

Prairie-Hills Elementary School District 144
4th Grade ~ MATH Curriculum Map
Quarter 1

Month: August, September, October

Domain(s):

- Operations and Algebraic Thinking
- Number – Base Ten (NBT)

Cluster(s):

- Use the four operations with whole numbers to solve problems.
- Generalize place value understanding for multi-digit whole numbers
- Gain familiarity with factors and multiples.
- Use place value understanding and properties of operations to perform multi-digit arithmetic.
- Use the four operations with whole numbers to solve problems.

Standard(s):

Use the four operations with whole numbers to solve problems.

■ 4.OA.1 Interpret a multiplication equation as a comparison, e.g., interpret $35 = 5 \times 7$ as a statement that 35 is 5 times as many as 7 and 7 times as many as 5. Represent verbal statements of multiplicative comparisons as multiplication equations. *(Mastered)

■ 4.OA.2 Multiply or divide to solve word problems involving multiplicative comparison, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem, distinguishing multiplicative comparison from additive comparison. *(Mastered)

Generalize place value understanding for multi-digit whole numbers.

■ 4.NBT.1 Recognize that in a multi-digit whole number, a digit in one place represents ten times what it represents in the place to its right. For example, recognize that $700 \div 70 = 10$ by applying concepts of place value and division. *(Mastered)

■ 4.NBT.2 Read and write multi-digit whole numbers using base-ten numerals, number names, and expanded form. Compare two multi-digit numbers based on meanings of the digits in each place, using $>$, $=$, and $<$ symbols to record the results of comparisons. *(Mastered)

Use place value understanding and properties of operations to perform multi-digit arithmetic.

■ 4.NBT.4 Fluently add and subtract multi-digit whole numbers using the standard algorithm. ****Introduce and Support**

■ 4.NBT.5 Multiply a whole number of up to four digits by a one-digit whole number, and multiply two two-digit numbers, using strategies based on place value and the properties of operations. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models. ****Introduce and Support**

■ 4.NBT.6 Find whole-number quotients and remainders with up to four-digit dividends and one-digit divisors, using strategies based on place value, the properties of operations, and/or the relationship between multiplication and division. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models. ****Introduce and Support**

Use the four operations with whole numbers to solve problems.

■ 4.OA.3 Solve multistep word problems posed with whole numbers and having whole-number answers using the four operations, including problems in which remainders must be interpreted. Represent these problems using equations with a letter standing for the unknown quantity. Assess the reasonableness of answers using mental computation and estimation strategies including rounding. ****Introduce and Support**

Gain familiarity with factors and multiples.

□ 4.OA.4 Find all factor pairs for a whole number in the range 1–100. Recognize that a whole number is a multiple of each of its factors. Determine whether a given whole number in the range 1–100 is a multiple of a given one-digit number. Determine whether a given whole number in the range 1–100 is prime or composite. **** Introduce & Support**

Mathematical Practices Standards

- 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 an express regularity in repeated reasoning.

Targeted Skills:

- Count, read and write numbers through 1,000,000
- Compare and order whole numbers
- Identify the four steps in a problem solving process
- Round whole number and money amounts through millions
- Make a table to organize data and solve a problem
- Count coins and bills to find money amounts and make change
- Analyze data and make decisions
- Use addition properties to solve problems
- Form conclusions about whether to estimate or find an exact answer
- Add and subtract whole numbers up to 1,000,000
- Review subtracting whole numbers and money
- Subtracting numbers across zero
- Write a number sentence to solve a problem
- Solving word problems using pictures
- Estimate difference of up to 6-digit numbers
- Understand factors to 11
- Identify properties of operation
- Know multiplication strategies
- Interpret a multiplication equation as a comparison (e.g. $18 = 3$ times as many as 6.)
- Define prime and composite numbers
- Generate a number or shape pattern that follows a given rule
- Identify a number or shape pattern
- Recognize that a whole number is a multiple of each of its factors

- Determine if a given whole number (1-100) is a multiple of a given one-digit number

Key Vocabulary:

Critical Terms:

Factor Multiple Prime
Composite Standard Form
Written Form Expanded Form
Multiplicative comparison

Supplemental Terms:

Area Model Array Equation Product

***Mastered**

**** Introduce & Support**

***** Additional Standards**

Students should spend the large majority of their time on the major work of the grade (■). Supporting work (□) and, where appropriate, additional work (○) can engage students in the major work of the grade.

