



Math

Grade 4

**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](#)



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](#)



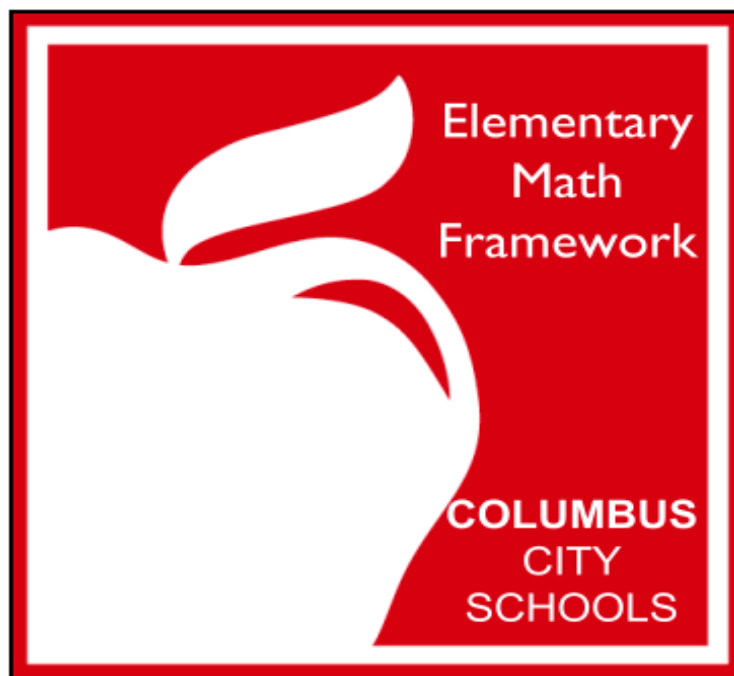
Curriculum and Instruction Guide

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](#)
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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.

[Link to CCS Math Framework](#)



Year-at-a-Glance

Grading Period 1	9 Weeks <u>Number and Operations in Base Ten</u> <u>Operations and Algebraic Thinking</u>			
	Generalize place value understanding for multi-digit whole numbers less than or equal to 1,000,000. *4.NBT.1 *4.NBT.2 *4.NBT.3	Use place value understanding and properties of operations to perform multi-digit arithmetic with whole numbers less than or equal to 1,000,000. 4.NBT.4	Use the four operations with whole numbers to solve problems. *4.OA.1 *4.OA.2	Gain familiarity with factors and multiples. 4.OA.4

Grading Period 2	9 Weeks <u>Operations and Algebraic Thinking</u> <u>Number and Operations in Base Ten</u> <u>Measurement and Data</u>				
	Gain familiarity with factors and multiples. Use the four operations with whole numbers to solve problems. 4.OA.5 *4.OA.3	Use place value understanding and properties of operations to perform multi-digit arithmetic with whole numbers less than or equal to 1,000,000. 4.NBT.5	Solve problems involving measurement and conversion of measurements from a larger unit to a smaller unit. 4.MD.1	Use place value understanding and properties of operations to perform multi-digit arithmetic with whole numbers less than or equal to 1,000,000. 4.NBT.6	Solve problems involving measurement and conversion of measurements from a larger unit to a smaller unit. 4.MD.3
					Extend understanding of fraction equivalence and ordering limited to fractions with denominators 2,3,4, 5,6,8,10,12, and 100. *4.NF.1

Grading Period 3	<u>9 Weeks</u> <u>Number and Operations-Fractions</u> <u>Measurement and Data</u>				
	Extend understanding of fraction equivalence and ordering limited to fractions with denominators 2,3,4,5,6,8,10,12 and 100. *4.NF.2	Build fractions from unit fractions by applying and extending previous understandings of operations on whole numbers limited to fractions with denominators 2,3,4,5,6,8,10,12, and 100. 4.NF.3a-d	Represent and interpret data. 4.MD.4	Build fractions from unit fractions by applying and extending previous understandings of operations on whole numbers limited to fractions with denominators 2,3,4,5,6,8,10,12, and 100. 4.NF.4a-c	Understand decimal notation for fractions, and compare decimal fractions limited to fractions with denominators 2,3,4,5,6,8,10,12, and 100. *4.NF.5 *4.NF.6

Grading Period 4	<u>9 Weeks</u> <u>Number Operations-Fractions</u> <u>Measurement and Data</u> <u>Geometry</u>				
	Understand decimal notation for fractions, and compare decimal fractions limited to fractions with denominators 2,3,4,5,6,8,10,12, and 100. *4.NF.7	Solve problems involving measurement and conversion of measurements from a larger unit to a smaller unit. 4.MD.2	Draw and identify lines and angles, and classify shapes by properties of their lines and angles. 4.G.1	Geometric measurement: understand concepts of angle and measure angles. 4.MD.5 4.MD.7	Draw and identify lines and angles, and classify shapes by properties of their lines and angles. 4.G.2

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 standards 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 4th 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 I		
	Standard	Link to Ohio's Critical Area of Focus
*4.NBT.1	Recognize that in a multi-digit whole number, a digit in one place represents ten times what it represents in the place to its right by applying concepts of place value, multiplication, or division.	#1 Developing an understanding and fluency with multi-digit multiplication, and developing understanding of dividing to find quotients involving multi-digit dividends as part of effectively and efficiently performing multi-digit arithmetic.
*4.NBT.2	Read and write multi-digit whole numbers using standard form, word form, and expanded form ^G . Compare two multi-digit numbers based on meanings of the digits in each place, using „=, and symbols to record the results of comparisons. Grade 4 expectations in this domain are limited to whole numbers less than or equal to 1,000,000.	
*4.NBT.3	Use place value understanding to round multi-digit whole numbers to any place through 1,000,000.	
4.NBT.4	Fluently ^G add and subtract multi-digit whole numbers using a standard algorithm ^G .	
*4.OA.1	Interpret a multiplication equation as a comparison, e.g., interpret $35 = 5 \times 7$ as a statement that 35 is 5 times as many as 7 and 7 times as many as 5. Represent verbal statements of multiplicative comparisons as multiplication equations.	
*4.OA.2	Multiply or divide to solve word problems involving multiplicative comparison, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem, distinguishing multiplicative comparison from additive comparison. See table 2, page 19 in the Standards. Drawings need not show details, but should show the mathematics in the problem.	
4.OA.4	Find all the factor pairs for a whole number in the range 1-100. Recognize that a whole number is a multiple of each of its factors. Determine whether a given whole number in the range 1-100 is a	

	multiple of a given one-digit number. Determine whether a given whole number in the range 1-100 is prime or composite.	
Link to Ohio's 4th Grade Performance Level Descriptors		

