

NeSA Math Indicator Labels
Twelfth Grade AT 2015
Maco ML-3000

	MA 12.2.1.b (AT) Use the unit circle to define the trigonometric functions on all real numbers.	MA 12.2.3.a (AT) Model periodic events with specified amplitude, frequency, and shifts.
MA 12.1.1.a (AT) Graph complex numbers on the complex plane.	MA 12.2.1.c (AT) Evaluate sine, cosine, and tangent functions at positive and negative multiples of 30, and 45 degrees.	MA 12.2.3.b (AT) Solve real-world problems using trigonometric and inverse trigonometric functions.
MA 12.1.1.b (AT) Determine the magnitude of complex numbers.	MA 12.2.1.d (AT) Create new functions out of existing functions using addition, subtraction, multiplication, division, translation, dilation, and composition.	MA 12.3.1.a (AT) Apply the Law of Sines and the Law of Cosines to find unknown measures in triangles.
MA 12.1.1.c (AT) Use matrices to represent and manipulate data.	MA 12.2.1.e (AT) Use limits to describe the behavior of a function near its asymptotes and removable discontinuities.	MA 12.3.1.b (AT) Prove and apply properties of lengths of chords, secant segments, and tangent segments.
MA 12.1.1.d (AT) Recognize the role that additive and multiplicative identities play in matrix operations.	MA 12.2.1.f (AT) Understand that the radian measure of an angle is the length of the arc on the unit circle subtended by that angle.	MA 12.3.2.a (AT) Identify features of a function (e.g., local and global maxima and minima, concavity, approximate locations of points of inflection and vertical and horizontal asymptotes) from its graph.
MA 12.1.1.e (AT) Recognize that, unlike multiplication of numbers, matrix multiplication for square matrices is not a commutative operation, but still satisfies the associative and distributive properties.	MA 12.2.1.g (AT) Convert between radian and degree measures of an angle.	MA 12.3.2.b (AT) Identify symmetry properties of a function (e.g., axis of symmetry of a parabola) and know the connection between its symmetry properties and specific transformations.
MA 12.1.1.f (AT) Derive and use the formulas for the general term and summation of finite arithmetic and geometric series	MA 12.2.2.a (AT) Use trigonometric identities to solve trigonometric equations.	MA 12.3.2.c (AT) Recognize that vector quantities have both magnitude and direction and can be represented by directed line segments.
MA 12.1.2.a (AT) Multiply matrices by scalars to produce new matrices.	MA 12.2.2.b (AT) Explain symmetry (odd and even) and periodicity of trigonometric functions.	MA 12.3.2.d (AT) Add and subtract vectors graphically and algebraically.
MA 12.1.2.b (AT) Add, subtract, and multiply matrices of appropriate dimensions.	MA 12.2.2.c (AT) Create an invertible function from a non-invertible function by restricting the domain (e.g., arcsin, arccos, and arctan).	MA 12.3.2.e (AT) Perform scalar multiplication of a vector and show it graphically.
MA 12.2.1.a (AT) Analyze and graph non-linear functions (e.g., quadratic, trigonometric, square root, logarithmic, rational, higher-order polynomials, exponential, absolute value, piecewise, and sinusoidal).	MA 12.2.2.d (AT) Find the period, amplitude, and midline of a trigonometric function of the form $y=A + B\sin(Cx)$, where A, B, and C are parameters, and identify these properties on a graph of the function.	MA 12.3.2.f (AT) Derive the equations of parabolas, ellipses, and hyperbolas from a graph or given parameters.

MA 12.3.2.g (AT) Determine the three-dimensional object created by rotating or revolving a two-dimensional object about an axis.

MA 12.3.2.h (AT) Determine the shape of a two-dimensional cross-section of a three-dimensional object.

MA 12.3.3.a (AT) Use Cavalieri's Principle to determine the volume of a sphere and other solid figures.

MA 12.3.3.b (AT) Determine the tolerance interval and percent of error in measurement.

MA 12.4.1 Representations, No additional indicator(s) at this level. Mastery is expected at previous grade levels.

MA 12.4.2.a (AT) Make inferences and justify conclusions from sample surveys, experiments, and observational studies.

MA 12.4.3.a (AT) Calculate the expected value of a random variable and interpret it as the mean of a probability distribution.

MA 12.4.3.b (AT) Determine possible outcomes of a decision by assigning probabilities to outcome values and finding expected values.

MA 12.4.3.c (AT) Evaluate and compare strategies on the basis of expected values.

MA 12.4.3.d (AT) Analyze decisions and strategies using probability concepts (e.g., medical testing and product testing).