

Blind-Brook School District
Grade 5
Math Standards Curriculum Alignment
May 2007

September

Place Value (Whole Numbers and Decimals)

Content Strands

- 5.N.1 Read and write whole numbers to millions
- 5.N.2 Compare and order numbers to millions
- 5.N.3 Understand the place value structure of the base ten number system
 - 10 ones = 1 ten
 - 10 tens = 1 hundred
 - 10 hundreds = 1 thousand
 - 10 thousands = 1 ten thousand
 - 10 ten thousands = 1 hundred thousand
 - 10 hundred thousands = 1 million
- 5.N.8 Read, write, and order decimals to thousandths
- 5.N.10 Compare decimals using $<$, $>$, or $=$
- 5.N.23 Use a variety of strategies to add, subtract, multiply, and divide decimals to thousandths
- 5.N.24 Round numbers to the nearest hundredth and up to 10,000
- 5.N.26 Estimate sums, differences, products, and quotients of decimals

Process Stands

- 5.PS.1 Know the difference between relevant and irrelevant information when solving problems
- 5.PS.2 Understand that some ways of representing a problem are more efficient than others
- 5.PS.3 Interpret information correctly, identify the problem, and generate possible strategies and solutions
- 5.PS.10 Work in collaboration with others to solve problems
- 5.CM.1 Provide an organized thought process that is correct, complete, coherent, and clear
- 5.CM.4 Share organized mathematical ideas through the manipulation of objects, numerical tables, drawings, pictures, charts, graphs, tables, diagrams, models, and symbols in written and verbal form
- 5.R.6 Investigate relationships between different representations and their impact on a given problem

Vocabulary

Arithmetic expression	Base-ten number system
Compare numbers	Composite number
Convert	Counting numbers
Decimal number	Decimal point
Digit	Equivalent decimals
Equal	Equivalent numerical expressions
Estimation strategies	
Compatible numbers	
Front-end estimation	
Rounding	
Reasonable estimates	
Greater than ($>$)	Inequality
Less than ($<$)	Number
Number line	Number system
Numeral	Numeration
Numerator	Numerical problems
Numerically	Numeric expression
Order	Percent
Round a number	Whole numbers
Place value	
Thousandths	
Hundredths	
Tenths	
Ones	
Tens	
Hundreds	
Thousands	
Ten thousands	
Hundred thousands	
Millions	

October

Multiplication and Algebra

Content Strands

- 5.N.12 Recognize that some numbers are only divisible by one and themselves (prime) and others have multiple divisors (composite)
- 5.N.16 Use a variety of strategies to multiply three-digit by three-digit numbers
- 5.N.23 Use a variety of strategies to add, subtract, multiply, and divide decimals to thousandths
- 5.N.26 Estimate sums, differences, products, and quotients of decimals
- 5.N.27 Justify the reasonableness of answers using estimation
- 5.A.1 Define and use appropriate terminology when referring to expressions such as constants, variables, and algebraic expressions
- 5.A.7 Create and explain patterns and algebraic relationships (e.g., 2, 4, 6, 8...) algebraically: $2n$ (doubling)

Process Strands

- 5.PS.5 Formulate problems and solutions from everyday situations
- 5.PS.7 Represent problem situations verbally, numerically, algebraically, and/or graphically
- 5.PS.12 Use trial and error and the process of elimination to solve problems
- 5.PS.22 Discuss whether a solution is reasonable in the context of the original problem
- 5.CM.2 Explain a rationale for strategy selection
- 5.CM.3 Organize and accurately label work
- 5.R.2 Explain, describe, and defend mathematical ideas using representations

Vocabulary

Algebra	Algebraic expression
Algebraic patterns	Algebraic relationship
Algebraically	Arithmetic (numeric) expression
Constant	Equation
Evaluate	Extend a pattern
Geometric patterns	Input values
Inverse operations	Numeric patterns
Order of operations	Solve
Substitute	Substitution
Symbols in verbal form	Symbols in written form
Translate	Variable
Verbal expression	Least common multiple (LCM)
Multiple	Multiplicand
Multiplier	Order of operations

October-November

Division

Content Strands

- 5.N.17 Use a variety of strategies to divide three-digit numbers by one- and two-digit numbers
- 5.N.18 Evaluate an arithmetic expression using order of operations including multiplication, division, addition, subtraction and parentheses
- 5.N.23 Use a variety of strategies to add, subtract, multiply, and divide decimals to thousandths
- 5.N.26 Estimate sums, differences, products, and quotients of decimals

