

BENCHMARK SEQUENCE REPORT

MATHEMATICS GRADE 8 BY QUARTER



This planning tool can be used to sequence the teaching and assessing of the OCS Benchmarks. Benchmarks should be assessed formatively in multiple ways and over multiple times to guide reteaching/relearning. Benchmarks that are assessed summatively should be sequenced throughout the school year to determine student mastery.

Quarter 1		Quarter 2		Quarter 3		Quarter 4		OCS Benchmarks	
Taught	Assessed	Taught	Assessed	Taught	Assessed	Taught	Assessed	OCS Codes	Benchmarks
DOMAIN: Standards for Mathematical Content									
<i>Strand: The Number System (NS)</i>									
8.SMC.NS.1 Know that there are numbers that are not rational, and approximate them by rational numbers.									
								8.SMC.NS.1.1-1.a	Show that numbers that are not rational are irrational
								8.SMC.NS.1.1-2.a	Show that every number has a decimal expansion
								8.SMC.NS.1.1-3.a	Show that for rational numbers the decimal expansion repeats eventually
								8.SMC.NS.1.1-4.a	Convert a decimal expansion which repeats eventually into a rational number
								8.SMC.NS.1.2-1.b	Compare rational approximations of irrational numbers to the size of irrational numbers
								8.SMC.NS.1.2-2.b	Locate rational approximations of irrational numbers on a number line diagram
								8.SMC.NS.1.2-3.b	Estimate the value of expressions by using rational approximations of irrational numbers
<i>Strand: Expressions and Equations (EE)</i>									
8.SMC.EE.1 Work with radicals and integer exponents.									
								8.SMC.EE.1.1-1.a	Show that the properties of integer exponents generate equivalent numerical expressions
								8.SMC.EE.1.1-2.a	Apply the properties of integer exponents to generate equivalent numerical expressions
								8.SMC.EE.1.2-1.b	Use square root symbols to represent solutions to equations of the form $x^2 = p$, where p is a positive rational number
								8.SMC.EE.1.2-2.b	Use cube root symbols to represent solutions to equations of the form $x^3 = p$, where p is a positive rational number
								8.SMC.EE.1.2-3.b	Evaluate square roots of small perfect squares
								8.SMC.EE.1.2-4.b	Evaluate cube roots of small perfect cubes
								8.SMC.EE.1.3-1.b	Estimate large or small quantities using numbers expressed in the form of a single digit times a whole-number power of 10
								8.SMC.EE.1.3-2.b	Compare large quantities to small quantities expressed in the form of a single digit times a whole-number power of 10
								8.SMC.EE.1.4-1.c	Perform operations with numbers expressed in scientific notation
								8.SMC.EE.1.4-2.c	Choose units of appropriate size for measurements of large or small quantities using scientific notation
								8.SMC.EE.1.4-3.c	Interpret numbers that have been expressed in scientific notation which have been generated by technology
8.SMC.EE.2 Understand the connections between proportional relationships, lines, and linear equations.									
								8.SMC.EE.2.1-1.b	Graph proportional relationships
								8.SMC.EE.2.1-2.b	Interpret the unit rate as the slope of a graph showing a proportional relationship
								8.SMC.EE.2.1-3.b	Compare two different proportional relationships represented in different ways
								8.SMC.EE.2.2-1.b	Use similar triangles to show that the slope m is the same between any two distinct points on a non-vertical line in the coordinate plane

