Eric Montesano - 5th Grade Math

5th Grade Math Curriculum Map
2013-2014

Cycle 1
(Weeks 1-8)

Foundational	Read/Write Compare Multi-Digit Whole Numbers
Foundational	Solve Multistep Word Problems with Four Operations

Focus Topic 1 : Write/Interpret Numerical Expressions

5.OA.1-Use parentheses, brackets, or braces in numerical expressions, and evaluate expressions with these symbols.

Learning Target

I can use parentheses, brackets, or braces in numerical expressions and evaluate expressions with these symbols.

5.OA.2- Write simple expressions that record calculations with numbers, and interpret numerical expressions without evaluating them. For example, express the calculation "add 8 and 7, then multiply by 2" as 2 x (8 + 7). Recognize that 3 x (18932 +921) is three times as large as 18932 + 921, without having to calculate the indicated sum or product.

Learning Target

I can write and interpret simple expressions to represent calculations.

5.OA.3- Generate two numerical patterns using two given rules. Identify apparent relationships between corresponding terms. Form ordered pairs consisting of corresponding terms from the two patterns, and graph the ordered pairs on a coordinate plane.

Learning Targets

I can create two numerical patterns using two given rules.

I can create ordered pairs using terms from two patterns and graph the ordered pairs on a coordinate plane.

5.G.1- Use a pair of perpendicular number lines, called axes, to define a coordinate system, with the intersection of the lines (the origin) arranged to coincide with the 0 on each line and a given point in the plane located by using an ordered pair of numbers, called its coordinates. Understand that the first number indicates how far to travel from the origin in the direction of one axis, and the second number indicates how far to travel in the direction of the second axis, with the convention that the names of the two axes and the coordinates correspond (e.g., *x*-axis and *x*-coordinate, *y*-axis and *y*-coordinate).

Learning Targets

I can define a coordinate system and its components (origin, axes, ordered pairs/ coordinates).

I can locate and describe how to locate an ordered pair (x- and y-coordinates) using the x- and y-axes.

Additional Resources

5.OA.1

Target Number Dash
Order of Operation Bingo
Friendly Talk Probe
Order of Operations Puzzle
Numerical Expressions
Wall Clock
Writing Expressions

5.OA.2

Verbal Expressions
Expressions
Evaluating

5.OA.3

Function Table and Coordinate Grid
Function Table and Graph
What's the Pattern
Patterns
Adding on the Coordinate Grid
Subtracting on the Coordinate Grid

5.G.1

Coordinate Grid on the Geo-board
Coordinate Grid Swap
Coordinate Grid Paper
Running Races
*Lessons 4 and 5
Grids
Creating a Grid
Coordinate Shapes
Friendly Talk Probe

5th Grade Math Curriculum Map
2013-2014

5.G.2-Represent real world and mathematical problems by graphing points in the first quadrant of the coordinate plane, and interpret coordinate values of points in the context of the situation. **Learning Target** I can represent mathematical problems by graphing points in the first quadrant and interpreting coordinate values of points in real world contexts.	**5.G.2** Patterns 1 PowerPoint Patterns 1 Geometric Shapes on the Coordinate Grid Patterns 2
Focus Topic 2: Multiply Multi-Digit Whole Numbers Using Algorithm	
5.NBT.5 -Fluently multiply multi-digit whole numbers using the standard algorithm. **Learning Target** I can fluently multiply multi-digit whole numbers using the standard algorithm.	Additional Resources **5.NBT.5** Multiplying Using the Algorithm
Focus Topic 3: Find Whole Number Quotients	
5.NBT.6 - Find whole-number quotients of whole numbers with up to four-digit dividends and two-digit divisors, using strategies based on place value, the properties of operations, and/or the relationship between multiplication and division. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models. **Learning Target** I can divide a 4 digit by a 2 digit number using place value, the properties of operations, and/or the relationship between multiplication and division.	Additional Resources **5.NBT.6** French Fries Solve It Concert
Vocabulary: Parentheses, brackets, braces, numerical expression, evaluate, simple expression, calculation, interpret, quotient, dividend, divisor, place value, properties of operations, multiplication, division, equation, rectangular array, area model, perpendicular lines, axis, coordinate system, intersection, origin, plane, ordered pair, coordinates	
Instructional Notes: • Standard **5.NBT.5** is recommended to be taught and assessed throughout the year. Students need to demonstrate mastery by the end of the year. • ***Standards are to be taught to mastery in each cycle unless otherwise noted.*** **Assessment Notes:** • Foundational standards should be formatively assessed early in the cycle to identify foundational gaps of students. They will NOT be assessed on the proficiency.	

