DELAWARE VALLEY SCHOOL DISTRICT

PLANNED INSTRUCTION

A PLANNED COURSE FOR:

Mathematics 6

Honors

Grade Level: 6

Date of Board Approval: _____2017_____

DELAWARE VALLEY SCHOOL DISTRICT

Planned Instruction

Title of Planned Instruction: Honors Mathematics

Subject Area: Math Grade(s): 6

This rigorous course of study provides a strong foundation in middle school mathematics, with introductions to algebra and geometry. The course will cover numbers and operations with real numbers, ratios and proportional relationships to include unit rates, units of measurement and percent applications. Algebraic concepts will include writing and solving expressions, equations and inequalities, and exploring and determining quantitative relationships. Geometric concepts covered will include coordinate geometry, area of simple and compound figures, surface area and volume. Statistics and probability will cover such topics as measures of center and variability as well as graphing and interpreting data of various data displays.

Time/Credit for the Course: 2 SEMESTERS, 1 CREDIT, 180 days, meeting 2 periods per day

Curriculum Writing Committee: Kaitlin Sabo, Kayla Troast

Honors Math 6 Gradebook Policy

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%

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Curriculum Map

1. **Marking Period One**
   Ratios, Proportional Relationships, and the Number System

   Goals:
   Understanding of:
   - Ratio and Rates
   - Proportional Relationships
   - Fractions, Decimals, Percents
   - Number Theory
   - Real World Operations
   - Fractional Operations

2. **Marking Period Two**
   Operations with Rational Numbers, Expressions, and Equations

   Goals:
   Understanding of:
   - Operations with Integers
   - Coordinate Plane and Graphing
   - Writing Algebraic Expressions
   - Simplifying Algebraic Expressions
   - Solving One-step Equations

3. **Marking Period Three**
   Functions, Inequalities, Two-Dimensional, and Three-Dimensional Figures

   Goals:
   Understanding of:
   - Independent and Dependent Variables
   - Function Tables and Function Rules
   - Write, Solve, and Graph One-Step Inequalities
   - Area of 2 dimensional figures
   - Surface Area of Prisms and Nets
   - Volume of Prisms

4. **Marking Period Four**
   Statistical Measures, Statistical Displays, Multi-Step Equations, Probability, Geometric Concepts

   Goals:
   Understanding of:
   - Line Plots, Dot Plots, Histograms, Line Graphs, Box-Plots
   - Measure of Center
   - Measure of Variation
   - Multi-Step Equations
   - Independent Probability
   - Circumference and Area of Circles
   - Volume of Cylinders

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Curriculum Plan

UNIT 1:

Big Idea # 1:
- Using Equivalent Rates and Ratios in the Real World to explore proportional relationships

Big Idea #2:
- Exploring the appropriateness of using different forms of numbers in terms of fractions, decimals, and percent

Big Idea #3:
- Computing fluently with rational and irrational numbers and finding common factors and multiples

Big Idea #4:
- Applying and extending previous understandings of multiplication and division to divide and multiply fractions by fractions

Standard(s): Numbers and Operations

Standards Addressed:
http://static.pdesas.org/content/documents/PA%20Core%20Standards%20Mathematics%20PreK-12%20March%202014.pdf
PACS Math: CC.2.1.6.E, CC.2.1.6.D

Overview: Ratios, Proportional Relationships, and the Number System
Goals:
Students will be able to compute fluently with rational numbers including fractions, apply arithmetic properties, and explore different forms of equivalent numbers in relation to fractions, decimals, and percents.
Students will be able to identify proportional relationships using ratios, rates, graphs, and tables.
Students will be able to apply number theory to generate common multiples and common factors. Students will apply these skills to real world problems.

Objectives:
1. Students will be able to calculate the GCF and LCM (DOK-Level One).
2. Students will be able to create models to represent and solve problems involving ratios and unit rates (DOK-Level Four).
3. Students will be able to give examples of ratios as fractions and use ratios to compare quantities (DOK-Level One).
4. Students will be able to give examples of rates and write rates as unit rates (DOK-Level One).
5. Students will be able to use tables and graphs to represent and solve problems involving

ratios and rates (DOK-Level Three).