Instructional Supports

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

Quarter I				
Timeframe	Clear Learning Targets	Essential Understandings	Strategies and Approaches	Assessment Opportunities
19 days	*4.NBT.1	<p>In the base-ten system, the value of each place is 10 times the value of the place to the immediate right.</p> <p>Each period of three digits separated by commas is read as hundreds, tens, and ones, followed (when appropriate) by the name of the period, e.g., 123,456 is read as one hundred twenty-three thousand, four hundred fifty-six.</p>	<p>Use place value charts and blocks to explore.</p> <p>Relate multiplication and division to place value understanding.</p> <p>Explore multiplication or division with numbers to 1,000,000 using place value:</p> <ul style="list-style-type: none"> • A digit in the tens place represents a number that is ten times more than the number resulting from the same digit in the ones place. • A digit in the hundreds place represents a number that is ten times more than the number resulting from the same digit in the tens place. • A digit in the thousands place represents a number that is ten times more than the number resulting from 	<p>Compare the value of a numeral in a number to the same numeral in a different place in a different number, e.g., Given 342 and 432 compare the value of 3.</p> <p>Given the number 3,726, write a number that is 10 times more than and explain your reasoning using grade-level appropriate mathematical language.</p>

			<p>the same digit in the hundreds place, etc.</p> <p>Use patterns in the place value system to read and write numbers.</p> <p>Compare numbers based on place-value understanding—</p> <ul style="list-style-type: none"> • with the same number of digits; • with the same leading digits; and • with different leading digits and different number of digits. 	
	*4.NBT.2	<p>Generalize place value understanding for multi-digit whole numbers less than or equal to 1,000,000.</p> <p>Numbers can be expressed in standard form, word form, and expanded form.</p>	<p>Use patterns in the place value system to read and write numbers.</p> <p>Represent, read, and write whole numbers in various forms (standard, word, expanded) within 1,000,000.</p> <p>Generalize that each period of three digits separated by commas is read as hundreds, tens, and ones, followed by the name of the appropriate unit.</p> <p>Compare numbers based on place-value understanding—</p> <ul style="list-style-type: none"> • with the same number of digits; • with the same leading digits; and • with different leading digits and different number of digits. <p>Connect the mathematical language to the use of symbols $>$, $=$, and $<$ when describing the</p>	<p>Write two true inequality statements using symbols and words for a pair of numbers and use mathematical language to explain the reasoning. Ex. $3,012 < 4,542$ and $4,542 > 3,012$.</p> <p>Given a number in words, write the numerals that represent the number or give the numeral and have students write the number.</p> <p>Write a number that has 47 one, 30 hundreds, 30 tens, and 10 ten thousands? Explain the strategies you used to write your number.</p>

			relationship between the numbers.	
			Create numbers given specific criteria, e.g., Create a number that has 3 in the thousands place, 5 in the millions place, etc.	
	*4.NBT.3	Rounding helps solve problems mentally and assess the reasonableness of an answer.	<p>Explore rounding by using the location of a given number on a model, e.g., number line, number chart, etc.</p> <p>Round numbers based on place-value understanding.</p> <p>Explain and reason when rounding.</p> <p>Develop and generalize rounding rules for larger numbers.</p> <p>Explore the purposes of rounding.</p>	<p>Identify or create numbers that will round to a chosen number. Ex. Create a number that will round to 10,500. Answers will vary.</p> <p>Pose questions that ask for an estimation and not an exact answer.</p>
	4.NBT.4	<p>There are different algorithms that can be used to add or subtract.</p> <p>Fluency is being efficient, accurate, and flexible with strategies.</p>	<p>Estimate the solution of an addition or subtraction situation.</p> <p>Connect a standard algorithm to an efficient strategy.</p> <p>Determine reasonableness of a solution and compare to initial estimation.</p> <p>Use an efficient standard algorithm accurately and flexibly.</p>	<p>Given a multi-step word problem, have students estimate the solution and justify the reasoning using grade-level appropriate mathematical language.</p> <p>Have students analyze other students' use of a standard algorithm and explain any errors.</p> <p>Pose multi-step word problems for students to engage in practice.</p>

12 days	*4.OA.1	<p>Comparisons can be additive or multiplicative depending on the mathematical situation.</p> <p>In multiplicative comparisons, the relationship between quantities is described in terms of how many times larger one is than the other.</p>	<p>Explore using bar models to represent multiplicative comparisons.</p> <p>Explore and practice mental computation and estimation strategies including rounding.</p> <p>Use estimation as an entry point to make sense of situations.</p> <p>Create models, drawings, and equations to solve multiplication word problems involving multiplicative comparisons.</p> <p>In a multiplicative comparison, the underlying question is, “What factor would multiply one quantity in order to result in another?”</p>	<p>Solve multiplicative comparison problems and explain the reasoning.</p> <p>Pose a multiplicative comparison problem and have students use a bar model to represent the problem. Have students label and explain the model.</p> <p>Given a multiplication equation, have students create a real-world problem that shows the multiplicative comparison of the numbers. Have students explain their reasoning.</p>
	*4.OA.2	<p>Comparisons can be additive or multiplicative depending on the mathematical situation.</p> <p>In multiplicative comparisons, the relationship between quantities is described in terms of how many times larger one is than the other.</p>	<p>Use bar models and drawings to represent the equations.</p> <p>Create models, drawings, and equations to solve multiplication and division word problems involving multiplicative comparisons.</p>	<p>Given an equation, have students create a scenario that represents a multiplicative relationship between the numbers.</p> <p>Pose a multiplicative comparison problem and have students use a model or drawing to represent the problem. Have students justify the drawing or model.</p>
	4.OA.4	<p>A number can be multiplicatively decomposed into factor pairs and expressed as a product of these factor pairs.</p>	<p>Explore and discuss factor pairs for whole numbers in the range 1-100.</p> <p>Use models to develop the understanding that</p>	<p>Given a number, the student draws models to represent all the factors for the number. Students need to label each model by identifying if the</p>

		<p>A prime number has only two factors: one and itself (only one factor pair). A composite number has more than two factors (more than one factor pair).</p> <p>Any whole number is a multiple of each of its factors.</p>	<p>a prime number only has the number one and itself as factors (only one factor pair). Use models to develop the understanding that a composite number has more than two factors (more than one factor pair).</p> <p>Use models to explore if a given whole number is a multiple of another given a one-digit number.</p> <p>Use models to explain and justify if a given whole number in the range 1-100 is prime or composite.</p>	<p>number is prime or composite.</p> <p>Pose multi-step word problems that require students to represent the factors of numbers in different ways. Have students explain their reasoning for selecting the representation. Ex. The 4th graders are having a party. They need to set up 48 chairs for the party guests in equal rows. How should they arrange the rows of 48 chairs? Justify your model.</p> <p>Create multi-step problems where students are given a set of criteria and are required to perform it. Have students explain their reasoning. Ex. Guess my age.</p> <ul style="list-style-type: none"> • The number is between 20 and 30. • The number has exactly 4 factors. • One of the factors is 9. <p>How old am I? Explain your reasoning.</p>
Link to Ohio's 4th Grade Model Curriculum				

