

DELAWARE VALLEY SCHOOL DISTRICT

PLANNED INSTRUCTION

A PLANNED COURSE FOR:

Math 7

Grade Level: 7

Date of Board Approval: 2017

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Planned Instruction

Title of Planned Instruction: Math 7

Subject Area: Math

Grade(s): 7

Course Description:

This course is available to students in grade 7 who have successfully completed Math 6. The curriculum for Math 7 is intended to prepare students for Math 8. In this course, students learn to understand and apply properties of real numbers. Students will explore one variable equations, linear relationships, geometry concepts, and data analysis. Students will develop effective mathematical communication skills including statistical representations.

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

Curriculum Writing Committee: Robert Cosentino, Eve Houseknecht and Kayla Troast

Curriculum Map

1. Marking Period One - Integers and Rational Numbers

Marking Period One -Goals:

Understanding of:

- Absolute Value
- Adding and Subtracting Integers & Fractions
- Multiplying and Dividing Integers & Fractions
- Rational Numbers
- Terminating and Repeating Decimals
- Comparing and Ordering Numbers

2. Marking Period Two - Ratios & Proportions, Percent and Expressions

Marking Period Two -Goals:

Understanding of:

- Unit Rates
- Complex Fractions
- Proportional Relationships
- Rate of Change and Slope
- Percent and Percent Applications
- Properties of Operations
- Linear Expressions

3. Marking Period Three - Equations, Inequalities, Geometry Figures, Measuring Figures

Marking Period Three -Goals

Understanding of:

- One-Step Equations
- Two-Step Equations
- Solving Inequalities
- Angles
- Triangles
- Scale Drawings
- Cross-Sections

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- Circumference and Area of Circles
- Surface Area and Volume of Prisms

4. Marking Period Four – Probability and Statistics

Marking Period Four -Goals:

Understanding of:

- Simple & Compound Probability
- Counting Principle
- Predictions
- Sampling

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Curriculum Plan

UNIT 1:

Big Idea # 1:

- Integers can be used in everyday contexts that involve values above and below zero. These values can be used to represent and solve real-life problems.

Big Idea #2:

- Every quotient of integers is a rational number. Real-life problems can be solved by performing operations with rational numbers.

Standard(s): The Number System and Expressions and Equations

PA Standards Addressed:

PACS Math: CC.2.1.7.E.1, CC.2.2.7.B.3

Link to Standards in SAS:

<https://www.pdesas.org/Standard/View#>

Overview: Integers and Rational Numbers

Goals: Solve problems involving all forms of rational numbers. Apply these skills to real world problems.

Objectives:

1. Students will be able to read and write integers, and find the absolute value of an integer. (DOK – Level One)
2. Students will be able to add and subtract integers. (DOK – Level Two)
3. Students will be able to multiply and divide integers. (DOK – Level Two)
4. Students will be able to write fractions as terminating or repeating decimals and write decimals as fractions. (DOK – Level Two)
5. Students will be able to compare and order rational numbers. (DOK – Level Three)
6. Students will be able to add and subtract rational numbers, expressed as fractions. (DOK – Level Two)
7. Students will be able to add and subtract fractions with unlike denominators, including mixed numbers. (DOK – Level Two)
8. Students will be able to multiply and divide fractions and mixed numbers. (DOK - Two)

Curriculum Plan

UNIT 2:

Big Idea # 1:

- Relationships can be determined to be proportional and proportions can be used to solve real-world problems. Proportional relationships can also be used to solve percent problems.

Big Idea #2:

- The properties of operations can be used to simplify and evaluate algebraic expressions.

Standard(s): Ratios & Proportional Relationships and Expressions and Equations

PA Standards Addressed:

PACS Math: CC.2.1.7.D.1, C.C.2.2.7.B.1, CC.2.2.7.B.3

Link to Standards in SAS:

<https://www.pdesas.org/Standard/View#>

Overview: Ratios & Proportions, Percents and Expressions

Goals: Identify proportional relationships and use proportions to solve problems of financial literacy and percents. Perform operations with linear expressions.

