quarter. There are twenty nickels in one dollar). ([1]See Table1 at the end of this document) *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts	• They can use a variety of coins and bills to solve word problems. • Bills and coins have standard values. • Symbols and decimals display monetary value. • The same amount of money can usually be shown with different combinations of coins and/or bills. **The student is able to:** • Count an assortment of like or unlike coins and/or bills • Find the appropriate coins to represent a given amount. • Recognize what operation is required to solve the word problem involving money. • Write the corresponding symbols ($ and ¢) to show the appropriate amount.	• I can solve story problems by using dollar bills, quarters, dimes, nickels, and pennies. • I can use the $ and ¢ symbols when solving money problems. • I can count different combinations of coins and bills. • I can show many different ways to make the same value.
Key Vocabulary: word problems, dollar bills, quarters, dimes, nickels, pennies, symbol, dollar sign, cent sign, value, amount, decimal, money, currency, adding, subtracting, counting on			
Resources:			

Cluster 4: Represent and interpret data.

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 understand that:	Student Friendly Language Learning Targets
MAFS.2.MD.4.9	Generate measurement data by measuring lengths of several objects to the nearest whole unit, or by making repeated measurements of the same object. Show the measurements by making a line plot, where the horizontal scale is marked off in whole-number units. *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts	• Objects can be measured by any equal unit. • Line plots are one standard way to represent accurate lengths (rulers are accurate measurements, where hands vary in size). **The student is able to:** • Measure an object with standard units. • Represent data on a line plot (ruler). • Measure the same object with various units (ex. measure a pencil with paperclips then unifix cubes, measure with inches and centimeters).	• I can measure lengths of objects. • I can use many items to measure the same object. • I can measure to the closest number on a line plot. (ex. ruler, yardstick, measuring tape. etc.)

Key Vocabulary: measurement, length, whole, unit, line plot, horizontal

Resources:

Standard Identifier	Standard with Complexity Rating	Conceptual and Procedural Understanding – The student understand that:	Student Friendly Language Learning Targets
MAFS.2.MD.4.10	Draw a picture graph and a bar graph (with single-unit scale) to represent a data set with up to four categories. Solve simple put-together, take-apart, and compare problems using information presented in a bar graph. *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts	• Graphs represent information gathered from a group. • Graphs can be used to organize information. • Graphs represent data which can be used to help solve various problems. **The student is able to:** • Collect data from a group. • Draw bar/picture graph template (lines, title, numbers). • Record data as a bar/picture graph with a single-unit scale. • Interpret data from a graph to solve simple problems (take-apart, compare, put-together).	• I can create a picture graph with four different choices. • I can create a bar graph with four different choices. • I can solve problems by using information from a simple bar graph.

Key Vocabulary: picture graph, bar graph, data, single-unit scale

Resources:

BODY OF KNOWLEDGE: GEOMETRY

Cluster 1: Reason with shapes and their attributes.

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 and Complexity Rating	Conceptual and Procedural Understanding – The student understand that:	Student Friendly Language Learning Targets
MAFS.2.G.1.1	Recognize and draw shapes having specified attributes, such as a given number of angles or a given number of equal faces. Identify triangles, quadrilaterals, pentagons, hexagons, and cubes. *Cognitive Complexity:* Level 1: Recall	• The name of a shape is determined by its specific attributes. • Triangles, quadrilaterals, pentagons, hexagons and cubes each have a defining number of angles and faces/sides. **The student is able to:** • Recognize and draw shapes when given the attributes such as angles and faces. • Identify and name triangles, quadrilaterals, pentagons, hexagons and cubes.	• I can name and draw shapes for the given number of angles and faces. • I can recognize and name triangles, quadrilaterals, pentagons, hexagons, and cubes.
Key Vocabulary: faces, angle, attribute, triangle, quadrilateral, pentagon, hexagon, cube			
Resources:			

Standard Identifier	Standard and Complexity Rating	Conceptual and Procedural Understanding – The student understand that:	Student Friendly Language Learning Targets
MAFS.2.G.1.2	Partition a rectangle into rows and columns of same-size squares and count to find the total number of them. *Cognitive Complexity:* Level 1: Recall	• Rectangles can be partitioned into equal parts. • Rows and columns is a quick and effective way to partition/divide a shape. **The student is able to:** • Partition a rectangle into equal squares. • Count the number of equal squares needed to cover a rectangle. • Using a given rectangle that has been partitioned into equal squares, count the number of squares in each row/column to find the total number.	• I can partition/divide a rectangle into equal squares. • I can count the number of squares needed to fill a rectangle.
Key Vocabulary: rectangle, square, partition, divide, equal, row, column			
Resources:			

Standard Identifier	Standard and Complexity Rating	Conceptual and Procedural Understanding – The student understand that:	Student Friendly Language Learning Targets
MAFS.2.G.1.3	Partition circles and rectangles into two, three, or four equal shares, describe the shares using the words *halves, thirds, half of, a third of,* etc., and describe the whole as two halves, three thirds, four fourths. Recognize that equal shares of identical wholes need not have the same shape. *Cognitive Complexity:* Level 1: Recall	• Shapes can be divided into equal shares in various ways. • Equal shares can be called halves, thirds, fourths, etc. **The student is able to:** • Identify if a circle or rectangle has been divided into equal or unequal shares. • Partition/divide a circle or rectangle into two, three, or four equal shares. • Describe the whole as two halves, three thirds, or four fourths. • Divide a circle or rectangle into equal-sized parts in different ways.	• I can figure out if a shape has been divided into equal or unequal parts. • I can partition/divide circles and rectangles into two, three, or four equal parts. • I can describe the whole as two halves, three thirds, or four fourths. • I can partition/divide a square or rectangle into equal parts in different ways.
Key Vocabulary: partition, circle, rectangle, equal shares, unequal, whole, half, third, fourth			
Resources:			

Math Vocabulary			
Comparing	Equation	Symbol	Unknown
Sum	Digit	Addition	Subtraction
Odd	Even	Addend	Total
Array	Expanded form	Base-ten	Place value
Strategy	Compose	Decompose	Measure
Length	Names of measurement tools	Estimate	Inches
Unit	meters	centimeters	feet
Point	Difference	Analog	Digital
Data	Line plot	Horizontal scale	Picture graph
Bar graph	Attribute	Angle	Face
Triangle	Quadrilateral	Pentagon	Hexagon
Cube	Square	Row	Column
Rectangle	Partition	Circle	Equal shares
Halves	Thirds	Half of	A third of
Fourths	whole		

Sample Vocabulary Categories:

Geometry	Shares	Measurement	Money
Triangle	Thirds	Inches	Dollar
Cube	Fourths	Fee	Quarter
Rectangle	Halves	Measure	Dime
Square	Equal shares	unit	Cent
Hexagon	A third of		penny

Second Grade MATH Pacing Guide

	Quarter 1	Quarter 2	Quarter 3	Quarter 4
Overarching Concepts	Operations and Algebraic thinking; Number and operations in base 10; *ongoing development of automaticity of recall for basic addition and subtraction facts*	Practice 2 and 3 digit numbers and concepts. *ongoing development of automaticity of recall for basic addition and subtraction facts*	Practice of 3-digit concepts, measurements, data and geometry; *ongoing development of automaticity of recall for basic addition and subtraction facts*	Measurement and Data; *mastery of automaticity of recall for basic addition and subtraction facts*
Standards/ Learning Targets with Aligned Resources	MACC.2.OA.3.3 MACC.2.NBT.1.2 MACC.2.NBT.1.3 **Resource:** *Chapter 1* MACC.2.OA.1.a MACC.2.OA.1.1 MACC.2.OA.2.2 MASS.2.OA.3.4 **Resource:** *Chapter 3* MACC.2.NBT.2.5 MACC.2.NBT.2.6 MACC.2.NBT.2.9 **Resource:** *Chapter 4*	MAFS.2.NBT.1.1 MAFS.2.NBT.1.3 MAFS.2.NBT.1.4 MAFS.2.NBT.1.4 MAFS.2.NBT.2.8 **Resource:** *Chapter 2* MAFS.2.OA.1.1 MAFS.2.OA.1.a MAFS.2.NBT.2.5 MAFS.2.NBT.2.9 **Resource:** *Chapter 5*	MAFS.2.NBT.2.7 **Resource:** *Chapter 6* MAFS.2.6.1.1 **Resource:** *Chapter 10* MAFS.2.6.1.1 MAFS.2.6.1.2 MAFS.2.6.1.3 **Resource:** *Chapter 11*	MAFS.2.MD.3.7 MAFS.2.MD.3.8 **Resource:** *Chapter 7* MAFS.2.MD.1.1 2.MD.1.2 2.MD.1.3 2.MD.1.4 2.MD.2.5 2.MD.2.6 2.MD.2.9 **Resource:** *Chapter 8* MAFS.MD.1.1 MD.1.2 MD.1.3 MD.1.4 MD.2.5 MD.2.6 **Resource:** *Chapter 9*
High-Yield Routine(s) (Refer to Book)	**Today's Numbers**- Start with first 10 minutes of the 90 minute block. Teachers will choose one out of the 10 options each day.	**Number Lines**- Have students use to show addition, subtraction, skip counting, even, odd	**How do you know?-** Even, odd, shape attributes, equivalency	**Alike and Different-** Venn-diagram, fractions, shapes, numbers, digits, data, clocks, graphs(2)
Target Vocabulary	• Place Value • Subtraction • Base Tens • Fluently • Even • Odd • Digits	• Fact Families • Hundred • Represented • Concrete • Pictorial • Model • Thousand	• Strategies • Place Value • Decompose Numbers • Compose Numbers • Concrete • Regrouping • Hundreds	• Analog Clock • Digital Clock • A.M/ P.M • Minute/ Hour hands on the clock • Word Problems • Dollar Bills • Quarters

	Quarter 1	Quarter 2	Quarter 3	Quarter 4
	• Addition • Pattern • Equation • Equivalent • Expanded • Form • Sums • Skip Counting • Addends • Unknown • Doubles • Differences • Arrays • Row • Tens • Ones • Regroup	• Expanded • Form • Make a Model • Less Than • Greater Than • Equal To • Break Apart • Difference • A Logarithm • Digit • Horizontal • Vertical • Diagram • Symbol • Multi-step	• Tens • Ones • Survey • Data • Tally Chart • Tally Mark • Picture Graph • Key • Bar Graph • Single Unit Scale • Faces • Angle • Attribute • Triangle, Quadrilateral, Pentagon, Hexagon, Cube, Rectangle, Square • Partition, Divide • Equal • Row, Column • Rectangular Prism, Sphere, Cylinder • Face • Edge • Vertex • Vertices • Side • Halves, Thirds, Fourths, parts, whole • Equal	• Dimes • Nickels • Pennies • Symbols • Dollar sign • Cent sign • Value • Amount • Decimal • Money • Currency • Adding • Subtracting • Measurement • Length • Whole Unit • Line Plot • Horizontal • Comparison • Standard Units • Foot, Inch, Yard • Meter, Centimeter • Estimation • Difference • Addition • Unknown • Represent
Essentials to Remember	*Be sure to supplement MAFS.2.OA.1.a in chapter 3. Provide extra materials for students to use as manipulatives. Have students explain their answers. *Students are expected to have complete automaticity of recall of basic addition/subtraction facts by the end of the year.*	Make sure to relate concepts of the number line and equal iterations to a ruler. *Students are expected to have complete automaticity of recall of basic addition/subtraction facts by the end of the year.*	Relate fractions to the clock and to money. *Use MAFS.2.OA.1.a in this chapter as well. *Students are expected to have complete automaticity of recall of basic addition/subtraction facts by the end of the year.*	*MAFS.2.MD.1.4- found in both chapters. Be sure to supplement in chapter 8 and 9. *May want to practice elapsed time in Ch.7.

Table 1. Common addition and subtraction situations.[6]

	result Unknown	Change Unknown	Start Unknown
add to	Two bunnies sat on the grass. Three more bunnies hopped there. How many bunnies are on the grass now? 2 + 3 = ?	Two bunnies were sitting on the grass. Some more bunnies hopped there. Then there were five bunnies. How many bunnies hopped over to the first two? 2 + ? = 5	Some bunnies were sitting on the grass. Three more bunnies hopped there. Then there were five bunnies. How many bunnies were on the grass before? ? + 3 = 5
take from	Five apples were on the table. I ate two apples. How many apples are on the table now? 5 – 2 = ?	Five apples were on the table. I ate some apples. Then there were three apples. How many apples did I eat? 5 – ? = 3	Some apples were on the table. I ate two apples. Then there were three apples. How many apples were on the table before? ? – 2 = 3

	total Unknown	addend Unknown	Both addends Unknown[1]
Put together/ take apart[2]	Three red apples and two green apples are on the table. How many apples are on the table? 3 + 2 = ?	Five apples are on the table. Three are red and the rest are green. How many apples are green? 3 + ? = 5, 5 – 3 = ?	Grandma has five flowers. How many can she put in her red vase and how many in her blue vase? 5 = 0 + 5, 5 = 5 + 0 5 = 1 + 4, 5 = 4 + 1 5 = 2 + 3, 5 = 3 + 2

	difference Unknown	Bigger Unknown	Smaller Unknown
Compare[3]	("How many more?" version): Lucy has two apples. Julie has five apples. How many more apples does Julie have than Lucy? ("How many fewer?" version): Lucy has two apples. Julie has five apples. How many fewer apples does Lucy have than Julie? 2 + ? = 5, 5 – 2 = ?	(Version with "more"): Julie has three more apples than Lucy. Lucy has two apples. How many apples does Julie have? (Version with "fewer"): Lucy has 3 fewer apples than Julie. Lucy has two apples. How many apples does Julie have? 2 + 3 = ?, 3 + 2 = ?	(Version with "more"): Julie has three more apples than Lucy. Julie has five apples. How many apples does Lucy have? (Version with "fewer"): Lucy has 3 fewer apples than Julie. Julie has five apples. How many apples does Lucy have? 5 – 3 = ?, ? + 3 = 5

[1]These take apart situations can be used to show all the decompositions of a given number. The associated equations, which have the total on the left of the equal sign, help children understand that the = sign does not always mean makes or results in but always does mean is the same number as.
[2]Either addend can be unknown, so there are three variations of these problem situations. Both Addends Unknown is a productive extension of this basic situation, especially for small numbers less than or equal to 10.
[3]For the Bigger Unknown or Smaller Unknown situations, one version directs the correct operation (the version using more for the bigger unknown and using less for the smaller unknown). The other versions are more difficult.

[6]Adapted from Box 2-4 of National Research Council (2009, op. cit., pp. 32, 33).