Timeframe

Quarter 1												
Lesson Number	Lesson 0	Lesson 1	Lesson 2	Lesson 3	Lesson 4	Lesson 5	Math Task		Lesson 6	Lesson 7	Lesson 8	
Lesson Standards	Introduction of discourse routine	*4.NBT.1 *4.NBT.2	*4.NBT.2	*4.NBT.3	4.NBT.4	4.NBT.4	*4.NBT.2 *4.NBT.3 4.NBT.4	Unit Assessment	*4.OA.1	*4.OA.2	4.OA.4	Mid-Unit Assessment
Supporting Standards			*4.NBT.1		*4.NBT.3	*4.NBT.3			*4.OA.2	*4.OA.1		

Scope and Sequence

Quarter 2		
	Standard	Link to Ohio's Critical Area of Focus
4.OA.5	Generate a number or shape pattern that follows a given rule. Identify apparent features of the pattern that were not explicit in the rule itself. <i>For example, given the rule "Add 3" and the starting number 1, generate terms in the resulting sequence and observe that the terms appear to alternate between odd and even numbers. Explain informally why the numbers will continue to alternate in this way.</i>	#2 developing an understanding of fraction equivalence, addition and subtraction of fractions with like denominators, and multiplication of fractions by whole numbers.
*4.OA.3	Solve multistep word problems posed with whole numbers and having whole number answers using the four operations, including problems in which remainders must be interpreted. Represent these problems using equations with a letter standing for the unknown quantity. Assess the reasonableness of answers using mental computation and estimation strategies including rounding.	#1 Developing an understanding and fluency with multi-digit multiplication, and developing understanding of dividing to find quotients involving multi-digit dividends as part of effectively and efficiently performing multi-digit arithmetic.
4.NBT.5	Multiply a whole number of up to four digits by a one-digit whole number, and multiply two two-digit numbers, using strategies based on place value and the properties of operations. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models.	
4.MD.1	Know relative sizes of the metric measurement units within one system of units. Metric units include kilometer, meter, centimeter, and millimeter; kilogram and gram; and liter and milliliter. Express a larger measurement unit in terms of a smaller unit. Record measurement conversions in a two-column table. <i>For example, express the length of a 4-meter rope in centimeters. Because 1 meter is 100 times as long as a 1 centimeter, a two-column table of meters and centimeters includes the number pairs 1 and 100, 2 and 200, 3 and 300...</i>	#2 developing an understanding of fraction equivalence, addition and subtraction of fractions with like denominators, and multiplication of fractions by whole numbers.

	4.NBT.6	Find whole number quotients and remainders with up to four-digit dividends and one-digit divisors, using strategies based on place value, the properties of operations, and/or the relationship between multiplication and division. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models.	#1 Developing an understanding and fluency with multi-digit multiplication, and developing understanding of dividing to find quotients involving multi-digit dividends as part of effectively and efficiently performing multi-digit arithmetic.
	4.MD.3	Develop efficient strategies to determine the area and perimeter of rectangles in real-world situations and mathematical problems. For example, given the total area and one side length of a rectangle, solve for the unknown factor; and given two adjacent side lengths of a rectangle, find the perimeter.	
	*4.NF.1	Explain why a fraction $\frac{a}{b}$ is equivalent to a fraction $\frac{(n \times a)}{(n \times b)}$ by using visual fraction models, with attention to how the number and size of the parts differ even though the two fractions themselves are the same size. Using this principle to recognize and generate equivalent fractions.	#2 developing an understanding of fraction equivalence, addition and subtraction of fractions with like denominators, and multiplication of fractions by whole numbers.
Link to Ohio's 4th Grade Performance Level Descriptors			

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
11 days	4.OA.5	<p>Patterns can be classified as growing or as repeating sequences.</p> <p>Features can be identified from patterns generated from a given rule.</p>	<p>Generate a geometric or numeric pattern that follows a given rule.</p> <p>Explore patterns that consist of repeated sequences of shapes.</p> <p>Explore patterns that consist of growing sequences of designs.</p> <p>Explore patterns that consist of repeatedly adding the same whole number or repeatedly multiplying by the same whole number.</p>	<p>Identify features of given or generated patterns. Have students generate statements that are true about the pattern.</p> <p>Make and describe generalizations about patterns. Have students explain their thinking.</p> <p>Given an incomplete pattern, have students complete the pattern without having to formally identify the rule. Pose problems where the pattern increase as well as decrease. Missing numbers should be in all positions.</p> <p>Problems should require students to use concepts to solve non-routine problems and perform a procedure with multiple steps and multiple decision points.</p>
	*4.OA.3	Remainders can be interpreted numerically and in context.	Explore the use of a bar model and a number line to represent problems.	Solve real-world multi-step problems accurately and use numbers of easy (smaller values) and medium difficulty

		<p>Estimation strategies, including rounding, can be used to determine the reasonableness of answers.</p> <p>Real-world mathematical situations can be represented using drawings and equations.</p> <p>An unknown can be in any position of a multiplicative comparison problem.</p>	<p>Interpret and explain the use of remainders with respect to context.</p> <p>Assess the reasonableness of answers.</p> <p>Represent verbal statements symbolically.</p>	<p>that are grade-level appropriate using the four operations.</p> <p>Have students explain the strategies they used to solve the problem.</p>
27 days	4.NBT.5	<p>When multiplying, patterns and structures can be generalized.</p> <p>The product is the result of multiplication.</p> <p>Factors are the numbers being multiplied together.</p> <p>Equations, rectangular arrays, and/or area models can be used to illustrate and explain multiplication.</p>	<p>Use visual representations such as area models and arrays to draw connections to equations.</p> <p>Explore number relationships and look for patterns.</p> <p>Multiply a whole number of up to four digits by a one-digit whole number.</p> <p>Multiply two two-digit numbers.</p> <p>Explore solving problems using strategies that 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.</p> <p>Apply the conceptual understanding of properties to multiplication.</p>	<p>Pose problems based on Table 2 in the Standards document that multiply four-digit by one-digit numbers and two-digit by two-digit numbers.</p> <p>Have students justify their answer using a model or drawing.</p> <p>Have students critique the reasoning of others by having students analyze other students' work and explain any errors.</p>

