DELAWARE VALLEY SCHOOL DISTRICT

PLANNED INSTRUCTION

A PLANNED COURSE FOR:

6th Grade Honors Math

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Grade Level: 6

Date of Board Approval: 2025

DELAWARE VALLEY SCHOOL DISTRICT

Marking Period Course Grade Weighting

Marking Period	Quiz	Test	Homework	Graded Work	Total Percent
MP 1	**35%**	**45%**	**10%**	**10%**	**100%**
MP 2	**35%**	**45%**	**10%**	**10%**	**100%**
MP 3	**35%**	**45%**	**10%**	**10%**	**100%**
MP 4	**35%**	**45%**	**10%**	**10%**	**100%**

Curriculum Map

Overview:
This rigorous honors course of study will cover sixth-grade math standards, assessment anchors, and eligible content set forth by the Commonwealth of Pennsylvania. Course content will challenge students to apply and extend previous understandings of multiplication and division to the division of fractions, compute with multi-digit numbers, and find common factors and multiples. Students will apply and extend their previous understandings of whole numbers to rational numbers. Ratio concepts, reasoning and problem solving will be explored. Students will apply and extend their previous understandings of arithmetic to numerical and algebraic expressions and interpret and solve one-variable equations and inequalities. Students will represent and analyze quantitative relationships between dependent and independent variables, and solve real-world mathematical applications involving area, surface area, and volume. An understanding of statistical variability by summarizing and describing distributions will also be introduced. Material will be covered more deeply and at a faster pace than in the Math 6 course.

Time/Credit for the Course: One full year, meeting daily for ~92 minutes (2 periods)

Goals:

1. **Marking Period One: Overview based on 45 days**
   Understanding of:
   Unit 1: Ratios (12 days), Proportional Relationships (16 days), and the Number System (17 days)
   - Factors and Multiples
   - Ratio and Rates
   - Proportional Relationships
   - Fractions, Decimals, Percents
   - Operations with Decimals
   - Number System

2. **Marking Period Two: Overview based on 45 days**
   Understanding of:
   Unit 2: The Number System (17 days), Expressions (16 days), and Equations (12 days)
   - Number System
   - Terminating and Repeating Decimals
   - Integers and Absolute Value
   - Multiplying and Dividing Fractions and Mixed Numbers
   - Coordinate Plane and Graphing
   - Writing and Simplifying Algebraic Expressions
   - Properties of Multiplication and Addition and the Distributive Property
   - Solving One-Step Equations

3. **Marking Period Three: Overview based on 45 days**
   Understanding of:
   Unit 3: Functions (9 days), Inequalities (4 days), Two-Dimensional Figures (11 days), Three-Dimensional Figures (5 days), and Statistical Measures (16 days)
   - Function Tables, Function Rules, and Equations
   - Write, Solve, and Graph One-Step Inequalities
   - Area of Two-Dimensional Figures
   - Surface Area of Prisms and Nets
   - Volume of Prisms
   - Measures of Center
   - Measures of Variation
   - Mean Absolute Deviation

4. **Marking Period Four: Overview based on 45 days**
   Understanding of:
   Unit 4: Statistical Displays (8 days), PSSA Review (15 days), Operations with Integers (10 days), and Solving Equations with Integers (12 days)
   - Line Plots, Dot Plots, Histograms, Line Graphs, and Box-Plots
   - Shape of Data Distributions
   - Select an Appropriate Display
   - PSSA Review (Non-Calculator Questions, Open-Ended Questions, Item Samplers)
   - Operations with Integers
   - Solving Equations

Big Ideas:
Big Idea #1: Ratio concepts and ratio reasoning can be used to solve rate problems.
Big Idea #2: Equivalent forms of fractions, decimals, and percents can be written and used to solve problems.
Big Idea #3: The standard algorithm used to multiply and divide whole numbers can be applied to operations with decimals.
Big Idea #4: Integers, terminating decimals, and repeating decimals are rational numbers.
Big Idea #5: Numerical and algebraic expressions can be used to represent and solve real-world problems.
Big Idea #6: Functions can be represented using words, equations, tables, and graphs.
Big Idea #7: The area, perimeter, surface area and volume can be found in two-dimensional and three-dimensional shapes respectively through different methods.
Big Idea #8: Statistical data has a distribution that can be described by its center or by its spread and can be represented in a variety of ways.
Big Idea #9: Equations can be solved using the inverse operations and steps to isolate the variable.