Third Grade Florida Standards Math

Revised, 2014

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

Third 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.3

In Grade 3, instructional time should focus on four critical areas: (1) developing understanding of multiplication and division and strategies for multiplication and division within 100; (2) developing understanding of fractions, especially unit fractions (fractions with numerator 1); (3) developing understanding of the structure of rectangular arrays and of area; and (4) describing and analyzing two-dimensional shapes.

(1) Students develop an understanding of the meanings of multiplication and division of whole numbers through activities and problems involving equal-sized groups, arrays, and area models; multiplication is finding an unknown product, and division is finding an unknown factor in these situations. For equal-sized group situations, division can require finding the unknown number of groups or the unknown group size. Students use properties of operations to calculate products of whole numbers, using increasingly sophisticated strategies based on these properties to solve multiplication and division problems involving single-digit factors. By comparing a variety of solution strategies, students learn the relationship between multiplication and division.

(2) Students develop an understanding of fractions, beginning with unit fractions. Students view fractions in general as being built out of unit fractions, and they use fractions along with visual fraction models to represent parts of a whole. Students understand that the size of a fractional part is relative to the size of the whole. For example, 1/2 of the paint in a small bucket could be less paint than 1/3 of the paint in a larger bucket, but 1/3 of a ribbon is longer than 1/5 of the same ribbon because when the ribbon is divided into 3 equal parts, the parts are longer than when the ribbon is divided into 5 equal parts. Students are able to use fractions to represent numbers equal to, less than, and greater than one. They solve problems that involve comparing fractions by using visual fraction models and strategies based on noticing equal numerators or denominators.

(3) Students recognize area as an attribute of two-dimensional regions. They measure the area of a shape by finding the total number of same-size units of area required to cover the shape without gaps or overlaps, a square with sides of unit length being the standard unit for measuring area. Students understand that rectangular arrays can be decomposed into identical rows or into identical columns. By decomposing rectangles into rectangular arrays of squares, students connect area to multiplication, and justify using multiplication to determine the area of a rectangle.

(4) Students describe, analyze, and compare properties of two-dimensional shapes. They compare and classify shapes by their sides and angles, and connect these with definitions of shapes. Students also relate their fraction work to geometry by expressing the area of part of a shape as a unit fraction of the whole.

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.

MAFS.K12.MP.8.1 : **Look for and express regularity in repeated reasoning.**

Mathematically proficient students notice if calculations are repeated, and look both for general methods and for shortcuts. Upper elementary students might notice when dividing 25 by 11 that they are repeating the same calculations over and over again, and conclude they have a repeating decimal. By paying attention to the calculation of slope as they repeatedly check whether points are on the line through (1, 2) with slope 3, middle school students might abstract the equation $(y – 2)/(x – 1) = 3$. Noticing the regularity in the way terms cancel when expanding $(x – 1)(x + 1)$, $(x – 1)(x^2 + x + 1)$, and $(x – 1)(x^3 + x2 + x + 1)$ might lead them to the general formula for the sum of a geometric series. As they work to solve a problem, mathematically proficient students maintain oversight of the process, while attending to the details. They continually evaluate the reasonableness of their intermediate results.

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.

Third Grade Florida Standards for Math

BODY OF KNOWLEDGE: OPERATIONS AND ALGEBRAIC THINKING

Cluster 1: Represent and solve problems involving multiplication and division.

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.3.OA.1.1	Interpret products of whole numbers, e.g., interpret 5 × 7 as the total number of objects in 5 groups of 7 objects each. For example, describe a context in which a total number of objects can be expressed as 5 × 7. *Cognitive Complexity:* Level 1: Recall	• Objects of equal groups can be arranged to find the product. • An expression can be put into context. **The student is able to:** • Demonstrate and explain how equal groups can represent the product. • Create a context for an expression or equation.	• I can arrange objects (blocks, arrays, pictures, number lines, chips, cubes, and so on) into equal groups and understand the product. • I can write an equation about the equal groups I made. • I can make a model showing the equation I made. • I can describe a context for a number expression.
Key Vocabulary: equal groups, factors, product, expression			
Standard Identifier	**Standard with Complexity Rating**	**Conceptual and Procedural Understanding – The student understands that:**	**Student Friendly Language Learning Targets**
MAFS.3.OA.1.2	Interpret whole-number quotients of whole numbers, e.g., interpret 56 ÷ 8 as the number of objects in each share when 56 objects are partitioned equally into 8 shares, or as a number of shares when 56 objects are partitioned into equal shares of 8 objects each. For example, describe a context in which a number of shares or a number of groups can be expressed as 56 ÷ 8. *Cognitive Complexity:* Level 1: Recall	• Division is partitioning a whole number into groups when the number in each group is known. • Division is partitioning a whole number into the amount in each group when the number of groups is known. • An expression can be put into context. **The student is able to:** • Divide groups of objects into equal shares. • Create an equation connected to the visual model of division. • Construct a division equation using models to show equal groups. • Create a context for an expression or equation.	• I can start with a set of objects and divide into equal shares. • I can write an equation about the equal groups I made. • I can make a model showing the equation I made.
Key Vocabulary: quotient, expression, equal shares, equation			
Standard Identifier	**Standard with Complexity Rating**	**Conceptual and Procedural Understanding – The student understands that:**	**Student Friendly Language Learning Targets**
MAFS.3.OA.1.3	Use multiplication and division within 100 to solve word problems in situations involving equal groups, arrays, and measurement quantities, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem.	• There is a relationship between real world problems (that deal with equal groups, arrays, and measurement quantities) and multiplication and division. • Word problems can be represented by a mathematical equation. • Pictures and symbols can represent unknown numbers. • Mathematical situations can be represented with a model. **The student is able to:**	• I can solve multiplication and division word problems using different strategies like models, arrays, drawings, or equations. • I can use a symbol for an unknown amount when I write an equation.

	Cognitive Complexity: Level 2: Basic Application of Skills and Concepts	• Create models (arrays, equal groups, and measurement quantities) to represent and solve multiplication and division word problems. • Create equations with an unknown number that is represented by a symbol to solve word problems. • Explain when and why you would use multiplication and division to solve a word problem.	
Key Vocabulary: equations, symbols, measurement, quantities, arrays, equal groups, multiplication, division			
Standard Identifier	**Standard with Complexity Rating**	**Conceptual and Procedural Understanding – The student understands that:**	**Student Friendly Language Learning Targets**
MAFS.3.OA.1.4	Determine the unknown whole number in a multiplication or division equation relating three whole numbers. For example, determine the unknown number that makes the equation true in each of the equations 8 × ? = 48, 5 = __ ÷ 3, 6 × 6 = ?. *Cognitive Complexity:* Level 1: Recall	• An equation represents the relationship between three numbers. • Multiplication and division are related operations. • An equation is true when the numbers are related mathematically correct. • To find the unknown you need to determine the mathematical relationship between the numbers. **The student is able to:** • Solve multiplication and division equations with an unknown number in all locations.	• I can find a missing number in a multiplication or division problem to make the number sentence true.
Key Vocabulary: equation, multiplication, division, unknown factors, products, dividend, divisor, quotient			
Cluster 2: Understand properties of multiplication and the relationship between multiplication and division. *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.3.OA.2.5	Apply properties of operations as strategies to multiply and divide. Examples: If 6 × 4 = 24 is known, then 4 × 6 = 24 is also known. (Commutative property of multiplication.) 3 × 5 × 2 can be found by 3 × 5 = 15 then 15 × 2 = 30, or by 5 × 2 = 10 then 3 × 10 = 30. (Associative property of multiplication.) Knowing that 8 × 5 = 40 and 8 × 2 = 16, one can find 8 × 7 as 8 × (5 + 2) = (8 × 5) + (8 × 2) = 40 + 16 = 56. (Distributive property.) (Students need not use formal terms for these properties.) *Cognitive Complexity:* Level 2: Basic Application of Skills and Concepts	• There is a relationship between addition and multiplication. • There is a relationship between subtraction and division. • There are multiple strategies to solve multiplication and division problems. **The student is able to:** • Show or explain how multiplication and division problems are related using manipulatives. • Apply properties of operations to solve mental math problems. • Use a variety of strategies to solve multiplication problems. (skip counting, doubling, finger tricks, and arrays)	• I can use the distributive property for multiplication and division. • I can use the associative property for multiplication. • I can use the commutative property for multiplication.
Key Vocabulary: commutative property, associative property, distributive property, strategies, arrays, parenthesis			

Standard Identifier	Standard with Complexity Rating	Conceptual and Procedural Understanding – The student understands that:	Student Friendly Language Learning Targets
MAFS.3.OA.2.6	Understand division as an unknown-factor problem. For example, divide 32 ÷ 8 by finding the number that makes 32 when multiplied by 8. *Cognitive Complexity:* Level 2: Basic Application of Skills and Concepts	• Division is an unknown factor problem. • There is a relationship between multiplication and division. **The student is able to:** • Calculate a multiplication and or division problem with an unknown. • Apply properties of division and multiplication in order to solve the quotients and products. • Identify the factors.	• I can understand division in ways that makes sense to me. • I can understand the relationship between multiplication and division in ways that makes sense to me. • I can find the unknown factor of division using different strategies that makes sense to me.
Key Vocabulary: factors, unknown factor, division quotient, product, properties, dividends, divisor			

Cluster 3: Multiply and divide within 100.

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.3.OA.3.7	Fluently multiply and divide within 100, using strategies such as the relationship between multiplication and division (e.g., knowing that 8 × 5 = 40, one knows 40 ÷ 5 = 8) or properties of operations. By the end of Grade 3, know from memory all products of two one-digit numbers *Cognitive Complexity:* Level 1: Recall	• Multiplication is repeated addition. • Multiplication and division are related. • Division is grouping into equal sets. **The student is able to:** • Use various strategies to solve multiplication and division problems. • Apply knowledge of fact families to solve multiplication and division problems. • Describe the process used to solve multiplication or division problem. • Apply knowledge of multiplication and division to solve story problems. • Interpret mathematical symbols to solve multiplication and division. • Estimate products and quotients to see if answers are reasonable. • Recall from memory all products of two one-digit numbers.	• I can solve multiplication and division problems using fact families (For example: I can solve 45 ÷ 5 = 9 because I know that 9 x 5 = 45.). • I can solve multiplication and division quickly because I know my facts from 1-9.
Key Vocabulary: grouping, dividend, quotient, divisor, product, factor, multiply, divide, fluently, properties, fact families, equal(s)			

Cluster 4: Solve problems involving the four operations, and identify and explain patterns in 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.3.OA.4.8	Solve two-step word problems using the four operations. Represent these problems using equations with a letter standing for the unknown quantity. Assess the reasonableness of answers using mental computation and estimation strategies including rounding. (This standard is limited to problems posed with whole numbers and having whole-number answers; students should know how to perform operations in the conventional order when there are no parentheses to specify a particular order (Order of Operations).) *Cognitive Complexity:* Level 2: Basic Application of Skills and Concepts	• An equation is a balance of numbers on both sides of the equal sign. • The correct order of operations is multiplication and division first followed by addition and subtraction in order from left to right. • Letters and symbols can represent an unknown quantity in an equation. • Estimating and rounding are efficient strategies to check answers. **The student is able to:** • Formulate the equation(s) that matches the word problem. • Insert a variable to represent an unknown number. • Solve the equation(s). • Use mental math to check the reasonableness of answers.	• I can solve word problems with two-steps using addition, subtraction, multiplication, and division. • I can use a letter to stand for a number I don't know. • I can check if my answer is reasonable by using mental math. • I can check if my answer is reasonable by estimating.
Key Vocabulary: equations, mental computation, estimation, strategy, variable (unknown quantity), order of operations, reasonable/reasonableness			

Standard Identifier	Standard with Complexity Rating	Conceptual and Procedural Understanding – The student understands that:	Student Friendly Language Learning Targets
MAFS.3.OA.4.9	Identify arithmetic patterns (including patterns in the addition table or multiplication table), and explain them using properties of operations. For example, observe that 4 times a number is always even, and explain why 4 times a number can be decomposed into two equal addends. *Cognitive Complexity:* Level 3: Strategic Thinking and Complex Reasoning	• Patterns are created and extended. • There is a relationship between properties of operations. (example: multiplication is repeated addition) • There is a relationship between properties of operations and patterns. **The student is able to:** • Identify arithmetic patterns. • Analyze the pattern. • Explain the pattern. • Extend the pattern. • Apply the pattern to new problems. • Compare a pattern to multiple orders of operations.	• I can see patterns in a group of numbers. • I can explain patterns using properties of operations (addition, subtraction, multiplication, division).
Key Vocabulary: arithmetic pattern, properties of operations, multiplication, division, addition, subtraction, even and odd, compose and decompose numbers			

BODY OF KNOWLEDGE: NUMBER AND OPERATIONS IN BASE TEN

Cluster 1: Use place value understanding and properties of operations to perform multi-digit arithmetic.

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.3.NBT.1.1	Use place value understanding to round whole numbers to the nearest 10 or 100.	• Rounding is a form of estimation. • Place value understanding is used to round whole numbers. **The student is able to:**	• I can round any number to the nearest 10. • I can round any number to the nearest 100.