5th Grade Math Curriculum Map
2013-2014

Cycle 2
(Weeks 9-15)

Focus Topic 2	Multiply Multi-Digit Whole Numbers Using Algorithm
Focus Topic 3	Find Whole Number Quotients

Focus Topic 4: Solve Problems with Add/Sub of Fractions

5.NF.2- Solve word problems involving addition and subtraction of fractions referring to the same whole, including cases of unlike denominators, e.g., by using visual fraction models or equations to represent the problem. Use benchmark fractions and number sense of fractions to estimate mentally and assess the reasonableness of answers.

Learning Target

I can use visual fraction models or equations to solve word problems involving addition and subtraction of fractions.

5.NF.1- Add and subtract fractions with unlike denominators (including mixed numbers) by replacing given fractions with equivalent fractions in such a way as to produce an equivalent sum or difference of fractions with like denominators.

Learning Target

I can add and subtract fractions (including mixed numbers) with unlike denominators.

Additional Resources

5.NF.2

The Wishing Club 1
The Wishing Club 2
Closest to 25
Fraction Word Problems1
Fraction Word Problems2
Using Equivalent Fractions to Subtract
Journal Prompt

5.NF.1

Intro To Fractions
Eggsactly with Fractions
Fun with Fractions
Compare Fractions

Focus Topic 5: Multiply Fraction/Whole Number by a Fraction

5.NF.4- Apply and extend previous understandings of multiplication to multiply a fraction or whole number by a fraction.

a. Interpret the product $(a/b) \times q$ as a parts of a partition of q into b equal parts; equivalently, as the result of a sequence of operations $a \times q \div b$. *For example, use a visual fraction model to show* $(2/3) \times 4 = 8/3$, *and create a story context for this equation. Do the same with* $(2/3) \times (4/5) = 8/15$. *(In general,* $(a/b) \times (c/d) = ac/bd$.*)*

b. Find the area of a rectangle with fractional side lengths by tiling it with unit squares of the appropriate unit fraction side lengths, and show that the area is the same as would be found by multiplying the side lengths. Multiply fractional side lengths to find areas of rectangles, and represent fraction products as rectangular areas.

Learning Targets

I can use a visual model to represent multiplication of a fraction or a whole number by a fraction.

I can represent fraction products as rectangular areas.

Additional Resources

5.NF.4

Multiplying Fractions by Dividing Rectangles
Fraction x Fraction Word Problems
Multiplication of Fractions
Fraction Rectangles
Candy Bars
Adjusting a Recipe
Journal Prompt
Justified True and False
Area Word Problems with Fractional Side Lengths
Multiplying Fractions
Kyle's Garden

5th Grade Math Curriculum Map
2013-2014

5.NF.5 - Interpret multiplication as scaling (resizing), by: a. Comparing the size of a product to the size of one factor on the basis of the size of the other factor, without performing the indicated multiplication. b. Explaining why multiplying a given number by a fraction greater than 1 results in a product greater than the given number (recognizing multiplication by whole numbers greater than 1 as a familiar case); explaining why multiplying a given number by a fraction less than 1 results in a product smaller than the given number; and relating the principle of fraction equivalence $a/b = (n \times a)/(n \times b)$ to the effect of multiplying a/b by 1 **Learning Targets** I can compare the size of the product to the size of one factor based on the size of the other factor without multiplying the factors. I can multiply a whole number by a fraction and compare the size of the product to the original whole number.	**5.NF.5** Pizza How do they Compare? Which is More? Agree or Disagree?
Focus Topic 6: Solve Problems with Multiplication of Fractions/Mixed Numbers	
5.NF.6- Solve real world problems involving multiplication of fractions and mixed numbers, e.g., by using visual fraction models or equations to represent the problem. **Learning Target** I can use visual fraction models or equations to solve real world problems involving multiplication of fractions and mixed numbers.	Additional Resources **5.NF.6** Whole Number by Mixed Number Models Mixed Number by Fraction Models Fraction Word Problems
Vocabulary: fraction, denominator, numerator, mixed number, equivalent, reasonableness, visual fraction models, benchmark fractions, equation, product, equivalent, sequence of operations, story context, area, rectangle length, tiling, rectangular area, scale, resize, quotient, multiplication, division	
Instructional Notes: • ***Standards are to be taught to mastery in each cycle unless otherwise noted.*** **Assessment Notes:** • Focus topics 2 and 3 from Cycle 1 will be reassessed on this proficiency.	

