Moon Area School District Curriculum Map

Course: Math 4
Grade Level: 4
Content Area: Math
Frequency: Full-Year Course

Big Ideas

1. Generalize place value understanding for multi-digit whole numbers.
2. Use place value understanding and properties of operations to perform multi-digit arithmetic.
3. Use the four operations with whole numbers to solve problems.
4. Gain familiarity with factors and multiples.
5. Extend understanding of fraction equivalence and ordering.
6. Build fractions from unit fractions by applying and extending previous understandings of operations on whole numbers
7. Represent and interpret data.
8. Understand decimal notation for fractions and compare decimal fractions.
9. Solve problems involving measurement and conversion of measurements from a larger unit to a smaller unit.
10. Generate and analyze patterns.
11. Geometric measurement: understand concepts of angle and measure angles.
12. Draw and identify line and angles and classify shapes by properties of their lines and angles.

Essential Questions

13. How are greater numbers written, compared, and related through place values?
14. What are the procedures for adding and subtracting whole numbers?
15. How can sums and differences of numbers be estimated?
16. How can we multiply whole numbers, including multiples of 10, 100, and 1,000?
17. How can you use a model or Distributive Property to multiply?
18. How do you use multiplication to solve problems?
19. How can mental math be used to divide?
20. How can the steps for dividing be explained?
21. How can quotients be estimated?
22. How is comparing with multiplication different from comparing with addition?
23. How can you use equations to solve multi-ten problems?
24. How can you use arrays or multiplication to find factors of a number?
25. How can identify prime, composite and multiples of numbers?
26. What are some ways to name the same part of a whole?
27. How can you compare fractions with unlike numerators and denominators?
28. How do you add and subtract fractions and mixed numbers with like denominators?
29. How can fractions be added and subtracted on number line?
30. How can you describe a fraction using a unit fraction?
31. How can you multiply a fraction by a whole number?

32. How can you make a line plot and solve problems using data on a line plot?
33. How can you write a fraction as a decimal?
34. How do you compare decimals?
35. How can you locate points on a number line?
36. How can you convert from one unit of measurement to another?
37. How can you be precise when solving math problems?
38. How can you use a rule to continue a pattern?
39. How can use a table to extend the pattern?
40. How can use a repeating pattern to predict a shape?
41. What are some common geometric terms?
42. How can you measure angles?
43. How can you classify triangles and quadrilaterals?
44. What is line of symmetry?

Primary Resource(s) & Technology:
Textbook Series, IXL online software,
Microsoft Teams, Promethean Boards, Student Laptops/iPads

Pennsylvania and/or focus standards referenced at:
www.pdesas.org
www.education.pa.gov

Big Ideas/EQs	Focus Standard(s)	Assessed Competencies (Key content and skills)	Timeline
Topic 1 Generalize Place Value Understanding 1, 2, 13	**Standard: CC.2.1.4.B.1** - Apply place value concepts to show an understanding of multi-digit whole numbers. **Eligible Content:** M04.A-T.1.1.1 M04.A-T.1.1.2 M04.A-T.1.1.3 M04.A-T.1.1.4	• Demonstrate an understanding that in a multi-digit whole number (through 1,000,000), a digit in one place represents ten times what it represents in the place to its right. Example: Recognize that in the number 770, the 7 in the hundreds place is ten times the 7 in the tens place. • Read and write whole numbers in expanded, standard, and word form through 1,000,000. • Compare two multi-digit numbers through 1,000,000 based on meanings of the digits in each place, using >, =, and < symbols. • Round multi-digit whole numbers (through 1,000,000) to any place.	August - September 8 days
Topic 2	**Standard: CC.2.1.4.B.2**	• Add and subtract multi-digit whole numbers (limit sums and subtrahends up to and including 1,000,000).	September