	Cognitive Complexity: Level 1: Recall	• Use place value understanding to round any number to the nearest 10s digit. • Use place value understanding to round any number to the nearest 100s digit.	
Key Vocabulary: rounding, place value, digits ones, digit tens, digit whole numbers, estimate, hundreds digit			
Standard Identifier	**Standard with Complexity Rating**	**Conceptual and Procedural Understanding – The student understands that:**	**Student Friendly Language Learning Targets**
MAFS.3.NBT.1.2	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. (A range of algorithms may be used.) *Cognitive Complexity:* Level 1: Recall	• There are many strategies for solving addition and subtraction problems. • Numbers can be added or subtracted according to place value. • There is a relationship between addition and subtraction and use it to solve problems. • Different properties of operations can be used to solve addition and subtraction problems. **The student is able to:** • Add and subtract with sums and differences from 0-999. • Add and subtract using a variety of strategies. • Use what I know about addition to solve subtraction problems. • Use what I know about subtraction to solve addition problems. • Explain the strategy they used for solving the problem.	• I can add numbers to 999 in many ways using a strategy that makes sense to me. • I can subtract numbers from 999 in many ways using a strategy that make sense to me.
Key Vocabulary: place value, digit, addition, subtraction, Commutative Property, Associative Property, sum, difference, algorithm, decompose, compose, regrouping			
Standard Identifier	**Standard with Complexity Rating**	**Conceptual and Procedural Understanding – The student understands that:**	**Student Friendly Language Learning Targets**
MAFS.3.NBT.1.3	Multiply one-digit whole numbers by multiples of 10 in the range 10–90 (e.g., 9 × 80, 5 × 60) using strategies based on place value and properties of operations. *Cognitive Complexity:* Level 1: Recall	• The multiples of 10 are the same as skip counting by 10. • The value of a digit in our number system is determined by its place value position. • Properties of operations may be used to solve multiplication problems. • Numbers can be decomposed by place value to solve multiplication problems. **The student is able to:** • Multiply a one digit number by a multiple of 10. • Use manipulatives (base 10 blocks, money) to show multiplication of a one digit number by a multiple of 10. • Explain how to multiply a one digit number by a multiple of 10.	• I can multiply one-digit numbers (0-9) by multiples of 10 (10, 20, 30, 40, 50, 60, 70, 80, and 90) using a strategy based on place value or properties of operations that make sense to me.
Key Vocabulary: multiples of ten, place value, digit, product, multiple, factor, properties of operations			

BODY OF KNOWLEDGE: NUMBER AND OPERATIONS – FRACTIONS

Cluster 1: Develop understanding of fractions as 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.3.NF.1.1	Understanding the fraction 1/b as the quantity formed by 1 part when a whole is partitioned into b equal parts, understand a fraction a/b as the quantity formed by a parts of size 1/b. *Cognitive Complexity:* Level 2: Basic Application of Skills and Concepts	• A fraction represents equal parts of a whole **The student is able to:** • Represent equal parts of a whole as a fraction in many ways.	• I can show equal parts of a whole with a fraction in many different ways.

Key Vocabulary: numerator, denominator, whole fraction, fraction, bar, equal

Standard Identifier	Standard with Complexity Rating	Conceptual and Procedural Understanding – The student understands that:	Student Friendly Language Learning Targets
MAFS.3.NF.1.2	Understanding a fraction as a number on the number line diagram. *Cognitive Complexity:* Level 2: Basic Application of Skills and Concepts	• The denominator of the fraction determines how many equal parts to split a whole number into on a number line. • The numerator determines how many spaces to move forward on the number line. • The number of spaces from zero to the point on the number line is the size of the fraction. **The student is able to:** • Place a fraction on a number line. • Determine the relative size of fractions from the number line.	• I can name the equal parts on a number line. • I can show where to put a fraction on a number line.

Key Vocabulary: numerator, denominator, number line, diagram, fraction

Standard Identifier	Standard with Complexity Rating	Conceptual and Procedural Understanding – The student understands that:	Student Friendly Language Learning Targets
MAFS.3.NF.1.3	Explain equivalent fractions in special cases, and compare fractions by reasoning about their size. a. Understand two fractions as equivalent (equal) if they are the same size, or the same point on a number line. b. Recognize and generate simple equivalent fractions, e.g., ½=2/4, 4/6=2/3). Explain why the fractions are equivalent, e.g., by using a visual fraction model. c. Express whole numbers as fractions, and recognize fractions that are equivalent to whole numbers. Examples: Express 3 in the form 3=3/1; recognize that 6=6/1; locate 4/4 and 1 at the same point of a number line diagram.	• Fractional parts can be represented using pictures and as a fractional (n/d) number. • Whole numbers can be written as fractions (6/6=1) • The denominator is the total number of pieces a number or shape is broken up into. • The numerator is the indicated parts of the whole. • Number lines can also be broken up into fractional parts to show parts of a whole. • Equivalent fractions can have different numerators and denominators. • The symbols <, >, = are used to compare fractions. **The student is able to:** • Create and choose pictures that represent a given fraction. • Create and choose a fraction from a given picture. • Apply their knowledge to explain a fraction of a given situation.	• I can show that a whole can be divided, or cut up, into equal pieces. • I can recognize a fraction through pictures of objects. • I can compare the size of 2 fractions with the same numerator or denominator and show which fraction is greater than, less than, or equal to another fraction by illustrating a picture. • I can recognize, understand, and explain whole numbers as equal (equivalent) fractions by illustrating pictures or creating a number line

	d. Compare two fractions with the same numerator or the same denominator by reasoning about their size. Recognize that comparisons are valid only when the two fractions refer to the same whole. Record the results of comparisons with the symbols >, <, =, and justify the conclusions, e.g., by using the visual fraction model. *Cognitive Complexity:* Level 3: Strategic Thinking and Complex Reasoning	• Compare fractions with like denominators. • Compare fractions with like numerators. • Compare fractions using greater than, less than, equal to. • Compare fractions using a number line or a ruler. • Express fractions in terms of a whole. • Explain the difference between a numerator and a denominator. • Construct a visual representation of an equivalent fraction. • Identify equivalent fractions in the real world. • Explain how fractions are equivalent.	showing the equal fractional pieces.
Key Vocabulary: whole number, number line, ruler, mixed fractions, improper fractions, compare and contrast, greater than, less than, equal to, fraction, numerator, denominator, equivalent fraction, parts of a whole			

BODY OF KNOWLEDGE: MEASUREMENT AND DATA

Cluster 1: Solve problems involving measurement and estimation of intervals of time, liquid volumes, and masses of objects.

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.3.MD.1.1	Tell and write time to the nearest minute and measure time intervals in minutes. Solve word problems involving addition and subtraction of time intervals in minutes, e.g., by representing the problem on a number line diagram. *Cognitive Complexity:* Level 2: Basic Application of Skills and Concepts	• Time can be measured in minutes. • Addition and subtraction strategies may be used to solve problems involving time. **The student is able to:** • Tell and write time to the nearest minute. • Solve time interval problems using addition and subtraction strategies.	• I can tell and write time to the nearest minute. • I can solve word problems involving addition and subtraction of time in minutes. • I can represent time problems using addition and subtraction strategies. • I can measure time intervals in minutes.
Key Vocabulary: hour hand, minute hand, hours, minutes, time intervals, half hour, quarter hour, half past, quarter past, quarter til			
Standard Identifier	**Standard with Complexity Rating**	**Conceptual and Procedural Understanding – The student understands that:**	**Student Friendly Language Learning Targets**
MAFS.3.MD.1.2	Measure and estimate liquid volumes and masses of objects using standard units of grams (g), kilograms (kg), and liters (l). Add, subtract, multiply, or divide to solve one-step word problems involving masses or volumes that are given in the same units. *Cognitive Complexity:* Level 2: Basic Application of Skills and Concepts	• Mass and volume can be estimated. • Mass and volume can be measured using standard units. • Estimates can be compared with actual measurements. • Addition, subtraction, multiplication, and division can be used to solve problems involving mass and volume. **The student is able to:** • Estimate mass and volume using standard units. • Measure mass and volume using standard units. • Solve word problems involving liquid volumes and masses. • Compare and contrast estimates with actual measurements.	• I can measure and estimate liquid volumes using standard units. • I can measure and estimate masses of objects using standard units. • I can use addition, subtraction, multiplication, and division strategies to solve word problems involving liquid volumes and masses.
Key Vocabulary: mass volume, standard units- grams (g), kilograms (kg), liters (l), measurement, estimation, scale			

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.

EXAMPLES OF OPPORTUNITIES FOR IN-DEPTH FOCUS

Continuous measurement quantities such as liquid volume, mass, and so on are an important context for fraction arithmetic (cf. 4.NF.2.4c, 5.NF.2.7c, 5.NF.2.3). In grade 3, students begin to get a feel for continuous measurement quantities and solve whole-number problems involving such quantities.

Standard Identifier	Standard with Complexity Rating	Conceptual and Procedural Understanding – The student understands that:	Student Friendly Language Learning Targets
MAFS.3.MD.2.3	Draw a scaled picture graph and a scaled bar graph to represent a data set with several categories. Solve one- and two-step "how many more" and "how many less" problems using information presented in scaled bar graphs. For example, draw a bar graph in which each square in the bar graph might represent 5 pets. *Cognitive Complexity:* Level 2: Basic Application of Skills and Concepts	• Data can be represented on a bar graph. • Data can be represented on a picture graph. • Data can be used to solve problems. **The student is able to:** • Draw a scaled bar graph. • Draw a scaled picture graph. • Solve one-step and two-step "how many more" and "how many less" problems.	• I can draw a scaled picture graph to represent data. • I can draw a scaled bar graph to represent data. • I can solve problems using the graph data.

Key Vocabulary: data, bar graph, picture graph, scale

Standard Identifier	Standard with Complexity Rating	Conceptual and Procedural Understanding – The student understands that:	Student Friendly Language Learning Targets
MAFS.3.MD.2.4	Generate measurement data by measuring lengths using rulers marked with halves and fourths of an inch. Show the data by making a line plot, where the horizontal scale is marked off in appropriate units—whole numbers, halves, or quarters. *Cognitive Complexity:* Level 2: Basic Application of Skills and Concepts	• Length can be measured in inches- whole numbers, halves, and fourths/quarters. • Measurement data can be represented on a line plot. • A horizontal scale is marked off with appropriate units (halves, quarters, etc). **The student is able to:** • Use a ruler to measure length in halves and fourths of an inch. • Create a line plot with measurement data.	• I can use a ruler to measure lengths in halves and fourths of an inch. • I can show measurement data by creating a line plot.

Key Vocabulary: measurement, inches, halves, fourths, quarters, length, line, plot, horizontal, scale

Cluster 3: Geometric measurement: understand concepts of area and relate area to multiplication and to addition.

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.3.MD.3.5	Recognize area as an attribute of plane figures and understand concepts of area measurement. a. A square with side length 1 unit, called "a unit square," is said to have "one square unit" of area, and can be used to measure area. b. b. 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. *Cognitive Complexity:* Level 1: Recall	• All plane figures have a measurable area. • A unit square is a square with a side length of 1. • Area of a plane figure is measured when the figure is covered without gaps or overlaps with unit squares. • The number of unit squares used to cover a plane figure without gaps or overlaps is called area. **The student is able to:** • Recognize area as an attribute of a plane figure. • Measure the area of a plane figure by covering and counting the number of unit squares it takes to cover the figure without gaps or overlaps. • Label the area of a plane figure in square units • Show the area of a plane figure using square tiles..	• I can measure the area of a plane figure in square units. • I can use square units to cover the space inside a plane figure without leaving gaps or overlapping.

Key Vocabulary: plane, figure, area, square unit

Standard Identifier	Standard with Complexity Rating	Conceptual and Procedural Understanding – The student understands that:	Student Friendly Language Learning Targets
MAFS.3.MD.3.6	Measure areas by counting unit squares (square cm, square m, square in, square ft., and improvised units). *Cognitive Complexity:* Level 1: Recall	• Unit squares are used to measure area. • Area is measured by covering and counting the amount of unit squares it takes to cover a space. **The student is able to:** • Measure area by counting the number of square units covering the figure. • Label area in square units. • Show that the area of a figure is a certain number of units.	• I can measure the area of a figure by counting the unit squares.

Key Vocabulary:
Area, square unit, square centimeter, square meter, square inch, square foot, figure

Standard Identifier	Standard with Complexity Rating	Conceptual and Procedural Understanding – The student understands that:	Student Friendly Language Learning Targets
MAFS.3.MD.3.7	Relate area to the operations of multiplication and addition. a. Find the area of a rectangle with whole-number side lengths by tiling it, and show that the area is the same as would be found by multiplying the side lengths. b. Multiply side lengths to find areas of rectangles with whole number side lengths in the context of solving real world and mathematical problems, and represent whole-number	• Multiplication and addition are related operations. • The area model is a representation of multiplication and multiplication problems. • Area can be found by covering and counting with tiles or by multiplying side lengths. • Tiles and the area model of a rectangle can be used to represent the distributive property of multiplication. • A rectangle can be decomposed into smaller rectangles. The areas of the smaller rectangles can be added together to find the area of the larger rectangle. **The student is able to:**	• I can find the area of a rectangle by covering and counting with tiles. • I can find the area of a rectangle by multiplying the side lengths. • I can use the area model to represent multiplication problems. • I can use the area model to show the distributive property. • I can break apart a rectangle into smaller rectangles and add their

	products as rectangular areas in mathematical reasoning. c. 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 × b and a × c. Use area models to represent the distributive property in mathematical reasoning. d. d. Recognize area as additive. Find areas of rectilinear figures by decomposing them into non-overlapping rectangles and adding the areas of the non-overlapping parts, applying this technique to solve real world problems. *Cognitive Complexity:* Level 3: Strategic Thinking and Complex Reasoning	• Find the area of a rectangle by covering and counting with tiles. • Find the area of a rectangle by multiplying side lengths. • Interpret and solve real world math problems using the area model for multiplication. • Represent products using the area model of rectangles. • Use tiles and the area of a rectangle to demonstrate the distributive property of multiplication. • Model with tiles how a rectangle with side lengths a and b+c has the area of a•b + a•c. • Decompose a larger rectangle into smaller rectangles. • Calculate the area of a large rectangle by adding the areas of smaller rectangles within the larger rectangle. • Solve real world problems involving the distributive property of multiplication by using the area model for rectangles.	areas to find the area of the entire rectangle. • I can solve real world problems concerning area.
Key Vocabulary: multiplication, product area, rectangle, side length, area, model tiling, distributive property of multiplication, decompose, non-overlapping			

Cluster 4: Geometric measurement: recognize perimeter as an attribute of plane figures and distinguish between linear and area measures.

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.3.MD.4.8	Solve real world and mathematical problems involving perimeters of polygons, including finding the perimeter given the side lengths, finding an unknown side length, and exhibiting rectangles with the same perimeter and different areas or with the same area and different perimeters. *Cognitive Complexity:* Level 2: Basic Application of Skills and Concepts	• Perimeter can be found by adding the side lengths together. • I can find an unknown side length if I know the perimeter and some of the other side lengths. • When given a perimeter, I can find rectangles with different areas. • When given an area, I can find rectangles with different perimeters. **The student is able to:** • Solve real world problems using perimeters of polygons. • Calculate the perimeter given the side lengths of a polygon. • Determine an unknown side length of a polygon using information about the perimeter. • Create polygons with the same perimeter but different areas. • Create polygons with the same area but different perimeter.	• I can solve real world problems using perimeters of polygons. • I can find unknown side lengths and the perimeter of polygons. • I can show rectangles that have the same area but different perimeters. • I can show rectangles that have the same perimeter but different areas.
Key Vocabulary: polygon, rectangle, area, perimeter, side, length			

BODY OF KNOWLEDGE: GEOMETRY

Cluster 1: Reason with shapes and their attributes.

