

# Oneness-Family School - Sixth - Eighth Grade - Math Benchmarks

Academy: Math

<b>MATH</b>			
<b>Introduction to Pre-Algebra</b>	<b>Pre-Algebra</b>	<b>Algebra</b>	<b>Geometry</b>
<p>Can analyze problems by identifying relations, distinguishing relevant from irrelevant information, and identifying missing information</p> <p>Can write and solve one-step linear equations in one variable</p> <p>Can solve problems using the correct order of operations</p> <p>Can apply algebraic order of operations and properties and justify each step in a process</p> <p>Can use a variety of methods to explain mathematical reasoning</p> <p>Can compare and order positive and negative fraction, decimals, and mixed numbers and place them on a number line</p> <p>Can use graphs to explain mathematical reasoning</p> <p>Can solve addition, subtraction, multiplication, and division problems, including that use positive and negative integers and combinations of these operations</p>	<p>Can use variables, expression, and equations to model real-world problems</p> <p>Can predict, find, and justify solutions to application problems using appropriate tables, graphs and algebraic equations</p> <p>Can locate and name points on a coordinate graph</p> <p>Can draw conclusions and make predictions using scatter plots</p> <p>Can compare and order integers</p> <p>Can select appropriate operations to solve problems involving integers</p> <p>Can locate and name points on a coordinate plane using ordered pairs of integers</p> <p>Can graph reflections and translations on a coordinate plane</p> <p>Can explore rational numbers</p>	<p>Can translate between mathematical and verbal expressions and equations</p> <p>Can evaluate numerical and algebraic expressions using the order of operations</p> <p>Can solve open sentence equations and inequalities</p> <p>Can recognize and use the properties of identity and equality.</p> <p>Can use the Distributive Property to simplify and evaluate expressions.</p> <p>Can recognize and use the Commutative and Associative Properties to simplify algebraic expressions</p> <p>Can identify the hypothesis and conclusion in a conditional statement</p> <p>Can use a counterexample to show that an assertion is false</p> <p>Can classify and graph real numbers</p> <p>Can find square roots and order real numbers</p>	<p>Can identify and model points, lines, and planes</p> <p>Can identify collinear and coplanar points and intersecting lines and planes in space</p> <p>Can measure segments, determine accuracy of measurement, and compute with measures</p> <p>Can find the midpoint of a segment and the distance between points</p> <p>Can identify and use congruent angles and the bisector of an angle</p> <p>Can identify and name polygons and find perimeters of polygons</p> <p>Can make conjectures based on inductive reasoning and find counterexamples</p> <p>Can determine truth values of conjunctions and disjunctions and construct truth tables</p> <p>Can analyze statements in if-then form and write the converse, inverse, and contrapositive of if-then statements</p> <p>Can use the Law of Detachment and the Law of Syllogism</p> <p>Can identify and use basic postulates about points, lines, and planes</p>

Introduction to Pre-Algebra	Pre-Algebra	Algebra	Geometry
<p>Can write an algebraic expression for a given situation, using up to three variables</p> <p>Can solve problems involving rates, average speed, distance, and time</p> <p>Can use variables in expressions describing the formulas for the perimeter of a rectangle</p> <p>Can determine the least common multiple and the greatest common divisor of whole numbers and use them to solve problems with fractions</p> <p>Can compare and order positive and negative fractions, decimals, and mixed numbers and place them on a number line</p> <p>Can solve problems involving addition, subtraction, multiplication, and division of positive fractions</p> <p>Can explain the meaning of multiplication and division of positive fractions and perform the calculations</p> <p>Can interpret and use ratios in different contexts to show the relative sizes of two quantities, using appropriate notations</p> <p>Can use proportions to solve problems</p>	<p>Can multiply and divide fractions</p> <p>Can add and subtract like fractions and unlike fractions</p> <p>Can convert fractions to decimals</p> <p>Can factor numbers</p> <p>Can determine least common multiple</p> <p>Can communicate mathematical ideas using algebraic mathematical models</p> <p>Can predict, find, and justify solutions to application problems using algebraic equations</p> <p>Can use formulas to solve problems</p> <p>Can translate verbal phrases into inequalities</p> <p>Can compare and contrast proportional and non proportional linear relationships</p> <p>Can use proportional relationships in similar two-dimensional figures to find missing measurements</p>	<p>Can draw and interpret graphs of functions</p> <p>Can solve equations by using addition, subtraction, multiplication, and division</p> <p>Can determine whether two ratios form a proportion</p> <p>Can solve equations involving more than one operation, including equations with grouping symbols and variables on both sides</p> <p>Can solve consecutive integer problems</p> <p>Can solve proportions</p> <p>Can find percents of increase and decrease</p> <p>Can solve problems involving percents of change</p> <p>Can solve equations for given variables</p> <p>Can use formulas to solve real-world problems</p> <p>Can solve uniform motion problems</p> <p>Can solve mixture problems</p> <p>Can represent relation as sets of ordered pairs, tables, mappings, and graphs</p>	<p>Can write paragraph proofs</p> <p>Can use algebra to write two-column proofs</p> <p>Can use properties of equality in geometry proofs</p> <p>Can write proofs involving segment addition, segment congruence, supplementary and complementary angles, and congruent and right angles</p> <p>Can identify the relationships between two lines or two planes</p> <p>Can name angles formed by a pair of lines and a transversal</p> <p>Can use the properties of parallel lines to determine congruent angles</p> <p>Can use algebra to find angle measures</p> <p>Can find slopes of lines and use slope to identify parallel and perpendicular lines</p> <p>Can write an equation of a line using given information and can solve problems by writing equations</p> <p>Can recognize angle conditions that occur with parallel lines and prove that two lines are parallel based on given angle relationships</p> <p>Can find the distance between a point and a line and the distance between parallel lines</p> <p>Can identify and classify triangles by angles and sides</p>