6. Students will be able to solve problems by using the four-step plan (DOK-Level Three).
7. Students will be able to generate equivalent ratios and rates by using unit rates and equivalent fractions (DOK-Level Two).
8. Students will be able to analyze problems arising in the workplace and apply mathematics to solve such problems (DOK-Level Four).
9. Students will be able to convert fluently between the equivalent forms of decimals, fractions, mixed numbers, and percents (DOK-Level Two).
10. Students will be able to create models to represent percents and percents of a number (DOK-Level Four).
11. Students will be able to write equivalent forms of fractions, decimals, and percents that are greater than 100% and less than 1% (DOK-Level Two).
12. Students will be able to solve problems by solving a simpler problem (DOK-Level Three).
13. Students will be able to compare and order fractions, decimals, and percents (DOK-Level Two).
14. Students will be able to estimate and find the percent of a number (DOK-Level Two).
15. Students will be able to solve percent problems to find the whole (DOK-Level Two).
16. Students will be able to add and subtract decimals (DOK-Level One).
17. Students will be able to estimate and find the products and quotients of decimal and whole number factors, and judge the reasonableness of the results (DOK-Level One).
18. Students will be able to multiply by powers of 10 (DOK-Level One).
19. Students will be able to solve problems by looking for a pattern (DOK-Level Three).
20. Students will be able to find quotients of problems involving multi-digit numbers (DOK-Level One).
21. Students will be able to estimate and find products with fractions, whole numbers, and mixed numbers factors (DOK-Level One).
22. Students will be able to convert units of measure in the customary system (DOK-Level Two).
23. Students will be able to solve problems by drawing a diagram (DOK-Level Three).
24. Students will be able to calculate the quotient of problems with fractional, whole number, and mixed number factors and model such problems (DOK-Level Four).

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Curriculum Plan

UNIT 2:

Big Idea # 1:

- Apply and extend previous understandings of numbers to the system of rational numbers.

Big Idea #2:

- Apply and extend previous understandings of arithmetic to algebraic expressions and reason about solving one step equations.

Big Idea #3:

- Reason about and solve one-step equations and inequalities.

Standard(s): Numbers and Operations; Algebraic Concepts

Standards Addressed:
http://static.pdesas.org/content/documents/PA%20Core%20Standards%20Mathematics%20PreK-12%20March%202014.pdf
PACS Math: CC.2.1.6.E, CC.2.2.6.B

Overview: Operations with Rational Numbers, Expressions, and Equations
Goals:
Students will be able to calculate fluently with integers and extend their understanding of integers to real world problems.
Students will be able to plot points on vertical and horizontal number lines and extend this knowledge to the Cartesian coordinate plane.
Students will be able to write algebraic expressions to model real world situations and simplify these expressions. Students will be able to write and solve one-step equations modeling real world situations.

Objectives:

1. Students will be able to use models to represent integers in real-world situations (DOK-Level Four).
2. Students will be able to use a number line to explore the absolute value of an integer (DOK-Level One).
3. Students will be able to find the absolute value of an integer (DOK-Level One).
4. Students will be able to compare and order integers (DOK-Level Two).
5. Students will be able to solve problems by using the work backward strategy (DOK-Level Three).
6. Students will be able to model rational numbers (DOK-Level Four).
7. Students will be able to convert positive and negative fractions to decimals (DOK-Level

One).

8. Students will be able to compare and order rational numbers (DOK-Level Two).
9. Students will be able to graph ordered pairs on the coordinate plane (DOK-Level Two).
10. Students will be able to find the distance between two points on the coordinate plane (DOK-Level Two).
11. Students will be able to analyze problems arising in the workplace and apply mathematics to solve such problems (DOK-Level Four).
12. Students will be able to explore and identify parts of an expression (DOK-Level One).
13. Students will be able to represent numbers using exponents (DOK-Level Two).
14. Students will be able to find the value of expressions using order of operations (DOK-Level Two).
15. Students will be able to evaluate algebraic expressions and use models to represent and write expressions (DOK-Level Four).
16. Students will be able to write and model verbal phrases as simple algebraic expressions (DOK-Level Four).
17. Students will be able to solve problems by acting them out (DOK-Level Three).
18. Students will be able to use properties to simplify and generate equivalent expressions (DOK-Level Two).
19. Students will be able to model and use the Distributive Property to compute multiplication problems mentally and to write algebraic expressions (DOK-Level Four).
20. Students will be able to use the Distributive Property (DOK-Level Two).
21. Students will be able to use properties to simplify expressions (DOK-Level Two).
22. Students will be able to solve equations by using mental math and the guess, check, and revise strategy (DOK-Level Three).
23. Students will be able to solve and write addition and subtraction equations using models (DOK-Level Four).
24. Students will be able to solve and write multiplication and division equations using models (DOK-Level Four).