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.3.G.1.1	Understand that shapes in different categories (e.g., rhombuses, rectangles, and others) may share attributes (e.g., having four sides), and that the shared attributes can define a larger category (e.g., quadrilaterals). Recognize rhombuses, rectangles, and squares as examples of quadrilaterals, and draw examples of quadrilaterals that do not belong to any of these subcategories. *Cognitive Complexity:* Level 2: Basic Application of Skills and Concepts	• Shapes get their names based on their common attributes. • Shapes share some attributes. • A shape's attributes determine which category they belong to. • All closed shapes with four straight sides and four vertices are part of a large category called quadrilaterals. • Even though shapes have different names, they may have attributes that are the same. **The student is able to:** • Recognize shapes by name including rhombus, rectangle, and square. • Name attributes found in quadrilateral shapes. • Categorize shapes based on names and/or attributes. • Compare and contrast quadrilaterals based on attributes. • Draw quadrilaterals, including rhombuses, rectangles, and squares. • Draw a quadrilateral that is not a rhombus, rectangle or a square.	• I can identify common attributes between shapes. • I can use common attributes among shapes to define a larger group. • I can identify rhombuses, rectangles, and squares as quadrilaterals. • I can draw a quadrilateral that is NOT a rhombus, rectangle, or a square.
Key Vocabulary: quadrilateral, rectangle, rhombus, square, category, subcategory, attribute			

Standard Identifier	Standard with Complexity Rating	Conceptual and Procedural Understanding – The student understands that:	Student Friendly Language Learning Targets
MAFS.3.G.1.2	Partition shapes into parts with equal areas. Express the area of each part as a unit fraction of the whole. For example, partition a shape into 4 parts with equal area, and describe the area of each part as 1/4 of the area of the shape. *Cognitive Complexity:* Level 1: Recall	• Shapes can be partitioned into equal areas. • A unit fraction is the area of one of the equal areas. **The student is able to:** • Partition a shape into parts with equal areas. • Determine the area of each part using a fraction. • Determine the unit fraction of a given area.	• I can partition shapes into parts with equal areas. • I can express the area of each part as a fraction.
Key Vocabulary: partition unit fraction area			

Third Grade MATH Pacing Guide

	Quarter 1	Quarter 2	Quarter 3	Quarter 4
Overarching Concepts	Number Sense, Addition and Subtractions, Graphs	Multiplication and Division Elapsed Time	Measurement, Fractions, Perimeter, and Area	
Standards/ Learning Targets	MAFS.3.OA.4.8 MAFS.3.OA.4.9 MAFS.3.NBT.1.1 MAFS.3.NBT.1.2 MAFS.3.MD.2.3 MAFS.3.MD.2.4 MAFS.3.OA.4.8 MAFS.3.OA.1.1 MAFS.3.OA.1.3 MAFS.3.OA.2.5 MAFS.3.OA.3.7	MAFS.3.OA.1.3 MAFS.3.OA.1.4 MAFS.3.OA.4.9 MAFS.3.NBT.1.3 MAFS.3.OA.1.1 MAFS.3.OA.2.5 MAFS.3.OA.3.7 MAFS.3.OA.1.2 MAFS.3.OA.2.6 MAFS.3.OA.4.8 MAFS.3.OA.1.2 MAFS.3.MD.1.2 MAFS.3.MD.1.1 MAFS.3.MD.1.2 MAFS.3.MD.2.4	MAFS.NF.1.1 MAFS.3.NF.1.2 MAFS.3.NF.1.3 MAFS.3.G.1.1 MAFS.3.MD.3.5 MAFS.3.MD.3.6 MAFS.3.MD.3.7 MAFS.3.MD.4.8 MAFS.3.G.1.1 MAFS.3.G.1.2	• Review remediate as needed based on data gained for 3rd DEA assessment. Assure student progress and mastery of: • Fluency of addition/subtraction (end expectation for 2nd grade) • Fluency of multiplication basic facts (beginning automaticity of recall) • Concept of Equivalence • Introduce AM and PM for time
Aligned Resources: Harcourt GOMATH	Ch. 1.1-1.4 Ch. 1.5-1.8 Ch. 1.9-1.12 **Mathematical Practices:** *6 & 7* Ch. 2.1-2.5 Ch. 2.6-2.7 **Mathematical Practices:** *1 & 4* Ch. 3.1-3.5 Ch. 3.6-3.7 & 4.1-4.3 **Mathematical Practices:** *2 & 8* Ch. 4.4-4.10 **Mathematical Practices:** *3 & 7*	Ch. 5.1-5.5 **Mathematical Practices:** *1 & 5* Ch. 6.1-6.5 Ch. 6.6-6.9 **Mathematical Practices:** *2 & 7* Ch. 7.1-7.6 Ch. 7.7-7.11 **Mathematical Practices:** 3 & 7 Ch. 10.1 & 10.3-10.5 Ch. 10.6-10.9 **Mathematical Practices:** *4 & 5*	Ch. 8.1-8.6 **Mathematical Practices:** *2 & 4* Ch. 9.1-9.4 Ch. 9.5-9.7 **Mathematical Practices:** *2 & 4* Ch. 11.1-11.3 Ch. 11.4-11.8 Ch.11.9-11.10 **Mathematical Practices:** *1, 2, 7 & 8* Ch. 12.1-12.5 Ch. 12.6-12.9 **Mathematical Practices:** *1, 3,& 6*	DEA Review key skills - Multiply/ Divide - Fractions - Geometry - Lines/ Perimeter - Equivalence - AM & PM (time) Fluency with basic facts
High-Yield Routine(s)	"Today's Number" begin with 1 digit numbers and move toward multi-digit	"Guess My Rule"	"Alike and Different"	"How Do You Know?"

Target Vocabulary	• Equation • Product • Row • Column • Factor • Array • Equal • Values • Expression • Digit • Addend • Sum • Product • Difference • Fact Family • Round • Estimate • Total	• Quotient • Dividend • Represent • Model • Value • Property • Equivalent • Partial • Multiplies	• Model • Numerator • Denominator • Represent • Whole • Length • Like • Unlike • Equivalent • Fraction • Container • Measurement	
• **Essentials to Remember** Always use correct mathematical terminology.	• Required: Analysis of data from 2nd grade, DEA, and 1st assessment of 3rd grade DEA to form "watch list" • Spiral review; use the standards to guide instruction. • Use "standards for mathematical practices as part of direct instruction. • Refer to math vocabulary page in curriculum guide.	• Use standards to guide instruction. • Use "standards for mathematical practices" as part of direct instruction. • Refer to Math Vocabulary page in guide.	• Fraction of a group-lesson 8.7-8.9 is not a MAFS. Modify chapter 8 • Lesson Test • Use the standards to guide instruction. • Use "standards for mathematical practices" as part of direct instruction. • Refer to Math Vocabulary page in guide.	• Use "standards for mathematical practice" as part of direct instruction • Refer to Math Vocabulary page in guide.

Table 2. Common multiplication and division situations.[7]

	Unknown Product	Group Size Unknown ("How many in each group?" Division)	number of Groups Unknown ("How many groups?" Division)
	$3 \times 6 = ?$	$3 \times ? = 18$, and $18 \div 3 = ?$	$? \times 6 = 18$, and $18 \div 6 = ?$
equal Groups	There are 3 bags with 6 plums in each bag. How many plums are there in all? *Measurement example*. You need 3 lengths of string, each 6 inches long. How much string will you need altogether?	If 18 plums are shared equally into 3 bags, then how many plums will be in each bag? *Measurement example*. You have 18 inches of string, which you will cut into 3 equal pieces. How long will each piece of string be?	If 18 plums are to be packed 6 to a bag, then how many bags are needed? *Measurement example*. You have 18 inches of string, which you will cut into pieces that are 6 inches long. How many pieces of string will you have?
arrays,[4] area[5]	There are 3 rows of apples with 6 apples in each row. How many apples are there? *Area example*. What is the area of a 3 cm by 6 cm rectangle?	If 18 apples are arranged into 3 equal rows, how many apples will be in each row? *Area example*. A rectangle has area 18 square centimeters. If one side is 3 cm long, how long is a side next to it?	If 18 apples are arranged into equal rows of 6 apples, how many rows will there be? *Area example*. A rectangle has area 18 square centimeters. If one side is 6 cm long, how long is a side next to it?
Compare	A blue hat costs $6. A red hat costs 3 times as much as the blue hat. How much does the red hat cost? *Measurement example*. A rubber band is 6 cm long. How long will the rubber band be when it is stretched to be 3 times as long?	A red hat costs $18 and that is 3 times as much as a blue hat costs. How much does a blue hat cost? *Measurement example*. A rubber band is stretched to be 18 cm long and that is 3 times as long as it was at first. How long was the rubber band at first?	A red hat costs $18 and a blue hat costs $6. How many times as much does the red hat cost as the blue hat? *Measurement example*. A rubber band was 6 cm long at first. Now it is stretched to be 18 cm long. How many times as long is the rubber band now as it was at first?
General	$a \times b = ?$	$a \times ? = p$, and $p \div a = ?$	$? \times b = p$, and $p \div b = ?$

[4]The language in the array examples shows the easiest form of array problems. A harder form is to use the terms rows and columns: The apples in the grocery window are in 3 rows and 6 columns. How many apples are in there? Both forms are valuable.

[5]Area involves arrays of squares that have been pushed together so that there are no gaps or overlaps, so array problems include these especially important measurement situations.

[7]The first examples in each cell are examples of discrete things. These are easier for students and should be given before the measurement examples.

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.

Fifth Grade Florida Standards Math

Revised, 2014

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

Fifth 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.5
In Grade 5, instructional time should focus on three critical areas: (1) developing fluency with addition and subtraction of fractions, and developing understanding of the multiplication of fractions and of division of fractions in limited cases (unit fractions divided by whole numbers and whole numbers divided by unit fractions); (2) extending division to 2-digit divisors, integrating decimal fractions into the place value system and developing understanding of operations with decimals to hundredths, and developing fluency with whole number and decimal operations; and (3) developing understanding of volume.

(1) Students apply their understanding of fractions and fraction models to represent the addition and subtraction of fractions with unlike denominators as equivalent calculations with like denominators. They develop fluency in calculating sums and differences of fractions, and make reasonable estimates of them. Students also use the meaning of fractions, of multiplication and division, and the relationship between multiplication and division to understand and explain why the procedures for multiplying and dividing fractions make sense. (Note: this is limited to the case of dividing unit fractions by whole numbers and whole numbers by unit fractions.)

(2) Students develop understanding of why division procedures work based on the meaning of base-ten numerals and properties of operations. They finalize fluency with multi-digit addition, subtraction, multiplication, and division. They apply their understandings of models for decimals, decimal notation, and properties of operations to add and subtract decimals to hundredths. They develop fluency in these computations, and make reasonable estimates of their results. Students use the relationship between decimals and fractions, as well as the relationship between finite decimals and whole numbers (i.e., a finite decimal multiplied by an appropriate power of 10 is a whole number), to understand and explain why the procedures for multiplying and dividing finite decimals make sense. They compute products and quotients of decimals to hundredths efficiently and accurately.

(3) Students recognize volume as an attribute of three-dimensional space. They understand that volume can be measured by finding the total number of same-size units of volume required to fill the space without gaps or overlaps. They understand that a 1-unit by 1-unit by 1-unit cube is the standard unit for measuring volume. They select appropriate units, strategies, and tools for solving problems that involve estimating and measuring volume. They decompose three-dimensional shapes and find volumes of right rectangular prisms by viewing them as decomposed into layers of arrays of cubes. They measure necessary attributes of shapes in order to determine volumes to solve real world and mathematical problems

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.

MAFS.K12.MP.8.1 : **Look for and express regularity in repeated reasoning.**

Mathematically proficient students notice if calculations are repeated, and look both for general methods and for shortcuts. Upper elementary students might notice when dividing 25 by 11 that they are repeating the same calculations over and over again, and conclude they have a repeating decimal. By paying attention to the calculation of slope as they repeatedly check whether points are on the line through (1, 2) with slope 3, middle school students might abstract the equation $(y – 2)/(x – 1) = 3$. Noticing the regularity in the way terms cancel when expanding $(x – 1)(x + 1)$, $(x – 1)(x^2 + x + 1)$, and $(x – 1)(x^3 + x2 + x + 1)$ might lead them to the general formula for the sum of a geometric series. As they work to solve a problem, mathematically proficient students maintain oversight of the process, while attending to the details. They continually evaluate the reasonableness of their intermediate results.

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.

Fifth Grade Florida Standards for Math

BODY OF KNOWLEDGE: OPERATIONS AND ALGEBRAIC THINKING

Cluster 1: Write and interpret numerical expressions.

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.5.OA.1.1	Use parentheses, brackets, or braces in numerical expressions, and evaluate expressions with these symbols. *Cognitive Complexity:* Level 1: Recall	• Conventional order must be followed in order to reach the correct answer. (order of operations) • You must have parentheses in a problem in order to have brackets and you must have brackets in order to have braces. **The student is able to:** • Solve expressions with parentheses, brackets, and braces.	• I can evaluate/simplify (solve) numerical expressions by following the order of operations.

Key Vocabulary: parentheses, brackets, braces, sequential, analyze, numerical expressions, order of operations, evaluate, simplify

Resources:

Standard Identifier	Standard with Complexity Rating	Conceptual and Procedural Understanding – The student understands that:	Student Friendly Language Learning Targets
MAFS.5.OA.1.2	Write simple expressions that record calculations with numbers, and interpret numerical expressions without evaluating them. For example, express the calculation "add 8 and 7, then multiply by 2" as 2 × (8 + 7). Recognize that 3 × (18932 + 921) is three times as large as 18932 + 921, without having to calculate the indicated sum or product. *Cognitive Complexity:* Level 1: Recall	• Simple expressions can be written and interpreted but not evaluated. • Applying the four operations as well as place value will aid in describing the relationship between numbers. • Teaching Note: Writing numerical expressions will help them in the future when evaluating word problems. **The student is able to:** • Construct an expression using numbers and symbols. • Interpret numerical expressions. • Distinguish the relationship between numbers and place value. • Example: a. Describe how the expression 5(10*10) relates to 10*10. b. Double 5 and then add 15.	• I can write simple expressions using numbers and symbols (=,-,x,/) without evaluating (solving). • I can interpret simple expressions using numbers and symbols (=,-,x,/) without evaluating (solving). • I can verbally describe what an expression represents using numbers and symbols (=,-,x,/).

Key Vocabulary: expressions, interpret, order of operations

Resources:

Cluster 2: Analyze patterns and relationships.

