Math 9
Patterns & Relations

I Can Statements:

- **Patterns and Equations –** Generalize a pattern arising from a problem-solving context, using a linear equation, and verify by substitution.
  - I can represent a pattern with a linear equation.
  - I can substitute into an expression or equation to verify a solution.

- **Graphing Linear Relations –** Graph a linear relation, analyze the graph, and interpolate or extrapolate to solve problems.
  - I can graph a linear relation.
  - I can use a graph to solve problems.

- **Solving Equations –** Model and solve problems, using linear equations of the form:
  - I can represent a given problem with an algebraic equation.
  - I can solve the following types of equations:
    - $ax = b$
    - $\frac{x}{a} = b,\ a \neq 0$
    - $ax + b = c$
    - $\frac{x}{a} + b = c,\ a \neq 0$
    - $ax = b + cx$
    - $a(x + b) = c$
    - $ax + b = cx + d$
    - $a(bx + c) = d(ex + f)$
    - $\frac{a}{x} = b,\ x \neq 0$

    Where *a, b, c, d, e,* and *f* are rational numbers.
  - I can verify the solution to an algebraic equation.

- **Inequalities -** Explain and illustrate strategies to solve single variable linear inequalities with rational coefficients within a problem-solving context.
  - I can represent a given problem with an inequality.
  - I can solve inequalities.
  - I can verify the solution to an inequality.

- **Polynomials –** Demonstrate an understanding of polynomials (limited to polynomials of degree less than or equal to two.)
  - I can recognize when an expression is (or is not) a polynomial.
  - I can classify a polynomial according to the number of terms (monomial, binomial, trinomial, or polynomial).
  - I can determine the degree of a polynomial.
  - I can identify the coefficient(s), variable(s), and constant in a polynomial.

- **Adding & Subtracting Polynomials –** Model, record, and explain the operations of addition and subtraction of polynomial expressions, concretely, pictorially, and symbolically (limited to polynomials of degree less than or equal to two.)
    - I can model addition of polynomials concretely, pictorially, and symbolically.
    - I can model subtraction of polynomials concretely, pictorially, and symbolically.
    - I can identify like terms.
    - I can simplify polynomials by collecting like terms.
    - I can add and subtract polynomials.

- **Multiplying & Dividing Polynomials by Monomials –** Model, record, and explain the operations of multiplication and division of polynomial expressions (limited to polynomials of degree less than or equal to two) by monomials, concretely, pictorially, and symbolically.
    - I can model multiplication of monomials by polynomials concretely, pictorially, and symbolically.
    - I can model division of polynomials by monomials concretely, pictorially, and symbolically.
    - I can multiply a polynomial by a monomial.
    - I can divide a polynomial by a monomial.

VOCABULARY

Math 7
Constant
Variable
Algebraic Expression
Numerical Coefficient
Equation
T-Chart
Pattern
Stage Number
Substitute
Equality
Preservation of Equality

Math 8
Distributive Property

Math 9
Interpolate
Extrapolate
Linear
Relation
Inequality
Vertical
Horizontal
Degree
Greater Than
Less Than
Greater Than or Equal To
Less Than or Equal To
$>,\ <,\ \geq,\ \leq,\ =,\ \neq$
Monomial
Binomial
Trinomial
Polynomial
Like Terms
$\in$ (element of)