Math
Grade 3

Aligned with Ohio's Learning Standards
for Math (2018)

Department of Academic Services
Office of Teaching and Learning
Curriculum Division

COLUMBUS CITY SCHOOLS

Curriculum Map

Year-at-a-Glance

The Year-at-a-Glance provides the Math Framework and a high-level overview of the course by grading period.
- Link to the Math Framework
- Quarterly Standards Overview by Domain and Cluster

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Scope and Sequence

The Scope and Sequence provides a detailed overview of each grading period, including:
- Standards
- Link to Critical Areas of Focus
- Link to Performance Level Descriptors

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Instructional Supports

The Curriculum and Instruction Guide provides direction for standards-based instruction, including:
- Link to the Clear Learning Targets
- Essential Understandings
- Strategies and Approaches
- Assessment Opportunities
- Link to the Model Curriculum
- Timeline
- Mathematical Practices

The Math framework consists of components that support the shifts in mathematics education by the Common Core Standards that are identified in Ohio's Learning Standards for Mathematics. These shifts narrow the focus of topics taught in each grade level to provide for deeper understanding of topics presented, provide the ability to see the coherence of the topics across the grade levels and support more rigorous instruction. The best practices in the framework support these shifts and are applied during all phases of conceptual development. The practices provide students with opportunities to make connections, communicate, and demonstrate mathematical understanding.
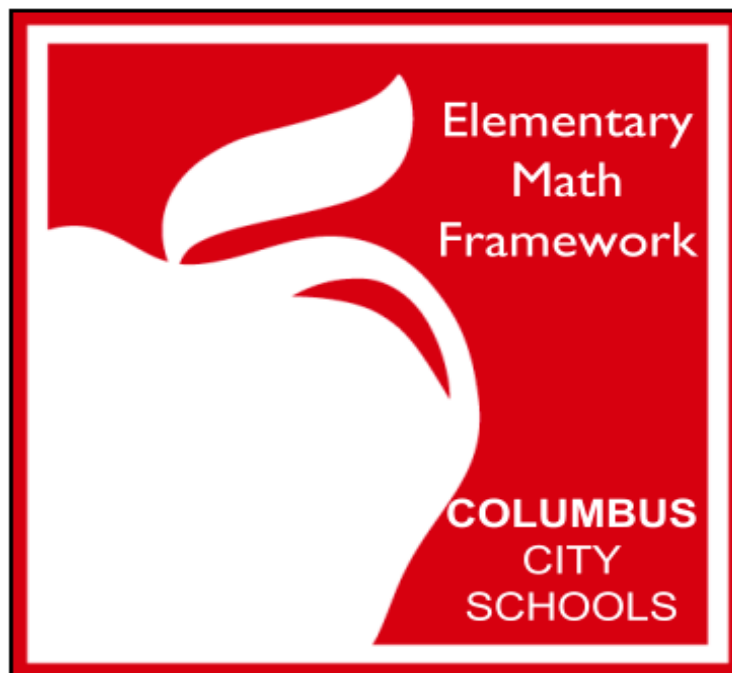
Year-at-a-Glance

Grading Period 1	**9 Weeks** **Number and Operations in Base Ten** **Operations and Algebraic Thinking**			
	Use place value understanding and properties of operations to perform multi-digit arithmetic. A range of strategies and algorithms may be used. **3.NBT.1** **3.NBT.2**	Represent and solve problems involving multiplication and division. ***3.OA.1** ***3.OA.3**	Understand properties of multiplication and the relationship between multiplication and division. ***3.OA.5**	Multiply and divide within 100. ***3.OA.7**

Grading Period 2	**9 Weeks** **Operations and Algebraic Thinking** **Number and Operations in Base Ten** **Measurement and Data**					
	Understand properties of multiplication and the relationship between Multiplication and division. ***3.OA.5**	Use place value understanding and properties of operations to perform multi-digit arithmetic. A range of strategies and algorithms may be used. **3.NBT.3**	Represent and solve problems involving multiplication and division. Understand properties of multiplication and the relationship between multiplication and division. ***3.OA.2** ***3.OA.6** ***3.OA.4**	Multiply and divide within 100. Solve problems involving the four operations, and identify and explain patterns in arithmetic. ***3.OA.7** **3.OA.9**	Geometric measurement: understand concepts of area and relate area to multiplication and to addition. **3.MD.5a-b** **3.MD.6** **3.MD.7a-d**	Represent and solve problems involving multiplication and division. ***3.OA.3**

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Grading Period 3	9 Weeks Operations and Algebraic Thinking Measurement and Data Number and Operations-Fractions			
	Solve problems involving the four operations, and identify and explain patterns in arithmetic. *3.OA.8	Represent and interpret data. 3.MD.3	Develop understanding of fractions as numbers. Grade 3 expectations in this domain are limited to fractions with denominators 2,3,4,6,and 8. *3.NF.1 *3.NF.2a-b *3.NF3.a-d	Represent and interpret data. 3.MD.4

Grading Period 4	9 Weeks Measurement and Data Geometry		
	Solve problems involving money, measurement, and estimation of intervals of time, liquid volumes, and masses of objects. 3.MD.1 3.MD.2	Reason with shapes and their attributes. 3.G.1 3.G.2	Geometric measurement: recognize perimeter as an attribute of plane figures and distinguish between linear and area measures. 3.MD.8

Scope and Sequence and Instructional Supports

Standards: The standards are listed for the grading period and linked to the Clear Learning Targets for that strand under the instructional supports.

Priority Standards: Standards that require emphasis and name the content that should be mastered to ensure a foundation for the following year.

Critical Area of Focus: The critical areas are designed to bring focus to the standards at each grade by describing the big ideas that educators can use to build their curriculum and to guide instruction.