5th Grade Math Curriculum Map
2013-2014

Cycle 3
(Weeks 16-23)

Focus Topic 5	Multiply Fraction/Whole Number by a Fraction
Focus Topic 6	Solve Word Problems With Multiplication of Fractions/Mixed Numbers

Focus Topic 7: Solve Word Problems With Division of Fractions

5.NF.7- Apply and extend previous understandings of division to divide unit fractions by whole numbers and whole numbers by unit fractions.

a. Interpret division of a unit fraction by a non-zero whole number, and compute such quotients. *For example, create a story context for (1/3) ÷ 4, and use a visual fraction model to show the quotient. Use the relationship between multiplication and division to explain that (1/3) ÷ 4 = 1/12 because (1/12) × 4 = 1/3.*

b. Interpret division of a whole number by a unit fraction, and compute such quotients. *For example, create a story context for 4 ÷ (1/5), and use a visual fraction model to show the quotient. Use the relationship between multiplication and division to explain that 4 ÷ (1/5) = 20 because 20 × (1/5) = 4.*

c. Solve real world problems involving division of unit fractions by non-zero whole numbers and division of whole numbers by unit fractions, e.g., by using visual fraction models and equations to represent the problem. *For example, how much chocolate will each person get if 3 people share 1/2 lb of chocolate equally? How many 1/3-cup servings are in 2 cups of raisins?*

Learning Targets

I can divide a unit fraction by a non-zero whole number using a visual model and relate it as the inverse of multiplication.

I can divide a whole number by a unit fraction using a visual model and relate it as the inverse of multiplication.

I can solve real world problems involving division of unit fractions by non-zero whole numbers and division of whole numbers by unit fractions.

5.NF.3- Interpret a fraction as division of the numerator by the denominator ($a/b = a \div b$). Solve word problems involving division of whole numbers leading to answers in the form of fractions or mixed numbers, e.g., by using visual fraction models or equations to represent the problem. *For example, interpret 3/4 as the result of dividing 3 by 4, noting that 3/4 multiplied by 4 equals 3, and that when 3 wholes are shared equally among 4 people each person has a share of size 3/4. If 9 people want to share a 50-pound sack of rice equally by weight, how many pounds of rice should each person get? Between what two whole numbers does your answer lie?*

Additional Resources

5.NF.7

Divide a Unit Fraction by a Whole Number
Dividing a Whole Number by a Unit Fraction
Divide a Whole Number by a Unit Fraction
Fraction Division
Finding Fractions
Pizza Journal Prompt
Division Word Problems

Fraction Strips
Fraction Pieces

5.NF.3

Justified True or False
Fraction Word Problems
Comparing Fractions
Word Problems
How Much Pie?
What is 23 ÷ 5?

