COURSE: Mathematics

GRADE LEVEL: Fifth Grade

LENGTH OF COURSE: 180 Days/60 Minutes Per Day

TEXT: Mathematics Plus and/or Everyday Mathematics

PUBLISHER: Harcourt Brace and/or Everyday Learning Corporation

COURSE DESCRIPTION:

The fifth grade math program is designed to allow students to apply and utilize mathematical understanding of real world and everyday situations. Students will understand and be able to demonstrate calculation and application of concepts including problem solving, computation, measurement, use of number systems, geometry, organizing and interpreting data, fractions, decimals, algebra, estimation, probability, and statistics.

AREAS OF STUDY:

Number Systems and Relationships
Computation and Estimation
Measurement and Estimation
Mathematical Reasoning and Connections
Statistics and Data Analysis
Probability and Predictions
Algebra and Functions
Geometry
Trigonometry
Concepts of Calculus

CURRICULUM WRITING TEAM:

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DATE OF REVISION:

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Wallenpaupack Area School District

Course: Mathematics **Grade Level:** Grade 5

PA Standard: 2.1.5

Topics:	**Skills:**
Numbers, nuber systems	Use expended notation to represent whole numbers or decimals Apply number theory concepts to rename a number quantity (e.g., six, 6, 12/2, 3 x2, 10-4) Demonstrate that mathematical operations can represent a variety of problem situations Use models to represent fractions and decimals Explain the concepts of prime and composite numbers Use simple concepts of negative number (e.g., on a number line, in counting, in temperature) Develop and apply number theory concepts (e.g., primes, factors, multiples, composites) to represent numbers in various ways
Activities:	**Performance Assessments:**
Textbooks and related materials Dictionary/math glossary Calculators Related PSSA problems Games Overhead Rulers Flash cards Thermometer Place value chart Word problems/real life situations Fraction chart Base ten blocks Money Fractions sticks Counters Number line Cards	Teacher observation In-class questions/participation Checklists Class projects Teacher-made tests/quizzes Program tests PSSA test Fifth grade rubric End of year test Homework

Course: Mathematics **Grade Level:** Grade 5

PA Standard: 2.2.5

Topics:	**Skills:**
Computation and estimation	Create and solve word problems involving addition, subtraction, multiplication and division of whole numbers Develop and apply algorithms to solve word problems that involve addition, subtraction, and/or multiplication with decimals with and without regrouping Develop and apply algorithms to solve word problems that involve addition, subtraction, and/or multiplication with fractions and mixed numbers that include like and unlike denominators Demonstrate the ability to round numbers Determine through estimations the reasonableness of answers to problems involving addition, subtraction, multiplication and division of whole numbers Demonstrate skills for using fraction calculators to verify conjectures, confirm computations and explore complex problem-solving situations Apply estimation strategies to variety of problems including time and money Explain multiplication and division algorithms
Activities:	**Performance Assessments:**
Textbooks and related materials Dictionary/math glossary Calculators Related PSSA problems Games Overhead Clocks Money Place value chart	Teacher observation In-class questions/participation Checklists Class projects Teacher-made test/quizzes Program tests PSSA test Fifth grade rubric End of year test Homework

Course: Mathematics **Grade Level:** Grade 5

PA Standard: 2.3.5

Topics:	**Skills:**
Measurement and estimation	Select and use appropriate instruments and units for measuring quantities (e.g., perimeter, volume, area, weight, time temperature) Select and use standard tools to measure the size of figures with specified accuracy, including length, width, perimeter and area Estimate, refine and verify specified measurements of objects Convert linear measurements within the same system Add and subtract measurements
Activities:	**Performance Assessments:**
Textbooks and related materials Dictionary/math glossary Calculators Related PSSA problems Games Overhead Clocks Rulers (metric & customary) Spring scale Balance scale Thermometer Graph paper Geometry template	Teacher observation In-class question/participation Checklists Class projects Teacher-made tests/quizzes Program tests PSSA test Fifth grade rubric End of year test Homework

Course: Mathematics **Grade Level:** Grade 5

PA Standard: 2.4.5

Topics:	**Skills:**
Mathematical reasoning	Compare quantities and magnitudes of numbers Use models, number facts, properties and relationships to check and verify predictions and explain reasoning Draw inductive and deductive conclusions within mathematical contexts Distinguish between relevant and irrelevant information in a mathematical problem Interpret statements made with precise language of logic (e.g., “all”, “or”, “every”, “none”, “some”, “or”, “many”) Use statistics to quantify
Activities:	**Performance Assessments:**
Textbooks and related materials Dictionary/math glossary Calculators Related PSSA problems Games Overhead Cards Place value chart Graph paper	Teacher observations In-class questions/participation Checklists Class projects Teacher-made tests/quizzes Program tests PSSA test Fifth grade rubric End of year test Homework

Course: Mathematics **Grade Level:** Grade 5

PA Standard: 2.5.5

Topics:	**Skills:**
Mathematical problem solving	Develop a plan to analyze a problem, identify the information needed to solve the problem, carry out the plan, check whether an answer makes sense and explain how the problem was solved Use appropriate mathematical terms, vocabulary, language symbols and graphs to explain clearly and logically solutions to problems Show ideas in a variety of way, including words, numbers, symbols, pictures, charts, graphs, tables, diagrams and models Connect, extend and generalize problem solutions to other concepts, problems and circumstances in mathematics
Activities:	**Performance Assessments:**
Textbooks and related materials Dictionary/math glossary Calculators Related PSSA problems Games Overhead Unifix cubes Base ten blocks Graph paper	Teacher observations In-class questions/participation Checklists Class projects Teacher-made tests/quizzes Program tests PSSA tests Fifth grade rubric End of year test Homework

