MATH

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

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

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

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

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

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

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