Performance Level Descriptors: The performance level descriptors were developed to illustrate the typical demonstration of the learning for each of the five performance levels: Limited, Basic, Proficient, Accelerated and Advanced.

Essential Understandings: Synthesizes what the students should understand - not just know and do - empowering them to connect concepts and knowledge across contents and grades.

Strategies and Approaches: Strategies and approaches are based on the Instructional Focus for the standard provided in the grade level Model Curriculum provided by ODE.

Assessment Opportunities: Assessment opportunities for the standard are samples to consider when checking for understanding. Some examples of formative assessments are verbal opportunities, exit tickets, checklists, written summaries, quizzes, common assessments and student journals.

Lesson Standards: The standards that will be explicitly taught during the daily lesson.

Supporting Standards: Additional standards to be taught in the daily lesson that align with and support mastery of the standards for the lesson.

Mathematical Practices: The Standards for Mathematical Practice describe the skills that mathematics educators should seek to develop in their students. The Mathematical Practices represent a picture of what it looks like for students to understand and do mathematics in the classroom and should be integrated into every mathematics lesson for all students.

* Indicates priority standards for 3rd grade.

[   ] indicates a clickable link.

Educator Notes and One-Day Activities for Ohio Enhancement Activities can be found in our resources digital platform.

Scope and Sequence

	Quarter 1	
	Standard	**Link to Ohio's Critical Area of Focus**
3.NBT.1	Use place value understanding to round whole numbers to the nearest 10 or 100.	#5 Solving multi-step problems
3.NBT.2	Fluently add and subtract within 1,000 using strategies and algorithms[G] based on place value, properties of operations, and/or the relationship between addition and subtraction.	
*3.OA.1	Interpret products of whole numbers, e.g., interpret 5 x 7 as the total number of objects in 5 groups of 7 objects each. (Note: These standards are written with the convention that **a x b** means **a** groups of **b** objects each; however, because of the commutative property, students may also interpret 5 x 7 as the total number of objects in 7 groups of 5 objects each).	#1 Developing understanding of multiplication and division and strategies for multiplication and division within 100
*3.OA.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. See Table 2 of the Standards. Drawings need not show details, but should show the mathematics in the problem. (This applies wherever drawings are mentioned in the Standards.)	
*3.OA.5	Apply properties of operations as strategies to multiply and divide. *For example, if 6 x 4 = 24 is known, then 4 x 6 = 24 is also known. (Commutative Property of Multiplication); 3 x 5 x 2 can be found by 3 x 5 = 15, then 15 x 2 = 30, or by 5 x 2 = 10, then 3 x 10 = 30 (Associative Property of Multiplication); knowing that 8 x 5 = 40 and 8 x 2 = 16, one can find 8 x 7 as 8 x (5 + 2)= (8 x 5) + (8 x 2) = 40 + 16 = 56 (Distributive Property).* Students need not use formal terms for these properties.	
*3.OA.7	Fluently[G] multiply and divide within 100, using strategies such as the relationship between multiplication and division, e.g., knowing that 8 x 5 = 40, one knows 40 ÷ 5 = 8, or properties	

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	of operations. Limit to division without remainders. By the end of Grade 3, know from memory all products of two one-digit numbers.	

Link to Ohio's 3rd Grade Performance Level Descriptors

Instructional Supports
Click on the Clear Learning Targets to find vocabulary, learning targets, and sample questions.

Quarter 1				
Timeframe	**Clear Learning Targets**	**Essential Understandings**	**Strategies and Approaches**	**Assessment Opportunities**
15 days	**3.NBT.1**	Rounding helps solve problems mentally and assesses the reasonableness of an answer. Rounding helps to estimate.	Connect what students know about place value to round to the nearest 10 or 100. Use a hundred chart to explore rounding. Use a number line model when rounding.	Pose real world questions where students have to reason about rounding. Ex. A number is rounded to the nearest 10. What number/s will round to 1,260? Explain your reasoning. There will be multiple responses acceptable for the answer. Explore the purpose of rounding when solving problems.
	3.NBT.2	Fluency is being efficient, accurate, and flexible with addition and subtraction strategies. Use place value understanding, properties of operations, and the relationships between operations to perform multi-digit arithmetic.	Use models to explore place value and regrouping when adding and subtracting. Explore using properties of operations as a strategy to add numbers. Look at the relationship between addition and subtraction by using strategies of estimation,	Pose real-world multi-step problems that represent all common addition and subtraction situations based on Table 1 of the Standards. Have students explain the strategy or algorithm they used to solve the problem.

			particle sums, and partial differences. Use base ten and number lines models. Support students' understanding by generalizing computation strategies of addition and subtraction of smaller numbers that will apply to larger numbers though questions, prompts and cues.		
22 days	*3.OA.1	Multiplication is repeated addition. For whole numbers A and B, the product A x B is represented by A groups with B objects in each group. Although visually 5 groups of 7 objects look different than 7 groups of 5 objects, the products are equivalent because multiplication is commutative.	Build on repeated addition models and rectangular arrays used in Grade 2 to illustrate multiplication. Explore the commutative aspect of multiplication by building arrays and then area models. Interpret the "×" symbol as meaning equal groups of objects (multiplication).	Have students justify the mathematical models used to solve a problem. Pose real-world multi-step problems using known facts to support unknown facts that lead students to apply the understanding of commutative property when multiplying numbers. Have students explain their reasoning using grade-level appropriate mathematical language.
	*3.OA.3	Represent and solve word problems involving multiplication and division Real-world mathematical situations can be represented using drawings and equations.	Interpret word problems using models to illustrate. Use arrays and area models to represent multiplication. Explore the use of fair sharing (group size unknown) and repeated subtraction (number	When given a real-world context, students formulate an original problem based on the context or given situation. Students express that context using an equation. Ex. The students need to set up 72 chairs for the assembly. How can they arrange the chairs so each row has the