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.5.OA.2.3	Generate two numerical patterns using two given rules. Identify apparent relationships between corresponding terms. Form ordered pairs consisting of corresponding terms from the two patterns, and graph the ordered pairs on a coordinate plane. *For example, given the rule" Add 3" and the starting number 0, and given the rule "Add 6" and the starting number 0, generate terms in the resulting sequences, and observe that the terms in one sequence are twice the corresponding terms in the other sequence. Explain informally why this is so.* *Cognitive Complexity:* Level 2: Basic Application of Skills and Concepts	• Ordered pairs correspond to specific points on a coordinate plane. • Patterns can be used to form ordered pairs. • One value affects another in a pattern. **The student is able to:** • Generate number patterns using a given rule. • Form ordered pairs from number patterns. • Graph ordered pairs on a coordinate plane. • Explain and identify the relationship between the numbers (terms) in a pattern.	• I can complete number patterns with given rules. • I can form ordered pairs using given rules and graph them on a coordinate plane. • I can explain the relationship between the numbers(terms) in a pattern. • I can name points as ordered pairs on a coordinate plane.
Key Vocabulary: Ordered pairs, Function tables, Coordinate plane, Quadrants, x and y axes, Corresponding terms			
Resources:			

BODY OF KNOWLEDGE: NUMBER AND OPERATIONS IN BASE TEN

Cluster 1: Understand the place value system.

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.5.NBT.1.1	Recognize that in a multi-digit number, a digit in one place represent 10 times as much as it represents in the place to its right and 1/10 of what it represents in the place to its left. *Cognitive Complexity:* Level 1: Recall	• Placement of a digit in our base 10 number system determines the value of that digit. • The reason the magnitude of numbers • Tens place is ten times as much as the ones place, and the ones place is 1/10 the size of the tens place... • Multiples and Powers of 10. **The student is able to:** • Students will recognize that our number system is a base ten system. • Recognize that moving a digit one place to the right or left will change it's value by 10. • Use a model of one unit. • Express understanding of place value using fractional language.	• I can recognize that every time I multiply by 10, I add a zero to the end of the number. • I can make a digit 10 times larger by moving it one place value to the left. • I can make a digit 10 times smaller by moving it one place value to the right.

Key Vocabulary: digit, number, place value, exponent, powers of 10

Resources:

Standard Identifier	Standard with Complexity Rating	Conceptual and Procedural Understanding – The student understands that:	Student Friendly Language Learning Targets
MAFS.5.NBT.1.2	Explain patterns in the number of zeros of the product when multiplying a number by powers of 10, and explain patterns in the placement of the decimal point when a decimal is multiplied or divided by a power of 10. Use whole number exponents to denote powers of 10. *Cognitive Complexity:* Level 2: Basic Application of Skills and Concepts	• The decimal point represents the power of ten when it is moved within a number and is represented using an exponent • Connecting the pattern of the numbers of zeros in the product when you multiply by the powers of 10. • The exponent above the 10 indicates how many places the decimal point is moving. **The student is able to:** • model what a power of ten looks like • explain the pattern when zeros are added or taken off • explain what happens when the decimal point is moved to the right or left in a number • use exponents to represent numbers in power of tens	• I can explain patterns I found when multiplying by the power of 10. • I can explain and relate how the decimal point moves when it is multiplied or divided by powers of ten. • I can use exponents to show powers of ten. • I can explain and compare the use of powers of ten and whole number exponents.

Key Vocabulary: exponent, power of ten, product, quotient, placement

Resources:

Standard Identifier	Standard with Complexity Rating	Conceptual and Procedural Understanding – The student understands that:	Student Friendly Language Learning Targets
MAFS.5.NBT.1.3	Read, write, and compare decimals to thousandths. 5.NBT.3a - Read and write decimals to thousandths using base-ten numerals, number names, and expanded form, e.g., 347.392 = 3 × 100 + 4 × 10 + 7 × 1 + 3 × (1/10) + 9 × (1/100) + 2 × (1/1000). 5.NBT.3b - Compare two decimals to thousandths based on meanings of the digits in each place, using >, =, and < symbols to record the results of comparisons. *Cognitive Complexity:* Level 2 Basic Application of Skills and Concepts	• Decimals represent a fraction of a whole number. • Each place has a different value. • The equivalence of decimals • Example: 32/100 = 0.30 + 0.02 30/00 + 2/100 = .320 3/10 + 2/100 = 3(1*10) + 2(1*100) **The student is able to:** • Read decimals using fractional language. • Write decimals using fractional form. • Write decimals in expanded form using symbol notation. • Compare decimals to thousandths using symbol notation. • Relate decimals to common benchmark decimals (.50, 1.0)	• I can read base 10 numbers using decimals up to the thousandths place with number names and expanded notation. • I can write base 10 numbers using decimals up to the thousandths place with number names and expanded notation. • I can compare base 10 numbers using decimals up to the thousandths place.
Key Vocabulary: base-ten system, expanded form, thousandths, place value, digits vs. numbers symbols <, =, >, compare, tenths, hundredth, order			
Resources:			

Standard Identifier	Standard with Complexity Rating	Conceptual and Procedural Understanding – The student understands that:	Student Friendly Language Learning Targets
MAFS.5.NBT.1.4	Use place value understanding to round decimals to any place *Cognitive Complexity:* Level 1: Recall	• The value of a digit in our number system is determined by its place value position • The ability to go beyond the standard algorithm of procedure for rounding. • Place value and number sense. **The student is able to:** • Demonstrate rounding of decimal numbers. • Explain the process of rounding decimals to any place value. • Use benchmark decimals to round (0, 0.5, 1, 1.5)	• I can round decimals to any place. • I can reason and explain the answer when I round. • I can use the benchmarks (0, 0.5, 1, 1.5) to round.
Key Vocabulary: tenths, hundredths, thousandths, place value, decimal, rounding, base 10 system			
Resources:			

Cluster 2: Perform operations with multi-digit whole numbers and with decimals to hundredths.

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.5.NBT.2.5	Fluently multiply multi-digit whole numbers using the standard algorithm. *Cognitive Complexity:* Level 1: Recall	• Using the standard algorithm with help them to multiply multi-digit numbers. **The student is able to:** • Multiply fluently multi-digit numbers • Use the standard algorithm • Solve word problems using multiplication • Understand the relationship between addition and multiplication	• I can multiply numbers with two or more digits in the traditional way.

Key Vocabulary: Algorithm, Multi-digit, Whole Number, Product, Factor

Resources:

Standard Identifier	Standard with Complexity Rating	Conceptual and Procedural Understanding – The student understands that:	Student Friendly Language Learning Targets
MAFS.5.NBT.2.6	Find whole-number quotients of whole numbers with up to four-digit dividends and two-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. *Cognitive Complexity:* Level 2; Basic Application of skills and Concepts	• There is a relationship between the properties of operations and solutions of division problems • There are a variety of strategies used to divide numbers. • Equations, rectangular arrays and area models can be used to find whole number quotients. • There is a relationship between multiplication and division. **The student is able to:** • Use multiplication to check division (inverse operations). • Find whole number quotients with multi-digit dividends and 2-digit divisors. • Explain strategies used to find quotients. • Illustrate and explain division by using equations, rectangular arrays or area models.	• I can divide a multi-digit number by a two-digit number. • I can show my work and explain how I got the answer through equations, rectangular array, and/or an area model. • I can show how multiplication and division are related. • I can check my work using multiplication. • I can show how division is related to subtraction. • I can use inverse operations. • When problem solving I can apply concepts of a quotient, divisor and a dividend.

Key Vocabulary: Dividends, Quotients, Divisor, Inverse operation, Whole Number, Rectangular array, Area model, Equations, Place Value, Algorithm

Resources:

Standard Identifier	Standard with Complexity Rating	Conceptual and Procedural Understanding – The student understands that:	Student Friendly Language Learning Targets
MAFS.5.NBT.2.7	Add, subtract, multiply, and divide decimals to hundredths, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method and explain the reasoning used. *Cognitive Complexity:* Level 2: Basic Application of Skills and Concepts	• Multiple strategies may be used to perform operations with decimals to the hundredths. • Multiplication is a series of addition problems and that division is a series of subtraction problems. • Fractions and decimals are all parts of a whole and are two different ways of recording the same number. • When multiplying decimals, placement of the decimal point in the product is determined by the placement of the decimal point within the factors. • The placement of the decimal point in the quotient is determined by the placement of the decimal point within the divisor and dividend. • When adding and subtracting decimals, the decimal point needs to align within the problem and the answer. **The student is able to:** • Use models, drawings, graph paper and other strategies to add, subtract, multiply, and divide decimals. • Communicate what strategy was used in the expression or equation and justify why that strategy was appropriate. • Read orally/write numbers with decimal points.	• I can add, subtract, multiply, and divide numbers with decimals. • I can use drawings, models, and strategies to the hundredths to explain my thinking.
Key Vocabulary: Relationship, Decimal, Inverse, Algorithms, Properties of Operation (Commutative, Associative, Distributive, Identity, Zero)			
Resources:			

BODY OF KNOWLEDGE: NUMBER AND OPERATIONS - FRACTIONS

Cluster 1: Use equivalent fractions as a strategy to add and subtract 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.5.NF.1.1	Add and subtract with unlike denominators (including mixed numbers) by replacing given fractions with equivalent fractions in such a way as to produce an equivalent sum or difference of fractions with like denominators. *For example, ⅔ + 5/4 = 8/12 + 15/12 = 23/12. (In general, a/b + c/d = (ad + bc)/bd.)* *Cognitive Complexity:* Level 2: Basic Application of Skills and Concepts	• There are multiple ways to find common denominators. • Finding common denominators makes addition and subtraction of fractions possible. **The student is able to:** • Solve to find equivalent fractions. • Calculate the sum and difference of fractions. • Create equivalent fractions by finding common denominators. • Create a model showing equivalent fractions.	• I can add fractions with unlike denominators by finding common denominators. • I can subtract fractions with unlike denominators by finding common denominators.

Key Vocabulary: numerator, denominator, common denominator, equivalent fractions, mixed numbers, improper fraction, simplify

Resources:

Standard Identifier	Standard with Complexity Rating	Conceptual and Procedural Understanding – The student understands that:	Student Friendly Language Learning Targets
MAFS.5.NF.1.2	Solve word problems involving addition and subtraction of fractions referring to the same whole, including cases of unlike denominators, e.g., by using visual fraction models or equations to represent the problem. Use benchmark fractions and number sense of fractions to estimate mentally and assess the reasonableness of answers. *For example, recognize an incorrect result 2/5 + 1/2 = 3/7, by observing that 3/7 < 1/2* *Cognitive Complexity:* Level 2: Basic Application of Skills and Concepts	• Fractions can be combined. • Fractions with the same denominators can be combined. • Fractions with different denominators can be combined. **The student is able to:** • Calculate the sum of fractions with like and unlike denominators. • Calculate the difference of fractions with like and unlike denominators. • Use concepts to solve non-routine word problems involving addition and subtraction of fractions with unlike denominators. • Use benchmark fractions and number sense of fractions to estimate mentally and assess the reasonableness of answers. • Interpret word problems and apply correct operation.	• I can add and subtract fractions with denominators that are the same when solving word problems. • I can add and subtract fractions with denominators that are different when solving word problems.

Key Vocabulary: common denominator, unlike denominator, benchmark fractions, reasonableness, whole

Resources:

Cluster 2: Apply and extend previous understandings of multiplication and division to multiply and divide 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.5.NF.2.3	Interpret a fraction as division of the numerator by the denominator (a/b = a÷b). Solve word problems involving division of whole numbers leading to answers in the form of fractions or mixed numbers. e.g., by using visual fraction models or equations to represent the problem. For example, interpret 3/4 as the result of dividing 3 by 4, noting that 3/4 multiplied by 4 equals 3, and that when 3 wholes are shared equally among 4 people each person has a share of size 3/4. If 9 people want to share a 50-pound sack of rice equally by weight, how many pounds of rice should each person get? Between what two whole numbers does your answer lie? *Cognitive Complexity:* Level 2: Basic Application of Skills and Concepts	• There is a relationship between a fraction and a division problem. • A remainder can be expressed as a fraction whose denominator is the divisor • Fractions lie between two whole numbers. **The student is able to:** • Construct a fraction model showing the relationship between a fraction and division and vice versa. • Recognize the remainder can be a fraction of the whole. • Show how to change the remainder into a fraction.	• I can identify a fraction as a division problem. • I can solve a whole number division word problem as a fraction • I can write the quotient as a fraction or mixed number.

Key Vocabulary: Interpret, fraction, division, numerator, denominator, mixed numbers, visual fraction, model, remainder

Resources:

Standard Identifier	Standard with Complexity Rating	Conceptual and Procedural Understanding – The student understands that:	Student Friendly Language Learning Targets
MAFS.5.NF.2.4	Apply and extend previous understandings of multiplication to multiply a fraction or whole number by a fraction. a. Interpret the product (*a*/*b*) × *q* as *a* parts of a partition of *q* into *b* equal parts; equivalently, as the result of a sequence of operations *a* × *q* ÷ *b*. *For example, use a visual fraction model to show (2/3) × 4 = 8/3, and create a story context for this equation. Do the same with (2/3) × (4/5) = 8/15. (In general, (a/b) × (c/d) = ac/bd.)* b. Find the area of a rectangle with fractional side lengths by tiling it with unit squares of the appropriate unit fraction side lengths, and show that the area is the same as	• A whole number can be written as a fraction. • A mixed number can be written as a fraction. • A fraction is a part of a whole. • When you double or triple fractions, you multiply the whole number times the numerator and divide the quotient by the denominator • The area of a rectangle can be found by multiplying fractions. **The student is able to:** • Multiply a numerator times a numerator and a denominator times a denominator. • (multiply a fraction by different representations of one) • Convert whole numbers into improper fractions. • Use a visual fraction model to interpret (a/b) x (c/d) = ac/bd • Create a story problem to explain the visual fraction model. • Multiply fractional side lengths of a rectangle to find the area.	• I can multiply a fraction or whole number by a fraction. • I can find the area of a rectangle using fraction side lengths • I can find the area of a rectangle by tiling it with unit squares.

	would be found by multiplying the side lengths. Multiply fractional side lengths to find areas of rectangles, and represent fraction products as rectangular areas. *Cognitive Complexity:* Level 2: Basic Application of Skills and Concepts		

Key Vocabulary: fraction, whole number, numerator, denominator, product, improper fraction, proper fraction, mixed number, area, equation, rectangle

Resources:

Standard Identifier	Standard with Complexity Rating	Conceptual and Procedural Understanding – The student understands that:	Student Friendly Language Learning Targets
MAFS.5.NF.2.5	Interpret multiplication as scaling (resizing), by: a. Comparing the size of a product to the size of one factor on the basis of the size of the other factor, without performing the indicated multiplication. b. Explaining why multiplying a given number by a fraction greater than 1 results in a product greater than the given number (recognizing multiplication by whole numbers greater than 1 as a familiar case); explaining why multiplying a given number by a fraction less than 1 results in a product smaller than the given number; and relating the principle of fraction equivalence a/b = (n x a)/(n x b) to the effect of multiplying a/b by 1. *Cognitive Complexity:* Level 3: Strategic Thinking & Complex Reasoning	• A product can be the result of scaling or resizing one factor to another. • Scaling is a form of multiplication. • Scaling/multiplying a number by a fraction greater than 1, results in a product greater than the original number. • Scaling/multiplying a number by a fraction less than 1, results in a product less than the original number. • Equivalent fractions can be made by multiplying the numerator and denominator by the same number. **The student is able to:** • Compare in words or diagrams the relationship between the size of the product and the size of a factor that has been sized or rescaled. • Describe how scaling is a form of multiplication. • Explain the effect of multiplying a number by a fraction greater than 1. • Explain the effect of multiplying a number by a fraction less than 1. • Create equivalent fractions by multiplying the numerator and denominator by the same number.	• I can describe the relationship between scaling (resizing) and multiplication. • I can describe how a factor changes when resized or scaled. • I can explain why when I multiply a number by a fraction greater than 1, the product is greater than the original number. • I can explain why when I multiply a number by a fraction less than 1, the product is less than the original number. • I can create equivalent fractions.

