

Chambersburg Area School District Mathematic Curriculum
Grade 3

Course Summary: Grade 3 mathematics is about (1) developing understanding of multiplication and division and strategies for multiplication and division within 100; (2) developing understanding of fractions, especially unit fractions (fractions with a numerator of 1); (3) developing understanding of the structure of rectangular arrays and of area; and (4) describing and analyzing two-dimensional shapes.

Standards for Mathematical Practice

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.
4. Model with mathematics.
5. Use appropriate tools strategically.
6. Attend to precision.
7. Look for and make use of structure.
8. Look for and makes sense of regularity in repeated reasoning.

Unit of Study	Unit 1: Properties of Multiplication and Division and Solving Problems with Units of 2-5 and 10
Time Frame/Pacing	25 days • Can consolidate lessons 12 and 13, both of which are division lessons sharing the same objective • Can omit lessons 15 and 19 (see pacing notes on page 3, Module 1)
Big Ideas	Mathematical relationships can be represented as expressions, equations, and inequalities in mathematical situations.
Unit Essential Questions	• How are relationships represented mathematically? • How can expressions, equations, and inequalities be used to quantify, solve, model and/or analyze mathematical situations?
PA Core Standards	• CC.2.2.3.A.1 Represent and solve problems involving multiplication and division. • CC.2.2.3.A.2 Understand properties of multiplication and the relationship between multiplication and division. • CC.2.2.3.A.3 Demonstrate multiplication and division fluency. • CC.2.2.3.A.4 Solve problems involving the four operations, and identify and explain patterns in arithmetic.
Assessment Anchors	• M03.B-O.1 Represent and solve problems involving multiplication and division. • M03.B-O.2 Understand properties of multiplication and the relationship between multiplication and division. • M03.B-O.3 Solve problems involving the four operations, and identify and explain patterns in arithmetic.
PA Eligible Content	• M03.B-O.1.1.1 Interpret and/or describe products of whole numbers (up to and including 10×10). Example 1: Interpret 35 as the total number of objects in 5 groups, each containing 7 objects.

	Example 2: Describe a context in which a total number of objects can be expressed as 5×7. ● M03.B-O.1.1.2 Interpret and/or describe whole-number quotients of whole numbers (limit dividends through 50 and limit divisors and quotients through 10). Example 1: Interpret $48 \div 8$ as the number of objects in each share when 48 objects are partitioned equally into 8 shares, or as a number of shares when 48 objects are partitioned into equal shares of 8 objects each. Example 2: Describe a context in which a number of shares or a number of groups can be expressed as $48 \div 8$. ● M03.B-O.2.1.1 Apply the commutative property of multiplication (not identification or definition of the property). ● M03.B-O.2.1.2 Apply the associative property of multiplication (not identification or definition of the property). ● M03.B-O.2.2.1 Interpret and/or model division as a multiplication equation with an unknown factor. Example: Find $32 \div 8$ by solving $8 \times ? = 32$ ● M03.B-O.3.1.1 Solve two-step word problems using the four operations (expressions are not explicitly stated). Limit to problems with whole numbers and having whole-number answers. ● M03.B-O.3.1.2 Represent two-step word problems using equations with a symbol standing for the unknown quantity. Limit to problems with whole numbers answers. ● M03.B-O.3.1.3 Assess the reasonableness of answers. Limit problems posed with whole numbers and having whole-number answers. ● M03.B-O.3.1.4 Solve two-step equations using order of operations (equation is explicitly stated with no grouping symbols). ● M03.B-O.3.1.5 Identify arithmetic patterns (including patterns in the addition table or multiplication table) and/or explain them using properties of operations. Example 1: Observe that 4 times a number is always even. Example 2: Explain why 6 times a number can be decomposed into three equal addends. ● M03.B-O.3.1.6 Create or match a story to a given combination of symbols (+, −, ×, ÷, <, > and =) and numbers. ● M03.B-O.3.1.7 Identify the missing symbol (+, −, ×, ÷, <, > and =) that makes a number sentence true.
Learning Objectives (Concepts Taught)	Students will... ● Relate repeated addition to multiplication ● Use array model and skip counting strategies to understand multiplication ● Distinguish the difference between number of groups and size of groups ● Model, write and solve multiplication and division problems using factors 2,3,4,5, 10

Performance Objectives (Skills Demonstrated)	Multiplication and the Meaning of the Factors • Understand equal groups of as multiplication. • Relate multiplication to the array model. • Interpret the meaning of factors—the size of the group or the number of groups. Division as an Unknown Factor Problem • Understand the meaning of the unknown as the size of the groups and number of groups in division • Interpret the unknown in division using the array model. Multiplication Using Units of 2 and 3 • Demonstrate the commutativity of multiplication, and practice related facts by skip-counting objects in array models. • Find related multiplication facts by adding and subtracting equal groups in array models. • Model the distributive property with arrays to decompose units as a strategy to multiply. Division Using Units of 2 and 3 • Model division as the unknown factor in multiplication using arrays and tape diagrams. • Interpret the quotient as the number of groups or the number of objects in each group using units of 2 or 3. Multiplication and Division Using Units of 4 • Skip-count objects in models to build fluency with multiplication facts using units of 4. • Relate arrays to tape diagrams to model the commutative property of multiplication. • Use the distributive property as a strategy to find related multiplication facts. • Model the relationship between multiplication and division. Distributive Property and Problem Solving Using Units of 2–5 and 10 • Apply the distributive property to decompose units. • Solve two-step word problems involving all four operations, and assess the reasonableness of answers.																								
Key Vocabulary:	New or Recently Introduced Terms and Symbols <table border="0"> <tr> <td>Array</td><td>Number of Groups</td></tr> <tr> <td>Commutative property/commutative</td><td>Parentheses</td></tr> <tr> <td>Equal groups</td><td>Product</td></tr> <tr> <td>Distribute</td><td>Quotient</td></tr> <tr> <td>Divide/division</td><td>Rotate</td></tr> <tr> <td>Factors</td><td>Row/Column</td></tr> <tr> <td>Multiplication/multiply</td><td>Size of groups</td></tr> <tr> <td>Unit</td><td>Unknown</td></tr> </table> Familiar Terms and Symbols <table border="0"> <tr> <td>Add 1 unit, subtract 1 unit</td><td>Ones, Twos, threes, etc.</td></tr> <tr> <td>Expression</td><td>Repeated addition</td></tr> <tr> <td>Number bond</td><td>Tape diagram</td></tr> <tr> <td>Value</td><td></td></tr> </table>	Array	Number of Groups	Commutative property/commutative	Parentheses	Equal groups	Product	Distribute	Quotient	Divide/division	Rotate	Factors	Row/Column	Multiplication/multiply	Size of groups	Unit	Unknown	Add 1 unit, subtract 1 unit	Ones, Twos, threes, etc.	Expression	Repeated addition	Number bond	Tape diagram	Value	
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Assessments	Exit tickets Mid-module assessment End-of-module assessment Additional Assessments: Topic Quizzes: • Module 1 Topic A Quiz																								

