Federal Way Public Schools

Standards-Based Education
Priority Standards

IB Math Studies Pre-Calculus

PS 1 Demonstrate proficiency in basic mathematical concepts including manipulating equations and inequalities with one or more variables.

PS 2 Demonstrate an understanding of the subsets of Real numbers and how they relate to one another.

PS 3 Demonstrate an understanding of appropriate use of rounding in mathematics including using correct significant figures, reasonableness of answers, and calculating percent error.

PS 4 Perform operations on numbers in scientific notation.

PS 5 Convert within and between SI units of measurement.

PS 6 Demonstrate an understanding of commonly used currencies and perform conversions involving commissions.

PS 7 Use a GDC to solve equations and systems of equations.

PS 8 Apply formulas for arithmetic sequences and series including finding the n^{th} term and the sum of the first n terms.

PS 9 Apply formulas for geometric sequences and series including finding the n^{th} term and the sum of the first n terms.

PS 10 Apply geometric sequences to problems involving compound interest and depreciation.

PS 11 Classify data as discrete or continuous.

PS 12 Create frequency tables for simple discrete data.

PS 13 Create frequency tables and histograms for grouped discrete or continuous data.

PS 14 Create cumulative frequency tables and box-and-whisker diagrams for grouped discrete or continuous data.

PS 15 Calculate measures of central tendency.

PS 16 Calculate measures of dispersion.

PS 17 Translate logic statements between verbal statements and symbolic form.

PS 18 Create truth tables for logic statements with up to three propositions.

PS 19 Use truth tables to determine logical contradiction, tautology, and logical equivalence.

PS 20 State the converse, inverse, and contrapositive of conditional statements.

PS 21 Demonstrate an understanding of basic set theory including elements, subsets, intersection, union, and complement.

PS 22 Create Venn diagrams and use them to solve problems.

PS 23 Demonstrate an understanding of basic concepts of probability including finding sample spaces, calculating the probability of an event, and the probability of a complementary event.

PS 24 Describe and apply the concepts of complementary, mutually exclusive, independent, and compound events.

PS 25 Describe and calculate the characteristics of the normal distribution including measures of central tendency and dispersion.

PS 26 Use tools to analyze and interpret bivariate data.

PS 27 Calculate and interpret correlation and regression to make predictions.

PS 28 Calculate and interpret Chi squared tests for independence on appropriate data sets.

PS 29 Demonstrate an understanding of linear equations in various forms including parallel and perpendicular lines.

PS 30 Use trigonometric ratios to solve problems involving right triangles.

PS 31 Fill in values of sine cosine and tangent for common angles on the unit circle.

PS 32 Use the unit circle to evaluate the six trigonometric functions of angles.

PS 33 Use amplitude, period, and shifts to graph trigonometric functions.

PS 34 Use a trigonometric graph to derive an equation.

PS 35 Use the laws of sines and cosines to solve problems.

PS 36 Use formulas to find areas of oblique triangles.

PS 37 Calculate volumes and surface areas of 3 dimensional solids.

PS 38 Identify the domain and range of a function.

PS 39 Solve and graph quadratic equations using a variety of methods.

PS 40 Graph exponential functions, and use them to solve exponential equations.

PS 41 Use a GDC to graph polynomial functions and identify characteristics of these functions.

PS 42 Use a GDC to solve equations involving combinations of common functions.

PS 43 Solve problems involving rates of change as slopes of lines including finding the slope of a tangent line as an instantaneous rate of change.

PS 44 Calculate derivatives of functions of the form $f(x)=ax^n + bx^{n-1} + \ldots$, where all exponents are integers.

PS 45 Find the slope and equation of a tangent line to a function at a given point, and find the equation of a line perpendicular to the tangent line at a given point.

PS 46 Find the points on a function where the tangent has a given gradient.

PS 47 Find the stationary points of a function and use them to find the intervals where the function is increasing and decreasing and to find minimum and maximum values on a given interval.

PS 49 Solve problems where a quantity is to be maximized or minimized.

PS 50 Chose a topic for an internal assessment and develop an introduction including statement of the task.

PS 51 Gather relevant data or measurements.

PS 52 Perform relevant mathematical processes to analyze data/measurements gathered.

PS 53 Produce conclusions based on the mathematical processes used.

PS 54 Discuss the validity of the processes and conclusions.

PS 55 Add, subtract, and multiply matrices of various dimensions.

PS 56 Use a GDC to find inverses of 2x2 and 3x3 matrices.

PS 57 Calculate determinants of 2x2 matrices and use GDC to find determinants of 3x3 matrices.

PS 58 Solve systems of equations using matrices or determinants.