Prairie-Hills Elementary School District 144
4th Grade ~ MATH Curriculum Map
Quarter 2

Month: October, November, December

Domain(s):

- Number – Fractions (NF)
- Measurement & Data (MD)
- Number – Base Ten (NBT)
- Operations and Algebraic Thinking (OA)

Cluster(s):

- Extend understanding of fraction equivalence and ordering.
- Build fractions from unit fractions by applying and extending previous understandings of operations on whole numbers.
- Solve problems involving measurement and conversion of measurement from a larger unit to a smaller unit.
- Represent and interpret data.
- Use place value understanding and properties of operations to perform multi-digit arithmetic.

Standard(s):

Extend understanding of fraction equivalence and ordering.

■ **4.NF.1 Explain why a fraction a/b is equivalent to a fraction $(n \times a)/(n \times b)$ by using visual fraction models, with attention to how the number and size of the parts differ even though the two fractions themselves are the same size. Use this principle to recognize and generate equivalent fractions.**

*(Mastered)

■ **4.NF.2 Compare two fractions with different numerators and different denominators, e.g., by creating common denominators or numerators, or by comparing to a benchmark fraction such as $\frac{1}{2}$. Recognize that comparisons are valid only when the two fractions refer to the same whole. Record the results of comparisons with symbols $>$, $=$, or $<$, and justify the conclusions, e.g., by using a visual fraction model. Build fractions from unit fractions by applying and extending previous understandings of operations on whole numbers.** *(Mastered)

■ *4.NF.3 Understand a fraction a/b with $a > 1$ as a sum of fractions $1/b$. Understand addition and subtraction of fractions as joining and separating parts referring to the same whole. Decompose a fraction into a sum of fractions with the same denominator in more than one way, recording each decomposition by an equation. Justify decompositions, e.g., by using a visual fraction model. Examples: $3/8 = 1/8 + 1/8 + 1/8$; $3/8 = 1/8 + 2/8$; $2 \frac{1}{8} = 1 + 1 + 1/8 = 8/8 + 8/8 + 1/8$. Add and subtract mixed numbers with like denominators, e.g., by replacing each mixed number with an equivalent fraction, and/or by using properties of operations and the relationship between addition and subtraction. Solve word problems involving addition and subtraction of fractions referring to the same whole and having like denominators, e.g., by using visual fraction models and equations to represent the problem.*

** Introduce & Support

■ **4.NF.4** Apply and extend previous understandings of multiplication to multiply a fraction by a whole number. Understand a fraction a/b as a multiple of $1/b$. For example, use a visual fraction model to represent $5/4$ and the product $5 \times (1/4)$, recording the conclusion by the equation $5/4 = 5 \times (1/4)$. Understand a multiple of a/b as a multiple of $1/b$, and use this understanding to multiply a fraction by a whole number. For example, use a visual fraction model to express $3 \times (2/5)$ as $6 \times (1/5)$, recognizing this product as $6/5$. (In general, $n \times (a/b) = (n \times a)/b$.) Solve word problems involving multiplication of a fraction by a whole number, e.g., by using visual fraction models and equations to represent the problem. For example, if each person at a party will eat $3/8$ of a pound of roast beef, and there will be 5 people at the party, how many pounds of roast beef will be needed? Between what two whole numbers does your answer lie? **** Introduce & Support**

Use place value understanding and properties of operations to perform multi-digit arithmetic. ***(Mastered)**

■ **4.NBT.4** Fluently add and subtract multi-digit whole numbers using the standard algorithm. ***(Mastered)**

■ **4.NBT.5** Multiply a whole number of up to four digits by a one-digit whole number, and multiply two two-digit numbers, using strategies based on place value and the properties of operations. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models.

