

Wallenpaupack Area School District

COURSE: Mathematics

GRADE LEVEL: Seventh Grade/Basic – Applied – General

LENGTH OF COURSE: 90 Days/70 Minutes Per Day

TEXT: Passport to Mathematics Book 2 Middle Grade Math Tools for Success

PUBLISHER: McDougal Littell Prentice Hall

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COURSE DESCRIPTION:

The sixth, seventh and eighth grade math curriculum covers a number of skills and concepts through a rich yet balanced curriculum. The structure of the lessons promotes understanding, retention and preparation for standardized tests.

AREAS OF STUDY:

Number Sense
Computation
Measurement
Estimation
Problem Solving
Statistics and Data Analysis
Algebra and Functions
Geometry
Trigonometry

CURRICULUM WRITING TEAM:

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Wallenpaupack Area School District

Course: Mathematics

Grade Level: Grade 7

PA Standard: 2.1.8

Topics:	Skills:
Numbers, number systems, number relationships	Represent and use numbers in equivalent forms (e.g., integers, fractions, decimals, percents, exponents, scientific notation, square roots) Simplify numerical expressions involving exponents, scientific notation and using order of operations Distinguish between and order rational and irrational numbers Apply ratio and proportion to mathematical problem situations involving distance, rate, time and similar triangles Simplify and expand algebraic expressions using exponential forms Use the number line model to demonstrate integers and their applications Use the inverse relationships between addition, subtraction, multiplication, division, exponentiation and root extraction to determine unknown quantities in equations
Activities:	Performance Assessments:
Draw to scale using a protractor Explain problems step by step Problem of the week	Teacher observation Oral questions Board work Classroom participation Paper/pencil activities Teacher made tests Textbook tests Homework

Wallenpaupack Area School District

Course: Mathematics

Grade Level: Grade 7

PA Standard: 2.2.8.

Topics: Computation and estimation	Skills: Complete calculations by applying the order of operations Add, subtract, multiply and divide different kinds and forms of rational numbers including integers, decimal fractions, percents and proper and improper fractions Estimate the value of irrational numbers Estimate amount of tips and discounts using ratios, proportions and percents Determine the appropriateness of overestimating or underestimating in computation
Activities: Restaurant activity Problem of the week	Performance Assessments: Teacher observation Oral questions Board work Classroom participation Paper/pencil activities Teacher made tests Textbook tests

Wallenpaupack Area School District

Course: Mathematics

Grade Level: Grade 7

PA Standard: 2.3.8.

Topics:	Skills:
Measurement and estimation	Develop formulas for determining measurements (e.g., area, volume, distance) Solve rate problems (e.g., rate x time=distance, principal x interest rate=interest) Measure angles in degrees and determine relations of angles Estimate, use and describe measures of distance, rate, perimeter, area, volume, weight, mass and angles
Activities:	Performance Assessments:
Calculators Use of protractors Problem of the week	Teacher observation Oral questions Board work Classroom participation Paper/pencil activities Teacher made tests Textbook tests Homework

Wallenpaupack Area School District

Course: Mathematics

Grade Level: Grade 7

PA Standard: 2.4.8

Topics:	Skills:
Mathematical reasoning	Make conjectures based on logical reasoning and test conjectures by using counter-examples Combine numeric relationships to arrive at a conclusion Use if...then statements to construct simple, valid arguments Construct, use and explain algorithmic procedures for computing and estimating with whole numbers, fractions, decimals and integers Distinguish between inductive and deductive reasoning
Activities:	Performance Assessments:
Problem of the week (open ended questions)	Teacher observation Oral questions Board work Classroom participation Paper/pencil activities Teacher made tests Textbook tests Homework

Wallenpaupack Area School District

Course: Mathematics

Grade Level: Grade 7

PA Standard: 2.5.8.

Topics:	Skills:
Mathematical problem solving	<p>Invent, select, use and justify the appropriate methods, materials and strategies to solve problems</p> <p>Verify and interpret results using precise mathematical language, notation and representations, including numerical tables and equations, simple algebraic equations and formulas, charts, graphs and diagrams</p> <p>Justify strategies and defend approaches used and conclusion reached</p> <p>Determine pertinent information in problem situations and whether any further information is needed for solution</p>
Activities:	Performance Assessments:
Problem of the week (Open-ended questions)	<p>Teacher observation</p> <p>Oral questions</p> <p>Board work</p> <p>Classroom participation</p> <p>Paper/pencil activities</p> <p>Teacher made tests</p> <p>Teacher tests</p> <p>Homework</p>

Wallenpaupack Area School District

Course: Mathematics

Grade Level: Grade 7

PA Standard: 2.6.8

Topics: Statistics and data analysis	Skills: Compare and contrast different plots of data using values of mean, median, mode, quartiles and range Explain effects of sampling procedures and missing or incorrect information on reliability
Activities: Problems of the week (Open-ended questions)	Performance Assessments: Teacher observation Oral questions Board work Classroom participation Paper/pencil activities Teacher made tests Textbook tests Homework

