

	EM*	0Q	100Q	200Q	300Q	400Q	500Q	600Q	700Q	800Q	900Q	1000Q	1100Q	1200Q	1300Q	1400Q
GEOMETRY	<b>EM</b> Use directional and positional words.	<b>40Q</b> Combine simple figures to create a given shape.	<b>160Q</b> Identify and name basic solid figures: rectangular prism, cylinder, pyramid, and cone; identify in the environment.	<b>200Q</b> Identify and name: hexagon, trapezoid, parallelogram and rhombus.	<b>300Q</b> Identify intersecting, parallel, skew, and perpendicular lines and line segments. Identify midpoints of line segments.	<b>400Q</b> Identify angles (acute, right, obtuse, and straight).	<b>680Q</b> Classify plane figures according to type of symmetry (line, rotational).	<b>770Q</b> Identify corresponding parts of similar and congruent figures.	<b>880Q</b> Describe cross-sectional views of three-dimensional figures.	<b>1020Q</b> Define and identify complementary and supplementary angles.	<b>1170Q</b> Use properties of triangles to solve problems related to isosceles and equilateral triangles.	<b>1280Q</b> Use trigonometric ratios to represent relationships in the coordinate plane.	<b>1340Q</b> Describe the transformations of solid figures in space.	<b>1400Q</b> Graph polar equations; identify transformations related to changes in constants and coefficients.		
MEASUREMENT	<b>EM</b> Measure length using nonstandard units.	<b>70Q</b> Determine the value of sets of coins.	<b>100Q</b> Measure lengths in inches/centimeters using appropriate tools and units.	<b>210Q</b> Tell time at the five-minute intervals.	<b>300Q</b> Make different sets of coins with equivalent values.	<b>400Q</b> Determine perimeter using concrete models, nonstandard units, and standard units.	<b>560Q</b> Use grids to develop the relationship between the total numbers of square units in a rectangle and the length and width of the rectangle ( $l \times w$ ).	<b>640Q</b> Calculate distances from scale drawings and maps.	<b>840Q</b> Use models to find volume for prisms and cylinders as the product of the area of the base (B) and the height. Calculate the volume of prisms.	<b>920Q</b> Use proportions to express relationships between corresponding parts of similar figures.	<b>1040Q</b> Use nets or formulas to find the surface area of prisms and cylinders.	<b>1140Q</b> Find the slope of a line given the graph of the line, an equation of the line, or two points on the line.	<b>1230Q</b> Find the ratio of perimeters, areas, and volumes of similar geometric figures using formulas to solve problems.	<b>1360Q</b> Determine the area and volume of figures using right triangle relationships, including trigonometric relationships.	<b>1400Q</b> Determine the magnitude and direction of a vector and solve problems.	
OPERATIONS	<b>EM</b> Read, write, and count using whole numbers; rote count forward to 30.	<b>30Q</b> Use place value with hundreds.	<b>160Q</b> Read and write word names for numbers from 1,000 to 9,999.	<b>210Q</b> Compare and order numbers less than 10,000.	<b>320Q</b> Identify combinations of fractions that make one whole.	<b>410Q</b> Round whole numbers to a given place value.	<b>560Q</b> Use the distributive property to simplify numerical expressions.	<b>600Q</b> Estimate products and quotients of decimals or of mixed numbers.	<b>720Q</b> Read, write, or model numbers in expanded form using exponents.	<b>830Q</b> Calculate unit rates to make comparisons.	<b>900Q</b> Determine the absolute value of a number.	<b>1000Q</b> Calculate using numbers expressed in scientific notation.	<b>1130Q</b> Factor polynomials.	<b>1210Q</b> Use rational exponents to simplify expressions.	<b>1310Q</b> Find sums, differences, products, and quotients of rational algebraic expressions.	<b>1400Q</b> Simplify complex fractions.
<b>The Quantile Framework® for Mathematics</b>																
NUMBERS AND	<b>EM</b> Use ordinal numbers beyond tenth to describe order.	<b>60Q</b> Identify odd and even numbers using objects.	<b>190Q</b> Represent fractions concretely and symbolically.	<b>250Q</b> Subtract 2- and 3-digit numbers with regrouping.	<b>330Q</b> Compare rational numbers in decimal form (tenths and hundredths) with and without models.	<b>450Q</b> Divide using single-digit divisors with and without remainders.	<b>580Q</b> Estimate and compute sums and differences with decimal numbers.	<b>650Q</b> Use powers of ten to multiply and divide whole numbers and decimals.	<b>780Q</b> Write numbers using prime factorization.	<b>890Q</b> Compute with rational numbers (positive and negative).	<b>970Q</b> Add, subtract, and multiply matrices (including scalar multiplication).	<b>1050Q</b> Add, subtract, and multiply polynomials.	<b>1170Q</b> Describe, compare, and simplify imaginary numbers.	<b>1210Q</b> Perform basic operations with complex numbers and graph complex numbers.	<b>1370Q</b> Locate points in a polar coordinate system. Convert between rectangular and polar systems.	<b>1400Q</b> Add and subtract vectors; multiply vectors by a scalar.