***(Mastered)**

■ **4.NBT.6** Find whole-number quotients and remainders with up to four-digit dividends and one-digit divisors, using strategies based on place value, the properties of operations, and/or the relationship between multiplication and division. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models. ***(Mastered)**

Use the four operations with whole numbers to solve problems.

■ **4.OA.3** Solve multistep word problems posed with whole numbers and having whole-number answers using the four operations, including problems in which remainders must be interpreted. Represent these problems using equations with a letter standing for the unknown quantity. Assess the reasonableness of answers using mental computation and estimation strategies including rounding. **** Introduce & Support**

Solve problems involving measurement and conversion of measurement from a larger unit to a smaller unit.

□ **4.MD.1** Know relative sizes of measurement units within one system of units including km, m, cm; kg, g; lb., oz.; l, ml; hr, min, sec. Within a single system of measurement, express measurements in a larger unit in terms of a smaller unit. Record measurement equivalents in a two-column table. For example, know that if 1 ft is 12 times as long as 1 in. Express the length of a 4 ft snake as 48 in. Generate conversion table for feet and inches listing the number pairs (1, 12), (2, 24), (3, 36), ... **** Introduce & Support**

Targeted Skills:

- Round multi-digit whole numbers to any place using place value

- Divide whole numbers including division with remainders.
- Represent verbal statements of multiplicative comparisons as multiplication equations.
- Determine and use a variety of representations to model a problem involving multiplicative comparison.
- Access the reasonableness of an answer in solving a multistep word problem using mental math and estimation strategies (including rounding).
- Create a line plot to display a data set of measurement given in fractions of a unit.
- Use strategies based on place value and the properties of operations to multiply whole numbers.
- Recognize the relationship with multiplication and division
- Understand the function of equivalent fractions.
- Understand comparing and ordering fractions.
- Identify fractions on number lines.
- Use visual equivalent models to show why fractions are equivalent (ex. $\frac{3}{4} = \frac{6}{8}$).
- Recognize that two fractions with unlike denominators can be equivalent.
- Add and subtract mixed numbers by replacing each mixed number with an equivalent fraction.
- Understand improper fractions and mixed numbers.
- Recognize fractions as being greater than, less than, or equal to other fractions.
- Multiply two two-digit numbers.
- Multiply or divide to solve word problems.
- Identify a number or shape pattern.
- Find and use elapsed time.
- Understand and use coordinate graphing.

Critical Terms:

Benchmark fractions
 Common denominators
 Improper fraction
 Mixed numbers
 Visual fraction model
 Range
 Divisor
 Quotient
 Remainder
 Dividend

Supplemental Terms:

Unit fractions	Decompose	Compose	Equivalent
	Numerator	Denominator	Symbols
	Number line	Line plot	Quarters
	Halves		
Distances (inches and feet)			
Intervals (of time)			
Elapsed time (seconds, minutes, hours, days, etc.)			
Liquid volume (fluid ounce, cup, pint, quart, gallon)			
Weight (ounce, pound, ton)			

***Mastered**

**** Introduce & Support**

***** Additional Standards**

Students should spend the large majority of their time on the major work of the grade (■). Supporting work (□) and, where appropriate, additional work (○) can engage students in the major work of the grade.

Prairie-Hills Elementary School District 144
4th Grade ~ MATH Curriculum Map
Quarter 3

Months: December, January, February, March

Domain(s):

- Number – Fractions (NF)
- Operations & Algebraic Thinking (OA)
- Measurement and Data

Cluster(s):

- Understand decimal notation for fractions, and compare decimal fractions.
- Generate and analyze patterns.
- Use place value understanding and properties of operations to perform multi-digit arithmetic.
- Use the four operations with whole numbers to solve problems.
- Solve problems involving measurement and conversion of measurements from a larger unit to a smaller unit.