			Estimate the solution of a multiplication problem.	
	4.MD.1	<p>Larger units can be expressed in terms of smaller units.</p> <p>The number of units used to measure an object will depend on the size of the unit of measure.</p> <p>The larger the unit, the smaller the measurement reads; the smaller the unit, the larger the measurement reads.</p> <p>Metric units are related by powers of ten.</p> <ul style="list-style-type: none"> • 1 kilometer = 1,000 meters, 1 meter = 100 centimeters, 1 centimeter = 10 millimeters; • 1 kilogram = 1,000 grams; and • 1 liter = 1,000 milliliters. 	<p>Explore the metric system using appropriate tools (metric rulers, meter sticks, balance scales, etc.)</p> <p>Explore the units millimeter and milliliter.</p> <p>Know relative sizes of the metric measurement units within one system of units:</p> <ul style="list-style-type: none"> • length – kilometer, meter, centimeter, and millimeter; • mass – kilogram and gram; and • liquid volume – liter and milliliter. <p>Relate the metric measurement to understanding of the place value system.</p> <p>Explore and explain larger measurement units in terms of smaller units, e.g., 5 kilograms = 5,000 grams.</p> <p>Explore, record, and look for patterns when doing conversions in a two- column table.</p> <p>Attend to precision.</p>	<p>Add, subtract, and multiply whole numbers to solve metric measurement.</p> <p>Pose problems that require students to reason about the relationship between small units to larger units. Have students solve problems and explain their strategies using grade-level appropriate mathematical language.</p>
	4.NBT.6	<p>There is a relationship between multiplication and division.</p> <p>Equations, rectangular arrays, and/or area models can be used to illustrate and explain multiplication and division.</p>	<p>Illustrate and explain the relationship between multiplication and division.</p> <p>Estimate the solution of a division problem.</p> <p>Use visual representations, models and</p>	<p>Determine reasonableness of a solution, and compare it to initial estimation when solving real-world multi-step problems.</p> <p>Explore real-world multi-step division</p>

		<p>There are two major division situations: fair sharing (group size unknown) and repeated subtraction (number of groups unknown). See Table 2 of the Standards.</p> <p>The dividend divided by the divisor is the quotient.</p> <p>A remainder can be stated, can be discarded, or can force the quotient to increase to the next whole number depending on the context.</p>	<p>drawings to make connections to equations.</p> <p>Find whole-number quotients and remainders with up to four-digit dividends and one-digit divisors.</p> <p>Explore and explain how zeroes affect division: in the dividends; within the process of dividing; and in the quotient.</p>	<p>problems that result in remainders and determine whether the remainder is left alone, is discarded, or forces the quotient to increase. Justify the reasoning.</p> <p>Pose real-world multi-step problems based on situations on Table 2 of the standards. Have students create a model to solve the problems and justify the reasoning.</p>
	4.MD.3	<p>The area of a rectangle can be found by multiplying the lengths of adjacent sides (length and width) of the rectangle.</p> <p>Given an area or a perimeter of a rectangle and one side length, the adjacent side length can be determined.</p>	<p>Draw a picture or create a model to make sense of a problem.</p> <p>Explore and explain efficient strategies used to determine the perimeter and area of rectangles in real-world and mathematical situations.</p> <p>Explore finding an unknown side length in a mathematical situation involving area or perimeter.</p>	<p>Pose real-world problems that have students answer area and perimeter questions. Have students draw a picture or create a model to make sense of a problem and justify their answer.</p> <p>Pose real-world problems that include an unknown length or width, or has the area known and they need to determine the perimeter and label the figure. Have students explain their strategy using grade-level appropriate mathematical language.</p>
3 days	*4.NF.1	<p>Extend understanding of fraction equivalence and ordering limited to</p>	<p>Recognize and generate equivalent fractions on number lines or using other length models</p>	<p>Generate an equivalent fraction for a given fraction. Have students</p>

		<p>fractions with denominators 2, 3, 4, 5, 6, 8, 10, 12, and 100.</p> <p>Equivalent fractions use different sized fractional parts to describe the same amount, e.g., $\frac{1}{2} = \frac{2}{4}$.</p> <p>There is a multiplicative relationship between the number of equal parts in a whole and the size of the parts.</p> <p>Multiplying the numerator and the denominator by the same number will result in an equivalent fraction.</p>	<p>(include wholes and values greater than a whole; use denominators 2, 3, 4, 5, 6, 8, 10, 12, and 100).</p> <p>Given pairs of length models divided into different numbers of equal parts, explore how both of the models can illustrate equivalent quantities.</p> <p>Use models to explore what is required to maintain equivalent fractions when a denominator is multiplied by a number, e.g., doubling or tripling the number of parts.</p> <p>Use models to explore what is required to maintain equivalent fractions when a numerator is multiplied by a number.</p>	<p>generalize the pattern by explaining their reasoning.</p> <p>Given a model of a fraction, find an equivalent fraction and represent it using numbers. Justify using grade-level appropriate mathematical language.</p> <p>Pose real-world problems that require students to create equivalent fractions to add the fractions together and justify their reasoning.</p>
Link to Ohio's 4th Grade Model Curriculum				

Timeline

Quarter 2														
Lesson Number	Lesson 9	Lesson 10	Math Task		Lesson 11	Lesson 12	Lesson 13		Lesson 14	Lesson 15	Lesson 16	Math Task		Lesson 17
Lesson Standards	4.OA.5	*4.OA.3	*4.OA.1 *4.OA.2 *4.OA.3 4.OA.4 4.NBT.4	Unit Assessment	4.NBT.5	4.NBT.5	4.MD.1 See One-Day Activity and Educator Notes for Ohio Enhancement Activities	Mid-Unit Assessment	4.NBT.6	4.NBT.6	4.MD.3	4.MD.3 4.NBT.5 4.NBT.6 *4.OA.3	Unit Assessment	*4.NF.1
Supporting Standards	4.OA.4	4.NBT.6 *4.OA.2			*4.NBT.1 *4.NBT.3		4.NBT.5		4.NBT.5	4.NBT.5	4.NBT.5 4.NBT.6			

