



St. Mel's Catholic School

MATHEMATICS STANDARDS

Grade Eight

Algebra I

By the end of Algebra I, your child will:

1.0 Identify and use the arithmetic properties of subsets of integers and rational, irrational, and real numbers, including closure properties for the four basic arithmetic operations where applicable.

1.1 Use properties of numbers to demonstrate whether assertions are true or false.

2.0 Understand and use such operations as taking the opposite, finding the reciprocal, taking a root, and raising to a fractional power. Also understand and use the rules of exponents.

3.0 Solve equations and inequalities involving absolute values.

4.0 Simplify expressions before solving linear equations and inequalities in one variable, such as $3(2x-5) + 4(x-2) = 12$.

5.0 Solve multi-step problems, including word problems, that involve linear equations and linear inequalities in one variable and provide justification for each step.

6.0 Graph a linear equation and compute the x - and y -intercepts (e.g., graph $2x + 6y = 4$). Also sketch the region defined by linear inequalities (e.g., they sketch the region defined by $2x + 6y < 4$).

7.0 Verify that a point lies on a line, given an equation of the line and derive linear equations by using the point-slope formula.

8.0 Understand the concepts of parallel lines and perpendicular lines and how those slopes are related. Also find the equation of a line perpendicular to a given line that passes through a given point.

9.0 Solve a system of two linear equations in two variable algebraically and interpret the answer graphically. Also solve a system of two linear inequalities in two variables and sketch the solution sets.

10.0 Add, subtract, multiply, and divide monomials and polynomials. Also solve multi-step problems, including word problems, by using these techniques.

11.0 Apply basic factoring techniques to second- and simple third-degree polynomials. These techniques include finding a common factor for all terms in a polynomial, recognizing the difference of two squares, and recognize perfect squares of binomials.

12.0 Simplify fractions with polynomials in the numerator and denominator by factoring both and reducing them to the lowest terms.

13.0 Add, subtract, multiply, and divide rational expressions and functions. Also solve both computationally and conceptually challenging problems by using these techniques.

14.0 Solve a quadratic equation by factoring or completing the square.