Standard(s):

■ 4.NF.3 Understand a fraction a/b with $a > 1$ as a sum of fractions $1/b$. Understand addition and subtraction of fractions as joining and separating parts referring to the same whole. Decompose a fraction into a sum of fractions with the same denominator in more than one way, recording each decomposition by an equation. Justify decompositions, e.g., by using a visual fraction model. Examples: $3/8 = 1/8 + 1/8 + 1/8$; $3/8 = 1/8 + 2/8$; $2 1/8 = 1 + 1 + 1/8 = 8/8 + 8/8 + 1/8$. Add and subtract mixed numbers with like denominators, e.g., by replacing each mixed number with an equivalent fraction, and/or by using properties of operations and the relationship between addition and subtraction. Solve word problems involving addition and subtraction of fractions referring to the same whole and having like denominators, e.g., by using visual fraction models and equations to represent the problem. ***(Mastered)**

■ 4.NF.4 Apply and extend previous understandings of multiplication to multiply a fraction by a whole number. Understand a fraction a/b as a multiple of $1/b$. For example, use a visual fraction model to represent $5/4$ and the product $5 \times (1/4)$, recording the conclusion by the equation $5/4 = 5 \times (1/4)$. Understand a multiple of a/b as a multiple of $1/b$, and use this understanding to multiply a fraction by a whole number. For example, use a visual fraction model to express $3 \times (2/5)$ as $6 \times (1/5)$, recognizing this product as $6/5$. (In general, $n \times (a/b) = (n \times a)/b$.) Solve word problems involving multiplication of a fraction by a whole number, e.g., by using visual fraction models and equations to represent the problem. For example, if each person at a party will eat $3/8$ of a pound of roast beef, and there will be 5 people at the party, how many pounds of roast beef will be needed? Between what two whole numbers does your answer lie? ***(Mastered)**

Understand decimal notation for fractions, and compare decimal fractions.

■ **4.NF.5** Express a fraction with denominator 10 as an equivalent fraction with denominator 100, and use this technique to add two fractions with respective denominators 10 and 100. For example, express $\frac{3}{10}$ as $\frac{30}{100}$, and add $\frac{3}{10} + \frac{4}{100} = \frac{34}{100}$. ***(Mastered)**

■ **4.NF.6.** Use decimal notation for fractions with denominators 10 or 100. For example rewrite 0.62 as $\frac{62}{100}$, describe a length as .62 meters, locate 0.62 on a number line. ***(Mastered)**

Use the four operations with whole numbers to solve problems.

■ **4.OA.3** Solve multistep word problems posed with whole numbers and having whole-number answers using the four operations, including problems in which remainders must be interpreted. Represent these problems using equations with a letter standing for the unknown quantity. Assess the reasonableness of answers using mental computation and estimation strategies including rounding. ***(Mastered)**

Solve problems involving measurement and conversion of measurements from a larger unit to a smaller unit.

□ **4.MD.1** Know relative sizes of measurement units within one system of units including km, m, cm; kg, g, lb., oz.; hr, min, sec. Within a single system of measurement, express measurements in a larger unit in terms of a smaller unit. Record measurement equivalents in a two column table. For example, know that 1 ft. is 12 times as long as 1 in. Express the length of a 4 ft. snake as 48 inches. Generate a conversion table for feet and inches listing the number pairs (1,12), (2,24), (3,36).. **** Introduce & Support**

□ **4.MD.2** Use the four operations to solve word problems involving distances, intervals of time, liquid volumes, masses of objects, and 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. Represent measurement quantities using diagrams such as number line diagrams that feature a measurement scale. **** Introduce & Support**

4.MD.3 Apply the area and perimeter formulas for rectangles in real world and mathematical problems. For example, find the width of a rectangular room given the area of the flooring and the length, by viewing the area formula as a multiplication equation with an unknown factor.