Textbook and Supplementary Resources:

Name of Textbook: Glencoe Math Course 1 Volume 1 and 2

Textbook ISBN #: 978-0-07-669100-5; 978-0-07-670930-4

Textbook Publisher & Year of Publication: McGraw Hill Education, 2016

Supplemental Resources: Study Island; IXL, PDE PSSA Samplers

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Curriculum Plan

Unit 1: Ratios, Proportional Relationships, Number System **Time Range:** Approx. 45 days

Standard(s): PA Academic Standards for Mathematics
2.1.6.D.1 Understand ratio concepts and use ratio reasoning to solve problems.
2.1.6.E.2 Identify and choose appropriate processes to compute fluently with multi-digit numbers.
2.1.6.E.3 Develop and/or apply number theory concepts to find common factors and multiples.
2.1.6.E.4 Apply and extend previous understandings of numbers to the system of rational numbers.
2.1.7.D.1 Analyze proportional relationships and use them to model and solve real-world and mathematical problems.

Anchor(s):
M06.A-N.2 Compute with multi-digit numbers and find common factors and multiples
M06.A-R.1 Understand ratio concepts and use ratio reasoning to solve problems.

Eligible Content:
M06.A-N.2.1.1 Solve problems involving operations (+, –, ×, and ÷) with whole numbers, decimals (through thousandths), straight computation, or word problems.
M06.A-N.2.2.1 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.
M06.A-R.1.1.1 Use ratio language and notation (such as 3 to 4, 3:4, 3/4) to describe a ratio relationship between two quantities. Example 1: "The ratio of girls to boys in a math class is 2:3 because for every 2 girls there are 3 boys." Example 2: "For every five votes candidate A received, candidate B received four votes."
M06.A-R.1.1.2 Find the unit rate a/b associated with a ratio a:b (with $b \neq 0$) and use rate language in the context of a ratio relationship. Example 1: "This recipe has a ratio of 3 cups of flour to 4 cups of sugar, so there is 3/4 cup of flour for each cup of sugar." Example 2: "We paid $75 for 15 hamburgers, which is a rate of $5 per hamburger."
M06.A-R.1.1.3 Construct tables of equivalent ratios relating quantities with whole-number measurements, find missing values in the tables, and/or plot the pairs of values on the coordinate plane. Use tables to compare ratios.
M06.A-R.1.1.4 Solve unit rate problems including those involving unit pricing and constant speed. Example: If it took 7 hours to mow 4 lawns, then at that rate, how many lawns could be mowed in 35 hours? At what rate were lawns being mowed?
M06.A-R.1.1.5 Find a percent of a quantity as a rate per 100 (e.g., 30% of a quantity means 30/100 times the quantity); solve problems involving finding the whole, given a part and the percentage.

Objectives: (Students will be able to)

1. Calculate the GCF and LCM (DOK 3).
2. Create models to represent and solve problems involving ratios and unit rates (DOK 4).
3. Give examples of ratios as fractions and use ratios to compare quantities (DOK 3).
4. Give examples of rates and write rates as unit rates and write rates as unit rates (DOK 3).
5. Use tables and graphs to represent and solve problems involving ratios and rates (DOK 4).
6. Solve problems by using the four step plan (DOK 4).
7. Generate equivalent ratios and rates by using unit rates and equivalent fractions (DOK 3).
8. Analyze problems arising in the workplace and apply mathematics to solve such problems (DOK 4)
9. Convert fluently between the equivalent forms of decimals, fractions, mixed numbers, and percents (DOK 3).
10. Create models to represent percents and percents of a number (DOK 4).
11. Write equivalent forms of fractions, decimals, and percents that are greater than 100% and less than 1% (DOK 3).
12. Solve problems by solving a simpler problem (DOK 4)
13. Compare and order fractions, decimals, and percents (DOK 3).
14. Estimate and find the percent of a number using real-world application examples (DOK 4).
15. Solve percent problems to find the whole (DOK 3).
16. Add and subtract decimals (DOK 3).
17. Use real-world situations to explain the process of adding and subtracting decimals (DOK 4).
18. Estimate and find the products and quotients of decimal and whole number factors, and judge the reasonableness of the results (DOK 3).
19. Multiply by powers of 10 (DOK 3).
20. Solve problems by looking for a pattern (DOK 4).
21. Find quotients of problems involving multi-digit numbers (DOK 3).
22. Estimate and find products with fractions, whole numbers, and mixed numbers factors (DOK 4).
23. Solve problems by drawing a diagram (DOK 4).
24. Calculate the quotient of problems with fractional, whole number, and mixed number factors and model such problems (DOK 4).

