PETERS TOWNSHIP SCHOOL DISTRICT

CORE BODY OF KNOWLEDGE (CBK)

Keystone Math

GRADE 9

For each of the sections that follow, students may be required to understand, apply, analyze, evaluate or create the particular concepts being taught.

COURSE DESCRIPTION

This course is a study of the language, concepts, and techniques of Algebra that will prepare students to approach and solve problems following a logical succession of steps. This course is the foundation for high school mathematics courses. Topics include simplifying expressions, evaluating and solving equations and inequalities, and graphing linear and quadratic functions and relations. For each of the sections that follow, students may be required to analyze, recall, explain, interpret, apply, or evaluate the particular concepts being taught. Concepts will be presented, applied, and assessed analytically, numerically, and graphically. Real-world applications are presented within the course content and a functional approach is emphasized.

STUDY SKILLS:

- Maintain an organized math binder
- Adequately prepare for quizzes and exams through the development of study skills
- Independent practice

Major Unit Themes:

1. Operations with Real Numbers and Expressions

- Compare and order numbers
- Simplifying square roots
- Understand GCF & LCM of monomials
- Differentiate between GCF and LCM
- Simplify & Evaluate Expressions
- Apply estimation to real-word scenario
- Solve polynomial expressions
- Factor algebraic expressions
- Solve rational algebraic expressions
- Multiply and divide rational expressions
- · Add and subtract rational expressions
- Understand rational functions

2. Linear Equations

- Solve linear equation
- Solve systems of linear equations
- Model Linear equations
- Use graphs and tables to solve linear systems
- Use algebraic methods to solve linear systems
- Solve systems of linear inequalities
- Apply linear programming

3. Linear Inequalities

- Solve and model linear inequalities
- Solve systems of linear inequalities
- Graph linear inequalities
- Write linear inequalities
- Solve linear inequalities in two variables
- Transform linear inequalities
- Fit data with linear inequalities

4. Functions

- Understand patterns
- Understand relations and functions
- Calculate domain and range
- Solve and graph linear functions
- Use operations with functions• Understand polynomials
- Multiply polynomials
- Divide polynomials
- Factor polynomials
- Find real roots of polynomial functions
- Apply the fundamental theorem of algebra
- Investigate graphs of polynomial equations
- Transform polynomial functions
- Fit data with polynomial models

5. Coordinate Geometry

- Solve rate of change
- Write or identify a linear equation
- Solve linear equations and inequalities
- Apply proportional reasoning
- Graph linear functions

7. Data Analysis

- Apply best-fit lines
- Calculate measures of dispersion and central tendency
- Understand data displays and analysis
- Solve probability
- Differentiate between independent and dependent events
- Calculate compound events

MATERIALS (and Supplemental material used in course)

- Algebra 1 (Burger, Chard, Kennedy, Leinwand, Renfro, Roby, Waits): Holt McDougal, Copyright 2011, Orlando, Florida, ISBN 978-0-030-99574-3
- ONLINE
- Study Island
- Blended Schools
- Chapter Resources Book
- Computers
- Study Island Logins
- Blended School Logins
- Khan Videos
- YouTube videos
- Graphing Calculator

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