Draw and identify lines and angles, and classify shapes by properties of their lines and angles.

Draw points, lines, line segments, rays, angles (right, acute, obtuse), and perpendicular and parallel lines. Identify these in two-dimensional figures. **** Introduce & Support**

Represent and interpret data.

□ **4.MD.4** Make a line plot to display a data set of measurements in fractions of a unit ($\frac{1}{2}$, $\frac{1}{4}$, $\frac{1}{8}$). Solve problems involving addition and subtraction of fractions by using information presented in line plots. For example, from a line plot find and interpret the difference in length between the longest and shortest specimens in an insect collection. **** Introduce & Support**

Targeted Skills:

- Multiply a whole number of up to four digits by a one-digit whole number.
- Use strategies based on place value and the properties of operations to multiply whole numbers.
- Illustrate and explain calculations by using written equations, rectangular arrays, and area models.
- Find whole number quotients and remainders with up to four-digit dividends and one-digit divisors.
- Assess the reasonableness of an answer in solving a multistep word problem using mental math and estimation strategies.
- Divide with two-digit numbers with remainders.
- Define prime and composite numbers.
- Know strategies to determine whether a whole number is prime or composite.
- Determine if a given whole number (1-100) is a multiple of a given one-digit number.
- Identify all factor pairs for any given number 1-100.
- Recognize that a whole number is a multiple of each of its factors.
- Understand the function of equivalent fractions.
- Understand comparing and ordering fractions.
- Identify fractions on number lines.
- Use visual equivalent models to show why fractions are equivalent (ex. $3/4 = 6/8$).
- Recognize that two fractions with unlike denominators can be equivalent.
- Add and subtract mixed numbers by replacing each mixed number with an equivalent fraction.
 - Understand improper fractions and mixed numbers.
 - Recognize fractions as being greater than, less than, or equal to other fractions.
 - Add, subtract, multiply and divide fractions and decimals.
 - Solve word problems involving measurement that include simple fractions or decimals.
 - Multiplying a fraction by a whole number.
 - Develop an understanding of decimal place value.
 - Explain how decimals and fractions relate.
 - Understand comparing and ordering decimals.
 - Identify decimals on a number line.
 - Understand equivalent decimals.

CRITICAL TERMS

Decimals Tenths Hundredths Decimal grids
Shape patterns rules variable formula

SUPPLEMENTAL TERMS

Number patterns Rounding Estimation
Metric units of measurement Distance
Liquid volume Mass Perimeter Area

***Mastered**

**** Introduce & Support**

***** Additional Standards**

Students should spend the large majority of their time on the major work of the grade (■). Supporting work (□) and, where appropriate, additional work (○) can engage students in the major work of the grade.

Prairie-Hills Elementary School District 144
4th Grade ~ MATH Curriculum Map
Quarter 4

Month: April, May, June

Domain(s):

- Operations and Algebraic Thinking
- Measurement & Data (MD)
- Geometry (G)

Cluster(s):

- Generate and analyze patterns.
- Use the four operations with whole numbers to solve problems.
- Solve problems involving measurement and conversion of measurements from a larger unit to a smaller unit.
- Draw and identify lines and angles, and classify shapes by properties of their lines and angles.
- Geometric measurement: understand concepts of angle and measure angles.

Standard(s):

Solve problems involving measurement and conversion of measurements from a larger unit to a smaller unit.