Fluently Add and Subtract Multi-Digit Whole Numbers 1, 2, 14, 15	Use place value understanding and properties of operations to perform multi-digit arithmetic. **Eligible Content:** M04.A-T.2.1.1 M04.A-T.2.1.2 M04.A-T.2.1.4	Estimate the answer to addition, subtraction, and multiplication problems using whole numbers through six digits (for multiplication, no more than 2 digits × 1 digit, excluding powers of 10). • 2-2 Estimate the answer to addition, subtraction, and multiplication problems using whole numbers through six digits (for multiplication, no more than 2 digits × 1 digit, excluding powers of 10).	10 days
Topic 3 Use Strategies and Properties to Multiply by 1-digit Numbers 1, 2, 3, 16	**Standard: CC.2.1.4.B.2** Use place value understanding and properties of operations to perform multi-digit arithmetic. **Eligible Content:** M04.A-T.2.1.2 M04.A-T.2.1.4	• Multiply a whole number of up to four digits by a one-digit whole number and multiply 2 two-digit numbers. • 3-2Estimate the answer to addition, subtraction, and multiplication problems using whole numbers through six digits (for multiplication, no more than 2 digits × 1 digit, excluding powers of 10).	September -October 11 days
Topic 4 Use Strategies and Properties to Multiply by 2-digit Numbers 1, 2, 3, 7, 18	**Standard: CC.2.1.4.B.2** Use place value understanding and properties of operations to perform multi-digit arithmetic. **Eligible Content:** M04.A-T.2.1.2 M04.A-T.2.1.3 M04.A-T.2.1.4	• Multiply a whole number of up to four digits by a one-digit whole number and multiply 2 two-digit numbers. • 4-3 Estimate the answer to addition, subtraction, and multiplication problems using whole numbers through six digits (for multiplication, no more than 2 digits × 1 digit, excluding powers of 10).	October 9 days
Topic 5 Use Strategies and Properties to Divide by 1-digit Numbers 1, 2, 3, 19, 20, 21	**Standard: CC.2.1.4.B.2** Use place value understanding and properties of operations to perform multi-digit arithmetic. **Eligible Content:** M04.A-T.2.1.3	• Divide up to four-digit dividends by one-digit divisors with answers written as whole-number quotients and remainders.	October – November 13 days
Topic 6 Use Operations with Whole Numbers to Solve Problems 1, 2, 3, 22, 23	**Standard - CC.2.2.4.A.1** Represent and solve problems involving the four operations. **Eligible Content:** M04.B-O.1.1.1 M04.B-O.1.1.2 M04.B-O.1.1.3	• Interpret a multiplication equation as a comparison. Represent verbal statements of multiplicative comparisons as multiplication equations. Example 1: Interpret 35 = 5 × 7 as a statement that 35 is 5 times as many as 7 and 7 times as many as 5. Example 2: Know that the statement 24 is 3 times as many as 8 can be represented by the equation 24 = 3 × 8 or 24 = 8 × 3. • Multiply or divide to solve word problems involving multiplicative comparison, distinguishing multiplicative comparison from additive comparison.	November - December 9 days

		Example: Know that 3 × 4 can be used to represent that Student A has 4 objects and Student B has 3 times as many objects not just 3 more objects. • Solve multi-step word problems posed with whole numbers using the four operations. Answers will be either whole numbers or have remainders that must be interpreted yielding a final answer that is a whole number. Represent these problems using equations with a symbol or letter standing for the unknown quantity. • Identify the missing symbol (+, –, ×, ÷, =, <, and >) that makes a number sentence true (single-digit divisor only).	
Topic 7 Factors and Multiples 4, 24, 25	**Standard - CC.2.2.4.A.2** Develop and/or apply number theory concepts to find factors and multiples. **Eligible Content**: M04.B-O.2.1.1	• Find all factor pairs for a whole number in the interval 1 through 100. Recognize that a whole number is a multiple of each of its factors. Determine whether a given whole number in the interval 1 through 100 is a multiple of a given one digit number. Determine whether a given whole number in the interval 1 through 100 is prime or composite.	December -January 8 days
Topic 8 Extend Understanding of Fraction Equivalence and Ordering 5, 26, 27	**Standard - CC.2.1.4.C.1** Extend the understanding of fractions to show equivalence and ordering. **Eligible Content**: M04.A-F.1.1.1 M04.A-F.1.1.2	• Recognize and generate equivalent fractions. • Compare two fractions with different numerators and different denominators (denominators limited to 2, 3, 4, 5, 6, 8, 10, 12, and 100) using the symbols >, =, or < and justify the conclusions.	December -January 9 days
Topic 9 Understand Addition and Subtraction of Fractions 6, 28, 29	**Standard - CC.2.1.4.C.2** Build fractions from unit fractions by applying and extending previous understandings of operations on whole numbers. **Eligible Content:** M04.A-F.2.1.3 M04.A-F.2.1.4	• Add and subtract fractions with a common denominator (denominators limited to 2, 3, 4, 5, 6, 8, 10, 12, and 100; answers do not need to be simplified; and no improper fractions as the final answer). • Decompose a fraction or a mixed number into a sum of fractions with the same denominator (denominators limited to 2, 3, 4, 5, 6, 8, 10, 12, and 100), recording the decomposition by an equation. Justify decompositions (e.g., by using a visual fraction model). Example 1: 3/8 = 1/8 + 1/8 + 1/8 OR 3/8	January 13 days

