



# Switched-On

SCHOOLHOUSE® 2012 EDITION

## Curriculum Catalog

Pre-algebra

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### 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.

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

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

**UNIT 3: MODELING PROBLEMS WITH RATIONAL NUMBERS**
**Assignment Titles**

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|----------------------------------------------------------------------|------------------------------------------------------------------|
| 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**
**Assignment Titles**

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|----------------------------------------------|-----------------------------------------------------------|
| 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**
**Assignment Titles**

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|-----------------------------------------------------|-----------------------------------------------------|
| 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**

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|---------------------------------------------------------------|------------------------------------------------|
| 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**

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

**UNIT 8: MEASURES OF SOLID FIGURES**
**Assignment Titles**

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|-------------------------------------------------|--------------------------------------|
| 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**

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|---------------------------------------------------------------|--------------------------------------------------|
| 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**

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|---------------------------------------------|-------------------------------------------|
| 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**

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|--------------------|----------------------------|
| 1. Course Review 1 | 14. Alternate Exam: Form A |
| 2. Course Review 2 | 15. Alternate Exam: Form B |
| 3. Exam            |                            |