Integrated Math IV – Essentials

LOGICAL REASONING AND METHODS OF PROOF

- review proofs and explore the relationship between implications and their converses, inverses, and contrapositives
- compare and contrast coordinate and synthetic methods of proof
- understand the need for clear definitions. Reconsider the definition of a trapezoid
- find formulas for the sums of interior and exterior angle measures in polygons
- use indirect proof in geometric, algebraic and everyday contexts
- examine relationships between circumscribed polygons and circles

SEQUENCES AND SERIES

- describe and continue patterns
- graph sequences and find apparent limits
- use subscripts and formulas for sequences
- write and use formulas for sequences in which each term is found by using the preceding term
- identify sequences that have a common difference, a common ratio, or neither
- write explicit and recursive formulas
- find the sum of a finite non-geometric series
- use a formula to find the sum of a finite geometric series
- find the sum of an infinite geometric series

EXPONENTIAL AND LOGARITHMIC FUNCTIONS

- use exponential growth and decay functions to model situations
- use exponential functions with negative x values to model situations
- use expressions involving fractional exponents or radicals
- model situations using exponential functions with fractional exponents
- model situations using exponential functions with base e
- find and graph inverse functions
- recognize and evaluate log functions and use log functions to solve problems
- learn about the properties of logs
- use properties of logs to solve problems
- use exponential and logarithmic equations to solve real life problems

APPLYING PROBABILITY MODELS

- use simulations to solve problems
- find probability in situations with continuous and discrete outcomes
- find the probability that either of two events occurs
- use area models with coordinates to solve probability problems
- find conditional probabilities and recognize independent and dependent events
- find the average gain or loss in a situation

- review combinations and permutations

ANGLES, TRIGONOMETRY AND VECTORS

- develop the Unit Circle with radian and degree measurement
- discover and use the coordinates of the Unit Circle
- find the sine, cosine, and tangent of special angles
- use right triangle trigonometry to solve application problems
- graph and transform the curves of sine and cosine
- use polar coordinates to locate points
- covert from polar to rectangular coordinates, and vice versa
- extend the definitions of cosine, sine and tangent and use a Pythagorean identity
- use drawings of vectors to solve problems
- use algebra to solve problems involving vectors
- use parametric equations to solve problems
- derive the law of cosines and use it to find measures of sides and angles in triangles
- use the law of sines to find measures of sides and angles in triangles