

## **Course/Grade Level: Trigonometry Curriculum** (semester)

**Focus:** Students will use definitions and principles of trigonometry as they relate to angles in standard position, right triangles and circular functions. Students will graph the trigonometric functions, apply identities, and solve trigonometric applications. Students will perform operations using complex numbers and polar coordinates.

### **M.T.1 Students will demonstrate an understanding of angle measure and use fundamental properties of Trigonometry.** Students will...

- M.T.1.1 describe an angle and convert between radian and degree measure.
- M.T.1.2 demonstrate an understanding of the unit circle.
- M.T.1.3 express an angle in terms of its reference angle.
- M.T.1.4 evaluate trigonometric functions of special angles without calculator.
- M.T.1.5 evaluate trigonometric functions of all angles with calculator.
- M.T.1.6 evaluate arc length and area of a sector given the formulas.

### **M.T.2 Students will demonstrate an understanding of trigonometric graphs.** Students will...

- M.T.2.1 recognize basic graphs of the six trig functions.
- M.T.2.2 use the basic graphs to evaluate sine and cosine functions.
- M.T.2.3 sketch the transformed graphs of sine and cosine.
- M.T.2.4 name the amplitude, period, and shifts of trig functions from equations or from graphs.
- M.T.2.5 solve applications involving periodic motion.

### **M.T.3 Students will demonstrate an understanding of trigonometric identities.** Students will...

- M.T.3.1 manipulate trigonometric identities to verify them.
- M.T.3.2 solve trigonometric equations by using standard algebraic techniques and inverse trigonometric functions.
- M.T.3.3 evaluate and rewrite trigonometric functions using sum and difference, double angle, and half-angle identities.

**M.T.4 Students will solve triangles. Students will...**

- M.T.4.1 recognize and describe the ratios of the sides in special right triangles: 30-60-90 and 45-45-90. (HS 3.1.A2)
- M.T.4.2 use trigonometric ratios to solve right triangles.
- M.T.4.3 solve triangles using the law of sines, including the ambiguous case.
- M.T.4.4 solve triangles using the law of cosines.
- M.T.4.5 calculate the areas of triangles.
- M.T.4.6 apply trigonometric relationships to solve real-world problems.

**M.T.5 Students will perform operations using complex numbers and the trigonometric form of complex numbers. Students will ...**

- M.T.5.1 define the set of complex numbers and perform operations with them.
- M.T.5.2 graph polar coordinates and simple polar equations.
- M.T.5.3 recognize the form of a complex number.
- M.T.5.4 convert between polar form and rectangular form of complex numbers.
- M.T.5.5 calculate products, quotients, and powers of complex numbers written in polar form or rectangular form.