Course: Mathematics **Grade Level:** Grade 5

PA Standard: 2.6.5

Topics:	**Skills:**
Data analysis	Organize and display data using pictures, tallies, tables, charts, bar graphs and circle graphs Describe data sets using mean, median, mode and range Sort data using Venn diagrams Predict the likely number of times a condition will occur based on analyzed data Construct and defend simple conclusion based on data
Activities:	**Performance Assessments:**
Textbooks and related materials Dictionary/math glossary Calculators Related PSSA problems Games Overhead Dice Spinners Coins Graph paper Geometry template	Teacher observation In-class questions/participation Checklists Class projects Teacher-made tests/quizzes Program tests PSSA test Fifth grade rubric End of year test Homework

Course: Mathematics **Grade Level:** Grade 5

PA Standard: 2.7.5

Topics:	**Skills:**
Probability and predictions	Perform simulations with concrete devices (e.g., dice, spinner) to predict the chance of an event occurring Determine the fairness of the design of a spinner Express probabilities as fractions and decimals Compare predictions based on theoretical probability and experimental results Calculate the probability of a simple event Determine patterns generated as a result of an experiment Determine the probability of an event involving “and”, “or”, or “not” Predict and determine why some outcomes are certain, more likely, less likely, equally likely or impossible Find all possible combinations and arrangements involving a limited number of variables Develop a tree diagram and list the elements
Activities:	**Performance Assessments:**
Textbooks and related materials Dictionary/math glossary Calculators Related PSSA problems Games Overhead Dice Spinners Coins Graph paper	Teacher observation In-class questions/participation Checklists Class projects Teacher-made tests/quizzes Program tests PSSA tests Fifth grade rubric End of year test Homework

Course: Mathematics **Grade Level:** Grade 5

PA Standard: 2.8.5

Topics:	**Skills:**
Algebra	Recognize, reproduce extend, create and describe patterns, sequences and relationships verbally, numerically, symbolically, graphically, using a variety of materials Connect patterns to geometric relations and basic number skills Form rules based on patterns (e.g., an equation that relates pairs in a sequence) Use concrete object and combinations of symbols and numbers to create expressions that model mathematical situations Explain the use of combinations of symbols and numbers in expressions, equators in inequalities Describe a realistic situation using information given in equations, inequalities, tables or graphs Select and use appropriate strategies, including concrete materials, to solve number sentences and explain the method of solution Locate and identify points on a coordinate system Generate functions from tables of data and relate data to corresponding graphs and functions
Activities:	**Performance Assessments:**
Textbooks and related materials Dictionary/math glossary Calculators Related PSSA problems Games Overhead Pattern blocks Geometry template Unifix cubes Base ten blocks Graph paper	Teacher observation In-class questions/participation Checklists Class projects Teacher-made tests/quizzes Program tests PSSA test Fifth grade rubric End of year test Homework

Course: Mathematics **Grade Level:** Grade 5

PA Standard: 2.9.5

Topics:	**Skills:**
Geometry	Give formal definitions of geometric figures Classify and compare triangles and quadrilaterals according to side or angles Identify and measure circles, their diameters and their radii Describe in words how geometric shapes are constructed Construct two- and three-dimensional shapes and figures using manipulative, geoboards and computer software Find familiar solids in the environment and describe them Create an original tessellation Describe the relationship between the perimeter and area of triangles, quadrilaterals and circles Represent and use the concepts of line, point and plane Define the basic properties of squares, pyramids, parallelograms, quadrilaterals, trapezoids, polygons, rectangles, rhombi, circles, triangles, cube, prism, spheres and cylinders Analyze simple transformations of geometric figures and rotations of line segments Identify properties of geometric figures (e.g., parallel, perpendicular, similar, congruent, symmetrical)
Activities:	**Performance Assessments:**
Textbooks and related materials Compass Dictionary/math glossary Protractor Calculators Geoboards Related PSSA problems Solid figure models Games Rulers Overhead Computer software	Teacher observation In-class questions/participation Checklists Class projects Teacher-made tests/quizzes Program tests PSSA test Fifth grade rubric End of year test Homework

Activities: (continued)	
Pattern blocks Polyhedral dice Geometry template G (may need additional resources)	

Course: Mathematics **Grade Level:** Grade 5

PA Standard: 2.10.5

Topics:	**Skills:**
Trigonometry	Identify and compare parts of right triangles, including right angles, acute angles, hypotenuses and legs Create right triangles on a geoboard
Activities:	**Performance Assessments:**
Textbooks and related materials Dictionary/math glossary Calculators Related PSSA problems Games Overhead Pattern blocks Geometry template Protractor Geoboard A (will need additional supplemental materials for hypotenuse and legs of a right triangle)	Teacher observation In-class questions/participation Checklists Class projects Teacher-made tests/quizzes Program tests PSSA test Fifth grade rubric End of year test Homework

Course: Mathematics **Grade Level:** Grade 5

PA Standard: 2.11.5

Topics:	**Skills:**
Calculus	Make comparisons of numbers (e.g., more, less, same, least, most, greater than, less than) Identify least and greatest values represented in bar and circle graphs Identify maximum and minimum Describe the relationship between rates of change and time Estimate areas and volumes as the sums of areas of tiles and volumes of cubes Describe the relationship between the size of the unit measurement and the estimate of the areas and volumes
Activities:	**Performance Assessments:**
Textbooks and related materials Dictionary/math glossary Calculators Related PSSA problems Games Overhead Base ten blocks Geometry template Graph paper Unifix cubes Rulers Solid figure models	Teacher observation In-class questions/participation Checklists Class projects Teacher-made tests/quizzes Program tests PSSA test Fifth grade rubric End of year test Homework