

## MAT 8: Pre-Algebra Grade 8

Our Math 8 course is designed for middle school pre- algebra students and aligns directly to the California State Content Standards. The Course includes lessons covering 8<sup>th</sup> grade mathematics and pre-algebra standards in order to reach students with differing previous exposure to mathematics as well as pre-teach important topics that come up in high school algebra that are heavily emphasized in the CA state standards.

| Order | Lesson Name            | Lesson Content  |
|-------|------------------------|---|
| 1     | Number Concepts Review | Place value. Rounding. Estimation, Compatible numbers   |
| 2     | Properties             | Commutative property of addition; associative property of addition; commutative property of multiplication; associative property of multiplication; identity properties; distributive property                                |
| 3     | Problem Solving 1      | Five step thinking plan. Problem solving strategies.  |
| 4     | Basic Operations 1     | Positive and negative rational numbers; equivalent fractions; cross products; absolute value; order of operations; fractions to decimals; comparing and ordering.   |
| 5     | Basic Operations 2     | Addition, subtraction, multiplication, division   |
| 6     | <b>Review Test 1</b>   |   |
| 7     | Ratio & Proportion     | Ratio, rates. Equivalent ratios. Proportion   |
| 8     | Problem Solving 2      | Practical problems dealing with ratio, proportion, unit rates, rates, and scale   |
| 9     | Percent 1              | Percent to decimals; percent to fractions; finding percent  |
| 10    | Percent 2              | Percent of increase or decrease; sales tax and discounts  |
| 11    | Probability            | Probability. Finding samples. Randomly occurring events. Compound events. Independent events. Dependent events. Making predictions. Capture and recapture. Method tree diagrams. Counting principle factorials. Venn diagrams |
| 12    | <b>Review Test 2</b>   |   |
| 13    | Algebra 1              | Numerical expressions; variables; variable expressions; order of operations; equations; solutions   |
| 14    | Algebra 2              | Simplifying numerical and variable expressions; coefficients; constants; evaluating algebraic expressions   |
| 15    | Algebra 3              | Properties of equality; inverse operations; inequality; solving inequalities  |
| 16    | Algebra 4              | Guides for practice in solving multi-step equations and inequalities  |
| 17    | Algebra 5              | Translating data into equations and inequalities; using equations and inequalities to solve practical   |

## MAT 8: Pre-Algebra Grade 8

|    |                          |  |
|----|--------------------------|--|
|    |                          | problems   |
| 18 | <b>Review Test 3</b>     |  |
| 19 | Geometric Concepts       | Point, line, ray; line relationships; angles; angle relationships; angle measurement and classifications; bisecting line segments and angles                               |
| 20 | Plane Figures            | Regular polygons. Triangles. Quadrilaterals. Congruent figures. Circles.   |
| 21 | Space Figures            | Polyhedrons. Prisms. Pyramids. Cylinders, cones, and spheres.  |
| 22 | Geometric Measurement    | Perimeter and circumference; formulas for area of plane figures; surface area of polyhedrons; volume of space figures  |
| 23 | Square Roots & Triangles | Square roots. Principal square roots. Perfect squares. Irrational numbers and real numbers. Pythagorean Theorem. Similar triangles. Special right triangles. Trigonometry. |
| 24 | <b>Review Test 4</b>     |  |
| 25 | Statistics 1             | Samples. Mean, median, mode, and range. Binomial data. Line plots. Bar graphs. Line graphs. Double bar and double line graphs. Circle graphs. Frequency distribution       |
| 26 | Statistics 2             | Stem and leaf plots. Box and whiskers plots. Histograms. Line plots  |
| 27 | Integer Concepts         | Positive and negative numbers. Zero. Opposites. Absolute value.  |
| 28 | Integer Operations       | Addition, subtraction, multiplication, and division of integers.   |
| 29 | Problem Solving 3        | Translating word phrases into algebraic expressions with integers. Problem solving strategies.   |
| 30 | <b>Review Test5</b>      |  |
| 31 | Coordinate Graphing 1    | Coordinate planes. Ordered pairs. Solutions. Graphing equations. Linear equations. Slope. Slope formula.   |
| 32 | Coordinate Graphing 2    | Using coordinate graphing to solve problems. Solving and graphing equations and inequalities. Quadrants.   |
| 33 | Polynomials 1            | Monomials. Binomials. Trinomials. Operations with polynomials  |
| 34 | Polynomials 2            | Using the distributive property. FOIL method of multiplying binomials. Squaring binomials  |
| 35 | Solving Equation Systems | Matrices. Determinants. Cramer's rule.   |
| 36 | <b>Final Exam</b>        |  |