Process Strands

- 5.PS.9 Understand the basic language of logic in mathematical situations (and, or, not)
- 5.PS.13 Model problems with pictures/diagrams or physical objects
- 5.PS.14 Analyze problems by observing patterns
- 5.CM.9 Increase their use of mathematical vocabulary and language when communicating with others
- 5.CM.10 Use appropriate vocabulary when describing objects, relationships, mathematical solutions, and rationale
- 5.CM.11 Decode and comprehend mathematical visuals and symbols to construct meaning
- 5.CN.9 Recognize and apply mathematics to other disciplines and areas of interest
- 5.R.9 Use mathematics to show and understand mathematical phenomena (e.g., find the missing value that makes the equation true: $(3 + 4) + 5 = 3 + (4 + \underline{\quad})$)

Vocabulary

- | | |
|-------------------------------|-----------|
| Divide | Divisible |
| Product | Quotient |
| Ratio | Remainder |
| Greatest common divisor (GCD) | |

November

Fractions (Part 1)

Content Strands

- 5.N.4 Create equivalent fractions, given a fraction
- 5.N.5 Compare and order fractions including unlike denominators (with/without the use of a number line)
- 5.N.9 Compare fractions using $<$, $>$, or $=$
- 5.N.14 Identify the factors of a given number
- 5.N.15 Find the common factors and the greatest common factor of two numbers
- 5.N.19 Simplify fractions to lowest terms
- 5.N.20 Convert improper fractions to mixed numbers, and mixed numbers to improper fractions

Process Strands

- 5.PS.4 Act out or model with manipulatives activities involving mathematical content from literature
- 5.PS.15 Make organized lists or charts to solve numerical problems
- 5.RP.7 Verify claims other students make, using examples and counterexamples when appropriate
- 5.RP.8 Support an argument through examples/counterexamples and special cases
- 5.CM.8 Consider strategies used and solutions found by others in relation to their own work
- 5.CN.1 Understand and make connections and conjectures in their everyday experiences to mathematical ideas
- 5.CN.4 Understand multiple representations and how they are related
- 5.R.1 Use physical objects, drawings, charts, tables, graphs, symbols, equations, or objects created using technology as representations

Vocabulary

Equivalent fractions	Factor (verb)
Fraction	Decimal fraction
Estimate factor (noun)	Greatest common factor (GCF)
Improper fraction	Simplify fractions
Unlike denominators	Common factor
Common multiple	Denominator
Proper fraction	Prime number
Like (common) denominators	Least common denominator (LCD)
Lowest terms (simplest form)	Mixed number

December

Fractions (Part 2)

Content Strands

- 5.N.11 Understand that percent means part of 100, and write percents as fractions and decimals
- 5.N.13 Calculate multiples of a whole number and the least common multiple of two numbers
- 5.N.21 Use a variety of strategies to add and subtract fractions with like denominators
- 5.N.22 Add and subtract mixed numbers with like denominators
- 5.N.6 Understand the concept of ratio
- 5.N.7 Express ratios in different forms
- 5.N.25 Estimate sums and differences of fractions with like denominators

Process Strands

- 5.PS.11 Translate from a picture/diagram to a number or symbolic expression
- 5.PS.21 Explain the methods and reasoning behind the problem solving strategies used
- 5.RP.2 Understand that mathematical statements can be supported, using models, facts, and relationships to explain their thinking
- 5.CM.6 Understand mathematical solutions shared by other students
- 5.CN.5 Model situations with objects and representations and be able to draw conclusions
- 5.R.3 Read, interpret, and extend external models
- 5.R.5 Use representations to explore problem situations

Vocabulary

Equivalent fractions	Factor (verb)
Fraction	Decimal fraction
Estimate factor (noun)	Greatest common factor (GCF)
Improper fraction	Simplify fractions
Unlike denominators	Common factor
Common multiple	Denominator
Proper fraction	Prime number
Like (common) denominators	Least common denominator (LCD)
Lowest terms (simplest form)	Mixed number

