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.