



JC Schools 7th Grade Accelerated Yearly Math Standards

Blue Highlight indicates 8th Grade standards

Units	Priority Standards	Supporting Standards
Unit 1 The Number System 22 Days	7.NS.A.1.c,f Apply and extend previous understandings of numbers to add and subtract rational numbers. c) Describe situations and show that a number and its opposite have a sum of 0 (additive inverses). f) Interpret sums and differences of rational numbers. 7.NS.A.2.b,f Apply and extend previous understandings of numbers to multiply and divide rational numbers. b) Determine that a number and its reciprocal have a product of 1 (multiplicative inverse). f) Interpret products and quotients of rational numbers by describing real-world contexts. 7.NS.A.3 Solve problems involving the four arithmetic operations with rational numbers.	7.NS.A.1.a,b,d,e Apply and extend previous understandings of numbers to add and subtract rational numbers. a) Add and subtract rational numbers. b) Represent addition and subtraction on a horizontal or vertical number line. d) Understand subtraction of rational numbers as adding the additive inverse. e) Determine the distance between two rational numbers on the number line is the absolute value of their difference. 7.NS.A.2.a,c-e Apply and extend previous understandings of numbers to multiply and divide rational numbers. a) Multiply and divide rational numbers. c) Understand that every quotient of integers (with on-zero divisor) is a rational number. d) Convert a rational number to a decimal. e) Understand that all rational numbers can be written as fractions or decimal numbers that terminate or repeat. 8.NS.A.1.a-d Explore the real number system. a) Know the differences between rational and irrational numbers. b) Understand that all rational numbers have a decimal expansion that terminates or repeats. c) Convert decimals which repeat into fractions and fractions into repeating decimals. d) Generate equivalent representations of rational numbers. 8.NS.A.2 Estimate the value and compare the size of irrational numbers and approximate their locations on a number line.

		8.EE1.A.2.a-c Investigate concepts of square and cube roots. a) Solve equations of the form $x^2 = p$ and $x^3 = p$, where p is a positive rational number. b) Evaluate square roots of perfect squares less than or equal to 625 and cube roots of perfect cubes less than or equal to 1000. c) Recognize that square roots of non-perfect squares are irrational.
Unit 2 Expressions, Equations, and Inequalities 28 Days	7.EE1.A.1 Apply properties of operations to simplify and to factor linear algebraic expressions with rational coefficients. 7.EE1.A.2 Understand how to use equivalent expressions to clarify quantities in a problem. 7.EE1.B.3.b Solve multi-step problems posed with rational numbers. b) Assess the reasonableness of answers using mental computation and estimation strategies. 7.EE1.B.4.b,c Write and/or solve linear equations and inequalities in one variable. b) Write and/or solve two-step equations of the form $px + q = r$ and $p(x + q) = r$, where p, q and r are rational numbers, and interpret the meaning of the solution in the context of the problem. c) Write, solve and/or graph inequalities of the form $px + q > r$ or $px + q < r$, where p, q, and r are rational numbers. 7.NS.A.2.f Apply and extend previous understandings of numbers to multiply and divide rational numbers. f) Interpret products and quotients of rational numbers by describing real-world contexts. 8.EE1.C.7.a,b Solve linear equations and inequalities in one variable. a) Create and identify linear equations with one solution, infinitely many solutions or no solutions.	7.EE1.B.4.a Write and/or solve linear equations and inequalities in one variable. a) Write and/or solve equations of the form $x+p = q$ and $px = q$ in which p and q are rational numbers. 7.GM.B.5 Use angle properties to write and solve equations for an unknown angle.