			of groups unknown) models for division.	same number of chairs? Students create a word problem when given an expression or equation. Use grade-level appropriate mathematical language to explain reasoning.
	*3.OA.5	The order of numbers in multiplication does not change the product. Numbers can be regrouped in a multiplication problem without changing the product. In multiplication, one factor can be decomposed into parts; each part is multiplied separately by the other factor, then the results are added.	Develop a conceptual understanding of the use of the mathematical properties of multiplication (commutative, associative, and distributive properties). Develop the conceptual understanding that multiplying a factor by zero results in zero. (Multiplicative Property Of Zero). Develop conceptual understanding that multiplying a factor by one results in the original factor (Multiplicative Identity Property of One) Use models and drawing to represent the properties.	Apply the property strategies when solving real-world problems that require students to compare and/or contrast statements that represent the properties of operations. Use grade-level appropriate mathematical language to explain and justify reasoning. Use models to prove the properties.
	*3.OA.7	Fluency means being efficient, accurate, and flexible with strategies. There is an inverse relationship between multiplication and division.	Explore number relationships and look for patterns. Encourage the use of mental strategies which may include the following: decomposing factors; using the relationship between multiplication and division; creating equivalent but easier or known products doubles, and properties of operations, etc.	Use efficient mental strategies to compute accurately and flexibly with products of two one-digit numbers. Pose real-world problems based on Table 2 of the Standards using all situations. Have students justify their reasoning using grade-level appropriate mathematical language. Apply the conceptual understanding of

					properties to multiplication and division when solving real-world multi-step problems. Explain why some strategies may be more efficient than others through mathematical discourse.
		[Link to Ohio's 3rd Grade Model Curriculum](#)			

Timeline

Quarter 1										
Lesson Number	Lesson 0	Lesson 1	Lesson 2	Lesson 3	Math Task		Lesson 4	Lesson 5	Lesson 6	Lesson 7
Lesson Standards	Introduction of discourse routine	3.NBT.1	3.NBT.2	3.NBT.2	3.NBT.1 3.NBT.2	Unit Assessment	*3.OA.1	*3.OA.3 *3.OA.5 *3.OA.7	*3.OA.3 *3.OA.5 *3.OA.7	*3.OA.3 *3.OA.5 *3.OA.7
Supporting Standards				3.NBT.1	3.NBT.1		*3.OA.2			

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Scope and Sequence

	Quarter 2	
	Standard	
*3.OA.5	Apply properties of operations as strategies to multiply and divide. *For example, if 6 x 4 = 24 is known, then 4 x 6 = 24 is also known. (Commutative Property of Multiplication); 3 x 5 x 2 can be found by 3 x 5 = 15, then 15 x 2 = 30, or by 5 x 2 = 10, then 3 x 10 = 30 (Associative Property of Multiplication); knowing that 8 x 5 = 40 and 8 x 2 = 16, one can find 8 x 7 as 8 x (5 + 2)= (8 x 5) + (8 x 2) = 40 + 16 = 56 (Distributive Property).* Students need not use formal terms for these properties.	#1 Developing understanding of multiplication and division and strategies for multiplication and division within 100
3.NBT.3	Multiply one-digit whole numbers by multiples of 10 in the range 10-90, e.g., 9 x 80, 5 x 60 using strategies based on place value and properties of operations.	
*3.OA.2	Interpret whole numbers 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.*	
*3.OA.6	Understand division as an unknown-factor problem. *For example, find 32 ÷8 by finding the number that makes 32 when multiplied by 8.*	
*3.OA.4	Determine the unknown whole number in a multiplication or division equation relating three whole numbers. *Fo example, determine the unknown number that makes the equation true in each of the equations 8 x $\square$ =48; 5 = $\square$ ÷ 3; 6 x 6 = $\square$.*	
*3.OA.7	Fluently[G] multiply and divide within 100, using strategies such as the relationship between multiplication and division, e.g., knowing that 8 x 5 = 40, one knows 40 ÷ 5 = 8, or properties	

	of operations. Limit to division without remainders. By the end of Grade 3, know from memory all products of two one-digit numbers.	
3.OA.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.*	

3.MD.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. 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.
		#3 Develop understanding of the structure of rectangular arrays and of area

3.MD.6	Measure areas by counting unit squares (square cm, square m, square ft., and improvised units).	

3.MD.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 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 sides lengths *a* and *b* + *c* is the sum of *a x b* and *a x c* (represent the distributive property with visual models including an area model).
	  d. Recognize the area as additive. Find the area of figures composed of rectangles by decomposing into non-overlapping rectangles and adding the areas of the non-overlapping parts, applying this technique to solve real-world problems.	

*3.OA.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 that represent the problem. See table 2 of the Standards.	#1 Develop understanding of multiplication and division and strategies for

Drawings need not show details, but should show the mathematics in the problem. (This applies wherever drawings are mentioned in the Standards.)		multiplication and division within 100

Instructional Supports
Click on the Clear Learning Targets to find vocabulary, learning targets, and sample questions.