5th Grade Math Curriculum Map
2013-2014

Learning Targets I can interpret a fraction as division of the numerator by the denominator. I can use fraction models or equations to solve word problems involving division of whole numbers leading to answers in the form of fractions or mixed numbers.	
Focus Topic 8: Read/Write/Compare Decimals to Thousandths	
5.NBT.3 Read, write, and compare decimals to thousandths. a. Read and write decimals to thousandths using base-ten numerals, number names, and expanded form, e.g., $347.392=3x100+4x10+7x1+3x(\frac{1}{10})+9x(\frac{1}{100})+2x(\frac{1}{1000})$. b. Compare two decimals to thousandths based on meanings of the digits in each place, using >,<,=, and symbols to record the results of comparisons. **Learning Targets** I can read and write decimals to thousandths using base-ten numerals, number names, and expanded form. I can compare two decimals to thousandths based on the digits in each place using >, =, and <. **5.NBT.1** Recognize that in a multi-digit number, a digit in one place represents 10 times as much as it represents in the place to its right and $1/10$ of what it represents in the place to its left. **Learning Target** I can explain how the value of a digit in a decimal to thousandths relates to the value of the digits around it. **5.NBT.4** Use place value understanding to round decimals to any place. **Learning Target** I can use place value understanding to round decimals to any place.	Additional Resources **5.NBT.3** Representing Decimals with Base Ten Blocks Representing Decimals in Different Ways Decimals Comparing Decimals Decimal Compare Playing with Place Value Hunt for Decimals **5.NBT.1** Digit Journal Prompt Digit Values **5.NBT.4** Decimals-Rounding Rounding Decimals-Question Rounding Decimals to the Nearest Hundredth
Focus Topic 9: Use Four Operations with Decimals to Hundredths	
5.NBT.7 Add, subtract, multiply, and divide decimals to hundredths, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method and explain the reasoning used. **Learning Target** I can add, subtract, multiply, and divide decimals to hundredths using strategies.	Additional Resources **5.NBT.7** Base Ten Decimal Bag-Addition Base Ten Decimal Bag-Subtraction Decimal Addition BINGO Decimal Addition to 500 Decimal Race to Zero Magic Square Decimal Addition Total Ten

5th Grade Math Curriculum Map
2013-2014

5.NBT.2 Explain patterns in the number of zeros of the product when multiplying a number by powers of 10, and explain patterns in the placement of the decimal point when a decimal is multiplied or divided by a power of 10. Use whole-number exponents to denote powers of 10. **Learning Target** I can explain patterns in the placement of the decimal point when a decimal is multiplied or divided by a power of 10.	Decimal Cross Number Puzzles Balance the Scales Decimal Multiplication Decimal Division Decimal Magic Triangle Input/Output The Value of Education **5.NBT.2** Dividing a Decimal by a Power of Ten Multiplying a Decimal by a Power of Ten Decimal Patterns
Vocabulary: Fraction, numerator, denominator, mixed number, visual fraction model, equation, product, equivalent, sequence of operations, story context, area, rectangle length, tiling, rectangular area, scale, resize, quotient, multiplication, division, multi-digit number, powers of 10, decimal point, exponents, compare, decimals, tenths, hundredths, thousandths, base-ten numerals, number names, expanded form, round, concrete models	
Instructional Notes: • ***Standards are to be taught to mastery in each cycle unless otherwise noted.*** **Assessment Notes:** • Focus topics 5 and 6 from Cycle 2 will be reassessed on this proficiency.	

5th Grade Math Curriculum Map
2013-2014

Cycle 4
(Weeks 24-31)

Focus Topic 8	Read/Write/Compare Decimals to Thousandths
Focus Topic 9	Use Four Operations with Decimals to Hundredths

Focus Topic 10: Convert Standard Units of Measurement Units within Same System

5.MD.1- Convert among different-sized standard measurement units within a given measurement system (e.g., convert 5 cm to 0.05 m), and use these conversions in solving multi-step, real world problems.

Learning Target

I can convert among different-sized standard measurement units within the same system and solve multi-step real world problems.

Additional Resources

5.MD.1

Metric Landmarks
Metric Relationships
Measurement and Time Problems
US Customary Units
Metric and Customary
Common Benchmarks
Measurement word problems
Measurement Problems
Minutes and Days

Focus Topic 11: Solve Problems with Fractions on a Line Plot

5.MD.2- Make a line plot to display a data set of measurements in fractions of a unit ($1/2$, $1/4$, $1/8$). Use operations on fractions for this grade to solve problems involving information presented in line plots.

Learning Targets

I can make a line plot to display a data set of measurements in fractions of a unit (1/2, 1/4, 1/8).

I can use operations to solve problems involving information presented in line plots which use fractions of a unit (1/2, 1/4, 1/8).