Core Activities and Corresponding Instructional Methods:

- Expose students' prior knowledge of comparing decimals, rounding decimals, dividing whole numbers, operations with decimals, factors and multiples, ratios and ratio language, understanding unit rates, ratios in tables and graphs and unit rate problems through warm-up questions and other introductory activities.

- Engage students through the use of real-world examples related to each topic in the unit (i.e., the Real-World Links in the McGraw Hill textbook).
- Provide opportunities for remediation and re-teaching through spiral review.
- Use supplemental resources (i.e. IXL, Kuta Software, Study Island) for differentiation, remediation and extension.
- Students will take notes to learn and review core lesson topics through direct instruction by the teacher (topics for unit 1 include ratios, rates, fractions, decimals, percents, and computing with multi-digit numbers).
- Engage students in collaborative learning to explain reasoning, identify errors, and strengthen their understanding.
- Use independent practice problems and/or higher order thinking questions (worksheet based, from the McGraw Hill workbook, or other similar resource) to gauge students' individual comprehension of the material.
- Use tables, charts, and graphic organizers to break apart and discuss the meaning of each math vocabulary word in acronyms (i.e. LCM, GCF, LCD).
- Engage students in solving percent problems through collaborative discussion on where they see these real-world examples of percentages (i.e. in sports, music, school).
- Encourage students to estimate percent problem answers as a way to check for reasonableness and foster critical thinking.
- Use teacher created exit tickets, short quizzes, or other similar resource to re-teach and remediate (i.e. McGraw Hill eAssessment)..
- Students will write definitions for vocabulary words and they will be thoroughly discussed and implemented in each lesson: Compatible numbers, Coordinate plane, Equivalent ratios, Graph, Greatest common factor (GCF), Least common multiple (LCM), Ordered pair, Origin, Rate, Ratio, Ratio table, Scaling, Unit price, Unit rate, x-axis, x-coordinate, y-axis, y-coordinate, Least common denominator (LCD), Percent, Percent proportion, Proportion, Rational number.
- Practice PSSA Constructed Response Questions related to each topic.

Assessments:

Diagnostic:

- IXL
- CDT, Firefly, or other district approved benchmark

Formative:

- Teacher observations and questions
- "Got it?" questions embedded in the textbook notes
- Define vocabulary words
- Daily lesson quiz
- Homework - give the corresponding homework worksheet for each lesson

Summative:

- Unit 1 Chapter tests
- Open-ended questions (CRQ) for Unit 1
- Unit 1 common assessment

Extensions and Correctives:

- IXL
- Extra practice problems from the textbook if teacher chooses to use
- Extra practice worksheets
- Honors level Enrichment worksheets
- Honors level Skills practice worksheets

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Unit 2: The Number System, Expressions, and Equations **Time Range:** Approximately 45 days

Standard(s): PA Academic Standards for Mathematics
2.1.6.E.1 Apply and extend the previous understandings of multiplication and division to divide fractions by fractions.
2.1.6.E.2 Identify and choose appropriate processes to compute fluently with multi-digit numbers.
2.1.6.E.4 Apply and extend previous understandings of numbers to the system of rational numbers.
2.2.6.B.1 Apply and extend previous understandings of arithmetic to algebraic expressions.
2.2.6.B.2 Understand the process of solving a one-variable equation or inequality and apply it to real-world and mathematical problems.
2.1.7.E.1 Apply and extend previous understandings of operations with fractions to operations with rational numbers.

Anchor(s):
M06.A-N.1 Apply and extend previous understandings of multiplication and division to divide fractions by fractions.
M06.A-N.2 Compute with multi-digit numbers and find common factors and multiples.
M06.A-N.3 Apply and extend previous understandings of numbers to the system of rational numbers.
M06.B-E.1 Apply and extend previous understandings of arithmetic to numerical and algebraic expressions.
M06.B-E.2 Interpret and solve one-variable equations and inequalities.