		Quarter 2		
Timeframe	Clear Learning Targets	Essential Understandings	Strategies and Approaches	Assessment Opportunities
24 days	*3.OA.5	The order of numbers in multiplication does not change the product. Numbers can be regrouped in a multiplication problem without changing the product. In multiplication, one factor can be decomposed into parts; each part is multiplied separately by the other factor, then the results are added.	Develop a conceptual understanding of the use of the mathematical properties of multiplication (commutative, associative, and distributive properties). Develop the conceptual understanding that multiplying a factor by zero results in zero. (Multiplicative Property Of Zero). Develop conceptual understanding that multiplying a factor by one results in the original factor (Multiplicative Identity Property of One). Use models and drawing to represent the properties.	Apply the property strategies when solving real-world problems that require students to compare and/or contrast statements that represent the properties of operations. Use grade-level appropriate mathematical language to explain and justify reasoning. Use models to prove the properties.
	3.NBT.3	Use place value understanding and properties of operations to multiply a	Use concrete models or drawings to represent multiplication of a one-digit whole	Pose real-world multi-step problems that require students to apply their

		one-digit number by multiples of 10.	number by a multiple of 10.	understanding of place value and properties of operations to solve problems. Have students explain their strategy using grade-level appropriate mathematical language.
		Understand that zero is a placeholder.	Explore calculation patterns for products of 10, e.g., 3 x 40 is 3 groups of 4 tens which is the same as 12 tens which equals 120.	Ex. The school store has 7 boxes of pencils. There are 20 pencils in each box. How many pencils does the school store have? Explain your strategy.
		Generalizing patterns and structures can be used when multiplying by a multiple of ten.	Explore and use properties of operations in multiplication of a one-digit whole number by a multiple of 10.	Identify patterns between basic facts and related multiplication situations.
	*3.OA.2	There are two major division situations: fair sharing (group size unknown) and repeated subtraction (number of groups unknown). Division is related to subtraction, so 56 ÷ 8 can be solved by subtracting 8 until you reach zero or have less than 8 left. Division is related to multiplication.	Interpret the "÷" symbol as meaning partitioning the total into equal groups or an equal number in each group. Use models to represent the partitioning of the total into equal groups or an equal number in each group. Make connections between multiplication and division and help students apply that knowledge.	Use a model to solve division real-world problems. Pose real-word problems and have students justify mathematical models used to solve the problem.
	*3.OA.6	Understand that the inverse of division is multiplication, therefore the answer to 24 ÷ 8 can be found by finding what number makes 24 when multiplied by 8.	Build understanding of the relationship between multiplication and division using models.	Apply the relationship between multiplication and division to solve a division problem by using an unknown factor. Pose problems where students are asked to create a multiplication problem that can be used to solve the

				unknown of a division problem. Ex. What is the related multiplication problem that Zach could use to solve $56 \div 8 = \square$.
*3.OA.4		Represent and solve problems involving multiplication and division. Understand that the unknown in a problem can occur in a position within the equation and must make the equation true.	Explain the relationship between multiplication and division to determine the unknown number.	Determine the unknown number in any position that makes an equation true. Pose real-world problems using Table 2 of the Standards having the unknown in all situations. Have students use grade-level mathematical language to explain their reasoning.
*3.OA.7		Fluency means being efficient, accurate, and flexible with strategies.

There is an inverse relationship between multiplication and division. | Explore number relationships and look for patterns.

Encourage the use of mental strategies which may include the following: decomposing factors; using the relationship between multiplication and division; creating equivalent but easier or known products doubles, and properties of operations, etc. | Apply the conceptual understanding of properties to multiplication and division.

Explain why some strategies may be more efficient than others by reasoning about others strategies through participating in mathematical discourse.

Use efficient mental strategies to compute accurately and flexibly with products of two one-digit numbers. Pose real-world multi-step problems based on Table 2 of the Standards using all situations. Have students justify the reasoning using grade-level appropriate mathematical language. |
| 3.OA.9 | | Arithmetic patterns can be identified | Use an addition table and multiplication table | Students justify their reasoning when |

		and explained using properties of operations.	to explore patterns. Use models to explore the even + even = even, odd + odd = even, even + odd = odd. Use models to explore the even x even = even, odd x odd = odd, and even x odd = even. Find numerical relationships within patterns. Connect properties of operations to arithmetic patterns.	explaining patterns that are explored through real-world multi-step problems using mathematical language appropriate for the grade level. Students use their understanding of patterns when solving multi-step problems.
17 days	3.MD.5 a-b	Area is an attribute of plane figures that is measured using square units. Area is found by covering the inside of a two-dimensional plane figure with square units without gaps or overlaps, and then count the number of square units used.	Explore and develop the conceptual understanding of "a unit square" with area "one square unit." Use the model of tiling (without gaps or overlaps) to find the area of a rectangle by counting unit squares.	Pose real-world problems where students apply their understanding of square units when finding the area when tiling with no overlaps or gaps to solve a problem. Attend to precision when creating models.
	3.MD.6	Area is found by covering the inside of a two-dimensional plane figure with square units without gaps or overlaps, and then count the number of square units used.	Use appropriate units (square cm, square m, square in, square ft, and improvised units).	Pose real-world multi-step problems that require students to compare models that represent the mathematical concepts of area. Attend to and make sense of quantities. Draw pictures or create a model to

			make sense of problems and explain the reasoning.
3.MD.7 a-d	The process of finding area shifts from tiling and counting, to multiplication of side lengths. The area of a rectangle can be found by being decomposed into two rectangular parts; finding the area of the two smaller rectangles; and then adding the two smaller areas to find the total area. A figure composed of rectangles may be decomposed into rectangles whose areas may be added to find the area of the figure.	Discover by tiling that the area is the same as would be by multiplying the side lengths; use whole number side lengths. Represent the distributive property using visual models. Explore finding the area of a rectangle by decomposing into two rectangulare parts; finding the areas of the two smaller rectangles; and then adding to find the total area. (*a* and *b + c* is the sum of *a* x *b* and *a* x *c* (*distributive property*)). Explore and explain decomposing a figure composed of rectangles into non-overlapping rectangles in order to find the area of the figure by adding areas of rectangles.	Pose real-world multi-step problems that require students to compare models that represent the mathematical concepts of area. Compute accurately and efficiently with grade-level numbers using whole number strategies. Measure using appropriate tools and units; justify mathematical models used.
*3.OA.3	Represent and solve word problems involving multiplication and division Real-world mathematical situations can be represented using drawings and equations.	Interpret word problems using models to illustrate. Use arrays and area models to represent multiplication. Explore the use of fair sharing (group size unknown) and repeated subtraction (number of groups unknown) models for division.	When given a real-world context, students formulate an original problem based on the context or given situation. Students express that context using an equation. Ex. The students need to set up 72 chairs for the assembly. How can they arrange the chairs so each row has the same number of chairs?