Additional Resources

5.MD.2

Fractional Clothesline
When is a Fraction Worth One-Half
More or Less Than One-Half
Fractions on a line plot
Sacks of Flour
Line Plots

Focus Topic 12: Solve Word Problems Relating to Volume

5.MD.5- Relate volume to the operations of multiplication and addition and solve real world and mathematical problems involving volume.

a. Find the volume of a right rectangular prism with whole-number side lengths by packing it with unit cubes, and show that the volume is the same as would be found by multiplying the edge lengths, equivalently by multiplying the height.
b. Apply the formulas *V=l x w x h* and *V=b x h* for rectangular prisms to find volumes of right rectangular prisms with whole-number edge lengths in the context of solving real world and mathematical problems.
c. Recognize volume as additive. Find volumes of solid figures composed of two non-overlapping right rectangular prisms by adding the volumes of the non-over-lapping parts, applying this technique to solve real-

Additional Resources

5.MD.5

Journal Prompt
Designing a Cereal Box
Designing a Toy Box
Building Rectangular Prisms with a Given
Shoe Boxes
Roll a Rectangular Prism
Volume of a Rectangular Prism1
Volume of a Rectangular Prism2
Go Team Apparel

world problems. **Learning Targets** I can solve real world problems involving volume. I can use the formulas V=l x w x h and V= b x h to find volume. I can solve real world problems by decomposing a solid figure into two right rectangular prisms and adding their volumes together. **5.MD.3**- Recognize volume as an attribute of solid figures and understand concepts of volume measurement. a. A cube with side length 1 unit, called a "unit cube," is said to have "one cubic unit" of volume, and can be used to measure volume. b. A solid figure which can be packed without gaps or overlaps using *n* unit cubes is said to have a volume of *n* cubic unit. **Learning Targets** I can use volume as one characteristic to describe a solid figure. I can explain different ways volume can be measured. I can identify a unit cube and explain how it can be used to measure volume. I can explain the relationship between the number of cubes it takes to fill a solid figure and the volume of that figure. **5.MD.4**- I can measure volume in cubic in, cubic cm, cubic ft, and improvised units by counting cubes. **Learning Target** I can measure volume in cubic in, cubic cm, cubic ft, and improvised units by counting cubes.	Cari's Aquarium Box of Clay **5.MD.3** Exploring Volume Journal Prompt Units for Measuring Volume Journal Prompt-Unit Cube Ordering Rectangular Prisms by Volume Chocolate Shop **5.MD.4** 3-D Structures
Vocabulary: measurement units, measurement system, kilometer, meter, centimeter, millimeter, liter, milliliter, kilogram, gram, milligram, mile, yard, foot, inch, gallon, quart, pint, cup, ton, pound, ounce, volume, attribute, solid figures, unit cube, cubic unit, cubic cm, cubic in, cubic ft, improvised units, right rectangular prism, length, width, height, base, additive	
Instructional Notes: • ***Standards are to be taught to mastery in each cycle unless otherwise noted.*** **Assessment Notes:** • Focus topics 8 and 9 from Cycle 3 will be reassessed on this proficiency.	

5th Grade Math Curriculum Map
2013-2014

Cycle 5
(Weeks 32-36)

Fluencies Required by the End of 5th Grade

5.NBT.5 -Fluently multiply multi-digit whole numbers using the standard algorithm. **Learning Target** I can fluently multiply multi-digit whole numbers using the standard algorithm.	Additional Resources **5.NBT.5** Matching Multi-Digit Multiplication

Geometry

5.G.3- Understand that attributes belonging to a category of two-dimensional figures also belong to all subcategories of that category. **Learning Target** I can recognize that if an attribute of a two-dimensional figure belongs to a category it also belongs to all subcategories. **5.G.4**- Classify two-dimensional figures in a hierarchy based on properties. **Learning Target** I can classify two-dimensional figures in a hierarchy based on properties.	Additional Resources **5.G.3** Shape Up Who am I? Justified True and False **5.G.4** Quadrilateral Hierarchy Regular Irregular Polygons Hierarchy Triangle Hierarchy What is a Trapezoid?

Vocabulary: , attributes, two-dimensional, category, sub-category, classify, hierarchy, properties polygon, angle, line, parallel, perpendicular, triangle, quadrilateral, pentagon, trapezoid, hexagon, octagon, decagon, parallelogram, rectangle, rhombus, square, isosceles, scalene, acute, right, obtuse, equilateral, two-dimensional

Instructional Notes:

- ***Standards are to be taught to mastery in each cycle unless otherwise noted.***

Assessment Notes:

- There will be no district proficiency for the standards in Cycle 5. It is the classroom teacher's responsibility to teach and assess these standards.