Math
Grade 5

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 |
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| 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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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 ● 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.

[Link to CCS Math Framework](#)
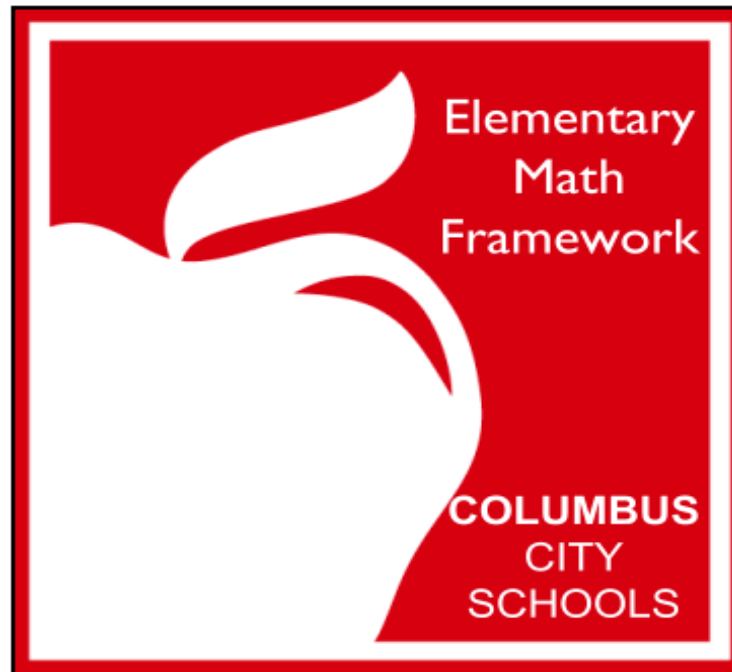
Year-at-a-Glance

Grading Period 1	**9 Weeks** **Measurement and Data** **Number and Operations in Base Ten**		
	Geometric measurement: understand concepts of volume and relate volume to multiplication and to addition. ***5.MD.3a-b** ***5.MD.4** ***5.MD.5a-c**	**Perform operations with multi-digit whole numbers and with decimals to hundredths.** ***5.NBT.5** ***5.NBT.6**	**Understand the place value system.** ***5.NBT.1** ***5.NBT.2** ***5.NBT.3a**

Grading Period 2	**9 Weeks** **Number and Operations in Base Ten** **Number and Operations-Fractions**		
	Understand the place value system. ***5.NBT.3b** ***5.NBT.4**	**Perform operations with multi-digit whole numbers and with decimals to hundredths.** ***5.NBT.7a-c**	**Use equivalent fractions as a strategy to add and subtract fractions.** ***5.NF.1** ***5.NF.2**

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	9 Weeks Number and Operations-Fractions Measurement and Data	
Grading Period 3	Apply and extend previous understandings of multiplication and division to multiply and divide fractions. *5NF.3 *5.NF.4a-b *5.NF.5a-b *5.NF.6 *5.NF.7a-c	Convert like measurements units within a given measurement system. 5.MD.1

	9 Weeks Measurement and Data Geometry Operations and Algebraic Thinking			
Represent and interpret data. 5.MD.2	Classify two-dimensional figures into categories based on their properties. 5.G.3 5.G.4	Write and interpret numerical expressions. 5.OA.1 5.OA.2	Graph points on the coordinate plane to solve real-world and mathematical problems. *5.G.1 *5.G.2	Analyze patterns and relationships. 5.OA.3

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 5th grade.

indicates a clickable link.

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

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Scope and Sequence

	Quarter 1	
	Standard	**Link to Ohio's Critical Area of Focus**
*5.MD.3 a-b	Recognize volume as an attribute of solid figures and understand concepts of volume measurement. a. A cube with side length 1 unit, called a "unit cube," is said to have "one cubic unit" of volume, and can be used to measure volume. b. A solid figure which can be packed without gaps or overlaps using n unit cubes is said to have a volume of n cubic units.	# 3 Develop understanding of volume
*5.MD.4	Measure volumes by counting unit cubes, using cubic cm, cubic in, cubic ft, and improvised units.	
*5.MD.5 a-c	Relate volume to the operations of multiplication and addition and solve real-world and mathematical problems involving volume. a. Find the volume of a right rectangular prism with whole number side lengths by packing it with unit cubes, and show that the volume is the same as would be found by multiplying the edge lengths, equivalently by multiplying the height by the area of the base. Represent threefold whole number products as volumes, e.g., to represent the Associative Property of Multiplication. b. Apply the formulas $V = \ell \times w \times h$ and $V = B \times h$ for rectangular prisms to find volumes of right rectangular prisms with whole number edge lengths in the context of solving real-world and mathematical problems. c. Recognize volume as additive. Find volumes of solid figures composed of two non-overlapping right rectangular prisms by adding the volumes of the non-overlapping parts, applying this technique to solve real-world problems.	
*5.NBT.5	Fluently[G] multiply multi-digit whole numbers using a standard algorithm[G].	# 2 Extending division of 2-digit divisors integrating

*5.NBT.6	Find whole number quotients of whole numbers with up to four-digit dividends and two-digit divisors, using strategies based on place value, the properties of operations, and/or the relationship between multiplication and division. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models.	decimals fractions into the place value system and developing understanding of operations with decimals to hundredths, and developing fluency with whole number and decimal operations.
*5.NBT.1	Recognize that in a multi-digit number, a digit in one place represents 10 times as much as it represents in the place to its right and $\frac{1}{10}$ of what it represents in the place to its left.	
*5.NBT.2	Explain patterns in the number of zeros of the product when multiplying a number by powers of 10, and explain patterns in the placement of the decimal point when a decimal is multiplied or divided by a power of 10. Use whole number exponents to denote powers of 10.	
*5.NBT.3 a	Read, write, and compare decimals to thousandths. a. Read and write decimals to thousandths using base-ten numerals, number names, and expanded formG, e.g., $347.392 = 3 \times 100 + 4 \times 10 + 7 \times 1 + 3 \times (\frac{1}{10}) + 9 \times (\frac{1}{100}) + 2 \times (\frac{1}{1,000})$.	
[Link to Ohio's 5th Grade Performance Level Descriptors](#)		

Instructional Supports

Click on the Clear Learning Targets where you can find vocabulary, learning targets, and sample questions.

<table>
<tr><td colspan="5" align="center">**Quarter 1**</td></tr>
<tr>
<td>Timeframe</td>
<td>**Clear Learning Targets**</td>
<td align="center">**Essential Understandings**</td>
<td align="center">**Strategies and Approaches**</td>
<td align="center">**Assessment Opportunities**</td>
</tr>
<tr>
<td>25 days</td>
<td>***5.MD.3 a-b**</td>
<td>Volume is an attribute of a three-dimensional solid figure that is measured in cubic units.