				Students create a word problem when given an expression or equation. Use grade-level appropriate mathematical language to explain reasoning.

[Link to Ohio's 3rd Grade Model Curriculum](#)

Timeline

Quarter 2															
Lesson Number	Lesson 8	Lesson 9	Mid-Unit Assessment	Lesson 10	Lesson 11	Lesson 12	Lesson 13	Math Task	Unit Assessment	Lesson 14	Lesson 15	Lesson 16	Mid-Unit Assessment	Lesson 17
Lesson Standards	*3.OA.5	3.NBT.3		*3.OA.2	*3.OA.6	*3.OA.4 *3.OA.7	3.OA.9	3.NBT.3 *3.OA.1 *3.OA.2 *3.OA.3 *3.OA.5 *3.OA.6 *3.OA.7		3.MD.5a 3.MD.5b 3.MD.6	3.MD.7a 3.MD.7b	3.MD.7c 3.MD.7d		*3.OA.3
Supporting Standards	*3.OA.1 *3.OA.3	*3.OA.1 *3.OA.5 *3.OA.7		*3.OA.5		*3.OA.3 *3.OA.5 *3.OA.6					*3.OA.3 3.MD.6	*3.OA.3 *3.OA.5 3.MD.7a 3.MD.7b		*3.OA.4 *3.OA.6 *3.OA.7 3.MD.7a 3.MD.7b

Scope and Sequence

		Quarter 3	
		Standard	
*3.OA.8		Solve two-step word problems using the four operations. Represent these problems using equations with a letter or a symbol, which stands for the unknown quantity. Assess the reasonableness of answers using mental computation and estimation strategies including rounding. The standard is limited to problems posed with whole numbers and having whole number answers. Students may use parentheses for clarification since algebraic order of operations is not expected.	#1 Develop understanding of multiplication and division and strategies for multiplication and division within 100
3.MD.3		Create scaled picture graphs to represent a data set with several categories. Create scaled bar graphs to represent a data set with several categories. Solve two-step "how many more" and "how many less" problems using information presented in the scaled graphs. *For example, create a bar graph in which each square in the bar graph might represent 5 pets, then determine how many more/less in two given categories.*	#5 Solving multi-step problems.
*3.NF.1		Understand a fraction $\frac{1}{b}$ as the quantity formed by 1 part when a whole is partitioned into b equal parts; understand a fraction $\frac{a}{b}$ as the quantity formed by a parts of size $\frac{1}{b}$.	#2 Developing understanding of fractions, especially unit fractions (fractions with numerator 1)
*3.NF.2		Understand a fraction as a number on the number line; represent fractions on a number line diagram[G]. a. Represent a fraction $\frac{1}{b}$ on a number line diagram by defining the interval from 0 to 1 as the whole and partitioning it into b equal parts. Recognize that each part has size $\frac{1}{b}$ and that the endpoint of the part based at 0 locates the number $\frac{1}{b}$ on the number line. b. Represent a fraction $\frac{a}{b}$ (which may be greater than 1) on a number line diagram by marking off a lengths $\frac{1}{b}$ from 0. Recognize that the resulting interval has size $\frac{a}{b}$ and that its endpoint locates the number $\frac{a}{b}$ on the number line.	

*3.NF.3	Explain equivalence of 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., $\frac{1}{2} = \frac{2}{4}$, $\frac{4}{6} = \frac{2}{3}$. Explain why the fractions are equivalent, e.g., by using a visual fractions model[G].
	   c. Express whole numbers as fractions, and recognize fractions that are equivalent to whole numbers. *Examples: Express 3 in the form 3 = $\frac{3}{1}$: recognize that $\frac{6}{1}$ = 6; locate $\frac{4}{4}$ and 1 at the same point of a number line diagram.*
	   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 >, =, or <, and justify the conclusions, e.g., by using a visual fraction model.	

3.MD.4	Generate measurement data by measuring lengths using rulers marked with halves and fourths of an inch. Show the data by creating a line plot[G], where the horizontal scale is marked off in appropriate units- whole number, halves, or quarters.	
	[Link to Ohio's 3rd Grade Performance Level Descriptors](#)	

Instructional Supports

Click on the Clear Learning Targets to find vocabulary, learning targets, and sample questions.

	Quarter 3			
Timeframe	**[Clear Learning Targets](#)**	**Essential Understandings**	**Strategies and Approaches**	**Assessment Opportunities**
11 days	***3.OA.8**	In solving a two-step word problem,	Interpret word problems to determine the	Solve two-step, real-world problems

			one or more of the four operations may be needed. A letter or symbol can represent an unknown quantity. Estimation strategies, including rounding, can be used to determine the reasonableness of answers.	operations(s) to be used. Represent and solve real-world mathematical situations accurately. Use models to represent the math. Explore and practice mental computation and estimations strategies including rounding. Scaffold representation of unknowns from symbols to letters. Support the use of different strategies or properties of operations.	accurately using the four operations using Table 1 & 2 of the Standards to represent mathematical situations. Explain different strategies or properties of operations that were used by having students examine the work of others during mathematical discourse discussions. Justify mathematical models used. Reflect on whether the results are reasonable.
	3.MD.3	Data can be organized and represented in a picture graph, a bar graph, or a line plot. The key of a picture graph tells how many items each picture or symbol represents. A scaled graph (bar graph or line plot) is labeled using equal-sized intervals along the axes. The scale of a bar graph varies depending on the data set.	**Picture Graphs** • Determine an appropriate scale for a given set of data. • Explore and record data in a scaled picture graph with several categories. • Interpret data to solve two-step problems (how many more/ how many less problems) using information displayed in a graph. **Bar Graphs** • Determine an appropriate scale for a given set of data.	Have students use real-world data to create a picture graph that has a scale key. Create two-step problems that answer questions of how many more and how many less. Have students use the data to solve the problems. Given a picture graph, have students create two-step word problems that use the data from the graph to solve. Have students critique the reasoning of others' questions by using grade-level mathematical language. Have students use real-world data to create a bar graph. Create two-step problems that answer questions of