	• Module 1 Topic B Quiz • Module 1 Topic C Quiz • Module 1 Topic D Quiz • Module 1 Topic E Quiz • Module 1 Topic F Quiz
Resources and Differentiation Tools	Primary Resources: • Eureka Module 1 Other Resources: • www.Engageny.org • www.zearn.org • www.embarc.online • Activity: Would you Rather - Multiplication? • Literature : List of Read Alouds - Multiplication • Game: Multiplication Bump (x2) ELL Overlay for Listening and Reading in Grades 3-5 Mathematics ELL Overlay for Speaking and Writing in Grades 3-5 Mathematics
Authentic Examples (real-world tasks)	• Application problems
Visual Representations & Strategies	• Counters • Tape diagram • Number bond • array
Writing in Math	Students are taught to represent multiplication and division with drawings or arrays, tape diagrams and equal groups Students are asked to justify their answers through written explanations *For written assessment, Use End-of-Module Assessment #1-2 (pp. 273-274 Teacher Edition).
Grade Level DOK Examples	Grade 3 Math DOK Samples

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Unit of Study	Unit 2: Place Value and Problem Solving with Units of Measure
Time Frame/Pacing	25 days (*Due to the addition of the standard that addresses money, this module will probably take more than 25 days. Additions to the curriculum that address this standard are highlighted in yellow.) - Consider omitting lesson 1 & 20 (see page 3, Module 2) - Consider consolidating lessons 15/16 and 18/19 (see page 3, Module 2)
Big Ideas	Measurement attributes can be quantified and estimated using customary and non-customary units of measure.
Unit Essential Questions	- Why does “what” we measure influence “how” we measure? - In what ways are the mathematical attributes of objects or processes measured, calculated, and/or interpreted? - How precise do measurements and calculations need to be?
PA Core Standards	- CC.2.1.3.B.1 Apply place value understanding and properties of operations to perform multi-digit arithmetic. - CC.2.4.3.A.2 Tell and write time to the nearest minute and solve problems by calculating time intervals. CC.2.4.3.A.3 Solve problems and make change involving money using a combination of coins and bills. - CC.2.4.3.A.1 Solve problems involving measurement and estimation of temperature, liquid volume, mass or length.
Assessment Anchors	M03.A-T.1 Use place-value understanding and properties of operations to perform multi-digit arithmetic. M03.D-M.1 Solve problems involving measurement and estimation of intervals of time, money, liquid volumes, masses, and lengths of objects.
PA Eligible Content	M03.A-T.1.1.1 Round two- and three-digit whole numbers to the nearest ten or hundred, respectively. M03.A-T.1.1.2 Add two- and three-digit whole numbers (limit sums from 100 through 1,000) and/or subtract two- and three-digit numbers from three-digit whole numbers. M03.A-T.1.1.3 Multiply one-digit whole numbers by two-digit multiples of 10 (from 10 through 90).

	● M03.A-T.1.1.4 Order a set of whole numbers from least to greatest or greatest to least (up through 9,999, and limit sets to no more than four numbers). ● M03.D-M.1.2.1 Measure and estimate liquid volumes and masses of objects using standard units (cups [c], pints [pt], quarts [qt], gallons [gal], ounces [oz.], and pounds [lb]) and metric units (liters [l], grams [g], and kilograms [kg]). ● M03.D-M.1.2.2 Add, subtract, multiply, and divide to solve one-step word problems involving masses or liquid volumes that are given in the same units. ● M03.D-M.1.2.3 Use a ruler to measure lengths to the nearest quarter inch or centimeter ● M03.D-M.1.1.1 Tell, show, and/or write time (analog) to the nearest minute. ● M03.D-M.1.1.2 Calculate elapsed time to the minute in a given situation (total elapsed time limited to 60 minutes) ● M03.D-M.1.3.1 Compare total values of combinations of coins (penny, nickel, dime, and quarter) and/or dollar bills less than \$5.00. ● M03.D-M.1.3.2 Make change for an amount up to \$5.00 with no more than \$2.00 change given (penny, nickel, dime, quarter, and dollar). ● M03.D-M.1.3.3 Round amounts of money to the nearest dollar.
Learning Objectives (Concepts Taught)	*Concepts taught in this unit are foundational skills that may need to be reviewed and spiraled throughout the year but will not reappear in future units. Students will... ● Tell and write time to the nearest minute ● Calculate elapsed time ● Measure capacity and weight using metric and non-metric units ● Round numbers to the nearest ten and hundred ● Solve measurement word problems ● Compare values of money, make change up to \$5.00, and round money to the nearest dollar ● Solve 2-and 3-digit addition and subtraction problems using standard algorithm
Performance Objectives (Skills Demonstrated)	Time Measurement and Problem Solving ● Explore time as a continuous measurement using a stopwatch. ● Relate skip-counting by fives on the clock and telling time to a continuous measurement model, the number line. ● Count by fives and ones on the number line as a strategy to tell time to the nearest minute on the clock. ● Solve word problems involving time intervals within 1 hour by counting backward and forward using the number line and clock. ● Solve word problems involving time intervals within 1 hour by adding and subtracting on the number line. Measuring Weight and Liquid Volume in Metric Units ● Build and decompose a kilogram to reason about the size and weight of 1 kilogram, 100 grams, 10 grams, and 1 gram. ● Develop estimation strategies by reasoning about the weight in kilograms of a series of familiar objects to establish mental benchmark measures. ● Solve one-step word problems involving metric weights within 100 and estimate to reason about solutions. ● Decompose a liter to reason about the size of 1 liter, 100 milliliters, 10 milliliters, and 1 milliliter. ● Estimate and measure liquid volume in liters and milliliters using the vertical number line.