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								8.SMC.EE.2.2-2.b	Derive the equation $y = mx$ for a line through the origin
								8.SMC.EE.2.2-3.b	Derive the equation $y = mx + b$ for a line intercepting the vertical axis at b
8.SMC.EE.3 Analyze and solve linear equations and pairs of simultaneous linear equations.									
								8.SMC.EE.3.3-1.b	Create linear equations in one variable with one solution
								8.SMC.EE.3.3-2.b	Create linear equations in one variable with infinitely many solutions
								8.SMC.EE.3.3-3.b	Create linear equations in one variable with no solutions
								8.SMC.EE.3.3-4.c	Solve linear equations with rational number coefficients
								8.SMC.EE.3.4-1.b	Show how solutions to a system of two linear equations in two variables correspond to points of intersection of their graph
								8.SMC.EE.3.4-2.b	Solve systems of two linear equations in two variables algebraically
								8.SMC.EE.3.4-3.b	Estimate solutions of two linear equations by graphing the equations
								8.SMC.EE.3.4-4.b	Solve simple cases of systems of two linear equations by inspection
								8.SMC.EE.3.4-5.c	Solve real world and mathematical problems leading to two linear equations in two variables
Strand: Functions (F)									
8.SMC.F.1 Define, evaluate, and compare functions.									
								8.SMC.F.1.1-1.a	Recognize that a function is a rule that assigns to each input exactly one output
								8.SMC.F.1.1-2.a	Relate the graph of a function to the set of ordered pairs consisting of an input and the corresponding output
								8.SMC.F.1.2.b	Compare properties of two functions each represented in a different way
								8.SMC.F.1.3-1.c	Interpret the equation $y = mx + b$ as defining a linear function, whose graph is a straight line
								8.SMC.F.1.3-2.c	Construct examples of functions that are not linear
8.SMC.F.2 Use functions to model relationships between quantities.									
								8.SMC.F.2.1-1.b	Construct a function to model a linear relationship between two quantities
								8.SMC.F.2.1-2.b	Determine the rate of change and initial value of the function from a description of a relationship
								8.SMC.F.2.1-3.b	Determine the rate of change and initial value of the function from two (x, y) values
								8.SMC.F.2.1-4.b	Interpret the rate of change and initial value of a linear function in terms of the situation it models
								8.SMC.F.2.1-5.b	Interpret the rate of change and initial value of a linear function in terms of its graph
								8.SMC.F.2.1-6.b	Interpret the rate of change and initial value of a linear function in terms of a table of values
								8.SMC.F.2.2-1.c	Describe qualitatively the functional relationship between two quantities by analyzing a graph
								8.SMC.F.2.2-2.c	Graph the qualitative features of a function that has been described verbally
Strand: Geometry (G)									
8.SMC.G.1 Understand congruence and similarity using physical models, transparencies, or geometry software.									
								8.SMC.G.1.1-1.b	Verify experimentally the properties of rotations, reflections, and translations, when lines are taken to lines
								8.SMC.G.1.1-2.b	Verify experimentally the properties of rotations, reflections, and translations, when line segments are taken to line segments of the same length