	b) Solve linear equations and inequalities with rational number coefficients, including equations and inequalities whose solutions require expanding expressions using the distributive property and combining like terms.	
Unit 3 Ratios and Proportional Relationships 28 Days	7.RP.A.2.a,c Recognize and represent proportional relationships between quantities. a) Determine when two quantities are in a proportional relationship. c) Explain what a point (x, y) on the graph of a proportional relationship means in terms of the situation. 7.RP.A.3 Solve problems involving ratios, rates, percentages and proportional relationships. 7.NS.A.3 Solve problems involving the four arithmetic operations with rational numbers. 7.EE1.A.2 Understand how to use equivalent expressions to clarify quantities in a problem. 7.EE1.B.3.b Solve multi-step problems posed with rational numbers. b) Assess the reasonableness of answers using mental computation and estimation strategies. 7.GM.A.1 Solve problems involving scale drawings of real objects and geometric figures, including computing actual lengths and areas from a scale drawing and reproducing the drawing at a different scale. 8.EE1.B.6.a, b Apply concepts of slope and y-intercept to graphs, equations and proportional relationships. a) Explain why the slope (m) is the same between any two distinct points on a non-vertical line in the Cartesian coordinate plane. b) Derive the equation $y = mx$ for a line through the origin and the equation $y = mx + b$ for a line intercepting the vertical axis at b.	7.RP.A.1 Compute unit rates, including those that involve complex fractions, with like or different units. 7.RP.A.2.b, d Recognize and represent proportional relationships between quantities. b) Identify and/or compute the constant of proportionality (unit rate). d) Recognize that the graph of any proportional relationship will pass through the origin.. 8.EE1.B.5.a, b Graph proportional relationships. a) Interpret the unit rate as the slope of the graph. b) Compare two different proportional relationships. 8.F.A.1.a-c Explore the concept of functions. (The use of function notation is not required.) a) Understand that a function assigns to each input exactly one output. c) Graph a function. 8.F.A.3.a-c Investigate the differences between linear and nonlinear functions. a) Interpret the equation $y = mx + b$ as defining a linear function, whose parameters are the slope (m) and the y-intercept (b). b) Recognize that the graph of a linear function has a constant rate of change c) Give examples of nonlinear functions. 8.F.B.4.b,c Use functions to model linear relationships between quantities. c) Determine the parameters of a linear function <i>*Determine the rate of change and initial value of the function from a description of a relationship or from two (x, y) values, including reading these from a table or from a graph) of a linear function.</i>

	8.F.A.1.b Explore the concept of functions. (The use of function notation is not required.) b) Determine if a relation is a function. 8.F.A.2 Compare characteristics of two functions each represented in a different way. 8.F.B.4.a Use functions to model linear relationships between quantities. a) Explain the parameters of a linear function based on the context of a problem. <i>*Interpret the rate of change and initial value of a linear function in terms of the situation it models, and in terms of its graph or a table of values</i> 8.F.B.5 Describe the functional relationship between two quantities from a graph or a verbal description.	d) Determine the x-intercept of a linear function.
Unit 4 Percentages 25 Days	7.RP.A.3 Solve problems involving ratios, rates, percentages and proportional relationships. 7.NS.A.3 Solve problems involving the four arithmetic operations with rational numbers. 7.EE1.A.2 Understand how to use equivalent expressions to clarify quantities in a problem. 7.EE1.B.3.b Solve multi-step problems posed with rational numbers. b) Assess the reasonableness of answers using mental computation and estimation strategies.	7.NS.A.1.a Apply and extend previous understandings of numbers to add and subtract rational numbers. a) Add and subtract rational numbers. 7.NS.A.2.a,e Apply and extend previous understandings of numbers to multiply and divide rational numbers. a) Multiply and divide rational numbers. e) Understand that all rational numbers can be written as fractions or decimal numbers that terminate or repeat.
Unit 5 Geometry 30 Days	7.GM.A.1 Solve problems involving scale drawings of real objects and geometric figures, including computing actual lengths and areas from a scale drawing and reproducing the drawing at a different scale. 7.GM.B.6.a,b	7.GM.A.3 Describe two-dimensional cross sections of pyramids, prisms, cones and cylinders. 7.GM.A.2.a,b Use a variety of tools to construct geometric shapes. a) Determine if provided constraints will create a unique triangle through construction.