Eligible Content:
M06.A-N.1.1.1 Interpret and compute quotients of fractions (including mixed numbers), and solve word problems involving division of fractions by fractions.
M06.A-N.2.1.1 Solve problems involving operations with whole numbers, decimals (through thousandths), straight computation or word problems).
M06.A-N.2.2.2 Apply the distributive property to express a sum of two whole numbers, 1 through 100, with a common factor as a multiple of a sum of two whole numbers with no common factor.
M06.A-N.3.1.1 Represent quantities in real-world contexts using positive and negative numbers, explaining the meaning of 0 in each situation (e.g., temperature above/below zero, elevation above/below sea level, credits/debits, positive/negative electric charge).
M06.A-N.3.1.2 Determine the opposite of a number and recognize that the opposite of the opposite of a number is the number itself.
M06.A-N.3.1.3 Locate and plot integers and other rational numbers on a horizontal or vertical number line; locate and plot pairs of integers and other rational numbers on a coordinate plane.

M06.A-N.3.2.1 Write, interpret, and explain statements of order for rational numbers in real-world contexts.
M06.A-N.3.2.2 Interpret the absolute value of a rational number as its distance from 0 on a number line and as a magnitude for a positive or negative quantity in a real-world situation.
M06.A-N.3.2.3 Solve real-world and mathematical problems by plotting points in all four quadrants of the coordinate plane. Include use of coordinates and absolute value to find distances between points with the same first coordinate or the same second coordinate.
M06.B-E.1.1.1 Write and evaluate numerical expressions involving whole-number exponents.
M06.B-E.1.1.2 Write algebraic expressions from verbal descriptions.
M06.B-E.1.1.3 Identify parts of an expression using mathematical terms (e.g., sum, term, product, factor, quotient, coefficient, quantity).
M06.B-E.1.1.4 Evaluate expressions at specific values of their variables, including expressions that arise from formulas used in real-world problems.
M06.B-E.1.1.5 Apply the properties of operations to generate equivalent expressions.
M06.B-E.2.1.1 Use substitution to determine whether a given number in a specified set makes an equation or inequality true.
M06.B-E.2.1.2 Write algebraic expressions to represent real-world or mathematical problems.
M06.B-E.2.1.3 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 non-negative rational numbers.

Objectives: (Students will be able to)

1. Estimate products of fractions (DOK 3).
2. Round to compatible numbers (DOK 3).
3. Multiply fractions, whole numbers and mixed numbers (DOK 3).
4. Divide fractions and mixed numbers (DOK 3).
5. Students will graph integers on a number line (DOK 3).
6. Students will classify integers as positive or negative (DOK 4).
7. Use a number line to explore the absolute value of an integer (DOK 3).
8. Find the absolute value of an integer (DOK 3).
9. Compare and order integers (DOK 3).
10. Solve problems by using the work backward strategy (DOK 4)
11. Use number lines with rational numbers (DOK 3)
12. Convert positive and negative fractions to decimals (DOK 3)
13. Compare and order rational numbers (DOK 3)
14. Classify terminating and repeating decimals (DOK 3).
15. Graph ordered pairs on the coordinate plane (DOK 4).
16. Find the distance between two points on the coordinate plane (DOK 4).
17. Reflect points on the coordinate plane (DOK 4).
18. Explore and identify parts of an expression (DOK 3).
19. Represent numbers using exponents (DOK 3).

20. Find the value of expressions using order of operations (DOK 3).
21. Evaluate algebraic expressions (DOK 4).
22. Write verbal phrases as simple algebraic expressions (DOK 3).
23. Use properties to simplify and generate equivalent expressions (DOK 3).
24. Use the distributive property to compute multiplication (DOK 4).
25. Use the distributive property (DOK 3).
26. Use properties to simplify expressions (DOK 4).
27. Solve equations using mental math and the guess, check and revise strategy (DOK 4).
28. Solve and write addition and subtraction equations (DOK 4).
29. Solve and write multiplication and division equations (DOK 4).