Volume can be measured (or determined) by finding the total number of cubic units required to fill the space without gaps or overlaps.</td>
<td>Create models to represent volume.

Select appropriate units to estimate and measure volume.

Use spatial reasoning.

Explore and develop the conceptual understanding of "a unit cube" with volume as "one cubic unit."

Recognize volume as an attribute of a three-dimensional object.

Use packing of unit cubes (without gaps or overlaps) to find the volume of a rectangular prism by counting the unit cubes.</td>
<td>Pose real-world problems that show a model and students must identify length, width, and height of the model and compute the volume. Have students make and test conjectures about the volume and then justify their reasoning.

Given the volume of a rectangular prism, students identify the models that represent the given amount. Have students explain the strategy they used to identify the correct models.</td>
</tr>
<tr>
<td></td>
<td>***5.MD.4**</td>
<td>The process of finding volume shifts from building with cubes and counting to the multiplication of side lengths.</td>
<td>Measure using appropriate tools and units; justify mathematical models used.

Explore and explain finding the volume of a rectangular prism with whole number side lengths by packing with unit cubes to find that the volume is the same as would be by</td>
<td>Pose a real-world question asking students to find the volume of a model that is partially constructed. Have students make and test conjectures about the volume. Have students justify their reasoning.</td>
</tr>
</table>

			multiplying the side lengths. Use appropriate units (cubic cm, cubic in, cubic ft, and improvised units).	Pose a real-world problem where a model is provided and students are asked to select all the appropriate methods for finding the volume. Ex. Which expressions can be used to find the volume of the rectangular prism in cubic inches? Provide equations that are correct and incorrect.
	*5.MD.5 a-c	The area of a Base of a rectangular prism is found by multiplying the length by width (B = ℓ × w). In a right rectangular prism, any two parallel faces can be the Bases. The volume of a rectangular prism can be found by multiplying the length by width by height (ℓ × w × h) or by multiplying the area of the Base by height (B x h). A figure composed of rectangular prisms may be decomposed into two non-overlapping rectangular prisms whose volumes may be added to find the volume of the figure.	Measure using appropriate tools and units; justify mathematical models used. Explore and explain finding the volume of a rectangular prism with whole number side lengths by packing with unit cubes to find that the volume is the same as would be by multiplying the side lengths. Decompose a prism built from cubes into layers. Develop a connection between building layers from the base to applying formulas for finding volume. Explore and explain the volume of a figure composed of two non-overlapping right rectangular prisms by adding the volumes of the non-overlapping parts.	Show a model of a rectangular prism that has the length, width and height identified. Have students show all the ways they can combine the numbers to get the correct volume. Use grade-level appropriate mathematical language to explain the reasoning. Pose real-world multi-step problems that have the area of the base identified and the total volume but not the height. Have students solve for the height of the prism and explain their strategy. Pose real-world multi-step problems that provide an irregular 3 dimensional shape with the side lengths identified. Have students use reasoning about the volume of the shape and explain the strategies they used to solve the problem.
	*5.NBT.5	There are different algorithms that can	Estimate the solution of a multiplication	Pose real-world multi-step questions

		be used to multiply. Fluency is being efficient, accurate, and flexible with strategies.	situation. Connect a standard algorithm to an efficient strategy. Explain and justify the reasoning used in a standard algorithm. Analyze other students' use of a standard algorithm, and explain any errors. Use an efficient standard algorithm accurately and flexibly.	that represent all common situations based on Table 2 of the Standards. Have students explain what strategies they used when solving the problem using grade-level appropriate mathematical language. Have students critique the reasoning of others by having them compare how others solved problems and explain any errors that were made. Students should use mathematical language to explain the reasoning.
	*5.NBT.6	There is a relationship between multiplication and division. Equations, rectangular arrays, and/or area models can be used to illustrate and explain division. Remainders can be interpreted symbolically and in context. Real-world mathematical situations can be represented using concrete models or drawings. Patterns and structures can be generalized when multiplying and dividing whole numbers.	Explore number relationships and look for patterns. Divide finding whole number quotients with up to four-digit dividends and two-digit divisors. Explore division problems that result in remainders. Determine whether the remainder is left alone, is discarded, or forces the quotient to increase. Explore and explain how zeroes affect division: in the dividends, within the process of dividing, and in the quotient. Illustrate and explain the relationship between multiplication and division	Students solve division problems using strategies that may include the following: decomposing factors; using the relationship between multiplication and division; creating equivalent but easier or known products; and properties of operations, etc. and explain the reasoning used to solve the problem. Pose real-world multi-step problems based on the division situations shown on Table 2 of the standards. Provide opportunities for students to reason about remainders either symbolically or in context.

			Apply the conceptual understanding of properties to division. Estimate the solution of a division problem.	
11 days	***5.NBT.1**	In the base-ten system, the value of each place is 10 times the value of the place to the immediate right and $\frac{1}{10}$ of the value to its immediate left.	Relate multiplication and division to place value. Explore using place value, multiplication, or division with whole numbers and/or decimal numbers: • 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 the same digit in the hundreds place. • A digit in the tenths place is 1/10 of the digit in the ones place. • A digit in the hundredths place is 1/10 of the digit in the tenths place. • A digit in the thousandths place is 1/10 of the digit in the hundredths place.	Students fill in the missing numbers in the pattern and use mathematical language to explain the relationship. Multiply by 10: 0.004, _____, 0.4, _____, 30, _____. Divide by 10: 600, _____, 6, _____, 0.06, _____. Ask: What is the number that has a value 10 times the number 0.09? Explain your reasoning
	*5.NBT.2	There are patterns in the number of zeros when multiplying a number by a	Explore and explain why multiplying by a power of 10 changes the value of the number.	Pose problems that use exponents and have students explain the strategy

			power of ten.	Use whole number exponents to denote powers of 10.	they used. Ex. I made a deal with my son, I said I will pay him 10^2 x .25 to shovel the snow off the driveway after we received 5 inches of snow. How much money will he make? Explain your thinking.

	*5.NBT.3a	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. In a decimal number, digits to the right of the decimal point are named by the appropriate unit: tenths, hundredths, thousandths. In a decimal number, the digits to the right of the decimal point are read followed by the name of the appropriate unit. When reading a decimal number, the decimal point is read as and. Decimals to thousandths can be expressed in standard form, word form, and expanded form.	Represent, read, and write decimals to the thousandths in various forms (standard, word, expanded). Use patterns in the place value system to read and write numbers. Create numbers given specific criteria, e.g., Create a number that has 3 in the thousandths place, 5 in the hundredths place, 7 in the ones place, etc.	Pose questions that students need to show an understanding of base-ten numerals, number names and expanded form. Ex. Represent 345.278 in two different ways. Explain how each shows the place value of the digits of the number.