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Curriculum Plan

UNIT 3:

Big Idea # 1:

- Apply and extend previous understandings of arithmetic to algebraic expressions and reason about and solve one-step functions and inequalities.

Big Idea #2:

- Represent and analyze quantitative relationships between independent and dependent variables.

Big Idea #3:

- Solve real world and mathematical problems involving two-dimensional area and three-dimensional volume of surface area of prisms.

Standard(s): Numbers and Operations; Algebraic Concepts; Geometry

Standards Addressed:
http://static.pdesas.org/content/documents/PA%20Core%20Standards%20Mathematics%20PreK-12%20March%202014.pdf
PACS Math: CC.2.1.6.E, CC.2.2.6.B, CC.2.3.6.A

Overview: Functions, Inequalities, Two-Dimensional, and Three-Dimensional Figures
Goals:
Students will explore the relationships between dependent and independent variables looking at tables, graphs, and equations.
Students will use function rules to create input and output tables.
Students will write, solve, and graph inequalities related to real world situations.
Students will calculate the area of polygons and compound figures.
Students will expand this knowledge to calculate the surface area of prisms and use nets.
Students will calculate volume of triangular and rectangular prisms.

Objectives:

1. Students will be able to complete function tables for given function rules (DOK-Level Two).
2. Students will be able to extend and describe sequences using algebraic expressions (DOK-Level Three).
3. Students will be able to construct and analyze different verbal, tabular, graphical, and algebraic representations of functions (DOK-Level Four).
4. Students will be able to solve problems by making a table (DOK-Level Three).
5. Students will be able to model and solve inequalities using bar diagrams, mental math and the guess, check, and revise strategy (DOK-Level Four).
6. Students will be able to write, solve, and graph inequalities (DOK-Level Two).
7. Students will be able to model and solve one-step inequalities (DOK-Level Two).

8. Students will be able to analyze problems arising in the workplace and apply mathematics to solve such problems (DOK-Level Four).
9. Students will be able to model the area formula for parallelograms and calculate the area (DOK-Level Four).
10. Students will be able to model the area formula for triangles (DOK-Level Four).
11. Students will be able to find the areas and missing dimensions of triangles (DOK-Level Two).
12. Students will be able to model the area formula of trapezoids and calculate the area (DOK-Level Four).
13. Students will be able to solve problems by drawing a diagram (DOK-Level Three).
14. Students will be able to determine how changes in dimensions affect perimeter and area (DOK-Level Four).
15. Students will be able to draw polygons in the coordinate plane and use coordinates to find length (DOK-Level Three).
16. Students will be able to estimate the area of an irregular figure (DOK-Level Three).
17. Students will be able to find the areas of composite figures (DOK-Level Three).
18. Students will be able to use models to find the volume of rectangular and triangular prisms (DOK-Level Four).
19. Students will be able to solve problems by making a model (DOK-Level Three).
20. Students will be able to find the surface area of rectangular and triangular prisms using models and nets (DOK-Level Four).
21. Students will be able to use nets to find the surface area of a square pyramid (DOK-Level Two).

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Curriculum Plan

UNIT 4:

Big Idea #1:
- Develop understanding of statistical variability.

Big Idea # 2:
- Summarize and describe distributions.

Big Idea # 3:
- Solve real world and mathematical problems involving two-dimensional area and three-dimensional volume of surface area of non-polygonal objects.

Big Idea # 4:
- Apply and extend previous understandings of arithmetic to algebraic expressions and reason about and solve multi-step functions and inequalities.

