Trigonometry
General Outcome: **Develop trigonometric reasoning.**
Specific Outcomes
It is expected that students will:
12P.T.1. Demonstrate an understanding of angles in standard position, expressed in degrees and radians. [C, CN, ME, R, V]
12P.T.2.   Develop and apply the equation of the unit circle. [CN, R, V]
12P.T.3. Solve problems, using the six trigonometric ratios for angles expressed in radians and degrees. [C, ME, PS, R, T, V]
12P.T.4. Graph and analyze the trigonometric functions sine, cosine and tangent to solve problems. [C, CN, PS, T, V]
12P.T.5.   Solve, algebraically and graphically, first and second degree trigonometric equations with the domain expressed in degrees and radians. [C, CN, PS, R, T, V]
12P.T.6. Prove trigonometric identities, using: - reciprocal identities   - quotient identities   - Pythagorean identities   - sum or difference identities (restricted to sine, cosine and tangent)   - double-angle identities (restricted to sine, cosine and tangent).   [C, R, T, V]

Permutations, Combinations and Binomial Theorem
General Outcome: **Develop algebraic and numeric reasoning that involves combinatorics.**
Specific Outcomes
It is expected that students will:
12P.P.1 Apply the fundamental counting principle to solve problems. [C, CN, PS, R, V]
12P.P.2. Determine the number of permutations of n elements taken r at a time to solve problems. [C, PS, R, V]
12P.P.3. Determine the number of combinations of n different elements taken r at a time to solve problems. [C, PS, R, V]
12P.P.4. Expand powers of a binomial in a variety of ways, including using the binomial theorem (restricted to exponents that are natural numbers). [C, CN, R, V]

Relations and Functions
General Outcome: **Develop algebraic and graphical reasoning through the study of relations.**
Specific Outcomes
It is expected that students will:
12P.R.1. Demonstrate an understanding of operations on, and compositions of, functions. [CN, R, T, V]
12P.R.2. Demonstrate an understanding of the effects of horizontal and vertical translations on the graphs of functions and their related equations. [C, CN, R, V]
12P.R.3. Demonstrate an understanding of the effects of horizontal and vertical compressions and stretches on the graphs of functions and their related equations. [C, CN, R, V]
12P.R.4. Apply translations, compressions and stretches to the graphs and equations of functions. [C, CN, R, V]
12P.R.5. Demonstrate an understanding of the effects of reflections on the graphs of functions and their related equations, including reflections through the: x-axis y-axis   - line $y = x$.   [C, CN, R, V]
12P.R.6. Demonstrate an understanding of inverses of relations. [C, CN, R, V]
12P.R.7. Demonstrate an understanding of logarithms. [C, CN, ME, R]
12P.R.8. Demonstrate an understanding of the product, quotient and power laws of logarithms. [C, CN, R, T]
12P.R.9. Graph and analyze exponential and logarithmic functions. [C, CN, T, V]
12P.R.10. Solve problems that involve exponential and logarithmic equations. [C, CN, PS, R]
12P.R.11. Demonstrate an understanding of factoring polynomials of degree greater than 2 (limited to polynomials of degree ≤ 5 with integral coefficients). [C, CN, ME]
12P.R.12. Graph and analyze polynomial functions (limited to polynomial functions of degree ≤ 5). [C, CN, PS, T, V]
12P.R.13. Graph and analyze radical functions (limited to functions involving one radical). [C, CN, R, T, V]
12P.R.14. Graph and analyze rational functions (limited to numerators and denominators that are monomials, binomials or trinomials). [C, CN, R, T, V]

Processes:
C – Communication   CN – Connections   ME – Mental Mathematics and Estimation
PS – Problem Solving   R – Reasoning   T – Technology
V – Visualization