



SOUTHERN LEHIGH SCHOOL DISTRICT

5775 Main Street
Center Valley, PA 18034

Scope and Sequence for **Trigonometry**

Standards for Mathematical Practice:

MP1 Make sense of problems and persevere in solving them.
MP2 Reason abstractly and quantitatively.
MP3 Construct viable arguments and critique the reasoning of others.
MP4 Model with mathematics.

MP5 Use appropriate tools strategically.
MP6 Attend to precision.
MP7 Look for and make use of structure.
MP8 Look for and express regularity in repeated reasoning.

F.BF – Functions – Building Functions

CCSSM

Build a new functions from existing functions.

F.BF.3 Identify the effect on the graph of replacing $f(x)$ by $f(x) + k$, $k f(x)$, $f(kx)$, and $f(x + k)$ for specific values of k (both positive and negative); find the value of k given the graphs. Experiment with cases and illustrate an explanation of the effects on the graph using technology. *Include recognizing even and odd functions from their graphs and algebraic expressions for them.*

F.BF.4 Find inverse functions.

- b. (+)** Verify by composition that one function is the inverse of another.
- c. (+)** Read values of an inverse function from a graph or a table, given that the function has an inverse.
- d. (+)** Produce an invertible function from a non-invertible function by restricting the domain.

PA Core Standards for Mathematics

CC.2.2.HS.C.4

Write functions or sequences that model relationships between two quantities.

F.TF – Functions – Trigonometric Functions

CCSSM	PA Core Standards for Mathematics
Extend the domain of trigonometric functions using the unit circle. F.TF.3 (+) Use special triangles to determine geometrically the values of sine, cosine, tangent for $\pi/3$, $\pi/4$ and $\pi/6$, and use the unit circle to express the values of sine, cosine, and tangent for x, $\pi + x$, and $2\pi - x$ in terms of their values for x, where x is any real number. F.TF.4 (+) Use the unit circle to explain symmetry (odd and even) and periodicity of trigonometric functions.	CC.2.2.HS.C.7 Apply radian measure of an angle and the unit circle to analyze the trigonometric functions. CC.2.2.HS.C.9 Prove the Pythagorean identity and use it to calculate trigonometric ratios. CC.2.3.HS.A.7 Apply trigonometric ratios to solve problems involving right triangles
Model periodic phenomena with trigonometric functions. F.TF.6 (+) Understand that restricting a trigonometric function to a domain on which it is always increasing or always decreasing allows its inverse to be constructed. F.TF.7 (+) Use inverse functions to solve trigonometric equations that arise in modeling contexts; evaluate the solutions using technology, and interpret them in terms of the context.	CC.2.2.HS.C.8 Choose trigonometric functions to model periodic phenomena and describe the properties of the graphs.
Prove and apply trigonometric identities. F.TF.9 (+) Prove the addition and subtraction formulas for sine, cosine, and tangent and use them to solve problems.	Intentionally left blank.