MSAD #53 Mathematics Curriculum
Grade 5

Overarching Processes:
Problem Solving, Reasoning,
Connections, and Communication

Number and Operations: Student Learning Goals

Students will understand that . . .

- The meaning of numerals in many–digit numbers depends on their positions.
- Patterns can be found in numbers, and recognizing these patterns helps us to solve problems and to explain how things work.
- The operations addition and subtraction are inverses of each other – one undoes what the other does; likewise multiplication and division.
- Numbers can be written in different forms, depending on how they are being used.

Content MLR & NECAP Alignment	Skills: students will . . .	Materials & Resources
September NECAP Practice Items NWEA Universal Screening VMath Benchmark Test MCAP Benchmark Test	• Practice NECAP released items • Take NWEA MAP assessment for math • Take Vmath and MCAP Grade 5 Benchmark tests • Practice and demonstrate fluency in computation of whole numbers 0-12 for the operations addition, subtraction, multiplication, and division	FASTT Math NECAP Released Items Review materials
October	• Take NECAP	
Number and Operations **MLR A** **NECAP M(N & O) 5-1 – 5-4** Place value Magnitude Estimation & rounding	• Demonstrate conceptual understanding through equivalency, composition, decomposition, or place value of rational numbers using benchmarks: whole numbers from 0 – 9,999,999; fractional numbers (proper, mixed, and improper) using halves, fourths, eighths, thirds, sixths, twelfths, fifths; powers of ten (10, 100, 1000); decimals to thousandths; percents (10%, 25%, 50%, 75%, 100%) • Read and write whole numbers through 999,999,999,999 • Identify place value through hundred	*Saxon Math: Intermediate 5* Lessons & Investigations 52 52

	billions	
	• Round whole numbers, decimals, and mixed numbers	33, 62, 101, 104, 106
	• Estimate sums, differences, and products	33, 51, 55, 59, 62, 73, 101
		33, 94
	• Estimate quotients	12, 27, 33
	• Locate and name whole numbers on a number line	
Equivalency	• Read and write numbers in expanded form	3, 48
		48, 52, 78
	• Read and write numbers in expanded notation	
	• Use comparison symbols (=, <, >)	4
	• Compare and order whole numbers	4, 7
	• Solve problems using multiple operations on whole numbers	
	• Add and subtract decimal numbers	13, 73, 99, 102
	• Add and subtract proper fractions and mixed numbers	41, 43, 116
	• Use regrouping in addition and subtraction	6, 9, 16
	• Understand the relationship between multiplication and repeated addition	13, 17
	• Multiply by one, two, and three-digit whole numbers	17, 51, 55, 56
	• Use regrouping in multiplication	17, 51, 55, 56
	• Multiplies by multiples of 10, 100, and 1000	29, 111
	• Multiply and divide decimal numbers	109, 110, 111, 117, 118, 119
		76, 86, 87, 96, 120
	• Multiply and divide fractions and mixed numbers	19, 20, 22, 26, 42, 54, 92
	• Divide whole numbers by up to two digit divisors	20
	• Understand and use division notations: division box, division sign, and division bar	22, 26, 40, 58
	• Divide whole numbers with remainder and explain or illustrate the meaning of a remainder	54
Prime numbers	• Divide by multiples of 10 and 100	
Greatest common factor	• Identify even and odd numbers	15, 29, 112
Least common multiple	• Identify and use multiples	15, 18, 25, 80,82
Exponents	• Identify and use factors	22, 25, 42
Squares	• Understand divisibility and use divisibility rules	80, 112
Square roots	• Identify prime and composite numbers	82, 90
Order of operations	• Find the greatest common factor (GCF)	112
Fact families	• Find the least common multiple (LCM)	78
	• Use positive exponents with whole numbers	78
Rational numbers	• Understand the concept of square	