Core Activities and Corresponding Instructional Methods:

- Expose students' prior knowledge of multiplication and division of whole numbers and decimals through warm-up questions and other introductory activities, so it can be connected to multiplication and division of fractions.
- Engage students through the use of real-world examples related to each topic in the unit (i.e., the Real-World Links in the McGraw Hill textbook).
- Provide opportunities for remediation and re-teaching through spiral review.
- Use supplemental resources (i.e. IXL, Kuta Software, Study Island) for differentiation, remediation, and extension.
- Students will take notes to learn and review core lesson topics through direct instruction by the teacher (topics for unit 2 include multiply/divide fractions, integers, the coordinate plane, expressions, and equations).
- Engage students in collaborative learning to explain reasoning, identify errors, and strengthen their understanding.
- Use independent practice problems and/or higher order thinking questions (worksheet based, from the McGraw Hill workbook, or other similar resource) to gauge students' individual comprehension of the material.
- Use models to show multiplication and division of fractions.
- Use number lines to show where negative integers are located relative to whole numbers..
- Engage students in solving multiplication and division of fractions problems through collaborative discussion on where they see these real-world examples of multiplying and dividing fractions (i.e. in cooking, construction, school).
- Practice plotting points on a coordinate plane through connecting the dot activities which creates pictures in the end.
- Use a cube and a 2-dimensional 100's block to show the difference between the vocabulary terms squared and cubed for the exponents associated with each term.
- Use a chart to explain the everyday meaning versus the mathematical meaning of the word "variable."
- Use a comparison chart to describe the difference between an expression and an equation.

- Use a triple-beam balance to show that what we do to one side of an equation, we have to do to the other side.
- Use teacher-created exit tickets, short quizzes, or another similar resource to re-teach and remediate (i.e. McGraw Hill eAssessment).
- Students will write definitions for vocabulary words and they will be thoroughly discussed and implemented in each lesson: Commutative Property, Dimensional Analysis, Reciprocals, Unit Ratio, Absolute Value, Bar Notation, Integer, Negative Integer, Opposites, Positive Integer, Quadrants, Rational Number, Repeating Decimal, Terminating Decimal, Algebra, Algebraic Expression, Associative Properties, Base, Coefficient, Commutative Properties, Constant, Defining the Variable, Distributive Property, Equivalent Expressions, Evaluate, Exponent, Factor the Expression, Identity Properties, Like Terms, Numerical Expression, Order of Operations, Perfect Square, Powers, Properties, Term, Variable, Addition Property of Equality, Division Property of Equality, Equals Sign, Equation, Inverse Operations, Multiplication Property of Equality, Solution, Solve and Subtraction Property of Equality.
- Practice PSSA Constructed Response Questions related to each topic.

Assessments:

Diagnostic:

- IXL
- CDT, Firefly, or other district approved benchmark

Formative:

- Teacher observations and questions
- "Got it?" questions embedded in the textbook notes
- Define vocabulary words
- Daily lesson quiz
- Homework - give the corresponding homework worksheet for each lesson

Summative:

- Unit 2 Chapter tests
- Open-ended questions (CRQ) for Unit 2
- Unit 2 common assessment

Extensions and Correctives:

- IXL
- Extra practice problems from the textbook if teacher chooses to use
- Extra practice worksheets
- Honors level Enrichment worksheets
- Honors level Skills practice worksheets

Unit 3: Functions, Inequalities, Two-Dimensional Figures, Three-Dimensional Figures, and Statistical Measures **Time Range:** Approximately 45 days

Standard(s): PA Academic Standards for Mathematics
2.2.6.B.3 Represent and analyze quantitative relationships between dependent and independent variables.
2.3.6.A.1 Apply appropriate tools to solve real-world and mathematical problems involving area, surface area, and volume.
2.4.6.B.1 Demonstrate an understanding of statistical variability by displaying, analyzing, and summarizing distributions.
2.3.7.A.2 Visualize and represent geometric figures and describe the relationships between them.
2.2.7.B.3 Model and solve real-world and mathematical problems by using and connecting numerical, algebraic, and/or graphical representations.
2.4.7.B.1 Draw inferences about populations based on random sampling concepts.

Anchor(s):
M06.B-E.2 Interpret and solve one-variable equations and inequalities.
M06.B-E.3 Represent and analyze quantitative relationships between dependent and independent variables.
M06.C-G.1 Solve real-world and mathematical problems involving area, surface area, and volume.
M06.D-S.1 Demonstrate understanding of statistical variability by summarizing and describing distributions.