Objectives:

1. Students will be able to find unit rates. (DOK – Level Two)
2. Students will be able to simplify a complex fraction. (DOK – Level Two)
3. Students will be able to convert rates using unit rates and dimensional analysis. (DOK – Level Four)
4. Students will be able to identify proportional and non-proportional relationships. (DOK – Level Two)
5. Students will be able to identify proportional relationships by graphing on a coordinate plane. (DOK – Level Two)
6. Students will be able to use proportions to solve problems. (DOK - Two)
7. Students will be able to represent and identify constant rates of change (DOK - Two)
8. Students will be able to identify slope using tables and graphs. (DOK - Two)

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9. Students will be able to use direct variation to solve problems. (DOK - Three)
10. Students will be able to find the percent of a number. (DOK - Two)
11. Students will be able to estimate the percent of a number. (DOK - Three)
12. Students will be able to solve problems involving percents by using the percent proportion. (DOK - Two)
13. Students will be able to solve problems involving percents by using the percent equation. (DOK -Two)
14. Students will be able to solve problems involving percent increase and percent decrease. (DOK -Three)
15. Students will be able to solve problems involving financial literacy, such as sales tax, tips, and markup. (DOK -Four)
16. Students will be able to solve problems involving discount. (DOK - Four)
17. Students will be able to solve problems involving simple interest. (DOK - Three)
18. Students will be able to evaluate simple algebraic expressions. (DOK - Two)
19. Students will be able to describe the relationships and extend terms in arithmetic sequences. (DOK - Four)
20. Students will be able to identify and use mathematical properties to simplify algebraic expressions. (DOK - Two)
21. Students will be able to apply the Distributive Property to rewrite algebraic expressions. (DOK - Two)
22. Students will be able to simplify algebraic expressions. (DOK - Two)
23. Students will be able to add, subtract and factor linear expressions. (DOK - Three)

Curriculum Plan

UNIT 3:

Big Idea # 1:

- The properties of operations can be used to simplify and evaluate algebraic equations.

Big Idea # 2:

- Problems involving area, surface area and volume can be solved by using formulas. Scale models can be used to represent real-life spaces and to calculate real-life measurements.

Standard(s): Expressions, Equations and Geometry

Standards Addressed:

PACS Math: CC.2.3.7.A.1, CC.2.3.7.A.2, CC.2.2.7.B.3

Link to Standards in SAS:

<https://www.pdesas.org/Standard/View#>

Overview: Equations, Inequalities, Geometric Figures and Measuring Figures

Goals: Solve equations and inequalities that can be used to represent real-world situations. Develop a deeper understanding of relationships between two and three dimensional shapes. Find area, surface area and volume of shapes.

Objectives:

1. Students will be able to use models to write and solve addition and subtraction equations. (DOK – Level Two)
2. Students will be able to solve one-step multiplications and division equations. (DOK – Level Two)
3. Students will be able to solve one-step equations with rational coefficients. (DOK – Level Two)
4. Students will be able to solve two-step equations. (DOK – Level Two)
5. Students will be able to solve two-step equations of the form $p(x + q) = r$. (DOK – Level Two)
6. Students will be able to solve inequalities by using the addition and subtraction properties of inequality. (DOK - Level Two)

