



**Switched-On**  
SCHOOLHOUSE

# Course Catalog

Essentials of Mathematics

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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 percents
- 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	<b>Assignment Titles</b>
	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
	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	<b>Assignment Titles</b>
	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	<b>Assignment Titles</b>
	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	<b>Assignment Titles</b>
	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	<b>Assignment Titles</b>
	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	<b>Assignment Titles</b>
	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	<b>Assignment Titles</b>
	1. Final Exam
	2. Alternate Final Exam*

(\*) Indicates alternate assignment