Key Vocabulary: Scaling, resizing, comparing, interpret, factor, product, equivalence, multiplying, greater than, less than, fraction equivalence, relationship

Resources:

Standard Identifier	Standard with Complexity Rating	Conceptual and Procedural Understanding – The student understands that:	Student Friendly Language Learning Targets
MAFS.5.NF.2.6	Solve real world problems involving multiplication of fractions and mixed numbers, e.g. by using visual fraction models or equations to represent the problem. *Cognitive Complexity:* Level 2: Basic Application of Skills and Concepts	• Multiplying by a fraction less than one decreases the product. • Multiplying by a whole number or a mixed number increases the product. • A quantity can be represented as a mixed number or improper fraction. • There is a relationship between a mixed number and an improper fraction as one can be converted to the other.	• I can use problem solving strategies/ideas to multiply fractions and mixed numbers in everyday life. • I can use visual fraction models to show the solution.

		• There are various strategies to solving problems. • There is a correlation between a multiplication problem and an addition problem. **The student is able to:** • Apply/use multiplication of fractions to solve real world problems. • Apply/use multiplication of mixed numbers to solve real world problems. • Prove/explain solutions using manipulatives or models.	
Key Vocabulary: Mixed numbers, Improper fractions, Fractions, Numerator Denominator, Product, Simplify/Reduce, Correlations, Real world problems, Problem Solving Strategies			
Resources:			
Standard Identifier	**Standard with Complexity Rating**	**Conceptual and Procedural Understanding – The student understands that:**	**Student Friendly Language Learning Targets**
MAFS.5.NF.2.7	Apply and extend previous understandings of division to divide unit fractions by whole numbers and whole numbers by unit fractions.[1] a. Interpret division of a unit fraction by a non-zero whole number, and compute such quotients. *For example, create a story context for (1/3) / 4, and use a visual fraction model to show the quotient. Use the relationship between multiplication and division to explain that (1/3) / 4 = 1/12 because (1/12) x 4 = 1/3.* b. Interpret division of a whole number by a unit fraction, and compute such quotients. *For example, create a story context for 4 / (1/5), and use a visual fraction model to show the quotient. Use the relationship between multiplication and division to explain that 4 / (1/5) = 20 because 20 x (1/5) = 4.* c. Solve real world problems involving division of unit fractions by non-zero whole numbers and division of whole numbers by unit fractions, e.g., by using visual fraction models and equations to represent the problem. *For example, how much chocolate will each person get if 3 people share 1/2 lb. of chocolate equally? How many 1/3-cup servings are in 2 cups of raisins?*	• Multiplication and division are inverse operations; if one is known for a given fact family, the other is also known. **The student is able to:** • Interpret division of a unit fraction by a whole number greater than 0. • Interpret division of a whole number greater than 0 by a unit fraction. • Compute the quotients. • Show the problems and solutions with visual fraction models. • Create a story for the problem.	• I can divide a fraction (less than 0) by a whole number greater than 0 by using what I know about multiplication. • I can divide a whole number greater than 0 by a fraction (less than 0) by using what I know about multiplication. • I can use models to prove my answers. • I can use what I know in real world examples**.**

	d. Students able to multiply fractions in general can develop strategies to divide fractions in general, by reasoning about the relationship between multiplication and division. But division of a fraction by a fraction is not a requirement at this grade. *Cognitive Complexity:* Level 2: Basic Application of Skills and Concepts		
Key Vocabulary: inverse operation/property, reciprocal, equation, quotient, fact family, unit fraction			
Resources:			

BODY OF KNOWLEDGE: MEASUREMENT AND DATA

Cluster 1: Convert like measurement units within a given measurement system.

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.5.MD.1.1	Convert among different-sized standard measurement units within a given measurement system (i.e. ,km, m, cm ,kg, g; lb, oz. ,l ,ml ,hr, min, ,sec) within a given measurements (e.g., convert 5 cm to 0.05 m), and use these conversions in solving multi-step, real world problems *Cognitive Complexity:* Level 2: Basic Application of skills and Concepts	• Converting among different-sized standard measurement units within a given measurement system is often necessary to solve multi-step, real world problems. • There are different systems of measurement at work in our world. **The student is able to:** • Convert among measurement systems and identify patterns of conversion within systems for length, weight and volume. • Interpret and solve multi step real world problems involving conversions in various measurement situations.	• I can fluently convert measurement units within the same system. • I can solve multi-step, real world problems, based on different measurement systems.

Key Vocabulary: metric units of measurement, customary units of measurement

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.5.MD.2.2	Make a line plot to display a data set of measurements in fractions of a unit (1/2, 1/4, 1/8). Use operations on fractions for this grade to solve problems involving information presented in line plots. *For example*, given different measurements of liquid in identical beakers, find the amount of liquid each beaker would contain if the total amount in all the beakers were redistributed equally. *Cognitive Complexity:* Level 2: Basic Application of Skills and Concepts	• The use of operations with fractions to solve problems. • A line plot is and how to create one. • How to collect and display data in a line plot. • They can use operations of fractions to solve problems from data on a line plot. • Knowing benchmark fractions like 1/2, 1/4 and 1/8 can help them visualize and solve problems. • How to find the mean of fractions based on a line plot. **The student is able to:** • Collect, display, and formulate conclusions in regards to data that is presented in fractions of 1/2, 14 and 18. • Construct a line plot of consistent scale using fractional quantities. • Interpret data in a line plot to solve problems. • Distinguish the unit of measurement that is appropriate for the situation. • Demonstrate and explain precision in measurement and choose appropriate tools for measurement.	• Make a line plot to display a data set of measurements in fractions of a unit (1/2, 1/4, 1/8). Use operations on fractions for this grade to solve problems involving information presented in line plots. • For example, given different measurements of liquid in identical beakers, find the amount of liquid each beaker would contain if the total amount in all the beakers were redistributed equally.

Key Vocabulary: Line plot, fractions, operations, scale, weight, length, volume, (Customary and Metric Units), data, mean/average, precision, benchmark fractions

Resources:

Cluster 3: Geometric measurement: understand concepts of volume and relate volume to multiplication and to addition.

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.5.MD.3.3	Recognize volume as an attribute of solid figures and understand concepts of volume measurement. a. A cube with side length 1 unit, called a "unit cube," is said to have "one cubic unit" of volume, and can be used to measure volume. b. A solid figure which can be packed without gaps or overlaps using n unit cubes is said to have a volume of n cubic units. *Cognitive Complexity:* Level 1: Recall	• Volume is an attribute of solid figures and volume can be measured in cubic units. • A cubic unit measures one unit on each side. • Some examples of cubic units are cubic inches, cubic centimeters, cubic feet and cubic yards. • When finding the volume of a solid figure, unit cubes must be packed in the solid figure with no gaps or overlaps. **The student is able to:** • Recognize volume as an attribute of solid figures. • Identify a cube with side length of 1 unit as a 'unit cube'. • Use manipulatives to model finding the volume of a solid figure by filling a solid figure with unit cubes. • Construct a model of a unit cube.	• I can recognize that all solid figures have volumes. • I can demonstrate and explain that a cube that measures one unit on each side is called one cubic unit. • I can recognize that cubic units are used to measure volume. • I can explain that to measure volume means I pack a solid figure with cubic unit cubes without any gaps or overlaps. The number of unit cubes in the figure is its volume

Key Vocabulary: cubic units, volume, gaps, overlaps, unit, packed

Resources:

Standard Identifier	Standard with Complexity Rating	Conceptual and Procedural Understanding – The student understands that:	Student Friendly Language Learning Targets
MAFS.5.MD.3.4	Measure volumes by counting unit cubes, using cubic cm, cubic in, cubic ft, and improvised units. *Cognitive Complexity:* Level 1: Recall	• The volume of a solid is measured in cubic units and they can measure that volume in a variety of units. • They can develop an image of cubic units. **The student is able to:** • Design a new school playground using measurements in fractions, formulas, and a computer program. • Estimate the volume of a variety of rectangular prisms. • Calculate the volume of a variety of rectangular prisms by counting unit cubes.	• I can measure volume using a unit cubes and improvised units. • I can measure the volume of combined rectangular prisms. • I can distinguish between which cubic measurements to use for a given situation.

Key Vocabulary: volume, measure, cubic unit, cubic in, cubic ft, cubic cm, formulas, face, estimate

Resources:

Standard Identifier	Standard with Complexity Rating	Conceptual and Procedural Understanding – The student understands that:	Student Friendly Language Learning Targets
MAFS.5.MD.3.5	Relate volume to the operations of multiplication and addition and solve real world and mathematical problems involving volume. a. Find the volume of a right rectangular prism with whole-number side lengths by packing it with unit cubes, and show that the volume is the same as would be found by multiplying the edge lengths, equivalently by multiplying the height by the area of the base. Represent threefold whole-number products as volumes, e.g., to represent the associative property of multiplication. b. Apply the formulas V = l × w × h and V = b × h for rectangular prisms to find volumes of right rectangular prisms with whole number edge lengths in the context of solving real world and mathematical problems. c. Recognize volume as additive. Find volumes of solid figures composed of two non-overlapping right rectangular prisms by adding the volumes of the non-overlapping parts, applying this technique to solve real world problems. *Cognitive Complexity:* Level 2: Basic Application of Skills and Concepts	• Volume can be found in a variety of ways. • Formulas can be used to find volume. • The relationship between the total volume and the area of the base. • Volume of an original figure can be found by adding the area of the bottom of the cube and adding layers of unit cubes to that bottom layer. **The student is able to:** • Organize unit cubes to find the volume of right rectangular prisms. • Calculate the volume of right rectangular prisms using the volume formulas. • Decompose a 3-D figures into right rectangular prisms in order to find the volume of the entire 3-D figure. • Compare area and volume and recognize volume as additive.	• I can use manipulatives to measure the volume of right rectangular prisms. • I can use the volume formulas to determine the volume of right rectangular prisms. • I can decompose solid figures into smaller right rectangular prisms. • I can add the volumes of several right rectangular prisms to determine the volume of the original figure.
Key Vocabulary: volume, right rectangular prism, length, width, height, formula, cubic units			
Resources:			

BODY OF KNOWLEDGE: GEOMETRY

Cluster 1: Graph points on the coordinate plane to solve real-world and mathematical problems.

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.5.G.1.1	Use a pair of perpendicular number lines, called axes, to define a coordinate system, with the intersection of the lines (the origin) arranged to coincide with the 0 on each line and a given point in the plane located by using an ordered pair of numbers, called its coordinates. Understand that the first number indicates how far to travel from the origin in the direction of one axis, and the second number indicates how far to travel in the direction of the second axis, with the convention that the names of the two axes and the coordinates correspond (e.g., x-axis and x-coordinate, y-axis and y-coordinate). *Cognitive Complexity:* Level 1: Recall	• Each point on a coordinate plane has a specific set of ordered pair of numbers. • The first number in an ordered pair points start at the origin (0,0)and moves right or left of it on the x-axis. • The second number in ordered pair points moves up or down on the y-axis. **The student is able to:** • Locate an ordered pair of numbers on a coordinate plane. • Locate the numbers of the ordered pair by starting at the origin (0,0). • Explain that the intersecting lines that form the coordinate plane are number lines	• I can use the x and y axis to locate and identify points on a coordinate plane. • I can identify the origin on a coordinate plane.
Key Vocabulary: number line, perpendicular lines, x-axis, y-axis, coordinates, origin, ordered pair of numbers, intersection			
Resources:			

Standard Identifier	Standard with Complexity Rating	Conceptual and Procedural Understanding – The student understands that:	Student Friendly Language Learning Targets
MAFS.5.G.1.2	Represent real world and mathematical problems by graphing points in the first quadrant of the coordinate plane, and interpret coordinate values of points in the context of the situation. *Cognitive Complexity:* Level 2: Basic Application of Skills and Concepts	• Places on maps can be located by using an ordered pair. **The student is able to:** • Plot ordered pairs in quadrant I of a coordinate grid. • Determine distances between two ordered pairs.	• I can graph points in the first quadrant of a coordinate plane. • I can represent real world math problems by graphing points on a coordinate plane.
Key Vocabulary: ordered pair, coordinate, quadrant 1			
Resources:			

Cluster 2: Classify two-dimensional figures into categories based on their properties.

