

**Flossmoor School District 161
Mathematics Curriculum Framework
Grade 6**

Month August/September
(**BOLD denotes Advanced Objectives**)

Goal #6 Number Sense

Objective
SD161 Know how and when to use a calculator
SD161 Use estimation to judge the reasonableness of an answer, with or without a calculator
6.6.01 Read, write, recognize, and model equivalent representations of whole numbers and their place values (including integers)
6.6.02 Read, write, recognize, model, and interpret numerical expressions from a given description or situation (including integers)
6.6.07 Order and compare whole numbers (and integers)
6.7.09 Identify and apply order of operations to simplify numeric (and variable) expressions involving whole numbers (including exponents), fractions, and decimals (and integers)
6.6.12 Solve problems and number sentences involving addition, subtraction, multiplication, and division using whole numbers (and integers)
6.6.16 Solve problems involving the commutative, distributive, and associative properties of operations on whole numbers (integers) [e.g., $(5 \times 7) \times 2 = 5 \times (7 \times 2)$] (comparison property)

Goal #8 Algebra

8.6.02 Write an expression using variables to represent unknown quantities
8.7.03 Identify and combine like terms

Goal #10 Data Analysis, Statistics, and Probability

10.6.01 Read, interpret, and make predictions from data represented in a bar graph, line (dot) plot, Venn diagram (with two circles), chart/table, line graph, or circle graph (**double/multiple graphs**)

10.6.02 Compare different representations of the same data (**determine appropriate type of graph**)

10.6.03 Create a bar graph, chart/table, line graph, or circle graph with common referents ($1/4$, 50%, .75) for a given set of data

10.6.04 Determine the mode, range, median, and mean, given a set of data or a graph

10.7.01 Read, interpret and make predictions from data represented in a bar graph, a line (dot plot), Venn diagram, chart, table, line graph, scatter plot, circle graph or histogram

Mathematics Curriculum Framework – Grade 6

Month October

(**BOLD** denotes Advanced Objectives)

Goal #6 Number Sense

Objective
SD161 Know how and when to use a calculator
SD161 Use estimation to judge the reasonableness of an answer, with or without a calculator
6.6.05 Read, write, recognize, and model equivalent representations of decimals and their place values through thousandths (no limit)
6.6.08 Order and compare decimals through thousandths (no limit)
6.6.11 Solve problems involving descriptions of numbers, including characteristics and relationships (e.g., odd/even, factors/multiples, greater than, less than, square numbers, primes)
6.6.13 Solve problems and number sentences involving addition, subtraction, and multiplication (and division) of decimals
6.6.15 Identify and apply order of operations to simplify numeric (and variable) expressions involving whole numbers (and integers)

Goal #7 Measurement

7.6.01 Select and use appropriate standard units and tools to measure length, mass/weight, capacity, and angles
7.6.02 Solve problems involving the perimeter and area of a triangle, parallelogram, or irregular shape using diagrams, models, and grids or by measuring or using given formulas (may include sketching a figure from its description) (including circles)
7.6.03 Compare and estimate length (including perimeter), area, volume, weight/mass, and angles (0° to 180°) using referents

Goal #8 Algebra

8.6.01 Determine a missing term in a sequence, extend a sequence, and construct and identify a rule that can generate the terms of a given sequence (e.g., 3, 6, 9, . . . is explained by the rule $3n$, for $n \geq 1$) **(including rational and irrational numbers)**

8.6.04 Determine a rule having two operations from an input-output table (e.g., multiply by 3 and add 2) **(including rational and irrational numbers)**

8.6.10 Solve word problems involving unknown quantities

Mathematics Curriculum Framework – Grade 6

Month November
(**BOLD** denotes Advanced Objectives)

Goal #6 Number Sense

Objective
SD161 Know how and when to use a calculator
SD161 Use estimation to judge the reasonableness of an answer, with or without a calculator
6.6.03 Read, write, recognize, and model equivalent representations of fractions, including improper fractions and mixed numbers (all rational numbers)
6.6.04 Recognize, translate between, and apply multiple representations of decimals, fractions, percents (less than 100%), and mixed numbers (halves, quarters, fifths, and tenths) (all fractions and decimal parts)
6.6.06 Represent repeated factors using exponents (including negative factors and exponents)
6.6.09 Order and compare fractions having like or unlike denominators
6.6.10 Identify and locate decimals, fractions, and mixed numbers on a number line (including rational numbers)
6.6.14 Solve problems involving addition and subtraction of fractions and mixed numbers, and express answers in simplest form (including rational numbers and variables)
6.6.17 Make estimates appropriate to a given situation, and analyze what effect the estimation method used has on the accuracy of results