[Link to Ohio's 5th Grade Model Curriculum](#)

Timeline

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

Scope and Sequence

	Quarter 2	
	Standard	**Link to Ohio's Critical Area of Focus**
*5.NBT.3b	Read, write, and compare decimals to thousandths. b. Compare two decimals to thousandths based on meanings of the digits in each place, using >, =, and < symbols to record the results of comparisons.	# 2 Extending division of 2-digit divisors integrating decimals fractions into the place value system and developing understanding of operations with decimals to hundredths, and developing fluency with whole number and decimal operations.
*5.NBT.4	Use place value understanding to round decimals to any place, millions through hundredths.	
*5.NBT.7 a	Solve real-world problems by adding, subtracting, multiplying, and dividing decimals using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction, or multiplication and division; relate the strategy to a written method and explain the reasoning used. a. Add and subtract decimals, including decimals with whole numbers, (whole numbers through the hundreds place and decimals through the hundredths place).	
*5.NF.1	Add and subtract fractions with unlike denominators (including mixed numbers and fractions greater than 1) by replacing given fractions with equivalent fractions in such a way as to produce an equivalent sum or difference of fractions with like denominators. For example, use visual models and properties of operations to show $\frac{2}{3} + \frac{5}{4} = \frac{8}{12} + \frac{15}{12} = \frac{23}{12}$. In general, $\frac{a}{b} + \frac{c}{d} = (\frac{a}{b} \times \frac{d}{d}) + (\frac{c}{d} \times \frac{b}{b}) = \frac{(ad+bc)}{bd}$.	#1 Developing fluency with addition and subtraction of fractions and developing understanding of the multiplication of fractions and of division of fractions in limited cases (unit fractions divided by whole numbers and whole numbers divided by unit fractions.)
*5.NF.2	Solve word problems involving addition and subtraction of fractions referring to the same whole, including cases of unlike denominators, e.g., by using visual fraction models^G or equations to represent the problem. Use benchmark fractions and number sense of fractions to estimate mentally and assess the reasonableness of answers. For example, recognize an incorrect result $\frac{2}{5} + \frac{1}{2} = \frac{3}{7}$, by observing that $\frac{3}{7} < \frac{1}{2}$.	

*5.NBT.7 b-c	Solve real-world problems by adding, subtracting, multiplying, and dividing decimals using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction, or multiplication and division; relate the strategy to a written method and explain the reasoning used.
	     b. Multiply whole numbers by decimals (whole numbers through the hundreds place and decimals through the hundredths place).
	     c. Divide whole numbers by decimals and decimals by whole numbers (whole numbers through the tens place and decimals less than one through the hundredths place using numbers whose division can be readily modeled). For example, 0.75 divided by 5, 18 divided by 0.6, or 0.9 divided by 3.
		# 2 Extending division of 2-digit divisors integrating decimals fractions into the place value system and developing understanding of operations with decimals to hundredths, and developing fluency with whole number and decimal operations.

	Link to Ohio's 5th Grade Performance Level Descriptors	

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

Quarter 2				
Timeframe	**Clear Learning Targets**	**Essential Understandings**	**Strategies and Approaches**	**Assessment Opportunities**
25 days	***5.NBT.3b**	Two decimals to thousandths can be compared using the symbols >, =, and <.	Compare numbers based on place-value understanding— • with the same number of digits; • with the same leading digits; • with different leading digits and different number of digits; and • with the same whole number value and different decimal values.	Write two true inequality statements using symbols and words for a pair of decimals, e.g., 3.012 < 3.102 and 3.102 > 3.012. Have students evaluate inequalities to determine if they are true or not. Use examples that compare two

		Connect the mathematical language to the use of symbols >, =, and < when describing the relationship between the numbers. Compare the value of a numeral in a number to the same numeral in a different place in a different number, e.g. Given 3.42 and 4.32, compare the value of 3.	numbers with decimals, compare a number that is a decimal and a number that is a fraction, as well as numbers that are fractions that have a denominator of tenths and hundredths ex. $1 + (7 \times \frac{1}{10}) + (8 \times \frac{1}{100}) < 1 + (9 \times \frac{1}{10}) + (2 \times \frac{1}{100})$
*5.NBT.4	Rounding helps solve problems mentally and assess the reasonableness of an answer.	Round numbers based on place-value understanding. Explore rounding by using the location of a given number on a model, e.g., number line, number chart, etc. Round numbers based on place-value understanding. Develop and generalize rounding rules for decimals. Identify or create numbers that will round to a chosen number, e.g., Create a number that will round to 1.05. Explore the purposes of rounding.	Pose real-word multi-step problems using numbers with decimals that require students to round numbers based on place-value understanding. Have students use grade level appropriate language to explain reasoning when rounding.
*5.NBT.7a	There is a relationship between addition and subtraction. Real-world mathematical situations can be represented using concrete models or drawings when adding and	Estimate solutions when solving problems with decimals before computing. Explore and explain mathematical operations in context of real-world problems. Illustrate and explain calculations with decimals	Have students estimate the solution to a real-world addition and subtraction problem with decimal numbers before computing the solution. Have students determine the reasonableness of a solution by

	subtracting decimals (including decimals with whole numbers through hundreds place and decimals through hundredths place).	through the use of concrete models, drawings, or strategies based on place value. Pay attention to and make sense of quantities when using decimals in real-world problems. Solve problems using the different problem types. See Table 1 of the Standards. Use concrete models or drawings to relate strategies to a written method: • Add and subtract decimals. • Connect the addition and subtraction of decimals to fractions.	comparing the solution to initial estimation. Have students explain their reasoning. Have students add or subtract two numbers with decimals by creating a model to represent the problem. Have students explain the model.
*5.NF.1	Fractions can be added and subtracted when the wholes are the same size and the fractional parts (denominators) are the same. Fractions with different denominators are called unlike fractions. Fractions with different denominators can be added and subtracted by replacing each fraction with an equivalent fraction expressed with a like denominator. An equation can be used to describe a mathematical situation involving fractions. There is usually more than one way to	Explore the use of models (e.g., rectangular area models, fraction strips, number lines, clock models, etc.) to find an appropriate model to represent both fractions when the denominators are difficult to represent. Add and subtract fractions and mixed numbers with like and unlike denominators using models. Represent two fractions with unlike denominators using the same model. Express two fractions with unlike denominators as fractions with like denominators using visual models and renaming strategies; then write an equation using each fraction.	Create a model (e.g., rectangular area models, fraction strips, number lines, clock models, etc.) to represent both fractions or mixed numbers when the denominators are difficult when adding or subtracting fractions. Explain the reasoning using grade-level appropriate mathematical language. Have students create the best model and rewrite the equation to represent an addition or subtraction problem. Explain their thinking.