	- Solve mixed word problems involving all four operations with grams, kilograms, liters, and milliliters given in the same units. Rounding to the Nearest Ten and Hundred - Round two-digit measurements to the nearest ten on the vertical number line. - Round two- and three-digit numbers to the nearest ten on the vertical number line. - Round to the nearest hundred on the vertical number line. Two- and Three-Digit Measurement Addition Using the Standard Algorithm - Add measurements using the standard algorithm to compose larger units once. - Add measurements using the standard algorithm to compose larger units twice. - Estimate sums by rounding and apply to solve measurement word problems. Two- and Three-Digit Measurement Subtraction Using the Standard Algorithm - Decompose once to subtract measurements including three-digit minuends with zeros in the tens or ones place. - Decompose twice to subtract measurements including three-digit minuends with zeros in the tens and ones places. - Estimate differences by rounding and apply to solve measurement word problems. - Estimate sums and differences of measurements by rounding, and then solve mixed word problems. Money - Compare values of combinations of coins. - Make change for an amount up to \$5.00. - Round amounts of money to the nearest dollar.																																																									
Key Vocabulary:	New or Recently Introduced Terms and Symbols <table><tr><td>About</td><td>Cups</td><td>Ounce</td></tr><tr><td>Addend</td><td>Quarts</td><td>Pound</td></tr><tr><td>Capacity</td><td>Pints</td><td></td></tr><tr><td>Continuous</td><td>Gallons</td><td></td></tr><tr><td>Endpoint</td><td>Milliliter</td><td></td></tr><tr><td>Gram</td><td>Plot</td><td></td></tr><tr><td>Interval</td><td>Point</td><td></td></tr><tr><td>Halfway</td><td>Reasonable</td><td></td></tr><tr><td>Kilogram</td><td>Round</td><td></td></tr><tr><td>Liquid volume</td><td>Second</td><td></td></tr><tr><td>Liter</td><td>Standard algorithm</td><td></td></tr></table> Familiar Terms and Symbols <table><tr><td>Analog clock</td><td>Meter</td><td>penny</td></tr><tr><td>Centimeter</td><td>Minute</td><td>nickel</td></tr><tr><td>Compose</td><td>Multiply</td><td>dime</td></tr><tr><td>Divide</td><td>Number Line</td><td>quarter</td></tr><tr><td>Estimate</td><td>Rename</td><td>dollar</td></tr><tr><td>Horizontal</td><td>Simplifying strategy</td><td>value</td></tr><tr><td>Measure</td><td>Unbundle</td><td></td></tr><tr><td>Mental math</td><td>Vertical</td><td></td></tr></table>	About	Cups	Ounce	Addend	Quarts	Pound	Capacity	Pints		Continuous	Gallons		Endpoint	Milliliter		Gram	Plot		Interval	Point		Halfway	Reasonable		Kilogram	Round		Liquid volume	Second		Liter	Standard algorithm		Analog clock	Meter	penny	Centimeter	Minute	nickel	Compose	Multiply	dime	Divide	Number Line	quarter	Estimate	Rename	dollar	Horizontal	Simplifying strategy	value	Measure	Unbundle		Mental math	Vertical	
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	Topic Quizzes • Module 2 Topic A Quiz • Module 2 Topic B Quiz • Module 2 Topic C Quiz • Module 2 Topic D Quiz • Module 2 Topic E Quiz
Resources and Differentiation Tools	Primary Resource: • Eureka Module 2 Additional Resources: • www.Engageny.org • www.zearn.org • www.embarc.online • Activity: Would you Rather - Money? • Activity: Would you Rather - Money? • Activity: Would you Rather - Subtraction? • Activity: More or Less than a Liter? ELL Overlay for Listening and Reading in Grades 3-5 Mathematics ELL Overlay for Speaking and Writing in Grades 3-5 Mathematics
Authentic Examples (real-world tasks)	• Application problems • Lessons include real-world examples/tasks of telling time/elapsed time (lessons 2-5) • Students use tools to measure, weight, and compare weigh real-world materials (lessons 6-9) • Students measure real-world objects (cm, g, mL) (lesson 12)
Visual Representations & Strategies	Beaker (100 mL and 1 liter) Beans, rice, popcorn kernels (used for making benchmark baggies of different weights) Bottles (used for measuring mL and liters) Clocks Containers for measurement (cup, pint, quart, gallon) Clear cups Cylinder Dropper Meter stick and ruler Pan balance and measuring scale Pitchers Place value cards and disks Sealable plastic baggies (sandwich and gallon size) Stopwatch Tape diagram Ten frame Vertical number line Weights (1g, 10g, 100g, and 1 kg)
Writing in Math	For written assessment use sampler question #17 within the link below: • PSSA Sampler Open Ended Question #17
Grade Level DOK Examples	Grade 3 Math DOK Samples

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Unit of Study	Unit 3: Multiplication and Division with Units of 0, 1, 6-9, and Multiples of 10
Time Frame/Pacing	25 days - Consider omitting lesson 1 & 20 (see page 3, Module 2) - Consider consolidating lessons 15/16 and 18/19 (see page 3, Module 2)
Big Ideas	Mathematical relationships can be represented as expressions, equations, and inequalities in mathematical situations.
Unit Essential Questions	- How are relationships represented mathematically? - How can expressions, equations, and inequalities be used to quantify, solve, model and/or analyze mathematical situations?
PA Core Standards	CC.2.2.3.A.1 Represent and solve problems involving multiplication and division. CC.2.2.3.A.2 Understand properties of multiplication and the relationship between multiplication and division. CC.2.2.3.A.3 Demonstrate multiplication and division fluency. CC.2.2.3.A.4 Solve problems involving the four operations, and identify and explain patterns in arithmetic. CC.2.1.3.B.1 Apply place value understanding and properties of operations to perform multi-digit arithmetic.
Assessment Anchors	M03.B-O.1 Represent and solve problems involving multiplication and division. M03.B-O.2 Understand properties of multiplication and the relationship between multiplication and division M03.B-O.3 Solve problems involving the four operations, and identify and explain patterns in arithmetic.
PA Eligible Content	M03.B-O.1.1.1 Interpret and/or describe products of whole numbers (up to and including 10×10). Example 1: Interpret 35 as the total number of objects in 5 groups, each containing 7 objects. Example 2: Describe a context in which a total number of objects can be expressed as 5×7. M03.B-O.1.1.2 Interpret and/or describe whole-number quotients of whole numbers (limit dividends through 50 and limit divisors and quotients through 10).