Scope and Sequence

Quarter 3		
	Standard	Link to Ohio's Critical Area of Focus
*4.NF.2	Compare two fractions with different numerators and different denominators, e.g., by creating common denominators or numerators, or by comparing to a benchmark fraction such as $\frac{1}{2}$. Recognize that comparisons are valid only when the two fractions refer to the same whole. Record the results of comparisons with symbols $>$, $=$, $<$, and justify the conclusions	#2 Developing and understanding of fraction equivalence, addition and subtraction of fractions with like denominators, and multiplication of fractions by whole numbers.
4.NF.3 a-d	Understand a fraction $\frac{a}{b}$ with $a > 1$ as a sum of fractions $\frac{1}{b}$. a. Understand addition and subtraction of fractions as joining and separating parts referring to the same whole. b. Decompose a fraction into a sum of fractions with the same denominator in more than one way, recording each decomposition by an equation. Justify decompositions, e.g., by using a visual fraction model ^G . <i>Examples:</i> $\frac{3}{8} = \frac{1}{8} + \frac{1}{8} + \frac{1}{8}$; $\frac{3}{8} = \frac{1}{8} + \frac{2}{8}$; $2\frac{1}{8} = 1 + 1 + \frac{1}{8} = \frac{8}{8} + \frac{8}{8} + \frac{1}{8}$. c. Add and subtract mixed numbers with like denominators, e.g., by replacing each mixed number with an equivalent fraction and/or by using properties of operations and the relationship between addition and subtraction. d. Solve word problems involving addition and subtraction of fractions referring to the same whole and having like denominators, e.g., by using visual fraction models and equations to represent the problem.	
4.MD.4	Display and interpret data in graphs (picture graphs, bar graphs, and line plots ^G) to solve problems using numbers and operations for this grade.	
4.NF.4 a-c	Apply and extend previous understandings of multiplication to multiply a fraction by a whole number. a. Understand a fraction $\frac{a}{b}$ as a multiple of $\frac{1}{b}$. For example, use a visual fraction model to represent $\frac{5}{4}$ as the product $5 \times (\frac{1}{4})$, recording the conclusion by the equation	

	$\frac{5}{4} = 5 \times (\frac{1}{4})$ or $\frac{5}{4} = (\frac{1}{4}) + (\frac{1}{4}) + (\frac{1}{4}) + \frac{1}{4} + (\frac{1}{4})$. b. Understand a multiple of $\frac{a}{b}$ as a multiple of $\frac{1}{b}$, and use this understanding to multiply a fraction by a whole number. For example, use a visual fraction model to express $3 \times (\frac{2}{5})$ as $6 \times (\frac{1}{5})$, recognizing this product as $\frac{6}{5}$. (In general, $n \times (\frac{a}{b}) = (\frac{n \times a}{b})$.) c. Solve word problems involving multiplication of a fraction by a whole number, e.g., by using visual fraction models and equations to represent the problem. For example, if each person at a party will eat $\frac{3}{8}$ of a pound of roast beef, and there will be 5 people at the party, how many pounds of roast beef will be needed? Between what two whole numbers does your answer lie?	
*4.NF.5	Express a fraction with denominator 10 as an equivalent fraction with denominator 100, and use this technique to add two fractions with respective denominators 10 and 100. For example, express $\frac{3}{10}$ as $\frac{30}{100}$, and add $\frac{3}{10} + \frac{4}{100} = \frac{34}{100}$. In general, students who can generate equivalent fractions can develop strategies for adding fractions with unlike denominators, but addition and subtraction with unlike denominators is not a requirement at this grade.	
*4.NF.6	Use decimal notation for fractions with denominators 10 or 100. For example, rewrite 0.62 as $\frac{62}{100}$; describe a length as 0.62 meters; locate 0.62 on a number line diagram.	
Link to Ohio's 4th 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
38 days	*4.NF.2	The denominator describes the number of equal parts the whole is	Recognize and generate equivalent fractions on number lines or using other length models	Compare two fractions with either the numerator or the denominator

		<p>divided into; the more equal fractional parts used to make a whole, the smaller the size of the parts.</p> <p>To compare fractions using models, each fraction should be represented with the same visual model and the same sized whole.</p> <p>There is a multiplicative relationship between the number of equal parts in a whole and the size of the parts.</p> <p>Multiplying the numerator and the denominator by the same number will result in an equivalent fraction.</p>	<p>(include wholes and values greater than a whole; use denominators 2, 3, 4, 5, 6, 8, 10, 12, and 100).</p> <p>Given pairs of length models divided into different numbers of equal parts with a fraction for each model, explore and explain which fraction is larger, smaller, or equivalent. Represent the comparison of the fractions using $>$, $=$, or $<$.</p> <p>Explore the use of benchmark fractions of 0, $\frac{1}{2}$, and 1 to compare two fractions with different numerators and different denominators.</p> <p>Use models to explore what is required to maintain equivalent fractions when a denominator is multiplied by a number, e.g., doubling or tripling the number of parts.</p> <p>Use models to explore what is required to maintain equivalent fractions when a numerator is multiplied by a number.</p>	<p>the same as the other fraction using $>$, $<$, or $=$ by creating a model to justify the answer.</p> <p>Pose real-world problems that require students to compare two fractions and have students explain their reasoning using grade-level appropriate mathematical language.</p> <p>Pose real-world problems that use numbers that are easy to relate to 0 and $\frac{1}{2}$. Have students create models to justify their reasoning.</p> <p>Provide opportunities for students to generalize about patterns when comparing fractions. Ex. Explain what happens to the value of a fraction if the denominator of a fraction is doubled and the numerator stays the same.</p>
	4.NF.3 a-d	A unit fraction is the building block of fractions.	Express a fraction as a unit fraction and a factor.	Pose real-world multi-step problems that require students to write an equation to show the decomposition

