

Wallenpaupack Area School District

Planned Course Curriculum Guide

Department

Math

Name of Course

Math 6

Course Description:

Math 6 includes the study and application of the following topics: integers, factors and multiples, rational numbers, number operations, ratios and rates, percents, expressions, equations, inequalities, area, polygons, coordinate plane, surface area, volume, measures of center, measurement, and data.

Revision Date:

September 2015

| Wallenpaupack Area School District Curriculum | |
|--|----------------------------|
| COURSE: Math 6 | GRADE: 6 |
| UNIT 1: Numbers Integers, Rational Numbers, Factors and Multiples | TIMEFRAME: On-going |

PA COMMON CORE/NATIONAL STANDARDS:

CC.6.NS.4 Find the greatest common factor of two whole numbers less than or equal to 100 and the least common multiple of two whole numbers less than or equal to 12. Use the distributive property to express a sum of two whole numbers 1-100 with a common factor as a multiple of a sum of two whole numbers with no common factor.

CC.6.NS.5 Understand that positive and negative numbers are used together to describe quantities having opposite directions or values (e.g., temperature above/below zero, elevation above/below sea level, credits/debits, positive/negative electric charge); use positive and negative numbers to represent quantities in real-world contexts, explaining the meaning of 0 in each situation.

CC.6.NS.6 Understand a rational number as a point on the number line. Extend number line diagrams and coordinate axes familiar from previous grades to represent points on the line and in the plane with negative number coordinates.

CC.6.NS.7 Understand ordering and absolute value of rational numbers.

UNIT OBJECTIVES (SWBATS):

- Use integers to solve real world problems
- Identify an integer and its opposite
- Identify irrational numbers and their opposites
- Find and use absolute value
- Compare and order integers and rational numbers
- Classify rational numbers
- Use greatest common factor to solve real world problems
- Use the Distributive Property to rewrite the sum of two numbers as a product of their GCF and another sum
- Use least common multiple to solve real world problems

INSTRUCTIONAL STRATEGIES/ACTIVITIES:

- Note taking
- Homework and practice
- Cooperative learning
- Peer interaction
- Modeling
- Active participation

May vary depending on instructor/course.

ANCHOR VOCABULARY:

- Integers
- Inequality
- Absolute Value
- Opposites
- Negative numbers
- Positive numbers
- Rational Numbers
- Factor
- Multiple
- Greatest Common Factor
- Least Common Multiple
- Distributive Property

ASSESSMENTS (Diagnostic/Benchmark/Formative/Summative):**Diagnostic**

- Chapter pre-tests and assignments
- CDTs

Formative

- Teacher observation
- Unit quizzes
- Unit tests
- Unit projects/investigations
- Study Island

Summative

- Final Exam
- PSSAs

EVIDENCE OF MASTERY/Cut Score (PSSA/Keystone Exam)

- PSSA Proficient (1003-1101) Advanced (1110 and up)
- Objective Assessment Score of 70%

DIFFERENTIATED INSTRUCTION (Remediation/Extension) (Process, Product or Content)

- Appropriate accommodations based on the student's IEP/504 Plan

RESOURCES (Websites, Blogs, Videos, Whiteboard Resources, etc.):

Go Math- Middle School Edition- Houghton Mifflin Harcourt

my.hrw.com

www.studyisland.com

supplemental handouts/worksheets/websites

Coach Workbooks

Instructional Videos

PowerPoint Presentations

Calculators

graph paper

SAS

May vary based on instructor, course, availability, updates

RESOURCE SPECIFIC VOCABULARY:

www.pdesas.org Math 6

| Wallenpaupack Area School District Curriculum | |
|---|----------------------------|
| COURSE: Math 6 | GRADE: 6 |
| UNIT 2: Number Operations Operations with Fractions and Decimals | TIMEFRAME: On-going |

PA COMMON CORE/NATIONAL STANDARDS:

CC.6.NS.1 Interpret and compute quotients of fractions, and solve word problems involving division of fractions by fractions, e.g., by using visual fraction models and equations to represent the problem.

CC.6.NS.2 Fluently divide multi-digit numbers using the standard algorithm.

CC.6.NS.3 Fluently add, subtract, multiply, and divide multi-digit decimals using the standard algorithm for each operation.