		= 1/8 + 2/8 Example 2: 2 1/12 = 1 + 1 + 1/12 = 12/12 + 12/12 + 1/12 • Add and subtract mixed numbers with a common denominator (denominators limited to 2, 3, 4, 5, 6, 8, 10, 12, and 100; no regrouping with subtraction; fractions do not need to be simplified; and no improper fractions as the final answers). • Solve word problems involving addition and subtraction of fractions referring to the same whole or set and having like denominators (denominators limited to 2, 3, 4, 5, 6, 8, 10, 12, and 100).	
Topic 10 Extend Multiplication Concepts to Fractions 6, 30, 31	**Standard - CC.2.1.4.C.2** Build fractions from unit fractions by applying and extending previous understandings of operations on whole numbers. **Eligible Content:** M04.A-F.2.1.5 M04.A-F.2.1.6 M04.A-F.2.1.7	• Multiply a whole number by a unit fraction (denominators limited to 2, 3, 4, 5, 6, 8, 10, 12, and 100 and final answers do not need to be simplified or written as a mixed number). Example: 5 × (1/4) = 5/4 • Multiply a whole number by a non-unit fraction (denominators limited to 2, 3, 4, 5, 6, 8, 10, 12, and 100 and final answers do not need to be simplified or written as a mixed number). Example: 3 × (5/6) = 15/6 • Solve word problems involving multiplication of a whole number by a fraction (denominators limited to 2, 3, 4, 5, 6, 8, 10, 12, and 100).	January-February 7 days
Topic 11 Represent and Interpret Data on Line Plots 7, 32	**Standard - CC.2.4.4.A.2** Translate information from one type of data display to another. **Standard - CC.2.4.4.A.4** Represent and interpret data involving fractions using information provided in a line plot. **Eligible Content:** M04.D-M.2.1.1 M04.D-M.2.1.2 M04.D-M.2.1.3	• Make a line plot to display a data set of measurements in fractions of a unit (e.g., intervals of 1/2, 1/4, or 1/8). • Solve problems involving addition and subtraction of fractions by using information presented in line plots (line plots must be labeled with common denominators, such as 1/4, 2/4, 3/4). • Translate information from one type of display to another (table, chart, bar graph, or pictograph).	February 8 days
Topic 12 Understand and Compare Decimals	**Standard - CC.2.1.4.C.3** Connect decimal notation to fractions, and compare decimal	• Add two fractions with respective denominators 10 and 100. Example: Express 3/10 as 30/100, and add 3/10 + 4/100 = 30/100 + 4/100 = 34/100.	February 8 days