		<p>A unit fraction is any fraction where the numerator is 1, and the denominator is a whole number not equal to zero.</p> <p>A whole can be divided into any number of equal sized parts and re-combined to make a whole again.</p> <p>In a problem, the unit is the amount counted as the whole or one.</p> <p>It is necessary to determine the unit in a problem to add or subtract correctly.</p> <p>Unit fractions can be combined from multiple wholes if all the wholes are the same size.</p> <p>Fractions can be added and subtracted when the wholes are the same size. Fractions with the same denominators can be added and subtracted using visual models, properties of operations, and relationships of addition and subtraction of whole numbers.</p> <p>Mixed numbers can be written as fractions, e.g., $\frac{14}{3} = 4 \frac{2}{3}$, and can be added or subtracted in this form.</p> <p>Equivalent fractions can be used to add</p>	<p>Use models to illustrate renaming a fraction as a mixed number and vice versa.</p> <p>Explore and explain decomposing a fraction into a sum of fractions with the same denominator in more than one way.</p> <p>Add and subtract fractions with like denominators using models.</p> <p>Add and subtract mixed numbers with like denominators using models.</p>	<p>of a fraction and justify their answer using a model or words.</p> <p>Pose real-world multi-step problems that add and subtract fractions with like denominators using models or equations to explain the reasoning.</p> <p>Pose real-world problems that add and subtract mixed numbers with like denominators using models to justify their reasoning.</p> <p>Explore equal sharing problems involving 2, 3, 4, 5, 6, 8, 10, and 12 sharers and having answers that are whole numbers, mixed numbers, or fractions less than 1, e.g., Ten children are sharing 14 liters of punch. If they each are to have the same amount, how much punch should each child get? Between what two whole numbers will your answer lie? Have students explain their strategy using grade-level appropriate mathematical language.</p> <p>Solve problems where the unit or the amount counted as the whole represents various amounts, e.g., using pattern blocks, make the hexagon a whole, 1 trapezoid a whole, 2 trapezoids a whole, 2 pizzas</p>
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		and subtract fractions.		the whole, etc. Solve real-world multi-step problems that will result in various equivalent answers, having students explain why the solutions are equivalent.
	4.MD.4	<p>Data can be organized and represented in a picture graph, a bar graph, or a line plot.</p> <p>The key of a picture graph tells how many items each picture or symbol represents.</p> <p>The scale of a line plot can be whole numbers, halves, quarters, tenths, or hundredths.</p> <p>The scale of a bar graph varies depending on the data set.</p> <p>Symbols used in picture graphs and line plots should be consistently spaced and sized for visual accuracy.</p> <p>Information presented in a graph can be used to solve problems involving the data in the graph.</p>	<p>Picture Graphs Use units of halves and quarters for data sets in situations where these fractions are appropriate.</p> <p>Bar Graphs Use whole number units for a large variety of data sets.</p> <ul style="list-style-type: none"> Use units of halves and quarters for data sets in situations where these fractions are appropriate. <p>Line Plots Use whole number units for a large variety of data sets.</p> <p>Use units of halves, quarters, tenths, or hundredths for data sets in situations where these fractions are appropriate.</p>	<p>Picture Graph Interpret data from a picture graph using real-world problems and justify the reasoning using grade-level appropriate mathematical language.</p> <p>Bar Graph Interpret data from a bar graph using real-world problems (including money and metric measures) and have students explain their reasoning.</p> <p>Line Plot Interpret data from a line plot using real-world problems (including money and metric measures) and justify the reasoning using grade-level appropriate mathematical language.</p>
	4.NF.4 a-c	<p>Multiplication is repeated addition, i.e., just as $4 \times 3 = 3 + 3 + 3 + 3$, $5 \times \frac{1}{8} = \frac{1}{8} + \frac{1}{8} + \frac{1}{8} + \frac{1}{8} + \frac{1}{8}$ which</p>	Use visual models to help students apply multiplication understandings to fractions.	Represent real-world problems with visual models and with equations (involving multiplication of a fraction by a whole number), and justify the

		<p>equals $\frac{5}{8}$.</p> <p>A fraction is a multiple of a unit fraction.</p>	<p>Since a fraction is a multiple of a unit fraction, in turn a multiple of a fraction is also a multiple of a unit fraction. This concept provides the foundation for understanding what it means to multiply a fraction by a whole number. $5 \times \frac{1}{8} = \frac{1}{8} + \frac{1}{8} + \frac{1}{8} + \frac{1}{8} + \frac{1}{8}$ which equals $\frac{5}{8}$.</p>	<p>solutions.</p> <p>Solve real-world multi-step problems that will result in various equivalent answers. Have students explain why the solutions are equivalent.</p> <p>Solve problems where the unit or the amount counted as the whole represents various amounts, e.g., using pattern blocks, make the hexagon a whole, 1 trapezoid a whole, 2 trapezoids a whole, 2 pizzas the whole, etc.</p>
	*4.NF.5	<p>Using equivalent fractions, any fraction with a denominator of ten can be renamed as a fraction with a denominator of 100.</p> <p>Fractions with denominators of 10 or 100 are compared with the same strategies as with other fractions.</p>	<p>Model and explore fractions with denominators of 10 or 100.</p> <p>Explore and generate an equivalent fraction in tenths as a fraction in hundredths.</p>	<p>Pose real-world multi-step problems where students need to add fractions with denominators of 10 and 100 by finding the equivalent fraction to add like denominators. Use a model or equations to justify reasoning. Limit the use of unlike denominators to 10 and 100 (Note: students do not have to add fractions with unlike denominators in 4th grade but students who can generate equivalent fractions with denominators of 10 and 100 can develop strategies for adding and subtracting unlike</p>

				denominators.) Generate equivalent fractions for fractions with denominators of 10 and 100 and use visual models to represent the concept to explain the reasoning.
	*4.NF.6	<p>The place value system of whole numbers can be expanded to represent numbers less than 1.</p> <p>A fraction with a denominator of 10 or 100 can be written using decimal notation.</p> <p>A number can be written as a fraction, e.g., $\frac{17}{100}$, or as a decimal, e.g., 0.17.</p> <p>A decimal point or horizontal bar can be used to show where the unit is located, e.g., $\frac{35}{100} = 0.35$.</p> <p>Fractions with denominators of 10 or 100 can be compared using equivalent decimals.</p>	<p>Use visual models to represent decimal notation of a number.</p> <p>Describe and express a fraction with a denominator of 10 or 100 as a decimal.</p> <p>Explore and express a decimal up to hundredths as a fraction.</p> <p>Compare, discuss, and justify two fractions with denominators of 10 or 100 using visual models.</p>	<p>Pose real-world multi-step problems that result in an answer with a decimal and have students use a visual model to justify their answer.</p> <p>Given a number line, students place fractions with denominators of 10 and/or 100 and decimals in correct order and justify their reasoning using grade-level appropriate mathematical language.</p> <p>Pose problems that students must recall, identify, or make conversions between and among representations or numbers (fractions and decimals).</p>
Link to Ohio's 4th Grade Model Curriculum				

Timeline

Quarter 3											
Lesson Number	Lesson 18	Lesson 19	Lesson 20		Lesson 21	Lesson 22	Lesson 23	Lesson 24		Lesson 25	Lesson 26
Lesson Standards	*4.NF.2	4.NF.3 4.NF.3a	4.NF.3b 4.NF.3d	Mid-Unit Assessment	4.NF.3c	4.MD.4 See One-Day Activity for Ohio Enhancement Activities	4.NF.4a 4.NF.4b	4.NF.4c	Mid-Unit Assessment	*4.NF.5	*4.NF.6
Supporting Standards	*4.NF.1		4.NF.3a		4.NF.3a 4.NF.3b 4.NF.3d	4.NF.3c 4.NF.3d		4.NF.4a 4.NF.4b		*4.NF.1	