		describe and solve a mathematical situation involving fractions. A fraction with a numerator larger than the denominator can be expressed as a mixed number or a fraction greater than one; both are correct representations. Expressing a mixed number as a fraction, e.g., $2\frac{3}{5}=1\frac{3}{5}$, may be useful when solving a fraction problem. Common denominators are needed to add and subtract fractions with unlike denominators. Multiples may be used to find common denominators.	Decompose each of two fractions into a sum of fractions with the same denominator, e.g., To solve $\frac{1}{2} + \frac{3}{4}$ a student may think $\frac{1}{2} = \frac{1}{4} + \frac{1}{4} = \frac{2}{4}$, so $\frac{2}{4} + \frac{3}{4} = \frac{5}{4}$. Add and subtract combinations of fractions whose denominators are multiples: (2, 4, 6, 8, 10, 12 or 3, 6, 12 or 5, 10, and 100) by using models and applying renaming fractions strategies. Explain and justify thinking when adding and subtracting combinations of fractions with— • unlike fractions where only one of the fractions needs to be changed, e.g., $\frac{7}{8} - \frac{1}{2}$; $\frac{3}{4} + \frac{1}{8}$; $1\frac{1}{2} - \frac{3}{4}$. Rewrite as an equivalent mathematical problem in order to add or subtract equal sized parts, and • unlike fractions where both fractions need to be changed, e.g., $\frac{2}{3} - \frac{1}{2}$, $1\frac{2}{3} - \frac{3}{4}$. Find the best model; rewrite as an equivalent mathematical problem; then add or subtract the equal sized parts.	
	*5.NF.2	An equation can be used to describe a mathematical situation involving fractions. There is usually more than one way to describe and solve a mathematical situation involving fractions.	Using models and equations, add and subtract to solve word problems with two or more fractions with like and unlike denominators For example, $\frac{45}{100} + \frac{6}{10}$; $\frac{1}{2} + \frac{1}{4} + \frac{1}{8}$; $2 - \frac{1}{10}$; $\frac{3}{4} + 1\frac{1}{2} + \frac{3}{8}$ etc. Solve multiple groups problems involving groups of $\frac{1}{2} , \frac{1}{4} , \frac{1}{3} , \frac{1}{5} , \frac{1}{6} , \frac{1}{8} , \frac{1}{10}$, and $\frac{1}{12}$, which	Represent real-world problems with visual models and with equations; justify the solutions using the relationship between addition and subtraction and properties of operations.

		Benchmark fractions may be used to estimate and to check whether answers are reasonable.	include mixed numbers, e.g., Three children are having breakfast. Each child is to get $1\frac{1}{2}$ waffles. How many waffles are needed? $1\frac{1}{2}+1\frac{1}{2}+1\frac{1}{2}=3+\frac{1}{2}+\frac{1}{2}+\frac{1}{2}=4+\frac{1}{2}=4\frac{1}{2}$ waffles. Explore and explain estimates of fraction problems using number sense or benchmark fractions.	Have students assess other students' solutions to real-world problems by determining if the solution is reasonable. Explain the reasoning. Real world problems can include measurement situations.
14 days	***5.NBT.7 b-c**	Real-world mathematical situations can be represented using concrete models or drawings when multiplying whole numbers by decimals (whole numbers through the hundreds place and decimals through the hundredths place). Real-world mathematical situations can be represented using concrete models or drawings when dividing whole numbers by decimals and decimals by whole numbers (whole numbers through the tens place and decimals less than one through the hundredths place using numbers whose division can be readily modeled).	Estimate solutions when solving problems with decimals before computing. Explore and explain mathematical operations in context of real-world problems. Illustrate and explain calculations with decimals through the use of concrete models, drawings, or strategies based on place value. Pay attention to and make sense of quantities when using decimals in real-world problems. Solve problems using the different problem types. See Table 2 of the Standards. Use concrete models or drawings to relate strategies to a written method: ● Multiply whole numbers by decimals. ● Compare a decimal product problem to the same problem without decimals, e.g., 24.8 × 3.5 to 248 × 35. ● Compare a decimal product problem	Pose real-world multi-step problems using problem types described in Table 2 of the Standards with numbers that require students to multiply and divide a whole number by a decimal appropriate to the grade level. Have students explain the strategies they use to solve the problem using grade-level appropriate mathematical language. Before students start to solve the problem, have them estimate the solution. Once they have completed the computation, have students determine the reasonableness of a solution and compare the initial estimation with decimals and explain the reasoning.

			to the same problems with the decimal located in different positions, e.g., 24.8 × 3.5 to 2.48 × 0.35. ● Divide whole numbers by decimals and decimals by whole numbers using numbers whose division can be readily modeled, e.g., 0.75 divided by 5, 18 divided by 0.6, or 0.9 divided by 3.	

[Link to Ohio's 5th Grade Model Curriculum](#)

Timeline

	Quarter 2													
Lesson Number	Lesson 9		Lesson 10	Lesson 11	Lesson 12	Lesson 13	Lesson 14	Math Task		Lesson 15	Lesson 16	Lesson 17	
Lesson Standards	*5.NBT.3b *5.NBT.4	Mid–Unit Assessment	*5.NBT.7a	*5.NBT.7a	*5.NF.1 *5.NF.2	*5.NF.1 *5.NF.2	*5.NBT.7 *5.NF.2	*5.NBT.1 *5.NBT.2 *5.NBT.3a *5.NBT.3b *5.NBT.3c *5.NBT.4 *5.NBT.7 *5.NF.1 *5.NF.2	Unit Assessment	*5.NBT.7b	*5.NBT.7b	*5.NBT.7c See Educator Notes for Ohio Enhancement Activities	Mid–Unit Assessment
Supporting Standards							*5.NF.1 *5.NBT.4			*5.NBT.1	*5.NBT.1	*5.NBT.1	