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.5.G.2.3	Understand that attributes belonging to a category of two-dimensional figures also belong to all subcategories of that category. For example, all rectangles have four right angles and squares are rectangles, so all squares have four right angles. *Cognitive Complexity:* Level 2: Basic Application of Skills and Concepts	• Two dimensional shapes can be in several categories based on their attributes. **The student is able to:** • Categorize two-dimensional figures • Explain how attributes were used to categorize two-dimensional figures	I can understand and explain that two-dimensional figures can be categorized multiple ways based on their attributes.
Key Vocabulary: attributes, categories, subcategories			
Resources:			

Standard Identifier	Standard with Complexity Rating	Conceptual and Procedural Understanding – The student understands that:	Student Friendly Language Learning Targets
MAFS.5.G.2.4	Classify two-dimensional figures in a Venn diagrams based on the attributes of the figures. *Cognitive Complexity:* Level 2: Basic Application of Skills and Concepts	• There are two-dimensional figures and three-dimensional figures. • Geometrical figures have attributes. • Venn Diagrams can be used to classify information. **The student is able to:** • Identify the attributes of two-dimensional figures. • Classify two-dimensional figures in a Venn Diagram based on the attributes of the figures.	I can classify two-dimensional figures in a Venn diagram based on the attributes of the figures
Key Vocabulary: Classify, sort, two-dimensional figures, properties, attributes, Venn Diagram			
Resources:			

Fifth Grade MATH Pacing Guide

	Quarter 1	Quarter 2	Quarter 3	Quarter 4
Overarching Concepts	Numbers and Operations, Algebra, Fractions	Division, Measurement, Decimals with multiplication	Dividing decimals, multiply and divide fractions, geometry	Review of skills and 6th grade preparation
Standards/ Learning Targets	MAFS.5.OA11 MAFS.5.OA12 MAFS.5.NB.1.1 MAFS.5.NBT.1.2 MAFS.5.NBT.2.5 MAFS.5.NBT.26 **Chapter 1** MAFS.5.NBT1.1 MAFS.5.NBT.1.3a MAFS.5.NBT.1.3b MAFS.5.NBT.1.4 MAFS.5.NBT.2.7 **Chapter 3** MAFS.5.NF.1.1 MAFS.5.NF.1.2 **Chapter 6** MAFS.5.OA.2.3 MAFS.5.MD.2.2 MAFS.5.G.1.1 MAFS.5.G.1.2 **Chapter 9** *Start on 9.2 instead of the first lesson. Option to come back to it later in the chapter.	MAFS.5.NBT.2.6 MAFS.5.NF.2.3 **Chapter 2** MAFS.5.MD.1.1 **Chapter 10** MAFS.5.NBT.1.2 MAFS.5.NBT.2.7 **Chapter 4**	MAFS.5.NBT.1.2 MAFS.5.NBT.2.7 **Chapter 5** MAFS.5.NF.2.4a MAFS.5.NF.2.4b MAFS.5.NF.2.5a MAFS.5.NF.2.6 **Chapter 7** MAFS.5.NF.2.3 MAFS.5.NF.2.7a MAFS.5.NF.2.7b MAFS.5.NF.2.7c **Chapter 8** MAFS.5.MD.3.3 MAFS.5.MD.3.3a MAFS.5.MD.3.3b MAFS.5.MD.3.4 MAFS.5.MD.3.5a MAFS.5.MD.3.5b MAFS.5.MD.3.5c MAFS.5.G.2.3 MAFS.5.G.2.4 **Chapter 11**	Review DEA data. Data driven remediation/acceleration based on assessment and progress monitoring results; Math Project (ex: survival math) - Plan and budget for a family vacation - Design your dream room. Create dimensions, floor plan - Compare time zones; what would a student in China be doing at the same time students are at school, on the bus, going to bed, etc.
High-Yield Routine(s) (Provided Spiraled Review)	Application Problems – See next section	Application Problems –	Application Problems	Applications Problems
Target Vocabulary	• Sequential • Evaluate • Simplify • Expressions • Expanded Form • Exponent • Power of Ten	• Precision • Algorithm • Interpret • Metric • Customary • Inverse • Coordinate	• Classify • Origin • Cubic • Attributes	Review difficult terms depending on data driven remediation; terms they will see in 6th grade math.
Essentials to Remember	Use of eight math practices	Use of eight math practices	Use of eight math practices itools (think central)	Use of eight math practices

High-Yield Routine for Fifth Grade

The spiraled review sheet is to be completed each week. 15 – 20 minutes of daily math time is spent on this spiraled review. The following routine is followed:

Step 1: **Monday** – Distribute the sheet for the week. Students begin work. On **Monday/Tuesday**, students complete the front page of number sense/operations/algebraic thinking. Students work as teacher circulates. Teacher coaches by asking questions when students are stuck. Example: What about this problem do you know how to do? What would be your next step? What tools could you use to help? Teacher does not provide the answer.

Step 2: **Wednesday/Thursday** – Students complete the back page of word problems. Students may work in pairs, groups, or alone.

Step 3: **Friday** – This may take up to one hour; it cannot be left out. Whole group discussion with teacher reviewing concepts in the problems. Teacher asks questions, asks to students to explain and justify thinking, compare how problems are solved, etc. The focus is on student thinking.

Step 4: Work is placed in notebook for recording of data.

WEEK 1

Name_____Date_____Mon. & Tues. FRONT, Wed. & Thur. BACK

Operations, Algebraic Thinking, and Fractions

Solve each problem. In the space next to it, use inverse operations to check your work.

$$\begin{array}{r} 6{,}404{,}385 \\ +\ 6{,}789{,}588 \end{array} \qquad \begin{array}{r} 5{,}890{,}709 \\ -\ 2{,}425{,}859 \end{array}$$

$$\begin{array}{r} \$\ 8.52 \\ +\ \$\ 7.89 \end{array} \qquad \begin{array}{r} 6.25 \\ -\ 2.88 \end{array}$$

Evaluate each expression and bubble the circle for each expression that shows 15:

◯10 + 5 ◯20 - 10 ◯ x 5 ◯36 ÷ 6 ◯13.50 + 1.50

Continue the pattern: 1, 3, 9, 27, _____, _____, _____

Fill in the table using the pattern:

A	1	2	3	4	5	7
B	1/2	1	1 1/2	2		

Numbers and Operations in Base Ten

Write **36.15** in word form:

Use symbols >, <, = to compare the whole numbers and decimals:

1.309 ____ 1.315 5.029 _____ 5.128 7.250 _____ 7.25 2.001 _____ 2.1 9.401 _____ 9.309

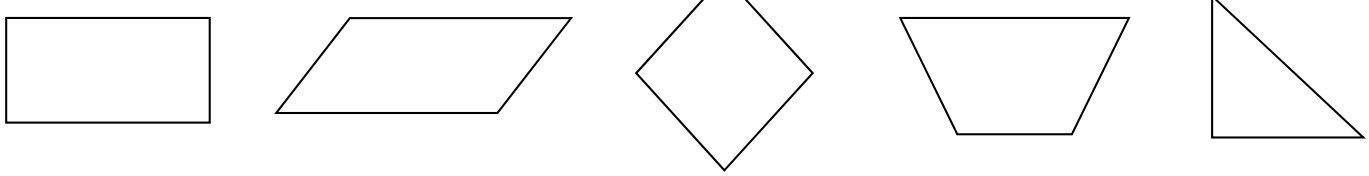
Use symbols >, <, = to compare the fractions and decimals:

$\frac{1}{8}$ ___ $\frac{3}{4}$ $\frac{1}{2}$ ___ .50 $\frac{3}{10}$ ___ .75 $\frac{2}{4}$ ___ $\frac{1}{2}$ .8 ___ .80

Measurement, Data, and Geometry

1 foot = 12 inches ____ feet = 24 inches 7 feet = ____ inches 12 feet = ____ inches

For each polygon identify the number of RIGHT angles. Then write that number inside the polygon.



Spiral Standards Review with Word Problems: **For each problem write an equation, solve, and explain your answer.**

A skyscraper is 7,321 feet tall. It is 3,420 feet taller than the office building next door. How tall is the office building?

Heather read 18 books. Tyler read one third as many books as Heather. How many books did Tyler read?

A zookeeper is in charge of taking care of rabbit families. Each rabbit family has a mom rabbit, a dad rabbit and 7 baby rabbits. If there are 4 rabbit families at the zoo, how many rabbits are there?

A stadium has 70,000 seats in it. Each section can hold 700 people. How many sections are there in the stadium?

Gabe and Justus are arranging books on shelves. They have 36 books to arrange and they want to have an equal number of books on each shelf. They want to use more than 6 shelves but less than 12. How many shelves should they use? How many books will be on each shelf? Draw it.

WEEK 2

Name_____Date_____Mon. & Tues. FRONT, Wed. & Thur. BACK

Operations, Algebraic Thinking, and Fractions

Solve each problem. In the space next to it, use inverse operations to check your work.

45 X 19	321 x 123
$28.52 + $ 14.89	36.25 - 15.48

Evaluate each expression and bubble the circle for each expression that shows 108:

◯ 60 + (8 x 6) ◯ 353 - 247 ◯97.5 + 10.5 ◯ 324 ÷ 3 ◯ 90 ½ + 16 ½

Continue the pattern: 1, 5, 25, 125, _____, _____, _____

Fill in the table using the pattern:

A	1	2	3		5	7
B	1.25	2.5	3.75	5		

Numbers and Operations in Base Ten

Write **72.034** in word form:

Use symbols >, <, = to compare the whole numbers and decimals:

4.086 ____ 4.09 1.253 _____ 1.523 9.35 _____ 9.350 7.06 _____ 7.061 11.23 _____ 11.237

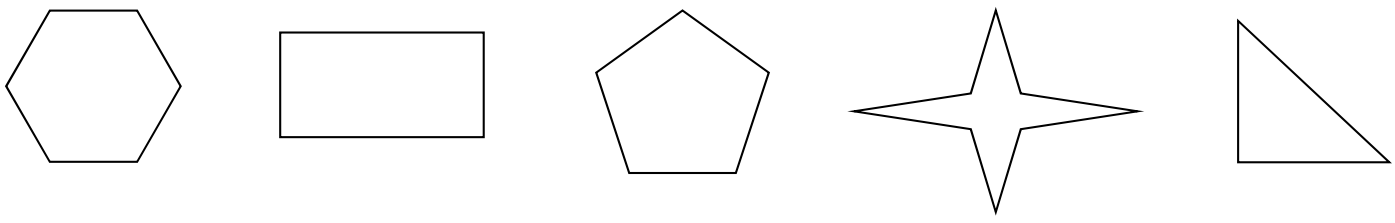
Use symbols >, <, = to compare the fractions and decimals:

$\frac{5}{6}$ ___ $\frac{1}{3}$ $\frac{6}{12}$ ___ .75 $\frac{4}{10}$ ___ .4 $\frac{12}{16}$ ___ $\frac{3}{4}$ .2 ___ $\frac{2}{5}$

Measurement, Data, and Geometry

1 yard = 3 feet ____ feet = 5 yards 21 feet = ____ yards 12 yards = ____ feet

Write the name of each polygon underneath it. Then write the number of sides it has inside the polygon.



Spiral Standards Review with Word Problems: **For each problem write an equation, solve, and explain your answer.**

We are planning for the 5th grade field trip. Each student will have to pay $25.00 to attend. There are eighty total students in fifth grade who plan to go on the trip. Forty-three of these students are boys. How many girls are planning to go on the trip?

Lia and three friends went to a play. They paid for candy and tickets. They shared a large bag of candy that cost $5.00. If they spent a total of $33.00, how much did one ticket cost?

Dominic missed five questions on a quiz and scored an 85%. How many points was each question worth?

Brooke is on a 28 mile hike. If she journeyed 9.82 miles on Monday and 6.5 miles on Tuesday, how far does she have left to travel?

Logan practices running 4 sprints across the baseball field every day during the summer. It takes him 13 seconds to walk onto the field and then he practices running for a total of 213 seconds. How long does it take him to run one sprint?

WEEK 3

Name_____Date_____Mon. & Tues. FRONT, Wed. & Thur. BACK

Operations, Algebraic Thinking, and Fractions

Solve each problem. In the space next to it, use inverse operations to check your work.

76 X 40	420 x 156
$ 473.26 - $ 294.89	236.05 - 79.48

Evaluate each expression and bubble the circle for each expression that shows 156:

◯ 2^4 x 10 ◯ 48 + (12 x 9) ◯ 624 ÷ 4 ◯ (9 x 10) + (5 x 10) + (6 x 1) ◯ 104 ¼ + 51.75

Continue the pattern: 4, 4, 8, 12, _____, _____, _____

Fill in the table using the pattern:

A	1	2	3	4	5	7
B	1	8	27	64		

Numbers and Operations in Base Ten

Write **312.521** in word form:

Use symbols >, <, = to compare the whole numbers and decimals:

14.526 ____ 14.256 91.203 _____ 91.023 17.35 _____ 17.530 327.6 _____ 327.60 82.45 _____ 82.045

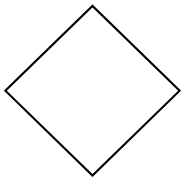
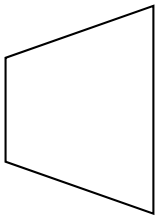
Use symbols >, <, = to compare the fractions and decimals:

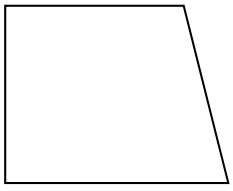
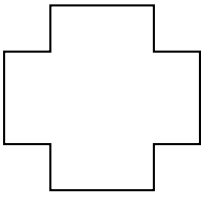
$\frac{9}{10}$ ___ .09 $\frac{12}{4}$ ___ 3.75 $\frac{6}{20}$ ___ .30 $\frac{18}{24}$ ___ $\frac{8}{12}$ .2 ___ $\frac{2}{5}$

Measurement, Data, and Geometry

1 gallon = 4 quarts ____ gallons = 20 quarts 10 gallons = ____ quarts ____ gallons = 96 quarts

Circle all the shapes that are also classified as parallelograms:

Spiral Standards Review with Word Problems: **For each problem write an equation, solve, and explain your answer.**

A seamstress is sewing buttons onto jackets. 6 buttons go on one jacket. **If she has 327 buttons, how many jackets can she complete? If she gets paid $2.00 per completed jacket, how much money will she make?**

Emma needs 4 gallons of water for a science experiment. Her classroom has nothing to measure gallons with, but they do have pitchers that hold exactly 1 quart of water. **How many full pitchers of water does Emma need for her science experiment?**

A vet measured the mass of two birds. The mass of the first bird was 52.94 grams and the mass of the second bird was 103.21 grams. **What is the difference in the masses of the two birds**?

Jon had a 14.25 pound block of clay. He used 5.3 pounds of clay to make a sculpture of a building. **How much clay does Jon have left?**

Johnny bought a football for $12.46, a helmet for $19.23 and some new cleats for $45.96. **What is the total amount of money Johnny spent on all three items?**

WEEK 4

Name_____Date_____Mon. & Tues. FRONT, Wed. & Thur. BACK

Operations, Algebraic Thinking, and Fractions

Solve each problem. In the space next to it, use inverse operations to check your work.

678 X 25	3,962 x 7
$99.01 + 3.59	0.84 - 0.56

Create the following expressions using numbers and symbols:

Divide 10 by 2, then subtract 3. _____ Subtract 6 from 9, then divide by 3. _____

Chance and Eli are creating patterns.