Standard(s): Measurement, Data, and Probability

Standards Addressed:
http://static.pdesas.org/content/documents/PA%20Core%20Standards%20Mathematics%20PreK-12%20March%202014.pdf
PACS Math: CC.2.4.6.B

Overview: Statistical Measures, Statistical Displays, Multi-Step Equations, Probability, Geometric Concepts
Goals:
Students will be able to display numerical data sets in contexts and calculate measure of center and variation.
Students will be able to write and solve multi-step equations representing real world problems.
Students will be able to calculate simple probability.
Students will be able to calculate the area and circumference of circles and expand this knowledge to calculate the surface area and volume of cylinders.

Objectives:
1. Students will be able to recognize a statistical question as one that anticipates and accounts for a variety of answers (DOK-Level Four).
2. Students will be able to summarize and interpret numerical data using the mean (DOK-Level Three).
3. Students will be able to find and interpret the median and mode of a set of data (DOK-Level Three).
4. Students will be able to use logical reasoning to solve problems (DOK-Level Three).
5. Students will be able to find and interpret the measures of variation (DOK-Level Three).
6. Students will be able to find and interpret the mean absolute deviation for a data set (DOK-Level Three).
7. Students will be able to analyze a data set and choose an appropriate measure of

central tendency (DOK-Level Four).
8. Students will be able to analyze problems arising in the workplace and apply mathematics to solve such problems (DOK-Level Four).
9. Students will be able to construct, analyze, and interpret line plots, line graphs, histograms, and box-plots (DOK-Level Four).
10. Students will be able to solve problems by using a graph (DOK-Level Two).
11. Students will be able to analyze and describe a data distribution by its center, spread, and overall shape (DOK-Level Four).
12. Students will be able to collect and display data (DOK-Level Four).
13. Students will be able to analyze a data set and select an appropriate display for a set of data (DOK-Level Four).
14. Students will be able to use an appropriate unit and tool to measure an object (DOK-Level Three).
15. Students will be able to calculate the area, surface area, and volume of cylinders, using the given formulas (DOK-Level Two).
16. Students will be able to calculate the area and circumference of circles, using the given formulas (DOK-Level Two).
17. Students will be able to interpret the probability of simple events (DOK-Level Three).
18. Students will be able to solve multi-step equations, including the distributive property and the use of integers (DOK-Level Two).

Core Activities and Corresponding Instructional Methods:

1. Expose students' prior knowledge of the real number system, including operations with and properties of real numbers, in addition to other middle school mathematics and pre-algebra skills (simplifying and/or evaluating arithmetic and algebraic expressions).
    a. Diagnostic assessment, questioning
    b. Cooperative learning groups
    c. Direct instruction as needed using Smart Technology and online textbook and resources, manipulative (such as Algebra Tiles), Venn Diagrams
    d. Guided Practice

2. Build math language and vocabulary
    a. Teacher will use appropriate language to identify arithmetic, algebraic, and statistical terms and processes.
    b. Writing activities incorporating appropriate math language and vocabulary.
    c. Use foldables to encourage vocabulary retention

3. Develop students' skills in organizing, displaying and interpreting data displays.
    a. Direct instruction using Smart Technology and online Textbook and resources
    b. Guided Practice
    c. Cooperative learning groups

4. Develop students' ability to solve problems by applying arithmetic and algebraic processes
    a. Guided Practice
    b. Cooperative learning groups

5. Develop students' ability to use the mathematical practices to extend to real life problem solving
    a. Inquiry Labs
    b. 21st Century Careers

Assessments:

Diagnostic:

Glencoe Math Course 1
Teacher prepared pre-test/diagnostic test
Teach questioning and observation
CDT

Formative:

Teacher observations, questions, discussions
Homework
Teacher prepared assessments (quizzes and chapter tests)

Summative:

Teacher prepared chapter tests and common Unit assessment

Extensions:

Inquiry Labs
Projects
Enrichment Worksheets (Textbook Supplement and Kuta Software)
Enrichment Topics from grade 7

Correctives:

Re-teaching and practice worksheet available with textbook
Practice worksheets generated through Kuta Software

Materials and Resources:

Glencoe Math Course 1
Supplemental Prentice Hall Math Course 1 Material
Textbook Online Resources
Teacher Generated Worksheets (Kuta Software)
Study Island
Foldables
CDT

DELAWARE VALLEY SCHOOL DISTRICT

Primary Textbook(s) Used for this Course of Instruction

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

Curriculum Textbook is utilized in (title of course): Math 6 Advanced

Please complete one sheet for each primary textbook.