CC.6.NS.4 Find the greatest common factor of two whole numbers less than or equal to 100 and the least common multiple of two whole numbers less than or equal to 12. Use the distributive property to express a sum of two whole numbers 1-100 with a common factor as a multiple of a sum of two whole numbers with no common factor.

UNIT OBJECTIVES (SWBATS):

- Use operations with fractions and decimals to solve real world problems
- Utilize the GCF and LCM when adding, subtracting, and multiplying fractions
- Divide fractions, mixed numbers whole numbers
- Solve word problems involving more than one fraction operation
- Add, subtract, multiply, and divide decimals
- Solve word problems involving multiplication and division of fractions and decimals

INSTRUCTIONAL STRATEGIES/ACTIVITIES:

- Note taking
- Homework and practice
- Cooperative learning
- Peer interaction
- Modeling
- Active participation

May vary depending on instructor/course.

ANCHOR VOCABULARY:

- Numerator
- Denominator
- Reciprocal
- Area
- Mixed Number
- Order of Operations
- Divisor/ Dividend/ Quotient
- Factor/ Product

ASSESSMENTS (Diagnostic/Benchmark/Formative/Summative):**Diagnostic**

- Chapter pre-tests and assignments
- CDTs

Formative

- Teacher observation
- Unit quizzes
- Unit tests
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- Study Island

Summative

- Final Exam
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| COURSE: Math 6 | GRADE: 6 |
| UNIT 3: Proportionality Ratio, Rate, and Percent | TIMEFRAME: On-going |

PA COMMON CORE/NATIONAL STANDARDS:

CC.6.RP.1 Understand the concept of a ratio and use ratio language to describe a ratio relationship between two quantities.

CC.6.RP.2 Understand the concept of a unit rate a/b associated with a ratio $a:b$ with b is not equal to 0, and use rate language in the context of a ratio relationship.

CC.6.RP.3 Use ratio and rate reasoning to solve real-world and mathematical problems, e.g., by reasoning about tables of equivalent ratios, tape diagrams, double number line diagrams, or equations.

UNIT OBJECTIVES (SWBATS):

- Use ratio, rate, and percent to solve real world problems
- Use ratios to compare two quantities
- Use rates to compare quantities
- Use ratios and rates to make comparisons and predictions
- Represent real world problems involving ratios and rates with tables and graphs
- Solve problems with proportions
- Convert measurements within a measurement system
- Use ratios and proportions to convert measurements
- Write a ratio as a percent
- Write equivalent percents, fractions, and decimals

INSTRUCTIONAL STRATEGIES/ACTIVITIES:

- Note taking
- Homework and practice
- Cooperative learning
- Peer interaction
- Modeling
- Active participation

May vary depending on instructor/course.

ANCHOR VOCABULARY:

- Rate
- Ratio
- Unit rate
- Equivalent ratios
- Conversion factor
- Proportion

- Scale
- Scale drawing
- Equivalent decimals
- Model
- Percent
- Proportional reasoning

ASSESSMENTS (Diagnostic/Benchmark/Formative/Summative):

Diagnostic

- Chapter pre-tests and assignments
- CDTs

Formative

- Teacher observation
- Unit quizzes
- Unit tests
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Summative

- Final Exam
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| COURSE: Math 6 | GRADE: 6 |
| UNIT 4: Equivalent Expressions Generating Equivalent Numerical and Algebraic Expressions | TIMEFRAME: On-going |

PA COMMON CORE/NATIONAL STANDARDS:

CC.6.EE.1 Write and evaluate numerical expressions involving whole-number exponents.

CC.6.EE.2 Write expressions that record operations with numbers and with letters standing for numbers.

CC.6.EE.3 Apply the properties of operations to generate equivalent expressions.

CC.6.EE.4 Identify when two expressions are equivalent (i.e., when the two expressions name the same number regardless of which value is substituted into them).

CC.6.EE.6 Use variables to represent numbers and write expressions when solving a real-world or mathematical problem; understand that a variable can represent an unknown number, or, depending on the purpose at hand, any number in a specified set.

