



**Switched-On**  
SCHOOLHOUSE

# Course Catalog

Pre-algebra

## Table of Contents

COURSE OVERVIEW .....	1
UNIT 1: THE REAL NUMBER SYSTEM.....	1
UNIT 2: MODELING PROBLEMS IN INTEGERS .....	1
UNIT 3: MODELING PROBLEMS WITH RATIONAL NUMBERS.....	2
UNIT 4: PROPORTIONAL REASONING.....	2
UNIT 5: MORE WITH FUNCTIONS .....	2
UNIT 6: MEASUREMENT .....	3
UNIT 7: PLANE GEOMETRY .....	3
UNIT 8: MEASURES OF SOLID FIGURES .....	3
UNIT 9: DATA ANALYSIS .....	4
UNIT 10: PROBABILITY .....	4
UNIT 11: COURSE REVIEW AND EXAM.....	4

## COURSE OVERVIEW

Pre-algebra is an introductory algebra course designed to prepare junior-high school students for Algebra I. The course focuses on strengthening needed skills in problem solving, integers, equations, and graphing. Students will begin to see the "big picture" of mathematics and learn how numeric, algebraic, and geometric concepts are woven together to build a foundation for higher mathematical thinking.

By the end of the course, students will be expected to do the following:

- Gain an increased awareness of how math is a life skill.
- Understand how math is like a language, with a set of conventions.
- Explore concepts taught in previous math courses at higher levels and in real world applications.
- Practice algebraic thinking in order to model and solve real world problems.
- Utilize new skills and concepts that will help them in future math courses.
- Introduce variable expressions and equations (single and multiple variable).
- Introduce linear functions, relationship between dependent and independent variables and coordinate graphing.

UNIT 1: THE REAL NUMBER SYSTEM	
Assignment Titles	
PRE-ALGEBRA	1. Course Overview
	2. Subsets of the Real Number System
	3. Using Variables
	4. The Number Line
	5. Comparing Rational Numbers
	6. Quiz 1: Relationships
	7. Alternate Quiz 1: Form A: Relationships*
	8. Alternate Quiz 1: Form B: Relationships*
	9. Properties of the Real Numbers
	10. Exponents
	11. Scientific Notation
	12. Quiz 2: Other Forms
	13. Alternate Quiz 2: Form A: Other Forms*
14. Alternate Quiz 2: Form B: Other Forms*	
15. Square Roots	
16. Order of Operations	
17. Quiz 3: Simplifying	
18. Alternate Quiz 3: Form A: Simplifying*	
19. Alternate Quiz 3: Form B: Simplifying*	
20. Special Project*	
21. Review	
22. Test	
23. Alternate Test: Form A*	
24. Alternate Test: Form B*	
25. Glossary and Credits	

UNIT 2: MODELING PROBLEMS IN INTEGERS	
Assignment Titles	
PRE-ALGEBRA	1. Translating Expressions and Equations
	2. Solving One-Step Equations
	3. Solving Two-Step Equations
	4. Quiz 1: Equations with Real Numbers
	5. Alternate Quiz 1: Form A: Equations with Real Numbers*
	6. Alternate Quiz 1: Form B: Equations with Real Numbers*
	7. Relations and Functions
	8. Functions
	9. Analyzing Graphs
	10. Quiz 2: Functions
	11. Alternate Quiz 2: Form A: Functions*
	12. Alternate Quiz 2: Form B: Functions*
	13. Addition of Integers
	14. Subtraction of Integers
	15. Multiplying and Dividing Integers
	16. Evaluating Expressions
17. Quiz 3: Integers	
18. Alternate Quiz 3: Form A: Integers*	
19. Alternate Quiz 3: Form B: Integers*	
20. Graphing	
21. One-Step Equations	
22. Two-Step Equations	
23. Problem Solving	
24. Quiz 4: Modeling with Integers	
25. Alternate Quiz 4: Form A: Modeling with Integers*	
26. Alternate Quiz 4: Form B: Modeling with Integers*	
27. Special Project*	
28. Review	
29. Test	
30. Alternate Test: Form A*	
31. Alternate Test: Form B*	
32. Glossary and Credits	