4.MD.1 Know relative sizes of measurement units within one system of units including km, m, cm; kg, g, lb., oz.; hr, min, sec. Within a single system of measurement, express measurements in a larger unit in terms of a smaller unit. Record measurement equivalents in a two column table. For example, know that 1 ft. is 12 times as long as 1 in. Express the length of a 4 ft. snake as 48 inches. Generate a conversion table for feet and inches listing the number pairs (1,12), (2,24), (3,36).. *(Mastered)

4.MD.2 Use the four operations to solve word problems involving distances, intervals of time, liquid volumes, masses of objects, and 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. Represent measurement quantities using diagrams such as number line diagrams that feature a measurement scale. *(Mastered)

4.MD.3 Apply the area and perimeter formulas for rectangles in real world and mathematical problems. For example, find the width of a rectangular room given the area of the flooring and the length, by viewing the area formula as a multiplication equation with an unknown factor. Draw and identify lines and angles, and classify shapes by properties of their lines and angles. Draw points, lines, line segments, rays, angles (right, acute, obtuse), and perpendicular and parallel lines. Identify these in two-dimensional figures. *(Mastered)

Represent and interpret data.



4.MD.4 Make a line plot to display a data set of measurements in fractions of a unit ($\frac{1}{2}$, $\frac{1}{4}$, $\frac{1}{8}$). Solve problems involving addition and subtraction of fractions by using information presented in line plots. For example, from a line plot find and interpret the difference in length between the longest and shortest specimens in an insect collection. **(Mastered)*

Geometric measurement: understand concepts of angle and measure angles.



*4.MD.5 Recognize angles as geometric shapes that are formed whenever two rays share a common endpoint, and understand concepts of angle measurement: a. and angle is measured with reference to a circle with its center at the common endpoint of the rays, by considering the fraction of the circular arc between the points where the two rays intersect the circle. An angle that turns through $\frac{1}{360}$ of a circle is called a “one-degree angle”, and can be used to measure angles. b. an angle that turns through n one-degree angles is said to have an angle measure of n degrees. ********

Additional Standards



*4.MD. 6 Measure angles in whole number degrees using a protractor. Sketch angles of specified measure. ***** Additional Standards***



*4.MD.7 Recognize angle measure as additive. When an angle is decomposed into non-overlapping parts, the angle measure of the whole is the sum of the angle measures of the parts. Solve addition and subtraction problems to find unknown angles on a diagram in real world and mathematical problems, e.g., by using an equation with a symbol for the unknown angle measure. ***** Additional Standards***

Draw and identify lines and angles, and classify shapes by properties of their lines and angles.



*4.G.1. Draw points, lines, line segments, rays, angles (right, acute, obtuse), and perpendicular and parallel lines. Identify these in two-dimensional figures. ***** Additional Standards***



*4.G.2. Classify two-dimensional figures based on the presence or absence of angles of a specified size. Recognize right triangles as a category, and identify right triangles. ***** Additional Standards***



*4.G.3. 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 matching parts. Identify line-symmetric figures and draw lines on symmetry. ***** Additional Standards***

Generate and analyze patterns.



*4.OA.5 Generate a number or shape pattern that follows a given rule. Identify apparent features of the pattern that were not explicit in the rule itself. For example, given the rule “Add 3” and the starting number 1 generate terms in the resulting sequence and observe that the terms appear to alternate between odd and even numbers. Explain informally why the numbers will continue to alternate in this way. ***** Additional Standards***

Targeted Skills:

- Draw diagrams to solve problems.
- Analyze data and make decisions.
- Convert metric and customary units.
- Measure temperature in degrees Fahrenheit and Celsius
- Recognize that an angle is a fraction of a 360-degree circle.
- Estimate or determine the perimeter of a polygon.
- Estimate or determine the area of a shape using a formula.

Key Vocabulary:

Critical Terms:

Points
End points
Lines
Line segments
Rays
Angles (right, acute, obtuse)
Central
Adjacent angles
Perpendicular lines
Parallel lines
Protractor
Degrees
Symmetry
Right triangle
Scalene triangle
Isosceles triangle

Supplemental Terms:

Plane (two-dimensional) figures
Quadrilaterals
Square
Rhombus
Rectangle
Circle
Triangle
Additive

- 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 an express regularity in repeated reasoning

***Mastered**

**** Introduce & Support**

***** Additional Standards**

Students should spend the large majority of their time on the major work of the grade (■). Supporting work (□) and, where appropriate, additional work (○) can engage students in the major work of the grade.2