			• Explore and record data in a scaled bar graph with several categories. • Interpret data to solve two-step problems (how many more/ how many less) using information displayed in a graph.	how many more and how many less. Have students use the data to solve the problems. Given a data set, have students determine what type of graph that would best represent the data. Have students create a graph using the data. Have students explain their reasoning using grade-level mathematical language.
30 days	*3.NF.1	A fraction is a number showing a relationship between the parts and the whole. Fractional parts have names that tell how many parts of a size are needed to make the whole (3 parts - thirds; 4 parts - fourths, etc). Fractional parts can be described with words and symbols. Fractions can be represented with visual models such as rectangular area models, arrays, and length models including number lines. A whole can be divided into any number of parts and recombined to make a whole.	Use models such as rectangular area models, arrays, and length models to represent fractions. Identify if a whole is divided into equal parts, the parts represent a fraction of the whole. Fold a whole to show how the size of the part can remain the same, but the number can be different. Describe fractional parts using words and symbols. Count up fractional parts to build the understanding of unit fractions combining to make a whole. Within context, identify what the denominator describes and what the	Students use a variety of models including concrete, pictorial, and symbolic representations when explaining their fractional thinking. Pose questions where students identify the unit fraction of the whole.

		numerator describes.	
	When a fraction is written symbolically, there is a top number and a bottom number. • The bottom number (the denominator) describes how many equal parts the whole is divided into. • The top number (the numerator) describes how many of that size part there are.		
*3.NF.2 a-b	On a number line, the size of the part is measured by the distance from zero to the numbered point. Unit fraction represent one piece of the equal-sized pieces that make a whole ($\frac{1}{2}$, $\frac{1}{3}$, $\frac{1}{4}$, $\frac{1}{6}$, $\frac{1}{8}$). A unit fraction is the building block for fractions just as 1 is the building block for whole numbers.	Explore the representation of fractions on a number line diagram: • Represent unit fractions. • Represent the fraction $\frac{a}{b}$ (which may be greater than one). Rename a point on a number line with an equivalent name for a whole, mixed number, or fraction. • Include examples of wholes and fractions greater than 1. Explore and explain equivalent fractions on a number line diagram. Explore and explain using length models (fraction strips or number lines) to generate equivalent fractions. Explore the representation of whole numbers	Solve multi-step problems and provide support with a mathematical explanation that justifies the answer. Students create, label, and represent fractions on a number line. Have students create a number line model and use evidence to develop logical arguments for a concept when solving real-world problems.

				as a fraction.

	*3.NF.3a-d	Two fractions can be compared when the two fractions refer to the same whole.
		
		When comparing fractions with the same denominator, the fraction with the greater numerator is greater because more unit fractions are needed to make up the part.
		
		When comparing unit fractions with different denominators, the fraction with the larger denominator is smaller because it takes more equal sized pieces to make the whole.
		
		When comparing fractions, if the numerators are the same, then compare the denominators.
		
		When comparing fractions, if the denominators are the same, then compare the numerators.
		
		The symbols >, =, and < are used with fractions just as they are used with whole numbers.
			Explore and explain equivalent fractions on a number line diagram.
			
			Explore and explain using length models (fraction strips or number lines) to generate equivalent fractions.
			
			Explore the representation of whole numbers as a fraction.
			
			Use models to explore equivalent fractions.
				Solve multi-step problems and provide support with a mathematical explanation that justifies the answer.
				
				Explain which fraction is larger, given pairs of length models (fraction strips) of fractions with denominators of either 2, 4, and 8 or 3 and 6 and a fraction for each model.
				
				Explain the comparison of two fractions by reasoning about their size. Record the results using the symbols >, =, or <
				   • with the same denominators, or
				   • with the same numerators.
				
				Using models to solve equal sharing problems involving whole numbers that result in a fractional answer to reveal the need for fractions and develop relational thinking, e.g., 2 people share 3 things; 4 people share 3 things; 3 people share 2 things.

	3.MD.4	Length measurement data can be generated and used to create a line plot.	Use rulers marked with halves and fourths of an inch to gather measurement data. Explore and record measurement data by	Use a graph to represent and solve real-world mathematical situations accurately. Use grade-level mathematical language to explain the

			The scale of a line plot can be whole numbers, halves, or quarters. Symbols used in picture graphs and line plots should be consistently spaced and sized for visual accuracy. Information presented in a graph can be used to solve problems involving the data in the graph.	creating a line plot, where the horizontal scale is marked off in appropriate units of whole numbers, halves, or quarters. Attend to precision when measuring and creating the line plot.	reasoning. Measure using appropriate tools and units; justify mathematical models.
			[Link to Ohio's 3rd Grade Model Curriculum](#)		