## UNIT 3: MODELING PROBLEMS WITH RATIONAL NUMBERS

PRE-ALGEBRA

## Assignment Titles

- |   |   |
|---|---|
| 1. Prime Factorization and the GCF                                    | 15. One-Step Addition and Subtraction Equations                   |
| 2. Simplifying Fractions  | 16. One-Step Multiplication and Division Equations                |
| 3. The LCM and the LCD  | 17. Two-Step Equations  |
| 4. Quiz 1: Number Theory  | 18. One-Step Inequalities   |
| 5. Alternate Quiz 1: Form A: Number Theory*                           | 19. Two-Step Inequalities   |
| 6. Alternate Quiz 1: Form B: Number Theory*                           | 20. Quiz 3: Solving Equations and Inequalities                    |
| 7. Adding and Subtracting Like Fractions                              | 21. Alternate Quiz 3: Form A: Solving Equations and Inequalities* |
| 8. Adding and Subtracting Unlike Fractions                            | 22. Alternate Quiz 3: Form B: Solving Equations and Inequalities* |
| 9. Adding and Subtracting Decimal Numbers                             | 23. Special Project*  |
| 10. Multiplying and Dividing Fractions                                | 24. Review  |
| 11. Multiplying and Dividing Decimal Numbers                          | 25. Test  |
| 12. Quiz 2: Solving Problems with Rational Numbers                    | 26. Alternate Test: Form A*                                       |
| 13. Alternate Quiz 2: Form A: Solving Problems with Rational Numbers* | 27. Alternate Test: Form B*                                       |
| 14. Alternate Quiz 2: Form B: Solving Problems with Rational Numbers* | 28. Glossary and Credits  |

## UNIT 4: PROPORTIONAL REASONING

PRE-ALGEBRA

## Assignment Titles

- |  |  |
|--|--|
| 1. Proportions                               | 17. Indirect Measure                                       |
| 2. Applications                              | 18. Models and Scales                                      |
| 3. Direct Variation                          | 19. Quiz 3: Measurement/Similar Figures                    |
| 4. Quiz 1: Proportions                       | 20. Alternate Quiz 3: Form A: Measurement/Similar Figures* |
| 5. Alternate Quiz 1: Form A: Proportions*    | 21. Alternate Quiz 3: Form B: Measurement/Similar Figures* |
| 6. Alternate Quiz 1: Form B: Proportions*    | 22. Project: Proportional Reasoning                        |
| 7. Fraction, Percent and Decimal Equivalents | 23. Alternate Project: Proportional Reasoning*             |
| 8. Solving Percent Problems                  | 24. Special Project*                                       |
| 9. Applications                              | 25. Review   |
| 10. More Applications                        | 26. Test   |
| 11. Quiz 2: Percents                         | 27. Alternate Test: Form A*                                |
| 12. Alternate Quiz 2: Form A: Percents*      | 28. Alternate Test: Form B*                                |
| 13. Alternate Quiz 2: Form B: Percents*      | 29. Glossary and Credits                                   |
| 14. Unit Conversion within Customary Units   |  |
| 15. Unit Conversion within Metric Units      |  |
| 16. Corresponding Parts                      |  |

## UNIT 5: MORE WITH FUNCTIONS

PRE-ALGEBRA

## Assignment Titles

- |  |  |
|--|--|
| 1. Rewriting Equations                               | 16. Alternate Quiz 2: Form B: Families of Functions* |
| 2. Combine Like Terms                                | 17. Patterns and Arithmetic Sequences                |
| 3. Solving Equations by Combining Like Terms         | 18. Geometric Sequences                              |
| 4. Distributive Property                             | 19. Exponential Sequences                            |
| 5. Solving Equations with Distributive Property      | 20. Recursive Sequences                              |
| 6. Quiz 1: Solving Equations                         | 21. Quiz 3: Patterns                                 |
| 7. Alternate Quiz 1: Form A: Solving Equations*      | 22. Alternate Quiz 3: Form A: Patterns*              |
| 8. Alternate Quiz 1: Form B: Solving Equations*      | 23. Alternate Quiz 3: Form B: Patterns*              |
| 9. Slope   | 24. Special Project*                                 |
| 10. Using Intercepts                                 | 25. Review   |
| 11. Slope-Intercept Form                             | 26. Test   |
| 12. More Slope-Intercept Form                        | 27. Alternate Test: Form A*                          |
| 13. Non-Linear Functions                             | 28. Alternate Test: Form B*                          |
| 14. Quiz 2: Families of Functions                    | 29. Glossary and Credits                             |
| 15. Alternate Quiz 2: Form A: Families of Functions* |  |

## UNIT 6: MEASUREMENT

## Assignment Titles

PRE-ALGEBRA	1.	Classify and Measure Angles	12.	Quiz 2: Polygons
	2.	Perpendicular and Parallel Lines, Part 1	13.	Alternate Quiz 2: Form A: Polygons*
	3.	Perpendicular and Parallel Lines, Part 2	14.	Alternate Quiz 2: Form B: Polygons*
	4.	Circles	15.	Pythagorean Theorem, Part 1
	5.	Quiz 1: Angle Measures and Circles	16.	Pythagorean Theorem, Part 2
	6.	Alternate Quiz 1: Form A: Angle Measures and Circles*	17.	Quiz 3: Indirect Measure
	7.	Alternate Quiz 1: Form B: Angle Measures and Circles*	18.	Alternate Quiz 3: Form A: Indirect Measure*
	8.	Classifying Polygons	19.	Alternate Quiz 3: Form B: Indirect Measure*
	9.	Interior and Exterior Measures of Polygons	20.	Special Project*
	10.	Classifying Triangles and the Triangle Inequality Theorem	21.	Review
	11.	The Quadrilateral Family	22.	Test
		23.	Alternate Test: Form A*	
		24.	Alternate Test: Form B*	
		25.	Glossary and Credits	