Scope and Sequence

		Quarter 3	
		Standard	**Link to Ohio's Critical Area of Focus**
*5.NF.3		Interpret a fraction as division of the numerator by the denominator ($\frac{a}{b}$ = a ÷ b). Solve word problems involving division of whole numbers leading to answers in the form of fractions or mixed numbers, e.g., by using visual fraction models or equations to represent the problem. *For example, interpret $\frac{3}{4}$ as the result of dividing 3 by 4, noting that $\frac{3}{4}$ multiplied by 4 equals 3, and that when 3 wholes are shared equally among 4 people each person has a share of size 3/4. If 9 people want to share a 50 pound sack of rice equally by weight, how many pounds of rice should each person get? Between what two whole numbers does your answer lie?*	#1 Developing fluency with addition and subtraction of fractions and developing understanding of the multiplication of fractions and of division of fractions in limited cases (unit fractions divided by whole numbers and whole numbers divided by unit fractions.)
*5.NF.4 a-b		Apply and extend previous understandings of multiplication to multiply a fraction or whole number by a fraction. a. Interpret the product (a/b) × q as a part of a partition of q into b equal parts, equivalently, as the result of a sequence of operations a × q ÷ b. *For example, use a visual fraction model to show ($\frac{2}{3}$) × 4 = $\frac{8}{3}$, and create a story context for this equation. Do the same with ($\frac{2}{3}$) × ($\frac{4}{5}$) = $\frac{8}{15}$. (In general, ($\frac{a}{b}$) × ($\frac{c}{d}$) = $\frac{ac}{bd}$.)* b. Find the area of a rectangle with fractional side lengths by tiling it with unit squares of the appropriate unit fraction side lengths, and show that the area is the same as would be found by multiplying the side lengths. Multiply fractional side lengths to find areas of rectangles, and represent fraction products as rectangular areas.	
*5.NF.5 a-b		Interpret multiplication as scaling (resizing). a. Compare the size of a product to the size of one factor on the basis of the size of the other factor, without performing the indicated multiplication.	

	b. Explain why multiplying a given number by a fraction greater than 1 results in a product greater than the given number (recognizing multiplication by whole numbers greater than 1 as a familiar case); explaining why multiplying a given number by a fraction less than 1 results in a product smaller than the given number; and relating the principle of fraction equivalence $\frac{a}{b} = \frac{(n \times a)}{(n \times b)}$ to the effect of multiplying $\frac{a}{b}$ by 1.	
*5.NF.6	Solve real-world problems involving multiplication of fractions and mixed numbers, e.g., by using visual fraction models or equations to represent the problem.	
*5.NF.7 a-c	Apply and extend previous understandings of division to divide unit fractions by whole numbers and whole numbers by unit fractions. In general, students able to multiply fractions can develop strategies to divide fractions, by reasoning about the relationship between multiplication and division, but division of a fraction by a fraction is not a requirement at this grade. a. Interpret division of a unit fraction by a non-zero whole number, and compute such quotients. *For example, create a story context for* $(\frac{1}{3}) \div 4$, *and use a visual fraction model to show the quotient. Use the relationship between multiplication and division to explain that* $(\frac{1}{3}) \div 4 = (\frac{1}{12})$ *because* $(\frac{1}{12}) \times 4 = (\frac{1}{3}).$ b. Interpret division of a whole number by a unit fraction, and compute such quotients. *For example, create a story context for* $4 \div (\frac{1}{5})$, *and use a visual fraction model to show the quotient. Use the relationship between multiplication and division to explain that* $4 \div (\frac{1}{5}) = 20$ *because* $20 \times (\frac{1}{5}) = 4.$ c. Solve real-world problems involving division of unit fractions by non-zero whole numbers and division of whole numbers by unit fractions, e.g., by using visual fraction models and equations to represent the problem. *For example, how much chocolate will each person get if 3 people share* $\frac{1}{2}$ *pound of chocolate equally? How many* $\frac{1}{3}$ *cup servings are in 2 cups of raisins?*	
5.MD.1	Know relative sizes of these U.S. customary measurement units: pounds, ounces, miles, yards, feet, inches, gallons, quarts, pints, cups, fluid ounces, hours, minutes, and seconds. Convert between pounds and ounces; miles and feet; yards, feet, and inches; gallons, quarts, pints, cups, and fluid ounces; hours, minutes, and seconds in solving multi-step, real-world problems.	
[Link to Ohio's 5th Grade Performance Level Descriptors](#)		

Instructional Supports

Click on the Clear Learning Targets where you can find vocabulary, learning targets, and sample questions.

	Quarter 3			
Timeframe	**Clear Learning Targets**	**Essential Understandings**	**Strategies and Approaches**	**Assessment Opportunities**

30 days	*5.NF.3	The denominator describes what number of equal parts a whole has been divided into.
		
		The numerator describes how many of the parts are considered.
		
		The numerator is a multiplier, e.g., $\frac{4}{5}$ =4 × $\frac{1}{5}$.
		• A fraction represents division, so $a \div b = \frac{a}{b}$, e.g., 3 ÷ 4 = $\frac{3}{4}$.
		  ● The denominator is the divisor.
		  ● The numerator is the dividend.
		
		Equal shares means each sharer gets the same sized part and no parts are discarded.
		
		The solution to an equal sharing problem can be shown with a fraction representing the relationship of the sharers and the amount.
			Solve word problems involving division of whole numbers leading to answers in the form of fractions or mixed numbers.
			
			Use mathematical models to solve problems.
				Create, explain, and solve real-world word problems involving equal shares or multiple groups using models and equations. When the answer is a mixed number, explain what two whole numbers the answer lies between.
				
				Solve equal sharing problems where the amount shared is less than the number of sharers by using models or writing the fraction, e.g., When three pizzas are shared with 8 students, each student gets $\frac{3}{8}$ of a pizza.
				
				Who gets more? A student in a group of 6 sharing 4 brownies or a student in a group of 5 sharing 3 brownies? Students can use a model to solve the problem.

		When adding or subtracting unlike fractions, all fractions must be represented with equal sized parts of the same whole.		
	*5.NF.4 a-b	The idea of the numerator as a multiplier can be used when a fraction is being multiplied by a whole number, e.g., Just as $\frac{5}{8} = 5 \times \frac{1}{8}$, 5 groups of $\frac{3}{8}$ equals $5 \times \frac{3}{8} = (5 \times 3) \times \frac{1}{8}$ which equals $\frac{15}{8}$. Arrays, number lines, fraction strips, or sets can be used to find the solution to multiplying a whole number by a fraction. The product of a fraction ($\frac{a}{b}$) and a whole number (q) shown as ($\frac{a}{b} \times q$) can be found by partitioning the whole number (q) into equal sized parts (b) with the result being $a \times q$ parts of size $\frac{1}{b}$, i.e., $\frac{(a \times q)}{b}$. The product of two fractions ($\frac{a}{b} \times \frac{c}{d}$) is found by multiplying the numerators (a and c) and then multiplying the denominators (b and d) which is then shown as $\frac{(a \times c)}{(b \times d)}$. Multiplying any number by a value of one maintains the original relationship.	Explore and explain that the product of a fraction ($\frac{a}{b}$) and a whole number (q) shown as ($\frac{a}{b} \times q$) can be found by partitioning the whole number (q) into equal sized parts (b) with the result being $a \times q$ parts of size $\frac{1}{b}$, i.e., $\frac{(a \times q)}{b}$. Explore and explain that the product of two fractions ($\frac{a}{b} \times \frac{c}{d}$ is found by multiplying the numerators (a and c) and then multiplying the denominators (b and d) which is then shown as $\frac{(a \times c)}{(b \times d)}$. Model and find the area of a rectangular region with sides of fractional lengths by tiling. Scaffold area of a rectangular region with sides of fractional lengths from concrete (tiling) to symbolic representation (equation).	Have students identify the equation that is represented by a model. Have students create a story context for the equation. Explain the reasoning. Pose real-world problems using fractional lengths to find the area of a rectangular shape. Have students create a model that represents the equations. Use grade-level appropriate mathematical language to justify the reasoning.