Timeline

	Quarter 3													
Lesson Number	Lesson 18	Lesson 19	Math Task	Unit Assessment	Lesson 20	Lesson 21	Lesson 22	Lesson 23	Mid-Unit Assessment	Lesson 24	Lesson 25	Lesson 26	Math Task	Unit Assessment
Lesson Standards	*3.OA.8 See Educator Notes for Ohio Enhancement Activities	3.MD.3	3.NBT.2 *3.OA.3 *3.OA.5 *3.OA.8		*3.NF.1	*3.NF.2a *3.NF.2b	*3.NF.3a	*3.NF.3b *3.NF.3c		*3.NF.3d	*3.NF.3d	3.MD.4	*3.NF.1 *3.NF.3a *3.NF.3b *3.NF.3d	
Supporting Standards	*3.OA.3 *3.OA.4 *3.OA.7 3.NBT.1 3.NBT.2	*3.OA.1 *3.OA.3			3.G.2	*3.NF.1	*3.NF..1 *3.NF.2a *3.NF.2b	*3.NF.2a *3.NF.2b *3.NF.3a		*3.NF.1 *3.NF.2a *3.NF.2b	*3.NF.2a *3.NF.2b *3.NF.3b	*3.NF.2a *3.NF.2b		

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Scope and Sequence

	Quarter 4	
	Standard	

3.MD.1	Work with time and money.
	   a. Tell and write time to the nearest minute. Measure time intervals in minutes (within 90 minutes). Solve real-world problems involving addition and subtraction of time intervals (elapsed time) in minutes, e.g., by representing the problem on a number line diagram or clock.
	   b. Solve word problems by adding and subtracting within 1,000, dollars with dollars and cents with cents (not using dollars and cents simultaneously) using the $ and ₵ symbol appropriately (not including decimal notation).
		#5 Solving multi-step problems

3.MD.2	Measure and estimate liquid volumes and masses of objects using standard units of grams, kilograms, and liters. Add, subtract, multiply, or divide whole numbers to solve one-step word problems involving masses or volumes that are given in the same units, e.g., by using drawings (such as beakers with a measurement scale) to represent the problem. Excludes multiplicative comparison problems involving notions of "times as much:m see Table 2 of the Standards.	
3.G.1	Draw and describe triangles, quadrilaterals (rhombuses, rectangles, and squares), and polygons (up to 8 sides) based on the number of sides and the presence or absence of square corners (right angles).	#4 Describing and analyzing two-dimensional shapes
3.MD.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.	#3 Developing understanding of the structure of rectangular arrays and of area
3.G.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 $\frac{1}{4}$ of the area of the shape.

Instructional Supports
Click on the Clear Learning Targets to find vocabulary, learning targets, and sample questions.

		Quarter 4		
Timeframe	**Clear Learning Targets**	**Essential Understandings**	**Strategies and Approaches**	**Assessment Opportunities**
14 days	**3.MD.1 a-b**	Time is measured in hours and minutes. Time can be measured to the nearest minute. Elapsed time measures the duration of an event. Money is added and subtracted using whole number strategies. A dollar symbol, $, is used to represent dollars. A cent symbol, ¢, is used to represent cents. The dollar symbol and cent symbol are not used simultaneously, i.e., do not	Use models such as number lines, diagrams, or clocks to solve elapsed time problems within 90 minutes Use real-world situations to develop an understanding of elapsed time as the interval between a start time and an end time. Use models and money manipulatives. Use pennies, nickels, dimes, and quarters as manipulatives to reinforce place value beyond 100 cents, e.g., 133¢. Use appropriate placement of the cent symbol, ¢, with problems involving cents with cents. Use paper bills in different denominations. Use appropriate placement of the dollar symbol, $, with problems involving	Solve multi-step problems where students tell time to the nearest minute using models to represent mathematical concepts. Solve multi-step problems based on real-world situations of elapsed time. Explaining reasoning used to solve the problem. Solve real-world multi-step problems within 1,000 involving money using mathematical situations in Table 1of the Standards. Use grade-level appropriate mathematical language to explain the reasoning. Explain models used to solve problems.

		use decimal notation. Note: Decimal notation, e.g., $1.33, will be used in 4th grade to represent values beyond 100 cents.		Interpret word problems to determine the operation to be used.
	3.MD.2	Mass is measured in kilograms or grams. Liquid volume is measured in liters. Mass and liquid volume word problems are solved using whole number strategies.	Using models and drawings, measure and estimate liquid volumes (liters); use appropriate units. Using models and drawings, measure and estimate masses (grams and kilograms); use appropriate units. Add and subtract within 1,000. See Table of the Standards. Multiply and divide within 100. See Table 2 of the Standards. This excludes multiplicative comparison problems involving notions of "times as much.". Attend to precision.	Explain the use of operations to solve one-step, real-world word problems involving masses or volumes given in the same units; use drawings or equations and justify the reasoning. Use drawings to represent solutions to word problems.
20 days	**3.G.1**	Polygons are closed two-dimensional shapes with straight sides. Polygons can be described by the number of sides. Polygons can be described by the	Explore classifying triangles, quadrilaterals (rhombuses, rectangles, and squares), and polygons (up to 8 sides) based on the number of sides and the presence or absence of square corners (right angles). Draw polygons with up to 8 sides.	Make and test conjectures about polygons and justify the reasoning. Identify, describe, define, and sort shapes by their attributes and justify the reasoning.

		presence or absence of square corners/right angles.		
3.MD.8	Perimeter is an attribute of plane figures that is measured using linear units (inches, feet, centimeter, meter, etc.). Perimeter is found by adding all the outside (exterior) side lengths of a polygon. An unknown side length of a polygon can be computed when given the perimeter of the other side lengths or properties of the Polygon. Different rectangles may have the same perimeter but different areas. Different rectangles may have the same area but different perimeters.	Draw a picture or create a model to make sense of a problem. Explore finding the perimeter of polygons with given side lengths. Explore finding an unknown side length, e.g., find unknown side length given the perimeter and all but one side length; find an unknown side length given the perimeter of a square; find an unknown side length given a figure composed of two rectangles with some side lengths given, etc. Construct rectangles that have the same perimeters but different areas. Construct rectangles that have the same area but different perimeters.	Solve real-world problems accurately and consider the reasonableness of the solution(s) when determining the perimeter of rectangles or triangles given a drawing and labels. Students need to compute accurately and efficiently with grade-level numbers using whole number strategies. Students justify their strategy of finding an unknown side length, e.g., find unknown side length given the perimeter and all but one side length; find an unknown side length given the perimeter of a square; find an unknown side length given a figure composed of two rectangles with some side lengths given, etc.
3.G.2	Some shapes can be partitioned into parts with equal areas. When shapes are partioned into equal areas, the area of each part is the unit fraction of the whole.	Partition shapes into parts with equal areas. Express each equal-area part of a shape as a unit fraction of the whole.	Partition shapes into parts with equal areas and identify the fractional parts.