- Chance uses the rule "multiply by 2" and starts at 5.
- Eli uses the rule "add 8" and starts at 16.

For which term is Chance's number equal to Eli's number?

Numbers and Operations in Base Ten

Write **329.5** in word form:

Write **329.5** in expanded form:

Write the value of the following expressions:

10^2 _____ 5.23×10^2 _____ 0.0759×10^2 _____ 632.841×10^3 _____

Select all the numbers that round to 4.3 when rounded to the nearest tenth.

○ 4.25 ○4.24 ○4.21 ○4.35 ○4.34 ○4.31 ○ 4.41 ○4.29 ○ 4.38

Measurement, Data, and Geometry

4 quarts = 1 gallon ____ gallons = 36 quarts _____ quarts = 23 gallons 26 quarts = ____ gallons

Select all of the properties that both rectangles and parallelograms share.

○ 4 right angles ○ 4 sides of equal length ○ 2 pairs of parallel sides ○ 2 pairs of sides with equal length

Which could be the name of a parallelogram that has four equal sides and four right angles?

○kite ○ trapezoid ○ square ○ quadrilateral

Spiral Standards Review with Word Problems: **For each problem write an equation, solve, and explain your answer.**

Heather is helping with the school play by measuring fabric for the costumes. She needs 9 yards of fabric. She has 12 feet of fabric. How many more feet of fabric does she need?

During the first race, 12 people ran a 1.5 mile race. During the second race, 4 people ran a 2.2 mile race. How many more total miles were run during the first race compared to the second race?

Allie has one coin that weighs 11 grams. If Allie's nine friends each have the same coin, what is the total weight of all the coins?

Ethan says that when you divide a number by 10^3 you move the decimal point 3 places to the left. Alex says that you move the decimal point 3 places to the right. Who is correct?

Elliana is collecting strips of ribbons for an art project as shown below. Create a line plot to show the ribbon lengths that Elliana has in her collection.

Ribbon Lengths (inches)
12
14 ½
12
13
13 ½
12
14 ½
11

WEEK 5

Name_____Date_____Mon. & Tues. FRONT, Wed. & Thur. BACK

Operations, Algebraic Thinking, and Fractions

Solve each problem. In the space next to it, use inverse operations to check your work.

2,873 X 64	785 x 17	579 ÷ 3 =
27.95 + 11.7 =	10.39 – 4.2 =	618 ÷ 6 =

Grace, Hannah, and Laural are creating patterns. Each pattern starts at 1.

- Austin uses the rule "multiply by 2, then add 4."
- Mackenzie uses the rule "subtract 2, then multiply by."
- Kinsley uses the rule "add 5, then multiply by 9."

Complete the table to show the next numbers in each pattern.

Austin's Pattern			Mackenzie's Pattern			Kinsley Pattern	
Term	Number		Term	Number		Term	Number
1			1			1	
2			2			2	
3			3			3	

Numbers and Operations in Base Ten

Write **1.726** in word form:

Write **1.726** in expanded form:

An expression is described in words. Add 5 and 14, triple the sum, and then add four-fifths. Create the expression using numbers and symbols.

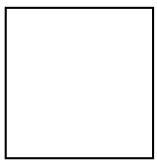
_____

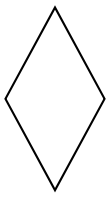
Evaluate the numerical expressions below.

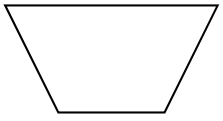
6 x (4 + 2) + 100	6 x (4 + 2 x 4) + 10	½ x [4 + 6 x 3] – 9

Measurement, Data, and Geometry

List all the possible categories for each of the following shapes:







Spiral Standards Review with Word Problems: **For each problem write an equation, solve, and explain your answer.**

Aden has ten coins that weigh a total of 25 grams. If all the coins are the same mass, how many grams does 1 of his coins weigh?

Brooke multiplies and divides original numbers by powers of 10 to create new numbers. Which original numbers were multiplied by 10^3 to create the new number?

Original Number	New Number
5.23	523,000
0.005	5
100	0.001
600	60,000
4.56	4,560
37.6	3,760

Shakya brought 1/4 cup of chocolate chips to Lia's house so they can bake cookies for Lia's birthday party. Lia already has 3/8 cup of chocolate chips. How many cups of chocolate chips do they have altogether?

John Garrett and Shelby each bought a pizza. The pizzas are the same size. Richard cut his pizza into 12 slices. Shelby cut her pizza into 6 slices, and ate 2 slices. Together, John Garrett and Shelby ate 9/12 of one pizza. How many slices of his pizza did John Garrett eat?

Two newspapers are comparing sales from last year. The Tallahassee Democrat sold 34,859 copies. The Wakulla News sold 34,859 x ½ copies. Write a statement that compares the numbers of newspapers sold.

WEEK 6

Name_____Date_____Mon. & Tues. FRONT, Wed. & Thur. BACK

Operations, Algebraic Thinking, and Fractions

Solve each problem. In the space next to it, use inverse operations to check your work.

2,873 X 64

785 x 17

579 ÷ 3 =

27.95 + 11.7 =

10.39 – 4.2 =

618 ÷ 6 =

Grace, Hannah, and Laural are creating patterns. Each pattern starts at 1.

- Austin uses the rule "multiply by 2, then add 4."
- Mackenzie uses the rule "subtract 2, then multiply by."
- Kinsley uses the rule "add 5, then multiply by 9."

Complete the table to show the next numbers in each pattern.

Austin's Pattern			Mackenzie's Pattern			Kinsley Pattern	
Term	Number		Term	Number		Term	Number
1			1			1	
2			2			2	
3			3			3	

Numbers and Operations in Base Ten

Write **1.726** in word form:

Write **1.726** in expanded form:

An expression is described in words. Add 5 and 14, triple the sum, and then add four-fifths. Create the expression using numbers and symbols.

_____

Evaluate the numerical expressions below.

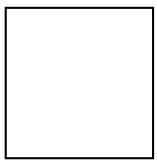
6 x (4 + 2) + 100

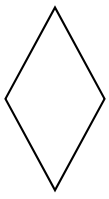
6 x (4 + 2 x 4) + 10

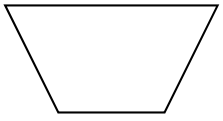
½ x [4 + 6 x 3] – 9

Measurement, Data, and Geometry

List all the possible categories for each of the following shapes:







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WEEK 7

Name_____Date_____Mon. & Tues. FRONT, Wed. & Thur. BACK

Operations, Algebraic Thinking, and Fractions

Solve each problem. In the space next to it, use inverse operations to check your work.

$$\begin{array}{r} 8{,}004{,}622 \\ -\ 914{,}675 \\ \hline \end{array} \qquad \begin{array}{r} 5{,}368 \\ \times\ 9 \\ \hline \end{array}$$

$$\begin{array}{r} 12.3 \\ +\ 11.46 \\ \hline \end{array} \qquad \begin{array}{r} 21.4 \\ -\ 16.97 \\ \hline \end{array}$$

Draw a fraction strip model to find the sum of the 2 fractions. Write your answer in simplest form.

$\frac{2}{3} + \frac{1}{6} =$

Fill in the table using the pattern:

A	$2.00	$3.25	$4.50	$5.75	$9.50	$10.00
B	$3.25	$4.50	$5.75			

Numbers and Operations in Base Ten

Write the **value** of the underlined digits in each number:

7,3<u>4</u>6,199 _____ <u>4</u>5,778,305 _____

Order these decimal amounts from least to greatest:

2.007; 2.09; 2.714; 2.97 _____ 0.386; 0.6; 0.683; 0.31_____

Use symbols >, <, = to compare the decimals:

5.678 ◯ 5.786 4.34 ◯ 4.341 7.20 ◯ 7.200 9.4 ◯ 0.94 0.12 ◯ 0.120

Measurement, Data, and Geometry : Use the line plot to answer the questions.

How many total students took the quiz? _____

What score did the largest number of students get and how do you know that?

_____

_____

Spiral Standards Review with Word Problems: **For each problem write an equation, solve, and explain your answer.**

Joe is running a 26 mile race. In the first hour he ran 6.4 miles. In the second hour he ran 7.135 miles. **How many miles does he have left to go?**

A tiger and tiger kitten were being studied at the Jacksonville zoo. At last measurement, the kitten was 1/3 the height of the tiger when they both stood on their hind legs. If the tiger was 6 feet tall, **What was the height, in inches, of the kitten?**

Jada made a special pie for the festival. She cut her pie into equal sized pieces and when she put three pieces of her pie together, they formed a right angle. **What type of angle would she form if she put 6 pieces together? Draw a picture to model your answer.**

A basketball team has 10 players on it. Each contributed $20.00 to buy new uniforms. In total they spent $183 of the $200 they brought in. The coach decided to give them back the leftover money. **About how much money, to the nearest whole dollar amount, will each player get back?**

Mr. Ward's truck weighs 3 tons. **How many ounces does his truck weigh?**

WEEK 8

Name_____Date_____Mon. & Tues. FRONT, Wed. & Thur. BACK

Operations, Algebraic Thinking, and Fractions

Solve each problem. In the space next to it, use inverse operations to check your work.

34, 678,214
+ 6, 034, 898

670, 0000
- 348, 0621

126
X 53

7)497

Write an expressions to match the words:

Tria has 10 fewer pencils than Seth and Clare combined. Seth has 15 and Clare has 12.

_____

Sara washes 4 cars for $8.00 each, 3 days in a row.

_____

Write a rule for the sequence, then find the unknown term.

3/10, 2/5,_____, 3/5, 7/10

Rule_____

⅛ , ½, _____,1¼ , 1⅝

Rule_____

Numbers and Operations in Base Ten

Write the **value** of the underlined digits in each number:

657,334,912 _____ 60,012,843 _____

Write this number in **two** other forms: (4 x 100,000) + (6 x 10,000) + (3 x 100) + (9 x 10)

Evaluate the expressions:

10^2 + (6 x 8) -12 16 +(7 x 2) 10° x (23-8)+ 18

Measurement, Data, and Geometry : Use the data to complete the line plot, then answer the questions.

Cream used in Omelet Orders

The chef used different amounts of cream when making omelets, depending on how many she was making at one time. Here are the amounts: ¼ c. , ¼ c. , ¾ c., 1 c., ½ c., ½ c., ½ c. , 1 c., ¾ c., ½ c.

What is the total amount of cream used?

_____

Which amount was used the most?

Spiral Standards Review with Word Problems: **For each problem write an equation, solve, and explain your answer.**

At a recent dog show, a German Shepherd and a Chihuahua took first and second place, respectively. The German Shepherd weighed 96 pounds and the Chihuahua's weight was equal to 1/12 of that of the German Shepherd's. **What was the weight, in ounces, of the Chihuahua?**

Our school is walking in Relay-for-Life. Our goal is to walk a total of 300 miles. If we walk 25.6 miles in the first hour, 153.9 miles in the second hour and 52 miles in the third hour, **how many miles will we still have to walk to reach our goal?**

Mrs. Roddenberry's science class combined 1/4 cup of water, 3/8 cups of vinegar and 4/16 cups of oil. **How much liquid do they have in total?**

Andrew read a book that was 1,548 pages long. Seth read a book that was 1/6 the length of Andrew's book (6 times shorter). How many pages were in Seth's book? **Solve and model your solution.**

Leslie has 4 ¾ pounds of clay. She uses 1 1/10 pounds to make a plate, and another 2 pounds to make a vase. **How many pounds of clay does she have left?**

Ethan is studying for his math test. He spent ¾ of an hour studying on Monday, 2/3 of an hour studying on Wednesday and ¼ of an hour on Friday morning. **How many hours did Ethan study on those 3 days?**

WEEK 9

Name_____Date_____Mon. & Tues. FRONT, Wed. & Thur. BACK

Operations, Algebraic Thinking, and Fractions

Find the sum or difference. Write your answer in simplest form.

5/12 + 1/3 9/10 – 1/4

5/7 - 2/3 3/10 + 1/6

Evaluate each expression and bubble the circle for each expression that shows 12:

◯ 24-12 ◯ 60 ÷ 5 ◯ 10° + 12 ◯ 1.35+ 10.55 ◯ 36 ÷ 1/3

Write the first four terms for the sequence. **Rule: Start at 2 ⅓ then add 2 ¼**

_____, _____, _____, _____

Numbers and Operations in Base Ten

Use benchmarks to estimate; 0, 0.25, 0.50, 0.75 and 1

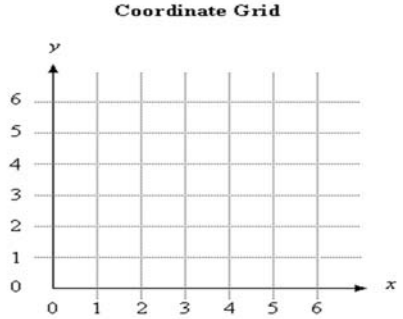
2.34 + 1.9 + 5.23 10.39 – 4.28 0.93 + 0.17 7.41- 3.88

Round each amount to the nearest whole dollar or whole number:

$27.95 _____ 3.4 _____ $4.19 _____ 8.56 _____

$17.03 _____ 2.88_____ $6.25_____ $5.76_____

Measurement, Data, and Geometry



Plot and label each of the following points on the coordinate grid.

M (2, 3) N (4, 7) 0 (6, 0)

P (3, 2) Q (6, 3) R (0, 5)

Spiral Standards Review with Word Problems: **For each problem write an equation, solve, and explain your answer.**

The William Tower is 3,296 feet tall. Around the corner there is a bakery that is eight times shorter than the height of the William Tower. How tall is the bakery? **Solve and model your solution.**

Mrs. Driggers' summer vacation lasted 67 days. At the beginning of her vacation she spent 3 weeks In England, then 10 days camping in Georgia and 2 weeks visiting family in South Carolina. **How many vacation days are remaining?**

Julie, Andrew, Mark and Courtney are painting a booth for the festival. They are all going to work together to get the booth painted. Julie volunteered to paint 30% of the booth. Mark is going to paint .25 of the booth. Andrew is going to paint 1/4 of the booth. Courtney is going to do the rest of the work. **What fraction of the booth, expressed in simplest form, will Courtney need to paint?**

Hunter bought five pizzas to share with his class. He cut each pizza into 10 slices. He gave 20 slices to the girls and 15 slices to the boys. He is going to give the rest of the pizza to the teachers. **How much pizza, expressed in a decimal, will the teachers get?**

Kara works as a dog walker. She earns $50 for every 2 hours that she works. How much does Kara earn in one week if she works 40 hours per week? Draw a table to show your work and write a rule.