		The relationship between multiplication and division is applied to fractions just as it is applied to whole numbers. The area of a rectangle with fractional side lengths can be computed. Multiplication can be used to solve division problems involving fractions.		
	*5.NF.5 a-b	When a number is multiplied by a number greater than one, the product will be greater than the original number, e.g., $3 \times \frac{5}{4}$ will be greater than 3. When a number is multiplied by a fraction less than one the product is smaller than the original number, e.g., $5 \times \frac{3}{4}$ will be less than 5). When two fractions less than one are multiplied, the product is smaller than both of the original fractions.	Compare the size of a product to the size of one factor on the basis of the size of the other factor, without performing the indicated multiplication. Explore and explain the value of the solutions when multiplying the following: • a given number by a fraction greater than one; and • a given number by a fraction less than one. Relate the principle of fraction equivalence $\frac{a}{b} = \frac{(n \times a)}{(n \times b)}$ to the effect of multiplying $\frac{a}{b}$ by 1.	Pose real-world problems that represent a situation of scaling. Have students identify the equation that would be used to represent the solution without having to solve for the answer. Ex. My dog weight is 50 pounds. When she was 6 months old, her weight was $\frac{1}{2}$ as much. Which equation could you use to find out how much my dog's weight was when she was 6 months old. a.) $50 \div \frac{1}{2}$ b.) $50 \times \frac{1}{2}$ c.) $50 + \frac{1}{2}$ d.) $50 - \frac{1}{2}$ Have students compare two models and explain how one is scaled compared to the other. Justify the reasoning using mathematical language or equations. Ex. Show a bar model that has 16 units and another bar model that has 4 units. Use words or an equation to describe how the bar with a length of 16 units is scaled.

		*5.NF.6	Use visual fraction models or equations to represent the problem.	Represent and create real-world problems with visual models and a corresponding equation, justifying the solution: ● fractions by whole numbers; ● fractions by unit fractions; ● two fractions; and ● fractions and mixed numbers.	Have students identify the equation that is represented by a model. Have students create a story context for the equation. Explain the reasoning. Pose real-world multi-step problems using fractions and mixed numbers using all mathematical situations in Table 2 of the Standards. Have students create a model to represent the problem. Explain the reasoning.
		*5.NF.7 a-c	A whole number can be divided by a non-zero fraction. A fraction can be divided by a non-zero whole number.	Use the understanding of the relationship between whole number multiplication and division to reason about solving problems involving the division of a whole number by a unit fraction.	Interpret division of a whole number by a unit fraction to solve real-world multi-step problems. Model, explain, and justify results, e.g., A cookie recipe needs $\frac{1}{2}$ cup of sugar. How many recipes (batches) can be made with 4 cups of sugar? Interpret the division of a unit fraction by a whole number to solve real-world problems. Use visual models to justify results, e.g., A $\frac{1}{2}$ a sheet of pizza is left over, and 8 students want to share it for lunch the next day. How much of the pizza will each student get?
	10 days	5.MD.1	Two measurement systems (U.S. customary and metric) are currently used in the United States.	Explore the U.S. customary system using appropriate tools (rulers, yardsticks, scales, measuring containers, clocks, etc.)	Solve multi-step, real-world problems involving conversions. Note: See the Ohio State Test Grade 5 Reference Sheet for conversions that will be given.

Relationships between units vary depending on the measurement system.

Conversions in the U.S. customary system vary depending upon what is being measured.

Conversions in the metric system are based on powers of ten.

When converting from a larger unit to a smaller unit, there will be more iterations of the smaller unit. For example, when converting from yards to feet, there will always be a greater number of feet than yards.

When converting from a smaller unit to a larger unit, there will be less iterations of the larger unit. For example, when converting from cups to gallons, there will always be fewer gallons than cups

Measurements can be converted to solve multi-step real-world problems.

Create models, tables, and drawings to represent measurements.

Explain relative sizes of these U.S. customary units:
- weight—pounds, ounces;
- length—miles, yards, feet, inches;
- capacity—gallons, quarts, pints, cups, fluid ounces; and
- time—hours, minutes, seconds.

Explore, record, and look for a pattern when doing conversions in a two-column table. Convert between units using these conversions:
- 1 pound = 16 ounces,
- 1 mile = 5,280 feet,
- 1 yard = 3 feet; 1 foot = 12 inches; 1 yard = 36 inches,
- 1 gallon = 4 quarts or 8 pints or 16 cups or 128 fluid ounces,
- 1 quart = 2 pints or 4 cups or 32 fluid ounces,
- 1 pint = 2 cups or 16 fluid ounces,
- 1 cup = 8 fluid ounces, and
- 1 hour = 60 minutes; 1 minute = 60 seconds; 1 hour = 3,600 seconds.

Have students interpret a table to show the relationship between measurements. Have students explain their reasoning.

Pose real-world problems that use fractional and mix number measurements. Have students justify their answers.

[Link to Ohio's 5th Grade Model Curriculum](#)

Timeline

Quarter 3													
Lesson Number	Lesson 18	Lesson 19	Lesson 20	Mid-Unit Assessment	Lesson 21	Lesson 22	Lesson 23	Lesson 24	Math Task	Unit Assessment	Lesson 25	Lesson 26
Lesson Standards	*5.NF.3	*5.NF.4a	*5.NF.4b		*5.NF.5a *5.NF.5b	*5.NF.6	*5.NF.7a *5.NF.7b	*5.NF.7c	*5.NF.3 *5.NF.4a *5.NF.4b *5.NF.6 *5.NF.7a *5.NF.7b *5.NF.7c		5.MD.1 See One-Day Activity for Ohio Enhancement Activities	5.MD.1 See Educator Notes for Ohio Enhancement Activities
Supporting Standards			*5.NF.6 *5.NF.4a			*5.NF.4a *5.NF.4b		*5.NF.7a *5.NF.7b			*5.NBT.2 *5.NF.3	*5.NBT.2 *5.NBT.5 *5.NF.3 *5.NF.6