Eligible Content:
M06.B-E.2.1.4 Write an inequality of the form $x > c$ or $x < c$ to represent a constraint or condition in a real-world or mathematical problem and/or represent solutions of such inequalities on number lines.
M06.B-E.3.1.1 Write an equation to express the relationship between the dependent and independent variables. Example: In a problem involving motion at a constant speed of 65 units, write the equation $d = 65t$ to represent the relationship between distance and time.
M06.B-E.3.1.2 Analyze the relationship between the dependent and independent variables using graphs and tables and/or relate these to an equation.
M06.C-G.1.1.1 Determine the area of triangles and special quadrilaterals (i.e., square, rectangle, parallelogram, rhombus, and trapezoid). Formulas will be provided.
M06.C-G.1.1.2 Determine the area of irregular or compound polygons. Example: Find the area of a room in the shape of an irregular polygon by composing and/or decomposing.
M06.C-G.1.1.3 Determine the volume of right rectangular prisms with fractional edge lengths. Formulas will be provided.

M06.C-G.1.1.4 Given coordinates for the vertices of a polygon in the plane, use the coordinates to find side lengths and area of the polygon (limited to triangles and special quadrilaterals). Formulas will be provided.
M06.C-G.1.1.5 Represent three-dimensional figures using nets made of rectangles and triangles.
M06.C-G.1.1.6 Determine the surface area of triangular and rectangular prisms (including cubes). Formulas will be provided.
M06.D-S.1.1.2 Determine quantitative measures of center (e.g., median, mean, mode) and variability (e.g., range, interquartile range, mean absolute deviation).
M06.D-S.1.1.3 Describe any overall pattern and any deviations from the overall pattern with reference to the context in which the data were gathered.
M06.D-S.1.1.4 Relate the choice of measures of center and variability to the shape of the data distribution and the context in which the data were gathered.

Objectives: (Students will be able to)

1. Complete function tables for given function rules (DOK 3).
2. Extend and describe sequences using algebraic expressions (DOK 4).
3. Construct and analyze different verbal, tabular, graphical, and algebraic representations of functions (DOK 4).
4. Solve problems by making a table (DOK 3).
5. Model and solve inequalities using bar diagrams, mental math, and the guess, check, and revise strategy (DOK 4).
6. Write, solve, and graph inequalities (DOK 3).
7. Model and solve one-step inequalities (DOK 3).
8. Analyze problems arising in the workplace and apply mathematics to solve such problems (DOK 4).
9. Model the area formula for parallelograms and calculate the area (DOK 4).
10. Model the area formula for triangles (DOK 4).
11. Find the areas and missing dimensions of triangles (DOK 3).
12. Model the area formula for trapezoids and calculate the area (DOK 4).
13. Solve problems by drawing a diagram (DOK 3).
14. Determine how changes in dimensions affect perimeter and area (DOK 4).
15. Draw polygons in the coordinate plane and use coordinates to find length (DOK 3).
16. Estimate the area of an irregular figure (DOK 3).
17. Find the areas of composite figures (DOK 3).
18. Use models to find the volume of rectangular and triangular prisms (DOK 4).
19. Find the surface area of rectangular and triangular prisms using models and nets (DOK 4).
20. Identify a statistical question (DOK 3).
21. Calculate the mean (DOK 3).
22. Apply calculating the mean to real-world situations (DOK 4).
23. Find the median and mode of a set of data (DOK 3).

24. Use logical reasoning to solve problems (DOK 4).
25. Find and interpret the measures of variation (DOK 3).
26. Find the mean absolute deviation for a data set (DOK 3).
27. Analyze a data set and choose an appropriate measure of central tendency (DOK 4).

Core Activities and Corresponding Instructional Methods:

- Expose students' prior knowledge and review topics such as computing with whole numbers and decimals, distance, writing and evaluating numerical expressions, writing algebraic expressions from verbal descriptions, evaluating algebraic expressions, working with equivalent expressions, solving equations and inequalities, and writing algebraic expressions from situations.
- Engage students through the use of real-world examples related to each topic in the unit (i.e., the Real-World Links in the McGraw Hill textbook).
- Provide opportunities for remediation and re-teaching through spiral review.
- Use supplemental resources (i.e. IXL, Kuta Software, Study Island) for differentiation, remediation and extension.
- Students will take notes to learn and review core lesson topics through direct instruction by the teacher (topics for unit 3 include functions, inequalities, area, volume, surface area, and statistical measures).
- Engage students in collaborative learning to explain reasoning, identify errors, and strengthen their understanding.
- Use independent practice problems and/or higher order thinking questions (worksheet based, from the McGraw Hill workbook, or other similar resource) to gauge students' individual comprehension of the material.
- Use tables with multiple columns to organize inputs and outputs for function rules.
- Engage students in collaborative learning discussions about the four inequality symbols and encourage them to discuss different real-world examples of inequalities (i.e. speed limit signs, grade percentages, etc.).
- Relate solving one-step inequalities to the process of solving one-step equations and encourage students to write down the same steps to isolate the variable.
- Use graphic organizers to classify and describe shapes (i.e. comparing and contrasting polygon, parallelogram, and rhombus).
- Engage students in a discussion on how the formula for finding the area of a triangle comes from the formula for finding the area of a parallelogram.
- Use coordinate plane pictures to help reinforce plotting points on a coordinate plane with both one-quadrant and four-quadrant coordinate planes.
- Calculate the area of composite figures by decomposing and adding the shapes together or completing the figure and subtracting negative space.
- Use teacher created exit tickets, short quizzes, or other similar resource to re-teach and remediate (i.e. McGraw Hill eAssessment).