Goal #8 Algebra

8.6.10 Solve word problems involving unknown quantities (including rational and irrational numbers)
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Goal #9 Geometry

9.6.07 Identify and sketch parallel, perpendicular, and intersecting lines

9.6.08 Identify and sketch acute, right, and obtuse angles

Goal #10 Data Analysis, Statistics, and Probability

10.6.05 Solve problems involving the probability of a simple event, including representing the probability as a fraction, decimal, or percent **(both independent and dependent events)**

10.6.06 Apply the fundamental counting principle in a simple **(and complex)** problem (e.g., How many different 3–digit numbers can be made with the digits 1, 2, and 2?)

10.7.06 Solve problems involving probability of a simple or compound event including representing the probability as a fraction, decimal, or percent

Mathematics Curriculum Framework – Grade 6

Month December
(**BOLD** denotes Advanced Objectives)

Goal #7 Measurement

Objective
SD161 Know how and when to use a calculator
SD161 Use estimation to judge the reasonableness of an answer, with or without a calculator
7.6.02 Solve problems involving the perimeter and area of a triangle, parallelogram, or irregular shape (including rational numbers and multiple units) using diagrams, models, and grids or by measuring or using given formulas (may include sketching a figure from its description)
7.6.03 Compare and estimate length (including perimeter), area, volume, weight/mass, and angles (0° to 180°) using referents

Goal #8 Algebra

8.6.03 Evaluate algebraic expressions with up to two whole number (and rational) variable values (e.g., evaluate $3m + n + 3$ when $m = 4$ and $n = 2$).
8.6.08 Represent problems with equations and inequalities
8.6.09 Solve for the unknown in an equation with one (multiple) operation (e.g., $8x = 24$, $m \div 2 = 25$)
8.6.10 Solve word problems involving unknown quantities

Goal #9 Geometry

9.6.04 Identify, describe, and sketch circles, including radius, diameter, and chord
9.6.11 Identify congruent and similar figures by visual inspection (and prove via properties)

Mathematics Curriculum Framework – Grade 6

Month January
(**BOLD** denotes Advanced Objectives)

Goal #6 Number Sense

Objective
SD161 Know how and when to use a calculator
SD161 Use estimation to judge the reasonableness of an answer, with or without a calculator
6.6.18 Identify and express ratios using appropriate notation (i.e., a/b , a to b , $a:b$), identify equivalent ratios, and explain ratios that represent a given situation (including complex fractions)
6.6.19 Solve problems involving proportional relationships, including unit pricing (e.g., seven apples cost \$1.40, so nine apples cost \$1.80)
6.6.20 Read, write, recognize, and model percents from 0% to 100% (including fractional percents and percents over 100)
6.6.21 Solve number sentences and problems involving percents

Goal #7

7.6.06 Solve problems involving scale drawings and maps

Goal #8 Algebra

8.6.10 Solve word problems involving unknown quantities

Goal #9 Geometry

9.6.03 Solve problems using properties of triangles and quadrilaterals (all polygons) (e.g., sum of interior angles of a quadrilateral is 360°)
9.6.06 Identify, describe, and predict results of reflections, translations, and rotations of two-dimensional shapes
9.6.12 Determine if figures are similar, and identify relationships between corresponding parts of similar figures

Mathematics Curriculum Framework – Grade 6

Month February
(**BOLD** denotes Advanced Objectives)

Goal #7 Measurement

Objective
SD161 Know how and when to use a calculator
SD161 Use estimation to judge the reasonableness of an answer, with or without a calculator
7.6.04 Determine the volume of a right rectangular prism using an appropriate formula or strategy
7.6.05 Solve problems involving unit conversions <u>within the same measurement system</u> for time, length, and weight/mass, including compound units (e.g., 5ft 5in, 2lbs 2oz)