UNIT OBJECTIVES (SWBATS):

- Generate equivalent numerical and algebraic expressions and use them to solve real world problems
- Use exponents to represent numbers
- Write the prime factorization of a number
- Use order of operations to simplify expressions with exponents
- Model and write algebraic expressions
- Use order of operations to evaluate algebraic expressions
- Identify and write equivalent expressions

INSTRUCTIONAL STRATEGIES/ACTIVITIES:

- Note taking
- Homework and practice
- Cooperative learning
- Peer interaction
- Modeling
- Active participation

May vary depending on instructor/course.

ANCHOR VOCABULARY:

- Base
- Exponent
- Order of operations
- Power
- Prime factorization

- Algebraic expression
- Equivalent expression
- Coefficient
- Constant
- Like terms
- Term
- Variable

ASSESSMENTS (Diagnostic/Benchmark/Formative/Summative):

Diagnostic

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Formative

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| COURSE: Math 6 | GRADE: 6 |
| UNIT 5: Equations and Inequalities Equations and Relationships with Variables | TIMEFRAME: On-going |

PA COMMON CORE/NATIONAL STANDARDS:

CC.6.EE.5 Understand solving an equation or inequality as a process of answering a question: which values from a specified set, if any, make the equation or inequality true? Use substitution to determine whether a given number in a specified set makes an equation or inequality true.

CC.6.EE.6 Use variables to represent numbers and write expressions when solving a real-world or mathematical problem; understand that a variable can represent an unknown number, or, depending on the purpose at hand, any number in a specified set.

CC.6.EE.7 Solve real-world and mathematical problems by writing and solving equations of the form $x + p = q$ and $px = q$ for cases in which p , q and x are all nonnegative rational numbers.

CC.6.EE.9 Use variables to represent two quantities in a real-world problem that change in relationship to one another; write an equation to express one quantity, thought of as the dependent variable, in terms of the other quantity, thought of as the independent variable. Analyze the relationship between the dependent and independent variables using graphs and tables, and relate these to the equation

UNIT OBJECTIVES (SWBATS):

- Use equations and relationships to solve real world problems
- Write equations and determine whether a number is a solution of an equation
- Solve equations that contain addition or subtraction
- Solve equations that contain multiplication or division
- Use inequalities to represent real world constraints or conditions
- Locate and name points in the coordinate plane
- Identify independent and dependent quantities from tables and graphs
- Use an equation to show a relationship between two variables
- Use verbal descriptions, tables, and graphs to represent algebraic relationships

INSTRUCTIONAL STRATEGIES/ACTIVITIES:

- Note taking
- Homework and practice
- Cooperative learning
- Peer interaction
- Modeling
- Active participation

May vary depending on instructor/course.

ANCHOR VOCABULARY:

- **Term**
- **Variable**
- **Equation**
- **Properties of operations**

- **Solution**
- **Axes**
- **Coordinate Plane**
- **Coordinates**
- **Dependent variable**
- **Independent variable**
- **Ordered pair**
- **Origin**
- **Quadrants**
- **X-axis**
- **Y-axis**

ASSESSMENTS (Diagnostic/Benchmark/Formative/Summative):

Diagnostic

- Chapter pre-tests and assignments
- CDS

Formative

- Teacher observation
- Unit quizzes
- Unit tests
- Unit projects/investigations
- Study Island

Summative

- Final Exam
- PSSAs

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| Wallenpaupack Area School District Curriculum | |
|--|----------------------------|
| COURSE: Math 6 | GRADE: 6 |
| UNIT 6: Relationships in Geometry Area and Polygons, Distance and Area in the Coordinate Plane, Surface Area and Volume of Solids | TIMEFRAME: On-going |

PA COMMON CORE/NATIONAL STANDARDS:

CC.6.G.1 Find the area of right triangles, other triangles, special quadrilaterals, and polygons by composing into rectangles or decomposing into triangles and other shapes; apply these techniques in the context of solving real-world and mathematical problems.

CC.6.G.2 Find the volume of a right rectangular prism with fractional edge lengths by packing it with unit cubes of the appropriate unit fraction edge lengths, and show that the volume is the same as would be found by multiplying the edge lengths of the prism. Apply the formulas $V = l w h$ and $V = b h$ to find volumes of right rectangular prisms with fractional edge lengths in the context of solving real-world and mathematical problems.