- Calculate the surface area of three-dimensional figures using the formulas and also by finding the sum of the areas of all the sides.
- Engage students in a discussion about how to solve for "h" given the formula for finding area of trapezoids.
- Engage students in a survey activity calculating measures of center for various responses to questions they ask their classmates.
- Students will write definitions for vocabulary words and they will be thoroughly discussed and implemented in each lesson: Arithmetic Sequence, Dependent Variable, Function, Function Rule, Function Table, Geometric Sequence, Independent Variable, Inequality, Linear Function, Sequence, Term, Base, Composite Figure, Congruent, Formula, Height, Parallelogram, Polygon, Rhombus, Cubic Units, Lateral Face, Pyramid, Rectangular Prism, Slant Height, Surface Area, Three-Dimensional Figure, Triangular Prism, Vertex, Volume, Average, First Quartile, Interquartile Range, Mean, Mean Absolute Deviation, Measures of Center, Measures of Variation, Median, Mode, Outliers, Quartiles, Range, Third Quartile
- Practice PSSA Constructed Response Questions related to each topic.
- Engage students in a cumulative project individually or in pairs on geometric concepts involving calculating the areas of two-dimensional figures (composite figures may be used).

Assessments:

Diagnostic:

- IXL
- CDT, Firefly, or other district approved benchmark

Formative:

- Teacher observations and questions
- "Got it?" questions embedded in the textbook notes
- Define vocabulary words
- Daily lesson quiz
- Homework - give the corresponding homework worksheet for each lesson

Summative:

- Unit 3 Chapter tests
- Open-ended questions (CRQ) for Unit 3

Extensions and Correctives:

- IXL
- Extra practice problems from the textbook if teacher chooses to use
- Extra practice worksheets
- Honors level Enrichment worksheets
- Honors level Skills practice worksheets

DELAWARE VALLEY SCHOOL DISTRICT

Unit 4: Statistical Displays, PSSA Review, Operations with Integers, and Solving Equations

Time Range: Approximately 45 days

Standard(s): PA Academic Standards for Mathematics

2.4.6.B.1 Demonstrate an understanding of statistical variability by displaying, analyzing, and summarizing distributions.

2.1.7.D.1 Analyze proportional relationships and use them to model and solve real-world and mathematical problems.

2.1.7.E.1 Apply and extend previous understandings of operations with fractions to operations with rational numbers.

2.2.7.B.1 Apply properties of operations to generate equivalent expressions.

2.2.7.B.3 Model and solve real-world and mathematical problems by using and connecting numerical, algebraic, and/or graphical representations.

Anchor(s):

M06.D-S.1 Demonstrate understanding of statistical variability by summarizing and describing distributions.

M07.A-N.1 Apply and extend previous understandings of operations to add, subtract, multiply, and divide rational numbers.

M07.B-E.2 Solve real-world and mathematical problems using numerical and algebraic expressions, equations, and inequalities.

Eligible Content:

M06.D-S.1.1.1 Display numerical data in plots on a number line, including line plots, histograms, and box-and-whisker plots.

M07.A-N.1.1.1 Apply properties of operations to add and subtract rational numbers, including real-world contexts.

M07.A-N.1.1.3 Apply properties of operations to multiply and divide rational numbers, including real-world contexts; demonstrate that the decimal form of a rational number terminates or eventually repeats.

M07.B-E.2.1.1 Apply properties of operations to calculate with numbers in any form; convert between forms as appropriate.