Goal #8 Algebra

8.6.05 Select a table of values that satisfies a linear equation, and recognize the ordered pairs on a rectangular coordinate system
8.6.06 Translate between different representations (table, written, or pictorial) of whole (rational) number relationships
8.6.07 Identify graphs of inequalities on a number line (including integers and rational numbers)
8.6.10 Solve word problems involving unknown quantities

Goal #9 Geometry

9.6.01 Classify, describe, and sketch regular and irregular two-dimensional shapes according to the number of sides, length of sides, number of vertices, and interior angles

9.6.02 Identify and describe three-dimensional shapes (cubes, spheres, cones, cylinders, prisms, and pyramids) according to their characteristics (faces, edges, vertices)

9.6.05 Graph, locate, identify points, describe paths, and plot figures using ordered pairs (first quadrant) **(on the Cartesian coordinate plane)**

9.6.13 Determine the distance between two **(multiple)** points on a horizontal or vertical number line **(on a Cartesian coordinate plane)**

Mathematics Curriculum Framework – Grade 6

Month March

(**BOLD** denotes Advanced Objectives)

Goal #8 Algebra

Objective
SD161 Know how and when to use a calculator
SD161 Use estimation to judge the reasonableness of an answer, with or without a calculator
8.6.04 Determine a rule having two operations from an input–output table (e.g., multiply by 3 and add 2) (including rational numbers)
8.6.08 Represent problems with equations and inequalities

Goal #9 Geometry

9.6.09 Identify a three–dimensional object from its net
9.6.10 Recognize which attributes (such as shape, perimeter, and area) change or don't change when plane figures are composed, decomposed, or rearranged

Mathematics Curriculum Framework – Grade 6

Month April

(**BOLD** denotes Advanced Objectives)

Goal #6 **Number Sense**

Objective
SD161 Know how and when to use a calculator
SD161 Use estimation to judge the reasonableness of an answer, with or without a calculator
6.7.02 Read, write, recognize, model, and interpret integers, including translating numerical expressions
6.7.05 Order and compare integers, terminating decimals, fractions, and mixed numbers
6.7.06 Identify and locate integers, decimals, fractions/mixed numbers on a number line, and estimate the locations of square roots
6.7.07 Solve problems involving descriptions of numbers, including characteristics and relationships (e.g., square numbers, prime/composite, prime factorization, greatest common factor, least common multiple)
6.7.08 Solve problems and number sentences involving addition, subtraction, multiplication, and division using integers, fractions, and decimals

Goal #9 **Geometry**

9.7.05 Graph points and identify coordinates of points on the Cartesian coordinate plane (all four quadrants)

Mathematics Curriculum Framework – Grade 6

Month May/June
(**BOLD** denotes Advanced Objectives)

Goal #6 Number Sense

Objective
SD161 Know how and when to use a calculator
SD161 Use estimation to judge the reasonableness of an answer, with or without a calculator
6.6.12 Solve problems and number sentences involving addition, subtraction, multiplication, and division using whole numbers (including variables and integers)
6.6.13 Solve problems and number sentences involving addition, subtraction, and multiplication of decimals (including variables)
6.6.14 Solve problems involving addition and subtraction of fractions and mixed numbers, and express answers in simplest form (including variables)
6.6.16 Solve problems involving the commutative, distributive, and associative properties of operations on whole numbers [e.g., $(5 \times 7) \times 2 = 5 \times (7 \times 2)$] (including rational numbers)

Goal #8 Algebra

8.6.01 Determine a missing term in a sequence, extend a sequence, and construct and identify a rule that can generate the terms of a given sequence (e.g., 3, 6, 9, . . . is explained by the rule $3n$, for $n \geq 1$)
8.6.02 Write an expression using variables to represent unknown quantities
8.6.03 Evaluate algebraic expressions with up to two whole number variable values (e.g., evaluate $3m + n + 3$ when $m = 4$ and $n = 2$).
8.6.04 Determine a rule having two operations from an input–output table (e.g., multiply by 3 and add 2)

8.6.05 Select a table of values that satisfies a linear equation, and recognize the ordered pairs on a rectangular coordinate system

8.6.10 Solve word problems involving unknown quantities

Goal #9 Geometry

9.6.02 Identify and describe three-dimensional shapes (cubes, spheres, cones, cylinders, prisms, and pyramids) according to their characteristics (faces, edges, vertices)