Fractions Decimals Percents	numbers and square roots • Use the correct order of operations with and without parentheses • Learn fact families and understands inverse operations • Read and write fractions and mixed numbers • Locate and name fractions and mixed numbers on a number line • Compare and order fractions • Model and name a fractional part of a whole, group, or set • Find equivalent fractions • Find the least common denominator (LCD) • Convert between improper fractions and mixed numbers • Simplify fractions • Read and write decimals • Locate and name decimals on a number line • Compare and order decimals • Compare and order percents • Convert between fractions, decimals, and percents • Find a percent of a whole, group, or set • Write reciprocals of numbers • Find rate and ratios	24 8, 10, 14, 19 Investigation 2 38 38, 39, 116; Investigations 2, 3 30, 37, 46; Investigations 2, 3 23, 79, 81, 90, 91; Investigations 2, 3 116 75, 113 81, 82, 90, 91 64, 67, 68, 70, 100, 106 66, 104 69; Investigations 2, 3 30, 67, 71; Investigations 2, 3 30, 43, 107 95, 96 97

Geometry and Measurement: Student Learning Goals

Students will understand that . . .

- Length can be thought of as unit lengths joined together; area as a collection of unit squares, and volume as a set of unit cubes
- Shapes can be described and compared in terms of concepts such as parallel and perpendicular, congruence, similarity, and symmetry.
- Symmetry can be found by reflection or rotation (flips, turns, slides).
- Some shapes have special properties.
- Lines can be parallel or perpendicular.
- When people care about what is being counted or measured, it is important for them to say what the units are and to measure carefully and consistently.

Content **MLR & NECAP Alignment**	**Skills: students will . . .**	**Materials & Resources**
Geometry and Measurement **MLR C.1 – C.5** **NECAP M(G & M) 5-1, 5-3, 5-6** Attributes and Properties of Two- and Three-Dimensional Polygons Symmetry (reflectional, rotational) Area, Perimeter, and Volume of Polygons Parallelism and Perpendicularity	Basic terms: • Describe, name, identify, or draw points, segments, angles, rays, lines, planes Properties and relationships of lines: • Describe, identify, and draw parallel and perpendicular lines and horizontal, vertical, intersecting, and oblique lines Angles: • Describe, name, identify, and draw acute, obtuse, right, and straight angles; interior and exterior angles • Calculate to find unknown angle measures 2-D Figures: • Identify and describe polygons by their attributes • Classify triangles (right, acute, obtuse, equiangular, equilateral) • Classify quadrilaterals (rectangles, squares, rhombi, trapezoids, parallelograms) • Understand congruence and similarity • Identify parts of a circle 3-D Figures: • Identify, describe, and compare geometric solids (rectangular prisms, triangular prisms, cylinders, spheres, pyramids, cones) by their attributes (shape of bases, number of lateral faces, number of bases) • Identify congruent parts of geometric solids Coordinate Geometry: • Name and graph ordered pairs • Identify types of symmetry	12, 31, 32, 36, 61 12, 31, 32, 45 31, 36, 61; Investigation 10 32, 36, 61 36 32, 45 32, 36 53 83, 89 Investigation 8 88, 105; Investigations 8, 12 105; Investigation 8

	• Identify transformations • Graph reflections	88; Investigation 8
Measurement **NECAP M(G & M) 5-7**	Area, Perimeter, Volume: • Use models, manipulatives, and formulas to determine perimeter of polygons, area of rectangles or right triangles, area of polygons or irregular figures on grids, and volume of rectangular prisms (cubes); express all measures using appropriate units Measurement: • Use standard units of length, weight, and capacity • Use metric units of lengths, mass, and capacity • Use Fahrenheit and Celsius temperature scales • Measure time and elapsed time • Choose an appropriate unit of measurement for a given problem • Convert in the U.S. standard system and the metric system • Use appropriate measurement instruments correctly (thermometer, stopwatch, compass, protractor)	53, 72, 101, 103, 104, 115 See benchmarks for measurement 44, 47, 77, 85, 103 44, 65, 66, 77, 85, 103 27, 98 28, 32, 108 65, 72, 74, 103 44, 47, 65, 74, 77, 85 44, 65, 66, 69, 98; Investigation 10

Data, Statistics, and Probability: Student Learning Goals

Students will understand that . . .