Scope and Sequence

Quarter 4		
	Standard	Link to Ohio's Critical Area of Focus
*4.NF.7	Compare two decimals to hundredths by reasoning about their size. Recognize that comparisons are valid only when the two decimals refer to the same whole. Record the results of comparisons with the symbols $>$, $=$, or $<$, and justify the conclusions, e.g., by using a visual model.	#2 Developing an understanding of fraction equivalence, addition and subtraction of fractions with like denominators, and multiplication of fractions by whole numbers.
4.MD.2	Solve real-world problems involving money, time, and metric measurement. <ul style="list-style-type: none"> a. Using models, add and subtract money and express the answer in decimal notation. b. Using number line diagrams^G, clocks, or other models, add and subtract intervals of time in hours and minutes. c. Add, subtract, and multiply whole numbers to solve metric measurement problems involving distances, liquid volumes, and masses of objects. 	
4.G.1	Draw points, lines, line segments, rays, angles (right, acute, and obtuse), and perpendicular and parallel lines. Identify these in two-dimensional figures.	#3 Understanding that geometric figures can be analyzed and classified based on their properties, such as having parallel sides, perpendicular sides, and particular angle measures.
4.MD.5a-b	Recognize angles as geometric shapes that are formed wherever two rays share a common endpoint, and understand concepts of angle measurement. <ul style="list-style-type: none"> a. Understand an angle is measured with reference to a circle with its center at the common endpoint of the rays, by considering the fraction of the circular arc between the points where the two rays intersect the circle. An angle that turns through $1/360$ of a circle is called a “one-degree angle,” and can be used to measure angles. b. Understand an angle that turns through n one-degree angles is said to have an angle measure of n degrees. 	
4.MD.6	Measure angles in whole number degrees using a protractor. Sketch angles of specified measure.	



	4.MD.7	Recognize angle measure as additive. When an angle is decomposed into non-overlapping parts, the angle measure of the whole is the sum of the angle measures of the parts. Solve addition and subtraction problems to find unknown angles on a diagram in real-world and mathematical problems, e.g., by using an equation with a symbol for the unknown angle measure.	
	4.G.2	Classify two-dimensional figures based on the presence or absence of parallel or perpendicular lines or the presence or absence of angles of a specified size.	
	Link to Ohio's 4th Grade Performance Level Descriptors		

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
17 days	*4.NF.7	<p>Decimals can only be compared when the decimals being compared refer to the same whole.</p> <p>Decimals written as tenths or hundredths can be compared using equivalent fractions.</p>	<p>Use a visual model to represent the comparison of two fractions.</p> <p>Recognize that decimals can only be compared when the decimals being compared refer to the same whole.</p> <p>Compare two decimals using visual models to hundredths; record the results using $>$, $=$, or $<$; and justify the conclusions.</p>	<p>Pose real-world problems where students need to compare decimals. Have students justify their reasoning using a model.</p> <p>Give students an inequality using numbers with decimals. Have them write statements that would be true about the inequality and explain the reasoning.</p>

			Add and subtract fractions with denominators of 10 and 100.	
	4.MD.2	<p>Time Answers to time problems should include a.m. and p.m. as appropriate.</p> <p>Noon is 12:00 p.m.</p> <p>Midnight is 12:00 a.m.</p> <p>Money Answers to money problems can include the dollar symbol, \$, and decimal point placed appropriately in decimal notation.</p> <p>The dollar symbol and the cent symbol are not used simultaneously.</p> <p>Metric Units Larger units can be expressed in terms of smaller units.</p> <p>The number of units used to measure an object will depend on the size of the unit of measure.</p> <p>The larger the unit, the smaller the measurement reads; the smaller the unit, the larger the measurement reads.</p> <p>Metric units are related by powers of</p>	<p>Draw a picture or create a model to make sense of a problem.</p> <p>Reflect on whether the results are reasonable.</p> <p>Time Explore using models (number lines, clocks, etc.) to add and subtract intervals of time in hours and minutes.</p> <p>Use number line diagrams to model to add and subtract time.</p> <p>Money Use models to illustrate addition and subtraction of money.</p> <p>Explore and explain the use of a decimal to separate dollars and cents.</p> <p>Express the answer in decimal notation (Conventionally, the \$ is placed before the numerical amount.) when solving money word problems.</p> <p>The dollar symbol and the cent symbol are not used simultaneously.</p> <p>Metric Units Add, subtract, and multiply whole numbers to</p>	<p>Pose real-world multi-step problems based on situations of time, money, and measurement. Have students justify their answers using models or equations.</p> <p>Pose a real-world multi-step problem and give a solution. Have students explore the reasonableness of the answer and analyse the errors. Justify the reasoning.</p>

		<p>ten.</p> <ul style="list-style-type: none"> • 1 kilometer = 1,000 meters, 1 meter = 100 centimeters, 1 centimeter = 10 millimeters; • 1 kilogram = 1,000 grams; and • 1 liter = 1,000 milliliters. 	<p>solve metric measurement situations involving distances, liquid volumes, and masses of objects.</p>	
24 days	4.G.1	<p>A point is a location in space; it has no length, width, or height.</p> <p>A line is a continuous straight path that extends indefinitely in two opposite directions.</p> <p>A line segment is a continuous straight path between two points.</p> <p>A ray is a continuous straight path that extends indefinitely in one direction from one point.</p> <p>Angles are made of two rays with the same endpoint; the endpoint is called the vertex.</p> <p>A right angle has a measure of 90°.</p> <p>An acute angle has a measure of less than 90°.</p> <p>An obtuse angle has a measure between 90° and 180°.</p>	<p>Draw points, lines, line segments, rays, and perpendicular and parallel lines.</p> <p>Identify points, lines, line segments, rays, and perpendicular and parallel lines.</p> <p>Identify points, line segments, and perpendicular and parallel line segments in two-dimensional figures.</p> <p>Draw angles (right, acute, and obtuse).</p> <p>Identify angles (right, acute, and obtuse).</p> <p>Identify angles (right, acute, and obtuse) in two-dimensional figures.</p> <p>Draw a shape based on properties of angles, number of sides, or parallel and/or perpendicular sides.</p> <p>Use correct language when discussing points, lines, line segments, rays, and angles.</p> <p>Use spatial reasoning.</p>	<p>Create models and drawings to represent figures. Have students use grade-level appropriate mathematical language to explain the reasoning.</p> <p>Pose real-world questions that have students reason about the properties of a shape and justify their reasoning. Ex. Cameron drew these two shapes,  and . How are they alike and how are they different? Explain your reasoning.</p>