	Understand the relationship between area, surface area and volume - Find the area of triangles, quadrilaterals and other polygons composed of triangles and rectangles - Find the volume and surface area of prisms, pyramids and cylinders 7.GM.A.4.a,b Understand concepts of circles. - Analyze the relationships among the circumference, the radius, the diameter, the area and Pi in a circle. - Know and apply the formulas for circumference and area of circles to solve problems. 7.RP.A.3 Solve problems involving ratios, rates, percentages-and proportional relationships. 8.GM.A.3 Describe the effect of dilations, translations, rotations and reflections on two-dimensional figures using coordinates. 8.GM.B.6 Use models to demonstrate a proof of the Pythagorean Theorem and its converse. 8.GM.C.9.a,b Solve problems involving surface area and volume. - Understand the concept of surface area and find the surface area of pyramids. - Understand the concept of volume and find the volume of pyramids, cones, and spheres.	b) Construct special quadrilaterals given specific parameters. 8.GM.A.1.a,b Verify experimentally the congruence properties of rigid transformations. - Verify that angle measure, betweenness, collinearity and distance are preserved under rigid transformations. - Investigate if orientation is preserved under rigid transformations. 8.GM.A.2.a Understand that two-dimensional figures are congruent if a series of rigid transformations can be performed to map the preimage to the image. - Describe a possible sequence of rigid transformations between two congruent figures., 8.GM.A.4.a Understand that two-dimensional figures are similar if a series of transformations (rotations, reflections, translations, and dilations) can be performed to map the preimage to the image. - Describe a possible sequence of transformations between two similar figures. 8.GM.A.5.a-d Explore angle relationships and establish informal arguments. - Derive the sum of interior angles of a triangle. - Explore the relationship between the interior and exterior angles of a triangle. - Construct and explore the angles created when parallel lines are cut by a transversal. - Use the properties of similar figures to solve problems. 8.GM.B.7 Use the Pythagorean Theorem to determine unknown side lengths in right triangles in problems in two- and three-dimensional context. 8.GM.B.8 Use the Pythagorean Theorem to find the distance between points in a Cartesian coordinate system.
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Unit 6 Probability and Statistics 25 Days	7.DSP.C.5.a,b Investigate the probability of chance events. a) Determine probabilities of simple events. b) Understand that the probability of a chance event is a number between 0 and 1 that expresses the likelihood of the event occurring. 7.DSP.A.1.b Understand that statistics can be used to gain information about a population by examining a sample of the population. b) Understand that generalizations from a sample are valid only if the sample is representative of the population. 7.DSP.B.3 Analyze different data distributions using statistical measures. 8.DSP.A.3 Interpret the parameters of a linear model of bivariate measurement data to solve problems. 8.DSP.A.4.a Understand the patterns of association in bivariate categorical data displayed in a two-way table. a) Construct and interpret a two-way table summarizing data on two categorical variables collected from the same subjects.	7.DSP.C.6.a-c Investigate the relationship between theoretical and experimental probabilities for simple events. a) Predict outcomes using theoretical probability. b) Perform experiments that model theoretical probability. c) Compare theoretical and experimental probabilities. 7.DSP.C.7.a,b Explain possible discrepancies between a developed probability model and observed frequencies. a) Develop a uniform probability model by assigning equal probability to all outcomes, and USE the model to determine probabilities of events. b) Develop a probability model (which may not be uniform) by observing frequencies in data generated from a chance process. 7.DSP.C.8.a,b Find probabilities of compound events using organized lists, tables, tree diagrams and simulations. a) Represent the sample space of a compound event. b) Design and use a simulation to generate frequencies for compound events. 7.DSP.A.1.a,c Understand that statistics can be used to gain information about a population by examining a sample of the population. a) Understand that a sample is a subset of a population. c) Understand that random sampling is used to produce representative samples and support valid inferences. 7.DSP.A.2 Use data from multiple samples to draw inferences about a population and investigate variability in estimates of the characteristic of interest. 7.DSP.B.4 Compare the numerical measures of center, measures of frequency and measures of variability from two random samples to draw inferences about the population. 8.DSP.A.1 Construct and interpret scatter plots of bivariate measurement data to investigate patterns of association between two quantities.
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		8.DSP.A.2 Generate and use a trend line for bivariate data, and informally assess the fit of the line. 8.DSP.A.4.b Understand the patterns of association in bivariate categorical data displayed in a two-way table. b) Use relative frequencies calculated for rows or columns to describe possible association between the two variables.
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