- Most measurements are approximations and that taking repeated measurements reveals this variability.
- A number without a unit is not a measurement, and an appropriate unit must always be attached to a number to provide a measurement.
- The precision and accuracy of a measurement depends on selecting the appropriate tools and units.
- Often a person can find out about a group of things by studying just a few of them.
- Some events can be predicted well and some cannot.
- Graphing data helps to see what the extremes are, where they pile up, and where the gaps are. A summary of data includes where the middle is and how much spread is around it.
- Events can be described in terms of being more or less likely, impossible, or certain.

Data, Statistics, & Probability **MLR B.1, 2, 3** **NECAP M(DSP) 5-1, 5-2, 5-3, 5-5**		
Data Analysis	• Collects and displays data using pictographs, bar graphs, tables and charts, frequency tables, line graphs, circle graphs, line plots, histograms, stem-and-leaf plots, and Venn diagrams. • Chooses an appropriate graph to display data	Investigation 5,6.7. and 9
Mean, Median, Mode, Range	• Finds the mean, median, mode and range	50, 84; Investigation 5, 7
Probability	• Describes the likelihood that an even will occur • Calculates simple probability • Calculates experimental probability • Makes predictions based on experiments	57, 81; Investigation 9

Functions and Algebra: Student Learning Goals

Students will understand that . . .

- Letters and other symbols are used in mathematics to represent numbers.
- Tables and graphs can show how values of one quantity are related to values of another.

Functions and Algebra **MLR D.1 - 3** **NECAP M(F & A) 5.1, 5.3, 5.4** NWEA Spring Universal Screening VMath Benchmark Spring Test Patterns, relations, and functions Variables, expressions, and equations	• Describes and extends an arithmetic or geometric sequence • Recognizes patterns in multiplication • Completes function tables • Analyzes patterns or sequence to name a rule • Solves addition equations using concrete and pictorial models • Solves subtraction equations using concrete and pictorial models • Solves multiplication equations using equations concrete and pictorial models • Writes and solves equations to solve word problems • Chooses an appropriate formula to solve a problem • Solves one-step equations with whole numbers • Solves two-step equations with whole numbers	1,2; Investigation 4 Investigation 4 Investigation 4 1; Investigation 4 11 35 10, 11, 16, 21; Investigation 1 53, 72, 103, 114 10, 21, 35 49, 62, 72

Benchmark Numbers for Grade 5:
Whole numbers: 0 – 9,999,999
Fractions (positive), including proper, improper, and mixed numerals: halves, thirds, fourths, fifths, sixths, eighths, twelfths
Powers of 10 (10, 100, 1000)
Decimals to thousandths place

NECAP Benchmark Measures	**Grade 5**
Length	**Units (accuracy):** Inch (to 1/8 inch); Foot; Centimeter (to 0.5 centimeter); Meter (to 0.5 centimeter); Yard; Mile (use in scale questions); Kilometer (use in scale questions) **Equivalencies:** 12 inches in 1 foot; 100 centimeters in 1 meter; 3 feet in 1 yard; 36 inches in 1 yard; 10 millimeters in 1 centimeter
Time	**Unit (accuracy):** Hour (to 1 minute); Day; Year **Equivalencies:** 24 hours in 1 day; 7 days in 1 week; 365 days in 1 year; 60 seconds in 1 minute; 60 minutes in 1 hour
Temperature	**Unit (accuracy):** Cº and Fº (to 1 degree)
Capacity	**Unit (accuracy):** Quart (to 1 ounce); Gallon; Pint **Equivalencies:** **32 ounces in 1 quart; 4 quarts in 1 gallon; 2 pints in 1 quart**
Mass	**Unit (accuracy):** Kilogram; Gram (to whole gram)
Weight	**Unit (accuracy):**

Essential Vocabulary:
Greatest common factor
Least common multiple
Prime number
Composite number
Fraction
Decimal
Percent
Other? From Bits
Right angle
Acute angle
Obtuse angle
Congruent
Parallel
Perpendicular
Polygon (and names of specific shapes)
Area
Perimeter
Volume
Two-dimensional
Three-dimensional
Mean
Median
Mode
Range
Probability
Linear and non-linear

Assessment:

- NWEA MAP Assessment for Math (all students Fall and Spring)
- VMath Grade Level Benchmark Test (all students Fall and Spring)
- MCAP Benchmark Tests
- Saxon Unit Tests