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<p>Can convert one unit of measure to another</p> <p>Can demonstrate an understanding that rate is a measure of one quantity per unit value of another quantity</p> <p>Can interpret and use ratios in different contexts</p> <p>Can solve problems involving rates</p> <p>Can calculate given percents of quantities</p> <p>Can understand how additional data added to data sets may affect measures of central tendency</p> <p>Can explain why a specific measure of central tendency provides the most useful information in a given context</p> <p>Can explain how the inclusion or exclusion of outliers affects measures of central tendency</p> <p>Can analyze data displays</p> <p>Can identify different ways of selecting a sample and which method makes a sample more representative for a population</p> <p>Can identify claims based on statistical data</p>	<p>Can use ratios, proportions, and percent of change to solve problems</p> <p>Can evaluate a solution for reasonableness</p> <p>Can select and use appropriate representations for presenting and displaying relationships among collected data</p> <p>Can generate a different representation of data given another representation of data</p> <p>Can predict, find, and justify solutions to application problems using appropriate tables, graphs, and algebraic equations</p> <p>Can draw conclusions and make predictions by analyzing trends in scatter plots</p> <p>Can examine factors and monomials</p> <p>Can evaluate expressions with powers and exponents</p> <p>Can multiply and divide monomials</p>	<p>Can find the inverse of a function</p> <p>Can determine whether a relation is a function.</p> <p>Can find functional values.</p> <p>Can identify linear equations, intercepts, and zeros</p> <p>Can graph linear equations</p> <p>Can recognize arithmetic sequences and extend and write formulas for arithmetic sequences</p> <p>Can write equations for proportional and non-proportional relationships</p> <p>Can use rate of change to solve problems</p> <p>Can find the slope of a line</p> <p>Can write and graph direct variation equations</p> <p>Can solve problems involving direct variation</p> <p>Can write and graph linear equations in slope-intercept form</p> <p>Can model real-world data with an equation in slope-intercept form</p> <p>Can write an equation of a line given the slope and one point on the line</p>	<p>Can apply the Angle Sum Theorem and the Exterior Angle Theorem</p> <p>Can name and label corresponding parts of congruent triangles and identify congruence transformations</p> <p>Can uses the SSS, SAS, and ASA Postulates and the AAS Theorem to test for triangle congruence</p> <p>Can use the properties of isosceles and equilateral triangles</p> <p>Can position and label figures in order to write coordinate proofs and can prove theorems using coordinate proofs</p> <p>Can identify and use perpendicular bisectors, and angle bisectors, medians, and altitudes in triangles</p> <p>Can recognize and apply properties of inequalities to the measure of the angles of a triangle and the relationship between angles and sides of a triangle</p> <p>Can apply the Triangle inequality Theorem</p> <p>Can determine the shortest distance between a point and a line</p> <p>Can apply the SAS and SSS Inequalities</p> <p>Can identify similar figures and solve problems involving scale factors</p> <p>Can use proportional parts of triangles</p>