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								8.SMC.G.1.1-3.b	Verify experimentally the properties of rotations, reflections, and translations, when angles are taken to angles of the same measure
								8.SMC.G.1.1-4.b	Verify experimentally the properties of rotations, reflections, and translations, when parallel lines are taken to parallel lines
								8.SMC.G.1.2-1.b	Show that a two-dimensional figure is congruent to another if the second can be obtained from the first by a sequence of rotations, reflections, and translations
								8.SMC.G.1.2-2.b	Describe a sequence that exhibits the congruence between two congruent figures
								8.SMC.G.1.3-1.b	Describe the effect of dilations on two-dimensional figures using coordinates
								8.SMC.G.1.3-2.b	Describe the effect of translations on two-dimensional figures using coordinates
								8.SMC.G.1.3-3.b	Describe the effect of rotations on two-dimensional figures using coordinates
								8.SMC.G.1.3-4.b	Describe the effect of reflections on two-dimensional figures using coordinates
								8.SMC.G.1.4-1.b	Relate one two-dimensional figure as similar to another if the second can be obtained from the first by a sequence of rotations, reflections, translations, and dilations
								8.SMC.G.1.4-2.b	Describe a sequence that exhibits the similarity between two similar two-dimensional figures
								8.SMC.G.1.5-1.c	State informal arguments to establish facts about the angle sum of triangles
								8.SMC.G.1.5-2.c	State informal arguments to establish facts about the exterior angle of triangles
								8.SMC.G.1.5-3.c	State informal arguments to establish facts about the angles created when parallel lines are cut by a transversal
								8.SMC.G.1.5-4.c	State informal arguments to establish facts about the angle-angle criterion for similarity of triangles
8.SMC.G.2 Understand and apply the Pythagorean Theorem.									
								8.SMC.G.2.1-1.b	Explain a proof of the Pythagorean Theorem
								8.SMC.G.2.1-2.b	Explain a proof of the converse of the Pythagorean Theorem
								8.SMC.G.2.2-1.c	Solve real world and mathematical problems in two dimensions using the Pythagorean Theorem to determine unknown side lengths in right triangles
								8.SMC.G.2.2-2.c	Solve real world and mathematical problems in three dimensions using the Pythagorean Theorem to determine unknown side lengths in right triangles
								8.SMC.G.2.3.c	Find the distance between two points in a coordinate system using the Pythagorean Theorem
8.SMC.G.3 Solve real-world and mathematical problems involving volume of cylinders, cones, and spheres.									
								8.SMC.G.3.1-1.b	Solve real world and mathematical problems using the formula for the volume of cones
								8.SMC.G.3.1-2.b	Solve real world and mathematical problems using the formula for the volume of cylinders
								8.SMC.G.3.1-3.b	Solve real world and mathematical problems using the formula for the volume of spheres
Strand: Statistics and Probability (SP)									
8.SMC.SP.1 Investigate patterns of association in bivariate data.									
								8.SMC.SP.1.1-1.a	Construct scatter plots for bivariate measurement data
								8.SMC.SP.1.1-2.a	Analyze patterns of association between two quantities on a scatter plot of bivariate measurement data

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								8.SMC.SP.1.2-1.b	Assess the proximity of data points to a line on a scatter plot in order to determine its linear association
								8.SMC.SP.1.2-2.b	Assess the model fit to a line on a scatter plot by judging the closeness of the data points to a line
								8.SMC.SP.1.3.b	Solve problems by interpreting the slope and intercept of bivariate measurement data by using the equation of a linear model
								8.SMC.SP.1.4-1.c	Analyze patterns of association of categorical data displayed in a two-way frequency and relative frequency table
								8.SMC.SP.1.4-2.c	Construct a two-way table summarizing data on two categorical variables collected from the same subjects
								8.SMC.SP.1.4-3.c	Analyze summary data from a two-way frequency table to describe the association between two categorical variables
DOMAIN: Standards for Mathematical Practices									
<i>Strand: Solve Problems (MP1)</i>									
8.SMP.1 1. Make sense of problems and persevere in solving them.									
								8.SMP.1.c	Make sense of problems and persevere in solving them
<i>Strand: Reason (MP2)</i>									
8.SMP.2 2. Reason abstractly and quantitatively.									
								8.SMP.2.c	Reason abstractly and quantitatively
<i>Strand: Construct Arguments (MP3)</i>									
8.SMP.3 3. Construct viable arguments and critique the reasoning of others.									
								8.SMP.3.c	Construct viable arguments and critique the reasoning of others
<i>Strand: Model (MP4)</i>									
8.SMP.4 4. Model with mathematics.									
								8.SMP.4.c	Model with mathematics
<i>Strand: Use Tools (MP5)</i>									
8.SMP.5 5. Use appropriate tools strategically.									
								8.SMP.5.c	Use appropriate tools strategically
<i>Strand: Attend to Precision (MP6)</i>									
8.SMP.6 6. Attend to precision.									
								8.SMP.6.c	Attend to precision
<i>Strand: Use Structure (MP7)</i>									
8.SMP.7 7. Look for and make use of structure.									
								8.SMP.7.c	Look for and make use of structure
<i>Strand: Express Regularity (MP8)</i>									
8.SMP.8 8. Look for and express regularity in repeated reasoning.									
								8.SMP.8.c	Look for and express regularity in repeated reasoning