Scope and Sequence

	Quarter 4	
	Standard	**Link to Ohio's Critical Area of Focus**
5.MD.2	Display and interpret data in graphs (picture graphs, bar graphs, and line plots[G]) to solve problems using numbers and operations for this grade, e.g., including U.S. customary units in fractions $\frac{1}{2}$, $\frac{1}{4}$, $\frac{1}{8}$, or decimals.	#1 Developing fluency with addition and subtraction of fractions and developing understanding of the multiplication of fractions and of division of fractions in limited cases (unit fractions divided by whole numbers and whole numbers divided by unit fractions.)
5.G.3	Identify and describe commonalities and differences between types of triangles based on angle measures (equiangular, right, acute, and obtuse triangles) and side lengths (isosceles, equilateral, and scalene triangles).	#4 Modeling numerical relationships with the coordinate plane.
5.G.4	Identify and describe commonalities and differences between types of quadrilaterals based on angle measures, side lengths, and the presence or absence of parallel and perpendicular lines, e.g., squares, rectangles, parallelograms, trapezoidsG, and rhombuses.	
5.OA.1	Use parentheses in numerical expressions, and evaluate expressions with this symbol. Formal use of algebraic order of operations is not necessary.	#2 Extending division to 2-digit divisors, integrating decimal fractions into the place value system and developing understanding of operations with decimals to hundredths, and developing
5.OA.2	Write simple expressions that record calculations with numbers, and interpret numerical expressions without evaluating them. *For example, express the calculation "add 8 and 7, then multiply by 2" as 2 × (8 + 7). Recognize that 3 × (18,932 + 921) is three times as large as 18,932 + 921, without having to calculate the indicated sum or product.*	

			fluency with whole number and decimal operations.
*5.G.1	Use a pair of perpendicular number lines, called axes, to define a coordinate system, with the intersection of the lines (the origin) arranged to coincide with the 0 on each line and a given point in the plane located by using an ordered pair of numbers, called its coordinates. Understand that the first number indicates how far to travel from the origin in the direction of one axis, and the second number indicates how far to travel in the direction of the second axis, with the convention that the names of the two axes and the coordinates correspond, e.g., x-axis and x-coordinate, y-axis and y-coordinate.		#4 Modeling numerical relationships with the coordinate plane.
*5.G.2	Represent real-world and mathematical problems by graphing points in the first quadrant of the coordinate plane, and interpret coordinate values of points in the context of the situation.		
5.OA.3	Generate two numerical patterns using two given rules. Identify apparent relationships between corresponding terms. Form ordered pairs consisting of corresponding terms from the two patterns, and graph the ordered pairs on a coordinate plane. *For example, given the rule "Add 3" and the starting number 0, and given the rule "Add 6" and the starting number 0, generate terms in the resulting sequences, and observe that the terms in one sequence are twice the corresponding terms in the other sequence. Explain informally why this is so.*		

[Link to Ohio's 5th Grade Performance Level Descriptors](#)

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

Quarter 4				
Timeframe	**Clear Learning Targets**	**Essential Understandings**	**Strategies and Approaches**	**Assessment Opportunities**
16 days	**5.MD.2**	Picture graphs, bar graphs, and line plots are used to display data.	**Picture Graph** Display and interpret data using real-world	Pose real-world problems where students have to solve multi-step

The key of a picture graph tells how many items each picture or symbol represents.

The scale of a bar graph varies depending on the data set.

The scale of a line plot can be whole numbers, halves, quarters, eighths, sixteenths, tenths, or hundredths.

Symbols used in picture graphs and line plots should be consistently spaced and sized.

Information presented in a graph can be used to solve problems using metric or U.S. customary measurements.

problems with grade-level appropriate units for data sets:
- Use units of halves and quarters in situations where these fractions are appropriate.
- The amount of items represented by a fractional picture or symbol is determined by the key and the fraction (12 or 14) of the picture or symbol that is present.

Bar Graph
Display and interpret data using real-world problems with grade-level appropriate units for data sets:
- Use whole number units for a large variety of data sets.
- Use units of halves, quarters, and eighths in situations where these fractions are appropriate.
- Use units of currency in situations when appropriate.
- Use decimal units in situations involving metric measurements.

Line Plots
Display and interpret data using real-world problems with grade-level appropriate units for data sets:
- Use whole number units for a large variety of data sets.
- Use units of halves, quarters, eighths, and sixteenths in situations where

problems that require them to interpret information from a graph. Have students explain their reasoning using grade-level appropriate mathematical language. Include picture graphs, bar graphs, line plots and circle graphs.

Have students interpret information and decide the best graphical representation of the data. Attend to precision when creating the graph. Have students explain their reasoning.

			these fractions are appropriate. ● Use units of currency in situations when appropriate. ● Use decimal units in situations involving metric measurements. **Circle Graphs** Explore circle graphs in connection with social studies standards.	
	5.G.3	Triangles can be named and classified by angle measures (equiangular, acute, right, and obtuse) and/or side lengths (scalene, isosceles, and equilateral). Triangles can be compared.	Note: Students are not required to measure angles with a protractor for this cluster, but should be comparing angles to greater than, less than, or equal to 90 degrees. Use hands-on materials to create triangles to explore angle measures and side length characteristics. Describe an equilateral triangle as having three equal side lengths. Describe a scalene triangle as having three different side lengths. Explore and describe an isosceles triangle as having at least two sides the same length. Explore and describe an equilateral triangle as a special type of an isosceles triangle. Identify and describe triangles by the following: ● side lengths (isosceles, equilateral, scalene)	Given several triangles, have students select the triangles that can best be described by a specific characteristic based on angle measures or side lengths. Have students explain their commonalities to justify their reasoning. For a given triangle, have students compare statements and select those that best describe the characteristics and explain the reasoning by using grade-level appropriate mathematical language.

			● angle measures (obtuse, acute, right, equiangular) Sort and compare types of triangles.	
	5.G.4	Quadrilaterals can be named and classified by angle measures, side lengths, or the presence or absence of parallel and perpendicular lines. Quadrilaterals can be compared.	Note: Students are not required to measure angles with a protractor for this cluster, but should be comparing angles to greater than, less than, or equal to 90 degrees. Explore and describe squares, rectangles, parallelograms, trapezoids, and rhombuses based on side lengths, angle measures, and the presence or absence of parallel and/or perpendicular sides. Identify and describe quadrilaterals by the following: ● side lengths; ● angle measures; ● the presence or absence of parallel and/or perpendicular lines; and/or ● the presence or absence of symmetry. Sort and compare types of quadrilaterals.	Given two different quadrilaterals, have students select statements that describe the ways in which the shapes are alike and ways in which the shapes are different. Have students explain their reasoning using grade-level appropriate mathematical language. Give students several shapes. Have students classify the shapes and provide reasoning to justify the classifications using mathematical language.
20 days	**5.OA.1**	Calculations with parentheses are evaluated first within an expression.	Explore the use of parentheses to indicate what operation(s) would be performed first when multiple operations exist in an expression.	Given an expression, have students insert parentheses into the expression so the value is the specific amount given. Have students explain their reasoning. Given an expression with parentheses,