December/January

Geometry

Content Strands

- 5.G.1 Calculate the perimeter of regular and irregular polygons
- 5.G.2 Identify pairs of similar triangles
- 5.G.3 Identify the ratio of corresponding sides of similar triangles
- 5.G.4 Classify quadrilaterals by properties of their angles and sides
- 5.G.5 Know that the sum of the interior angles of a quadrilateral is 360 degrees
- 5.G.6 Classify triangles by properties of their angles and sides
- 5.G.7 Know that the sum of the interior angles of a triangle is 180 degrees
- 5.G.8 Find a missing angle when given two angles of a triangle
- 5.G.9 Identify pairs of congruent triangles
- 5.G.10 Identify corresponding parts of congruent triangles
- 5.G.11 Identify and draw lines of symmetry of basic geometric shapes
- 5.A.6 Evaluate the perimeter formula for given input values
- 5.A.8 Create algebraic or geometric patterns using concrete objects or visual drawings (e.g., rotate and shade geometric shapes)

Process Strands

- 5.PS.6 Translate from a picture/diagram to a numeric expression
- 5.PS.18 Determine the efficiency of different representations of a problem
- 5.RP.1 Recognize that mathematical ideas can be supported using a variety of strategies
- 5.RP.6 Develop and explain an argument verbally, numerically, and/or graphically
- 5.CM.5 Answer clarifying questions from others
- 5.CM.7 Raise questions that elicit, extend, or challenge others' thinking
- 5.CN.2 Explore and explain the relationship between mathematical ideas
- 5.CN.8 Investigate the presence of mathematics in careers and areas of interest
- 5.R.7 Use mathematics to show and understand physical phenomena (e.g., determine the perimeter of a bulletin board)

Vocabulary

Acute angle	Acute triangle
Axis (axes)	Classify triangles
Congruent triangles	Coordinate plane
Corresponding angles	Corresponding sides
Decagon	Equilateral triangle
Formula	Geometry
Heptagon	Hexagon
Interior angles	Irregular polygon
Isosceles triangle	Length
Line of symmetry	Nonagon
Obtuse angle	Obtuse triangle
Octagon	Parallel lines
Parallelogram	Pentagon
Perimeter	Plot
Quadrant	Quadrilateral
Rectangle	Regular polygon
Rhombus	Right angle
Scalene triangle	Side
Similar triangles	Square
Straight angle	Trapezoid
Triangle	Vertex

January

Measurement

Content Strands

- 5.M.1 Use a ruler to measure to the nearest inch, $\frac{1}{2}$, $\frac{1}{4}$ and $\frac{1}{8}$ inch
- 5.M.2 Identify customary equivalent units of length
- 5.M.3 Measure to the nearest centimeter
- 5.M.4 Identify equivalent metric units of length
- 5.M.5 Convert measurement within a given system
- 5.M.6 Determine the tool and technique to measure with an appropriate level of precision: lengths and angles
- 5.M.7 Calculate elapsed time in hours and minutes
- 5.M.8 Measure and draw angles using a protractor
- 5.M.9 Determine personal references for customary units of length (e.g., your pace is approximately 3 feet, your height is approximately 5 feet, etc.)
- 5.M.10 Determine personal references for metric units of length
- 5.M.11J justify the reasonableness of estimates

Process Strands

- 5.PS.6 Translate from a picture/diagram to a numeric expression
- 5.PS.18 Determine the efficiency of different representations of a problem
- 5.RP.1 Recognize that mathematical ideas can be supported using a variety of strategies
- 5.RP.6 Develop and explain an argument verbally, numerically, and/or graphically
- 5.CM.5 Answer clarifying questions from others
- 5.CM.7 Raise questions that elicit, extend, or challenge others' thinking
- 5.CN.2 Explore and explain the relationship between mathematical ideas
- 5.CN.8 Investigate the presence of mathematics in careers and areas of interest
- 5.R.7 Use mathematics to show and understand physical phenomena (e.g., determine the perimeter of a bulletin board)

Vocabulary

Calculate	Centimeter
Convert	Customary measurement system
Decimeter	Degree measure of an angle
Elapsed time	Equivalent
Foot	Hour
Inch	Kilometer
Length	Measure
Measurement	Metric system
Mile	Millimeter
Minute	Personal references
Protractor	Reasonable estimates
Ruler	Yard

February

Statistics and Probability

Content Standards

- 5.S.1 Collect and record data from a variety of sources (e.g., newspapers, magazines, polls, charts, and surveys)
- 5.S.2 Display data in a line graph to show an increase or decrease over time
- 5.S.3 Calculate the mean for a given set of data and use to describe a set of data
- 5.S.4 Formulate conclusions and make predictions from graphs

