



monarch

Curriculum Catalog

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 Percent's
	6. Working with Percent's (1) Increase and Decrease
	7. Working with Percent's (2) Applications of Percent's
	8. Quiz 2: Fractions, Decimals, and Percent's
	9. Fractions and Factoring
	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	

Unit 4: Measurement and Geometry	
Essentials of Mathematics	Assignments
	1. Measurement Systems
	2. Scale Drawings and Models
	3. Measures of Rates and Products
	4. Perimeter and Area: 2D Figures
	5. Surface Area and Volume: 3D Figures
	6. Quiz 1: Measurement and Geometry
	7. Converting Between Units of Measure
	8. Complex 2D Objects
	9. Complex 3D Objects
	10. Geometric Shapes: Scale Factors
	11. Quiz 2: Complex Objects
	12. Pythagorean Theorem
	13. Coordinate Graphs
	14. Transformations and Congruent Figures
	15. Quiz 3: Coordinate Geometry
16. Test	
Unit 5: Mathematical Reasoning	
Essentials of Mathematics	Assignments
	1. Analyzing Problems
	2. Making Conjectures
	3. Estimation (1)
	4. Estimation (2)
	5. Inductive and Deductive Reasoning
	6. Solving Problems
	7. Quiz 1: Mathematical Reasoning
8. Test	
Unit 6: Algebra I	
Essentials of Mathematics	Assignments
	1. Graphs and Charts
	2. Represent Data
	3. Graphing Linear Functions
	4. Parallel Lines
	5. Solutions of Linear Equations
	6. Graphing Higher Power Functions
	7. Quiz 1: Graphing
	8. Solving Absolute Value Inequalities
	9. Solving Linear Equations
	10. Solving Linear Inequalities
	11. Quiz 2: Equations
	12. Multi-Step Word Problems (Rate)
	13. Multi-Step Word Problems (Work)
	14. Multi-Step Word Problems (Percent Mixture)
	15. System of Equations
	16. System of Linear Inequalities
	17. Quiz 3: Equations
18. Test	
Unit 7: Final Exam	
Essentials of Mathematics	Assignments
	1. Final Exam
	2. Alternate Final Exam*

(*) Indicates alternative assignment