Ray's for Today Scope & Sequence:
Level 8 – Pre-Algebra – Ages 13-14

Number Concepts
- number system expansion
- closure in the number system
- properties of operations
- language of math, numeration & symbols
- word form, standard form, expanded form, expanded group form
- translating from English to the language of math with each type of number
- order of operations with each type of number
- sets and set notation
- arithmetic & geometric sequences
- math reasoning & story problems with each type of number
- real numbers
- set concepts, finite and infinite sets, domains

Integers
- components of signed numbers
- absolute value
- additive inverse
- arithmetic operations with integers
- order of operations

Rational Numbers
- expansion, properties & closure
- precision and betweeness
- converting rational numbers in three forms: fraction/decimal/percent
- factorization
- using GCD and LCM
- arithmetic operations with rational numbers (fractions, decimals, percent)
- using rational numbers to solve problems
- ratio, proportion, and rates
- percent change
- signed rational numbers
- fractional coefficients

Exponential Numbers
- why exponents and usefulness
- relationship of exponents to multiplication
- exponents and different bases
- arithmetic operations with exponents

- positive and negative exponents
- exponents in formulas and equations, order of operation and translation
- scientific notation & powers of 10
- using scientific notation, converting to and from standard form and scientific notation
- roots as inverse of powers
- simplifying roots
- equations with exponents, radical equations
- Pythagorean Theorem
- arithmetic operations and roots

Graphing
- graphing data
- sampling
- normal distribution & bell curve
- coordinate plane
- relations
- functions
- graphing linear functions
- slope & slope-intercept form
- graphing linear inequalities
- direct variations

Probability
- definition of probability, vocabulary
- fairness, odds
- fundamental counting principle
- permutations & combinations
- independent & dependent events

Problem-Solving
- expressions, number sentences, equations
- translating words and drawings into math sentences and equations
- using formulas
- vocabulary and symbols of basic algebra – variables, coefficients, terms, like terms, equalities and inequalities, formulas as special equations
- if-then statements
- truth tables
- general equations
- simplifying expressions
- equalities and inequalities
- two-step equations
- using equations to show relationships between two variables

- functions
- slope and plotting functions & equations in y = mx + b form
- plotting direct and inverse relationships

Geometry Concepts
- elements of plane geometry
- parallel and intersecting lines, transversals and related angles
- polygons, triangles, quadrilaterals
- perimeter, circumference
- specialness of right triangles
- Pythagorean Theorem
- elements of solid geometry
- coordinate geometry
- congruence & similarity
- symmetry & transformations
- area
- volume
- surface area

Polynomials
- monomials & binomials
- converse
- polynomials
- factoring
- arithmetic operations