WESTLAKE
Preparatory Academy

Grade 8 Curriculum

Algebra 1

Algebra Basics

- The real numbers system and properties
- Properties
- Order of operations and absolute value
- Evaluating expressions
- Simplifying expressions
- Translating expressions/equations/inequalities
- Solving one and two step equations

Multi-Step Equations and Inequalities

- Multi-step equations
- Algebraic proportions
- Absolute value equations
- Multi variable literal equations
- Multi Step Inequalities
- Compound inequalities and absolute value inequalities

Relations and Functions

- Relations, functions, range, relations vs. functions
- Function notations, evaluating functions
- Zeroes of functions
- Slope from a graph and slope formula
- Linear equations – slope-intercept form and standard form
- Graphing linear equations using slope intercept form, standard form and point slope
- Scatter plots, line of best fit and linear regression

Systems of equations and inequalities

- Solving systems of equations by graphing, substitution and elimination
- Linear inequalities
- Systems of linear inequalities

Exponents and Exponential Functions

- Monomials: add, subtract, multiply, product rule
- Power rule, quotient rule, negative exponents
- Scientific notation
- Graphing exponential functions
- Exponential growth and decay applications
- Simplifying radicals
- Monomial square root

Polynomials and Factoring

- Intro to polynomials (classify, add, subtract)
- Multiplying a monomials, binomials, trinomials and polynomials
- Dividing polynomials by a monomial and a binomial
- Factoring polynomials: GCF, difference of squares, trinomials

Quadratic Equations

- Intro to quadratic equations, standard form, AOS, min and max
- Graphing quadratic equations
- Vertex form of a quadratic equation, transformations
- Quadratic roots and the discriminant
- Solving equations by factoring, square roots, completing the square and quadratic formula
- Linear vs quadratic regression

English and Language Arts

Students in this course level will be mastering the Texas Essential Knowledge and Skills Standards for grade six and will be given opportunities to extend their practice and demonstration of skills into standards beyond the expected grade six standards. Grammar instruction is augmented by No Red Ink, a self-paced and adaptive software program that provides practice and documents mastery in an individualized setting. Grammar skills are then applied in student compositions in a variety of formats including personal narrative, informative, persuasive, explanatory, and compare/contrast. All English and reading assignments are completed using Microsoft Office tools. Vocabulary development is based on SAT College Entrance Vocabulary Lists. Classic literature works in all genres are used for reading, and these works are selected for a Lexile rating recommended for Grades 8 – 10 college preparatory students. Students begin applying publishing standards to their compositions as they create electronic and print-based literary magazines including the Westlake Yearbook, newspapers, and interactive, hyperlinked multimedia E-books and presentations.

Physical Science

What is Physical Science

- Introduction

Motion, Forces and Energy

- Motion and forces
- Work, energy and simple machines
- Electricity and magnetism

Sound and Light

- Waves and electromagnetic spectrum
- Sound
- Light
- Mirrors and lenses

Matter and Energy

- Matter
- Energy
- Atoms and The Periodic Table
- Chemical reactions, chemical bonds and Eequations
- Solutions, acids, and bases