Process Strands

- 5.PS.8 Select an appropriate representation of a problem
- 5.PS.19 Differentiate between valid and invalid approaches
- 5.PS.23 Verify results of a problem
- 5.RP.5 Justify general claims or conjectures, using manipulatives, models, expressions, and mathematical relationships
- 5.CN.3 Connect and apply mathematical information to solve problems
- 5.CN.7 Apply mathematics to problem situations that develop outside of mathematics
- 5.R.4 Use standard and nonstandard representations with accuracy and detail

Vocabulary

Data	Event
Experimental results	Formulate conclusions from graphs
Impossible outcomes	Formulate predictions from graphs
Line graph	Mean
Organized chart	Organized list
Poll possible	Outcomes
Probability	Sample space
Set of data	Single event
Single-event experiment	Survey

March-April

Algebra/Geometry/Statistics and Probability

Content Standards

- 5.A.2 Translate simple verbal expressions into algebraic expressions
- 5.A.3 Substitute assigned values into variable expressions and evaluate using order of operations
- 5.A.4 Solve simple one-step equations using basic whole-number facts
- 5.A.5 Solve and explain simple one-step equations using inverse operations involving whole numbers
- 5.G.12 Identify and plot points in the first quadrant
- 5.G.13 Plot points to form basic geometric shapes (identify and classify)
- 5.G.14 Calculate perimeter of basic geometric shapes drawn on a coordinate plane (rectangles and shapes composed of rectangles having sides with integer lengths and parallel to the axes)
- 5.S.5 List the possible outcomes for a single-event experiment
- 5.S.6 Record experiment results using fractions/ratios
- 5.S.7 Create a sample space and determine the probability of a single event, given a simple experiment (e.g., rolling a number cube)

Process Standards

- 5.PS.16 Discuss with peers to understand a problem situation
- 5.PS.17 Determine what information is needed to solve problem
- 5.PS.20 Understand valid counter examples
- 5.RP.3 Investigate conjectures, using arguments and appropriate mathematical terms
- 5.RP.4 Make and evaluate conjectures, using a variety of strategies
- 5.CN.6 Recognize and provide examples of the presence of mathematics in their daily lives
- 5.R.8 Use mathematics to show and understand social phenomena (e.g., construct tables to organize data showing book sales)

Vocabulary

Review of vocabulary from previous units

May

Fractions (Part 3)

Content

Adding and subtracting fractions with unlike denominators
Adding and Subtracting mixed numbers with unlike denominators
Multiplying fractions and Mixed numbers
Dividing fractions

Process

Review problem solving strategies to solve problems – work backward, guess and check, solve a simpler problem, make a list or table, use logical reasoning

Vocabulary

Equivalent fractions	Factor (verb)
Fraction	Decimal fraction
Estimate factor (noun)	Greatest common factor (GCF)
Improper fraction	Simplify fractions
Unlike denominators	Common factor
Common multiple	Denominator
Proper fraction	Prime number
Like (common) denominators	Least common denominator (LCD)
Lowest terms (simplest form)	Mixed number

June

Geometry (Area)

Content

Find the area of a square, rectangle and parallelogram

Find the area of a triangle

Process

Review problem solving strategies to solve problems – work backward, guess and check, solve a simpler problem, make a list or table, use logical reasoning

Vocabulary

Review of vocabulary from previous units

Additional Grade 5 Vocabulary

Problem Solving

Analyze
Counterexample
Invalid approach
Irrelevant information
Language of logic (and, or, not)
Problem solving strategies
 Act it out
 Draw a graph
 Draw a picture
 Logical reasoning
 Look for a pattern
 Make an organized chart
 Make an organized list
 Process of elimination
 Solve a simpler problem
 Trial and error
 Work backwards
 Write an equation
Reasonableness of a solution
Relevant information
Solution(s)
Valid approach
Verify results

Reasoning and Proof

Argument
Conjecture
Counterexample
Example
Justify
Special case(s)
Strategies
Verify claims of others

Communications

Accurately label work

Appropriate mathematical language organize work

Questions

to challenge thinking

to clarify thinking

to elicit thinking

to extend thinking

Rationale

Thought process

Verbal symbols

Written symbols

Connections

Application

Conclusion

Explain mathematical relationships

Explore mathematical relationships

Real world math

Representation

Extend models

Interpret models

Nonstandard representations

Types of representations

Charts

Drawings

Equations

Graphs

Objects

Symbols

Tables

Objects created using technology

Standard representations