Objectives: (Students will be able to)

1. Analyze a data set and choose an appropriate measure of central tendency (DOK 4).
2. Construct, analyze, and interpret line plots, line graphs, histograms, and box-plots (DOK 4).
3. Solve problems by using a graph (DOK 3).
4. Analyze and describe a data distribution by its center, spread, and overall shape (DOK 4).
5. Collect and display data (DOK 4).
6. Analyze a data set and select an appropriate display for a set of data (DOK 4).

7. Add, subtract, multiply, and divide integers to simplify expressions (DOK 3).
8. Solve two-step and some multi-step equations, including the distributive property and the use of integers (DOK 3).

Core Activities and Corresponding Instructional Methods:

- Expose students' prior knowledge and review topics such as solving equations, inequalities, independent and dependent variables, area, volume with fractional edge lengths, coordinate geometry, display numerical data, measures of center and variability.
- Engage students through the use of real-world examples related to each topic in the unit (i.e., the Real-World Links in the McGraw Hill textbook).
- Provide opportunities for remediation and re-teaching through spiral review.
- Use supplemental resources (i.e. IXL, Kuta Software, Study Island) for differentiation, remediation and extension.
- Students will take notes to learn and review core lesson topics through direct instruction by the teacher (topics for unit 4 include statistical measures, statistical displays, operations with integers, and solving two-step equations).
- Engage students in collaborative learning to explain reasoning, identify errors, and strengthen their understanding.
- Use independent practice problems and/or higher order thinking questions (worksheet based, from the McGraw Hill workbook, or other similar resource) to gauge students' individual comprehension of the material.
- Utilize the PSSA item samplers and open-ended questions provided by PDE to engage students in a PSSA review.
- Provide students opportunities to practice geometric problems related to the PSSA formula/reference sheet in a PSSA review.
- Complete a "how to use" calculator review to re-teach functions of the calculator practiced throughout the year (i.e. abc button, fraction to decimal, exponents, percent, etc.).
- Utilize guided/scaffolded worksheets as notes for seventh grade topics (i.e. from Kuta, teacher-made, teacherspayteachers, etc.).
- Show YouTube Videos or something similar as examples/notes for operations with integers before practicing.
    - Adding Integers: https://www.youtube.com/watch?v=CfkaifC7tGY and https://www.youtube.com/watch?v=3LUTYhmltQY
    - Subtracting Integers: https://www.youtube.com/watch?v=1DKWG5CBeek and https://www.youtube.com/watch?v=_BgblvF90UE&t=69s and https://www.youtube.com/watch?v=_BgblvF90UE
    - Multiplying Integers: https://www.youtube.com/watch?v=xI1cGTQohlQ and https://www.youtube.com/watch?v=I9lDhbeKAHY

    - Dividing Integers: https://www.youtube.com/watch?v=K_tPbVPfHgk and https://www.youtube.com/watch?v=DR8LBKSdI20 and https://www.youtube.com/watch?v=K_tPbVPfHgk
- Show YouTube Videos or something similar as examples/notes for solving two-step equations before practicing.
    - Solving Two-Step Equations: https://www.youtube.com/watch?v=LDIiYKYvvdA and https://www.youtube.com/watch?v=AP5MbH88cdo and https://www.youtube.com/watch?v=0ackz7dJSYY
- Students will complete a cumulative project to demonstrate mastery of at least one concept learned (i.e. review game, poster project, etc.).
- Use teacher created exit tickets, short quizzes, or other similar resource to re-teach and remediate (i.e. McGraw Hill eAssessment).
- Students will write definitions for vocabulary words and they will be thoroughly discussed and implemented in each lesson: Box plot, Distribution, Dot plot, Frequency distribution, Gap, Histogram, Line graph, Line plot, Peak, Symmetric distribution
- Practice PSSA Constructed Response Questions related to each topic.

Assessments:

Diagnostic:

- IXL
- CDT, Firefly, or other district approved benchmark

Formative:

- Teacher observations and questions
- "Got it?" questions embedded in the textbook notes
- Define vocabulary words
- Daily lesson quiz
- Homework - give the corresponding homework worksheet for each lesson

Summative:

- Chapter test
- Open-ended question (CRQ) for Chapter 12
- Operations with integers test
- Solving equations test

Extensions and Correctives:

- IXL
- Extra practice problems from the textbook if teacher chooses to use
- Extra practice worksheets
- Honors level Enrichment worksheets
- Honors level Skills practice worksheets