Wallenpaupack Area School District

Course: Mathematics

Grade Level: Grade 7

PA Standard: 2.7.8

Topics:	Skills:
Probability and predictions	Determine the number of combinations and permutations for an event Present the results of an experiment using visual representations (e.g., tables, charts, graphs) Analyze predictions (e.g., election polls) Compare and contrast results from observations and mathematical models Make valid inferences, predictions and arguments based on probability
Activities:	Performance Assessments:
Numbered cube What is the probability of rolling a 3 on a single roll? What is the probability of rolling an even number? Predictions – using existing data to predict a future event	Teacher observation Oral questions Board work Classroom participation Paper/pencil activities Teacher made tests Textbook tests Homework

Wallenpaupack Area School District

Course: Mathematics

Grade Level: Grade 7

PA Standard: 2.8.8

Topics:	Skills:
Algebra and functions	Apply simple algebraic patterns to basic number theory and to spatial relations Discover, describe and generalize patterns, including linear, exponential and simple quadratic relationships Create and interpret expressions, equations or inequalities that model problem situations Use concrete objects to model algebraic concepts
Activities:	Performance Assessments:
Hands-on equations Problem of the week Distinguish between an expression, equation and an inequality Use of pawns to represent the variables and numbered cubes for the numbers to physically show the equation	Teacher observation Oral questions Board work Classroom participation Paper/pencil activities Teacher made tests Textbook tests Homework

Wallenpaupack Area School District

Course: Mathematics

Grade Level: Grade 7

PA Standard: 2.9.8

Topics:	Skills:
<p>Geometry</p>	<p>Construct figures incorporating perpendicular bisector of a line segment and an angle bisector using computer software</p> <p>Draw, label, measure and list the properties of complementary, supplementary and vertical angles</p> <p>Classify familiar polygons as regular or irregular up to a decagon</p> <p>Identify, name, draw and list all properties of squares, cubes, pyramids, parallelograms, quadrilaterals, trapezoids, polygons, rectangles, rhombi, circles, spheres, triangles, prisms and cylinders</p> <p>Construct parallel lines, draw a transversal and measure and compare angles formed (e.g., alternate interior and exterior angles)</p> <p>Distinguish between similar and congruent polygons</p> <p>Approximate the value of pi through experimentation</p> <p>Use simple geometric figures (e.g., triangles, squares) to create, through rotation, transformational figures in three dimensions</p>
Activities:	Performance Assessments:
<p>Construct an icosahedron out of straws and dental floss</p> <p>Develop why pi is 3.14 using a string</p>	<p>Teacher observation</p> <p>Oral questions</p> <p>Board work</p> <p>Classroom participation</p> <p>Paper/pencil activities</p> <p>Teacher made tests</p> <p>Textbook tests</p> <p>Homework</p>

Wallenpaupack Area School District

Course: Mathematics

Grade Level: Grade 7

PA Standard: 2.10.8

Topics: Trigonometry	Skills: Compute measures of sides and angles using proportions, the Pythagorean Theorem and right triangle relationships Solve problems requiring indirect measurement for lengths of sides of triangles
Activities: Real world construction problems Protractor activities	Performance Assessments: Teacher observation Oral questions Board work Classroom participation Paper/pencil activities Teacher made tests Textbook tests Homework

Wallenpaupack Area School District

Course: Mathematics

Grade Level: Grade 7

PA Standard: 2.11.8

Topics:	Skills:
Calculus	Analyze graphs of related quantities for minimum and maximum values and justify the findings Describe the concept of unit rate, ratio and slope in the context of rate of change Continue a pattern of number or objects that could be extended infinitely
Activities:	Performance Assessments:
Open-ended problems Rate/unit rate/comparison shopping (use of proportions and advertisements) Outline steps to follow for problem solving	Teacher observation Oral questions Board work Classroom participation Paper/pencil activities Teacher made tests Textbook tests Homework

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TERMS USED IN THE ACADEMIC STANDARDS FOR MATHEMATICS THROUGH GRADE 8:

Angle Measurement in Degrees

Bisector

Box-and-Whisker Plot

Combination

Complimentary Angle

Conjecture

Coordinate Plane

Counter Example

Deductive Reasoning

Dimensions

Equation

Evaluate the Expression

Exponent

Exponential Relationship

Functional Relationship

Inductive Reasoning

Inequality

Irrational Number

Linear Function

Linear Relationship

Logical Reasoning

Number Line

Order of Operations

Percent

Permutation

Proportion

Pythagorean Theorem

Quadratic Relationship

Quartile

Random Sampling

Ratio

Rational Number

Regular Polygon

Reliability

Scale Mode

Scientific Notation

Sequence

Slope

Square Root

Stem-and-Leaf Plot

Supplementary Angle

Transformation

Transversal

Unit Rate

Verbal, Symbolic Rules

Vertical Angle

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INTERNET RESOURCES:

www.aaamath.com

www.coolmath4kids.com

www.funbrain.com

www.moneyopolis.com (teacher can set up for class access)

www.schoolcentral.com/willoughby

www.stfx.caspecial/mathproblems

www.learningwave.com/abmath

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