## UNIT 7: PLANE GEOMETRY

## Assignment Titles

PRE-ALGEBRA	1.	Perimeter and Circumference	16.	Translations
	2.	Area of Parallelograms	17.	Tessellations
	3.	Area of Triangles and Trapezoids	18.	Rotations
	4.	Area of Circles	19.	Dilations
	5.	Composite Figures	20.	Quiz 3: Other Transformations
	6.	Effects of Dimensional Changes	21.	Alternate Quiz 3: Form A: Other Transformations*
	7.	Quiz 1: Perimeter and Area	22.	Alternate Quiz 3: Form B: Other Transformations*
	8.	Alternate Quiz 1: Form A: Perimeter and Area*	23.	Special Project*
	9.	Alternate Quiz 1: Form B: Perimeter and Area*	24.	Review
	10.	Symmetry	25.	Test
	11.	Distance and Midpoint	26.	Alternate Test: Form A*
12.	Reflections	27.	Alternate Test: Form B*	
13.	Quiz 2: Symmetry and Reflections	28.	Glossary and Credits	
14.	Alternate Quiz 2: Form A: Symmetry and Reflections*			
15.	Alternate Quiz 2: Form B: Symmetry and Reflections*			

## UNIT 8: MEASURES OF SOLID FIGURES

## Assignment Titles

PRE-ALGEBRA	1.	Solid Figures	15.	Volume of Cones
	2.	Euler's Formula	16.	Volume of Spheres
	3.	Surface Area of Rectangular Prisms	17.	Changes to Volume
	4.	Surface Area of Triangular Prisms	18.	Volume of Composite Figures
	5.	Surface Area of Cylinders	19.	Quiz 2: Volume
	6.	Surface Area of Pyramids, Cones, and Spheres	20.	Alternate Quiz 2: Form A: Volume*
	7.	Surface Area of Composite Figures	21.	Alternate Quiz 2: Form B: Volume*
	8.	Quiz 1: Surface Area	22.	Special Project*
	9.	Alternate Quiz 1: Form A: Surface Area*	23.	Review
	10.	Alternate Quiz 1: Form B: Surface Area*	24.	Test
	11.	Volume of Rectangular Prisms	25.	Alternate Test: Form A*
12.	Volume of Triangular Prisms	26.	Alternate Test: Form B*	
13.	Volume of Square Pyramids	27.	Glossary and Credits	
14.	Volume of Cylinders			

UNIT 9: DATA ANALYSIS				
Assignment Titles				
PRE-ALGEBRA	1.	Collecting Data	12.	Scatter Plots
	2.	Measures of Central Tendency and Dispersion	13.	Misleading Graphs
	3.	Bar Graphs	14.	Appropriate Displays
	4.	Circle Graphs	15.	Quiz 2: More Data Displays
	5.	Line Graphs	16.	Alternate Quiz 2: Form A: More Data Displays*
	6.	Frequency and Histograms	17.	Alternate Quiz 2: Form B: More Data Displays*
	7.	Quiz 1: Collecting and Representing Data	18.	Special Project*
	8.	Alternate Quiz 1: Form A: Collecting and Representing Data*	19.	Review
	9.	Alternate Quiz 1: Form B: Collecting and Representing Data*	20.	Test
	10.	Constructing Box-and-Whisker Plots	21.	Alternate Test: Form A*
	11.	Interpreting Box-and-Whisker Plots	22.	Alternate Test: Form B*
		23.	Glossary and Credits	

UNIT 10: PROBABILITY				
Assignment Titles				
PRE-ALGEBRA	1.	Tree Diagrams and the Counting Principle	12.	Quiz 2: Probability
	2.	Permutations	13.	Alternate Quiz 2: Form A: Probability*
	3.	Combinations	14.	Alternate Quiz 2: Form B: Probability*
	4.	Mixed Review of Outcomes	15.	Simulate a Problem
	5.	Quiz 1: Outcomes	16.	Quest: All That's Fair In...*
	6.	Alternate Quiz 1: Form A: Outcomes*	17.	Special Project*
	7.	Alternate Quiz 1: Form B: Outcomes*	18.	Review
	8.	Probability and Odds	19.	Test
	9.	Experimental vs Theoretical Probability	20.	Alternate Test: Form A*
	10.	Disjointed and Overlapping Events	21.	Alternate Test: Form B*
	11.	Independent and Dependent Events	22.	Glossary and Credits

UNIT 11: COURSE REVIEW AND EXAM				
Assignment Titles				
PRE-ALGEBRA	1.	Course Review I	4.	Alternate Exam: Form A*
	2.	Course Review II	5.	Alternate Exam: Form B*
	3.	Exam		

(\*) Indicates alternate assignment