CC.6.G.3 Draw polygons in the coordinate plane given coordinates for the vertices; use coordinates to find the length of a side joining points with the same first coordinate or the same second coordinate. Apply these techniques in the context of solving real-world and mathematical problems.

CC.6.G.4 Represent three-dimensional figures using nets made up of rectangles and triangles, and use the nets to find the surface area of these figures. Apply these techniques in the context of solving real-world and mathematical problems.

CC.6.EE.7 Solve real-world and mathematical problems by writing and solving equations of the form $x + p = q$ and $px = q$ for cases in which p , q and x are all nonnegative rational numbers.

CC.6.NS.6 Understand a rational number as a point on the number line. Extend number line diagrams and coordinate axes familiar from previous grades to represent points on the line and in the plane with negative number coordinates.

UNIT OBJECTIVES (SWBATS):

- Find the areas of parallelograms, rhombuses, and trapezoids
- Find the area of a triangle
- Find the area of an irregular polygon using area formulas
- Use equations to solve problems about area of rectangles, parallelograms, trapezoids, and triangles
- Find the area of a polygon by breaking it into simpler shapes
- Use absolute value to find the distance between two points with the same x or y coordinates
- Solve problems by drawing polygons in the coordinate plane
- Use nets to find surface area
- Find volume of a rectangular prism
- Write equations to solve problems involving volume of rectangular prisms

INSTRUCTIONAL STRATEGIES/ACTIVITIES:

- Note taking
- Homework and practice
- Cooperative learning
- Peer interaction
- Modeling
- Active participation

May vary depending on instructor/course.

ANCHOR VOCABULARY:

- Polygon
- Regular
- Parallelogram
- Rhombus
- Trapezoid
- Reflection
- Vertex/ vertices
- Rectangular prism
- Pyramid
- Net
- Surface area

ASSESSMENTS (Diagnostic/Benchmark/Formative/Summative):**Diagnostic**

- Chapter pre-tests and assignments
- CDTs

Formative

- Teacher observation
- Unit quizzes
- Unit tests
- Unit projects/investigations
- Study Island

Summative

- Final Exam
- PSSAs

EVIDENCE OF MASTERY/Cut Score (PSSA/Keystone Exam)

- PSSA Proficient (1003-1101) Advanced (1110 and up)
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DIFFERENTIATED INSTRUCTION (Remediation/Extension) (Process, Product or Content)

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|---|----------------------------|
| COURSE: Math 6 | GRADE: 6 |
| UNIT 7: Measurement and Data Displaying, Analyzing, and Summarizing Data | TIMEFRAME: On-going |

PA COMMON CORE/NATIONAL STANDARDS:

CC.6.SP.1 Recognize a statistical question as one that anticipates variability in the data related to the question and accounts for it in the answers.

CC.6.SP.2 Understand that a set of data collected to answer a statistical question has a distribution which can be described by its center, spread, and overall shape.

CC.6.SP.3 Recognize that a measure of center for a numerical data set summarizes all of its values with a single number, while a measure of variation describes how its values vary with a single number.

CC.6.SP.4 Display numerical data in plots on a number line, including dot plots, histograms, and box plots.

CC.6.SP.5 Summarize numerical data sets in relation to their context, such as by: Giving quantitative measures of center (median and/or mean) and variability (interquartile range and/or mean absolute deviation), as well as describing any overall pattern and any striking deviations from the overall pattern with reference to the context in which the data were gathered.

UNIT OBJECTIVES (SWBATS):

- Solve real world problems by displaying, analyzing, and summarizing data
- Use measures of center to describe a data set
- Determine and use the mean absolute deviation of a set of data points
- Use a box plot and measures of spread to describe a data set
- Summarize and display numeric data
- Display data in a histogram

INSTRUCTIONAL STRATEGIES/ACTIVITIES:

- Note taking
- Homework and practice
- Cooperative learning
- Peer interaction
- Modeling
- Active participation

May vary depending on instructor/course.

ANCHOR VOCABULARY:

- **Box plot**
- **Dot plot**
- **Histogram**
- **Interquartile range**

- Quartile
- Mean
- Median
- Mode
- Mean Absolute Deviation
- Measure of center

ASSESSMENTS (Diagnostic/Benchmark/Formative/Summative):

Diagnostic

- Chapter pre-tests and assignments
- CDTs

Formative

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