**Math 10 Pre-IB Outcomes – June 18, 2013**

**It is given that the course will be two semesters long and that the students will write the Math 10 provincial exam so the Math 10 Pre-IB outcomes must include all of the Math 10 outcomes. The additional outcomes for IB are:**

1. demonstrate an understanding of number sets, interval notation and Venn diagrams and solve problems involving union, intersection and the complement of sets
2. perform algebraic expansion and factorization including binomial expansion using Pascal’s triangle and quadratic factorization up to and including the method of decomposition
3. simplify expressions involving radicals and perform operations involving radicals including multiplication and division of radical terms and rationalizing the denominator
4. demonstrate an understanding of the Pythagorean theorem and employ it in solving 2D problems, including those involving diameters, chords, tangents and triangles inscribed in a circle and 3D problems including the diagonal of a box
5. perform slope, midpoint, and distance formula calculations and solve problems involving analytic geometry with emphasis on straight lines and the distance from a line to a point
6. understand the notions of congruency and similarity; create simple triangle congruence proofs; solve problems involving similar figures and investigate the relationships between the lengths, areas, and volumes of similar figures
7. perform linear transformations such as translations, reflections, rotations and dilatations upon points and figures and, for curves, determine the equation of the image using the reverse linear transformation
8. summarize and analyze single variable discrete/grouped/cumulative data with a variety of statistics including mean, median, mode, range, standard deviation; create and interpret graphical representations including column graphs, histograms and box-and-whisker plots and relate this to normally distributed continuous data
9. demonstrate an understanding of the methods used to solve quadratic equations, including factorization, completing the square, and the quadratic formula and solve problems that require these methods
10. demonstrate an understanding of the trigonometric ratios (sine, cosine and tangent) for right angled triangles and apply these to problems in 2D (including the formula for area of a triangle using sine ) and 3D; develop and apply the trigonometry for non-right angled triangles, including the sine law and the cosine law and prove simple trigonometric identities involving fractions, factorization and the Pythagorean identity
11. analyze probabilistic situations and perform probability calculations for simple and compound events (including sampling without replacement), both experimentally and theoretically by using tree diagrams, tables, grids, Venn diagrams and calculate probabilities associated with unions and intersections of events including mutually exclusive events and conditional probabilities
12. combine and simplify algebraic fractions having denominators of second degree or lower using the operations of multiplication, division, addition, and subtraction
13. rearrange formulas using algebraic operations (including nth roots) and develop formulas inductively from number patterns
14. understand the concepts of relation and function, function notation, composition of functions, simple transformations of functions, inverse function, absolute value functions, intersection of functions and develop and use the algebraic and recursive characterizations of arithmetic and geometric sequences
15. demonstrate vector skills which include the use of notation, representations, components, addition, subtraction, scalar multiplication, scalar (dot) product and apply these to parallelism and perpendicularity and the calculation of the angle between two lines
16. apply exponential and logarithmic functions to problems involving growth, decay, compound interest and depreciation and demonstrate facility with the laws of exponents (including trinomial factoring involving exponential terms) and the laws of logarithms
17. develop and apply procedures for finding the axis of symmetry, vertex and intercepts of a quadratic function and apply these skills to quadratic optimization problems
18. demonstrate an understanding of the unit circle, radian measure, exact trigonometric values associated with 30o and 45o, compound angle formulas and apply these and previously developed transformational skills to graphing trigonometric functions, modeling with sine functions, solving simple trigonometric equations
19. analyze and solve inequalities involving quadratic and simple rational functions through the use of sign diagrams, interval notation and graphs

**From the Pre-IB Math 10 meeting we recommended that:**

**Any Pre-IB Math 10 outcomes that may be developed for PowerSchool be regarded as provisional and that a review meeting be held after one year of implementation.**