

CURRICULUM OVERVIEW

Essentials of Mathematics



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Essentials of Mathematics Course Overview

Essentials of Mathematics is a semester-length review of the fundamentals taught in Pre-Algebra, Algebra I and Geometry courses and is useful at the high school level for basic skill remediation and/or practice necessary to prepare for a state exam. The course highlights basic mathematical skills through multiple review, practice and sample exam questions.

Upon successfully completing the course, the student should have mastered the following concepts:

- Understand and know how to compute and define rational numbers
- Perform basic operations such as addition, subtraction, multiplication, and division with fractions, decimals, and percent's
- Apply basic fundamental rules of exponents as well as scientific notation
- Be able to construct basic and complex geometric shapes; solve for perimeter, area, surface area, and volume
- Use inductive and deductive reasoning, conjectures, and estimation necessary to construct a picture, formula or equation needed for analyzing and solving algebraic and geometric word problems involving basic probability and statistical reasoning, scale factor, graphic representation of quantities, and linear systems of equations
- Solve single variable, absolute value, and linear systems of equations
- Evaluate, solve, and graph linear functions as well as conceptualize the relationship between the independent and dependent variable of a function
- Simplify and perform operations with radical expressions and polynomials
- Understand and know how to apply the slope-intercept form of a line, slope formula, and Pythagorean theorem

Unit 1: Number Sense	
Essentials of Mathematics	Assignments
	1. Course Overview
	2. Reviewing Rational Numbers
	3. Absolute Value and Integers
	4. Quiz 1: Reviewing Rational Numbers
	5. Converting Fractions to Decimals and Percents
	6. Working with Percents (1) Increase and Decrease
	7. Working with Percents (2) Applications of Percents
	8. Quiz 2: Fractions, Decimals, and Percents
	9. Fractions and Factoring
Essentials of Mathematics	10. Using Exponent Rules
	11. Exponents in Scientific Notation
	12. Negative Whole-Number Exponents
	13. Powers and Roots
	14. Quiz 3: Fractions and Factoring, Exponents, Powers and Roots
	15. Test
Unit 2: Statistics, Data, Analysis, and Probability	
Essentials of Mathematics	Assignments
	1. Measures of Central Tendency
	2. Evaluating Statistical Claims
	3. Displaying and Comparing Data Sets
	4. Quiz 1: Working with Data
	5. Outcomes
	6. Representing Probabilities
	7. Independent and Dependent Variables
	8. Quiz 2: Probability
	9. Test
Unit 3: Algebra and Functions	
Essentials of Mathematics	Assignments
	1. Order of Operations
	2. Working with Exponents and Roots
	3. The Distributive Property
	4. Add and Subtract Polynomials
	5. Multiply and Divide Polynomials
	6. Quiz 1: Simplifying Expressions
	7. Inverse Operations
	8. Solving Two-Step Equations and Inequalities
	9. Writing Mathematical Statements
	10. Quiz 2: Solving Equations and Inequalities
	11. Test

Essentials of Mathematics	Unit 4: Measurement and Geometry	
	Assignments	
	1. Measurement Systems	9. Complex 3D Objects
	2. Scale Drawings and Models	10. Geometric Shapes: Scale Factors
	3. Measures of Rates and Products	11. Quiz 2: Complex Objects
	4. Perimeter and Area: 2D Figures	12. Pythagorean Theorem
	5. Surface Area and Volume: 3D Figures	13. Coordinate Graphs
	6. Quiz 1: Measurement and Geometry	14. Transformations and Congruent Figures
	7. Converting Between Units of Measure	15. Quiz 3: Coordinate Geometry
	8. Complex 2D Objects	16. Test

Essentials of Mathematics	Unit 5: Mathematical Reasoning	
	Assignments	
	1. Analyzing Problems	5. Inductive and Deductive Reasoning
	2. Making Conjectures	6. Solving Problems
	3. Estimation (1)	7. Quiz 1: Mathematical Reasoning
	4. Estimation (2)	8. Test

Essentials of Mathematics	Unit 6: Algebra I	
	Assignments	
	1. Graphs and Charts	10. Solving Linear Inequalities
	2. Represent Data	11. Quiz 2: Equations
	3. Graphing Linear Functions	12. Multi-Step Word Problems (Rate)
	4. Parallel Lines	13. Multi-Step Word Problems (Work)
	5. Solutions of Linear Equations	14. Multi-Step Word Problems (Percent Mixture)
	6. Graphing Higher Power Functions	15. System of Equations
	7. Quiz 1: Graphing	16. System of Linear Inequalities
	8. Solving Absolute Value Inequalities	17. Quiz 3: Equations
	9. Solving Linear Equations	18. Test

	Unit 7: Final Exam	
	Assignments	
	1. Final Exam	2. Alternate Final Exam*

(*) Indicates alternative assignment