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7. Students will be able to solve inequalities by using the multiplication or division properties of inequality. Students will model and solve two-step inequalities and represent the solution on the number line. (DOK- Level 2)
8. (DOK - Level Three) Students will classify angles and identify vertical and adjacent angles.
9. Students will be able to identify pairs of complementary and supplementary angles. (DOK - Level Two)
10. Students will identify and classify triangles and find missing angle measures. (DOK – Level Three)
11. Students will find a possible measurement for the third side of a triangle using the Triangle Inequality Theorem. (DOK - Three)
12. Students will solve problems involving scale drawings. (DOK – Level Three)
13. Students will be able to draw three-dimensional figures given the top, side and front views. (DOK – Level Three)
14. Students will identify and draw three-dimensional figures. (DOK – Level Two)
15. Students will find the circumference and area of circles. (DOK – Level Two)
16. Students will find the area of composite figures. (DOK – Level Three)
17. Students will find the volume of prisms. (DOK - Two)
18. Students will find the surface area of prisms. (DOK - Three)
19. Students will find the surface area of pyramids. (DOK - Three)
20. Students will find the volume and surface area of a composite figure. (DOK - Four)

Curriculum Plan

UNIT 4:

Big Idea #1:

- Students will be able to describe a data set using statistical measures and/or displays. Students will use an understanding of probability of independent events and use proportional reasoning to make predictions.

Big Idea #2:

- Statistics can be used to draw conclusions about a population. Random samples can be used to make predictions and compare populations.

PA Standard(s): Statistics and Probability

Standards Addressed:

PACS Math: CC.2.4.7.B.1, CC.2.4.7.B.2, CC.2.4.7.B.3

Link to Standards in SAS:

<https://www.pdesas.org/Standard/View#>

Overview: Probability and Statistics

Goals: Find probability of simple and compound events and use that to predict. Use statistics including measures of center and variability and mean absolute deviation to compare populations.

Objectives:

1. Students will find the probability of a simple event and its complement (DOK – Level Two)
2. Students will find and compare experimental and theoretical probabilities. (DOK – Level Three)
3. Students will find probabilities of compound events. (DOK – Level Three)
4. Students will perform probability simulations to model real-world situations involving uncertainty. (DOK – Level Four)
5. Students will use multiplication to count the number of outcomes and find probabilities. (DOK – Level Three)
6. Students will find the probability of independent events. (DOK – Level Two)
7. Students will predict actions of a larger group by using a sample. (DOK - Four)

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8. Students will determine whether sampling methods are valid. (DOK - Three)
9. Students will identify misleading graphs and statistics. (DOK - Three)
10. Students will compare two populations. (DOK - Four)
11. Students will select, organize and construct appropriate data displays. (DOK - Four)
12. Students will find measures of center and variability. (DOK - Two)
13. Students will calculate Mean Absolute Deviation. (DOK - Three)

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 pre-algebra skills (simplifying and/or evaluating 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 algebraic terms and processes.
 - b. Writing activities incorporating appropriate math language and vocabulary.
3. Develop students' skills in solving two-step and multi-step equations
 - 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 algebraic processes
 - a. Guided Practice
 - b. Cooperative learning groups
5. Develop students' skills in identifying and graphing relations and functions
 - a. Direct instruction using Smart Technology and online Textbook and resources
 - b. Guided Practice
 - c. Cooperative learning groups
6. Develop students' skills in properties of exponents
 - a. Direct instruction using Smart Technology and online Textbook and resources

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- b. Guided Practice
 - c. Cooperative learning groups
7. Develop students' ability to identify, evaluate, add, subtract, and multiply polynomials
- a. Guided Practice
 - b. Cooperative learning groups

Assessments:

Diagnostic:

Teacher prepared pre-test/diagnostic test
Teach questioning and observation
Benchmark Assessment

Formative:

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

Summative:

Teacher prepared chapter tests and Unit Common Assessments

Extensions:

Study Island – preparation for PACS Mathematics PSSA

Correctives:

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

Materials and Resources:

Glencoe Math Course 2 (2016)
Textbook Online Resources
USA Test Prep
Study Island
CDT
Teacher Generated Worksheets (Kuta Software)

Primary Textbook(s) Used for this Course of Instruction

Name of Textbook: Glencoe Math Course 2 (2016)

Textbook ISBN #: 978-0-02-138984-1

Textbook Publisher & Year of Publication: Pearson Education, Inc. 2016

Curriculum Textbook is utilized in (title of course): Math 7