[Link to Ohio's 3rd Grade Model Curriculum](#)

Timeline

	Quarter 4										
Lesson Number	Lesson 27	Lesson 28	Lesson 29	Math Task	Unit Assessment	Lesson 30	Lesson 31	Lesson 32	Lesson 33	MathTask	Unit Assessment
Lesson Standards	3.MD.1a-b See One-Day Activity for Ohio Enhancement Activities	3.MD.2	3.MD.2	3.MD.1a-b 3.MD.2 3.NBT.2		3.G1 See Educator Notes for Ohio Enhancement Activities	3.G.1 See Educator Notes for Ohio Enhancement Activities	3.MD.8	3.G.2	3.G.1 3.G.2 3.MD.5a 3.MD.5b 3.MD.6 3.MD.7a 3.MD.7.b 3.MD.8 3.NF.1	
Supporting Standards		3.OA.3 3.OA.7 3.NBT.2	3.OA.3 3.OA.7 3.NBT.2					3.G.1 3.OA.3 3.OA.7 3.MD.7a 3.MD.7b	3.NF.1 3.NF.3b 3.NF.3d		

Mathematical Practices

Mathematical Practice Standards Taught Throughout the Year		
1. Make sense of problems and persevere in solving them	**2. Reason abstractly and quantitatively**	**3. Construct viable arguments and critique the reasoning of others**
In Grade 3, mathematically proficient students know that doing mathematics involves solving problems and discussing how they solved them. Students explain to themselves the meaning of a problem and look for ways to solve it. Students may use concrete objects, pictures, or drawings to help them conceptualize and solve problems, such as "Jim purchased 5 packages of muffins. Each package contained 3 muffins. How many muffins did Jim purchase?" or "Describe another situation where there would be 5 groups of 3 or 5 × 3." Students may check their thinking by asking themselves, "Does this make sense?" Students listen to other students' strategies and are able to make connections between various methods for a given problem.	Third graders should recognize that a number represents a specific quantity. They connect the quantity to written symbols and create a logical representation of the problem at hand, considering both the appropriate units involved and the meaning of quantities. For example: students apply their understanding of the meaning of the equal sign as "the same as" to interpret an equation with an unknown. When given $4 \times = 40$, they might think: • 4 groups of some number is the same as 40 • 4 times some number is the same as 40 • I know that 4 groups of 10 is 40 so the unknown number is 10 • The missing factor is 10 because 4 times 10 equals 40. Teachers might ask, "How do you know" or "What is the relationship between the quantities?" to reinforce students' reasoning and understanding.	Students may construct arguments using concrete referents, such as objects, pictures, and drawings. They refine their mathematical communication skills as they participate in mathematical discussions that the teacher facilitates by asking questions such as "How did you get that?" and "Why is that true?" Students explain their thinking to others and respond to others' thinking. For example, after investigating patterns on the 100s chart, students might explain why the pattern makes sense.

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Mathematical Practice Standards Taught Throughout the Year		
4. Model with mathematics	**5. Use appropriate tools strategically**	**6. Attend to precision**
Students experiment with representing problem situations in multiple ways including numbers, words (mathematical language), drawing pictures, using objects, acting out, making a chart, list, or graph, creating equations, etc. Students need opportunities to connect the different representations and explain the connections. They should be able to use all of these representations as needed. Third graders should evaluate their results in the context of the situation and reflect on whether the results make sense. For example, students use various contexts and a variety of models (e.g., circles, squares, rectangles, fraction bars, and number lines) to represent and develop understanding of fractions. Students use models to represent both equations and story problems and can explain their thinking. They evaluate their results in the context of the situation and reflect on whether the results make sense. Students should be encouraged to answer questions, such as "What math drawing or diagram could you make and label to represent the problem?" or "What are some ways to represent the quantities?"	Third graders consider the available tools (including drawings and estimation) when solving a mathematical problem and decide when certain tools might be helpful. For instance, they may use graph paper to find all the possible rectangles that have a given perimeter. They compile the possibilities into an organized list or a table, and determine whether they have all the possible rectangles. Students should be encouraged to answer questions such as, "Why was it helpful to use ____?"	As third graders develop their mathematical communication skills, they try to use clear and precise language in their discussions with others and in their own reasoning. They are careful about specifying units of measure and state the meaning of the symbols they choose. For instance, when figuring out the area of a rectangle they record their answers in square units.

Mathematical Practice Standards Taught Throughout the Year	
7. Look for and make use of structure	**8. Look for and express regularity in repeated reasoning**
Students look closely to discover a pattern or structure. For instance, students use properties of operations (e.g., commutative and distributive properties) as strategies to multiply and divide. Teachers might ask, "What do you notice when ____?" or "How do you know if something is a pattern?"	Students in third grade should notice repetitive actions in computation and look for more shortcut methods. For example, students may use the distributive property as a strategy for using products they know to solve products that they don't know. For example, if students are asked to find the product of 7 × 8, they might decompose 7 into 5 and 2 and then multiply 5 × 8 and 2 × 8 to arrive at 40 + 16 or 56. In addition, third graders continually evaluate their work by asking themselves, "Does this make sense? Students should be encouraged to answer questions, such as, "What is happening in this situation?" or "What predictions or generalizations can this pattern support?"