	Example 1: Interpret $48 \div 8$ as the number of objects in each share when 48 objects are partitioned equally into 8 shares, or as a number of shares when 48 objects are partitioned into equal shares of 8 objects each. Example 2: Describe a context in which a number of shares or a number of groups can be expressed as $48 \div 8$. ● M03.B-O.1.2.1 Use multiplication (up to and including 10×10) and/or division (limit dividends through 50 and limit divisors and quotients through 10) to solve word problems in situations involving equal groups, arrays, and/or measurement quantities. ● M03.B-O.1.2.2 Determine the unknown whole number in a multiplication (up to and including 10×10) or division (limit dividends through 50 and limit divisors and quotients through 10) equation relating three whole numbers. Example: Determine the unknown number that makes an equation true. ● M03.B-O.2.1.1 Apply the commutative property of multiplication (not identification or definition of the property). ● M03.B-O.2.1.2 Apply the associative property of multiplication (not identification or definition of the property). ● M03.B-O.2.2.1 Interpret and/or model division as a multiplication equation with an unknown factor. Example: Find $32 \div 8$ by solving $8 \times ? = 32$. ● M03.B-O.3.1.1 Solve two-step word problems using the four operations (expressions are not explicitly stated). Limit to problems with whole numbers and having whole-number answers. ● M03.B-O.3.1.2 Represent two-step word problems using equations with a symbol standing for the unknown quantity. Limit to problems with whole numbers and having whole-number answers. ● M03.B-O.3.1.3 Assess the reasonableness of answers. Limit problems posed with whole numbers and having whole-number answers. ● M03.B-O.3.1.4 Solve two-step equations using order of operations (equation is explicitly stated with no grouping symbols). ● M03.B-O.3.1.5 Identify arithmetic patterns (including patterns in the addition table or multiplication table) and/or explain them using properties of operations. Example 1: Observe that 4 times a number is always even. Example 2: Explain why 6 times a number can be decomposed into three equal addends. ● M03.B-O.3.1.6 Create or match a story to a given combination of symbols (+, −, ×, ÷, >, <, and =) and numbers. ● M03.B-O.3.1.7 Identify the missing symbol (+, −, ×, ÷, <, >, and =) that makes a number sentence true.
Learning Objectives (Concepts Taught)	Students will... ● Build multiplication and division strategies within 100 ● Solve two-step word problems

	• Learn commutative property, associative property, and distributive property • Model, write and solve multiplication and division problems using factors 6,7,8,9 • Multiply by multiples of 10
Performance Objectives (Skills Demonstrated)	The Properties of Multiplication and Division • Study commutativity to find known facts of 6, 7, 8, and 9. • Apply the distributive and commutative properties to relate multiplication facts $5 \times n + n$ to $6 \times n$ and $n \times 6$ where n is the size of the unit. • Multiply and divide with familiar facts using a letter to represent the unknown. Multiplication and Division Using Units of 6 and 7 • Count by units of 6 and 7 to multiply and divide using number bonds to decompose. • Use the distributive property as a strategy to multiply and divide using units of 6 and 7. • Interpret the unknown in multiplication and division to model and solve problems using units of 6 and 7. Multiplication and Division Using Units up to 8 • Understand the function of parentheses and apply to solving problems. • Model the associative property as a strategy to multiply. • Use the distributive property as a strategy to multiply and divide. • Interpret the unknown in multiplication and division to model and solve problems. Multiplication and Division Using Units of 9 • Apply the distributive property and the fact $9 = 10 - 1$ as a strategy to multiply. • Identify and use arithmetic patterns to multiply. • Interpret the unknown in multiplication and division to model and solve problems. Analysis of Patterns and Problem Solving Including Units of 0 and 1 • Reason about and explain arithmetic patterns using units of 0 and 1 as they relate to multiplication and division. • Identify patterns in multiplication and division facts using the multiplication table. • Solve two-step word problems involving all four operations and assess the reasonableness of solutions. Multiplication of Single-Digit Factors and Multiples of 10 • Multiply by multiples of 10 using the place value chart. • Use place value strategies and the associative property $n \times (m \times 10) = (n \times m) \times 10$ (where n and m are less than 10) to multiply by multiples of 10. • Solve two-step word problems involving multiplying single-digit factors and multiples of 10.
Key Vocabulary:	New or Recently Introduced Terms and Symbols Multiple Product Familiar Terms and Symbols Array Commutative property Distribute Divide, division Equal groups Equation Even number Expression Factors Multiply, multiplication Number bond Number sentence

	Odd number Ones, twos, threes, etc. Parentheses Quotient Row, column Tape diagram Unit Unknown Value
Assessments	Exit tickets Mid-module assessment End-of-module assessment Additional assessment options: Topic Quizzes • Module 3 Topic A Quiz • Module 3 Topic B Quiz • Module 3 Topic C Quiz • Module 3 Topic D Quiz • Module 3 Topic E/F Quiz
Resources and Differentiation Tools	Primary resource: • Eureka Module 3 Additional resources: • www.Engageny.org • www.zearn.org • www.embarc.online • Game: Division • Task: Creating Multiplication and Division Word Problems • Game: I Have Who Has Multiplication • Activity: Missing Numbers - Division ELL Overlay for Listening and Reading in Grades 3-5 Mathematics ELL Overlay for Speaking and Writing in Grades 3-5 Mathematics
Authentic Examples (real-world tasks)	• Application problems • Lessons focus on real-world examples of multiplication and division
Visual Representations & Strategies	• Array • Number bond • Place value disks • Tape diagrams
Writing in Math	Students represent multiplication and division with drawings or arrays, tape diagrams and equal groups. Students justify their strategies and answers through written explanations *For written assessment use End-of-Module Assessment #4 a,b,c (pp. 270-271 Teacher Edition).
Grade Level DOK Examples	Grade 3 Math DOK Samples

