

# PARENT MASTERY GUIDE

## ALGEBRA I

### FIRST TERM

<ul style="list-style-type: none"><li>•order a given set of fractions and decimal numbers</li><li>•identify the reciprocal of a fraction</li><li>•apply the concept of slope to represent rate of change in a real-world situation</li><li>•discuss differences in sets of the real</li><li>•compare and contrast the Greatest Common Factor and Least Common Multiple of a set of algebraic expressions</li><li>•draw a number line to describe the absolute value of a number as distance from zero</li><li>•model mathematical operations using real-world situations</li><li>•explore various representations of absolute value</li><li>•research the history of prime numbers and their uses</li><li>•add and subtract algebraic expressions</li><li>•use estimation to find a reasonable answer for a long math problem</li><li>•describe the steps for finding the area of different real world shapes</li><li>•generalize area formulas using manipulatives for a parallelogram, a triangle, and a trapezoid</li><li>•explain the steps for arriving at an estimate for the volume of a container</li><li>•relate the volume of a container to its shape</li><li>•add, subtract, and perform scalar multiplication on matrices using appropriate technology</li><li>•explain the importance of the value of the determinant of a matrix</li><li>•find the dimensions of a rectangle when given its area and the relationship between two connecting sides</li><li>•describe how changes in the dimensions of figures affect</li></ul>	<p>perimeter, area, and volume</p> <ul style="list-style-type: none"><li>•use technology to solve systems of equations using matrices</li><li>•translate a verbal sentence into an algebraic equation</li><li>•select the graph that represents a given linear function expressed in slope-intercept form</li><li>•solve multi-step linear equations</li><li>•select the linear graph that models the given real-world situation described in a word problem (no data set given)</li><li>•select the linear graph that models the given real-world situation described in a table of data</li><li>•evaluate an algebraic expression given values for one or more variables using grouping symbols and/or exponents less than four</li><li>•determine the slope from the graph of a linear equation (no labeled points)</li><li>•apply the concept of rate of change to solve real-world problems</li><li>•select the graph that best represents a given linear inequality</li><li>•select the non-linear graph that models the given real-world situation or vice versa</li><li>•recognize the change that occurs in a graph when coefficients and/or constants of the corresponding linear equations are changed</li><li>•represent algebraic expressions and operations using manipulatives</li><li>•model the steps for solving simple linear equations using manipulatives</li><li>•write an equation that can be used to solve a word problem</li><li>•justify correct results of algebraic procedures</li><li>•choose the matching linear graph given a set of ordered pairs</li><li>•make a prediction from the graph of a set of real-world linear data</li></ul>
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### SECOND TERM

<ul style="list-style-type: none"><li>•use ratios and proportions to represent and solve real-world problems (e.g. scale drawings, sampling, etc.)</li><li>•find approximate values of real numbers such as pi and the square root of two</li><li>•multiply two polynomials with each factor having no more than two terms</li><li>•use Algebra tiles to represent the area of the product of two one-variable binomials with positive constants and coefficients</li><li>•select the algebraic notation which generalizes the pattern represented by data in a given table</li><li>•identify the graph of the solution to a one variable inequality on a number line</li><li>•solve multi-step linear inequalities in real-world situations</li><li>•determine the domain and/or range of a function represented by the graph of real-world situations</li><li>•produce an equation to describe the relationship between data sets</li><li>•explore patterns in Pascal's Triangle and a Fibonacci sequence</li><li>•solve a system of two linear equations using the graphing, elimination, and substitution methods</li><li>•give reasons for the selection of one of the three methods for solving a system of equations</li><li>•distinguish between a function and other relationships.</li><li>•analyze "families of functions" using technology</li><li>•find the median for a given set of real-world data (even number of data)</li><li>•apply counting principles of permutations or combinations in real-world situations</li><li>•graph real-world data using a variety of representations</li><li>•give reasons for the selection of a graph that best describes specific data</li><li>•determine how valid the mean, median and mode are for a set of data</li><li>•defend the sampling method chosen to conduct a survey.</li><li>•debate possible conclusions that can be supported by the data</li></ul>	<ul style="list-style-type: none"><li>•determine how valid the mean, median and mode are for a set of data</li><li>•defend the sampling method chosen to conduct a survey.</li><li>•debate possible conclusions that can be supported by the data</li><li>•make predictions from real-world data using the graph of a best fitting line</li><li>•explain how to determine if a triangle is a right triangle given the measurements of all three sides</li><li>•make a chart showing connections among polygons (i.e. quadrilateral, parallelogram, rectangle, rhombus, square, and trapezoid)</li><li>•illustrate the Pythagorean Theorem by measuring the length, width, and diagonals of rectangular objects</li><li>•design area models to illustrate the Pythagorean Theorem.</li><li>•determine the height of an object that is difficult to measure by using the properties of similar triangles or the angle of elevation.</li><li>•apply the given formula to find the area of a circle, the circumference of a circle, or the volume of a rectangular solid</li><li>•apply the given Pythagorean Theorem to a real life problem illustrated by a diagram (no square roots in answer)</li><li>•apply proportion and the concepts of similar triangles to find the length of a missing side of a triangle</li><li>•calculate the distance between two points given the Pythagorean Theorem and the distance formula</li></ul>
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- make predictions from real-world data using the graph of a best fitting line
- explain how to determine if a triangle is a right triangle given the measurements of all three sides
- make a chart showing connections among polygons (i.e. quadrilateral, parallelogram, rectangle, rhombus, square, and trapezoid)
- illustrate the Pythagorean Theorem by measuring the length, width, and diagonals of rectangular objects
- design area models to illustrate the Pythagorean Theorem.
- determine the height of an object that is difficult to measure by using the properties of similar triangles or the angle of elevation.
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- apply the given Pythagorean Theorem to a real life problem illustrated by a diagram (no square roots in answer)
- apply proportion and the concepts of similar triangles to find the length of a missing side of a triangle
- calculate the distance between two points given the Pythagorean Theorem and the distance formula