8, 33, 34, 35	fractions (base 10 denominator, e.g, 19/100). **Standard - CC.2.4.4.A.1** Solve problems involving measurement and conversions from a larger unit to a smaller unit. **Eligible Content:** M04.A-F.3.1.1 M04.A-F.3.1.2 M04.A-F.3.1.3 M04.D-M.1.1.2	• Use decimal notation for fractions with denominators 10 or 100. Example: Rewrite 0.62 as 62/100 and vice versa. • Compare two decimals to hundredths using the symbols >, =, or <, and justify the conclusions. • Use the four operations to solve word problems involving distances, intervals of time (such as elapsed time), liquid volumes, masses of objects; money, including problems involving simple fractions or decimals; and problems that require expressing measurements given in a larger unit in terms of a smaller unit.	
Topic 13 Measurement: Find Equivalence in Units of Measure 9, 36, 37	**Standard - CC.2.4.4.A.1** Solve problems involving measurement and conversions from a larger unit to a smaller unit. **Eligible Content:** M04.D-M.1.1.1 M04.D-M.1.1.3 M04.D-M.1.1.4	• Know relative sizes of measurement units within one system of units including standard units (in., ft, yd, mi; oz., lb; and c, pt, qt, gal), metric units (cm, m, km; g, kg; and mL, L), and time (sec, min, hr, day, wk, mo, and yr). Within a single system of measurement, express measurements in a larger unit in terms of a smaller unit. A table of equivalencies will be provided. Example 1: Know that 1 kg is 1,000 times as heavy as 1 g. Example 2: Express the length of a 4-foot snake as 48 in. • Apply the area and perimeter formulas for rectangles in real-world and mathematical problems (may include finding a missing side length). Whole numbers only. The formulas will be provided. Identify time (analog or digital) as the number of minutes before or after the hour. Example 1: 2:50 is the same as 10 minutes before 3:00. Example 2: Quarter past six is the same as 6:15.	February-March 11 days
Topic 14 Algebra: Generate and Analyze Patterns 10, 38, 39, 40	**Standard - CC.2.2.4.A.4** Generate and analyze patterns using one rule. Eligible Content: M04.B-O.3.1.1 M04.B-O.3.1.2 M04.B-O.3.1.3	• Generate a number or shape pattern that follows a given rule. Identify apparent features of the pattern that were not explicit in the rule itself. Example 1: Given the rule “Add 3” and the starting number 1, generate terms in the resulting sequence and observe that the terms alternate between odd and even numbers. Example 2: Given the rule “increase the number of sides by 1” and starting with a triangle, observe that	March 7 days

		the tops of the shapes alternate between a side and a vertex. • Determine the missing elements in a function table (limit to +, –, or × and to whole numbers or money). • Determine the rule for a function given a table (limit to +, –, or × and to whole numbers).	
Topic 15 Geometric Measurement: Understand Concepts of Angles and Angle Measurement 11, 41, 42	**Standard - CC.2.3.4.A.1** Draw lines and angles and identify these in two-dimensional figures. **Standard - CC.2.4.4.A.6** Measure angles and use properties of adjacent angles to solve problems. Eligible Content: M04.C-G.1.1.1 M04.D-M.3.1.1 M04.D-M.3.1.2	• Draw points, lines, line segments, rays, angles (right, acute, and obtuse), and perpendicular and parallel lines. Identify these in two-dimensional figures. • Measure angles in whole-number degrees using a protractor. With the aid of a protractor, sketch angles of specified measure. • Solve addition and subtraction problems to find unknown angles on a diagram in real-world and mathematical problems. (Angles must be adjacent and non-overlapping.)	March-April 9 days
Topic 16 Lines, Angles and Shapes 12, 43, 44	**Standard - CC.2.3.4.A.1** Draw lines and angles and identify these in two-dimensional figures. **Standard - CC.2.3.4.A.2** Classify two-dimensional figures by properties of their lines and angles. **Standard - CC.2.3.4.A.3** Recognize symmetric shapes and draw lines of symmetry. Eligible Content: M04.C-G.1.1.1 M04.C-G.1.1.2 M04.C-G.1.1.3	• Draw points, lines, line segments, rays, angles (right, acute, and obtuse), and perpendicular and parallel lines. Identify these in two-dimensional figures. • Classify two-dimensional figures based on the presence or absence of parallel or perpendicular lines or the presence or absence of angles of a specified size. Recognize right triangles as a category and identify right triangles. • Recognize a line of symmetry for a two-dimensional figure as a line across the figure such that the figure can be folded along the line into mirroring parts. Identify line-symmetric figures and draw lines of symmetry (up to two lines of symmetry).	April 8 days