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Curriculum Catalog

Mathematics 800

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Mathematics 800 Course Overview

Mathematics 800 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.

- **The Real Number System:** Student will explore different properties of numbers, and how to use them to simplify expressions and formulas to make computations easier.
- **Modeling Problems in Integers:** Student will translate and solve one-step equations, or two-step equations in context, and check solutions for reasonableness, using the order of operations, and by substituting values for variables.
- **Modeling Problems with Rational Numbers:** Student will add, subtract, multiply, and divide decimals, fractions, and mixed numbers with variables, likes, and unlike denominators to solve one and two-step word problems.
- **Proportional Reasoning:** Student will convert between fractions, decimals, and percent's, and compare them, and identify similar and congruent figures and their corresponding parts, and solve for missing measures.
- **More with Functions:** Student will identify the parts of a line or quadratic equation and be able to graph it, and explore arithmetic and geometric sequences, as well as exponential growth and decay.
- **Measurement:** Student will explore relationships between sets of lines and the angles they create, understand and use the Pythagorean theorem, and identify characteristics of polygons.
- **Plane Geometry:** Student will determine how to calculate areas of common polygons, identify different transformations and how to determine the type and original image location.
- **Measures of Solid Figures:** Student will calculate surface area and volume of different objects, and solve for missing measures of 3 dimensional figures when given surface area or volume, and explain the relationship between surface area and volume.
- **Data Analysis:** Student will identify the mean, median, mode, range, lower quartile, and upper quartile of different data sets and construct the best display of the information.
- **Probability:** Student will identify all the possible outcomes of a given situation using combinations, permutations, and probability, and determine if events are dependent or independent.

Unit 1: The Real Number System	
Assignments	
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*	

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Unit 2: Modeling Problems in Integers	
Assignments	
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	
Assignments	
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	
Assignments	
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	
Assignments	
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		
Assignments		
Mathematics 800	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		
Assignments		
Mathematics 800	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		
Assignments		
Mathematics 800	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	28.

Unit 9: Data Analysis		
Assignments		
Mathematics 800	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		
Assignments		
Mathematics 800	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		
Assignments		
Math 800	1. Review I	4. Alternate Exam - Form A*
	2. Review II	5. Alternate Exam - Form B*
	3. Exam	

(*) Indicates alternative assignment