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Unit of Study	Unit 4: Multiplication and Area
Time Frame/Pacing	20 days - Consider consolidating lesson 2 & 3 (see page 3, Module 4) - Consider omitting lesson 9 (see page 3, Module 4) - Consider omitting lessons 15/16, however these lessons provide an opportunity for real-world application and extension of standards.
Big Ideas	Measurement attributes can be quantified and estimated using customary and non-customary units of measure.
Unit Essential Questions	- Why does “what” we measure influence “how” we measure? - In what ways are the mathematical attributes of objects or processes measured, calculated, and/or interpreted? - How precise do measurements and calculations need to be?
PA Core Standards	CC.2.4.3.A.6 Solve problems involving perimeters of polygons and distinguish between linear and area measures. CC.2.4.3.A.5 Determine the area of a rectangle and apply the concept to multiplication and to addition.
Assessment Anchors	M03.D-M.3 Geometric measurement: understand concepts of area and relate area to multiplication and to addition. M03.D-M.4 Geometric measurement: recognize perimeter as an attribute of plane figures and distinguish between linear and area measures.
PA Eligible Content	M03.D-M.3.1.1 Measure areas by counting unit squares (square cm, square m, square in., square ft, and non-standard square units). M03.D-M.3.1.2 Multiply side lengths to find areas of rectangles with whole-number side lengths in the context of solving real-world and mathematical problems, and represent whole-number products as rectangular areas in mathematical reasoning. M03.D-M.4.1.1 Solve real-world and mathematical problems involving perimeters of polygons, including finding the perimeter given the side lengths, finding an unknown side length, exhibiting rectangles with the same perimeter and different areas, and exhibiting rectangles with the same area and different perimeters. Use the same units throughout the problem.

Learning Objectives (Concepts Taught)	Students will... • Apply what they know about arrays to the concept of area models • Solve problems involving area • Compose/decompose composite regions of overlapping rectangles
Performance Objectives (Skills Demonstrated)	Foundations for Understanding Area • Understand area as an attribute of plane figures. • Decompose and recompose shapes to compare areas. • Model tiling with centimeter and inch unit squares as a strategy to measure area. • Relate side lengths with the number of tiles on a side. Concepts of Area Measurement • Form rectangles by tiling with unit squares to make arrays. • Draw rows and columns to determine the area of a rectangle given an incomplete array. • Interpret area models to form rectangular arrays. • Find the area of a rectangle through multiplication of the side lengths. • Analyze different rectangles and reason about their area. • Apply the distributive property as a strategy to find the total area of a large rectangle by adding two products. • Demonstrate the possible whole number side lengths of rectangles with areas of 24, 36, 48, or 72 square units using the associative property. Applications of Area Using Side Lengths of Figures • Solve word problems involving area. • Find areas by decomposing into rectangles or completing composite figures to form rectangles. • Apply knowledge of area to determine areas of rooms in a given floor plan.
Key Vocabulary:	New or Recently Introduced Terms and Symbols Area Area model Square unit Tile Unit square Whole number Familiar Terms and Symbols Array Commutative property of multiplication Distribute Geometric shape Length
Assessments	Exit tickets Mid-module assessment End-of-module assessment Additional Assessments: Topic Quizzes • Module 4 Topic A Quiz • Module 4 Topic B Quiz • Module 4 Topic C Quiz

	• Module 4 Topic D Quiz
Resources and Differentiation Tools	Primary Resource: • Eureka Module 4 Additional Resources: • www.Engageny.org • www.zearn.org • www.embarc.online • 3–Act Math Activity: Finding Area of a Rectangle • Activity: Would you Rather - Area? ELL Overlay for Listening and Reading in Grades 3-5 Mathematics ELL Overlay for Speaking and Writing in Grades 3-5 Mathematics
Authentic Examples (real-world tasks)	• Application problems • Students design a floor plan based on given measurements (lessons 15-16)
Visual Representations & Strategies	• Area model • Array • Grid paper (inch and centimeter) • Rulers • Unit squares in both inch and centimeter
Writing in Math	Students justify their thinking with drawings, calculations, and written explanations *For written assessment, use End-of-Module Assessment #4 a,b,c (p. 206 Teacher Edition).
Grade Level DOK Examples	Grade 3 Math DOK Samples

Chambersburg Area School District Mathematic Curriculum Grade 3

Course Summary: Grade 3 mathematics is about (1) developing understanding of multiplication and division and strategies for multiplication and division within 100; (2) developing understanding of fractions, especially unit fractions (fractions with a numerator of 1); (3) developing understanding of the structure of rectangular arrays and of area; and (4) describing and analyzing two-dimensional shapes.

Standards for Mathematical Practice

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.
4. Model with mathematics.
5. Use appropriate tools strategically.
6. Attend to precision.
7. Look for and make use of structure.
8. Look for and makes sense of regularity in repeated reasoning.