				have students calculate the value of the expression.
	5.OA.2	Expressions can be written using words or symbols. It is acceptable to change the order of an expression. For example, "add seven and six, then multiply by two" mathematically would get the same answer as (6 + 7) × 2 or 2 × (6 + 7).	Evaluate and interpret numerical expressions, including whole numbers, fractions, and decimals. Use conceptual understanding to interpret multiplicative comparisons without evaluating them. Explain the relationship between two number expressions without calculating the answers. Translate a numerical expression into words. Translate an expression written in words symbolically. For example, twice the sum of seven and six.	Have students write an expression that represents a statement. Ex. The total is 3 times 2,345 + 3,789. Write an expression to show this statement.
	*5.G.1	Coordinate graphs show relationships between numbers on a coordinate grid. The coordinate system is created from a horizontal number line (x-axis) and a vertical number line (y-axis) with the intersection of the lines at zero (the origin). A given point can be located in the plane by using an ordered pair of numbers (x, y). The origin of the coordinate plane is	Identify the horizontal number line as the x-axis. Identify the vertical number line as the y-axis. Identify the intersection of the number lines as the origin (0, 0). Identify x- and y-coordinates within an ordered pair (limited to whole numbers). Identify ordered pairs when given points in the first quadrant. Graph points in the first quadrant when given	Given statements about points on a coordinate plane, have students evaluate and select the statements that are true and explain the reasoning. Given a point on a coordinate plane, have students identify the ordered pairs.

		represented by the ordered pair (0, 0). The first number in an ordered pair, the x-coordinate or x, indicates how far to travel from the origin in the horizontal direction. The second number in an ordered pair, the y-coordinate or y, indicates how far to travel in the vertical direction. Distance is found by counting intervals rather than counting the grid marks.	ordered pairs.	
	*5.G.2	Real-world situations can be represented by graphing points in the coordinate plane. Coordinate values can be interpreted in the context of real-world situations.	Represent real-world and mathematical problems by graphing points in the first quadrant. Explore and explain paths (horizontally and vertically) between two sets of ordered pairs on a coordinate plane. Interpret coordinate values of points within the context of a situation. Represent geometric shapes on the coordinate grid, e.g., Given three points, plot the fourth point to create a rectangle).	Have students place a point on a coordinate plane. Next, have them place another point relative to the first point using specific directions. Ex. Place point A on the coordinate plane. Place point B, 2 units to the left of point A and 3 units up from point A. Identify the ordered pairs for point B and explain your reasoning. (There can be more than one correct answer.) Pose multi-step real-world problems that require students to identify points on a coordinate plane given an ordered pair, as well as place a point on the coordinate plane compared to a point that is already shown.
	5.OA.3	A relationship can exist between two numerical patterns generated from two	Generate two numerical patterns from two given rules.	Give students 2 rules and have them create a table using the rules starting at

		given rules. Ordered pairs generated from given rules can be graphed on a coordinate plane.	Align the two number sequences generated from the given rules to form corresponding terms. Generate ordered pairs using the corresponding terms of two given rules. • Graph the ordered pairs in the first quadrant of the coordinate plane. Apply the orientation of the x- and y-axis in relation to the ordered pairs. Informally compare the relationship of the x- and y-coordinates of two different rules when graphed on a coordinate plane. Discuss and apply the relationship between the two results, when two rules are given.	0 to create two patterns. Identify what the ordered pairs would be. Have students plot the ordered pairs on a coordinate plane that represent the rules. Ex. Rule: add 2 then add 3 starting at 0. Identify the ordered pairs and plot the points on the coordinate plane. Given a pattern, have students identify the rule and use grade-level appropriate language to explain the reasoning.

[Link to Ohio's 5th Grade Model Curriculum](#)

Timeline

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

COLUMBUS CITY SCHOOLS

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**
Students solve problems by applying the understanding of operations with whole numbers, decimals, and fractions including mixed numbers. They solve problems related to volume and measurement conversions. Students seek the meaning of a problem and look for efficient ways to represent and solve it. For example, Sonia had 2 $\frac{1}{3}$ candy bars. She promised her brother that she would give him $\frac{1}{2}$ of a candy bar. How much will she have left after she gives her brother the amount she promised? They may check their thinking by asking themselves, "What is the most efficient way to solve the problem?", "Does this make sense?", and "Can I solve the problem in a different way?".	Fifth graders should recognize that a number represents a specific quantity. They connect quantities 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 that record calculations with numbers and represent or round numbers using place value concepts. For example, students use abstract and quantitative thinking to recognize that 0.5 × (300 ÷ 15) is $\frac{1}{2}$ of (300 ÷ 15) without calculating the quotient.	In Grade 5, students may construct arguments using concrete referents, such as objects, pictures, and drawings. They explain calculations based upon models and properties of operations and rules that generate patterns. They demonstrate and explain the relationship between volume and multiplication. They refine their mathematical communication skills as they participate in mathematical discussions involving questions like "How did you get that?" and "Why is that true?" They explain their thinking to others and respond to others' thinking. Students use various strategies to solve problems, and they defend and justify their work with others. For example, two afterschool clubs are having pizza parties. The teacher will order 3 pizzas for every 5 students in the math club and 5 pizzas for every 8 students in the student council. If a student is in both groups, decide which party he/she should attend. How much pizza will each student get at each party? If a student wants to have the most pizza, which party should he/she attend?

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, 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. Fifth graders should evaluate their results in the context of the situation and whether the results make sense. They also evaluate the utility of models to determine which models are most useful and efficient to solve problems.	Fifth 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 unit cubes to fill a rectangular prism and then use a ruler to measure the dimensions. They use graph paper to accurately create graphs and solve problems or make predictions from real-world data.	Students continue to refine their mathematical communication skills by using clear and precise language in their discussions with others and in their own reasoning. Students use appropriate terminology when referring to expressions, fractions, geometric figures, and coordinate grids. They are careful about specifying units of measure and state the meaning of the symbols they choose. For instance, when figuring out the volume of a rectangular prism, they record their answers in cubic 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**
In Grade 5, students look closely to discover a pattern or structure. For instance, students use properties of operations as strategies to add, subtract, multiply and divide with whole numbers, fractions, and decimals. They examine numerical patterns and relate them to a rule or a graphical representation.	Fifth graders use repeated reasoning to understand algorithms and make generalizations about patterns. Students connect place value and their prior work with operations to understand algorithms to fluently multiply multi-digit numbers. They also perform all operations with decimals to hundredths. Students explore operations with fractions with visual models and begin to formulate generalizations.