		A plane is a flat surface that extends infinitely in all directions.		
	4.MD.5 a-b	<p>Angles are formed when two rays share a common endpoint; the common endpoint of the rays is called a vertex.</p> <p>Angles are measured in degrees.</p> <p>A protractor is a tool used to measure angles.</p> <p>There are 360 degrees in a circle.</p> <p>One degree is $\frac{1}{360}$ of a circle.</p>	<p>Draw two rays with a common endpoint to form an angle.</p> <p>Explore circles explaining one-degree as $\frac{1}{360}$ of a circle.</p> <p>Explore and explain what happens as multiple one-degree angles are accumulated with a common vertex to form a larger angle.</p> <p>Give students time to explore and practice with a physical protractor and an electronic protractor.</p>	<p>Have students create angles and explore angles in geometric shapes using both a protractor and an electric protractor.</p> <p>Use measurement notation to label the sides of a shape and identify the type of angles.</p>
	4.MD.6	<p>A straight angle has a measurement of 180 degrees.</p> <p>A right angle has a measurement of 90 degrees.</p>	<p>Identify angles as right, acute, obtuse, or straight.</p> <p>Explore and explain which angle measures to use when using a protractor.</p> <p>Measure angles in whole number degrees using a protractor.</p> <p>Sketch angles of a specified measure using a protractor.</p> <p>Attend to precision.</p>	<p>Students create and use shapes to measure angles and justify the measurement. Label the angle measurement. Use both a protractor and an electric protractor.</p> <p>Pose a real-world question that gives an incorrect angle measurement. Have students explain the error and justify their answer.</p>
	4.MD.7	Angles can be decomposed into unit angles. (n degrees is n one-degree angles.)	Explore and explain decomposing an angle into parts, e.g., 45 degrees = 15 degrees + 30 degrees.	Pose real-world multi-step problems where students use addition and subtraction to solve for unknown

			Use an equation with a symbol for an unknown angle measure.	angles and use grade-level appropriate mathematical language to explain their reasoning.
	4.G.2	<p>Two lines (or two line segments) in a plane are perpendicular if the angle between them is a right angle.</p> <p>Two lines (or two line segments) in a plane are parallel if they do not intersect.</p> <p>Two-dimensional figures can be classified (based on the presence or absence of parallel or perpendicular lines or presence or absence of angles of a specified size).</p>	<p>Classify two dimensional figures based on the following:</p> <ul style="list-style-type: none"> • presence or absence of acute, right, and/or obtuse angles; • presence or absence of parallel and/or perpendicular sides; and/or • presence or absence of symmetry. <p>Use spatial reasoning.</p>	<p>Make and test conjectures about the classification of polygons; then justify reasoning using models.</p> <p>Given a group of shapes, students classify the shapes and explain the reasoning they used. Ex. all shapes in this group have acute angles, all shapes in this group have right angles, etc.</p>
Link to Ohio's 4th Grade Model Curriculum				

Timeline

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

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
	<p>In Grade 4, 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. Fourth graders may use concrete objects or pictures to help them conceptualize and solve problems. They may check their thinking by asking themselves, “Does this make sense?” They listen to the strategies of others and will try different approaches. They often will use another method to check their answers. Students might use an equation strategy to solve a word problem. For example, students could solve the problem “Chris bought clothes for school. She bought 3 shirts for \$12 each and a skirt for \$15. How much money did Chris spend on her new school clothes?” with the equation $3 \times \\$12 + \\$15 = aa$.</p> <p>Fourth graders may use concrete objects or pictures to help them conceptualize and solve problems. They may check their thinking by</p>	<p>Fourth graders should recognize that a number represents a specific quantity. They connect the quality to written symbols and create a logical representation of the problem at hand, considering both the appropriate units involved and the meaning of quantities. They extend this understanding from whole numbers to their work with fractions and decimals. Students write simple expressions, record calculations with numbers, and represent or round numbers using place value concepts. Students might use base 10 blocks or drawings to demonstrate 154×6, as 154 added six times, and develop an understanding of the distributive property. For example: $154 \times 6 = (100 + 50 + 4) \times 6 = (100 \times 6) + (50 \times 6) + (4 \times 6) = 600 + 300 + 24 = 924$</p> <p>Continued on next page</p>	<p>In Grade 4, students may construct arguments using concrete referents, such as objects, pictures, and drawings. They explain their thinking and make connections between models and equations. They refine their mathematical communication skills as they participate in mathematical discussions involving questions like “How did you get that?”, “Explain your thinking,” and “Why is that true?” They not only explain their own thinking, but listen to others’ explanations. Students explain and defend their answers and solution strategies as they answer questions that require an explanation. For example, “Vincent cuts 2 meters of string into 4 centimeter pieces for a craft. How many pieces of string does Vincent have? Explain your reasoning.” Students ask appropriate questions and they decide if explanations make sense.</p>

<p>asking themselves, “Does this make sense?” They listen to the strategies of others and will try different approaches. They often will use another method to check their answers.</p>		
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Mathematical Practice Standards Taught Throughout the Year			
4. Model with mathematics	5. Use appropriate tools strategically	6. Attend to precision	
<p>Students experiment with representing problem situations in multiple ways including numbers, words (mathematical language), drawing pictures, using objects, 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.</p> <p>Fourth graders should evaluate their results in the context of the situation and reflect on whether the results make sense. For example, students may use money (i.e. dollars and coins) or base-10 blocks to solve the following problem: Elsie buys a drink for \$1.39 and a granola bar for \$0.89. How much change will she receive if she pays with a \$5 bill?</p>	<p>Fourth graders consider the available tools (including estimation) when solving a mathematical problem and decide when certain tools might be helpful. For instance, they may use graph paper, a number line, or base 10 blocks to represent, compare, add, and subtract decimals to the hundredths. Students in fourth grade use protractors to measure angles. They use other measurement tools to understand the relative size of units within a given system and express measurements given in larger units in terms of smaller units.</p>	<p>As fourth graders develop their mathematical communication skills, they try to use clear and precise language in their discussions with others and in their own reasoning. For instance, they may use graph paper or a number line to represent, compare, add, and subtract decimals to the hundredths. Students in fourth grade use protractors to measure angles. They are careful about specifying units of measure and state the meaning of the symbols they choose. For instance, they use appropriate labels when creating a line plot.</p>	

	Mathematical Practice Standards Taught Throughout the Year	
	7. Look for and make use of structure	8. Look for and express regularity in repeated reasoning
	<p>In Grade 4, students look closely to discover a pattern or structure. For instance, students use properties of operations to explain calculations (partial products model). They relate representations of counting problems such as arrays and area models to the multiplication principle of counting. They generate number or shape patterns that follow a given rule using two-column tables.</p>	<p>Students in Grade 4 should notice repetitive actions in computation to make generalizations. Students use models to explain calculations and understand how algorithms work. They also use models to examine patterns and generate their own algorithms. For example, students use visual fraction models to write equivalent fractions.</p>