Unit of Study	Unit 5: Fractions as Numbers on the Number Line
Time Frame/Pacing	35 days - Consider omitting lessons 3, 4, 13, 19, 20 and 25 (see page 3, Module 5) - Consider consolidating lessons 10 and 11 (see page 3, Module 5)
Big Ideas	Mathematical relationships between numbers can be represented, compared, and communicated.
Unit Essential Questions	- How is mathematics used to quantify, compare, represent, and model numbers? - How can mathematics support effective communication?
PA Core Standards	CC.2.1.3.C.1 Explore and develop an understanding of fractions as numbers. CC.2.3.3.A.2 Use the understanding of fractions to partition shapes into parts with equal areas and express the area of each part as a unit fraction of the whole.
Assessment Anchors	M03.A-F.1 Develop an understanding of fractions as numbers. M03.C-G.1 Reason with shapes and their attributes.
PA Eligible Content	M03.A-F.1.1.1 Demonstrate that when a whole or set is partitioned into y equal parts, the fraction $1/y$ represents 1 part of the whole and/or the fraction x/y represents x equal parts of the whole (limit denominators to 2, 3, 4, 6, and 8; limit numerators to whole numbers less than the denominator; and no simplification necessary). M03.A-F.1.1.2 Represent fractions on a number line (limit denominators to 2, 3, 4, 6, and 8; limit numerators to whole numbers less than the denominator; and no simplification necessary). M03.A-F.1.1.3 Recognize and generate simple equivalent fractions (limit the denominators to 1, 2, 3, 4, 6, and 8 and limit numerators to whole numbers less than the denominator). Example 1: $1/2 = 2/4$ Example 2: $4/6 = 2/3$ M03.A-F.1.1.4 Express whole numbers as fractions, and/or generate fractions that are equivalent to whole numbers (limit denominators to 1, 2, 3, 4, 6, and 8). Example 1: Express 3 in the form $3 = 3/1$. Example 2: Recognize that $6/1 = 6$.

	● M03.A-F.1.1.5 Compare two fractions with the same denominator (limit denominators to 1, 2, 3, 4, 6, and 8), using the symbols $>$, $=$, or $<$, and/or justify the conclusions. ● M03.C-G.1.1.3 Partition shapes into parts with equal areas. Express the area of each part as a unit fraction of the whole. Example 1: Partition a shape into 4 parts with equal areas. Example 2: Describe the area of each of 8 equal parts as $\frac{1}{8}$ of the area of the shape.
Learning Objectives (Concepts Taught)	Students will... ● Partition different models of wholes into equal parts ● Identify and count unit fractions ● Be introduced to different fraction forms ● Use unit fractions to build non-unit fractions ● Identify and compare unit and non-unit fractions ● Partition, place, count, and compare fractions on a number line
Performance Objectives (Skills Demonstrated)	Partitioning a Whole into Equal Parts ● Specify and partition a whole into equal parts, identifying and counting unit fractions using concrete models, fraction strips, and by drawing pictorial area models. ● Represent and identify fractional parts of different wholes. Unit Fractions and Their Relation to the Whole ● Partition a whole into equal parts and define the equal parts to identify the unit fraction numerically. ● Build non-unit fractions less than one whole from unit fractions. ● Identify and represent shaded and non-shaded parts of one whole as fractions. ● Represent parts of one whole as fractions with number bonds. ● Build and write fractions greater than one whole using unit fractions. Comparing Unit Fractions and Specifying the Whole ● Compare unit fractions by reasoning about their size using fraction strips. ● Compare unit fractions with different-sized models representing the whole. ● Specify the corresponding whole when presented with one equal part. ● Identify a shaded fractional part in different ways depending on the designation of the whole. Fractions on the Number Line ● Place any fraction on a number line with endpoints 0 and 1. ● Place whole number fractions and fractions between whole numbers on the number line. ● Practice placing various fractions on the number line. ● Compare fractions and whole numbers on the number line by reasoning about their distance from 0. Equivalent Fractions ● Recognize and show that equivalent fractions have the same size, though not necessarily the same shape. ● Recognize and show that equivalent fractions refer to the same point on the number line. ● Generate simple equivalent fractions by using visual fraction models and the number line. ● Express whole numbers as fractions and recognize equivalence with different units. ● Express whole number fractions on the number line when the unit interval is 1. ● Decompose whole number fractions greater than 1 using whole number equivalence with various models. ● Explain equivalence by manipulating units and reasoning about their size. Comparison, Order, and Size of Fractions ● Compare fractions with the same numerator pictorially.

	- Compare fractions with the same numerator using $<$, $>$, or $=$, and use a model to reason about their size. - Partition various wholes precisely into equal parts using a number line method.																
Key Vocabulary:	New or Recently Introduced Terms and Symbols <table> <tr> <td>Equivalent fractions</td><td>Unit form</td></tr> <tr> <td>Fraction form</td><td>Unit fraction</td></tr> <tr> <td>Fractional unit</td><td>Unit interval</td></tr> <tr> <td>Non-unit fraction</td><td></td></tr> </table> Familiar Terms and Symbols <table> <tr> <td>$=$, $>$, $<$</td><td>Half of, one third of, one fourth of, etc.</td></tr> <tr> <td>Array</td><td>Number line</td></tr> <tr> <td>Equal parts</td><td>Partition</td></tr> <tr> <td>Equal shares</td><td>Whole</td></tr> </table>	Equivalent fractions	Unit form	Fraction form	Unit fraction	Fractional unit	Unit interval	Non-unit fraction		$=$, $>$, $<$	Half of, one third of, one fourth of, etc.	Array	Number line	Equal parts	Partition	Equal shares	Whole
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Assessments	Exit tickets Mid-module assessment End-of-module assessment Additional Assessments: Topic Quizzes Module 5 Topic A Quiz Module 5 Topic B Quiz Module 5 Topic C Quiz Module 5 Topic D Quiz Module 5 Topic E Quiz Module 5 Topic F Quiz																
Resources and Differentiation Tools	Primary resources: - Eureka Module 5 Additional resources: www.Engageny.org www.zearn.org www.embarc.online - Activity: Would you Rather - Fractions? - Activity: Fractions on a Number Line - Activity: Fraction Riddles - Activity: Comparing Fractions of a Whole ELL Overlay for Listening and Reading in Grades 3-5 Mathematics ELL Overlay for Speaking and Writing in Grades 3-5 Mathematics																
Authentic Examples (real-world tasks)	- Application problems - Lesson connects what students know about measurement to introduce fractions (lesson 1). - Students create manipulatives to understand fractions (lesson 1). - Students represent a given fractional unit using a variety of materials (lesson 4).																
Visual Representations & Strategies	1-liter beaker 1 m length of yarn 12" x 1" strips of yellow construction (6 per student)																