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<p>Can identify data that represent sampling errors and explain why the sample might be biased</p> <p>Can represent probabilities as ratios, proportions, decimals, and percentages and verify that the probabilities computed are reasonable</p> <p>Can represent all possible outcomes for compound events in an organized way and express the theoretical probability of each outcome</p> <p>Can identify independent and dependent events</p> <p>Can calculate the probability of either of two disjoint events and the probability of one event following another</p> <p>Can identify angles as vertical, adjacent, complementary, or supplementary and describe each term</p> <p>Can use the properties of complementary and supplementary angles and the sum of the angles of a triangle to solve problems involving an unknown angle</p> <p>Can use coordinate graphs to plot simple figures, determine lengths and areas related to them, and</p>	<p>Can express numbers using positive and negative exponents</p> <p>Can use scientific notation</p> <p>Can communicate mathematical ideas using language, efficient tools, appropriate units, and graphical, numerical, physical or algebraic mathematical models</p> <p>Can predict, find, and justify solutions to application problems using appropriate tables, graphs, and algebraic equations</p> <p>Can communicate mathematical ideas using algebraic mathematical models</p> <p>Can use geometric concepts and properties to solve problems in fields such as art and architecture</p> <p>Can use the Pythagorean Theorem to solve real-world problems</p> <p>Can graph rotations on coordinate plane</p> <p>Can use properties to classify quadrilaterals and other polygons</p>	<p>Can write an equation of a line given two points on the line</p> <p>Can write the equation of a line in point-slope form</p> <p>Can write linear equations in different forms</p> <p>Can interpret points on a scatter plot</p> <p>Can use lines of fit to make and evaluate predictions</p> <p>Can write an equation of the line that passes through a given point, parallel to a given line</p> <p>Can write an equation of the line that passes through a given point, perpendicular to a given line</p> <p>Can determine whether a system of linear equations has no, one, or infinitely many solutions</p> <p>Can solve systems of equations by graphing, using substitution, and using elimination</p> <p>Can solve real-world problems involving systems of equations</p> <p>Can determine the best method for solving systems of equations</p> <p>Can solve linear inequalities by using addition, subtraction, multiplication and division</p>	<p>Can divide a segment into parts</p> <p>Can recognize and use proportional relationships of corresponding perimeters, angle bisectors, altitudes, and medians of similar triangles</p> <p>Can find the geometric mean of two numbers</p> <p>Can solve problems involving relationships between parts of a right triangle and the altitude to its hypotenuse</p> <p>Can use the Pythagorean Theorem and its converse</p> <p>Can use the properties of special right triangles</p> <p>Can find trigonometric ratios using right triangles and can solve problems using trigonometric ratios</p> <p>Can use the Law of Sines and the Law of Cosines to solve triangles</p> <p>Can solve problems using the Law of Sines and the Law of Cosines</p> <p>Can find the sum of the measures of the interior and exterior angles of a polygon</p> <p>Can recognize and apply properties of the sides, angles, and diagonals of parallelograms</p> <p>Can recognize the conditions that ensure a quadrilateral is a parallelogram and prove that a set of points forms a parallelogram in the coordinate plane</p>

