Mathematics: (Pearson-Prentice Hall)

Middle School students acquire math skills through problem solving utilizing technology, & project-based learning. The Standards for Mathematical Practice are developed & connected to the Standards for Mathematical Content. There is a grade level class and an accelerated class for each grade in middle school. In grades 7 and 8, math classes are also differentiated by gender.

Mathematical Practices:

- Make sense of problems and persevere in solving them
- Reason abstractly and quantitatively
- Construct viable arguments and critique the reasoning of others
- Model with mathematics
- Use appropriate tools strategically
- Attend to precision
- Look for and make use of structure
- Look for and express regularity in repeated reasoning

Grade 6 Grade Level Classes - *Course 1*

Mathematical Content:

Ratios and Proportional Relationships
- Understand ratio concepts and use ratio reasoning to solve problems

The Number System
- Apply and extend previous understandings of multiplication and division to divide fractions by fractions
- Compute fluently with multi-digit numbers and find common factors and multiples
- Apply and extend previous understandings of numbers to the system of rational numbers

Expressions and Equations
- Apply and extend previous understandings of arithmetic to algebraic expressions
- Reason about and solve one-variable equations and inequalities
- Represent and analyze quantitative relationships between dependent and independent variables

Geometry
- Solve real-world and mathematical problems involving area, surface area, and volume

Statistics and Probability
- Develop understanding of statistical variability
- Summarize and describe distributions

Grade 6 Accelerated Classes and Grade 7 Grade Level Classes - *Course 2*

Mathematical Content:

Ratios and Proportional Relationships
- Analyze proportional relationships and use them to solve real-world and mathematical problems

The Number System
- Apply and extend previous understandings of operations with fractions to add, subtract, multiply, and divide rational numbers

Expressions and Equations
- Use properties of operations to generate equivalent expressions
- Solve real-life and mathematical problems using numerical and algebraic expressions and equations

Geometry
- Draw, construct, and describe geometrical figures and describe the relationships between them
- Solve real-life and mathematical problems involving angle, measure, area, surface area, and volume

Statistics and Probability
- Use random sampling to draw inferences about a population
- Draw informal comparative inferences about two populations
- Investigate chance processes and develop, use, and evaluate probability models

Grade 7 Accelerated Classes and Grade 8 Grade Level Classes - *Algebra*

This is an Introduction to Algebra class. Students will complete Chapters 1 - 6 in the Algebra textbook. Eighth grade students matriculating to a Catholic high school will be prepared for Algebra I as a freshman. Eighth grade students matriculating to a public high school will be prepared for Integrated Math I as a freshman.

Mathematical Content:

Number and Quantity

Extend the properties of exponents to rational exponents

Use properties of rational and irrational numbers

Reason quantitatively and use units to solve problems

Algebra

Interpret the structure of expressions

Write expressions in equivalent forms to solve problems

Create equations that describe numbers or relationships

Understand solving equations as a process of reasoning and explain the reasoning

Solve equations and inequalities in one variable

Solve systems of equations

Represent and solve equations graphically

Functions (3 different functions)

Understand the concept of a function and use function notation

Interpret functions that arise in applications in terms of the context

Analyze functions using different representations

Build a function that models a relationship between two quantities

Build new functions from existing functions

Statistics and Probability   (Grade 7 Accelerated Only)

Summarize, represent, and interpret data on a single count or measurement variable

Summarize, represent, and interpret data on two categorical and quantitative variables

Interpret linear models

Use the rules of probability to compute probabilities of compound events in a uniform probability m

Understand independence and conditional probability and use them to interpret data

Geometry   (Grade 7 Accelerated Only)

Experiment with transformations in the plane

Make geometric constructions

Understand similarity in terms of similarity transformations

Prove theorems involving similarity

Define trigonometric ratios and solve problems involving right triangles

Apply trigonometry to general triangles

Explain volume formulas and use them to solve problems

Grade 8 Accelerated Classes - *Algebra*

Students will expand on their knowledge of Algebra and Geometry skills learned in 7th grade and will add new skills listed below. Students matriculating to a Catholic high school will be prepared for Algebra I, Algebra II, Geometry, Geometry Honors, or Algebra II/Trigonometry as a freshman depending on the extent they have mastered the curriculum. Students matriculating to a public high school will be prepared for Integrated Math I or II.

Mathematical Content:

Number and Quantity (same as above)

Algebra   (same as above)

Perform arithmetic operations on polynomials

Represent and solve inequalities graphically

Functions (same as above with 6 different functions)

Construct and compare linear, quadratic, and exponential models and solve problems

Interpret expressions for functions in terms of the situation they model

Geometry (same as above)