	• 2" x 6" strips of brown construction paper (6 per student) • 200 g ball of clay or play dough • 4" x 4" orange squares • 4 $\frac{1}{4}$" x 1" paper strips • Arrays • Clear plastic cups • Concrete fraction models (e.g., water, string, clay) • Food coloring • Fraction strips (used to fold and model parts of a whole) • Number line • Pictorial fraction model • Rectangular- and circular-shaped paper • Rulers • Sets of < and >, = cards • Shapes partitioned into fractional parts • Tape diagram
Writing in Math	Students use drawings to represent fractional parts. Students justify and explain through pictures, numbers and words (lessons 5-13, 17-29). *For written assessment, use End-of-Module Assessment #4 a,b,c (l. 360 Teacher Edition).
Grade Level DOK Examples	Grade 3 Math DOK Samples

Chambersburg Area School District Mathematic Curriculum Grade 3

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Unit of Study	Unit 6: Collecting and Displaying Data
Time Frame/Pacing	10 days Consider omitting lesson 9 (see page 2, Module 6)
Big Ideas	Data can be modeled and used to make inferences.
Unit Essential Questions	- How does the type of data influence the choice of display? - How can probability and data analysis be used to make predictions?
PA Core Standards	CC.2.4.3.A.4 Represent and interpret data using tally charts, tables, pictographs, line plots, and bar graphs.
Assessment Anchors	M03.D-M.2 Represent and interpret data.
PA Eligible Content	M03.D-M.2.1.1 Complete a scaled pictograph and a scaled bar graph to represent a data set with several categories (scales limited to 1, 2, 5, and 10). M03.D-M.2.1.2 Solve one- and two-step problems using information to interpret data presented in scaled pictographs and scaled bar graphs (scales limited to 1, 2, 5, and 10). Example 1: (One-step) “Which category is the largest?” Example 2: (Two-step) “How many more are in category A than in category B?” M03.D-M.2.1.3 Generate measurement data by measuring lengths using rulers marked with halves and fourths of an inch. Display the data by making a line plot, where the horizontal scale is marked in appropriate units—whole numbers, halves, or quarters. M03.D-M.2.1.4 Translate information from one type of display to another. Limit to pictographs, tally charts, bar graphs, and tables. Example: Convert a tally chart to a bar graph.
Learning Objectives (Concepts Taught)	Students will... - Understand picture and bar graphs as vertical representations - Round lengths to the nearest halves and fourths of an inch - Create and interpret line plots

Performance Objectives (Skills Demonstrated)	Generate and Analyze Categorical Data • Generate and organize data. • Rotate tape diagrams vertically. • Create scaled bar graphs. • Solve one- and two-step problems involving graphs. Generate and Analyze Measurement Data • Create ruler with 1-inch, $\frac{1}{2}$ -inch, and $\frac{1}{4}$ -inch intervals, and generate measurement data. • Represent and interpret measurement data with/from various line plots. • Analyze data to problem solve.
Key Vocabulary:	New or Recently Introduced Terms and Symbols Frequent Key Measurement data Scaled graphs Familiar Terms and Symbols Bar graph Data Fraction Line plot Picture graph (pictograph – PA Core) Scale Survey
Assessments	Exit tickets End-of-module assessment Additional Assessments: Topic Quizzes • Module 6 Topic A Quiz • Module 6 Topic B Quiz
Resources and Differentiation Tools	Primary resource: • Eureka Module 6 Additional resources: • www.Engageny.org • www.zearn.org • www.embarc.online • Activity: Survey and Graphing ELL Overlay for Listening and Reading in Grades 3-5 Mathematics ELL Overlay for Speaking and Writing in Grades 3-5 Mathematics
Authentic Examples (real-world tasks)	• Application problems • Students measure real-world objects in order to collect, graph and analyze data • Collect data from classmates and create a tally chart, bar graph, and pictograph (lesson 1)
Visual Representations & Strategies	• Bar graph • Grid paper • Line plot

	● Picture graph ● Rulers ● Sentence strips ● Tape diagram
Writing in Math	Represent, interpret and analyze different forms of data through pictures and written explanations (all lessons) *For written assessment use End-of-Module Assessment #4 a,b (p. 137 Teacher Edition)
Grade Level DOK Examples	Grade 3 Math DOK Samples

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Unit of Study	Unit 7: Geometry and Measurement Word Problems
Time Frame/Pacing	40 days Consider omitting lessons 8, 9, 11, 22, 24-27, 31-34 (see page 4, Module 7)
Big Ideas	Geometric relationships can be described, analyzed, and classified based on spatial reasoning and/or visualization.
Unit Essential Questions	- How are spatial relationships, including shape and dimension, used to draw, construct, model, and represent real situations or solve problems? - How can the application of the attributes of geometric shapes support mathematical reasoning and problem solving? - How can geometric properties and theorems be used to describe, model, and analyze situations?
PA Core Standards	CC.2.2.3.A.4 Solve problems involving the four operations, and identify and explain patterns in arithmetic. CC.2.4.3.A.4 Represent and interpret data using tally charts, tables, pictographs, line plots, and bar graphs. CC.2.4.3.A.6 Solve problems involving perimeters of polygons and distinguish between linear and area measures. CC.2.3.3.A.1 Identify, compare, and classify shapes and their attributes.
Assessment Anchors	M03.D-M.2 Represent and interpret data. M03.D-M.4 Geometric measurement: recognize perimeter as an attribute of plane figures and distinguish between linear and area measures. M03.C-G.1 Reason with shapes and their attributes.
PA Eligible Content	M03.D-M.2.1.1 Complete a scaled pictograph and a scaled bar graph to represent a data set with several categories (scales limited to 1, 2, 5, and 10). M03.D-M.2.1.2 Solve one- and two- step problems using information to interpret data presented in scaled pictographs and scaled bar graphs (scales limited to 1, 2, 5, and 10). Example 1: (One-step) “Which category is the largest?” Example 2: (Two-step) “How many more are in category A than in category B?” M03.D-M.2.1.3 Generate measurement data by measuring lengths using rulers marked with halves and fourths of an inch. Display the data by making a line plot, where the horizontal scale is marked in appropriate units—whole numbers, halves, or quarters.