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<p>determine their image under translations and reflections</p> <p>Can use variables in expressions describing geometric quantities</p> <p>Can express, in symbolic form, simple relationships arising from geometry</p> <p>Can understand the concept of a constant such as <math>\pi</math></p> <p>Can recall and use the formulas for the circumference and area of circles</p> <p>Can recall and use common estimates of <math>\pi</math> to calculate the circumference and area of circles</p> <p>Can recall and use the formulas for the volume of triangular prisms and cylinders</p> <p>Can determine the two integers between which the root of a non-square integer lies and explain why</p> <p>Can recall and understand the Pythagorean Theorem and its converse</p> <p>Can use the Pythagorean Theorem to find the length of the missing side of a right triangle and the lengths of other line segments</p>	<p>Can calculate areas for standard quadrilaterals, triangles and circles</p> <p>Can calculate the sum of the measures of the interior angles for any regular polygon</p> <p>Can use properties to define and identify angle and line relationships</p> <p>Can draw three-dimensional figures from different perspectives</p> <p>Can connect models of prisms, cylinders, pyramids, spheres, and cones to formulas for volume of these objects</p> <p>Can estimate measurements and use formulas to solve application problems involving lateral and surface area</p> <p>Can use proportional relationships in similar three-dimensional figures to find missing measurements</p> <p>Can select and use an appropriate representation for presenting and displaying relationships among collected data, including line plots, line graphs, stem and leaf plots,</p>	<p>Can solve linear inequalities involving more than one operation</p> <p>Can solve linear inequalities involving the Distributive Property</p> <p>Can solve compound inequalities containing the word or/and and graph their solution sets</p> <p>Can solve absolute value equations</p> <p>Can graph inequalities on the coordinate plane</p> <p>Can solve real-world problems involving linear inequalities</p> <p>Can solve systems of inequalities by graphing</p> <p>Can write expressions using exponents</p> <p>Can evaluate expressions with exponents using order of operations</p> <p>Can factor monomials</p> <p>Can multiply and divide monomials</p> <p>Can apply the product and quotient of powers properties</p> <p>Can use powers to compare values</p> <p>Can write expressions using positive exponents</p>	<p>Can recognize and apply the properties of rhombi, squares, and trapezoids</p> <p>Can draw reflected images</p> <p>Can recognize and draw lines and points of symmetry</p> <p>Can draw translated images using coordinates and repeated reflections</p> <p>Can draw rotated images using the angle of rotation</p> <p>Can identify figures with rotational symmetry</p> <p>Can identify regular tessellations and create tessellations with specific attributes</p> <p>Can determine whether a dilations is an enlargement, reduction, or congruence transformation and determine the scale factor of a given dilation</p> <p>Can identify and use the parts of circles</p> <p>Can solve problems involving the circumference of a circle</p> <p>Can recognize major arcs, minor arcs, semicircles, and central angles and their measures</p> <p>Can find arc length</p> <p>Can recognize and use the relationship between arcs and chords and chords and diameters</p> <p>Can find the measures of inscribed angles and the measures of angles of inscribed polygons</p> <p>Can use the properties of tangents</p>

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<p>Can use formulas routinely for finding the surface area of basic three-dimensional figures, including prisms</p>	<p>circle graphs, bar graphs, box and whisker plots, histograms, and Venn diagrams, with and without the use of technology</p> <p>Can find the probabilities of dependent and independent events</p> <p>Can evaluate methods of sampling to determine validity of an inference made from a set of data</p>	<p>Can use negative exponents to solve word and real world problems</p> <p>Can evaluate algebraic expressions with negative exponents</p> <p>Can express numbers in standard form and scientific notation</p> <p>Can solve problems using scientific notation</p> <p>Can order numbers in scientific notation</p> <p>Can use exponent rules to simplify and evaluate algebraic expressions</p> <p>Can identify polynomials</p> <p>Can determine the degree of a polynomials</p> <p>Can add and subtract polynomials</p> <p>Can multiply polynomials by monomial and polynomials</p> <p>Can find the prime factorization and greatest common factor of monomials</p> <p>Can factor polynomials using the Distributive Property</p> <p>Can factor trinomials where <math>A=1</math></p> <p>Can factor trinomials where <math>A&gt;1</math></p>	<p>Can solve problems with circumscribed polygons</p> <p>Can find measures of angles formed by lines intersecting inside, on, or outside a circle</p> <p>Can find the measures of segments that intersect in the interior or exterior of a circle</p> <p>Can write the equation of a circle</p> <p>Can find the perimeters and areas of parallelograms, triangles, rhombi, circles, regular polygons, and irregular figures</p> <p>Can solve problems involving geometric probability</p> <p>Can solve problems involving sectors and segments of circles</p> <p>Can use orthogonal drawings of three-dimensional figures to make models</p> <p>Can identify and use three-dimensional figures</p> <p>Can draw two-dimensional models for three-dimensional figures</p> <p>Can find the surface areas and lateral areas of prisms, cylinders, regular pyramids, and cones</p> <p>Can recognize and define the basic properties of spheres</p> <p>Can find the surface area of spheres</p> <p>Can find volumes of prisms, cylinders, pyramids, circular cones, and spheres</p> <p>Can solve problems involving volumes of spheres</p>

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		<p>Can factor the difference of squares</p> <p>Can factor perfect squares</p> <p>Can solve a quadratic function by graphing, completing the square, or using the quadratic formula</p> <p>Can graph exponential functions</p> <p>Can solve problems involving exponential functions</p>	<p>Can identify congruent or similar solids</p> <p>Can state the properties of similar solids</p> <p>Can use the Distance and Midpoint Formulae for points in space</p>