ALGEBRA/PATTERNS & FUNCTIONS	<b>EM</b> Describe likenesses and differences between and among objects.	<b>70Q</b> Identify a pattern and translate into another form (e.g., actions, words, objects).	<b>150Q</b> Find the value of an unknown in a number sentence.	<b>300Q</b> Write addition and subtraction sentences to represent a word problem.	<b>430Q</b> Describe the meaning of an unknown in the context of a word problem.	<b>530Q</b> Find the value of a variable in a number sentence.	<b>650Q</b> Use one-step equations and inequalities to model and solve problems.	<b>780Q</b> Identify situations or solve problems with varying rates of change.	<b>810Q</b> Determine the ratio or rate of change of a relation given a table or graph.	<b>990Q</b> Use systems of linear equations in two or more variables to solve problems.	<b>1090Q</b> Find and interpret the maximum, the minimum, and the intercepts of a quadratic function.	<b>1140Q</b> Describe the slope of a line given in the context of a problem situation.	<b>1200Q</b> Graph exponential functions of the form $f(x) = ab^x$ .	<b>1340Q</b> Rename logarithmic expressions using properties of logarithms.	<b>1400Q</b> Use the definition of an ellipse to identify characteristics, write an equation, and graph the relation.	
DATA ANALYSIS & PROBABILITY	<b>EM</b> Organize, display, and interpret information in concrete or picture graphs.	<b>40Q</b> Describe the probability of chance events as certain, impossible, more likely, less likely or equally likely to occur.	<b>200Q</b> Organize, display, and interpret information in line plots and tally charts.	<b>390Q</b> Organize, display, and interpret information in tables and graphs (frequency tables, pictographs, and line plots).	<b>440Q</b> Describe the probability of an event using a fraction or ratio.	<b>600Q</b> Organize, display, and interpret information in circle graphs.	<b>730Q</b> Determine odds given an event or a probability.	<b>850Q</b> Describe data using the mean.	<b>960Q</b> Organize, display, and interpret information in box-and-whisker plots.	<b>1050Q</b> Identify outliers and determine their effect on the mean, median, and range of a set of data.	<b>1100Q</b> Derive a linear equation that models a set of data using calculators. Use the model to make predictions.	<b>1230Q</b> Determine a simple probability using geometric figures.	<b>1460Q</b> Model periodic phenomena using trigonometric functions.			
	EM*	0Q	100Q	200Q	300Q	400Q	500Q	600Q	700Q	800Q	900Q	1000Q	1100Q	1200Q	1300Q	1400Q



The Quantile Framework® for Mathematics uses a common scale to measure both a student's mathematical ability and the difficulty of mathematical tasks. You can match a student's Quantile® measure (e.g., 650Q) to the Quantile measure of a mathematical skill to see if the student is ready to learn that skill, needs to learn supporting skills first, or has already mastered it. The Quantile map depicts sample measures from the more than 500 skills taught from kindergarten through high school. The map shows that mathematics is

developmental—readiness to learn a specific skill depends on having learned more basic skills first. It also shows the connections between skills across the content strands (colored bars). Educators and parents use Quantile measures to monitor a student's development in mathematics and determine how best to teach a skill or concept. To get more information, use free resources and search the mathematical skills database, visit [www.Quantiles.com](http://www.Quantiles.com).

\*Emerging Mathematician (EM) represents a Quantile measure of 0Q and below.

The Quantile Framework for Mathematics was developed by MetaMetrics®, Inc., a privately held educational measurement company.

A student's Quantile measure is derived from a mathematics assessment, such as a state's year-end test, or classroom program that is linked with the Quantile Framework. For more information, visit [www.Quantiles.com](http://www.Quantiles.com).

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