	● M03.D-M.2.1.4 Translate information from one type of display to another. Limit to pictographs, tally charts, bar graphs, and tables. Example: Convert a tally chart to a bar graph. ● M03.D-M.4.1.1 Solve real-world and mathematical problems involving perimeters of polygons, including finding the perimeter given the side lengths, finding an unknown side length, exhibiting rectangles with the same perimeter and different areas, and exhibiting rectangles with the same area and different perimeters. Use the same units throughout the problem. ● M03.C-G.1.1.1 Explain that shapes in different categories may share attributes and that the shared attributes can define a larger category. Example 1: A rhombus and a rectangle are both quadrilaterals since they both have exactly four sides. Example 2: A triangle and a pentagon are both polygons since they are both multi-sided plane figures. ● M03.C-G.1.1.2 Recognize rhombi, rectangles, and squares as examples of quadrilaterals and/or draw examples of quadrilaterals that do not belong to any of these subcategories. ● M03.C-G.1.1.3 Partition shapes into parts with equal areas. Express the area of each part as a unit fraction of the whole. Example 1: Partition a shape into 4 parts with equal areas. Example 2: Describe the area of each of 8 equal parts as $\frac{1}{8}$ of the area of the shape ● M03.C-G.1.1.1 Explain that shapes in different categories may share attributes and that the shared attributes can define a larger category. Example 1: A rhombus and a rectangle are both quadrilaterals since they both have exactly four sides. Example 2: A triangle and a pentagon are both polygons since they are both multi-sided plane figures. ● M03.C-G.1.1.2 Recognize rhombi, rectangles, and squares as examples of quadrilaterals and/or draw examples of quadrilaterals that do not belong to any of these subcategories. ● M03.C-G.1.1.3 Partition shapes into parts with equal areas. Express the area of each part as a unit fraction of the whole. Example 1: Partition a shape into 4 parts with equal areas. Example 2: Describe the area of each of 8 equal parts as $\frac{1}{8}$ of the area of the shape.
Learning Objectives (Concepts Taught)	Students will... ● Improve fluency for previously taught skills ● Use strategies to solve two-step word problems. ● Describe, analyze, and compare properties of 2-dimensional shapes ● Explore the attributes of quadrilaterals. ● Recognize the characteristics of polygons. ● Draw polygons based on attributes.
Performance Objectives (Skills Demonstrated)	Solving Word Problems ● Solve word problems in varied contexts using a letter to represent the unknown. ● Share and critique peer solution strategies to varied word problems. Attributes of Two-Dimensional Figures ● Compare and classify quadrilaterals and other polygons.

	• Draw polygons with specified attributes to solve problems. • Reason about composing and decomposing polygons using tetrominoes and tangrams. • Create a tangram puzzle and observe relationships among the shapes. Problem Solving with Perimeter • Decompose quadrilaterals to understand perimeter as the boundary of a shape. • Tessellate to understand perimeter as the boundary of a shape. • Measure side lengths in whole number units to determine the perimeter of polygons. • Explore perimeter as an attribute of plane figures and solve problems. • Determine the perimeter of regular polygons and rectangles when whole number measurements are unknown. • Solve word problems to determine perimeter with given side lengths. • Use string to measure the perimeter of various circles to the nearest quarter inch. • Use all four operations to solve problems involving perimeter and unknown measurements. Recording Perimeter and Area Data on Line Plots • Construct rectangles from a given number of unit squares and determine the perimeters. • Use a line plot to record the number of rectangles constructed from a given number of unit squares. • Construct rectangles with a given perimeter using unit squares and determine their areas. Problem Solving with Perimeter and Area • Solve a variety of word problems with perimeter. • Use rectangles to draw a robot with specified perimeter measurements, and reason about the different areas that may be produced. • Solve a variety of word problems involving area and perimeter using all four operations. • Share and critique peer strategies for problem solving. • Explore and create unconventional representations of one-half. • Solidify fluency with Grade 3 skills. • Create resource booklets to support fluency with Grade 3 skills.																				
Key Vocabulary:	New or Recently Introduced Terms and Symbols Diagonal Perimeter Regular polygon Tessellate Tetrominoes Familiar Terms and Symbols <table> <tr> <td>Area</td><td>polygon</td></tr> <tr> <td>Attribute</td><td>quadrilateral</td></tr> <tr> <td>Compose</td><td>rectangle</td></tr> <tr> <td>Decompose</td><td>rhombus</td></tr> <tr> <td>Heptagon</td><td>right angle</td></tr> <tr> <td>Hexagon</td><td>square</td></tr> <tr> <td>Octagon</td><td>tangram</td></tr> <tr> <td>Parallel</td><td>trapezoid</td></tr> <tr> <td>Parallelogram</td><td>triangle</td></tr> <tr> <td>Pentagon</td><td></td></tr> </table>	Area	polygon	Attribute	quadrilateral	Compose	rectangle	Decompose	rhombus	Heptagon	right angle	Hexagon	square	Octagon	tangram	Parallel	trapezoid	Parallelogram	triangle	Pentagon	
Area	polygon																				
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Pentagon																					
Assessments	Exit tickets Mid-Module assessment																				

	End-of-module assessment Additional Assessments: Topic Quizzes • Module 7 Topic A Quiz • Module 7 Topic B Quiz • Module 7 Topic C Quiz • Module 7 Topic D/E Quiz
Resources and Differentiation Tools	Primary resources: • Eureka Module 7 Additional resources: • www.Engageny.org • www.zearn.org • www.embarc.online • Activity: Quadrilateral Riddles • Activity: Partitioning Shapes, Fractions, Area • Game: Shape Match ELL Overlay for Listening and Reading in Grades 3-5 Mathematics ELL Overlay for Speaking and Writing in Grades 3-5 Mathematics
Authentic Examples (real-world tasks)	• Application problems • Robot Activity (lessons 24-27) • Real-world word problems (lesson 23)
Visual Representations & Strategies	• Cardstock • Circular objects • Grid paper • Index cards • Pattern blocks • Rulers • String • Square tiles • Tangrams • Tetrominoes
Writing in Math	Describe attributes of polygons using appropriate vocabulary (lessons 4 and 5) *For written assessment use End of Module Assessment #3 a, b (p. 405 Teacher Edition).
Grade Level DOK Examples	Grade 3 Math DOK Samples

[General Academic Vocabulary](#)